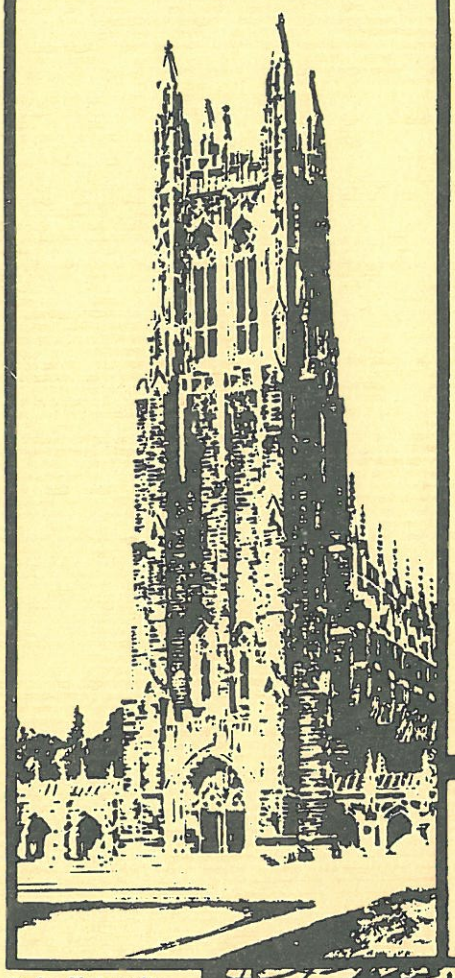
Triangle Universities Computation Center

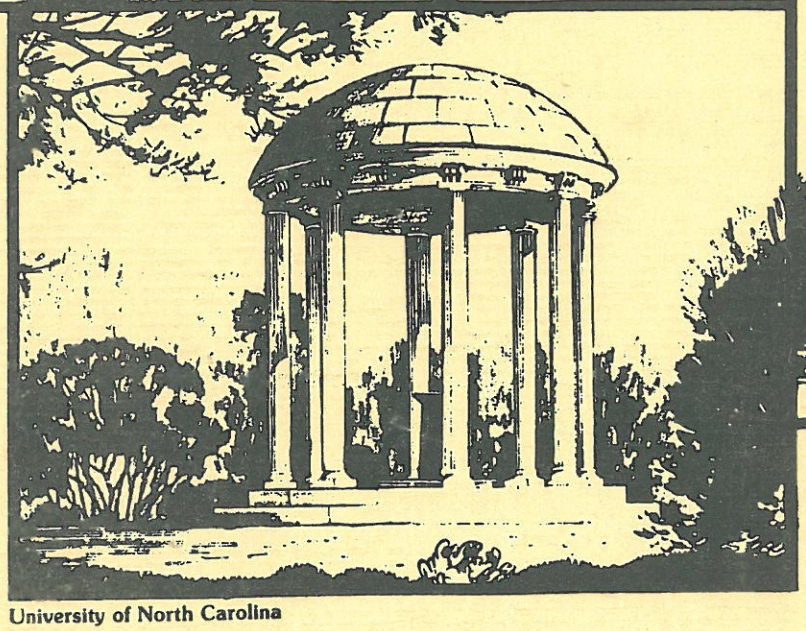
Index of Computer Programs
and
Facilities Documentation at TUCC

Document No. GIR-000-12

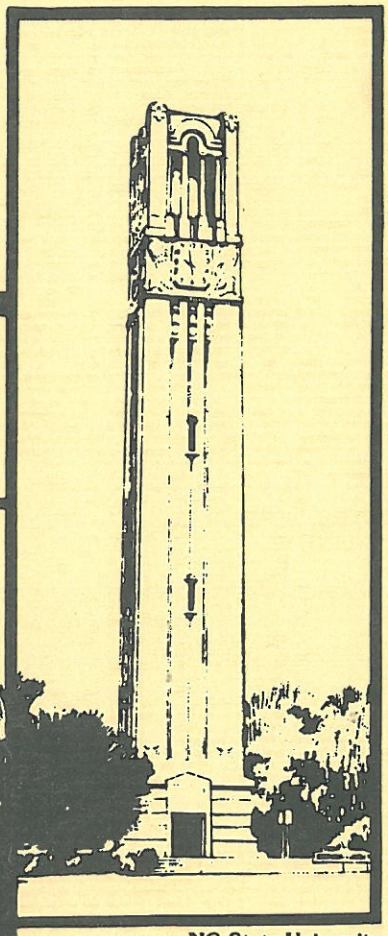


Duke University

TUCC



University of North Carolina



NC State University

P.O. Box 12076, Research Triangle Park, N C 27709

June 26, 1987 Document No. GIR-000-12

Index of Computer Programs and Facilities Documentation at TUCC

TRIANGLE UNIVERSITIES COMPUTATION CENTER
RESEARCH TRIANGLE PARK, NORTH CAROLINA

Index of Computer Programs and Facilities Documentation at TUCC

A. Introduction

This index is a list of available programs, subprograms, subroutines, subprocedures, and packages,indexed by name and by subject. Each entry shows a brief description, an abstract number, and a document number.

B. Using the Index

Entries appear alphabetically and include both program entries and subject entries. Subject entries are followed by program entries. Each program entry includes program name, short description, abstract number, and document number; for programs that are part of a package, the name of the package is given.

Here is a sample entry. Each part is discussed below.

name	description	abstract	document
TPVOLCPY	- A Tape Copying Program	004.	LS-291

1. Program Name

The program name is a short mnemonic that refers to the available computer program. Programs are listed both alphabetically according to these mnemonics and under the subject headings that describe them. For example, TPVOLCPY, a tape copying program, can be found under TPVOLCPY, COPY, TAPE HANDLING, and UTILITY PROGRAMS.

2. Short Description

This includes the name of the package program, if applicable, in parentheses, and a short description of the program.

3. Abstract Number

This number in the index corresponds to the number of an abstract. Abstract listings are available for reference use at local campus computation centers. To print the abstract listing, use the following Job Control Language:

```
//jobname  JOB  xxx.yyy.zzz,username,TIME=1,...
/*JOBPARM  LINES=12
//  EXEC  SCRIPT,LIB='TUCIS.ABSTRACT.TEXT'
//SYSIN DD DSN=TUCIS.ABSTRACT.TEXT(CONTROL),DISP=SHR
```

The printout will require about 250 pages. You may need other JCL parameters to request a lowercase print train at your installation; see your user services if you aren't sure how to specify this.

4. Listing Abstracts

Under TSO, you can use the ABSTRACT CLIST to display abstracts on your terminal. Just type "ABSTRACT" followed by the number of the abstract you want to see. For example:

ABSTRACT 138

would list the abstract for the SAS base product.

5. Documentation

a. TUCC Documents

There are two series of TUCC documents for users: the LS and GI series. Each of these designations may be suffixed by the letter "R" (i.e., LSR or GIR). The "R" indicates that one or more TUCC campuses may restrict distribution of the document, generally because of document cost or the specialized nature of the information. Procedures for acquiring "R" documents are announced by each campus computation center to its users.

LS and GI documents without the "R" suffix are usually available from local computation centers. The content of the documentation series is as follows:

LS - Computer program user documentation; how to use the program on the TUCC system.

GI - General information to facilitate the use of TUCC services; tutorials.

In many cases, the TUCC document is not the primary user documentation for a program or package; it serves only as an announcement that the software is available on the TUCC system, tells how to access it, and tells where to get complete documentation. This is often true for software that has been acquired outside the TUCC community.

The latest "List of Current TUCC Documentation" gives a listing, in document number order, of all current documents and their updates. It is published quarterly as an update to this index.

b. UNC Educational Computing Service Documents

UNC-ECS's TUCC-related documentation is in the LIB-ECS series. Reference copies of UNC-ECS documents are available at most local computation centers, and personal copies may be ordered through the local centers.

c. Other Documentation

For programs that have neither TUCC nor UNC-ECS documentation, the index will refer to one of the notes below. For documentation in this category, consult your local user services concerning the availability on your campus.

Note 1 IBM Report Program Generator (RPG) Programmer's Guide, GC24-3374

Note 2 Programming Guide (PG): available from UNC-CH Computation Center

Note 3 Documentation available from UNC-CH Department of Biostatistics

Note 4 IBM ANSI COBOL Manual, GC28-6396

Note 5 IBM Services Aids Manual, GC28-0674

Note 6 IBM Utilities Manual, GC26-3902

Note 7 Documentation available from Institute for Research in Social Science (IRSS), UNC-CH

Note 8 "Applications of SPITBOL," available from NCSU Student Supply Store

Note 9 Self-documenting: list program for documentation or see cataloged procedures listings available at your local computation center

Note 10 IBM APL2 Programming: Guide, SH20-9216, and IBM APL2 Programming: Language Reference, SH20-9227

Note 11 IBM OS/VS DOS/VS VM/370 Assembler Language, GC33-4010

Note 12 IBM VM/SP CMS Users' Guide, SC19-6210, and IBM VM/SP CMS Command and Macro Reference, SC19-6209

C. Package and System Abbrev ations

Many of the items listed in the index are subroutines, commands, or other parts of a package of programs or an interactive system. In such a case, an abbreviated name of the package or system is listed in the index entry, for example:

FREQ (SAS) Frequency and Crosstabulation Tables

indicates that FREQ is a procedure within the SAS package. The following is a list of most of the package and system abbreviations, with an extended title or description and the documentation that describes them.

ABBREVIATION	PACKAGE
APL STATPACK2	STATPACK2 package for APL programs. TUCC Document LS-114.
BERRY-WHYBARK	Berry-Whybark package for operations and logistics management. UNC-ECS Document LIB-ECS-40.
BMDP	Biomedical Computer Programs. TUCC Document LS-308.
CMS	Conversational Monitor System of the VM Operating System. TUCC Document GI-092 and IBM manuals (see Note 12 above).
EISPACK	An Eigensystem Subroutine Package. TUCC Document LS-286.
HARRIS-MAGGARD	Harris-Maggard management analysis package. UNC-ECS Document LIB-ECS-39.
JCP	Johnson Chemistry Package. UNC-ECS Document LIB-ECS-50.
ICES/360	Integrated Civil Engineering System. TUCC Document LS-44.
IMSL	International Mathematical and Statistical Library. TUCC Document LS-287.
LERNER	Lerner Finance Simulation Cases. UNC-ECS Document LIB-ECS-47.
LINPACK	Subroutine Library for Linear Algebra. TUCC Document LS-358.
PL/I SPC	PL/I Subprocedure Collection. TUCC Document LSR-347.

SAS	Statistical Analysis System. TUCC Document LS-118. (Other SAS Institute products are also documented in LS-118. SAS is a trademark of SAS Institute, Inc.)
SPSS-X	Statistical Package for the Social Sciences. TUCC Document LS-102. (SPSS-X is a trademark of SPSS, Inc.)
TSL	UNC-CH Biostatistics Time-Sharing Library. Documentation is available from the UNC-CH Department of Biostatistics.
TSO	Time Sharing Option of OS/VS2 MVS. TUCC Document LSR-352.
WYLBUR	OBS WYLBUR Interactive System. TUCC Document LSR-360.

ABC (JCP) Simulate ABC NMR Spectrum	209.	LIB-ECS-50
ABCANL (JCP) Solve Kinetics System	209.	LIB-ECS-50
ABEND - Force Abnormal Termination of a Program	079.	LS-015
ABIBN (IMSL) Analysis of Experimental Design Data	147.	LS-287
ACCES/MVS		
Access to Remote Computers via the INTERNET	176.	GI-097
ACCESS Command (CMS) Identify Disk to CMS File System	130.	Note 12
Access to Remote Computers via the INTERNET	176.	GI-097
ACCLVE (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
ACCOUNTING		
PILLS - Computer-Augmented Accounting Instruction	211.	LIB-ECS-33
TEMPOMATIC IV - A Management Simulation	314.	LS-323
ACCRSE (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
ACME (LERNER) Reinvestment Rates	212.	LIB-ECS-47
ACRDAN (IMSL) Analysis of Experimental Design Data	147.	LS-287
ACSL - Advanced Continuous Simulation Language	038.	LS-369
ACTRST (IMSL) Analysis of Experimental Design Data	147.	LS-287
ADAPTIVE SMOOTHING		
NICK (Berry-Whybark) Adaptive Smoothing	217.	LIB-ECS-40
ADDIX - Add Index Commands to a SCRIPT File	049.	Note 2
ADJUSTED RATES		
RATES (TSL) Computation and Comparison of Adjusted Rates	146.	Note 3
ADSTOP Command (CMS) Set a Virtual Machine Address Stop	130.	Note 12
AFACN (IMSL) Full Factorial Plan Analysis	147.	LS-287
AFACT (IMSL) - Full Factorial Plan Analysis of Variance	147.	LS-287
AGBACP (IMSL) Analysis of Experimental Design Data	147.	LS-287
AGGREGATE (SPSS-X) Aggregates	137.	LS-102
AGGREGATES		
AGGREGATE (SPSS-X) Aggregates	137.	LS-102
BMDP7D (BMDP) Descrip. of Groups (Strata) with Histograms	323.	LS-308
BMDP9D (BMDP) Multiway Description of Groups	323.	LS-308
BREAKDOWN (SPSS-X) Subpopulation Means	137.	LS-102
DATA-TEXT - Data Analysis Package	143.	LS-167
MEANS (SAS) Means and Descriptive Statistics	138.	LS-118
AGII - Tektronix Advanced Graphing II	120.	LS-289
AGLMOD (IMSL) Analysis of Experimental Design Data	147.	LS-287
AGVACL (IMSL) Analysis of Experimental Design Data	147.	LS-287
AGXPM (IMSL) Analysis of Experimental Design Data	147.	LS-287
AID - Automatic Interaction Detector	172.	LSR-163
ALGEBRA		
McLaughlin Linear Algebra Package	155.	LS-334
REDUCE - An Algebraic Programming System	125.	LS-380
ALGOLW - Student Compiler for Extended ALGOL	062.	LS-125
ALIGN Command (WYLBUR) Justify Text	287.	LSR-360
ALLIANCE (LERNER) Establishing a Credit Department	212.	LIB-ECS-47
ALLOCATE (PL/I System Subroutine) Check CTLG for dsname	279.	LS-297
ALLOCATE Command (TSO) Establish File Name	068.	LSR-352
ALSQAN (IMSL) Analysis of Experimental Design Data	147.	LS-287
AMASPZAP - Load Module and Data Set Corrector	007.	Note 5
AMBLIST - Map Load Module	017.	Note 5
AMEANS (IMSL) Analysis of Experimental Design Data	147.	LS-287
AMERICAN (LERNER) Multiple Reinvestment Rates	212.	LIB-ECS-47
AMP - Argonne Minimization Package	322.	LS-310
ANALYSIS OF COVARIANCE		
ANCOV1 (IMSL) Analysis of Experimental Design Data	147.	LS-287
ANOVA (SAS) - Analysis of Variance for Balanced Designs	138.	LS-118
ANOVA (SPSS-X) Factorial Analysis of Variance	137.	LS-102
BECVL (IMSL) Basic Statistics	147.	LS-287
BECVLI (IMSL) Basic Statistics	147.	LS-287
BMDP1V (BMDP) One-Way Analysis of Variance and Covariance	323.	LS-308
BMDP2V (BMDP) Analysis of Variance and Covariance	323.	LS-308
BMDP3V (BMDP) General Mixed Model Analysis of Variance	323.	LS-308

GLM (SAS) General Linear Models	138.	LS-118
LISREL V - Analysis of Linear Structural Relationships	164.	LS-367
MANOVA (SPSS-X) General Linear Models	137.	LS-102
MANOVA - Multivariate Analysis of Variance	174.	LSR-108
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
NESTED (SAS) Analysis of Variance for Nested Design	138.	LS-118
NPAR1WAY (SAS) Analysis of Variance on Ranks	138.	LS-118
ANALYSIS OF DISPERSION		
LOGLINEAR (SPSS-X) Loglinear Analysis	137.	LS-102
ANALYSIS OF VARIANCE		
ABIBN (IMSL) Analysis of Experimental Design Data	147.	LS-287
ACRDAN (IMSL) Analysis of Experimental Design Data	147.	LS-287
AFACN (IMSL) Full Factorial Plan Analysis	147.	LS-287
AGVACL (IMSL) Analysis of Experimental Design Data	147.	LS-287
AGXPM (IMSL) Analysis of Experimental Design Data	147.	LS-287
ALSQAN (IMSL) Analysis of Experimental Design Data	147.	LS-287
ANOVA (APL STATPACK2) Complete Factorial ANOVA	141.	LS-114
ANOVA (SAS) Analysis of Variance for Balanced Designs	138.	LS-118
ANOVA (SPSS-X) Factorial Analysis of Variance	137.	LS-102
ANOVA1 (APL STATPACK2) Crossed, Nested ANOVA	141.	LS-114
ANOVA2 (APL STATPACK2) One-Way Analysis of Variance	141.	LS-114
AOV (APL STATPACK2) Orthogonal Factorial Experiments	141.	LS-114
ARCBAN (IMSL) Analysis of Experimental Design Data	147.	LS-287
BECVL (IMSL) Basic Statistics	147.	LS-287
BECVLI (IMSL) Basic Statistics	147.	LS-287
BEIGRP (IMSL) Basic Statistics	147.	LS-287
BEIUGR (IMSL) Basic Statistics	147.	LS-287
BLOCKS (TSL) Analysis of Randomized Blocks Experiment	146.	Note 3
BMDP1R (BMDP) Multiple Linear Regression	323.	LS-308
BMDP1V (BMDP) One-Way Analysis of Variance and Covariance	323.	LS-308
BMDP2R (BMDP) Stepwise Regression	323.	LS-308
BMDP2V (BMDP) Analysis of Variance and Covariance	323.	LS-308
BMDP3V (BMDP) General Mixed Model Analysis of Variance	323.	LS-308
BMDP7D (BMDP) Descrip. of Groups (Strata) with Histograms	323.	LS-308
BMDP8V (BMDP) General Mixed Model Anal. - Equal Cell Sizes	323.	LS-308
DATA-TEXT - Data Analysis Package	143.	LS-167
DIALL, DIALLC - Least Squares Analysis of Diallel Expers.	240.	LS-175
FACTOR (TSL) Analysis for Complete Factorial Design	146.	Note 3
GLM (SAS) General Linear Models	138.	LS-118
MANOVA (SPSS-X) General Linear Models	137.	LS-102
MANOVA - Multivariate Analysis of Variance	174.	LSR-108
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
NAWNRP (IMSL) Nonparametric Statistics	147.	LS-287
NAWRPE (IMSL) Nonparametric Statistics	147.	LS-287
NAWRPU (IMSL) Nonparametric Statistics	147.	LS-287
NESTED (SAS) Analysis of Variance for Nested Design	138.	LS-118
NESTED (TSL) Analysis of Nested Experiment	146.	Note 3
ONEWAY (SPSS-X) One-way Analysis of Variance	137.	LS-102
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SQUARE (TSL) Analysis of Latin Square Experiment	146.	Note 3
STEPWISE (SAS) Stepwise Regression	138.	LS-118
TSAR - Tele-Storage and Retrieval System	142.	LS-076
ANATAB (TSL) Analysis of Contingency Tables	146.	Note 3
ANCOV1 (IMSL) Analysis of Experimental Design Data	147.	LS-287
AND - FORTRAN Boolean Function	094.	LS-008
ANESTE (IMSL) Analysis of Experimental Design Data	147.	LS-287
ANESTU (IMSL) Analysis of Experimental Design Data	147.	LS-287
ANOVA		
BMDP8V (BMDP) General Mixed Model Anal. - Equal Cell Sizes	323.	LS-308
ANOVA (APL STATPACK2) Complete Factorial ANOVA	141.	LS-114
ANOVA (SAS) Analysis of Variance for Balanced Designs	138.	LS-118
ANOVA (SPSS-X) Factorial Analysis of Variance	137.	LS-102
ANOVA1 (APL STATPACK2) Crossed, Nested ANOVA	141.	LS-114
ANOVA2 (APL STATPACK2) One-Way Analysis of Variance	141.	LS-114
AOBTAIN (PL/I System Subroutine) Check VTOC for dsname	279.	LS-297
AORDR (IMSL) - Reordering Bal. Complete Exp. Design Data	147.	LS-287
AOV (APL STATPACK2) Orthogonal Factorial Experiments	141.	LS-114

APFTN64		
How to Run Jobs on the FPS-164	089.	GIR-086
APFTN64 - FORTRAN for the FPS-164	089.	GIR-086
APL		
IBM APL2	070.	LS-121
APL2 Command (TSO) Invoke APL2	068.	LSR-352
GCD,GC - APL Greatest Common Divisor Functions	247.	Note 10
PLOT - APL Plotting Functions	122.	Note 10
SHOWAPL - Demonstration of APL Language and APL System	239.	LS-133
STATPACK2 - APL Package for Statistics and Mathematics	141.	LS-114
APMATH64		
How to Run Jobs on the FPS-164	089.	GIR-086
APMATH64 - Math Routines for the FPS-164	089.	GIR-086
APPEND (SAS) Add Observations to SAS Data Set	138.	LS-118
APPROXIMATION		
EXPON - Triple Exponential Smoothing	186.	LIB-ECS-14
ICSFKU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSVKU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
IFLSQ (IMSL) Least Squares Approx., User-Supplied Function	147.	LS-287
IRATCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
LSQFIT - Least Square Fit on Linear Data	182.	LS-071
NLIN - Least Squares Estimation of Nonlinear Parameters	183.	LSR-089
ARCBAN (IMSL) Analysis of Experimental Design Data	147.	LS-287
ARIMA (SAS/ETS) Box-Jenkins Univariate Forecasts	263.	LS-118
ARITHMETIC		
VXADD (IMSL) Extended Precision Analysis	147.	LS-287
VXMUL (IMSL) Extended Precision Arithmetic	147.	LS-287
VXSTO (IMSL) Extended Precision Arithmetic	147.	LS-287
ARITHMETIC SHIFTING		
ASHIFT - FORTRAN Arithmetic Shift Subroutine	094.	LS-008
IASHFT - FORTRAN Arithmetic Shift Function	094.	LS-008
ARPANET		
Access to Remote Computers via the INTERNET	176.	GI-097
ARRU - ASAP Redefine Record Utility	281.	LS-299
ASAP - File Management and Retrieval System	080.	LS-136
ASHIFT - FORTRAN Arithmetic Shift Subroutine	094.	LS-008
ASNKMC (IMSL) Analysis of Experimental Design Data	147.	LS-287
ASQ - Arithmetic Solution to Queues	321.	LS-309
ASSEMBLE Command (CMS) Invoke the System Assembler	130.	Note 12
ASSEMBLER U - VS ASSEMBLER with Base Register Usage Map	278.	LS-359
ASSEMBLERS		
ASSEMBLE Command (CMS) Invoke the System Assembler	130.	Note 12
ASSEMBLER U - VS ASSEMBLER with Base Register Usage Map	278.	LS-359
ASSIST - Student-Oriented Assembler	052.	LS-128
PL/C - Cornell PL/I Compiler	056.	LSR-095
VS ASSEMBLER - IBM Assembly Language	050.	Note 11
ASSEMBLY LINE BALANCING		
BALANCE (Harris-Maggard) Assembly Line Balancing	216.	LIB-ECS-39
ASSEMBLY OPERATION		
MCAL (Berry-Whybark) Marketing Assembly Operation	217.	LIB-ECS-40
ASSIGN (APL STATPACK2) Solve Minimizing Assignment Problem	141.	LS-114
ASSIGN (SAS/OR) Find Cost Assignment	159.	LS-118
ASSIGNMENT PROBLEM		
ASSIGN (APL STATPACK2) Solve Minimizing Assignment Problem	141.	LS-114
ASSIST - Student-Oriented Assembler	052.	LS-128
ATTN Command (CMS) Cause Attention Interrupt	130.	Note 12
ATTRIB Command (TSO) Build List of Data Set Attributes	068.	LSR-352

AUTOBATCH		
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
AUTOCORRELATION		
AUTOREG (SAS) - Autoregression	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SYSREG (SAS) - TTLS, LIML, and Seemingly-Unrelated Reg.	138.	LS-118
AUTOCOVARIANCE		
AUTOREG (SAS) - Autoregression	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
AUTOFLOW - For Printer Flowcharts of Input Programs	132.	LS-201
AUTOREG (SAS) - Autoregression	138.	LS-118
AUTOREG (SAS/ETS) Regression with Autoregressive Errors	263.	LS-118
AUTOREGRESSION		
AUTOREG (SAS) - Autoregression	138.	LS-118
FTML (IMSL) Autoregressive, Moving Aver. Params in Arima	147.	LS-287
BAKVEC (EISPACK) Compute Eigenvectors	260.	LS-286
BALANC (EISPACK) Similarity Transformation	260.	LS-286
BALANCE (Harris-Maggard) Assembly Line Balancing	216.	LIB-ECS-39
BALANCED MATRIX		
BALBAK (PL/I SPC) Obtaining Original Eigenvectors	259.	LSR-347
COBBAK (PL/I SPC) Obtain Original Eigenvectors	259.	LSR-347
EBALAC (IMSL) E. Eigenanalysis	147.	LS-287
EBALAF (IMSL) E. Eigenanalysis	147.	LS-287
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
BALBAK (EISPACK) Compute Eigenvectors	260.	LS-286
BALBAK (PL/I SPC) Obtaining Original Eigenvectors	259.	LSR-347
BALNCE (PL/I SPC) Norm-Reducing Transformation	259.	LSR-347
BAND MATRIX		
BANDR (EISPACK) Solve Eigensystem of Band Symmetric Matrix	260.	LS-286
BANDRD (PL/I SPC) Reduce Matrix to Tridiagonal Form	259.	LSR-347
BANET1 (PL/I SPC) Matrix Factorization	259.	LSR-347
BANET2 (PL/I SPC) Matrix Factorization	259.	LSR-347
BANOL1 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
BANOL2 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
BQR (EISPACK) Solve Eigensystem of Band Symmetric Matrix	260.	LS-286
BQR (PL/I SPC) Compute Eigenvalues	259.	LSR-347
CGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
CGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
CGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
CGBSL (LINPACK) Solve a Band System	327.	LS-358
CHODET (PL/I SPC) Matrix Decomposition	259.	LSR-347
CHOSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
CPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
CPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
CPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
DGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
DGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
DGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
DGBSL (LINPACK) Solve a Band System	327.	LS-358
DPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
DPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
DPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
DPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
EIGBS (IMSL) Eigenanalysis of Real Symmetric Band Matrix	147.	LS-287
LEQT1B (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT2B (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ1PB (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ2PB (IMSL) Linear Algebraic Equations	147.	LS-287
LIN1PB (IMSL) Linear Algebraic Equations	147.	LS-287
LIN2PB (IMSL) Linear Algebraic Equations	147.	LS-287
LUDAPB (IMSL) Linear Algebraic Equations	147.	LS-287
LUELPB (IMSL) Linear Algebraic Equations	147.	LS-287
LUREFP (IMSL) Linear Algebraic Equations	147.	LS-287
LUREPB (IMSL) Linear Algebraic Equations	147.	LS-287
RSB (EISPACK) Solve Eigenproblem of Symmetric Band Matrix	260.	LS-286
SGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358

SGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
SGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
SGBSL (LINPACK) Solve a Band System	327.	LS-358
SPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
SPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
SPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
SPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
SYMRAY (PL/I SPC) Compute Eigenvectors	259.	LSR-347
UNSRAY (PL/I SPC) Compute Eigenvectors of Matrix	259.	LSR-347
ZGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
ZGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
ZGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
ZGBSL (LINPACK) Solve a Band System	327.	LS-358
ZPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
ZPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
ZPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
ZPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
BAND SYSTEMS AND LINEAR EQUATIONS		
BANDV (EISPACK) Solution of Band System of Equations	260.	LS-286
BANDR (EISPACK) Solve Eigensystem of Band Symmetric Matrix	260.	LS-286
BANDRD (PL/I SPC) Reduce Matrix to Tridiagonal Form	259.	LSR-347
BANDV (EISPACK) Solution of Band System of Equations	260.	LS-286
BANET1 (PL/I SPC) Matrix Factorization	259.	LSR-347
BANET2 (PL/I SPC) Matrix Factorization	259.	LSR-347
BANOL1 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
BANOL2 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
BARCHART (SPSS-X) Bar Charts	137.	LS-102
BARTLETT'S KOLMOGOROV-SMIRNOV STATISTIC		
SPECTRA (SAS) - Spectral Analysis	138.	LS-118
BARTLETT'S TEST		
BMDP6M (BMDP) Canonical Correlation Analysis	323.	LS-308
BMDP9D (BMDP) Multiway Description of Groups	323.	LS-308
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
TSAR - Tele-Storage and Retrieval System	142.	LS-076
BATCH PROCESSING		
IOF Command (TSO) Cancel, Route Batch Job, View Output	068.	LSR-352
MVS - A New Operating System for TUCC's Batch/RJE Service	178.	GI-080
RUN Command (WYLBUR) Submit a Batch Job	287.	LSR-360
SUBMIT Command (TSO) Submit Jobs for Batch Execution	068.	LSR-352
TSOBATCH - Procedure to Run TSO Commands in Batch	068.	LSR-352
WYLBUR Reference Manual	287.	LSR-360
WYLBUR User Guide	287.	LSR-353
BAYLSIAN ANALYSIS		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
BCD-TO-EBCDIC		
CARDTRAN - Convert BCD Deck to EBCDIC	005.	Note 9
BDCOU1 (IMSL) Basic Statistics	147.	LS-287
BDCOU2 (IMSL) Basic Statistics	147.	LS-287
BDLTV (IMSL) Produce Letter Value Summary	147.	LS-287
BDTAB (IMSL) Frequencies of Multivariate Data	147.	LS-287
BDTRGI (IMSL) Basic Statistics	147.	LS-287
BDTRGO (IMSL) Basic Statistics	147.	LS-287
BDTWT (IMSL) Two-way Frequency Table	147.	LS-287
BEARSIM (Harris-Maggard) Maintenance Policy Simulation	216.	LIB-ECS-39
BECOR (IMSL) Basic Statistics	147.	LS-287
BECORI (IMSL) Basic Statistics	147.	LS-287
BECOVM (IMSL) Basic Statistics	147.	LS-287
BECOVW (IMSL) Means, Variance-Covariance of Corr. Matrix	147.	LS-287
BECTR (IMSL) Basic Statistics	147.	LS-287
BECVL (IMSL) Basic Statistics	147.	LS-287
BECVLI (IMSL) Basic Statistics	147.	LS-287
Beginning WYLBUR	266.	Note 2
BEGIN Command (CMS) Resume Execution of a Virtual Machine	130.	Note 12
BEGRPS (IMSL) Basic Statistics	147.	LS-287
BEIGRP (IMSL) Basic Statistics	147.	LS-287
BEIUGR (IMSL) Basic Statistics	147.	LS-287
BELBIN (IMSL) Basic Statistics	147.	LS-287

BELPOS (IMSL) Basic Statistics	147.	LS-287
BEMDP (IMSL) Median Polish of a Two-Way Table	147.	LS-287
BEMIRI (IMSL) Basic Statistics	147.	LS-287
BEMIRO (IMSL) Basic Statistics	147.	LS-287
BEMMI (IMSL) Basic Statistics	147.	LS-287
BEMMO (IMSL) Basic Statistics	147.	LS-287
BEMNON (IMSL) Basic Statistics	147.	LS-287
BEMSON (IMSL) Basic Statistics	147.	LS-287
BENSON (IMSL) Basic Statistics	147.	LS-287
BEPAT (IMSL) Basic Statistics	147.	LS-287
BEPET (IMSL) Basic Statistics	147.	LS-287
Berry-Whybark Package - Logistics Management	217.	LIB-ECS-40
BESRB (IMSL) Basic Statistics	147.	LS-287
BESRN (IMSL) Basic Statistics	147.	LS-287
BESSEL FUNCTION		
CJAPOSN - Complex J Bessel Function	242.	LS-280
IANEGN - Modified Bessel Function	244.	LS-280
IAPOSN - Modified Bessel Function	243.	LS-280
JANEGN - J Bessel Function	246.	LS-280
JAPOSN - J Bessel Function	245.	LS-280
MMBSIN (IMSL) Modified Bessel Function of First Kind	147.	LS-287
MMBSIR (IMSL) Modified Bessel Function of First Kind	147.	LS-287
MMBSI0 (IMSL) Modified, First Kind, Order Zero	147.	LS-287
MMBSI1 (IMSL) Modified, First Kind, Order One	147.	LS-287
MMBSJN (IMSL) Bessel Function of First Kind	147.	LS-287
MMBSJR (IMSL) Bessel Function of First Kind	147.	LS-287
MMBSJ0 (IMSL) First Kind, Order Zero	147.	LS-287
MMBSJ1 (IMSL) First Kind, Order One	147.	LS-287
MMBSKR (IMSL) Modified Bessel Function of Second Kind	147.	LS-287
MMBSK0 (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMBSK1 (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMBSYN (IMSL) Second Kind, Fractional Order	147.	LS-287
MMBZIN (IMSL) Modified Bessel Function of First Kind	147.	LS-287
MMBZJN (IMSL) Bessel Function of First Kind	147.	LS-287
BESTAT (IMSL) Basic Univariate Statistics	147.	LS-287
BESTA2 (IMSL) Confidence Intervals, Other Basic Statistics	147.	LS-287
BETA DISTRIBUTION		
GGBTR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
MDBETA (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDBETI (IMSL) Math. and Stat. Special Functions	147.	LS-287
BHAPKER V TEST		
NRBHA (IMSL) Nonparametric Statistics	147.	LS-287
BIBLIOGRAPHY		
KWIC360 - Keyword in Context Indexing Program	131.	LS-122
BIGL - Subroutine to Create Blocked Characters	267.	LS-285
BINOM (APL STATPACK2) Binomial Probabilities	141.	LS-114
BINOMIAL DISTRIBUTION		
BELBIN (IMSL) Basic Statistics	147.	LS-287
GGBN (IMSL) Binomial Random Deviate Generator	147.	LS-287
MDBIN (IMSL) Math. and Stat. Special Functions	147.	LS-287
BIOLOGY		
DIALL, DIALLC - Least Squares Analysis of Diallel Expers.	240.	LS-175
BISECT (EISPACK) Compute Eigenvalues	260.	LS-286
BISECT (PL/I SPC) Calculate Selected Eigenvalues	259.	LSR-347
BISECTION		
BISECT (PL/I SPC) Calculate Selected Eigenvalues	259.	LSR-347
BISERIAL CORRELATION		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
BIT - FORTRAN Bit Array Manipulation Subroutine	094.	LS-008
BIT MANIPULATION		
BIT - FORTRAN Bit Array Manipulation Subroutine	094.	LS-008
BOOL - FORTRAN Bit Array Manipulation Subroutine	094.	LS-008

GTPBC (IMSL) Gener. and Testing Random Numbers	147.	LS-287
IBIT - FORTRAN Bit Array Manipulation Function	094.	LS-008
IBOOL - FORTRAN Bit Array Manipulation Function	094.	LS-008
SUB - FORTRAN Selective Substitution Subroutine	094.	LS-008
BITNET		
Using Electronic Mail	124.	GIR-089
BIVARIATE INTERPOLATION		
G3GRID (SAS/GRAPH) Bivariate Interpolation for PROC G3D	264.	LS-118
IBCCCU (IMSL) Bicubic Spline Coefficient Calculator	147.	LS-287
IBCEVL (IMSL) Bicubic Spline Evaluator	147.	LS-287
ITPLBV - Smooth Bivariate Interpolation	248.	LS-242
SFCFIT - Smooth Bivariate Interpolation	248.	LS-242
BLOCKS (TSL) Analysis of Randomized Blocks Experiment	146.	Note 3
BMDP (SAS) - Call BMD Program from SAS	138.	LS-118
BMDP - Biomedical Computer Programs	323.	LS-308
BMDPAM (BMDP) Descrip. and Estimation of Missing Data	323.	LS-308
BMDPAR (BMDP) Derivative-Free Nonlinear Regression	323.	LS-308
BMDPKM (BMDP) K-Means Clustering	323.	LS-308
BMDPLR (BMDP) Stepwise Logistic Regression	323.	LS-308
BMDP1D (BMDP) Simple Data Description	323.	LS-308
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
BMDP1L (BMDP) Life Tables and Survival Functions	323.	LS-308
BMDP1M (BMDP) Cluster Analysis on Variables	323.	LS-308
BMDP1R (BMDP) Multiple Linear Regression	323.	LS-308
BMDP1S (BMDP) Multipass Transformation	323.	LS-308
BMDP1V (BMDP) One-Way Analysis of Variance and Covariance	323.	LS-308
BMDP2D (BMDP) Detailed Data Descrip., Including Freqs.	323.	LS-308
BMDP2F (BMDP) Two-Way Frequency Tables--Empty Cells	323.	LS-308
BMDP2M (BMDP) Cluster Analysis on Cases	323.	LS-308
BMDP2R (BMDP) Stepwise Regression	323.	LS-308
BMDP2V (BMDP) Analysis of Variance and Covariance	323.	LS-308
BMDP3D (BMDP) Comparison of Two Groups with t Tests	323.	LS-308
BMDP3F (BMDP) Multiway Frequency Tables--Log Linear Model	323.	LS-308
BMDP3M (BMDP) Block Clustering	323.	LS-308
BMDP3R (BMDP) Nonlinear Regression	323.	LS-308
BMDP3S (BMDP) Nonparametric Statistics	323.	LS-308
BMDP3V (BMDP) General Mixed Model Analysis of Variance	323.	LS-308
BMDP4D (BMDP) Single Column Freqs.-Numeric and Nonnumeric	323.	LS-308
BMDP4M (BMDP) Factor Analysis	323.	LS-308
BMDP4R (BMDP) Regression on Principal Components	323.	LS-308
BMDP5D (BMDP) Histograms and Univariate Plots	323.	LS-308
BMDP5R (BMDP) Polynomial Regression	323.	LS-308
BMDP6D (BMDP) Bivariate (Scatter) Plots	323.	LS-308
BMDP6M (BMDP) Canonical Correlation Analysis	323.	LS-308
BMDP6R (BMDP) Partial Correlation and Multivar. Regression	323.	LS-308
BMDP7D (BMDP) Descrip. of Groups (Strata) with Histograms	323.	LS-308
BMDP7M (BMDP) Stepwise Discriminant Analysis	323.	LS-308
BMDP8D (BMDP) Missing Value Correlation	323.	LS-308
BMDP8V (BMDP) General Mixed Model Anal. - Equal Cell Sizes	323.	LS-308
BMDP9D (BMDP) Multiway Description of Groups	323.	LS-308
BMDP9R (BMDP) All Possible Subsets Regression	323.	LS-308
BOOL - FORTRAN Bit Array Manipulation Subroutine	094.	LS-008
BOOLEAN FUNCTIONS		
AND - FORTRAN Boolean Function	094.	LS-008
IAND - FORTRAN Boolean Subroutine	094.	LS-008
INOT - FORTRAN Boolean Subroutine	094.	LS-008
IOR - FORTRAN Boolean Subroutine	094.	LS-008
IXOR - FORTRAN Boolean Subroutine	094.	LS-008
NOT - FORTRAN Boolean Function	094.	LS-008
OR - FORTRAN Boolean Function	094.	LS-008
XOR - FORTRAN Boolean Function	094.	LS-008
BOX (JCP) Particle in Finite Box Problem	209.	LIB-ECS-50
BOX-JENKINS		
ARIMA (SAS/ETS) Box-Jenkins Univariate Forecasts	263.	LS-118
BOX-JENKINS (SPSS-X) Time Series Analysis	137.	LS-102
FTCP (IMSL) Non-seasonal Arima Stochastic Model Analysis	147.	LS-287
FTML (IMSL) Autoregressive, Moving Aver. Params in Arima	147.	LS-287
BOX-JENKINS (SPSS-X) Time Series Analysis	137.	LS-102

BQR (EISPACK) Solve Eigensystem of Band Symmetric Matrix	260.	LS-286
BQR (PL/I SPC) Compute Eigenvalues	259.	LSR-347
BRANDA (LERNER) Planning a Merger	212.	LIB-ECS-47
BRANDB (LERNER) Financial Instruments in Merger	212.	LIB-ECS-47
BREAKDOWN (SPSS-X) Subpopulation Means	137.	LS-102
BRIDGE (ICES/360) Bridge Engineering Problems	201.	LS-044
BURGESS-KILLEBREW		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
BUSINESS		
ACME (LERNER) Reinvestment Rates	212.	LIB-ECS-47
ALLIANCE (LERNER) Establishing a Credit Department	212.	LIB-ECS-47
AMERICAN (LERNER) Multiple Reinvestment Rates	212.	LIB-ECS-47
BALANCE (Harris-Maggard) Assembly Line Balancing	216.	LIB-ECS-39
BEARSIM (Harris-Maggard) Maintenance Policy Simulation	216.	LIB-ECS-39
BRANDA (LERNER) Planning a Merger	212.	LIB-ECS-47
BRANDB (LERNER) Financial Instruments in Merger	212.	LIB-ECS-47
BUYCAR (Harris-Maggard) Cost Effectiveness Model	216.	LIB-ECS-39
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
COBOL (ANSI) Compiler	063.	Note 4
COMPUTAB (SAS/ETS) Row-and-column Financial Reporting	263.	LS-118
CONNOLLY (LERNER) Corporate Goals and Investment Methods	212.	LIB-ECS-47
CRIT (Harris-Maggard) Project Scheduling Model	216.	LIB-ECS-39
DONNELLY (LERNER) Corporate Profits and Cash	212.	LIB-ECS-47
DYNAMAT (LERNER) Price/Earnings Ratios	212.	LIB-ECS-47
DYNAMO III, A System for Continuous Dynamic Modeling	339.	LS-328
EMORY Game - Business Management Laboratory Simulation	154.	LS-333
EOQ (Harris-Maggard) Inventory Ordering Model	216.	LIB-ECS-39
Executive Game	332.	LS-324
FINANSIM - Financial Management Simulation	157.	LS-335
FRANKLIN (LERNER) Depreciation Policies	212.	LIB-ECS-47
FUTURE (Harris-Maggard) Statistical Forecasting Model	216.	LIB-ECS-39
GAME (Berry-Whybark) Policy Testing	217.	LIB-ECS-40
HARDENA (LERNER) EOQ Formulas	212.	LIB-ECS-47
HARDENB (LERNER) Minimizing Cash Investment in Inventory	212.	LIB-ECS-47
Harris-Maggard Package - Management Analysis	216.	LIB-ECS-39
HOLDINGS (LERNER) Risk Adjustment Methods	212.	LIB-ECS-47
HOLLOWAY (LERNER) Cash Constraints	212.	LIB-ECS-47
HORN (Berry-Whybark) Warehouse Location Simulation	217.	LIB-ECS-40
HUTC (Berry-Whybark) Variable Costs of Shipping	217.	LIB-ECS-40
INSYS (Harris-Maggard) Inventory System Model	216.	LIB-ECS-39
INVSYM (Harris-Maggard) Inventory System Model, II	216.	LIB-ECS-39
LERNER - Finance Simulation Cases	212.	LIB-ECS-47
MACII - Macroeconomic Policy Game	228.	LIB-ECS-48
MacWharton - Macroeconomic Policy Simulation	227.	LIB-ECS-46
MARQ (Berry-Whybark) Alternate Quality Control	217.	LIB-ECS-40
MCAL (Berry-Whybark) Marketing Assembly Operation	217.	LIB-ECS-40
MELROSEA (LERNER) Estimating the Cost of Capital	212.	LIB-ECS-47
MELROSEB (LERNER) Application of Valuation Formula	212.	LIB-ECS-47
MGMT1/MGMT2 - Harvard Management Simulation	230.	LIB-ECS-52
MGMT2 - Harvard Management Simulation	230.	LIB-ECS-52
MONARCH (LERNER) Lock Box Site Selection	212.	LIB-ECS-47
MORTGAGE (SAS/ETS) Amortization Schedules	263.	LS-118
MORTON (LERNER) Methods for Comparing Lease Costs	212.	LIB-ECS-47
NATB (Berry-Whybark) Production Scheduling	217.	LIB-ECS-40
NICK (Berry-Whybark) Adaptive Smoothing	217.	LIB-ECS-40
ORIENTAL (LERNER) Generate a Firm's Cash Flow	212.	LIB-ECS-47
OROA (Berry-Whybark) Finish Production Forecasts	217.	LIB-ECS-40
OROB (Berry-Whybark) Total Costs of Production	217.	LIB-ECS-40
PANDA (LERNER) Cash Management of Firm	212.	LIB-ECS-47
PILLS - Computer-Augmented Accounting Instruction	211.	LIB-ECS-33
PIZAZ Game - Starting a Small Business	162.	LS-336
QUESIM (Harris-Maggard) Queuing Simulation Model	216.	LIB-ECS-39
RANDALL (LERNER) Price for Outgoing Business	212.	LIB-ECS-47
RATS - Regression Analysis of Time Series	061.	LS-375
SAS/ETS - Econometrics and Time Series Library	263.	LS-118
SIMQUEUE - A Queuing Simulation Model	290.	LIB-ECS-57
SIMSTATE - Simulation Model of a State Economy	226.	LIB-ECS-45
SQC (Harris-Maggard) Statistical Growth Chart Modeling	216.	LIB-ECS-39
SUPERMKT (LERNER) Forecasting Inventory Requirements	212.	LIB-ECS-47
TEMPOMATIC IV - A Management Simulation	314.	LS-323
TRUST (LERNER) Stocks/Bonds Portfolio Proportions	212.	LIB-ECS-47
UNISIM (Harris-Maggard) One-Product Company Simulation	216.	LIB-ECS-39

BUYCAR (Harris-Maggard) Cost Effectiveness Model	216.	LIB-ECS-39
BYPASS LABEL PROCESSING		
TPVOLCPY - Tape Copying Program	004.	LS-291
VOLCHK - Magnetic Tape Volume Checking Program	316.	LS-313
BYTE - FORTRAN Numerical Byte Array Manipulation	094.	LS-008
C LANGUAGE		
Waterloo C Compiler on VM/CMS	010.	LS-391
CALCOMP		
PLOTTER - Plotter Routines	117.	LSR-048
TELL-A-GRAF	156.	LS-387
CALCULUS		
QDINT - Numerical Quadrature Integration	148.	LIB-ECS-13
CALDATE - Julian to Calendar Date Conversion Function	270.	LS-091
CALENDAR (SAS) Display Data in Calendar Format	138.	LS-118
CALFORM - A Mapping Program That Uses a Pen Plotter	337.	LS-326
CALL Command (TSO) Load and Execute Load Module	068.	LSR-352
CALLF Command (TSO) Load and Execute Load Module	068.	LSR-352
CAMIVA - Cartographic Mapping Program	166.	LS-339
CANCEL		
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
CANCEL Command (TSO) Delete Batch Job	068.	LSR-352
CANCEL Command (WYLBUR) Halt an Executing Job	287.	LSR-360
CANCORR (SAS) Canonical Correlation	138.	LS-118
CANDISC (SAS) Canonical Discriminant Analysis, etc.	138.	LS-118
CANONICAL CORRELATION		
BMDP6M (BMDP) Canonical Correlation Analysis	323.	LS-308
CANCORR (SAS) Canonical Correlation	138.	LS-118
MANOVA (SPSS-X) General Linear Models	137.	LS-102
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
CARD HANDLING		
CARDCOPY - Duplicate Card Deck	005.	Note 9
CARDDISK - Store Card Deck on Disk	005.	Note 9
CARDPRNT - Listing of Card Deck	005.	Note 9
CARDSEQ1 - Duplicate Deck, Sequence Numbers col. 73-80	005.	Note 9
CARDSEQ2 - Duplicate Deck, Sequence Numbers col. 1-6	005.	Note 9
CARDTAPE - Store Card Deck on Tape	005.	Note 9
CARDTRAN - Convert BCD Deck to EBCDIC	005.	Note 9
CARDTRNX - Convert EBCDIC Deck to BCD	005.	Note 9
DISKCARD - Punch Card Deck from Disk Data Set	005.	Note 9
ERLST - For Data Sequencing Errors	088.	LS-186
PUNCH Command (TSO) Punch Data Set	068.	LSR-352
PUNCHIT - Card Preparation Aid	022.	LS-147
CARDCOPY - Duplicate Card Deck	005.	Note 9
CARDDISK - Store Card Deck on Disk	005.	Note 9
CARDPRNT - Listing of Card Deck	005.	Note 9
CARDSEQ1 - Duplicate Deck, Sequence Numbers col. 73-80	005.	Note 9
CARDSEQ2 - Duplicate Deck, Sequence Numbers col. 1-6	005.	Note 9
CARDTAPE - Store Card Deck on Tape	005.	Note 9
CARDTRAN - Convert BCD Deck to EBCDIC	005.	Note 9
CARDTRNX - Convert EBCDIC Deck to BCD	005.	Note 9
CARTOGRAPHY		
CALFORM - A Mapping Program That Uses a Pen Plotter	337.	LS-326
CAMIVA - Cartographic Mapping Program	166.	LS-339
GCONTOUR (SAS/GRAPH) Produces Contour Plots	264.	LS-118
GMAP (SAS/GRAPH) Produces Choropleth and Surface Maps	264.	LS-118
GPROJECT (SAS/GRAPH) Applies Map Projections	264.	LS-118
GREDUCE (SAS/GRAPH) Creates Subsets of Map Data Sets	264.	LS-118
POLYVRT - A Geographic Base File Converter Program	336.	LS-325
SURFACE2 - A Program for Contour Maps and Transect Plots	221.	LS-355
SYMAP - Synagraphic Computer Mapping	111.	LS-139
SYMVU - Plotting From Gridded Data or SYMAP Output	112.	LS-218

CATALOG		
CATLG Command (WYLBUR) Catalog a Data Set	287.	LSR-360
CHEKCAT Command (TSO) Determine if Data Set in Catalog	068.	LSR-352
CVU - Data Set Maintenance Utility Program	030.	LS-284
IEHMOVE - Data Set Move Utility	023.	Note 6
LISTCAT Command (TSO) List Names of Cataloged Data Sets	068.	LSR-352
RECATLG Command (WYLBUR) Recatalog a Data Set	287.	LSR-360
RENAME Command (TSO) Change Data Set Name	068.	LSR-352
UNCATLG Command (WYLBUR) Uncatalog a Data Set	287.	LSR-360
UNC-ECS Catalog of Documented Pgms, Subs, and Data Bases	299.	LIB-ECS-01
CATALOGED PROCEDURES		
PDSPRINT - Listing of Cataloged Procedures	005.	Note 9
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
CATEGORICAL DATA		
FUNCAT (SAS) Categorical Analysis	138.	LS-118
GENCAT - Categorical Data Program	347.	LS-366
PARCAT - Categorical Data Program	346.	LS-365
CATLG Command (WYLBUR) Catalog a Data Set	287.	LSR-360
CBABK2 (EISPACK) Compute Eigenvectors	260.	LS-286
CBAL (EISPACK) Similarity Transformation	260.	LS-286
CBNRHO (IMSL) Categorized Data Analysis	147.	LS-287
CBNRHO (IMSL) Categorized Data Analysis	147.	LS-287
CCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
CCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
CCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
CCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
CCLOCK - CPU Timing Information	272.	LS-014
CENLIB - Demographic Analysis Programs	320.	LS-320
CENSUS DATA		
DUALAB'S Program Library	087.	Note 7
CENTER Command (WYLBUR) Center Text	287.	LSR-360
CENTRAL LIMIT THEOREM		
DEMO2 (TSL) Illustrate Law of Large Numbers and C.L.T.	146.	Note 3
CFTDIS (TSL) Chi-Square,F, and t Distribution	146.	Note 3
CG (EISPACK) Solve Eigensystem of Complex General Matrix	260.	LS-286
CG (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
CGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
CGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
CGBSL (LINPACK) Solve a Band System	327.	LS-358
CGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
CGEFA (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
CGESL (LINPACK) Solve System Given Factors of Matrix	327.	LS-358
CGTSL (LINPACK) Solve a Tridiagonal System	327.	LS-358
CH (EISPACK) Solve Eigensystem of Complex Hermitian Matrix	260.	LS-286
CHANGE Command (WYLBUR) Replace Character Strings	287.	LSR-360
CHANGE Command (CMS) Alter Attributes of Closed Spool File	130.	Note 12
CHAR - FORTRAN Non-numeric Byte Array Manipulation	094.	LS-008
CHARACTER SUBSTITUTION		
FRED - Multipurpose Merge-Copy-Editing Program	027.	LS-176
SUB - FORTRAN Selective Substitution Subroutine	094.	LS-008
TPUT - TSO PL/I Access to Special Characters	046.	LS-220
CHART (SAS) Produce Bar Charts, Block Charts, Pies, Stars	138.	LS-118
CHEBYSHEV		
IRATCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
CHEKCAT Command (TSO) Determine if Data Set in Catalog	068.	LSR-352
CHEMISTRY		
ABC (JCP) Simulate ABC NMR Spectrum	209.	LIB-ECS-50
ABCANL (JCP) Solve Kinetics System	209.	LIB-ECS-50
BOX (JCP) Particle in Finite Box Problem	209.	LIB-ECS-50
CONTOUR (JCP) Display Electron Density Contour Plots	209.	LIB-ECS-50
EDTA (JCP) Simulates EDTA Titration	209.	LIB-ECS-50
ENTROPY (JCP) Calculate Entropy of Molecule	209.	LIB-ECS-50

EQUIL (JCP) Calculate Equilibrium Constant	209.	LIB-ECS-50
FRSTLW - First Law of Thermodynamics	207.	LIB-ECS-58
HA (JCP) Simulate Weak Acid/Strong Base Titration	209.	LIB-ECS-50
HMO (JCP) Solves Huckel Molecular Orbital Problems	209.	LIB-ECS-50
IDGAME - Qualitative Organic Identification Game	208.	LS-319
JOHNSON Chemistry Package (JCP)	209.	LIB-ECS-50
NERNST (JCP) Cell Potential as a Function of pH	209.	LIB-ECS-50
NMR (JCP) Simulate NMR Spectra	209.	LIB-ECS-50
RADIAL (JCP) Radial Distribution Functions	209.	LIB-ECS-50
RADIO (JCP) Simulate Overlapping Radio-Decay Curves	209.	LIB-ECS-50
SOL (JCP) Solubility as a Function of pH	209.	LIB-ECS-50
SPECSOLV - Spectra Decomposition	292.	LS-301
CHI-SQUARE		
ANATAB (TSL) Analysis of Contingency Tables	146.	Note 3
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
BMDP2F (BMDP) Two-Way Frequency Tables--Empty Cells	323.	LS-308
BMDP3F (BMDP) Multiway Frequency Tables--Log Linear Model	323.	LS-308
BMDP9D (BMDP) Multiway Description of Groups	323.	LS-308
CROSSTABS (SPSS-X) Contingency Table Analysis	137.	LS-102
DATA-TEXT - Data Analysis Package	143.	LS-167
FREQ (SAS) Frequencies	138.	LS-118
GFIT (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTCN (IMSL) Gener. and Testing Random Numbers	147.	LS-287
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TSAR - Tele-Storage and Retrieval System	142.	LS-076
CHI-SQUARE DISTRIBUTION		
CFTDIS (TSL) Chi-Square,F, and t Distribution	146.	Note 3
MDCH (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDCHI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDCHN (IMSL) Math. and Stat. Special Functions	147.	LS-287
CHICO (LINPACK) Factor a Hermitian Matrix	327.	LS-358
CHIDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
CHIFA (LINPACK) Factor a Hermitian Matrix	327.	LS-358
CHISL (LINPACK) Solve Hermitian System	327.	LS-358
CHODET (PL/I SPC) Matrix Decomposition	259.	LSR-347
CHOET1 (PL/I SPC) Cholesky Decomposition of Matrix	259.	LSR-347
CHOET2 (PL/I SPC) Matrix Decomposition	259.	LSR-347
CHOLESKY DECOMPOSITION		
CCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
CCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
CCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
CCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
CHOET1 (PL/I SPC) Cholesky Decomposition of Matrix	259.	LSR-347
CHOET2 (PL/I SPC) Matrix Decomposition	259.	LSR-347
CHOON1 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CHOON2 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
DCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
DCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
DCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
DCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
SCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
SCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
SCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
SCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
ZCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
ZCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
ZCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
ZCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
CHOOL1 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CHOOL2 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CHOON1 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CHOON2 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CHOSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CHPCO (LINPACK) Factor a Hermitian Matrix	327.	LS-358
CHPDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
CHPFA (LINPACK) Factor a Hermitian Matrix	327.	LS-358

CHPSL (LINPACK) Solve A Hermitian System	327.	LS-358
CINVIT (EISPACK) Compute Eigenvectors	260.	LS-286
CIRCUIT ANALYSIS		
ECAP - Electronic Circuit Analysis Program	203.	LS-028
SPICE - Program for Electronic Circuit Analysis	069.	LS-376
CITIBASE Economic Database	045.	GI-084
CITY PLANNING		
CLUG - Community Land Use Game	231.	LIB-ECS-51
CIVIL ENGINEERING		
COGO (ICES/360) Planar Geometrics Problem	201.	LS-044
DODOTRANS (ICES/360) Transportation Analysis	201.	LS-044
ELAS75 - Structures and Solids Analysis	202.	LS-168
ICES/360 - Integrated Civil Engineering System	201.	LS-044
LEASE (ICES/360) Stability Analysis of Slope	201.	LS-044
OPTECH (ICES/360) Mathematical Optimization	201.	LS-044
PROJECT (ICES/360) Scheduling Projects	201.	LS-044
ROADS (ICES/360) Highway Location Problems	201.	LS-044
SEPOL (ICES/360) Calculation of Stresses and Strains	201.	LS-044
STRUDL (ICES/360) Structural Engineering Problems	201.	LS-044
TABLE (ICES/360) Handling Files of Tabular Information	201.	LS-044
TRANSET (ICES/360) Transportaion and Network Analysis	201.	LS-044
CJAPOSN - Complex J Bessel Function	242.	LS-280
CLASSIFICATION		
DISCRIMINANT (SPSS-X) Discriminant Analysis	137.	LS-102
CLEAR Command (WYLBUR) Erase Active File	287.	LSR-360
CLIFE (IMSL) Life Table Analysis	147.	LS-287
CLIQUE ANALYSIS		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
CLOCK - TUCC Accounting Clock Run Timing Information	272.	LS-014
CLOSE Command (CMS) Terminate Spooling Operation	130.	Note 12
CLUG - Community Land Use Game	231.	LIB-ECS-51
CLUSTAN - Collection of Cluster Analysis Programs	204.	LS-383
CLUSTER (SAS) Cluster Analysis	138.	LS-118
CLUSTER (SPSS-X) Hierarchical Clustering Procedure	137.	LS-102
CLUSTER ANALYSIS		
BMDPKM (BMDP) K-Means Clustering	323.	LS-308
BMDP1M (BMDP) Cluster Analysis on Variables	323.	LS-308
BMDP2M (BMDP) Cluster Analysis on Cases	323.	LS-308
BMDP3M (BMDP) Block Clustering	323.	LS-308
CLUSTAN - Collection of Cluster Analysis Programs	204.	LS-383
CLUSTER (SAS) Cluster Analysis	138.	LS-118
FASTCLUS (SAS) Disjoint Clustering of Large Data Sets	138.	LS-118
OCLINK (IMSL) Hierarchical Cluster Analysis	147.	LS-287
VARCLUS (SAS) Disjoint or Hierarchical Clustering	138.	LS-118
CM (APL STATPACK2) Simple Correlation Matrix	141.	LS-114
CMDCALL Command (CMS) Convert PLIST Function Calls	130.	Note 12
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
CMS		
Conversational Monitor System (CMS)	130.	Note 12
Introduction to Using CMS at TUCC	011.	GIR-098
COBBAK (PL/I SPC) Obtain Original Eigenvectors	259.	LSR-347
COBOL		
COBOL (ANSI) Compiler	063.	Note 4
OS/VS COBOL Compiler	055.	LS-351
WATBOL - Waterloo ANSI COBOL Compiler	064.	LS-130
COBOL (ANSI) Compiler	063.	Note 4
COBPL1 - COBOL to PL/I Language Conversion Program	136.	LS-137
COCHRAN Q TEST		
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102

COCHRAN'S Q		
NBQT (IMSL) Nonparametric Statistics	147.	LS-287
COGO (ICES/360) Planar Geometrics Problem	201.	LS-044
COLAT (PL/I Sub) - Return 256 Chars in Collating Sequence	306.	LS-305
COLLECT Command (WYLBUR) Enter Input Mode	287.	LSR-360
COMBAK (EISPACK) Compute Eigenvectors	260.	LS-286
COMBAK (PL/I SPC) Obtaining Original Eigenvectors	259.	LSR-347
COMDET (PL/I SPC) Factorization, Determinant of Matrix	259.	LSR-347
COMEIG (PL/I SPC) Eigenvectors and Eigenvalues	259.	LSR-347
COMHES (EISPACK) Similarity Transformation	260.	LS-286
COMHES (PL/I SPC) Reduce Complex Matrix	259.	LSR-347
COMLR (EISPACK) Compute Eigenvalues	260.	LS-286
COMLR (PL/I SPC) Finding All Eigenvalues	259.	LSR-347
COMLR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
COMLR2 (PL/I SPC) Find All Eigenvalues and Eigenvectors	259.	LSR-347
COMMAND PROCEDURE		
EXEC Command (CMS) Execute EXEC Program in CMS	130.	Note 12
EXEC Command (TSO) Execute Command Procedures	068.	LSR-352
EXECUTE (WYLBUR) Execute a File of Commands	287.	LSR-360
Communicating with MVS	050.	Note 2
COMMUNICATION CHAIN		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
COMMUNICATIONS		
Communications Device Types Supported for the IBM Systems	081.	GI-085
KERMIT - Mainframe-Microcomputer File Transfer	134.	LS-386
KERMIT Command (CMS) Transfer Files to, from Other Systems	130.	GI-092
MAIL Command (CMS) Send and Receive Electronic Mail	130.	GI-092
Using Electronic Mail	124.	GIR-089
Communications Device Types Supported for the IBM Systems	081.	GI-085
COMNCE (PL/I SPC) Norm-Reducing Transformation	259.	LSR-347
COMPANY SIMULATION		
UNISIM (Harris-Maggard) One-Product Company Simulation	216.	LIB-ECS-39
COMPARE Command (CMS) Compare Two CMS Files	130.	Note 12
COMPARE RECORDS		
COMPARE Command (CMS) Compare Two CMS Files	130.	Note 12
COMPARE Command (WYLBUR) Compare Lines of Text	287.	LSR-360
DOWNDATE - A Program That Compares Two Data Sets	340.	LS-329
IEBCOMPR - Comparison Utility	020.	Note 6
COMPILE - Algebraic Compile Macro for PL/I Preprocessor	073.	LS-145
COMPILE Command (TSO) Translate Program into Load Module	068.	LSR-352
COMPILERS		
ALGOLW - Student Compiler for Extended ALGOL	062.	LS-125
COBOL (ANSI) Compiler	063.	Note 4
IBM OS/VS RPG II	035.	LS-368
IBM PASCAL/VS	001.	LS-364
OS/VS COBOL Compiler	055.	LS-351
PL/C - Cornell PL/I Compiler	056.	LSR-095
PL/I OPTIMIZER - Optimizing Compiler	053.	LSR-150
PLC Command (TSO) Invoke Interactive PL/C Compiler	068.	LSR-352
PLI Command (TSO) Invoke PL/I Optimizing Compiler	068.	LSR-352
RPG - Report Program Generator Compiler	067.	Note 1
SIMSCRIPT II - Discrete Simulation Modeling Language	196.	LS-135
Stony Brook Student Pascal Compiler	220.	LS-346
VS FORTRAN - IBM FORTRAN IV and FORTRAN 77	059.	LS-362
WATBOL - Waterloo ANSI COBOL Compiler	064.	LS-130
Waterloo Student Pascal Compiler	235.	LS-350
WATFIV - Waterloo Fortran Compiler	060.	LSR-101
COMPLEX MATRIX		
CCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
CCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
CCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
CCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358

CG (EISPACK) Solve Eigensystem of Complex General Matrix	260.	LS-286
CGTSL (LINPACK) Solve a Tridiagonal System	327.	LS-358
CH (EISPACK) Solve Eigensystem of Complex Hermitian Matrix	260.	LS-286
COBBAK (PL/I SPC) Obtain Original Eigenvectors	259.	LSR-347
COMBAK (PL/I SPC) Obtaining Original Eigenvectors	259.	LSR-347
COMDET (PL/I SPC) Factorization, Determinant of Matrix	259.	LSR-347
COMEIG (PL/I SPC) Eigenvectors and Eigenvalues	259.	LSR-347
COMLR (PL/I SPC) Finding All Eigenvalues	259.	LSR-347
COMLR2 (PL/I SPC) Find All Eigenvalues and Eigenvectors	259.	LSR-347
COMNCE (PL/I SPC) Norm-Reducing Transformation	259.	LSR-347
COMQR (EISPACK) Compute Eigenvalues	260.	LS-286
COMQR2 (EISPACK) Compute Eigenvalues and Eigenvectors	260.	LS-286
COMSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CORTB (EISPACK) Backtransform Eigenvectors	260.	LS-286
CORTH (EISPACK) Reduce to Upper Hessenberg Form	260.	LS-286
CPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
CQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
CQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol	327.	LS-358
CSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
CTRCO (LINPACK) Estimate Condition of Tri. Matrix	327.	LS-358
CTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
CTRSL (LINPACK) Solve Triangular System	327.	LS-358
CXALVE (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CXIVIT (PL/I SPC) Finding Selected Eigenvectors	259.	LSR-347
HTRID3 (EISPACK) Reduce to Symmetric Tridiagonal Form	260.	LS-286
LEQT1C (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ2C (IMSL) Linear Algebraic Equations	147.	LS-287
USWCH (IMSL) Print Complex Hermitian Matrix	147.	LS-287
USWCM (IMSL) Print a Complex Matrix	147.	LS-287
USWCV (IMSL) Print a Complex Vector	147.	LS-287
VHSH2C (IMSL) Vector Matrix Arithmetic	147.	LS-287
ZCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
ZCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
ZCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
ZGTSL (LINPACK) Solve a Tridiagonal System	327.	LS-358
ZPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
ZQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
ZQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol	327.	LS-358
ZSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
ZTRCO (LINPACK) Estimate Condition of Tri. Matrix	327.	LS-358
ZTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
ZTRSL (LINPACK) Solve Triangular System	327.	LS-358
COMPLEX ROOTS		
POLRTA - Real and Imaginary Roots of Polynomials	150.	LIB-ECS-03
COMPOSITE DESIGN		
RLCOMP (IMSL) Regression Analysis	147.	LS-287
COMPRESS		
CONDENSE Command (WYLBUR) Compress a WYLBUR Library	287.	LSR-360
DISKPDSC - Compress PDS	005.	Note 9
LOADLIB Command (CMS) List, Copy, or Compress CMS LOADLIB	130.	Note 12
COMPUTAB (SAS/ETS) Row-and-column Financial Reporting	263.	LS-118
COMQR (EISPACK) Compute Eigenvalues	260.	LS-286
COMQR2 (EISPACK) Compute Eigenvalues and Eigenvectors	260.	LS-286
COMSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CONCAT Command (TSO) Concatenate Files	068.	LSR-352
CONCORDANCES		
Oxford Concordance Program	042.	LS-373
CONDENSE Command (WYLBUR) Compress a WYLBUR Library	287.	LSR-360
CONDESCRIPTIVE (SPSS-X) Univariate Descriptive Statistics	137.	LS-102
CONFIDENCE INTERVALS		
BELBIN (IMSL) Basic Statistics	147.	LS-287
BELPOS (IMSL) Basic Statistics	147.	LS-287
BESTA2 (IMSL) Confidence Intervals, Other Basic Statistics	147.	LS-287
GLM (SAS) General Linear Models	138.	LS-118
RLPRDI (IMSL) Regression Analysis	147.	LS-287
RLPRDO (IMSL) Regression Analysis	147.	LS-287

CONJUGATE-GRADIENT METHOD		
CG (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CONNOLLY (LERNER) Corporate Goals and Investment Methods	212.	LIB-ECS-47
CONTENTS (SAS) - Print Contents of SAS Data Set	138.	LS-118
CONTINGENCY ANALYSIS		
ANATAB (TSL) Analysis of Contingency Tables	146.	Note 3
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
BMDP2F (BMDP) Two-Way Frequency Tables--Empty Cells	323.	LS-308
BMDP3F (BMDP) Multiway Frequency Tables--Log Linear Model	323.	LS-308
CBNRHO (IMSL) Categorized Data Analysis	147.	LS-287
CROSSTABS (SPSS-X) Contingency Table Analysis	137.	LS-102
CTAB (APL STATPACK2) Two-Way Contingency Table	141.	LS-114
CTLLF (IMSL) Log-Linear Fit of Contingency Table	147.	LS-287
CTPR (IMSL) Exact Probabilities for Contingency Tables	147.	LS-287
CTRBYC (IMSL) Categorized Data Analysis	147.	LS-287
DATA-TEXT - Data Analysis Package	143.	LS-167
FREQ (SAS) - Frequency and Crosstabulation Analysis	138.	LS-118
GENCAT - Categorical Data Program	347.	LS-366
PARCAT - Categorical Data Program	346.	LS-365
TSAR - Tele-Storage and Retrieval System	142.	LS-076
CONTINUOUS MODELS		
ACSL - Advanced Continuous Simulation Language	038.	LS-369
DYNAMO II - Continuous Dynamic Modeling System	195.	LS-115
CONTOUR (JCP) Display Electron Density Contour Plots	209.	LIB-ECS-50
CONTOURING		
DISSPLA	126.	LS-381
CONTRASTS		
ACTRST (IMSL) Analysis of Experimental Design Data	147.	LS-287
REGR (SAS) Regression	138.	LS-118
Conversational Monitor System (CMS)	130.	Note 12
CONVERSION		
CARDTRAN - Convert BCD Deck to EBCDIC	005.	Note 9
CARDTRNX - Convert EBCDIC Deck to BCD	005.	Note 9
Converting to the IBM Standard Data Set Naming Convention	123.	GI-091
COPY - Utility Program	018.	LS-103
FIX2TSL (TSL) Trans. Card-Image Data Set to TSL Data Set	146.	Note 3
FTBATCH (TSL) Translate Card-Image Data to TSL Data	146.	Note 3
PRTSCRIP - Convert Print File to SCRIPT Input	265.	Note 2
PTCXLATE - General Purpose Translator Subroutine	091.	LS-075
SPS2TSL (TSL) Translate SPSS Data Sets to TSL Data Sets	146.	Note 3
TAPE7TO9 - Copy 7-Track Tape Data Set to 9-Track Tape	005.	Note 9
TRANS (TSL) Translate TSO-Text Data Set to TSL Data Set	146.	Note 3
UPTOLOW - Translate Uppercase Text to Lowercase Text	181.	LS-344
CONVERSION AND SCALING		
PTCXLATE - General Purpose Translator Subroutine	091.	LS-075
CONVERSION OF PROGRAMS		
COBPL1 - COBOL to PL/I Language Conversion Program	136.	LS-137
FIFT - Fortran Editing	016.	LS-064
FORTPL1 - Fortran to PL/I Language Conversion	133.	LS-063
CONVERT (SAS) - Convert Contents of SAS Data Set	138.	LS-118
Converting to the IBM Standard Data Set Naming Convention	123.	GI-091
COPY		
CARDCOPY - Duplicate Card Deck	005.	Note 9
CARDSEQ1 - Duplicate Deck, Sequence Numbers col. 73-80	005.	Note 9
CARDSEQ2 - Duplicate Deck, Sequence Numbers col. 1-6	005.	Note 9
COPY (SAS) Copy SAS Data Sets	138.	LS-118
COPY - Utility Program	018.	LS-103
COPY Command (WYLBUR) Copy Lines of Text	287.	LSR-360
COPYFILE Command (CMS) Copy CMS Files	130.	Note 12
IEBGENER - Multiple Purpose Utility	024.	Note 6
IEHMOVE - Disk Move Utility	023.	Note 6
LOADLIB Command (CMS) List, Copy, or Compress CMS LOADLIB	130.	Note 12
PDSPICK - A Partitioned Data Set Access Utility Program	135.	LS-356

PUNCH Command (TSO) Punch Data Set	068.	LSR-352
PUNCHIT - Card Preparation Aid	022.	LS-147
SYNCSORT - Sort/Merge Program and SORT Cataloged Procedure	179.	LS-343
TAPECOPY (SAS) Copy Tape Volumes	138.	LS-118
TPVOLCPY - Tape Copying Program	004.	LS-291
COPYFILE Command (CMS) Copy CMS Files	130.	Note 12
CORR (APL STATPACK2) Simple and Partial Correlation	141.	LS-114
CORR (SAS) Correlations	138.	LS-118
CORRELATION		
ANATAB (TSL) Analysis of Contingency Tables	146.	Note 3
BECOR (IMSL) Basic Statistics	147.	LS-287
BECORI (IMSL) Basic Statistics	147.	LS-287
BECOVW (IMSL) Means, Variance-Covariance of Corr. Matrix	147.	LS-287
BEMMI (IMSL) Basic Statistics	147.	LS-287
BEMMO (IMSL) Basic Statistics	147.	LS-287
BESRB (IMSL) Biserial Correlation Coefficient	147.	LS-287
BESRN (IMSL) Biserial Correlation Coefficient	147.	LS-287
BMDP6D (BMDP) Bivariate (Scatter) Plots	323.	LS-308
BMDP6M (BMDP) Canonical Correlation Analysis	323.	LS-308
BMDP7D (BMDP) Descrip. of Groups (Strata) with Histograms	323.	LS-308
BMDP8D (BMDP) Missing Value Correlation	323.	LS-308
CM (APL STATPACK2) Simple Correlation Matrix	141.	LS-114
CORR (APL STATPACK2) Simple and Partial Correlation	141.	LS-114
CORR (SAS) Correlations	138.	LS-118
DATA-TEXT - Data Analysis Package	143.	LS-167
LINEAR (JCP) Linear Regression Analysis	209.	LIB-ECS-50
MATCOR (TSL) Matched Correlation	146.	Note 3
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
PARCOR (TSL) Partial Correlation	146.	Note 3
PARTIAL CORR (SPSS-X) Partial Correlation Analysis	137.	LS-102
PEARSON CORR (SPSS-X) Pearson Correlations	137.	LS-102
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
SCORR (APL STATPACK2) Simple Correlation	141.	LS-114
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TSAR - Tele-Storage and Retrieval System	142.	LS-076
CORTB (EISPACK) Backtransform Eigenvectors	260.	LS-286
CORTH (EISPACK) Reduce to Upper Hessenberg Form	260.	LS-286
COST ANALYSIS		
Harris-Maggard Package - Management Analysis	216.	LIB-ECS-39
COST EFFECTIVENESS MODEL		
BUYCAR (Harris-Maggard) Cost Effectiveness Model	216.	LIB-ECS-39
COST OF PRODUCTION		
OROB (Berry-Whybark) Total Costs of Production	217.	LIB-ECS-40
COST-FLOW ANALYSIS		
COSTFLOW (APL STATPACK2) Minimum Cost of a Given Flow	141.	LS-114
NETFLOW (SAS/OR) Find Minimum Cost Flow in a Network	159.	LS-118
COSTFLOW (APL STATPACK2) Minimum Cost of a Given Flow	141.	LS-114
COUPLE Command (CMS) Connect Virtual C-T-C Adapters	130.	Note 12
CP Command (CMS) Enter CP Command from CMS	130.	Note 12
CPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
CPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
CPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
CPDA - Demographic Analysis Program	320.	LS-320
CPM (APL STATPACK2) Critical Path Method	141.	LS-114
CPM (SAS/OR) Critical Path Analysis	159.	LS-118
CPM1 (APL STATPACK2) Critical Path Analysis	141.	LS-114
CPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
CPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
CPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
CPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
CPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
CPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
CPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
CPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
CPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358

CPU TIME		
RUNTIME - Run Timing Subroutines	272.	LS-014
CQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
CQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol.	327.	LS-358
CRAMER'S V		
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
CROSSTABS (SPSS-X) Contingency Table Analysis	137.	LS-102
FREQ (SAS) Frequency and Crosstabulation Tables	138.	LS-118
CREATE Command (TSO) Allocate New Data Set	068.	LSR-352
CREATE DATA SETS		
ATTRIB Command (TSO) Build List of Data Set Attributes	068.	LSR-352
COLLECT Command (WYLBUR) Enter Input Mode	287.	LSR-360
CREATE Command (TSO) Allocate New Data Set	068.	LSR-352
EDIT Command (TSO) Create, Modify, Retrieve Data Sets	068.	LSR-352
EDITOR - Program for the Maintenance of Sequential Files	082.	LS-126
GREDUCE (SAS/GRAPH) Creates Subsets of Map Data Sets	264.	LS-118
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
MACLIB Command (CMS) Create and Update Macro Libraries	130.	Note 12
QED Command (TSO) TUCC Editor - Create, Modify, Store Data	068.	LSR-352
SAVE Command (WYLBUR) Store a File on Disk	287.	LSR-360
WYLBUR User Guide	287.	LSR-353
XEDIT Command (CMS) Create and Edit CMS Files	130.	Note 12
CRIT (Harris-Maggard) Project Scheduling Model	216.	LIB-ECS-39
CRITICAL PATH		
CPM (APL STATPACK2) Critical Path Method	141.	LS-114
CPM1 (APL STATPACK2) Critical Path Analysis	141.	LS-114
PROJECT (ICES/360) Scheduling Projects	201.	LS-044
CRITICAL PATH ANALYSIS		
CPM (SAS/OR) Critical Path Analysis	159.	LS-118
CROSS PRODUCT		
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
CROSS-NATIONAL AND WORLD POLITICS DATA BASES		
SPSS Data Bases for Use in Survey Analysis	302.	LIB-ECS-37
CROSSCOVARIANCES		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SPECTRA (SAS) - Spectral Analysis	138.	LS-118
CROSSTABS (SPSS-X) Contingency Table Analysis	137.	LS-102
CROSSTABULATION		
BREAKDOWN (SPSS-X) Subpopulation Means	137.	LS-102
CROSSTABS (SPSS-X) Contingency Table Analysis	137.	LS-102
DATA-TEXT - Data Analysis Package	143.	LS-167
FREQ (SAS) - Frequency and Crosstabulation Tables	138.	LS-118
MAKTAB (TSL) Crosstabulation	146.	Note 3
TSAR - Tele-Storage and Retrieval System	142.	LS-076
CROUT DECOMPOSITION		
BANET2 (PL/I SPC) Matrix Factorization	259.	LSR-347
CROUT FACTORIZATION		
UNSDET (PL/I SPC) Factorization, Determinant of Matrix	259.	LSR-347
CRYPT - Subroutine for Encrypting and Decrypting Data	085.	LS-138
CSICO (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
CSIDI (LINPACK) Compute Deter., Inertia, Inverse Sym. Matrix	327.	LS-358
CSIFA (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
CSISL (LINPACK) Solve Symmetric System	327.	LS-358
CSPCO (LINPACK) Factor Symmetric Matrix	327.	LS-358
CSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
CSPFA (LINPACK) Factor Symmetric Matrix	327.	LS-358
CSPSL (LINPACK) Solve Symmetric System	327.	LS-358
CSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
CTAB (APL STATPACK2) Two-Way Contingency Table	141.	LS-114

CTLLF (IMSL) Log-Linear Fit of Contingency Table	147.	LS-287
CTPR (IMSL) Exact Probabilities for Contingency Tables	147.	LS-287
CTRANSPORT (APL STATPACK2) Capacitated Transport. Problem	141.	LS-114
CTRBYC (IMSL) Categorized Data Analysis	147.	LS-287
CTRCO (LINPACK) Estimate Condition of Tri. Matrix	327.	LS-358
CTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
CTRSL (LINPACK) Solve Triangular System	327.	LS-358
CUBIC SPLINE		
DBCEVL (IMSL) Bicubic Spline Partial Derivative Evaluation	147.	LS-287
IBCCCU (IMSL) Bicubic Spline Coefficient Calculator	147.	LS-287
IBCEVL (IMSL) Bicubic Spline Evaluator	147.	LS-287
IBCIEU (IMSL) Bi-cubic Spline Interpolation	147.	LS-287
ICSCCU (IMSL) Cubic Spline Interpolation	147.	LS-287
ICSEVU (IMSL) Cubic Spline Evaluator	147.	LS-287
ICSPLN (IMSL) Cubic Spline Inter., Periodic End Conditions	147.	LS-287
ICSSCV (IMSL) Cubic Spline Smoother	147.	LS-287
CURVE FITTING		
CPDA and CENLIB - Demographic Analysis Programs	320.	LS-320
IBCICU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSEVU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSFKU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSICU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSVKU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
IQHSCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
IRATCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
LSQFIT - Least Square Fit on Linear Data	182.	LS-071
SPECSOLV - Spectral Decomposition	292.	LS-301
CVU - Data Set Maintenance Utility Program	030.	LS-284
CXALVE (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CXIVIT (PL/I SPC) Finding Selected Eigenvectors	259.	LSR-347
CYBER 205		
Running Jobs on the CYBER 205 at Colorado State University	092.	GI-087
DATA		
World Bank Tables From World Bank	095.	GI-088
DATA BANKS		
CAMIVA - Cartographic Mapping Program	166.	LS-339
CITIBASE Economic Database	045.	GI-084
Data Files and Data Banks in the TUCC Community	273.	GIR-045
INDEX - Index to Computer Programs at TUCC	273.	GIR-000
SETUPS I - American Series - Political Science	303.	LIB-ECS-59
SETUPS II - World and Cross-National Series-Political Sci.	305.	LIB-ECS-60
SPSS Data Bases for Use in Survey Analysis	302.	LIB-ECS-37
DATA BASE MANAGEMENT		
SIR/DBMS - Scientific Information Retrieval	039.	LS-370
SIR/HOST - FORTRAN Interface to SIR/DBMS	040.	LS-371
DATA BASES		
CITIBASE Economic Database	045.	GI-084
World Bank Tables From World Bank	095.	GI-088
DATA COLLECTION		
FORMPLOT - A Forms Design Program	338.	LSR-327
DATA COMMUNICATIONS		
Access to Remote Computers via the INTERNET	176.	GI-097
Communications Device Types Supported for the IBM Systems	081.	GI-085
Using Full Screen Devices: 3270 Terminals and IBM 7171	169.	GI-095
DATA DISPLAY		
AUTOFLOW - For Printer Flowcharts of Input Programs	132.	LS-201
CALENDAR (SAS) Display Data in Calendar Format	138.	LS-118
CARDPRNT - Listing of Card Deck	005.	Note 9
COPY - Utility Program	018.	LS-103
DISKHEXL - Hexadecimal Listing of Disk Data Set	005.	Note 9
DISKPRNT - Listing of Disk Data Set	005.	Note 9
ECAPPLOT - A Procedure for Plotting ECAP Output	115.	LS-054
ECSPLOT - Ordered Pairs Data Plotting	109.	LS-086
EDIT Command (TSO) Create, Modify, Retrieve Data Sets	068.	LSR-352

EZPLOT - Printer Plotting Subroutine	113.	LIB-ECS-36
FORMAT - A Text Processing Program	098.	LSR-033
FRED - Multipurpose Merge-Copy-Editing Program	027.	LS-176
FSBROWSE (SAS/FSP) Display Observations in a SAS Data Set	158.	LS-118
FSLIST (SAS/FSP) Display Listing Files	158.	LS-118
FSPRINT (SAS/FSP) Display SAS Data Set	158.	LS-118
GENPT - General Printer Plotting	114.	LIB-ECS-36
GRAFF - A Plotting Subroutine Package	107.	LSR-048
GRAPHER - Plotting Program	116.	LSR-048
IEBPTPCH - List and Punch Utility	021.	Note 6
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
IOF Command (TSO) Cancel, Route Batch Job, View Output	068.	LSR-352
KWIC360 - Keyword in Context Indexing Program	131.	LS-122
LIST Command (WYLBUR) List Lines of Text	287.	LSR-360
LISTSL (TSL) Print TSL Data Set	146.	Note 3
LSQPLOT - Least Squares Plot	110.	LS-086
MLIST - Print Input Data Set	102.	LS-184
PDSPICK - A Partitioned Data Set Access Utility Program	135.	LS-356
PLOT - APL Plotting Functions	122.	Note 10
PLOTF - Fortran Printer Plotting Subroutine	103.	LS-030
PLOTP - PL/I Printer Plotting Subroutine	104.	LS-030
PLOTTER - Plotter Routines	117.	LSR-048
PPLOT - Ordered Pairs Data Plotting	108.	LS-086
PRINT (SAS) Formatted Listing of Data	138.	LS-118
PRINT Command (TSO) Print Data Set	068.	LSR-352
QED Command (TSO) TUCC Editor - Create, Modify, Store Data	068.	LSR-352
SCRIPT - Text Processing Program	319.	LS-307
SURFACE2 - A Program for Contour Maps and Transect Plots	221.	LS-355
SYMAP - Synagraphic Computer Mapping	111.	LS-139
SYMVU - Plotting From Gridded Data or SYMAP Output	112.	LS-218
TAPEHEXL - Hexadecimal Listing of Tape Data Set	005.	Note 9
TAPEPRNT - List Tape Data Set	005.	Note 9
TEXT 360 - Text Processing System	097.	LS-049
TEXTCOPY - Interactive Control of Text Copy	100.	LS-292
USSLF (IMSL) Print a Stem and Leaf Display	147.	LS-287
XEDIT Command (CMS) Create and Edit CMS Files	130.	Note 12
Data Files and Data Banks in the TUCC Community	273.	GIR-045
DATA HANDLING		
ASAP - File Management and Retrieval System	080.	LS-136
CRYPT - Subroutine for Encrypting and Decrypting Data	085.	LS-138
DUALAB'S Program Library	087.	Note 7
ERLST - For Data Sequencing Errors	088.	LS-186
FRED - Multipurpose Merge-Copy-Editing Program	027.	LS-176
JCL and Data Management for SAS and SPSS Users	032.	GIR-082
MARK IV - File Management System	312.	LS-317
PTCXLATE - General Purpose Translator Subroutine	091.	LS-075
QUIKJOB III - File Maintenance and Report Generator	276.	LS-294
TRANSPOSE (SAS/ETS) Transposing SAS Data Sets	263.	LS-118
TSTPN - Check Data Preparation Errors	086.	LS-185
TUCC Security Features	288.	GI-066
VECSRT - PL/I Vector Sorting Source Procedure	090.	LS-100
VERIFY - Data Verifying Utility	084.	LS-240
DATA MANAGEMENT SYSTEMS		
MARK IV - File Management System	312.	LS-317
DATA MANIPULATION		
BMDPAM (BMDP) Descrip. and Estimation of Missing Data	323.	LS-308
BYTE - FORTRAN Numerical Byte Array Manipulation	094.	LS-008
CHAR - FORTRAN Non-numeric Byte Array Manipulation	094.	LS-008
FREE - Free Format Numeric Input to Fortran Programs	009.	LS-283
GETLST - Free Format Numeric Input to Fortran Programs	008.	LS-283
HFWD - FORTRAN Halfword Array Manipulation Subroutine	094.	LS-008
IBYTE - FORTRAN Numerical Byte Array Manipulation	094.	LS-008
ICHAR - FORTRAN Non-numeric Byte Array Manipulation Func	094.	LS-008
IHFWD - FORTRAN Halfword Array Manipulation Function	094.	LS-008
SAS - Statistical Analysis System	138.	LS-118
DATA SET AND FILE MAINTENANCE		
ACCESS Command (CMS) Identify Disk to CMS File System	130.	Note 12
ARRU - ASAP Redefine Record Utility	281.	LS-299
ATTRIB Command (TSO) Build List of Data Set Attributes	068.	LSR-352
CATLG Command (WYLBUR) Catalog a Data Set	287.	LSR-360

CHEKCAT Command (TSO) Determine if Data Set in Catalog	068.	LSR-352
CONDENSE Command (WYLBUR) Compress a WYLBUR Library	287.	LSR-360
Converting to the IBM Standard Data Set Naming Convention	123.	GI-091
CREATE Command (TSO) Allocate New Data Set	068.	LSR-352
CVU - Data Set Maintenance Utility Program	030.	LS-284
DELETE Command (TSO) Delete Data Set	068.	LSR-352
DFHSM - Hierarchical Storage Manager	106.	GI-090
DISKPDSC - Compress PDS	005.	Note 9
EDIT Command (TSO) Create, Modify, Retrieve Data Sets	068.	LSR-352
ERASE Command (CMS) Delete CMS Files	130.	Note 12
FILELIST Command (CMS) List File Information	130.	Note 12
FILIST Command (TSO)List, List Attributes, Search Data Set	068.	LSR-352
FREE Command (TSO) Release Previously Allocated Data Sets	068.	LSR-352
FREEALL Command (TSO) Free Data Sets and Attribute Lists	068.	LSR-352
FREEC Command (TSO) Release Previously Allocated Data Sets	068.	LSR-352
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
LISTALC Command (TSO) List Data Sets Allocated to User	068.	LSR-352
LISTCAT Command (TSO) List Names of Cataloged Data Sets	068.	LSR-352
LISTDS Command (TSO) List Data Set Attributes	068.	LSR-352
LISTFILE Command (CMS) List CMS File Information	130.	Note 12
LOADLIB Command (CMS) List, Copy, or Compress CMS LOADLIB	130.	Note 12
MOVEFILE Command (CMS) Move Data Between VM Devices	130.	Note 12
NAMES Command (CMS) Manipulate NAMES File	130.	Note 12
PDS (TSO) Manipulate Partitioned Data Set	068.	LSR-352
PROTECT Command (TSO) Maintain Data Set Passwords	068.	LSR-352
QED Command (TSO) TUCC Editor - Create, Modify, Store Data	068.	LSR-352
RACF Security System	118.	GI-093
RECALL Command (TSO) Recall Migrated Data Set	068.	LSR-352
RENAME Command (CMS) Rename CMS File	130.	Note 12
RENAME Command (TSO) Change Data Set Name	068.	LSR-352
SAVE Command (WYLBUR) Store a File on Disk	287.	LSR-360
TYPEDFLT Command (TSO) Establish Default QED Data Set Type	068.	LSR-352
UNCATLG Command (WYLBUR) Uncatalog a Data Set	287.	LSR-360
UPDATE Command (CMS) Change Source File	130.	Note 12
WYLBUR Reference Manual	287.	LSR-360
WYLBUR User Guide	287.	LSR-353
XEDIT Command (CMS) Create and Edit CMS Files	130.	Note 12
DATA SET NAMING CONVENTION		
Converting to the IBM Standard Data Set Naming Convention	123.	GI-091
DATA VERIFICATION		
TSTPN - Check Data Preparation Errors	086.	LS-185
VERIFY - Data Verifying Utility	084.	LS-240
DATA-TEXT - Data Analysis Package	143.	LS-167
DATACHK (SAS) - Quick Check of Input Data	138.	LS-118
DATASETS (SAS) List, Delete, and Rename SAS Data Sets	138.	LS-118
DATE - Current Date Read Subroutine	268.	LS-016
DATE CONVERSION		
CALDATE - Julian to Calendar Date Conversion Function	270.	LS-091
DAY (PL/I Sub) Produce Day of Week	306.	LS-305
JULDATE - Calendar to Julian Date Conversion Function	271.	LS-091
DATOC - Change Data Set Expiration Date	037.	LS-144
DAWSON'S INTEGRAL		
MMDAS (IMSL) Math. and Stat. Special Functions	147.	LS-287
DAY (PL/I Sub) Produce Day of Week	306.	LS-305
DBCEVL (IMSL) Bicubic Spline Partial Derivative Evaluation	147.	LS-287
DBCEVU (IMSL) - Bicubic Spline Mixed Partial Derivative	147.	LS-287
DBCQDU (IMSL) Bicubic Spline Quadrature	147.	LS-287
DBLIN (IMSL) Numeric Integration of Function of Two Vars.	147.	LS-287
DCADRE (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
DCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
DCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
DCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
DCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
DCSEVU (IMSL) - Derivatives of a Cubic Spline	147.	LS-287
DCSQDU (IMSL) - Integrate a Cubic Spline	147.	LS-287
DDNAMES (PL/I System Sub) Obtain ddnames used	279.	LS-297
DEBDCB (PL/I System Sub) Locate DEB and DCB	279.	LS-297
DEBUG Command (CMS) Test and Debug a Program	130.	Note 12

DEBUGGING AID		
ONSTMT - PL/I Debugging Aid	077.	LS-045
DECISION TREE ANALYSIS		
Harris-Maggard Package - Management Analysis	216.	LIB-ECS-39
DECISION TREES		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
DECONCAT Command (TSO) Deconcatenate TSO Files	068.	LSR-352
DECOSE (PL/I SPC) Matrix Reduction	259.	LSR-347
DECRYPTION		
CRYPT - Subroutine for Encrypting and Decrypting Data	085.	LS-138
DEFAULTS Command (CMS) Set CMS Default Options	130.	Note 12
DEFINE Command (WYLBUR) Establish PF Keys	287.	LSR-360
DEFINE Command (CMS) Reconfigure Virtual Machine	130.	Note 12
DELETE (SAS) - Delete SAS Data Set	138.	LS-118
DELETE Command (TSO) Delete Data Set	068.	LSR-352
DELETE Command (WYLBUR) Delete Lines of Text	287.	LSR-360
DEMOGRAPHIC ANALYSIS		
CPDA and CENLIB - Demographic Analysis Programs	320.	LS-320
DEMO2 (TSL) Illustrate Law of Large Numbers and C.L.T.	146.	Note 3
DENDOGRAM		
TREE (SAS) Print a Tree Diagram (Dendogram)	138.	LS-118
DENSITY DISTRIBUTIONS		
NDEST (IMSL) Evaluate Prob. Density at Specified Points	147.	LS-287
NDKER (IMSL) Nonparametric Density Estimation, Kernel	147.	LS-287
DERIVED MATRIX		
COMBAK (PL/I SPC) Obtaining Original Eigenvectors	259.	LSR-347
DEST Command (TSO) Specify Default Destination ID	068.	LSR-352
DETACH Command (CMS) Remove Device from Virtual Machine	130.	Note 12
DFHSM - Hierarchical Storage Manager	106.	GI-090
DGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
DGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
DGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
DGBSL (LINPACK) Solve a Band System	327.	LS-358
DGEAR (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
DGECO (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
DGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
DGEFA (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
DGESL (LINPACK) Solve System Given Factors of Matrix	327.	LS-358
DGTSL (LINPACK) Solve a Tridiagonal System	327.	LS-358
DIAL Command (CMS) Attach Terminal to Multi-access System	130.	Note 12
DIAL-UP SERVICE		
Telephone Numbers for Terminal Services and System Status	273.	GI-057
DIALL, DIALLC - Least Squares Analysis of Diallel Expers.	240.	LS-175
DIALLC		
DIALL, DIALLC - Least Squares Analysis of Diallel Expers.	240.	LS-175
DIALLEL CROSS		
DIALL, DIALLC - Least Squares Analysis of Diallel Expers.	240.	LS-175
DIFFERENTIAL EQUATIONS		
ACSL - Advanced Continuous Simulation Language	038.	LS-369
DGEAR (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
DIFSUB - Solve Initial Value Problem	033.	LS-235
DPDES (IMSL) Solve a System of Partial Diff. Equations	147.	LS-287
DREBS (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
DSS/2 - Differential Systems Simulator	078.	LS-378
DTPDB (IMSL) Solve Boundary Value Problem, Shooting Method	147.	LS-287
DVCPR (IMSL) Differential Equas w/ Boundary Conds.	147.	LS-287
DVERK (IMSL) First Order Equation Solver	147.	LS-287
DYNAMO III, A System for Continuous Dynamic Modeling	339.	LS-328

STIFDIF - Solve Initial Value Problem	034.	LS-236
DIFFERENTIATION		
DBCEVL (IMSL) Bicubic Spline Partial Derivative Evaluation	147.	LS-287
DBCEVU (IMSL) Bicubic Spline Mixed Partial Derivative	147.	LS-287
DCSEVU (IMSL) Derivatives of a Cubic Spline	147.	LS-287
DRVTE (IMSL) Derivatives of User-supplied Function	147.	LS-287
MMWPL1 (IMSL) First Derivative of Weierstrass P-Function	147.	LS-287
MMWPQ (IMSL) Weierstrass P-Function in Equianharmonic Case	147.	LS-287
MMWPQ1 (IMSL) First Derivative of Weierstrass P-Function	147.	LS-287
REDUCE - An Algebraic Programming System	125.	LS-380
DIFFICULTY INDEX		
TESTAN - Item Analysis	190.	LS-302
DIFSUB - Solve Initial Value Problem	033.	LS-235
DIRANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
DIRBAK (PL/I SPC) Eigenvectors of Original Matrix	259.	LSR-347
DIRHES (PL/I SPC) Reduces Submatrix	259.	LSR-347
DISCONN Command (CMS) Disconnect Terminal from VM	130.	Note 12
DISCRETE SIMULATION		
GPSS V - General Purpose Simulation System	193.	LS-080
SIMSCRIPT II - Discrete Simulation Modeling Language	196.	LS-135
DISCRIM (SAS) Discriminant Analysis	138.	LS-118
DISCRIMINANT (SPSS-X) Discriminant Analysis	137.	LS-102
DISCRIMINANT ANALYSIS		
BMDP7M (BMDP) Stepwise Discriminant Analysis	323.	LS-308
CANDISC (SAS) Canonical Discriminant Analysis, etc.	138.	LS-118
DISCRIM (SAS) Discriminant Analysis	138.	LS-118
DISCRIMINANT (SPSS-X) Discriminant Analysis	137.	LS-102
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
NEIGHBOR (SAS) - Nearest Neighbor Discriminant Analysis	138.	LS-118
ODFISH (IMSL) Observation Structure	147.	LS-287
ODNORM (IMSL) Observation Structure	147.	LS-287
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
STEPDISC (SAS) Perform Stepwise Discriminant Analysis	138.	LS-118
DISCRIMINATION INDEX		
TESTAN - Item Analysis	190.	LS-302
DISJOINT CLUSTERING		
FASTCLUS (SAS) Disjoint Clustering of Large Data Sets	138.	LS-118
VARCLUS (SAS) Disjoint or Hierarchical Clustering	138.	LS-118
DISK Command (CMS) Dump Disk Files	130.	Note 12
DISK HANDLING		
DATOC - Change Data Set Expiration Date	037.	LS-144
DFHSM - Hierarchical Storage Manager	106.	GI-090
DISKCOPY - Copy Disk Data Set To Another Disk Data Set	005.	Note 9
DISKPDSC - Compress PDS	005.	Note 9
DUMPRSTR - Dump and Restore Direct Access Volumes	274.	LS-290
Introduction to Tape and Disk Usage	326.	GIR-071
JCL and Data Management for SAS and SPSS Users	032.	GIR-082
RECALL Command (TSO) Recall Migrated Data Set	068.	LSR-352
RELEASE (SAS) Release Unused Space in Disk Data Sets	138.	LS-118
DISK MAP		
FILIST Command (TSO)List, List Attributes, Search Data Set	068.	LSR-352
DISKCARD - Punch Card Deck from Disk Data Set	005.	Note 9
DISKCOPY - Copy Disk Data Set To Another Disk Data Set	005.	Note 9
DISKHEXL - Hexadecimal Listing of Disk Data Set	005.	Note 9
DISKPDSC - Compress PDS	005.	Note 9
DISKPRNT - Listing of Disk Data Set	005.	Note 9
DISKTAPE - Copy Disk Data Set To Tape	005.	Note 9
DISPERSION MATRIX		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
DISPLAY Command (CMS) Display Virtual Machine Information	130.	Note 12

DISSIMILARITY MATRICES		
CLUSTAN - Collection of Cluster Analysis Programs	204.	LS-383
DISSPLA	126.	LS-381
DISTANCE MATRICES		
CLUSTAN - Collection of Cluster Analysis Programs	204.	LS-383
DISTRIBUTION FUNCTION		
GGUO (IMSL) Order Statistics from Uniform Distribution	147.	LS-287
GGVCR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
MDGC (IMSL) Probability Distribution Function	147.	LS-287
MDGCI (IMSL) Inverse Probability Distribution Function	147.	LS-287
USPC (IMSL) Utility Functions	147.	LS-287
USPDF (IMSL) Utility Functions	147.	LS-287
DMLIN (IMSL) Numeric Integration of Func. of Several Vars.	147.	LS-287
DOCUMENTATION		
DOCUMENTS - Documentation and Program Library Organization	273.	GI-072
HELP Command (TSO) Info on Command Function and Syntax	068.	LSR-352
HELPRINT - List HELP for TSO Commands	043.	LS-227
LIBRARIES - Documentation and Program Library Organization	273.	GI-072
DOCUMENTATION STANDARDS		
TUCC Documentation and Program Library Organization	342.	GI-072
DOCUMENTS - Documentation and Program Library Organization	273.	GI-072
DODOTRANS (ICES/360) Transportation Analysis	201.	LS-044
DONMAR II - Media Simulation Game	315.	LS-314
DONNELLY (LERNER) Corporate Profits and Cash	212.	LIB-ECS-47
DOTERM (PL/I Sub) Prompt for, and Read Input with Help	306.	LS-305
DOWNDATE - A Program That Compares Two Data Sets	340.	LS-329
DOWNLOAD Command (TSO) Transmit Data to a Terminal	068.	LSR-352
DOWNLOADING		
DOWNLOAD Command (TSO) Transmit Data to a Terminal	068.	LSR-352
KERMIT - Mainframe-Microcomputer File Transfer	134.	LS-386
KERMIT Command (CMS) Transfer Files to, from Other Systems	130.	GI-092
PCFTP - File Transfer for the IBM PC	041.	LS-372
TUCFTP Command (TSO) Invoke File Transfer Program	068.	LSR-352
DPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
DPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
DPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
DPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
DPDES (IMSL) Solve a System of Partial Diff. Equations	147.	LS-287
DPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
DPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
DPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
DPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
DPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
DPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
DPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
DPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
DPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
DQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
DQRSL (LINPACK) Compute Coord. Trans., Proj., Least Sq. Sol.	327.	LS-358
DREBS (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
DROPBUF Command (CMS) Eliminate Program Stack Buffers	130.	Note 12
DRVTE (IMSL) Derivatives of User-supplied Function	147.	LS-287
DSICO (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
DSIDI (LINPACK) Compute Deter., Inertia, Inverse Sym. Matrix	327.	LS-358
DSIFA (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
DSISL (LINPACK) Solve Symmetric System	327.	LS-358
DSPCO (LINPACK) Factor Symmetric Matrix	327.	LS-358
DSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
DSPFA (LINPACK) Factor Symmetric Matrix	327.	LS-358
DSPSL (LINPACK) Solve Symmetric System	327.	LS-358
DSS/2 - Differential Systems Simulator	078.	LS-378
DSTAT (APL STATPACK2) Descriptive Statistics	141.	LS-114
DSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
DTPDB (IMSL) Solve Boundary Value Problem, Shooting Method	147.	LS-287
DTRCO (LINPACK) Estimate Condition of Tri. Matrix	327.	LS-358
DTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358

DTRSL (LINPACK) Solve Triangular System	327.	LS-358
DUALAB'S Program Library	087.	Note 7
DUMP Command (CMS) Dump Virtual Machine Memory	130.	Note 12
DUMPING		
ABEND - Force Abnormal Termination of a Program	079.	LS-015
AMASPZAP - Load Module and Data Set Corrector	007.	Note 5
DUMPRSTR - Dump and Restore Direct Access Volumes	274.	LS-290
DUMPRSTR - Dump and Restore Direct Access Volumes	274.	LS-290
DUNCAN (SAS) Duncan's Multiple Range Test	138.	LS-118
DUNCAN'S MULTIPLE RANGE TEST		
ANOVA (SAS) Analysis of Variance for Balanced Designs	138.	LS-118
DUNCAN (SAS) Duncan's Multiple Range Test	138.	LS-118
GLM (SAS) General Linear Models	138.	LS-118
ONEWAY (SPSS-X) One-way Analysis of Variance	137.	LS-102
DURBIN-WATSON STATISTIC		
ESP - Econometric Software Package	222.	LSR-178
GLM (SAS) General Linear Models	138.	LS-118
REGRESSION (SPSS-X) Multiple Regression Analysis	137.	LS-102
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
STATRES (APL STATPACK2) Residual Statistics	141.	LS-114
SYSREG (SAS) - TTLS, LIML, and Seemingly-Unrelated Reg.	138.	LS-118
TSP - Time Series Processor	311.	LSR-315
TTLS - Two and Three Stage Least Squares	168.	LSR-140
DVCPR (IMSL) Differential Equas. w/ Boundary Conds.	147.	LS-287
DVERK (IMSL) Differential Equation Solver	147.	LS-287
DYNAMAT (LERNER) Price/Earnings Ratios	212.	LIB-ECS-47
DYNAMO II - Continuous Dynamic Modeling System	195.	LS-115
DYNAMO III - System for Continuous Dynamic Modeling	339.	LS-328
EASYGRAF		
IGP and EASYGRAF - Tektronix Interactive Graphics Packages	171.	LS-342
EASYGRAF - Tektronix Easy Graphing Package	205.	LS-342
EBALAC (IMSL) Eigenanalysis	147.	LS-287
EBALAF (IMSL) Eigenanalysis	147.	LS-287
EBBCKC (IMSL) Eigenanalysis	147.	LS-287
EBBCKF (IMSL) Eigenanalysis	147.	LS-287
EBCDIC-TO-BCD		
CARDTRNX - Convert EBCDIC Deck to BCD	005.	Note 9
ECAP - Electronic Circuit Analysis Program	203.	LS-028
ECAPPLOT - A Procedure for Plotting ECAP Output	115.	LS-054
ECONOMETRICS		
AUTOREG (SAS) - Autoregression	138.	LS-118
ESP - Econometric Software Package	222.	LSR-178
IMSL - See Section F of Abstract or Document LS-287	147.	LS-287
LISREL V - Analysis of Linear Structural Relationships	164.	LS-367
RATS - Regression Analysis of Time Series	061.	LS-375
SAS/ETS - Econometrics and Time Series Library	263.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SPECTRA (SAS) - Spectral Analysis	138.	LS-118
SYSREG (SAS) - TTLS,LIML, and Seemingly-Unrelated Reg.	138.	LS-118
TSP - Time Series Processor	311.	LSR-315
ECONOMICS		
CITIBASE Economic Database	045.	GI-084
Energy - Non-political Environment Simulation	304.	LIB-ECS-61
ESP - Econometric Software Package	222.	LSR-178
MACII - Macroeconomic Policy Game	228.	LIB-ECS-48
MacWharton - Macroeconomic Policy Simulation	227.	LIB-ECS-46
SETUPS I - American Series - Political Science	303.	LIB-ECS-59
SETUPS II - World and Cross-National Series-Political Sci.	305.	LIB-ECS-60
SIMSTATE - Simulation Model of a State Economy	226.	LIB-ECS-45
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TEMPOMATIC IV - A Management Simulation	314.	LS-323
TSP - Time Series Processor	311.	LSR-315
ECSPLOT - Ordered Pairs Data Plotting	109.	LS-086

EDITING		
CHANGE Command (WYLBUR) Replace Character Strings	287.	LSR-360
CLEAR Command (WYLBUR) Erase Active File	287.	LSR-360
COLLECT Command (WYLBUR) Enter Input Mode	287.	LSR-360
COMPARE Command (WYLBUR) Compare Lines of Text	287.	LSR-360
COPY Command (WYLBUR) Copy Lines of Text	287.	LSR-360
DELETE Command (WYLBUR) Delete Lines of Text	287.	LSR-360
EDIT Command (TSO) Create, Modify, Retrieve Data Sets	068.	LSR-352
EDIT Command (WYLBUR) Edit Lines of Text	287.	LSR-360
EDITOR - Program for the Maintenance of Sequential Files	082.	LS-126
ERASE (WYLBUR) Scratch a WYLBUR Qwik File	287.	LSR-360
FORMAT - A Text Processing Program	098.	LSR-033
FRED - Multipurpose Merge-Copy-Editing Program	027.	LS-176
FSEDIT (SAS/FSP) Edit SAS Data Set	158.	LS-118
FSLETTER (SAS/FSP) Edit and Send Letters and Forms	158.	LS-118
IEBGENER - Multiple Purpose Utility	024.	Note 6
IEBPTPCH - List and Punch Utility	021.	Note 6
IEBUPDTE - Update Utility	019.	Note 6
INSERT Command (WYLBUR) Insert Lines of Text	287.	LSR-360
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
LIST Command (WYLBUR) List Lines of Text	287.	LSR-360
MODIFY Command (WYLBUR) Edit Lines of Text	287.	LSR-360
MOVE Command (WYLBUR) Move Lines of Text	287.	LSR-360
NUMBER Command (WYLBUR) Number Lines of Text	287.	LSR-360
POINT Command (WYLBUR) List Lines of Text	287.	LSR-360
QED Command (TSO) TUCC Editor - Create, Modify, Store Data	068.	LSR-352
REPLACE Command (WYLBUR) Replace Lines of Text	287.	LSR-360
SUPERLIB - General Library Maintenance Utility Program	026.	LSR-127
TEXT 360 - Text Processing System	097.	LS-049
USE Command (WYLBUR) Create a Copy of a Data Set to Edit	287.	LSR-360
VERIFY - Data Verifying Utility	084.	LS-240
WYLBUR Reference Manual	287.	LSR-360
WYLBUR User Guide	287.	LSR-353
XEDIT Command (CMS) Create and Edit CMS Files	130.	Note 12
EDIT Command (WYLBUR) Edit Lines of Text	287.	LSR-360
EDIT Command (TSO) Create, Modify, Retrieve Data Sets	068.	LSR-352
EDITOR (SAS) - Interactive and Batch Edit of SAS Data Sets	138.	LS-118
EDITOR - Program for the Maintenance of Sequential Files	082.	LS-126
EDTA (JCP) Simulates EDTA Titration	209.	LIB-ECS-50
EDUNET and TELENET	343.	GI-073
EFAP - Exploratory Factor Analysis	127.	LS-384
EHBCKF (IMSL) Eigenanalysis	147.	LS-287
EHBCKH (IMSL) Eigenanalysis	147.	LS-287
EHESSC (IMSL) Eigenanalysis	147.	LS-287
EHESSF (IMSL) Eigenanalysis	147.	LS-287
EHOBKS (IMSL) Eigenanalysis	147.	LS-287
EHOUSH (IMSL) Eigenanalysis	147.	LS-287
EHOUSS (IMSL) Eigenanalysis	147.	LS-287
EIGBS (IMSL) Eigenanalysis of Real Symmetric Band Matrix	147.	LS-287
EIGCC (IMSL) Eigenanalysis	147.	LS-287
EIGCH (IMSL) Eigenanalysis	147.	LS-287
EIGEN (PL/I SPC) Solve Eigenproblem of Square Matrix	259.	LSR-347
EIGENPROBLEMS		
BANDR (EISPACK) Solve Eigensystem of Band Symmetric Matrix	260.	LS-286
BQR (EISPACK) Solve Eigensystem of Band Symmetric Matrix	260.	LS-286
BQR (PL/I SPC) Compute Eigenvalues	259.	LSR-347
CG (EISPACK) Solve Eigensystem of Complex General Matrix	260.	LS-286
CH (EISPACK) Solve Eigensystem of Complex Hermitian Matrix	260.	LS-286
COMEIG (PL/I SPC) Eigenvectors and Eigenvalues	259.	LSR-347
COMQR2 (EISPACK) Compute Eigenvalues and Eigenvectors	260.	LS-286
DIRANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
DIRBAK (PL/I SPC) Eigenvectors of Original Matrix	259.	LSR-347
EBALAC (IMSL) Eigenanalysis	147.	LS-287
EBALAF (IMSL) Eigenanalysis	147.	LS-287
EBBCKC (IMSL) Eigenanalysis	147.	LS-287
EBBCKF (IMSL) Eigenanalysis	147.	LS-287
EHBCKF (IMSL) Eigenanalysis	147.	LS-287
EHBCKH (IMSL) Eigenanalysis	147.	LS-287
EHESSC (IMSL) Eigenanalysis	147.	LS-287
EHESSF (IMSL) Eigenanalysis	147.	LS-287
EHOBKS (IMSL) Eigenanalysis	147.	LS-287

EHOUSH (IMSL) Eigenanalysis	147.	LS-287
EHOUSS (IMSL) Eigenanalysis	147.	LS-287
EIGCC (IMSL) Eigenanalysis	147.	LS-287
EIGCH (IMSL) Eigenanalysis	147.	LS-287
EIGEN (PL/I SPC) Solve Eigenproblem of Square Matrix	259.	LSR-347
EIGRF (IMSL) Eigenanalysis	147.	LS-287
EIGRS (IMSL) Eigenanalysis	147.	LS-287
EIGZC (IMSL) Complex Generalized Problem	147.	LS-287
EIGZF (IMSL) Real Generalized Problem	147.	LS-287
EISPAC (EISPACK) Eigenproblem Solver	260.	LS-286
ELRH1C (IMSL) Eigenanalysis	147.	LS-287
ELRH2C (IMSL) Eigenanalysis	147.	LS-287
ELZHC (IMSL) Complex Generalized Problem	147.	LS-287
ELZVC (IMSL) Complex Generalized Problem	147.	LS-287
EQRH3F (IMSL) Eigenanalysis	147.	LS-287
EQRT1S (IMSL) Eigenanalysis	147.	LS-287
EQRT2S (IMSL) Eigenanalysis	147.	LS-287
EQRT3S (IMSL) Eigenanalysis	147.	LS-287
EQZQF (IMSL) Real Generalized Problem	147.	LS-287
EQZT (IMSL) Eigenanalysis	147.	LS-287
EQZTF (IMSL) Real Generalized Problem	147.	LS-287
EQZVF (IMSL) Real Generalized Problem	147.	LS-287
EQZVT (IMSL) Eigenanalysis	147.	LS-287
HQR (PL/I SPC) Computes Eigenvalues	259.	LSR-347
HQR2 (PL/I SPC) Eigenvalues and Eigenvectors	259.	LSR-347
IMTQL1 (PL/I SPC) Compute Eigenvalues	259.	LSR-347
IMTQL2 (PL/I SPC) Compute Eigenvalues	259.	LSR-347
INVIT (PL/I SPC) Eigenvectors	259.	LSR-347
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
ORTANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
ORTBAK (PL/I SPC) Eigenvectors of Original Matrix	259.	LSR-347
PL/I SPC - PL/I Subprocedure Collection	259.	LSR-347
REBAKA (PL/I SPC) Compute Eigenvectors of Original Problem	259.	LSR-347
REBAKB (PL/I SPC) Compute Eigenvectors of Original Problem	259.	LSR-347
REDUC1 (PL/I SPC) Reduce Symmetric Eigenproblem	259.	LSR-347
REDUC2 (PL/I SPC) Reduces Symmetric Eigenproblems	259.	LSR-347
RG (EISPACK) Solve Eigensystem of General Real Matrix	260.	LS-286
RS (EISPACK) Solve Eigensystem of Symmetric Real Matrix	260.	LS-286
RSB (EISPACK) Solve Eigenproblem of Symmetric Band Matrix	260.	LS-286
RSP (EISPACK) For Packed Symmetric Matrix	260.	LS-286
RST (EISPACK) For Symmetric Tridiagonal Matrix	260.	LS-286
RT (EISPACK) For Real Tridiagonal Matrix	260.	LS-286
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TQL1 (PL/I SPC) Computes Eigenvalues	259.	LSR-347
TQL2 (PL/I SPC) Computes Eigenvalues and Eigenvectors	259.	LSR-347
TRBAK1 (PL/I SPC) Compute Eigenvectors of Original Matrix	259.	LSR-347
TRBAK3 (PL/I SPC) Compute Eigenvectors of Original Matrix	259.	LSR-347
TRIURM (PL/I SPC) Computes Selected Eigenvalues	259.	LSR-347
EIGENRS-Comp. of Eigenvalues and Eigenvectors of Matrices	225.	LS-113
EIGENSYSTEMS		
EISPACK - An Eigensystem Subroutine Package	260.	LS-286
EIGENVALUES		
BISECT (EISPACK) Compute Eigenvalues	260.	LS-286
BISECT (PL/I SPC) Calculate Selected Eigenvalues	259.	LSR-347
BMDP6M (BMDP) Canonical Correlation Analysis	323.	LS-308
BQR (PL/I SPC) Compute Eigenvalues	259.	LSR-347
CINVIT (EISPACK) Compute Eigenvectors	260.	LS-286
COMEIG (PL/I SPC) Eigenvectors and Eigenvalues	259.	LSR-347
COMLR (EISPACK) Compute Eigenvalues	260.	LS-286
COMLR (PL/I SPC) Finding All Eigenvalues	259.	LSR-347
COMLR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
COMLR2 (PL/I SPC) Find All Eigenvalues and Eigenvectors	259.	LSR-347
COMQR (EISPACK) Compute Eigenvalues	260.	LS-286
DIRANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
EIGBS (IMSL) Eigenanalysis of Real Symmetric Band Matrix	147.	LS-287
EIGCC (IMSL) Eigenanalysis	147.	LS-287
EIGCH (IMSL) Eigenanalysis	147.	LS-287
EIGEN (PL/I SPC) Solve Eigenproblem of Square Matrix	259.	LSR-347
EIGENRS-Comp. of Eigenvalues and Eigenvectors of Matrices	225.	LS-113
EIGRF (IMSL) Eigenanalysis	147.	LS-287
EIGRS (IMSL) Eigenanalysis	147.	LS-287
EIGZC (IMSL) Complex Generalized Problem	147.	LS-287

EIGZF (IMSL) Real Generalized Problem	147.	LS-287
EIGZS (IMSL) Eigenanalysis	147.	LS-287
EISPAC (EISPACK) Eigenproblem Solver	260.	LS-286
EISPACK - An Eigensystem Subroutine Package	260.	LS-286
ELRH1C (IMSL) Eigenanalysis	147.	LS-287
ELRH2C (IMSL) Eigenanalysis	147.	LS-287
ELZHC (IMSL) Complex Generalized Problem	147.	LS-287
ELZVC (IMSL) Complex Generalized Problem	147.	LS-287
EQRH3F (IMSL) Eigenanalysis	147.	LS-287
EQRT1S (IMSL) Eigenanalysis	147.	LS-287
EQRT2S (IMSL) Eigenanalysis	147.	LS-287
EQRT3S (IMSL) Eigenanalysis	147.	LS-287
EQZQF (IMSL) Real Generalized Problem	147.	LS-287
EQZTF (IMSL) Real Generalized Problem	147.	LS-287
EQZVF (IMSL) - Eigenanalysis	147.	LS-287
EQZVF (IMSL) Real Generalized Problem	147.	LS-287
HQR (EISPACK) Compute Eigenvalues	260.	LS-286
HQR (PL/I SPC) Computes Eigenvalues	259.	LSR-347
HQR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
HQR2 (PL/I SPC) Eigenvalues and Eigenvectors	259.	LSR-347
IMTQLV (EISPACK) Eigenvalues of Symmetric Tridiagonal	260.	LS-286
IMTQL1 (EISPACK) Compute Eigenvalues	260.	LS-286
IMTQL1 (PL/I SPC) Compute Eigenvalues	259.	LSR-347
IMTQL2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
IMTQL2 (PL/I SPC) Compute Eigenvalues	259.	LSR-347
JACOBI (PL/I SPC) Compute Eigenvalues and Eigenvectors	259.	LSR-347
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
ORTANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
RATQR (EISPACK) Compute Eigenvalues	260.	LS-286
RATQR (PL/I SPC) Compute Lowest Eigenvalues	259.	LSR-347
TQLRAT (EISPACK) For Symmetric Tridiagonal Matrix	260.	LS-286
TQL1 (EISPACK) Compute Eigenvalues	260.	LS-286
TQL1 (PL/I SPC) Computes Eigenvalues	259.	LSR-347
TQL2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
TQL2 (PL/I SPC) Computes Eigenvalues and Eigenvectors	259.	LSR-347
TRIDIB (EISPACK) For Real Symmetric Tridiagonal Matrix	260.	LS-286
TRIURM (PL/I SPC) Computes Selected Eigenvalues	259.	LSR-347
TSTURM (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286

EIGENVECTORS

BALBAK (EISPACK) Compute Eigenvectors	260.	LS-286
BALBAK (PL/I SPC) Obtaining Original Eigenvectors	259.	LSR-347
CBABK2 (EISPACK) Compute Eigenvectors	260.	LS-286
CINVIT (EISPACK) Compute Eigenvectors	260.	LS-286
COBBAK (PL/I SPC) Obtain Original Eigenvectors	259.	LSR-347
COMBAK (EISPACK) Compute Eigenvectors	260.	LS-286
COMBAK (PL/I SPC) Obtaining Original Eigenvectors	259.	LSR-347
COMEIG (PL/I SPC) Eigenvectors and Eigenvalues	259.	LSR-347
COMLR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
COMLR2 (PL/I SPC) Find All Eigenvalues and Eigenvectors	259.	LSR-347
CXIVIT (PL/I SPC) Finding Selected Eigenvectors	259.	LSR-347
DIRANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
DIRBAK (PL/I SPC) Eigenvectors of Original Matrix	259.	LSR-347
EBBCKF (IMSL) Eigenanalysis	147.	LS-287
EHBCKF (IMSL) Eigenanalysis	147.	LS-287
EHBCKH (IMSL) Eigenanalysis	147.	LS-287
EHOBKS (IMSL) Eigenanalysis	147.	LS-287
EIGBS (IMSL) Eigenanalysis of Real Symmetric Band Matrix	147.	LS-287
EIGCC (IMSL) Eigenanalysis	147.	LS-287
EIGCH (IMSL) Eigenanalysis	147.	LS-287
EIGEN (PL/I SPC) Solve Eigenproblem of Square Matrix	259.	LSR-347
EIGENRS-Comp. of Eigenvalues and Eigenvectors of Matrices	225.	LS-113
EIGRF (IMSL) Eigenanalysis	147.	LS-287
EIGRS (IMSL) Eigenanalysis	147.	LS-287
EIGZC (IMSL) Complex Generalized Problem	147.	LS-287
EIGZF (IMSL) Real Generalized Problem	147.	LS-287
EIGZS (IMSL) Eigenanalysis	147.	LS-287
EISPAC (EISPACK) Eigenproblem Solver	260.	LS-286
ELMBAK (EISPACK) Compute Eigenvectors	260.	LS-286
ELRH2C (IMSL) Eigenanalysis	147.	LS-287
ELZHC (IMSL) Complex Generalized Problem	147.	LS-287
ELZVC (IMSL) Complex Generalized Problem	147.	LS-287
EQRH3F (IMSL) Eigenanalysis	147.	LS-287
EQRT2S (IMSL) Eigenanalysis	147.	LS-287
EQZQF (IMSL) Real Generalized Problem	147.	LS-287

EQZTF (IMSL) Real Generalized Problem	147.	LS-287
EQZVF (IMSL) Real Generalized Problem	147.	LS-287
HQR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
HQR2 (PL/I SPC) Eigenvalues and Eigenvectors	259.	LSR-347
HTRIBK (EISPACK) Compute Eigenvectors	260.	LS-286
IMTQL2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
IMTQL2 (PL/I SPC) Compute Eigenvalues	259.	LSR-347
INVIT (EISPACK) Compute Eigenvectors	260.	LS-286
INVIT (PL/I SPC) Eigenvectors	259.	LSR-347
JACOBI (PL/I SPC) Compute Eigenvalues and Eigenvectors	259.	LSR-347
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
ORTANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
ORTBAK (EISPACK) Compute Eigenvectors	260.	LS-286
ORTBAK (PL/I SPC) Eigenvectors of Original Matrix	259.	LSR-347
QZVAL (EISPACK) Generalized Eigenvalues of Real System	260.	LS-286
QZVEC (EISPACK) Generalized Eigenvectors of Real System	260.	LS-286
REBAK (EISPACK) Backtransform Generalized Eigensystem	260.	LS-286
REBAKA (PL/I SPC) Compute Eigenvectors of Original Problem	259.	LSR-347
REBAKB (EISPACK) Backtransform Generalized Eigensystem	260.	LS-286
REBAKB (PL/I SPC) Compute Eigenvectors of Original Problem	259.	LSR-347
SYMRAY (PL/I SPC) Compute Eigenvectors	259.	LSR-347
TINVIT (EISPACK) Compute Eigenvectors	260.	LS-286
TQL2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
TQL2 (PL/I SPC) Computes Eigenvalues and Eigenvectors	259.	LSR-347
TRBAK1 (EISPACK) Compute Eigenvectors	260.	LS-286
TRBAK1 (PL/I SPC) Compute Eigenvectors of Original Matrix	259.	LSR-347
TRBAK3 (EISPACK) Backtransform for Symmetric Tridiagonal	260.	LS-286
TRBAK3 (PL/I SPC) Compute Eigenvectors of Original Matrix	259.	LSR-347
TSTURM (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
UNSRAY (PL/I SPC) Compute Eigenvectors of Matrix	259.	LSR-347
EIGRF (IMSL) Eigenanalysis	147.	LS-287
EIGRS (IMSL) Eigenanalysis	147.	LS-287
EIGZC (IMSL) Complex Eigenanalysis	147.	LS-287
EIGZF (IMSL) Real Eigenanalysis	147.	LS-287
EIGZS (IMSL) Eigenanalysis	147.	LS-287
EISPAC (EISPACK) Eigenproblem Solver	260.	LS-286
EISPACK - An Eigensystem Subroutine Package	260.	LS-286
ELAPSED TIME		
RUNTIME - Run Timing Subroutines	272.	LS-014
TIME - Real Time Clock Read Subroutine	269.	LS-078
ELASPLOT - Plot for Structures and Solids Analysis	202.	LS-168
ELAS75 - Structures and Solids Analysis	202.	LS-168
ELECTROCHEMISTRY		
NERNST (JCP) Cell Potential as a Function of pH	209.	LIB-ECS-50
ELECTRONIC CIRCUIT ANALYSIS		
SPICE - Program for Electronic Circuit Analysis	069.	LS-376
ELECTRONIC MAIL		
MAIL Command (CMS) Send and Receive Electronic Mail	130.	GI-092
MAIL Command (TSO) Send and Receive Electronic Mail	068.	LSR-352
MAILBOOK Command (CMS) Manage Electronic Mail Messages	130.	GI-092
RECEIVE (TSO) Receive Transmitted Files	068.	LSR-352
TRANSMIT (TSO) Transmit Files	068.	LSR-352
Using Electronic Mail	124.	GIR-089
ELLIPTIC INTEGRAL		
MMDELE (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMDELK (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMLIND (IMSL) Incomplete Elliptic Integral of Second Kind	147.	LS-287
MMLINF (IMSL) Incomplete Elliptic Integral of First Kind	147.	LS-287
MMLINJ (IMSL) Incomplete Elliptic Integral of Third Kind	147.	LS-287
ELMBAK (EISPACK) Compute Eigenvectors	260.	LS-286
ELMHES (EISPACK) Similarity Transformation	260.	LS-286
ELRH1C (IMSL) Eigenanalysis	147.	LS-287
ELRH2C (IMSL) Eigenanalysis	147.	LS-287
ELTRAN (EISPACK) Matrix of Hessenberg Transformations	260.	LS-286
ELZHC (IMSL) Complex Eigenanalysis	147.	LS-287
ELZVC (IMSL) Complex Eigenanalysis	147.	LS-287
EMORY Game - Business Management Laboratory Simulation	154.	LS-333

ENCRYPTION		
CRYPT - Subroutine for Encrypting and Decrypting Data	085.	LS-138
ENERGY		
SETUPS I - American Series - Political Science	303.	LIB-ECS-59
ENERGY - Non-political Environment Simulation	304.	LIB-ECS-61
ENGINEERING		
BRIDGE (ICES/360) Bridge Engineering Problems	201.	LS-044
DODOTRANS (ICES/360) Transportation Analysis	201.	LS-044
ECAP - Electronic Circuit Analysis Program	203.	LS-028
ELAS75 - Structures and Solids Analysis	202.	LS-168
ICES/360 - Integrated Civil Engineering System	201.	LS-044
LEASE (ICES/360) Stability Analysis of Slope	201.	LS-044
MSC NASTRAN	129.	LS-385
OPTECH (ICES/360) Mathematical Optimization	201.	LS-044
PROJECT (ICES/360) Scheduling Projects	201.	LS-044
ROADS (ICES/360) Highway Location Problems	201.	LS-044
SEPOL (ICES/360) Calculation of Stresses and Strains	201.	LS-044
SPICE - Program for Electronic Circuit Analysis	069.	LS-376
STRUDL (ICES/360) Structural Engineering Problems	201.	LS-044
TABLE (ICES/360) Handling Files of Tabular Information	201.	LS-044
TRANSET (ICES/360) Transportaion and Network Analysis	201.	LS-044
ENTER and EXIT Macro-instructions	099.	LS-067
ENTROPY (JCP) Calculate Entropy of Molecule	209.	LIB-ECS-50
EOQ (Harris-Maggard) Inventory Ordering Model	216.	LIB-ECS-39
EQRH3F (IMSL) Eigenanalysis	147.	LS-287
EQRT1S (IMSL) Eigenanalysis	147.	LS-287
EQRT2S (IMSL) Eigenanalysis	147.	LS-287
EQRT3S (IMSL) Eigenanalysis	147.	LS-287
EQUIL (JCP) Calculate Equilibrium Constant	209.	LIB-ECS-50
EQUILIBRIUM		
ELAS75 - Structures and Solids Analysis	202.	LS-168
EQUILIBRIUM CONSTANT		
EQUIL (JCP) Calculate Equilibrium Constant	209.	LIB-ECS-50
EQZQF (IMSL) Real Eigenanalysis	147.	LS-287
EQZTF (IMSL) Real Eigenanalysis	147.	LS-287
EQZVF (IMSL) Real Eigenanalysis	147.	LS-287
ERASE (WYLBUR) Scratch a WYLBUR Qwik File	287.	LSR-360
ERASE Command (CMS) Delete CMS Files	130.	Note 12
ERLST - For Data Sequencing Errors	088.	LS-186
ERROR FUNCTION		
MERFCI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MERFI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MERRCZ (IMSL) Complemented Error Function, Complex Arg.	147.	LS-287
SAS - Statistial Analysis System	138.	LS-118
ESP - Econometric Software Package	222.	LSR-178
EUCLIDEAN ALGORITHM		
GCD,GC - APL Greatest Common Divisor Functions	247.	Note 10
Executive Game	332.	LS-324
Evaluating Your Word Processing Needs	261.	Note 2
EVENT HISTORY ANALYSIS		
RATE - Est. of Stochastic Models of Change in Cat. Vars.	160.	LS-389
EXEC Command (TSO) Execute Command Procedures	068.	LSR-352
EXEC Command (CMS) Execute EXEC Program in CMS	130.	Note 12
EXECIO Command (CMS) Do I/O from an EXEC	130.	Note 12
EXECOS Command (CMS) Reset OS and VSAM Environments	130.	Note 12
EXECUTE (SPSS-X) Factor Analysis	137.	LS-102
EXECUTE (WYLBUR) Execute a File of Commands	287.	LSR-360
EXIT		
ENTER and EXIT Macro-instructions	099.	LS-067

EXPLODE (SAS) - Oversize Printing of Text	138.	LS-118
EXPLORATORY FACTOR ANALYSIS		
EFAP - Exploratory Factor Analysis	127.	LS-384
EXPON - Triple Exponential Smoothing	186.	LIB-ECS-14
EXPONENTIAL INTEGRAL		
MMDEI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMDEN (IMSL) Exponential Integrals of Integer Order	147.	LS-287
EXPONENTIAL SMOOTHING		
EXPON - Triple Exponential Smoothing	186.	LIB-ECS-14
EXTERNAL Command (CMS) Simulate External Interrupt	130.	Note 12
EZPLOT - Printer Plotting Subroutine	113.	LIB-ECS-36
F DISTRIBUTION		
CFTDIS (TSL) Chi-Square,F, and t Distribution	146.	Note 3
MDFD (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDFDRE (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDFI (IMSL) Math. and Stat. Special Functions	147.	LS-287
FACTOR (SAS) Factor Analysis	138.	LS-118
FACTOR (TSL) Analysis for Complete Factorial Design	146.	Note 3
FACTOR ANALYSIS		
BMDP4M (BMDP) Factor Analysis	323.	LS-308
DATA-TEXT - Data Analysis Package	143.	LS-167
EXECUTE (SPSS-X) Factor Analysis	137.	LS-102
FACTOR (SAS) Factor Analysis	138.	LS-118
OFPRI (IMSL) Observation Structure	147.	LS-287
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
FACTOR SCORES		
BMDP4M (BMDP) Factor Analysis	323.	LS-308
SCORE (SAS) - Factor Scores	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
FASTCLUS (SAS) Disjoint Clustering of Large Data Sets	138.	LS-118
FATS - Fast Analysis of Tape Surfaces	317.	LS-312
FCHART - Simulation in Design of Solar Heated Homes	163.	LS-337
FETCH Command (WYLBUR) Review Output of Batch Job	287.	LSR-360
FFTCC (IMSL) Forecast.;Econometrics;Timeseries;Transforms	147.	LS-287
FFTRC (IMSL) Forecast.;Econometrics;Timeseries;Transforms	147.	LS-287
FFTSC (IMSL) Forecast.;Econometrics;Timeseries;Transforms	147.	LS-287
FFT2C (IMSL) Forecast.;Econometrics;Timeseries;Transforms	147.	LS-287
FFT3D (IMSL) Fast Fourier Trans, Complex 1,2,3 Dim. Array	147.	LS-287
FIFT - Fortran Editing	016.	LS-064
FIGI (EISPACK) Similarity Transformation	260.	LS-286
FIGI2 (EISPACK) Similarity Transformation	260.	LS-286
FILE HANDLING - SEE ALSO DATA SET AND FILE MAINTENANCE		
ALLOCATE Command (TSO) Establish File Name	068.	LSR-352
CARDDISK - Store Card Deck on Disk	005.	Note 9
ERASE (WYLBUR) Scratch a WYLBUR Qwik File	287.	LSR-360
IDENTIFY Command (WYLBUR) Designate a WYLBUR Qwik File	287.	LSR-360
JCL and Data Management for SAS and SPSS Users	032.	GIR-082
MAILBOOK Command (CMS) Manage Electronic Mail Messages	130.	GI-092
REFERENCE Command (WYLBUR) Swap Qwik Files	287.	LSR-360
SAS - Statistical Analysis System	138.	LS-118
XEDIT Command (CMS) Create and Edit CMS Files	130.	Note 12
FILE MANAGEMENT		
ARRU - ASAP Redefine Record Utility	281.	LS-299
ASAP - File Management and Retrieval System	080.	LS-136
MARK IV - File Management System	312.	LS-317
QUIKJOB III - File Maintenance and Report Generator	276.	LS-294
FILE SECURITY		
ASAP - File Management and Retrieval System	080.	LS-136
CRYPT - Sub for Encrypting and Decrypting Data	085.	LS-138
QUIKJOB III - File Maintenance and Report Generator	276.	LS-294
TUCC SECURITY FEATURES	288.	GI-066

FILE TRANSFER		
Access to Remote Computers via the INTERNET	176.	GI-097
DOWNLOAD Command (TSO) Transmit Data to a Terminal	068.	LSR-352
KERMIT - Mainframe-Microcomputer File Transfer	134.	LS-386
KERMIT Command (CMS) Transfer Files to, from Other Systems	130.	GI-092
MAIL Command (CMS) Send and Receive Electronic Mail	130.	GI-092
MAIL Command (TSO) Send and Receive Electronic Mail	068.	LSR-352
PCFTP - File Transfer for the IBM PC	041.	LS-372
RECEIVE (TSO) Receive Transmitted Files	068.	LSR-352
SENDFILE Command (CMS) Send Files or Notes	130.	Note 12
TRANSMIT (TSO) Transmit Files	068.	LSR-352
TUCFTP Command (TSO) Invoke File Transfer Program	068.	LSR-352
UPLOAD Command (TSO) Receive Data from a Terminal	068.	LSR-352
Using Electronic Mail	124.	GIR-089
XMITSAS - SAS Data Set Transmission System	177.	LS-390
FILEDEF Command (CMS) Simulate JCL DD Statements	130.	Note 12
FILELIST Command (CMS) List File Information	130.	Note 12
FILEORG (PL/I System Sub) Obtain DCB Information	279.	LS-297
FILIST Command (TSO)List, List Attributes, Search Data Set	068.	LSR-352
FINANCE AND ACCOUNTING		
ACME (LERNER) Reinvestment Rates	212.	LIB-ECS-47
ALLIANCE (LERNER) Establishing a Credit Department	212.	LIB-ECS-47
AMERICAN (LERNER) Multiple Reinvestment Rates	212.	LIB-ECS-47
BRANDA (LERNER) Planning a Merger	212.	LIB-ECS-47
BRANDB (LERNER) Financial Instruments in Merger	212.	LIB-ECS-47
COMPUTAB (SAS/ETS) Row-and-column Financial Reporting	263.	LS-118
CONNOLLY (LERNER) Corporate Goals and Investment Methods	212.	LIB-ECS-47
DONNELLY (LERNER) Corporate Profits and Cash	212.	LIB-ECS-47
DYNAMAT (LERNER) Price/Earnings Ratios	212.	LIB-ECS-47
FINANSIM - Financial Management Simulation	157.	LS-335
FRANKLIN (LERNER) Depreciation Policies	212.	LIB-ECS-47
HARDENA (LERNER) EOQ Formulas	212.	LIB-ECS-47
HARDENB (LERNER) Minimizing Cash Investment in Inventory	212.	LIB-ECS-47
HOLDINGS (LERNER) Risk Adjustment Methods	212.	LIB-ECS-47
HOLLOWAY (LERNER) Cash Constraints	212.	LIB-ECS-47
LERNER - Finance Simulation Cases	212.	LIB-ECS-47
MACII - Macroeconomic Policy Game	228.	LIB-ECS-48
MELROSEA (LERNER) Estimating the Cost of Capital	212.	LIB-ECS-47
MELROSEB (LERNER) Application of Valuation Formula	212.	LIB-ECS-47
MONARCH (LERNER) Lock Box Site Selection	212.	LIB-ECS-47
MORTGAGE (SAS/ETS) Amortization Schedules	263.	LS-118
MORTON (LERNER) Methods for Comparing Lease Costs	212.	LIB-ECS-47
ORIENTAL (LERNER) Generate a Firm's Cash Flow	212.	LIB-ECS-47
PANDA (LERNER) Cash Management of Firm	212.	LIB-ECS-47
PILLS - Computer-Augmented Accounting Instruction	211.	LIB-ECS-33
PIZAZ Game - Starting a Small Business	162.	LS-336
RANDALL (LERNER) Price for Outgoing Business	212.	LIB-ECS-47
RATS - Regression Analysis of Time Series	061.	LS-375
SAS/ETS - Econometrics and Time Series Library	263.	LS-118
SUPERMKT (LERNER) Forecasting Inventory Requirements	212.	LIB-ECS-47
TEMPOMATIC IV - A Management Simulation	314.	LS-323
TRUST (LERNER) Stocks/Bonds Portfolio Proportions	212.	LIB-ECS-47
FINANCIAL DATA		
World Bank Tables From World Bank	095.	GI-088
FINANSIM - Financial Management Simulation	157.	LS-335
FINIS Command (CMS) Close Files on a CMS Disk	130.	Note 12
FINITE BOX PROBLEM		
BOX (JCP) Particle in Finite Box Problem	209.	LIB-ECS-50
FINITE ELEMENT ANALYSIS		
ELAS75 - Structures and Solids Analysis	202.	LS-168
MSC NASTRAN	129.	LS-385
STRUDL (ICES/360) Structural Engineering Problems	201.	LS-044
FISHER Z-TRANSFORMATIONS		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
FISHER'S KAPPA		
SPECTRA (SAS) - Spectral Analysis	138.	LS-118

FISHER'S TEST		
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
NHEXT (IMSL) Nonparametric Statistics	147.	LS-287
FIX2TSL (TSL) Translate Card-Image Data Sets to TSL Data Set	146.	Note 3
FLINV (IMSL) Inverse Laplace Transform of Complex Function	147.	LS-287
FLOATING POINT		
VXADD (IMSL) Extended Precision Analysis	147.	LS-287
VXMUL (IMSL) Extended Precision Arithmetic	147.	LS-287
VXSTO (IMSL) Extended Precision Arithmetic	147.	LS-287
FLOWCHARTING		
AUTOFLOW - For Printer Flowcharts of Input Programs	132.	LS-201
FMSLIB - Fast Matrix Solution Library for the FPS-164	089.	GIR-086
FONTS		
GFONT (SAS/GRAPH) Build and Display Software Fonts	264.	LS-118
FORD-FULKERSON ALGORITHM		
NETFLOW (APL STATPACK2) Ford-Fulkerson Algorithm	141.	LS-114
FORECASTING		
EXPON - Triple Exponential Smoothing	186.	LIB-ECS-14
FORECAST (SAS/ETS) Easy Univariate Forecasts	263.	LS-118
FUTURE (Harris-Maggard) Statistical Forecasting Model	216.	LIB-ECS-39
OROA (Berry-Whybark) Finish Production Forecasts	217.	LIB-ECS-40
SUPERMKT (LERNER) Forecasting Inventory Requirements	212.	LIB-ECS-47
FORMAC - Formula Manipulation	058.	LS-061
FORMAT (SAS) - Defining Formats to Print Value Labels	138.	LS-118
FORMAT (SAS/ETS) Picture Formats	263.	LS-118
FORMAT - A Text Processing Program	098.	LSR-033
FORMAT Command (CMS) Format a CMS Disk	130.	Note 12
FORMPLOT - A Forms Design Program	338.	LSR-327
FORMS (SAS) Label Program	138.	LS-118
FORMS DESIGN		
FORMPLOT - A Forms Design Program	338.	LSR-327
FORTPL1 - Fortran to PL/I Language Conversion	133.	LS-063
FORTRAN		
APFTN64 - FORTRAN for the FPS-164	089.	GIR-086
How to Run Jobs on the FPS-164	089.	GIR-086
Running WATFIV Programs Under TSO (Tutorial)	325.	GIR-070
VS FORTRAN - IBM FORTRAN IV and FORTRAN 77	059.	LS-362
WATFIV Command (TSO) Invoke WATFIV Processor	068.	LSR-352
FORTRAN REFERENCE NUMBERS		
OBJERR - Changing Fortran Reference Numbers	012.	LS-072
UNIT567 - Change FORTRAN Reference Numbers	249.	GI-081
FORTRAN Scientific Subroutine Package	151.	LS-116
FOURIER ANALYSIS		
FFTCC (IMSL) Forecast.;Econometrics;Timeseries;Transforms	147.	LS-287
FFTRC (IMSL) Forecast.;Econometrics;Timeseries;Transforms	147.	LS-287
FFTSC (IMSL) Forecast.;Econometrics;Timeseries;Transforms	147.	LS-287
FFT2C (IMSL) Forecast.;Econometrics;Timeseries;Transforms	147.	LS-287
FFT3D (IMSL) Fast Fourier Trans, Complex 1,2,3 Dim. Array	147.	LS-287
FTFPS (IMSL) Power and Cross-Spectra	147.	LS-287
FPS-164		
APFTN64 - FORTRAN for the FPS-164	089.	GIR-086
APMATH64 - Math Routines for the FPS-164	089.	GIR-086
How to Run Jobs on the FPS-164	089.	GIR-086
FR (APL STATPACK2) One-Way Frequency Table	141.	LS-114
FRANKLIN (LERNER) Depreciation Policies	212.	LIB-ECS-47
FRED - Multipurpose Merge-Copy-Editing Program	027.	LS-176
FREE - Free Format Numeric Input to Fortran Programs	009.	LS-283
FREE Command (TSO) Release Previously Allocated Data Sets	068.	LSR-352
FREEALL Command (TSO) Free Data Sets and Attribute Lists	068.	LSR-352

FREEC Command (TSO) Release Previously Allocated Data Sets	068.	LSR-352
FREQ (APL STATPACK2) Normal Fit	141.	LS-114
FREQ (SAS) Frequency and Crosstabulation Tables	138.	LS-118
FREQD (TSL) Tutorial on Descriptive Statistics, Grouped Da	146.	Note 3
FREQUENCIES		
BDCOU1 (IMSL) Basic Statistics	147.	LS-287
BDCOU2 (IMSL) Basic Statistics	147.	LS-287
BDTAB (IMSL) Frequencies of Multivariate Data	147.	LS-287
BDTWT (IMSL) Two-way Frequency Table	147.	LS-287
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
BMDP2D (BMDP) Detailed Data Descrip., Including Freqs.	323.	LS-308
BMDP2F (BMDP) Two-Way Frequency Tables--Empty Cells	323.	LS-308
BMDP3F (BMDP) Multiway Frequency Tables--Log Linear Model	323.	LS-308
BMDP4D (BMDP) Single Column Freqs.-Numeric and Nonnumeric	323.	LS-308
BMDP5D (BMDP) Histograms and Univariate Plots	323.	LS-308
DATA-TEXT - Data Analysis Package	143.	LS-167
FR (APL STATPACK2) One-Way Frequency Table	141.	LS-114
FREQ (APL STATPACK2) Normal Fit	141.	LS-114
FREQ (SAS) Frequency and Crosstabulation Tables	138.	LS-118
FREQUENCIES (SPSS-X) Frequency Tables	137.	LS-102
FR2 (APL STATPACK2) Two-Way Frequency Table	141.	LS-114
HIST (APL STATPACK2) Frequency Histogram	141.	LS-114
MAKTAB (TSL) Crosstabulation	146.	Note 3
NMKSF (IMSL) Nonparametric Statistics	147.	LS-287
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TSAR - Tele-Storage and Retrieval System	142.	LS-076
FREQUENCIES (SPSS-X) Frequency Tables	137.	LS-102
FRIEDMAN TEST		
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
FRIEDMAN'S ANALYSIS OF VARIANCE		
RELIABILITY (SPSS-X) Item Analysis	137.	LS-102
FRIEDMAN'S TEST		
BMDP3S (BMDP) Nonparametric Statistics	323.	LS-308
NAFRE (IMSL) Friedman's Test for Randomized Block Designs	147.	LS-287
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
FRSTLW - First Law of Thermodynamics	207.	LIB-ECS-58
FR2 (APL STATPACK2) Two-Way Frequency Table	141.	LS-114
FSBROWSE (SAS/FSP) Display Observations in a SAS Data Set	158.	LS-118
FSCALC (SAS/FSP) Create Spreadsheet	158.	LS-118
FSCON (SAS/FSP) Convert Data Sets into SAS Catalog Entries	158.	LS-118
FSEDIT (SAS/FSP) Edit SAS Data Set	158.	LS-118
FSLETTER (SAS/FSP) Edit and Send Letters and Forms	158.	LS-118
FSLIST (SAS/FSP) Display Listing Files	158.	LS-118
FSPRINT (SAS/FSP) Display SAS Data Set	158.	LS-118
FTARPS (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTAUTO (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTBATCH (TSL) Translate Card-Image Data to TSL Data	146.	Note 3
FTCAST (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTCP (IMSL) Non-seasonal Arima Stochastic Model Analysis	147.	LS-287
FTCROS (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTCRXY (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTFPS (IMSL) Forecast.;Econometrics;Timeseries;Transforms	147.	LS-287
FTFPS (IMSL) Power and Cross-Spectra	147.	LS-287
FTFREQ (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTGEN (IMSL) Forecast.;Econometrics;Timeseries;Transforms	147.	LS-287
FTKALM (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTMA (IMSL) Estimate Moving Aver. Params. in Arima Model	147.	LS-287
FTML (IMSL) Autoregressive, Moving Aver. Params in Arima	147.	LS-287
FTMQS (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTP		
Access to Remote Computers via the INTERNET	176.	GI-097
FTRDIF (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTTR (IMSL) Parameters for Univariate Transfer Model	147.	LS-287
FTWEIN (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTWENM (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTWENX (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287

FULDATE (PL/I Sub) Return Date	306.	LS-305
FULL SCREEN OPERATION		
FULLOFF Command (TSO) Turn off FULLSCREEN Mode	068.	LSR-352
FULLON Command (TSO) Turn on FULLSCREEN Mode	068.	LSR-352
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
SAS/FSP - SAS Full Screen Product	158.	LS-118
Using Full Screen Devices: 3270 Terminals and IBM 7171	169.	GI-095
FUNCAT (SAS) Categorical Analysis	138.	LS-118
FUNCTIONS AND OPERATIONS		
CJAPOSN - Z,A,NMAX,D,J,ERR Bessel Function	242.	LS-280
GCD,GC - APL Greatest Common Divisor Functions	247.	Note 10
IANEGN - X,A,NMAX,D,I,ERR Bessel Function	244.	LS-280
IAPOSN - X,A,NMAX,D,I,ERR Bessel Function	243.	LS-280
JANEGN - X,A,NMAX,D,J,ERR Bessel Function	246.	LS-280
JAPOSN - X,A,NMAX,D,J,ERR Bessel Function	245.	LS-280
RANDOM SAMPLER - General Sampling Simulator	256.	LIB-ECS-49
SFCFIT - Smooth Bivariate Interpolation	248.	LS-242
SHRU - Random Number Generator Subroutine	255.	LS-090
VARGEN - Random Distribution Generator Subroutine	257.	LS-110
FUTURE (Harris-Maggard) Statistical Forecasting Model	216.	LIB-ECS-39
GAME (Berry-Whybark) Policy Testing	217.	LIB-ECS-40
GAMMA DISTRIBUTION		
MDGAM (IMSL) Math. and Stat. Special Functions	147.	LS-287
GAMMA FUNCTION		
MMPSI (IMSL) Logarithmic Derivative of Gamma Function	147.	LS-287
SAS - Statistical Analysis System	138.	LS-118
GANTT (SAS/OR) Print Gantt Charts	159.	LS-118
GAUSS-JORDAN METHOD		
GJDEF1 (PL/I SPC) In-Place Matrix Inversion	259.	LSR-347
GJDEF2 (PL/I SPC) In-Place Inversion of Matrix	259.	LSR-347
INV (APL STATPACK2) Matrix Inversion	141.	LS-114
JINV (APL STATPACK2) Matrix Inversion	141.	LS-114
GAUSS-NEWTON		
BMDPAR (BMDP) Derivative-Free Nonlinear Regression	323.	LS-308
BMDP3R (BMDP) Nonlinear Regression	323.	LS-308
GAUSS-SEIDEL METHOD		
SEIDEL (JCP) Solve System of Linear Equatons	209.	LIB-ECS-50
GCD,GC - APL Greatest Common Divisor Functions	247.	Note 10
GCFLRV (AMP) Argonne Minimization Subroutine	322.	LS-310
GCHART (SAS/GRAPH) Bar, Star, and Block Charts	264.	LS-118
GCONTOUR (SAS/GRAPH) Produces Contour Plots	264.	LS-118
GEAR ALGORITHM		
DGEAR (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
DIFSUB - Solve Initial Value Problem	033.	LS-235
STIFDIF - Solve Initial Value Problem	034.	LS-236
GENCAT - Categorical Data Program	347.	LS-366
GENDAT (TSL) Generation of Random Samples	146.	Note 3
GENERAL INFORMATION		
GI(R) - General Information Series Documents	273.	GI-
HELP Command (TSO) Info on Command Function and Syntax	068.	LSR-352
TUCC Documentation and Program Library Organization	342.	GI-072
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
GENERAL LINEAR MODEL		
GLM (SAS) General Linear Models	138.	LS-118
MULMOD (TSL) Multivariate Regression	146.	Note 3
GENERALIZED EIGENVALUE PROBLEM		
RSGBA (EISPACK) Solve Generalized Symmetric Eigenproblem	260.	LS-286

GENERALIZED EIGENVALUE PROBLEMS		
QZHES (EISPACK) Reduce to Upper Hessenburg Form	260.	LS-286
QZIT (EISPACK) Reduce to Triangular Form	260.	LS-286
QZVAL (EISPACK) Generalized Eigenvalues of Real System	260.	LS-286
QZVEC (EISPACK) Generalized Eigenvectors of Real System	260.	LS-286
REBAK (EISPACK) Backtransform Generalized Eigensystem	260.	LS-286
REBAKB (EISPACK) Backtransform Generalized Eigensystem	260.	LS-286
REDUC (EISPACK) Reduce Generalized Symmetric Eigenproblem	260.	LS-286
REDUC2 (EISPACK) Reduce Generalized Symmetric Eigenproblem	260.	LS-286
RGG (EISPACK) Solve Generalized Real Eigenproblem	260.	LS-286
RSG (EISPACK) Solve Generalized Symmetric Eigenproblem	260.	LS-286
RSGAB (EISPACK) Solve Generalized Symmetric Eigenproblem	260.	LS-286
GENMOD Command (CMS) Generate a MODULE File	130.	Note 12
GENPT - General Printer Plotting	114.	LIB-ECS-36
GENPT - Printer Plotting Routine	170.	LS-340
GETLST - Free Format Numeric Input to Fortran Programs	008.	LS-283
GFIT (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GFONT (SAS/GRAPH) Build and Display Software Fonts	264.	LS-118
GGAMR (IMSL) Pseudo-Random Deviates	147.	LS-287
GGBN (IMSL) Binomial Random Deviate Generator	147.	LS-287
GGBNR (IMSL) Pseudo-Random Deviates	147.	LS-287
GGBTR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGCAY (IMSL) Pseudo-Random Deviates	147.	LS-287
GGCHS (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGCOR (IMSL) Generate Random Orth. and Corr. Matrices	147.	LS-287
GGDA(IMSL) Discrete Random Deviate Generator, Alias Method	147.	LS-287
GGDT(IMSL) Discrete Random Deviate Generator, Table Lookup	147.	LS-287
GGEOT (IMSL) Pseudo-Random Deviates	147.	LS-287
GGEXN (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGEXT (IMSL) Ran. Dev. Gen. for Mix of Two Exponentials	147.	LS-287
GGHPR (IMSL) Pseudo-Random Deviates	147.	LS-287
GGMTN (IMSL) Multinomial Random Deviate Generator	147.	LS-287
GGNLG (IMSL) Pseudo-Random Deviates	147.	LS-287
GGNML (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGNO (IMSL) Order Statistics from Normal Distribution	147.	LS-287
GGNPM (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGNPP (IMSL) Nonhomogeneous Poisson Process Generator	147.	LS-287
GGNQF (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGNSM (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGPER (IMSL) Random Permutation of Integers 1 to K	147.	LS-287
GGPON (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGPOS (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGSPH (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGSRS (IMSL) Simple Random Sample from Finite Population	147.	LS-287
GGSTA (IMSL) Stable Distribution Random Deviate Generator	147.	LS-287
GGTAB (IMSL) Generate Random Contingency Table	147.	LS-287
GGTRA (IMSL) Pseudo-Random Deviates	147.	LS-287
GGUBFS (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGUBS (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGUBT (IMSL) Uniform Pseudo-Random Number Generator	147.	LS-287
GGUD (IMSL) Discrete Uniform Random Number Generator	147.	LS-287
GGUO (IMSL) Order Statistics from Uniform Distribution	147.	LS-287
GGUW (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGVCR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGVMS (IMSL) Von Mises Random Deviate Generator	147.	LS-287
GGWIB (IMSL) Pseudo-Random Deviates	147.	LS-287
GJDEF1 (PL/I SPC) In-Place Matrix Inversion	259.	LSR-347
GJDEF2 (PL/I SPC) In-Place Inversion of Matrix	259.	LSR-347
GLM (SAS) General Linear Models	138.	LS-118
GLOBAL Command (CMS) Specifies Search Libraries	130.	Note 12
GLOBALV Command (CMS) Set Variables	130.	Note 12
GMAP (SAS/GRAPH) Produces Choropleth and Surface Maps	264.	LS-118
GOODENOUGH TECHNIQUE		
GUTTMAN (SAS) Guttman Scale	138.	LS-118
GOODMAN AND KRUSKAL'S GAMMA		
ANATAB (TSL) Analysis of Contingency Tables	146.	Note 3
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
GOODMAN AND KRUSKAL'S TAU		
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
DATA-TEXT - Data Analysis Package	143.	LS-167

GOODNESS OF FIT		
GFIT (IMSL) Gener. and Testing Random Numbers	147.	LS-287
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
GOPTIONS (SAS/GRAPH) Lists SAS/GRAPH System Options	264.	LS-118
GOVERNMENT		
SIMSTATE - Simulation Model of a State Economy	226.	LIB-ECS-45
GPLOT (SAS/GRAPH) Graphs One Variable Against Another	264.	LS-118
GPRINT (SAS/GRAPH) SAS Titles and Footnotes	264.	LS-118
GPROJECT (SAS/GRAPH) Applies Map Projections	264.	LS-118
GPSS V - General Purpose Simulation System	193.	LS-080
GQBEGS (AMP) Argonne Minimization Program	322.	LS-310
GRAECO-LATIN SQUARES		
MANOVA (SPSS-X) General Linear Models	137.	LS-102
GRAFF - A Plotting Subroutine Package	107.	LSR-048
GRAM-SCHMIDT ALGORITHM		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
GRAPHER - Plotting Program	116.	LSR-048
GRAPHICS (see also PLOTTING)		
AGII - Tektronix Advanced Graphing II	120.	LS-289
BARCHART (SPSS-X) Bar Charts	137.	LS-102
DISSPLA	126.	LS-381
EASYGRAF - Tektronix Easy Graphing Package	205.	LS-342
GCHART (SAS/GRAPH) Bar, Star, and Block Charts	264.	LS-118
GCONTOUR (SAS/GRAPH) Produces Contour Plots	264.	LS-118
GMAP (SAS/GRAPH) Produces Choropleth and Surface Maps	264.	LS-118
GPLOT (SAS/GRAPH) Graphs One Variable Against Another	264.	LS-118
GPROJECT (SAS/GRAPH) Applies Map Projections	264.	LS-118
GREPLAY (SAS/GRAPH) Reproduces SAS/GRAPH Pictures	264.	LS-118
GSETUP (SAS/GRAPH) Set Up Plotting Device	264.	LS-118
G3D (SAS/GRAPH) Plots Three-Dimensional Data	264.	LS-118
IGP - Tektronix Interactive Graphing Package	200.	LS-342
IGP and EASYGRAF - Tektronix Interactive Graphics Packages	171.	LS-342
LINECHART (SPSS-X) Line Charts	137.	LS-102
PIECHART (SPSS-X) Pie Charts	137.	LS-102
PLOT (SPSS-X) Two-dimensional Line Printer Plots	137.	LS-102
PLOTTER - Plotter Routines	117.	LSR-048
Plotter Utility Routines for the Tektronix 4662 Plotter	121.	LS-289
SAS/GRAPH - Interactive Computer Graphics System	264.	LS-118
SCATTERGRAM (SPSS-X) Bivariate Scatter Plots	137.	LS-102
SURFACE2 - A Program for Contour Maps and Transect Plots	221.	LS-355
TCS - Tektronix Terminal Control System	119.	LS-289
Tektronix PLOT 10 Interactive Graphics Library	153.	LS-388
Tektronix TCS, AGII, and PLOTTER Utilities	191.	LS-289
TELL-A-GRAF	156.	LS-387
USBOX (IMSL) Print a Box Plot (K Samples)	147.	LS-287
USSLF (IMSL) Print a Stem and Leaf Display	147.	LS-287
GREATEST COMMON DIVISOR		
GCD,GC - APL Greatest Common Divisor Functions	247.	Note 10
GREDUCE (SAS/GRAPH) Creates Subsets of Map Data Sets	264.	LS-118
GREPLAY (SAS/GRAPH) Reproduces SAS/GRAPH Pictures	264.	LS-118
GROWTH CHART MODELING		
SQC (Harris-Maggard) Statistical Growth Chart Modeling	216.	LIB-ECS-39
GSETUP (SAS/GRAPH) Set Up Plotting Device	264.	LS-118
GSLIDE (SAS/GRAPH) Displays Lines of Text	264.	LS-118
GTAB Command (TSO) Establish Tab Character, Tab Settings	068.	LSR-352
GTCN (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTDDU (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTD2T (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTE TELENET		
EDUNET and TELENET	343.	GI-073

GTMNT (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTNOR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPBC (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPKP (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPL (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPOK (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPST (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTRN (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTRTN (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTTRT (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTTT (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GUTTMAN (SAS) Guttman Scale	138.	LS-118
GUTTMAN SCALE		
GUTTMAN (SAS) Guttman Scale	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
G3D (SAS/GRAPH) Plots Three-Dimensional Data	264.	LS-118
G3GRID (SAS/GRAPH) Bivariate Interpolation for PROC G3D	264.	LS-118
HA (JCP) Simulate Weak Acid/Strong Base Titration	209.	LIB-ECS-50
HARDENA (LERNER) EOQ Formulas	212.	LIB-ECS-47
HARDENB (LERNER) Minimizing Cash Investment in Inventory	212.	LIB-ECS-47
Harris-Maggard Package - Management Analysis	216.	LIB-ECS-39
HARVEY (SAS) Least Squares and Maximum Likelihood	138.	LS-118
HELP (PL/I Sub) Display a Specified HELP Block	306.	LS-305
HELP Command (TSO) Info on Command Function and Syntax	068.	LSR-352
HELP Command (CMS) Display Information on VM Commands	130.	Note 12
HELPRINT - List HELP for TSO Commands	043.	LS-227
HERMITE		
IQHSCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
HERMITIAN MATRIX		
CH (EISPACK) Solve Eigensystem of Complex Hermitian Matrix	260.	LS-286
HTRIBK (EISPACK) Compute Eigenvectors	260.	LS-286
HTRIDI (EISPACK) Similarity Transformation	260.	LS-286
HTRID3 (EISPACK) Reduce to Symmetric Tridiagonal Form	260.	LS-286
HESSENBERG FORM		
COMBAK (PL/I SPC) Obtaining Original Eigenvectors	259.	LSR-347
COMHES (PL/I SPC) Reduce Complex Matrix	259.	LSR-347
COMLR (PL/I SPC) Finding All Eigenvalues	259.	LSR-347
COMLR2 (PL/I SPC) Find All Eigenvalues and Eigenvectors	259.	LSR-347
CXIVIT (PL/I SPC) Finding Selected Eigenvectors	259.	LSR-347
EHESSC (IMSL) Eigenanalysis	147.	LS-287
EHESSF (IMSL) Eigenanalysis	147.	LS-287
EQZQF (IMSL) Eigenanalysis	147.	LS-287
HESSENBERG MATRIX		
CINVIT (EISPACK) Compute Eigenvectors	260.	LS-286
COMHES (EISPACK) Similarity Transformation	260.	LS-286
COMLR (EISPACK) Compute Eigenvalues	260.	LS-286
COMLR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
COMQR (EISPACK) Compute Eigenvalues	260.	LS-286
COMQR2 (EISPACK) Compute Eigenvalues and Eigenvectors	260.	LS-286
CORTH (EISPACK) Reduce to Upper Hessenberg Form	260.	LS-286
DIRANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
DIRBAK (PL/I SPC) Eigenvectors of Original Matrix	259.	LSR-347
DIRHES (PL/I SPC) Reduces Submatrix	259.	LSR-347
ELMBAK (EISPACK) Compute Eigenvectors	260.	LS-286
ELMHES (EISPACK) Similarity Transformation	260.	LS-286
ELTRAN (EISPACK) Matrix of Hessenberg Transformations	260.	LS-286
EQZQF (IMSL) Reduce Hessenberg Matrix	147.	LS-287
EQZTF (IMSL) Reduce Hessenbeg - QZ Iteration	147.	LS-287
HQR (EISPACK) Compute Eigenvalues	260.	LS-286
HQR (PL/I SPC) Computes Eigenvalues	259.	LSR-347
HQR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
HQR2 (PL/I SPC) Eigenvalues and Eigenvectors	259.	LSR-347
INVIT (EISPACK) Compute Eigenvectors	260.	LS-286
INVIT (PL/I SPC) Eigenvectors	259.	LSR-347
ORTANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
ORTBAK (EISPACK) Compute Eigenvectors	260.	LS-286
ORTBAK (PL/I SPC) Eigenvectors of Original Matrix	259.	LSR-347
ORTHES (EISPACK) Similarity Transformations	260.	LS-286

ORTHES (PL/I SPC) Reduces Submatrix	259.	LSR-347
ORTRAN (EISPACK) Matrix of Hessenberg	260.	LS-286
OZHES (EISPACK) Reduce to Upper Hessenburg Form	260.	LS-286
OZIT (EISPACK) Reduce to Triangular Form	260.	LS-286
HEX (PL/I Sub) Return Hexadecimal Value	306.	LS-305
HEX LISTING		
COPY - Utility Program	018.	LS-103
DISKHEXL - Hexadecimal Listing of Disk Data Set	005.	Note 9
FILIST Command (TSO)List, List Attributes, Search Data Set	068.	LSR-352
TAPEHEXL - Hexadecimal Listing of Tape Data Set	005.	Note 9
HFWD - FORTRAN Halfword Array Manipulation Subroutine	094.	LS-008
HI Command (CMS) Halt Interpretation	130.	Note 12
HIERARCHICAL DATA		
CLUSTER (SPSS-X) Hierarchical Clustering Procedure	137.	LS-102
VARCLUS (SAS) Disjoint or Hierarchical Clustering	138.	LS-118
HIERARCHICAL DESIGN		
NESTED (SAS) Analysis of Variance for Nested Design	138.	LS-118
HIGHWAY LOCATION		
ROADS (ICES/360) Highway Location Problems	201.	LS-044
HILOGLINEAR (SPSS-X) Hierarchical Log-linear Models	137.	LS-102
HIST (APL STATPACK2) Frequency Histogram	141.	LS-114
HISTOGRAM		
BMDP2D (BMDP) Detailed Data Descrip., Including Freqs.	323.	LS-308
BMDP5D (BMDP) Histograms and Univariate Plots	323.	LS-308
BMDP7D (BMDP) Descrip. of Groups (Strata) with Histograms	323.	LS-308
CHART (SAS) Produce Bar Charts, Block Charts, Pies, Stars	138.	LS-118
HIST (APL STATPACK2) Frequency Histogram	141.	LS-114
USHHST (IMSL) Print a Horizontal Histogram	147.	LS-287
USHST (IMSL) Print a Vertical Histogram	147.	LS-287
USHST2 (IMSL) Print Vertical Histogram, Two Freqs./Bar	147.	LS-287
HISTOGRAMS		
DISSPLA	126.	LS-381
HMO (JCP) Solves Huckel Molecular Orbital Problems	209.	LIB-ECS-50
HO Command (CMS) Halt Tracing	130.	Note 12
HOLD		
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
HOLDINGS (LERNER) Risk Adjustment Methods	212.	LIB-ECS-47
HOLLOWAY (LERNER) Cash Constraints	212.	LIB-ECS-47
HOMEGENEITY		
INDSAMP (TSL) Test Homogeneity of Independent Samples	146.	Note 3
HOMOGENEOUS EQUATIONS		
MINFIT (PL/I SPC) Singular Values and Solve Equations	259.	LSR-347
HORN (Berry-Whybark) Warehouse Location Simulation	217.	LIB-ECS-40
HOTELLING-LAWLEY TRACE		
ANOVA (SAS) - Analysis of Variance for Balanced Designs	138.	LS-118
GLM (SAS) General Linear Models	138.	LS-118
MULMOD (TSL) Multivariate Regression	146.	Note 3
HOTELLING'S T-SQUARED		
BMDP3D (BMDP) Comparison of Two Groups with t Tests	323.	LS-308
RELIABILITY (SPSS-X) Item Analysis	137.	LS-102
HOUSEHOLDER REDUCTION		
MINFIT (PL/I SPC) Singular Values and Solve Equations	259.	LSR-347
HOUSEHOLDER TRANSFORMATIONS		
LEAION (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
VHSH2C (IMSL) Vector Matrix Arithmetic	147.	LS-287
VHSH2R (IMSL) Vector Matrix Arithmetic	147.	LS-287

VHSH3R (IMSL) Vector Matrix Arithmetic	147.	LS-287
VHS12 (IMSL) Vector, Matrix Arithmetic	147.	LS-287
How to Run Jobs on the FPS-164	089.	GIR-086
HQR (EISPACK) Compute Eigenvalues	260.	LS-286
HQR (PL/I SPC) Computes Eigenvalues	259.	LSR-347
HQR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
HQR2 (PL/I SPC) Eigenvalues and Eigenvectors	259.	LSR-347
HSM		
DFHSM - Hierarchical Storage Manager	106.	GI-090
HT Command (CMS) Halt Terminal Display	130.	Note 12
HTRIBK (EISPACK) Compute Eigenvectors	260.	LS-286
HTRIB3 (EISPACK) Backtransform Eigenvectors	260.	LS-286
HTRIB3 (EISPACK) Backtransform Eigenvectors	260.	LS-286
HTRIDI (EISPACK) Similarity Transformation	260.	LS-286
HTRID3 (EISPACK) Reduce to Symmetric Tridiagonal Form	260.	LS-286
HUNGARIAN METHOD		
ASSIGN (APL STATPACK2) Solve Minimizing Assignment Problem	141.	LS-114
HURWICZ		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
HUTC (Berry-Whybark) Variable Costs of Shipping	217.	LIB-ECS-40
HX Command (CMS) Halt Execution	130.	Note 12
HYPERGEOMETRIC DISTRIBUTION		
MDHYP (IMSL) Math. and Stat. Special Functions	147.	LS-287
HYPOTHESIS TESTING		
BEMNON (IMSL) Basic Statistics	147.	LS-287
BEMSON (IMSL) Basic Statistics	147.	LS-287
BENSON (IMSL) Basic Statistics	147.	LS-287
BEPAT (IMSL) Basic Statistics	147.	LS-287
BEPET (IMSL) Basic Statistics	147.	LS-287
LOGLINEAR (SPSS-X) Loglinear Analysis	137.	LS-102
TTEST (SAS) - T-Tests	138.	LS-118
IAND - FORTRAN Boolean Subroutine	094.	LS-008
IANEGN - Modified Bessel Function	244.	LS-280
IAPOSN - Modified Bessel Function	243.	LS-280
IASHFT - FORTRAN Arithmetic Shift Function	094.	LS-008
IBCCCU (IMSL) Bicubic Spline Coefficient Calculator	147.	LS-287
IBCEVL (IMSL) Bicubic Spline Evaluator	147.	LS-287
IBCIEU (IMSL) Bi-cubic Spline Interpolation	147.	LS-287
IBIT - FORTRAN Bit Array Manipulation Function	094.	LS-008
IBM OS/VS RPG II	035.	LS-368
IBM PASCAL/VS	001.	LS-364
IBM PC		
PCFTP - File Transfer for the IBM PC	041.	LS-372
IBM 7171		
Using Full Screen Devices: 3270 Terminals and IBM 7171	169.	GI-095
IBOOL - FORTRAN Bit Array Manipulation Function	094.	LS-008
IBYTE - FORTRAN Numerical Byte Array Manipulation	094.	LS-008
ICES/360 - Integrated Civil Engineering System	201.	LS-044
ICHAR - FORTRAN Non-numeric Byte Array Manipulation Func	094.	LS-008
ICSCCU (IMSL) Cubic Spline Interpolation	147.	LS-287
ICSEVU (IMSL) Cubic Spline Evaluator	147.	LS-287
ICSFKU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSFKV (IMSL) - Nucleus of ICSFKU	147.	LS-287
ICSICU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSMOU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSPLN (IMSL) Cubic Spline Inter., Periodic End Conditions	147.	LS-287
ICSSCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSSCV (IMSL) Cubic Spline Smoother	147.	LS-287
ICSVKU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
IDENTIFY Command (WYLBUR) Designate a WYLBUR Qwik File	287.	LSR-360
IDENTIFY Command (CMS) Display User Information	130.	Note 12
IDGAME - Qualitative Organic Identification Game	208.	LS-319
IEBCOMPR - IBM Comparison Utility	020.	Note 6

IEBGENER - IBM Multiple Purpose Utility	024.	Note 6
IEBPTPCH - IBM List and Punch Utility	021.	Note 6
IEBUPDTE - IBM Update Utility	019.	Note 6
IEHLIST - IBM Directory and Pointer Listing Utility	025.	Note 6
IEHMOVE - IBM Data Set Move Utility	023.	Note 6
IFLSQ (IMSL) Least Squares Approx., User-Supplied Function	147.	LS-287
IFTSO - Batch or TSO Determination	006.	LS-152
IGL		
Tektronix PLOT 10 Interactive Graphics Library	153.	LS-388
IGP - Tektronix Interactive Graphing Package	200.	LS-342
IGP and EASYGRAF - Tektronix Interactive Graphics Packages	171.	LS-342
IHFWD - FORTRAN Halfword Array Manipulation Function	094.	LS-008
ILL-CONDITIONED MATRIX		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
ILSHFT - FORTRAN Logical Shift Function	094.	LS-008
IMMCMD Command (CMS) Establish or Cancel Immediate Command	130.	Note 12
IMPLICIT QL METHOD		
IMTQL1 (EISPACK) Compute Eigenvalues	260.	LS-286
IMTQL2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
IMSL		
How to Run Jobs on the FPS-164	089.	GIR-086
IMSL - International Mathematical and Stat. Library	147.	LS-287
IMTQLV (EISPACK) Eigenvalues of Symmetric Tridiagonal	260.	LS-286
IMTQL1 (EISPACK) Compute Eigenvalues	260.	LS-286
IMTQL1 (PL/I SPC) Compute Eigenvalues	259.	LSR-347
IMTQL2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
IMTQL2 (PL/I SPC) Compute Eigenvalues	259.	LSR-347
INCLUDANCE TEST		
NHINC (IMSL) Nonparametric Statistics	147.	LS-287
INCLUDE Command (CMS) Bring TEXT Files into Storage	130.	Note 12
INDEX - Index to Computer Programs at TUCC	273.	GIR-000
INDEXING		
ADDIX - Add Index Commands to a SCRIPT File	049.	Note 2
KWIC360 - Keyword in Context Indexing Program	131.	LS-122
INDICATE Command (CMS) Display Use of System Resources	130.	Note 12
INDSAMP (TSL) Test Homogeneity of Independent Samples	146.	Note 3
INFORMATION RETRIEVAL		
ASAP - File Management and Retrieval System	080.	LS-136
MARK IV - File Management System	312.	LS-317
QUIKJOB III - File Maintenance and Report Generator	276.	LS-294
SIR/DBMS - Scientific Information Retrieval	039.	LS-370
SIR/HOST - FORTRAN Interface to SIR/DBMS	040.	LS-371
INFOTRON Port Selector Service Codes	184.	GI-076
INITIAL VALUE PROBLEM		
DGEAR (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
DIFSUB - Solve Initial Value Problem	033.	LS-235
DREBS (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
DSS/2 - Differential Systems Simulator	078.	LS-378
STIFDIF - Solve Initial Value Problem	034.	LS-236
INNER PRODUCT		
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
VIPRFF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VIPRSS (IMSL) Vector Matrix Arithmetic	147.	LS-287
INOT - FORTRAN Boolean Subroutine	094.	LS-008
INPUT-OUTPUT CONTROL		
EXECIO Command (CMS) Do I/O from an EXEC	130.	Note 12
FREE - Free Format Numeric Input to Fortran Programs	009.	LS-283
GETLST - Free Format Numeric Input to Fortran Programs	008.	LS-283

LABELS - A Formatted-Output Program	101.	LS-142
MARVEL - MPS Data Preparation and Output Analysis	199.	LSR-022
OBJERR - Changing Fortran Reference Numbers	012.	LS-072
READCOMM - MPS, Fortran Communication Interface	198.	LSR-022
TSO (Time Sharing Option) Reference Manual	068.	LSR-352
INPUT-OUTPUT ERRORS		
COPY - Utility Program	018.	LS-103
INSERT Command (WYLBUR) Insert Lines of Text	287.	LSR-360
INSTRUCTIONAL		
ASSIST - Student-Oriented Assembler	052.	LS-128
Beginning WYLBUR	266.	Note 2
Communicating with MVS	050.	Note 2
DEMO2 (TSL) Illustrate Law of Large Numbers and C.L.T.	146.	Note 3
DONMAR II - Media Simulation Game	315.	LS-314
Evaluating Your Word Processing Needs	261.	Note 2
FREQD (TSL) Tutorial on Descriptive Stat., Grouped Data	146.	Note 3
HELP Command (CMS) Display Information on VM Commands	130.	Note 12
HELP Command (TSO) Info on Command Function and Syntax	068.	LSR-352
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
Introduction to MVS TSO (A Tutorial)	096.	GIR-083
Introduction to SCRIPT (Tutorial)	140.	GIR-075
Introduction to Tape and Disk Usage	326.	GIR-071
Introduction to Using CMS at TUCC	011.	GIR-098
JCL and Data Management for SAS and SPSS Users	032.	GIR-082
LEARNTSO - Interactive Instruction in TSO	275.	LS-293
SHOWAPL - Demonstration of APL Language and APL System	239.	LS-133
WYLBUR User Guide	287.	LSR-353
INSYS (Harris-Maggard) Inventory System Model	216.	LIB-ECS-39
INTEGRATION		
DBCQDU (IMSL) Bicubic Spline Quadrature	147.	LS-287
DBLIN (IMSL) Numeric Integration of Function of Two Vars.	147.	LS-287
DCADRE (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
DCSQDU (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
DMLIN (IMSL) Numeric Integration of Func. of Several Vars.	147.	LS-287
ICSICU (IMSL) Diff. Eq.; Quadrature; Differ.	147.	LS-287
QDINT - Numerical Quadrature Integration	148.	LIB-ECS-13
REDUCE - An Algebraic Programming System	125.	LS-380
INTERACTION		
AID - Automatic Interaction Detector	172.	LSR-163
INTERACTIVE GRAPHICS		
AGII - Tektronix Advanced Graphing II	120.	LS-289
EASYGRAF - Tektronix Easy Graphing Package	205.	LS-342
IGP - Tektronix Interactive Graphing Package	200.	LS-342
IGP and EASYGRAF - Tektronix Interactive Graphics Packages	171.	LS-342
Plotter Utility Routines for the Tektronix 4662 Plotter	121.	LS-289
SAS/GRAPH - Interactive Computer Graphics System	264.	LS-118
TCS - Tektronix Terminal Control System	119.	LS-289
Tektronix TCS, AGII, and PLOTTER Utilities	191.	LS-289
INTERACTIVE SERVICES		
Conversational Monitor System (CMS)	130.	Note 12
IBM APL2	070.	LS-121
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
Introduction to MVS TSO (A Tutorial)	096.	GIR-083
Introduction to Using CMS at TUCC	011.	GIR-098
Telephone Numbers for Terminal Services and System Status	273.	GI-057
TSO (Time Sharing Option) Reference Manual	068.	LSR-352
WYLBUR Reference Manual	287.	LSR-360
WYLBUR User Guide	287.	LSR-353
INTERACTIVE UTILITIES		
CONCAT Command (TSO) Concatenate Files	068.	LSR-352
CVU - Data Set Maintenance Utility Program	030.	LS-284
DECONCAT Command (TSO) Deconcatenate TSO Files	068.	LSR-352
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
TPUT - TSO PL/I Access to Special Characters	046.	LS-220

INTERNET		
Access to Remote Computers via the INTERNET	176.	GI-097
INTERPOLATION		
IBCEVU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
IBCICU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
IBCIEU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSCCU (IMSL) Cubic Spline Interpolation	147.	LS-287
ICSEVU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSFKU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSICU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSPLN (IMSL) Cubic Spline Inter., Periodic End Conditions	147.	LS-287
ICSSCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSVKU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
IQHSCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
IRATCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ITPLBV - Smooth Bivariate Interpolation	248.	LS-242
SFCFIT - Smooth Bivariate Interpolation	248.	LS-242
INTERPRETIVE SYSTEMS		
ASSIST - Student-Oriented Assembler	052.	LS-128
FORMAC - Formula Manipulation	058.	LS-061
IBM APL2	070.	LS-121
SNOBOL4 String Manipulation Language	065.	LS-051
SPITBOL - Fast SNOBOL4 Compiler	066.	Note 8
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
Introduction to SCRIPT (Tutorial)	140.	GIR-075
Introduction to Tape and Disk Usage	326.	GIR-071
Introduction to MVS TSO (A Tutorial)	096.	GIR-083
Introduction to Using CMS at TUCC	011.	GIR-098
INV (APL STATPACK2) Matrix Inversion	141.	LS-114
INVENTORY		
INSYS (Harris-Maggard) Inventory System Model	216.	LIB-ECS-39
INVSYM (Harris-Maggard) Inventory System Model, II	216.	LIB-ECS-39
INVENTORY CONTROL		
Harris-Maggard Package - Management Analysis	216.	LIB-ECS-39
INVENTORY ORDERING POLICY MANUAL		
EOQ (Harris-Maggard) Inventory Ordering Model	216.	LIB-ECS-39
INVENTORY SYSTEM MODEL		
INSYS (Harris-Maggard) Inventory System Model	216.	LIB-ECS-39
INVSYM (Harris-Maggard) Inventory System Model, II	216.	LIB-ECS-39
INVERSE FUNCTIONS		
MMLINC (IMSL) Inverse Circular, Log., Hyperbolic Functions	147.	LS-287
INVERSE ITERATION		
CINVIT (EISPACK) Compute Eigenvectors	260.	LS-286
CXIVIT (PL/I SPC) Finding Selected Eigenvectors	259.	LSR-347
INVIT (EISPACK) Compute Eigenvectors	260.	LS-286
SYMRAY (PL/I SPC) Compute Eigenvectors	259.	LSR-347
TINVIT (EISPACK) Compute Eigenvectors	260.	LS-286
TSTURM (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
UNSRAY (PL/I SPC) Compute Eigenvectors of Matrix	259.	LSR-347
INVERSE LAPLACE TRANSFORM		
FLINV (IMSL) Inverse Laplace Transform of Complex Function	147.	LS-287
INVIT (EISPACK) Compute Eigenvectors	260.	LS-286
INVIT (PL/I SPC) Eigenvectors	259.	LSR-347
INVRSOLV - Matrix Inversion and Solution of Linear Equats.	219.	LS-107
INVSYM (Harris-Maggard) Inventory System Model, II	216.	LIB-ECS-39
IOF Command (TSO) Cancel, Route Batch Job, View Output	068.	LSR-352
IOR - FORTRAN Boolean Subroutine	094.	LS-008
IOWA EDUCATIONAL MATERIAL DATA BASES		
SPSS Data Bases for Use in Survey Analysis	302.	LIB-ECS-37
IPL Command (CMS) Simulate IPL for a Virtual Machine	130.	Note 12
IQHSCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
IQHSCV (IMSL) Smooth Surface Fitting, Irreg. Dist. Data	147.	LS-287

IRATCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ISPF/PDF		
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
ITEM ANALYSIS		
TESTAN - Item Analysis Program	190.	LS-302
ITERATIVE IMPROVEMENT		
ACCLVE (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
ACCRSE (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
LEAION (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
LUREFF (IMSL) Linear Algebraic Equations	147.	LS-287
LUREFP (IMSL) Linear Algebraic Equations	147.	LS-287
LUREPB (IMSL) Linear Algebraic Equations	147.	LS-287
ORTHO1 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
ORTIN1 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
ORTIN2 (PL/I SPC) Solve System of Equations	259.	LSR-347
ITPLBV - Smooth Bivariate Interpolation	248.	LS-242
IXOR - FORTRAN Boolean Subroutine	094.	LS-008
JACOBI (JCP) Diagonalize Hermitian Matrices	209.	LIB-ECS-50
JACOBI (PL/I SPC) Compute Eigenvalues and Eigenvectors	259.	LSR-347
JACOBI'S METHOD		
EIGEN (PL/I SPC) Solve Eigenproblem of Square Matrix	259.	LSR-347
JACOBI (PL/I SPC) Compute Eigenvalues and Eigenvectors	259.	LSR-347
JANCKHURE'S TEST		
NMKTS (IMSL) Nonparametric Statistics	147.	LS-287
JANEGN - J Bessel Function	246.	LS-280
JAPOSN - J Bessel Function	245.	LS-280
JCL		
Communicating with MVS	050.	Note 2
JCL and Data Management for SAS and SPSS Users	032.	GIR-082
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
JCL and Data Management for SAS and SPSS Users	032.	GIR-082
JFCBIN (PL/I System Sub) Read JFCB	279.	LS-297
JFCBOUT (PL/I System Sub) Write JFCB to JOBQ	279.	LS-297
JINV (APL STATPACK2) Matrix Inversion	141.	LS-114
JOB CONTROL		
CANCEL Command (TSO) Delete Batch Job	068.	LSR-352
CANCEL Command (WYLBUR) Halt an Executing Job	287.	LSR-360
Communicating with MVS	050.	Note 2
DEST Command (TSO) Specify Default Destination ID	068.	LSR-352
FETCH Command (WYLBUR) Review Output of Batch Job	287.	LSR-360
IOF Command (TSO) Cancel, Route Batch Job, View Output	068.	LSR-352
JCL and Data Management for SAS and SPSS Users	032.	GIR-082
LOCATE Command (WYLBUR) Display Status of Batch Job	287.	LSR-360
MVS - A New Operating System for TUCC's Batch/RJE Service	178.	GI-080
PRINT Command (WYLBUR) Print a Batch Job	287.	LSR-360
PUNCH Command (WYLBUR) Punch a Batch Job	287.	LSR-360
PURGE Command (WYLBUR) Delete a Batch Job	287.	LSR-360
RUN Command (WYLBUR) Submit a Batch Job	287.	LSR-360
SUBMIT Command (TSO) Submit Jobs for Batch Execution	068.	LSR-352
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
WYLBUR User Guide	287.	LSR-353
JOHNSON Chemistry Package (JCP)	209.	LIB-ECS-50
JORESKOGS METHOD		
EFAP - Exploratory Factor Analysis	127.	LS-384
LISREL V - Analysis of Linear Structural Relationships	164.	LS-367
JULDATE - Calendar to Julian Date Conversion Function	271.	LS-091
JULIAN DATE		
CALDATE - Julian to Calendar Date Conversion Function	270.	LS-091
JULDATE - Calendar to Julian Date Conversion Function	271.	LS-091
JUSTIFY Command (WYLBUR) Justify Lines of Text	287.	LSR-360

K-CLASS ESTIMATORS		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
KALMAN FILTERING		
FTKALM (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
KELVIN FUNCTION		
MMKELD (IMSL) Derivatives of the Kelvin Function	147.	LS-287
MMKEL0 (IMSL) Kelvin Function	147.	LS-287
MMKEL1 (IMSL) Kelvin Function	147.	LS-287
KENDALL CORRELATION		
ANATAB (TSL) Analysis of Contingency Tables	146.	Note 3
BMDP3S (BMDP) Nonparametric Statistics	323.	LS-308
CORR (SAS) - Correlation	138.	LS-118
CROSSTABS (SPSS-X) Contingency Table Analysis	137.	LS-102
DATA-TEXT - Data Analysis Package	143.	LS-167
NMKN (IMSL) Kendall's Test for Correlation	147.	LS-287
NONPAR CORR (SPSS-X) Nonparametric Correlation	137.	LS-102
TSAR - Tele-Storage and Retrieval System	142.	LS-076
KENDALL'S CONCORDANCE TEST		
BMDP3S (BMDP) Nonparametric Statistics	323.	LS-308
NMCC (IMSL) Nonparametric Statistics	147.	LS-287
KENDALL'S W		
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
KERMIT - Mainframe-Microcomputer File Transfer	134.	LS-386
KERMIT Command (CMS) Transfer Files to, from Other Systems	130.	GI-092
KERNEL METHOD		
NDKER (IMSL) Nonparametric Density Estimation, Kernel	147.	LS-287
KEYNESIAN ECONOMIC MODEL		
MACII - Macroeconomic Policy Game	228.	LIB-ECS-48
KEYWORD IN CONTEXT		
KWIC360 - Keyword in Context Indexing Program	131.	LS-122
KINETICS		
ABCANL (JCP) Solve Kinetics System	209.	LIB-ECS-50
KOLGOMOROV-SMIRNOV TEST		
TSAR - Tele-Storage and Retrieval System	142.	LS-076
KOLMOGOROV-SMIRNOV TEST		
MDSMR (IMSL) Math. and Stat. Special Functions	147.	LS-287
NKS1 (IMSL) Nonparametric Statistics	147.	LS-287
NKS2 (IMSL) Nonparametric Statistics	147.	LS-287
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
KRONECKER PRODUCT		
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
KRUSKAL-WALLIS TEST		
ANATAB (TSL) Analysis of Contingency Tables	146.	Note 3
BMDP3S (BMDP) Nonparametric Statistics	323.	LS-308
NAK1 (IMSL) Nonparametric Statistics	147.	LS-287
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
NPAR1WAY (SAS) Analysis of Variance on Ranks	138.	LS-118
KSLTEST (SAS) Normality Testing	138.	LS-118
KUDER - RICHARDSON RELIABILITY COEFFICIENT		
TESTAN - Item Analysis Program	190.	LS-302
KWIC360 - Keyword in Context Indexing Program	131.	LS-122
LA PLACE		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56

LABELDEF Command (CMS) Describe Tape Label Information	130.	Note 12
LABELS - A Formatted-Output Program	101.	LS-142
LAGS AND LEADS		
SAS - Statistical Analysis System	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
LAMBDA		
CROSSTABS (SPSS-X) Contingency Table Analysis	137.	LS-102
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
LAND USE		
CLUG - Community Land Use Game	231.	LIB-ECS-51
LANGUAGE		
APFTN64 - FORTRAN for the FPS-164	089.	GIR-086
ASSEMBLER U - VS ASSEMBLER with Base Register Usage Map	278.	LS-359
COBOL (ANSI) Compiler	063.	Note 4
FORMAC - Formula Manipulation	058.	LS-061
IBM APL2	070.	LS-121
IBM PASCAL/VS	001.	LS-364
OS/VS COBOL Compiler	055.	LS-351
PL/C - Cornell PL/I Compiler	056.	LSR-095
PL/I OPTIMIZER - Optimizing Compiler	053.	LSR-150
PLC Command (TSO) Invoke Interactive PL/C Compiler	068.	LSR-352
PLI Command (TSO) Invoke PL/I Optimizing Compiler	068.	LSR-352
RPG - Report Program Generator Compiler	067.	Note 1
SIMSCRIPT II - Discrete Simulation Modeling Language	196.	LS-135
SLAM - Simulation Language for Alternative Modeling	180.	LS-345
SNOBOL4 String Manipulation Language	065.	LS-051
Stony Brook Student Pascal Compiler	220.	LS-346
TL/I - Timesharing Language - One	282.	LSR-300
VS ASSEMBLER - IBM Assembly Language	050.	Note 11
VS FORTRAN - IBM FORTRAN IV and FORTRAN 77	059.	LS-362
WATBOL - Waterloo ANSI COBOL Compiler	064.	LS-130
Waterloo C Compiler on VM/CMS	010.	LS-391
Waterloo Student Pascal Compiler	235.	LS-350
WATFIV - Waterloo Fortran Compiler	060.	LSR-101
LANGUAGE CONVERSION		
COBPL1 - COBOL to PL/I Language Conversion Program	136.	LS-137
FIFT - Fortran Editing	016.	LS-064
FORTPL1 - Fortran to PL/I Language Conversion	133.	LS-063
LAW OF LARGE NUMBERS		
DEMO2 (TSL) Illustrate Law of Large Numbers and C.L.T.	146.	Note 3
LEAION (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
LEARNING (ALSO SEE INSTRUCTION)		
Beginning WYLBUR	266.	Note 2
Communicating with MVS	050.	Note 2
Evaluating Your Word Processing Needs	261.	Note 2
Introduction to SCRIPT (Tutorial)	140.	GIR-075
LEARNTSO - Interactive Instruction in TSO	275.	LS-293
LEARNTSO - Interactive Instruction in TSO	275.	LS-293
LEASE (ICES/360) Stability Analysis of Slope	201.	LS-044
LEAST SIGNIFICANT DIFFERENCE		
ANOVA (SAS) Analysis of Variance	138.	LS-118
LEAST SQUARES		
EFAP - Exploratory Factor Analysis	127.	LS-384
LEAST SQUARES ESTIMATES		
ANOVA (SAS) - Analysis of Variance for Balanced Designs	138.	LS-118
GLM (SAS) General Linear Models	138.	LS-118
HARVEY (SAS) Least Squares and Maximum Likelihood	138.	LS-118
IFLSQ (IMSL) Least Squares Approx., User-Supplied Function	147.	LS-287
LSQFIT - Least Square Fit on Linear Data	182.	LS-071
LSQPLOT - Least Squares Plot	110.	LS-086
NLIN - Least Squares Estimation of Nonlinear Parameters	183.	LSR-089
RATS - Regression Analysis of Time Series	061.	LS-375
REG (SAS) Fit Least-Sq. Estimates to Lin. Reg. Models	138.	LS-118

TSP - Time Series Processor	311.	LSR-315
TTLS - Two and Three Stage Least Squares	168.	LSR-140
LEAST SQUARES SOLUTION		
CQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol	327.	LS-358
DQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol	327.	LS-358
GLM (SAS) General Linear Models	138.	LS-118
LEAION (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
LINPACK - Subroutine Library for Linear Algebra	327.	LS-358
LISREL V - Analysis of Linear Structural Relationships	164.	LS-367
LLBQF (IMSL) Linear Least Squares Solution, High Accuracy	147.	LS-287
LLSQF (IMSL) Linear Algebraic Equations	147.	LS-287
ORTIN1 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
ORTIN2 (PL/I SPC) Solve System of Equations	259.	LSR-347
SQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol	327.	LS-358
ZQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol	327.	LS-358
LEQIF (IMSL) Linear Equation Solution	147.	LS-287
LEQOF (IMSL) Linear Equation Solution	147.	LS-287
LEQT1B (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT1C (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT1F (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT1P (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT2B (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT2F (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT2P (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ1PB (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ1S (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ2C (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ2PB (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ2S (IMSL) Linear Algebraic Equations	147.	LS-287
LERNER - Finance Simulation Cases	212.	LIB-ECS-47
LETTERING		
BIGL - Subroutine to Create Blocked Characters	267.	LS-285
LGINF (IMSL) Generalized Inverse of Real Matrix	147.	LS-287
LIBRARIES - TUCC Program/Subroutine Resident Libraries	273.	GI-072
LIBRARY BACKUP		
SUPERLIB - General Library Maintenance Utility Program	026.	LSR-127
LIBRARY LISTING		
LIBRARIES - TUCC Program/Subroutine Resident Libraries	273.	GI-072
LIBRARY MAINTENANCE		
EDITOR - Program for the Maintenance of Sequential Files	082.	LS-126
IEBUPDTE - Update Utility	019.	Note 6
SLIBDUMP - Dumping PDSs	031.	LS-282
SUPERLIB - General Library Maintenance Utility Program	026.	LSR-127
LIFE TABLES		
BMDP1L (BMDP) Life Tables and Survival Functions	323.	LS-308
CLIFE (IMSL) Life Table Analysis	147.	LS-287
LIFTA (TSL) Compute Life Tables	146.	Note 3
SURVIVAL (SPSS-X) Life Tables and Survival Functions	137.	LS-102
LIFTA (TSL) Compute Life Tables	146.	Note 3
LINEAR (JCP) Linear Regression Analysis	209.	LIB-ECS-50
LINEAR ALGEBRA		
ACCLVE (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
ACCRSE (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
BAKVEC (EISPACK) Compute Eigenvectors	260.	LS-286
BALANC (EISPACK) Similarity Transformation	260.	LS-286
BALBAK (EISPACK) Compute Eigenvectors	260.	LS-286
BALBAK (PL/I SPC) Obtaining Original Eigenvectors	259.	LSR-347
BALNCE (PL/I SPC) Norm-Reducing Transformation	259.	LSR-347
BANDRD (PL/I SPC) Reduce Matrix to Tridiagonal Form	259.	LSR-347
BANET1 (PL/I SPC) Matrix Factorization	259.	LSR-347
BANET2 (PL/I SPC) Matrix Factorization	259.	LSR-347
BANOL1 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
BANOL2 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
BISECT (EISPACK) Compute Eigenvalues	260.	LS-286
BISECT (PL/I SPC) Calculate Selected Eigenvalues	259.	LSR-347

BQR (PL/I SPC) Compute Eigenvalues	259.	LSR-347
CBABK2 (EISPACK) Compute Eigenvectors	260.	LS-286
CBAL (EISPACK) Similarity Transformation	260.	LS-286
CCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
CCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
CCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
CCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
CG (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
CGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
CGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
CGBSL (LINPACK) Solve a Band System	327.	LS-358
CGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
CGEFA (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
CGESL (LINPACK) Solve System Given Factors of Matrix	327.	LS-358
CGTSL (LINPACK) Solve a Tridiagonal System	327.	LS-358
CHICO (LINPACK) Factor a Hermitian Matrix	327.	LS-358
CHIDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
CHIFA (LINPACK) Factor a Hermitian Matrix	327.	LS-358
CHISL (LINPACK) Solve Hermitian System	327.	LS-358
CHODET (PL/I SPC) Matrix Decomposition	259.	LSR-347
CHOET1 (PL/I SPC) Cholesky Decomposition of Matrix	259.	LSR-347
CHOET2 (PL/I SPC) Matrix Decomposition	259.	LSR-347
CHOOL1 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CHOOL2 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CHOON1 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CHOON2 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CHOSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CHPCO (LINPACK) Factor a Hermitian Matrix	327.	LS-358
CHPDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
CHPFA (LINPACK) Factor a Hermitian Matrix	327.	LS-358
CHPSL (LINPACK) Solve A Hermitian System	327.	LS-358
CINVIT (EISPACK) Compute Eigenvectors	260.	LS-286
COBBAK (PL/I SPC) Obtain Original Eigenvectors	259.	LSR-347
COMBAK (EISPACK) Compute Eigenvectors	260.	LS-286
COMBAK (PL/I SPC) Obtaining Original Eigenvectors	259.	LSR-347
COMDET (PL/I SPC) Factorization, Determinant of Matrix	259.	LSR-347
COMEIG (PL/I SPC) Eigenvectors and Eigenvalues	259.	LSR-347
COMHES (EISPACK) Similarity Transformation	260.	LS-286
COMHES (PL/I SPC) Reduce Complex Matrix	259.	LSR-347
COMLR (EISPACK) Compute Eigenvalues	260.	LS-286
COMLR (PL/I SPC) Finding All Eigenvalues	259.	LSR-347
COMLR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
COMLR2 (PL/I SPC) Find All Eigenvalues and Eigenvectors	259.	LSR-347
COMNCE (PL/I SPC) Norm-Reducing Transformation	259.	LSR-347
COMSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
CPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
CPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
CPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
CPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
CPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
CPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
CPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
CPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
CPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
CPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
CPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
CPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
CQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
CQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol	327.	LS-358
CSICO (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
CSIDI (LINPACK) Compute Deter., Inertia, Inverse Sym. Mat.	327.	LS-358
CSIFA (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
CSISL (LINPACK) Solve Symmetric System	327.	LS-358
CSPCO (LINPACK) Factor Symmetric Matrix	327.	LS-358
CSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matr.	327.	LS-358
CSPFA (LINPACK) Factor Symmetric Matrix	327.	LS-358
CSPSL (LINPACK) Solve Symmetric System	327.	LS-358
CSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
CTRCO (LINPACK) Estimate Condition of Tri. Matrix	327.	LS-358
CTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
CTRSL (LINPACK) Solve Triangular System	327.	LS-358
CXALVE (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CXIVIT (PL/I SPC) Finding Selected Eigenvectors	259.	LSR-347

DCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
DCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
DCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
DCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
DECOSE (PL/I SPC) Matrix Reduction	259.	LSR-347
DGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
DGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
DGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
DGBSL (LINPACK) Solve a Band System	327.	LS-358
DGECO (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
DGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
DGEFA (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
DGESL (LINPACK) Solve System Given Factors of Matrix	327.	LS-358
DGTSL (LINPACK) Solve a Tridiagonal System	327.	LS-358
DIFSUB - Solve Initial Value Problem	033.	LS-235
DIRANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
DIRBAK (PL/I SPC) Eigenvectors of Original Matrix	259.	LSR-347
DIRHES (PL/I SPC) Reduces Submatrix	259.	LSR-347
DPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
DPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
DPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
DPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
DPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
DPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
DPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
DPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
DPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
DPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
DPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
DPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
DPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
DQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
DQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol	327.	LS-358
DSICO (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
DSIDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
DSIFA (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
DSISL (LINPACK) Solve Symmetric System	327.	LS-358
DSPCO (LINPACK) Factor Symmetric Matrix	327.	LS-358
DSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matr.	327.	LS-358
DSPFA (LINPACK) Factor Symmetric Matrix	327.	LS-358
DSPSL (LINPACK) Solve Symmetric System	327.	LS-358
DSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
DTRCO (LINPACK) Estimate Condition of Tri. Matrix	327.	LS-358
DTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
DTRSL (LINPACK) Solve Triangular System	327.	LS-358
EIGEN (PL/I SPC) Solve Eigenproblem of Square Matrix	259.	LSR-347
EISPACK - An Eigensystem Subroutine Package	260.	LS-286
ELMBAK (EISPACK) Compute Eigenvectors	260.	LS-286
ELMHES (EISPACK) Similarity Transformation	260.	LS-286
ELTRAN (EISPACK) Matrix of Hessenberg Transformations	260.	LS-286
FIGI (EISPACK) Similarity Transformation	260.	LS-286
FIGI2 (EISPACK) Similarity Transformation	260.	LS-286
GJDEF1 (PL/I SPC) In-Place Matrix Inversion	259.	LSR-347
GJDEF2 (PL/I SPC) In-Place Inversion of Matrix	259.	LSR-347
HQR (EISPACK) Compute Eigenvalues	260.	LS-286
HQR (PL/I SPC) Computes Eigenvalues	259.	LSR-347
HQR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
HQR2 (PL/I SPC) Eigenvalues and Eigenvectors	259.	LSR-347
HTRIBK (EISPACK) Compute Eigenvectors	260.	LS-286
HTRIDI (EISPACK) Similarity Transformation	260.	LS-286
IMTQL1 (EISPACK) Compute Eigenvalues	260.	LS-286
IMTQL1 (PL/I SPC) Compute Eigenvalues	259.	LSR-347
IMTQL2 (EISPACK) Compute Eigenvalues, eigenvectors	260.	LS-286
IMTQL2 (PL/I SPC) Compute Eigenvalues	259.	LSR-347
INVIT (EISPACK) Compute Eigenvectors	260.	LS-286
INVIT (PL/I SPC) Eigenvectors	259.	LSR-347
INVRSOLV - Matrix Inversion and Solution of Linear Equats.	219.	LS-107
JACOBI (PL/I SPC) Compute Eigenvalues and Eigenvectors	259.	LSR-347
LEAION (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
LEQIF (IMSL) Linear Equation Solution	147.	LS-287
LEQOF (IMSL) Linear Equation Solution	147.	LS-287
LEQT1B (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT1C (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT1F (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT1P (IMSL) Linear Algebraic Equations	147.	LS-287

LEQT2B (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT2F (IMSL) Linear Algebraic Equations	147.	LS-287
LEQT2P (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ1PB (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ1S (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ2C (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ2PB (IMSL) Linear Algebraic Equations	147.	LS-287
LEQ2S (IMSL) Linear Algebraic Equations	147.	LS-287
LINPACK - Subroutine Library for Linear Algebra	327.	LS-358
LINV3F (IMSL) Linear Algebraic Equations	147.	LS-287
LINV3P (IMSL) Positive Definite Matrix	147.	LS-287
LLSQF (IMSL) Linear Algebraic Equations	147.	LS-287
LUELMF (IMSL) Linear Algebraic Equations	147.	LS-287
LUELMP (IMSL) Linear Algebraic Equations	147.	LS-287
LUELPB (IMSL) Linear Algebraic Equations	147.	LS-287
LUREFF (IMSL) Linear Algebraic Equations	147.	LS-287
LUREFP (IMSL) Linear Algebraic Equations	147.	LS-287
LUREPB (IMSL) Linear Algebraic Equations	147.	LS-287
McLaughlin Linear Algebra Package	155.	LS-334
MINFIT (PL/I SPC) Singular Values and Solve Equations	259.	LSR-347
ORTANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
ORTBAK (EISPACK) Compute Eigenvectors	260.	LS-286
ORTBAK (PL/I SPC) Eigenvectors of Original Matrix	259.	LSR-347
ORTHES (EISPACK) Similarity Transformations	260.	LS-286
ORTHES (PL/I SPC) Reduces Submatrix	259.	LSR-347
ORTHO1 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
ORTHO2 (PL/I SPC) Inversion of Real Matrix	259.	LSR-347
ORTIN1 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
ORTIN2 (PL/I SPC) Solve System of Equations	259.	LSR-347
ORTRAN (EISPACK) Matrix of Hessenberg	260.	LS-286
PERC - Compute Inverse after Column Perturbation	028.	LS-230
PL/I SPC - PL/I Subprocedure Collection	259.	LSR-347
RATQR (EISPACK) Compute Eigenvalues	260.	LS-286
RATQR (PL/I SPC) Compute Lowest Eigenvalues	259.	LSR-347
REBAKA (PL/I SPC) Compute Eigenvectors of Original Problem	259.	LSR-347
REBAKB (PL/I SPC) Compute Eigenvectors of Original Problem	259.	LSR-347
REDUC1 (PL/I SPC) Reduce Symmetric Eigenproblem	259.	LSR-347
REDUC2 (PL/I SPC) Reduces Symmetric Eigenproblems	259.	LSR-347
RUNGE (JCP) Solve System of Linear Equations	209.	LIB-ECS-50
SCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
SCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
SCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
SCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
SEIDEL (JCP) Solve System of Linear Equations	209.	LIB-ECS-50
SGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
SGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
SGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
SGBSL (LINPACK) Solve a Band System	327.	LS-358
SGECO (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
SGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
SGEFA (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
SGESL (LINPACK) Solve System Given Factors of Matrix	327.	LS-358
SGTSL (LINPACK) Solve a Tridiagonal System	327.	LS-358
SPARSPAK - Waterloo Sparse Linear Equations Package	072.	LS-361
SPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
SPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
SPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
SPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
SPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
SPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
SPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
SPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
SPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
SPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
SPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
SPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
SPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
SQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
SQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol	327.	LS-358
SSICO (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
SSIDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
SSIFA (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
SSISL (LINPACK) Solve Symmetric System	327.	LS-358
SSPCO (LINPACK) Factor Symmetric Matrix	327.	LS-358
SSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matr.	327.	LS-358

SSPFA (LINPACK) Factor Symmetric Matrix	327.	LS-358
SSPSL (LINPACK) Solve Symmetric System	327.	LS-358
SSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
STIFDIF - Solve Initial Value Problem	034.	LS-236
STRCO (LINPACK) Estimate Condition of Tri. Matrix	327.	LS-358
STRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
STRSL (LINPACK) Solve Triangular System	327.	LS-358
SVD (PL/I SPC) Singular Values, Decomposition of Matrix	259.	LSR-347
SYMDET (PL/I SPC) Decomposition of Matrix	259.	LSR-347
SYMION (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
SYMRAY (PL/I SPC) Compute Eigenvectors	259.	LSR-347
SYMSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
TINVIT (EISPACK) Compute Eigenvectors	260.	LS-286
TQL1 (EISPACK) Compute Eigenvalues	260.	LS-286
TQL1 (PL/I SPC) Computes Eigenvalues	259.	LSR-347
TQL2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
TQL2 (PL/I SPC) Computes Eigenvalues and Eigenvectors	259.	LSR-347
TRBAK1 (EISPACK) Compute Eigenvectors	260.	LS-286
TRBAK1 (PL/I SPC) Compute Eigenvectors of Original Matrix	259.	LSR-347
TRBAK3 (PL/I SPC) Compute Eigenvectors of Original Matrix	259.	LSR-347
TRED1 (EISPACK) Similarity Transformation	260.	LS-286
TRED1 (PL/I SPC) Reduce Matrix to Tridiagonal Form	259.	LSR-347
TRED2 (EISPACK) Similarity Transformations	260.	LS-286
TRED2 (PL/I SPC) Reduce Matrix to Tridiagonal Form	259.	LSR-347
TRED3 (PL/I SPC) Reduce Matrix to Tridiagonal Form	259.	LSR-347
TRIURM (PL/I SPC) Computes Selected Eigenvalues	259.	LSR-347
TSTURM (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
UNSDET (PL/I SPC) Factorization, Determinant of Matrix	259.	LSR-347
UNSLVE (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
UNSRAY (PL/I SPC) Compute Eigenvectors of Matrix	259.	LSR-347
UNSSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
ZCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
ZCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
ZCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
ZCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
ZGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
ZGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
ZGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
ZGBSL (LINPACK) Solve a Band System	327.	LS-358
ZGECO (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
ZGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
ZGEFA (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
ZGESL (LINPACK) Solve System Given Factors of Matrix	327.	LS-358
ZGTSL (LINPACK) Solve a Tridiagonal System	327.	LS-358
ZHICO (LINPACK) Factor a Hermitian Matrix	327.	LS-358
ZHIDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
ZHIFA (LINPACK) Factor a Hermitian Matrix	327.	LS-358
ZHISL (LINPACK) Solve Hermitian System	327.	LS-358
ZHPCO (LINPACK) Factor a Hermitian Matrix	327.	LS-358
ZHPDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
ZHPFA (LINPACK) Factor a Hermitian Matrix	327.	LS-358
ZPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
ZPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
ZPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
ZPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
ZPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
ZPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
ZPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
ZPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
ZPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
ZPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
ZPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
ZPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
ZPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
ZQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
ZQRSL (LINPACK) Compute Co. Trans., Proj., Least Sq. Sol	327.	LS-358
ZSICO (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
ZSIDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
ZSIFA (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
ZSISL (LINPACK) Solve Symmetric System	327.	LS-358
ZSPCO (LINPACK) Factor Symmetric Matrix	327.	LS-358
ZSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matr.	327.	LS-358
ZSPFA (LINPACK) Factor Symmetric Matrix	327.	LS-358
ZSPSL (LINPACK) Solve Symmetric System	327.	LS-358
ZSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358

ZTRCO (LINPACK) Estimate Condition of Tri. Matrix	327.	LS-358
ZTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
ZTRSL (LINPACK) Solve Triangular System	327.	LS-358
LINEAR PROGRAMMING		
CTRANSPORT (APL STATPACK2) Capacitated Transportation Prob	141.	LS-114
LINPR (APL STATPACK2) Conversational Linear Programming	141.	LS-114
LP (SAS/OR) Solve Linear Programs	159.	LS-118
LPSBA - A Linear Programming Code	047.	LS-348
LPSOLN (APL STATPACK2) Linear Programming	141.	LS-114
MARVEL - MPS Data Preparation and Output Analysis	199.	LSR-022
MINOS -- A Program for Linear and Nonlinear Optimization	057.	LS-363
MPS - Mathematical Programming System	197.	LSR-022
NETFLOW (APL STATPACK2) Ford-Fulkerson Algorithm	141.	LS-114
RSIM (APL STATPACK2) Linear Programming	141.	LS-114
RSIM1 (APL STATPACK2) Linear Programming	141.	LS-114
SIMPLEX (APL STATPACK2) Linear Programming	141.	LS-114
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TRANSPORT (APL STATPACK2) Tranportation Prob.	141.	LS-114
ZXMIN (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZXOLP (IMSL) Revised Simplex Method	147.	LS-287
ZXSSQ (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZX3LP (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZX4LP (IMSL) Linear Programming, Revised Simplex Method	147.	LS-287
LINECHART (SPSS-X) Line Charts	137.	LS-102
LINK Command (TSO) Invoke Linkage Editor	068.	LSR-352
LINK Command (CMS) Connect Other User's Disk to Your VM	130.	Note 12
LINPACK - Subroutine Library for Linear Algebra	327.	LS-358
LINPR (APL STATPACK2) Conversational Linear Programming	141.	LS-114
LINV1F (IMSL) Linear Algebraic Equations	147.	LS-287
LINV1P (IMSL) Linear Algebraic Equations	147.	LS-287
LINV2F (IMSL) Linear Algebraic Equations	147.	LS-287
LINV2P (IMSL) Linear Algebraic Equations	147.	LS-287
LINV3F (IMSL) Linear Algebraic Equations	147.	LS-287
LINV3P (IMSL) Linear Algebraic Equations	147.	LS-287
LIN1PB (IMSL) Linear Algebraic Equations	147.	LS-287
LIN2PB (IMSL) Linear Algebraic Equations	147.	LS-287
LISP/360 - Symbolic Data Processing	309.	LS-316
LISREL (SPSS-X) Linear Modeling	137.	LS-102
LISREL V - Analysis of Linear Structural Relationships	164.	LS-367
LIST (APL STATPACK2) List Available Programs	141.	LS-114
LIST (SPSS-X) List Cases	137.	LS-102
LIST Command (WYLBUR) List Lines of Text	287.	LSR-360
LIST PROCESSING		
LISP/360 - Symbolic Data Processing	309.	LS-316
LISTALC Command (TSO) List Data Sets Allocated to User	068.	LSR-352
LISTBC Command (TSO) List Notices and Messages	068.	LSR-352
LISTCAT Command (TSO) List Names of Cataloged Data Sets	068.	LSR-352
LISTDS Command (TSO) List Data Set Attributes	068.	LSR-352
LISTFILE Command (CMS) List CMS File Information	130.	Note 12
LISTING		
CARDPRNT - Listing of Card Deck	005.	Note 9
COPY - Utility Program	018.	LS-103
DISKHEXL - Hexadecimal Listing of Disk Data Set	005.	Note 9
DISKPRNT - Listing of Disk Data Set	005.	Note 9
FRED - Multipurpose Merge-Copy-Editing Program	027.	LS-176
IEBGENER - Multiple Purpose Utility	024.	Note 6
IEBPTPCH - List and Punch Utility	021.	Note 6
IEHLIST - Directory and Pointer Listing Utility	025.	Note 6
LIST Command (WYLBUR) List Lines of Text	287.	LSR-360
LISTSL (TSL) Print TSL Data Set	146.	Note 3
LOADLIB Command (CMS) List, Copy, or Compress CMS LOADLIB	130.	Note 12
MLIST - Print Input Data Set	102.	LS-184
PDSPICK - A Partitioned Data Set Access Utility Program	135.	LS-356
PDSPRINT - Listing of Cataloged Procedures	005.	Note 9
POINT Command (WYLBUR) List Lines of Text	287.	LSR-360
PRDEST Command (TSO) Establish Default Print Destination	068.	LSR-352
PRINT (SAS) Formatted Listing of Data	138.	LS-118
PRINT Command (TSO) Print Data Set	068.	LSR-352
SLIBDUMP - Dumping PDSs	031.	LS-282
TAPEHEXL - Hexadecimal Listing of Tape Data Set	005.	Note 9

TAPEPRNT - List Tape Data Set	005.	Note 9
TYPE Command (CMS) Display File	130.	Note 12
LISTPROF Command (TSO) List User Information	068.	LSR-352
LISTSL (TSL) Print TSL Data Set	146.	Note 3
LISTU Command (TSO) List Current TSO Users	068.	LSR-352
LKED Command (CMS) Create a CMS LOADLIB	130.	Note 12
LLBQF (IMSL) Linear Least Squares Solution, High Accuracy	147.	LS-287
LLSQF (IMSL) Linear Algebraic Equations	147.	LS-287
LMCHOL (AMP) Argonne Minimization Subroutine	322.	LS-310
LMGENV (AMP) Argonne Minimization Subroutine	322.	LS-310
LOAD Command (CMS) Bring TEXT Files into Storage	130.	Note 12
LOAD MODULE		
AMASPZAP - Load Module and Data Set Corrector	007.	Note 5
AMBLIST - Map Load Modules	017.	Note 5
CALL Command (TSO) Load and Execute Load Module	068.	LSR-352
CALLF Command (TSO) Load and Execute Load Module	068.	LSR-352
COMPILE Command (TSO) Translate Program into Load Module	068.	LSR-352
LINK Command (TSO) Invoke Linkage Editor	068.	LSR-352
LKED Command (CMS) Create a CMS LOADLIB	130.	Note 12
LOADLIB Command (CMS) List, Copy, or Compress CMS LOADLIB	130.	Note 12
MODMAP Command (CMS) Display MODULE File Load Map	130.	Note 12
OSRUN Command (CMS) Execute a Load Module	130.	Note 12
PDS (TSO) Manipulate Partitioned Data Set	068.	LSR-352
TXTLIB Command (CMS) Update TEXT Files (Object Modules)	130.	Note 12
LOADGO Command (TSO) Load and Execute Program	068.	LSR-352
LOADLIB Command (CMS) List, Copy, or Compress CMS LOADLIB	130.	Note 12
LOADMOD Command (CMS) Bring MODULE File into Storage	130.	Note 12
LOALPHA (PL/I Sub) Return String of Lowercase Alphabetics	306.	LS-305
LOCATE Command (WYLBUR) Display Status of Batch Job	287.	LSR-360
LOGICAL SHIFTING		
ILSHFT - FORTRAN Logical Shift Function	094.	LS-008
LSHIFT - FORTRAN Logical Shift Subroutine	094.	LS-008
LOGISTICS MANAGEMENT		
Berry-Whybark Package - Logistics Management	217.	LIB-ECS-40
GAME (Berry-Whybark) Policy Testing	217.	LIB-ECS-40
HORN (Berry-Whybark) Warehouse Location Simulation	217.	LIB-ECS-40
HUTC (Berry-Whybark) Variable Costs of Shipping	217.	LIB-ECS-40
MARQ (Berry-Whybark) Alternate Quality Control	217.	LIB-ECS-40
MCAL (Berry-Whybark) Marketing Assembly Operation	217.	LIB-ECS-40
NATB (Berry-Whybark) Production Scheduling	217.	LIB-ECS-40
NATD (Berry-Whybark) Alternative Production Scheduling	217.	LIB-ECS-40
NICK (Berry-Whybark) Adaptive Smoothing	217.	LIB-ECS-40
OROA (Berry-Whybark) Finish Production Forecasts	217.	LIB-ECS-40
OROB (Berry-Whybark) Total Costs of Production	217.	LIB-ECS-40
LOGLINEAR (SPSS-X) Loglinear Analysis	137.	LS-102
LOGOFF Command (TSO) Terminate TSO Session	068.	LSR-352
LOGOFF Command (WYLBUR) Terminate a WYLBUR Session	287.	LSR-360
LOGOFF Command (CMS) Terminate a CMS Session	130.	Note 12
LOGON Command (TSO) Begin a TSO Session	068.	LSR-352
LOGON Command (WYLBUR) Begin a WYLBUR Session	287.	LSR-360
LOGON Command (CMS) Begin a CMS Session	130.	Note 12
LOGPAR -Logical and Partial-Word Subroutines for Fortran	094.	LS-008
LOWERCASE		
UPCASE (PL/I Sub) Convert Lowercase to Uppercase	306.	LS-305
UPTOLOW - Translate Uppercase Text to Lowercase Text	181.	LS-344
LP (SAS/OR) Solve Linear Programs	159.	LS-118
LPSBA - A Linear Programming Code	047.	LS-348
LPSOLN (APL STATPACK2) Linear Programming	141.	LS-114
LR METHOD		
COMLR (EISPACK) Compute Eigenvalues	260.	LS-286
COMLR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
LSHIFT - FORTRAN Logical Shift Subroutine	094.	LS-008
LSQFIT - Least Square Fit on Linear Data	182.	LS-071
LSQPLOT - Least Squares Plot	110.	LS-086
LSVDB (IMSL) Linear Algebraic Equations	147.	LS-287

LSVDF (IMSL) Linear Algebraic Equations	147.	LS-287
LUDAPB (IMSL) Linear Algebraic Equations	147.	LS-287
LUDATF (IMSL) Linear Algebraic Equations	147.	LS-287
LUDECP (IMSL) Linear Algebraic Equations	147.	LS-287
LUELMF (IMSL) Linear Algebraic Equations	147.	LS-287
LUELMP (IMSL) Linear Algebraic Equations	147.	LS-287
LUELPB (IMSL) Linear Algebraic Equations	147.	LS-287
LUREFF (IMSL) Linear Algebraic Equations	147.	LS-287
LUREFP (IMSL) Linear Algebraic Equations	147.	LS-287
LUREPB (IMSL) Linear Algebraic Equations	147.	LS-287
MACII - Macroeconomic Policy Game	228.	LIB-ECS-48
MacWharton - Macroeconomic Policy Simulation	227.	LIB-ECS-46
MACLIB Command (CMS) Create and Update Macro Libraries	130.	Note 12
MACLIST Command (CMS) Manipulate CMS Macro Library Mems.	130.	Note 12
MAHALONOBIS D-SQUARED		
BMDP3D (BMDP) Comparison of Two Groups with t Tests	323.	LS-308
BMDP7M (BMDP) Stepwise Discriminant Analysis	323.	LS-308
MAHALONOBIS DISTANCES		
CANDISC (SAS) Canonical Discriminant Analysis, etc.	138.	LS-118
MAIL (SEE ALSO ELECTRONIC MAIL)		
MAIL Command (CMS) Send and Receive Electronic Mail	130.	GI-092
MAIL Command (TSO) Send and Receive Electronic Mail	068.	LSR-352
MAILBOOK Command (CMS) Manage Electronic Mail Messages	130.	GI-092
MAINTENANCE POLICY SIMULATION		
BEARSIM (Harris-Maggard) Maintenance Policy Simulation	216.	LIB-ECS-39
MAKEBUF Command (CMS) Create a New CMS Stack Level	130.	Note 12
MAKTAB (TSL) Crosstabulation	146.	Note 3
MANAGEMENT		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
EMORY Game - Business Management Laboratory Simulation	154.	LS-333
Executive Game	332.	LS-324
FINANSIM - Financial Management Simulation	157.	LS-335
Harris-Maggard Package - Management Analysis	216.	LIB-ECS-39
MGMT1/MGMT2 - Harvard Management Simulation	230.	LIB-ECS-52
MGMT2 - Harvard Management Simulation	230.	LIB-ECS-52
SIMQUEUE - A Queuing Simulation Model	290.	LIB-ECS-57
MANN-WHITNEY U-TEST		
BMDP3S (BMDP) Nonparametric Statistics	323.	LS-308
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
NPAR1WAY (SAS) Analysis of Variance on Ranks	138.	LS-118
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
MANOVA (SPSS-X) General Linear Models	137.	LS-102
MANOVA - Multivariate Analysis of Variance	174.	LSR-108
MAPPING		
CALFORM - A Mapping Program That Uses A Pen Plotter	337.	LS-326
CAMIVA - Cartographic Mapping Program	166.	LS-339
DISSPLA	126.	LS-381
FILIST Command (TSO)List, List Attributes, Search Data Set	068.	LSR-352
GMAP (SAS/GRAPH) Produces Choropleth and Surface Maps	264.	LS-118
GPROJECT (SAS/GRAPH) Applies Map Projections	264.	LS-118
GREDUCE (SAS/GRAPH) Creates Subsets of Map Data Sets	264.	LS-118
POLYVRT - A Geographic Base File Converter Program	336.	LS-325
SURFACE2 - A Program for Contour Maps and Transect Plots	221.	LS-355
SYMAP - Synagraphic Computer Mapping	111.	LS-139
SYMVU - Plotting From Gridded Data or SYMAP Output	112.	LS-218
MARK IV - File Management System	312.	LS-317
MARKETING		
MCAL (Berry-Whybark) Marketing Assembly Operation	217.	LIB-ECS-40
TEMPOMATIC IV - A Management Simulation	314.	LS-323
MARQ (Berry-Whybark) Alternate Quality Control	217.	LIB-ECS-40
MARVEL - MPS Data Preparation and Output Analysis	199.	LSR-022
MASK - FORTRAN Dynamic Mask Generation	094.	LS-008

ZHPFA (LINPACK) Factor a Hermitian Matrix	327.	LS-358
ZPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
ZPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
ZPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
ZPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
ZPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
ZPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
ZSICO (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
ZSIFA (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
ZSPCO (LINPACK) Factor Symmetric Matrix	327.	LS-358
ZSPFA (LINPACK) Factor Symmetric Matrix	327.	LS-358
MATRIX HANDLING		
BALANC (EISPACK) Similarity Transformation	260.	LS-286
BALBAK (EISPACK) Compute Eigenvectors	260.	LS-286
CBABK2 (EISPACK) Compute Eigenvectors	260.	LS-286
CBAL (EISPACK) Similarity Transformation	260.	LS-286
COMBAK (EISPACK) Compute Eigenvectors	260.	LS-286
COMHES (EISPACK) Similarity Transformation	260.	LS-286
EIGBS (IMSL) Eigenanalysis of Real Symmetric Band Matrix	147.	LS-287
EISPACK - An Eigensystem Subroutine Package	260.	LS-286
ELMHES (EISPACK) Similarity Transformation	260.	LS-286
ELTRAN (EISPACK) Matrix of Hessenberg Transformations	260.	LS-286
FMSLIB - Fast Matrix Solution Library for the FPS-164	089.	GIR-086
How to Run Jobs on the FPS-164	089.	GIR-086
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
OCDIS(IMSL) Pairwise Euclidean Distances Bet. Matrix Cols.	147.	LS-287
ORTBAK (EISPACK) Compute Eigenvectors	260.	LS-286
ORTHES (EISPACK) Similarity Transformations	260.	LS-286
ORTRAN (EISPACK) Matrix of Hessenberg	260.	LS-286
RLSUM (IMSL) Reorder Rows and Columns	147.	LS-287
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TRBAK1 (EISPACK) Compute Eigenvectors	260.	LS-286
TRED1 (EISPACK) Similarity Transformation	260.	LS-286
TRED2 (EISPACK) Similarity Transformations	260.	LS-286
TSP - Time Series Processor	311.	LSR-315
USMNMX (IMSL) Utility Functions	147.	LS-287
USWBM (IMSL) Utility Functions	147.	LS-287
USWBS (IMSL) Utility Functions	147.	LS-287
USWCH (IMSL) Print Complex Hermitian Matrix	147.	LS-287
USWCM (IMSL) Print a Complex Matrix	147.	LS-287
USWCV (IMSL) Print a Complex Vector	147.	LS-287
USWFM (IMSL) Utility Functions	147.	LS-287
USWFV (IMSL) Utility Functions	147.	LS-287
USWLSM (IMSL) Print a Matrix	147.	LS-287
USWSM (IMSL) Print a Matrix	147.	LS-287
USWSM (IMSL) Utility Functions	147.	LS-287
VABMXF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VABMXS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VABSMF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VABSMS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCONVO (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTCH (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTFS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTHC (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTSF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VSRTA (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTP (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTR (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTU (IMSL) Interchange of Rows and Columns	147.	LS-287
MATRIX INVERSION		
ACCRSE (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
CHIDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
CHOON1 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CHOON2 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CHPDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
CPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
CPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
CSIDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
CSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matr.	327.	LS-358
CTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
DGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358

DPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
DPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
DSIDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
DSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matr.	327.	LS-358
DTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
GJDEF1 (PL/I SPC) In-Place Matrix Inversion	259.	LSR-347
GJDEF2 (PL/I SPC) In-Place Inversion of Matrix	259.	LSR-347
INV (APL STATPACK2) Matrix Inversion	141.	LS-114
INVRSOLV - Matrix Inversion and Solution of Linear Equats.	219.	LS-107
JINV (APL STATPACK2) Matrix Inversion	141.	LS-114
LGINF (IMSL) Generalized Inverse of Real Matrix	147.	LS-287
LINPACK - Subroutine Library for Linear Algebra	327.	LS-358
LINV1F (IMSL) Linear Algebraic Equations	147.	LS-287
LINV1P (IMSL) Linear Algebraic Equations	147.	LS-287
LINV2F (IMSL) Linear Algebraic Equations	147.	LS-287
LINV2P (IMSL) Linear Algebraic Equations	147.	LS-287
LINV3F (IMSL) Linear Algebraic Equations	147.	LS-287
LINV3P (IMSL) Positive Definite Matrix	147.	LS-287
LIN1PB (IMSL) Linear Algebraic Equations	147.	LS-287
LIN2PB (IMSL) Linear Algebraic Equations	147.	LS-287
LSVDF (IMSL) Linear Algebraic Equations	147.	LS-287
MATINVR (JCP) Invert Matrix	209.	LIB-ECS-50
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
ORTHO1 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
ORTHO2 (PL/I SPC) Inversion of Real Matrix	259.	LSR-347
PERC - Compute Inverse after Column Perturbation	028.	LS-230
SGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
SPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
SSIDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
SSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matr.	327.	LS-358
STRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
SYMION (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
ZGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
ZHIDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
ZHPDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
ZPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
ZPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
ZSIDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
ZSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matr.	327.	LS-358
ZTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
MATRIX MULTIPLICATION		
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
VMULBB (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULBF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULBS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULFB (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULFF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULFP (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULFQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULFS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULQF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULQQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULQS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULSB (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULSF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULSQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULSS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VTPROF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VTPROS (IMSL) Vector Matrix Arithmetic	147.	LS-287
MATRIX OPERATIONS		
FMSLIB - Fast Matrix Solution Library for the FPS-164	089.	GIR-086
How to Run Jobs on the FPS-164	089.	GIR-086
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
OCDIS(IMSL) Pairwise Euclidean Distances Bet. Matrix Cols.	147.	LS-287
PL/I SPC - PL/I Subprocedure Collection	259.	LSR-347
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TSP - Time Series Processor	311.	LSR-315
VBLA=CAXPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CCOPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CDOTC (IMSL) Vector, Matrix Arithmetic	147.	LS-287

VBLA=CDOTU (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CSCAL (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CSSCAL (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CSWAP (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CZDOTC (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CZDOTU (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DASUM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DAXPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DCOPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DDOT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DNRM2 (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DROT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DROTG (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DROTM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DROTMG (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DSCAL (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DSDOT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DSWAP (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=ICAMAX (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=IDAMAX (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=ISAMAX (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SASUM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SAXPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SCASUM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SCNRM2 (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SCOPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SDOT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SDSDOT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SNRM2 (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SROT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SROTG (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SROTM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SROTMG (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SSCAL (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SSWAP (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VNRMFI (IMSL) Vector Matrix Arithmetic	147.	LS-287
VNRMF1 (IMSL) Vector Matrix Arithmetic	147.	LS-287
VNRMF2 (IMSL) Vector Matrix Arithmetic	147.	LS-287
VNRMS1 (IMSL) Vector Matrix Arithmetic	147.	LS-287
VNRMS2 (IMSL) Vector Matrix Arithmetic	147.	LS-287
VPOLYF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VSAD (IMSL) Sort a Double Precision Matrix	147.	LS-287
VSAR (IMSL) Sort a Matrix	147.	LS-287
VSODA (IMSL) Sort Columns of Double Precision Matrix	147.	LS-287
VSORA (IMSL) Sort Columns of a Matrix	147.	LS-287
VSRTAD (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTMD (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTPD (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTRD (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTUD (IMSL) Vector, Matrix Arithmetic	147.	LS-287
MATRIX REDUCTION		
BANDRD (PL/I SPC) Reduce Matrix to Tridiagonal Form	259.	LSR-347
COMHES (EISPACK) Similarity Transformation	260.	LS-286
COMHES (PL/I SPC) Reduce Complex Matrix	259.	LSR-347
CORTH (EISPACK) Reduce to Upper Hessenberg Form	260.	LS-286
CSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
DECOSE (PL/I SPC) Matrix Reduction	259.	LSR-347
DIRHES (PL/I SPC) Reduces Submatrix	259.	LSR-347
DSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
EHOUSH (IMSL) Eigenanalysis	147.	LS-287
EHOUSS (IMSL) Eigenanalysis	147.	LS-287
EIGBS (IMSL) Eigenanalysis of Real Symmetric Band Matrix	147.	LS-287
EIGENRS-Comp. of Eigenvalues and Eigenvectors of Matrices	225.	LS-113
ELMHES (EISPACK) Similarity Transformation	260.	LS-286
EQZQF (IMSL) Eigenanalysis	147.	LS-287
EQZTF (IMSL) Eigenanalysis	147.	LS-287
HTRIDI (EISPACK) Similarity Transformation	260.	LS-286
HTRID3 (EISPACK) Reduce to Symmetric Tridiagonal Form	260.	LS-286
ORTHES (EISPACK) Similarity Transformations	260.	LS-286
ORTHES (PL/I SPC) Reduces Submatrix	259.	LSR-347
QZHES (EISPACK) Reduce to Upper Hessenburg Form	260.	LS-286
QZIT (EISPACK) Reduce to Triangular Form	260.	LS-286
REDUC1 (PL/I SPC) Reduce Symmetric Eigenproblem	259.	LSR-347
REDUC2 (PL/I SPC) Reduces Symmetric Eigenproblems	259.	LSR-347

SSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
TRED1 (PL/I SPC) Reduce Matrix to Tridiagonal Form	259.	LSR-347
TRED2 (PL/I SPC) Reduce Matrix to Tridiagonal Form	259.	LSR-347
TRED3 (EISPACK) Reduce Real Symmetric Matrix	260.	LS-286
TRED3 (PL/I SPC) Reduce Matrix to Tridiagonal Form	259.	LSR-347
ZSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
MATRIX SUBTRACTION		
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
MATRIX TRANSPOSE		
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
VTRAN (IMSL) Retangular Matrix	147.	LS-287
MAXIMUM LIKELIHOOD		
BMDP3V (BMDP) General Mixed Model Analysis of Variance	323.	LS-308
BMDP4M (BMDP) Factor Analysis	323.	LS-308
CBNRHO (IMSL) Categorized Data Analysis	147.	LS-287
EFAP - Exploratory Factor Analysis	127.	LS-384
FTWEIN (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
FTWENX (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
HARVEY (SAS) Least Squares and Maximum Likelihood	138.	LS-118
LISREL V - Analysis of Linear Structural Relationships	164.	LS-367
MAXLIK - for Maximum Likelihood Estimation	277.	LS-295
OTMLNR (IMSL) Observation Structure	147.	LS-287
PROBIT (SAS) - Probit Analysis	138.	LS-118
PROBIT (SPSS-X) Maximum Likelihood Estimates	137.	LS-102
SYSREG (SAS) - TTLS,LIML, and Seemingly-Unrelated Reg.	138.	LS-118
MAXLIK - for Maximum Likelihood Estimation	277.	LS-295
MCAL (Berry-Whybark) Marketing Assembly Operation	217.	LIB-ECS-40
McLaughlin Linear Algebra Package	155.	LS-334
MCNEMAR		
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
MDBETA (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDBETI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDBIN (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDBNOR (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDCH (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDCHI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDCHN (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDFD (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDFDRE (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDFI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDGAM (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDGC (IMSL) Probability Distribution Function	147.	LS-287
MDGCI (IMSL) Inverse Probability Distribution Function	147.	LS-287
MDHYP (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDNOR (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDNORD (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDNRIS (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDNRIS (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDSMR (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDSTI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDTD (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDTN (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDTNF (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDTPS (IMSL) Math. and Stat. Special Functions	147.	LS-287
MEANS (SAS) Means and Descriptive Statistics	138.	LS-118
MEDIA		
DONMAR II - Media Simulation Game	315.	LS-314
MELROSEA (LERNER) Estimating the Cost of Capital	212.	LIB-ECS-47
MELROSEB (LERNER) Application of Valuation Formula	212.	LIB-ECS-47
MERFCI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MERFCI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MERFI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MERGING		
SYNCSORT - Sort/Merge Program and SORT Cataloged Procedure	179.	LS-343
MERRCZ (IMSL) Complemented Error Function, Complex Arg.	147.	LS-287

MESSAGE Command (CMS) Send a Message to a VM User	130.	Note 12
MGMT1/MGMT2 - Harvard Management Simulation	230.	LIB-ECS-52
MGMT2 - Harvard Management Simulation	230.	LIB-ECS-52
MIGRAD - MINUIT Minimizing Method	215.	LS-341
MIGRATION		
DFHSM - Hierarchical Storage Manager	106.	GI-090
MINFIT (EISPACK) Minimal Norm Solution	260.	LS-286
MINFIT (PL/I SPC) Singular Values and Solve Equations	259.	LSR-347
MINIMAL LENGTH SOLUTION		
MINFIT (PL/I SPC) Singular Values and Solve Equations	259.	LSR-347
MINIMAL NORM SOLUTIONS		
MINFIT (EISPACK) Minimal Norm Solution	260.	LS-286
MINIMIZATION		
AMP - Argonne Minimization Package	322.	LS-310
MINUIT - Minimization of User-Supplied Functions	215.	LS-341
ZXCGR (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZXGSN (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZXGSP (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZXLSF (IMSL) One-dimensional Minimization of Smooth Func.	147.	LS-287
ZXMIN (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZXMWD (IMSL) Global Minimum w/ Constraints of Function	147.	LS-287
ZXSSQ (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
MINOS -- A Program for Linear and Nonlinear Optimization	057.	LS-363
MINUIT - Minimization of User-Supplied Functions	215.	LS-341
MISSING DATA ESTIMATION		
BMDPAM (BMDP) Descrip. and Estimation of Missing Data	323.	LS-308
MLIST - Print Input Data Set	102.	LS-184
MMBSIN (IMSL) Modified Bessel Function of First Kind	147.	LS-287
MMBSIR (IMSL) Modified Bessel Function of First Kind	147.	LS-287
MMBSI0 (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMBSI1 (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMBSJN (IMSL) Bessel Function of First Kind	147.	LS-287
MMBSJR (IMSL) Bessel Function of First Kind	147.	LS-287
MMBSJ0 (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMBSJ1 (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMBSKR (IMSL) Modified Bessel Function of Second Kind	147.	LS-287
MMBSK0 (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMBSK1 (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMBSYN (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMBZIN (IMSL) Modified Bessel Function of First Kind	147.	LS-287
MMBZJN (IMSL) Bessel Function of First Kind	147.	LS-287
MMDAS (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMDEI (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMDELE (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMDELK (IMSL) Math. and Stat. Special Functions	147.	LS-287
MMDEN (IMSL) Exponential Integrals of Integer Order	147.	LS-287
MMKELD (IMSL) Derivatives of the Kelvin Function	147.	LS-287
MMKEL0 (IMSL) Kelvin Function	147.	LS-287
MMKEL1 (IMSL) Kelvin Function	147.	LS-287
MMLINC (IMSL) Inverse Circular, Log., Hyperbolic Functions	147.	LS-287
MMLIND (IMSL) Incomplete Elliptic Integral of Second Kind	147.	LS-287
MMLINF (IMSL) Incomplete Elliptic Integral of First Kind	147.	LS-287
MMLINJ (IMSL) Incomplete Elliptic Integral of Third Kind	147.	LS-287
MMPSI (IMSL) Logarithmic Derivative of Gamma Function	147.	LS-287
MMWPL (IMSL) Weierstrass P-Function in Lemniscatic Case	147.	LS-287
MMWPL1 (IMSL) First Derivative of Weierstrass P-Function	147.	LS-287
MMWPQ (IMSL) Weierstrass P-Function in Equianharmonic Case	147.	LS-287
MMWPQ1 (IMSL) First Derivative of Weierstrass P-Function	147.	LS-287
MOBABILITY DISTRIBUTIONS		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
MODEL (SAS/ETS) Specification of Nonlinear Systems	263.	LS-118
MODEL FITTING		
LOGLINEAR (SPSS-X) Loglinear Analysis	137.	LS-102

MODELING		
ACSL - Advanced Continuous Simulation Language	038.	LS-369
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
DYNAMO II - Continuous Dynamic Modeling System	195.	LS-115
DYNAMO III - A System for Continuous Dynamic Modeling	339.	LS-328
GPSS V - General Purpose Simulation System	193.	LS-080
SIMSCRIPT II - Discrete Simulation Modeling Language	196.	LS-135
SLAM - Simulation Language for Alternative Modeling	180.	LS-345
MODIFY Command (WYLBUR) Edit Lines of Text	287.	LSR-360
MODMAP Command (CMS) Display MODULE File Load Map	130.	Note 12
MONARCH (LERNER) Lock Box Site Selection	212.	LIB-ECS-47
MONITORING		
PLEA - PL/I Execution Time Analyzer	075.	LS-243
MORTGAGE (SAS/ETS) Amortization Schedules	263.	LS-118
MORTON (LERNER) Methods for Comparing Lease Costs	212.	LIB-ECS-47
MOSES TEST		
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
MOSTELLER'S STANDARDIZATION		
DATA-TEXT - Data Analysis Package	143.	LS-167
MOVE Command (WYLBUR) Move Lines of Text	287.	LSR-360
MOVEFILE Command (CMS) Move Data Between VM Devices	130.	Note 12
MOVING AVERAGES		
FTMA (IMSL) Estimate Moving Aver. Params. in Arima Model	147.	LS-287
FTML (IMSL) Autoregressive, Moving Aver. Params in Arima	147.	LS-287
SMOOTH (APL STATPACK2) Weighted Moving Averages	141.	LS-114
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
MPS - Mathematical Programming System	197.	LSR-022
MREG (APL STATPACK2) Conversational Regression	141.	LS-114
MSC NASTRAN	129.	LS-385
MSENO (IMSL) Expected Values of Normal Order Statistics	147.	LS-287
MSMRAT (IMSL) Math. and Stat. Special Functions	147.	LS-287
MULDE (TSL) Multivariate Descriptive Statistics	146.	Note 3
MULMOD (TSL) Multivariate Regression	146.	Note 3
MULT RESPONSE (SPSS-X) Multiple Response Tables	137.	LS-102
MULTIPLE CLASS ANALYSIS		
AID - Automatic Interaction Detector	172.	LSR-163
MULTIPLE REGRESSION		
BMDP1R (BMDP) Multiple Linear Regression	323.	LS-308
BMDP2R (BMDP) Stepwise Regression	323.	LS-308
DATA-TEXT - Data Analysis Package	143.	LS-167
GLM (SAS) General Linear Models	138.	LS-118
MANOVA (SPSS-X) General Linear Models	137.	LS-102
MREG (APL STATPACK2) Conversational Regression	141.	LS-114
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
REG (APL STATPACK2) Simple and Multiple Regression	141.	LS-114
REGANA (TSL) Multiple Regression	146.	Note 3
REGRESSION (SPSS-X) Multiple Regression Analysis	137.	LS-102
RLMUL (IMSL) Multiple Linear Regression	147.	LS-287
RSQUARE (SAS) All Possible Regressions	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
STEPWISE (SAS) Stepwise Regression	138.	LS-118
STREG (APL STATPACK2) Stepwise Regression	141.	LS-114
SYSREG (SAS) - TTLS,LIML,and Seemingly-Unrelated Reg.	138.	LS-118
MULTIPLE UTILITY		
COPY - Utility Program	018.	LS-103
IEBCOMPR - IBM Comparison Utility	020.	Note 6
IEBGENER - IBM Multiple Purpose Utility	024.	Note 6
IEBPTPCH - IBM List and Punch Utility	021.	Note 6
IEBUPDTE - IBM Update Utility	019.	Note 6
IEHLIST - IBM Directory and Pointer Listing Utility	025.	Note 6
IEHMOVE - IBM Data Set Move Utility	023.	Note 6
SUPERLIB - General Library Maintenance Utility Program	026.	LSR-127

MULTIPUNCHED DATA		
SAS - Statistical Analysis System	138.	LS-118
MULTIVARIATE ANALYSIS		
ANOVA (SAS) - Analysis of Variance for Balanced Designs	138.	LS-118
BMDP6R (BMDP) Partial Correlation and Multivar. Regression	323.	LS-308
CANDISC (SAS) Canonical Discriminant Analysis, etc.	138.	LS-118
GLM (SAS) General Linear Models	138.	LS-118
MANOVA (SPSS-X) General Linear Models	137.	LS-102
MANOVA - Multivariate Analysis of Variance	174.	LSR-108
MULMOD (TSL) Multivariate Regression	146.	Note 3
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
TSP - Time Series Processor	311.	LSR-315
TTLS - Two and Three Stage Least Squares	168.	LSR-140
MULTIVARIATE REGRESSION		
BMDP6R (BMDP) Partial Correlation and Multivar. Regression	323.	LS-308
MULTIVARIATE STATISTICAL ANALYSES		
CLUSTAN - Collection of Cluster Analysis Programs	204.	LS-383
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
MVCLCL (PL/I Sub) Use MVCL and CLCL in PL/I	306.	LS-305
MVS		
MVS - A New Operating System for TUCC's Batch/RJE Service	178.	GI-080
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
MVS - A New Operating System for TUCC's Batch/RJE Service	178.	GI-080
MVSD (APL STATPACK2) Mean, Variance, and Standard Deviation	141.	LS-114
NAFRE (IMSL) Friedman's Test for Randomized Block Designs	147.	LS-287
NAK1 (IMSL) Nonparametric Statistics	147.	LS-287
NAMEFIND Command (CMS) Search Information in NAMES File	130.	Note 12
NAMES Command (CMS) Manipulate NAMES File	130.	Note 12
NASTRAN		
MSC NASTRAN	129.	LS-385
NATB (Berry-Whybark) Production Scheduling	217.	LIB-ECS-40
NATD (Berry-Whybark) Alternative Production Scheduling	217.	LIB-ECS-40
NAWNRP (IMSL) Nonparametric Statistics	147.	LS-287
NAWRPE (IMSL) Nonparametric Statistics	147.	LS-287
NAWRPU (IMSL) Nonparametric Statistics	147.	LS-287
NBCYC (IMSL) Nonparametric Statistics	147.	LS-287
NBQT (IMSL) Nonparametric Statistics	147.	LS-287
NBSDL (IMSL) Nonparametric Statistics	147.	LS-287
NBSIGN (IMSL) Nonparametric Statistics	147.	LS-287
NDEST (IMSL) Evaluate Prob. Density at Specified Points	147.	LS-287
NDKER (IMSL) Nonparametric Density Estimation, Kernel	147.	LS-287
NDMPLE (IMSL) Nonparametric Statistics	147.	LS-287
NDXEST (IMSL) Nonparametric Statistics	147.	LS-287
NEIGHBOR (SAS) - Nearest Neighbor Discriminant Analysis	138.	LS-118
NERNST (JCP) Cell Potential as a Function of pH	209.	LIB-ECS-50
NESTED (SAS) Analysis of Variance for Nested Design	138.	LS-118
NESTED (TSL) Analysis of Nested Experiment	146.	Note 3
NETFLOW (APL STATPACK2) Ford-Fulkerson Algorithm	141.	LS-114
NETFLOW (SAS/OR) Find Minimum Cost Flow in a Network	159.	LS-118
NETWORK ANALYSIS		
ASQ - Arithmetic Solution to Queues	321.	LS-309
NETWORKS		
Access to Remote Computers via the INTERNET	176.	GI-097
EDUNET and TELENET	343.	GI-073
RECEIVE (TSO) Receive Transmitted Files	068.	LSR-352
TRANSMIT (TSO) Transmit Files	068.	LSR-352
Using Electronic Mail	124.	GIR-089
NEWTON (JCP) Solve Systems of Nonlinear Equations	209.	LIB-ECS-50
NEWTON-RAPHSON METHOD		
NEWTON (JCP) Solve Systems of Nonlinear Equations	209.	LIB-ECS-50
POLRTA - Real and Imaginary Roots of Polynomials	150.	LIB-ECS-03

NEWTON'S METHOD		
POLRTA - Real and Imaginary Roots of Polynomials	150.	LIB-ECS-03
NEWTON'S 3/8 RULE		
QDINT - Numerical Quadrature Integration	148.	LIB-ECS-13
NHEXT (IMSL) Nonparametric Statistics	147.	LS-287
NHINC (IMSL) Nonparametric Statistics	147.	LS-287
NICK (Berry-Whybark) Adaptive Smoothing	217.	LIB-ECS-40
NKS1 (IMSL) Nonparametric Statistics	147.	LS-287
NKS2 (IMSL) Nonparametric Statistics	147.	LS-287
NLIN (SAS) - Nonlinear Regression	138.	LS-118
NLIN - Least Squares Estimation of Nonlinear Parameters	183.	LSR-089
NMCC (IMSL) Nonparametric Statistics	147.	LS-287
NMKN (IMSL) Kendall's Test for Correlation	147.	LS-287
NMKSF (IMSL) Nonparametric Statistics	147.	LS-287
NMKTS (IMSL) Nonparametric Statistics	147.	LS-287
NMR (JCP) Simulate NMR Spectra	209.	LIB-ECS-50
NMRANK (IMSL) Nonparametric Statistics	147.	LS-287
NMTIE (IMSL) Nonparametric Statistics	147.	LS-287
NOEHER'S TEST		
NBCYC (IMSL) Nonparametric Statistics	147.	LS-287
NONLIN (JCP) Nonlinear Least Squares Analysis	209.	LIB-ECS-50
NONLINEAR EQUATIONS		
NEWTON (JCP) Solve Systems of Nonlinear Equations	209.	LIB-ECS-50
NONLIN (JCP) Nonlinear Least Squares	209.	LIB-ECS-50
ZSCNT (IMSL) Solve a System of Nonlinear Equations	147.	LS-287
ZSPOW (IMSL) Solve a System of Nonlinear Equations	147.	LS-287
NONLINEAR PROGRAMMING		
MINOS -- A Program for Linear and Nonlinear Optimization	057.	LS-363
NONLINEAR REGRESSION		
BMDPAR (BMDP) Derivative-Free Nonlinear Regression	323.	LS-308
BMDPLR (BMDP) Stepwise Logistic Regression	323.	LS-308
BMDP3R (BMDP) Nonlinear Regression	323.	LS-308
NLIN (SAS) Nonlinear Regression	138.	LS-118
NLIN - Least Squares Estimation of Nonlinear Parameters	183.	LSR-089
NONREG (TSL) Nonlinear Regression	146.	Note 3
RSMITZ (IMSL) Regression Analysis	147.	LS-287
TSP - Time Series Processor	311.	LSR-315
ZXSSQ (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
NONLINEAR STRUCTURAL ANALYSIS		
STRUDL (ICES/360) Structural Engineering Problems	201.	LS-044
NONMETRIC SCALING		
TORSCA - Torgerson Nonmetric Multidimensional Scaling	187.	LSR-112
NONPAR CORR (SPSS-X) Nonparametric Correlation	137.	LS-102
NONREG (TSL) Nonlinear Regression	146.	Note 3
NONSYMMETRIC MATRIX		
UNSRAY (PL/I SPC) Compute Eigenvectors of Matrix	259.	LSR-347
NORM-REDUCING TRANSFORMATION		
BALANC (EISPACK) Similarity Transformation	260.	LS-286
BALNCE (PL/I SPC) Norm-Reducing Transformation	259.	LSR-347
CBAL (EISPACK) Similarity Transformation	260.	LS-286
COMNCE (PL/I SPC) Norm-Reducing Transformation	259.	LSR-347
NORMAL DISTRIBUTION		
BECTR (IMSL) Bivariate Normal RHO	147.	LS-287
BEMNON (IMSL) Basic Statistics	147.	LS-287
BEMSON (IMSL) Basic Statistics	147.	LS-287
BENSON (IMSL) Basic Statistics	147.	LS-287
BEPAT (IMSL) Basic Statistics	147.	LS-287
BEPET (IMSL) Basic Statistics	147.	LS-287
GGNML (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGNO (IMSL) Order Statistics from Normal Distribution	147.	LS-287
GGNPM (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGNQF (IMSL) Gener. and Testing Random Numbers	147.	LS-287

GGNSM (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTNOR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
MDBNOR (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDNOR (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDNORD (IMSL) Math. and Stat. Special Functions	147.	LS-287
MDNRIS (IMSL) Math. and Stat. Special Functions	147.	LS-287
MSMRAT (IMSL) Math. and Stat. Special Functions	147.	LS-287
OTMLNR (IMSL) Observation Structure	147.	LS-287
UNIVARIATE (SAS) Univariate Descriptive Statistics	138.	LS-118
NOT - FORTRAN Boolean Function	094.	LS-008
NOTE Command (CMS) Prepare a Note for Mailing	130.	Note 12
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
NPAR1WAY (SAS) Analysis of Variance on Ranks	138.	LS-118
NRBHA (IMSL) Nonparametric Statistics	147.	LS-287
NRWMD (IMSL) Nonparametric Statistics	147.	LS-287
NRWRST (IMSL) Nonparametric Statistics	147.	LS-287
NSFNET		
Access to Remote Computers via the INTERNET	176.	GI-097
NTILES (APL STATPACK2) Median and N-tiles	141.	LS-114
NUCLEAR MAGNETIC RESONANCE		
ABC (JCP) Simulate ABC NMR Spectrum	209.	LIB-ECS-50
NMR (JCP) Simulate NMR Spectra	209.	LIB-ECS-50
NUCXDROP Command (CMS) Delete Nucleus Extension	130.	Note 12
NUCXLOAD Command (CMS) Load Nucleus Extension	130.	Note 12
NUCXMAP Command (CMS) Identify Nucleus Extensions	130.	Note 12
NUMBER Command (WYLBUR) Number Lines of Text	287.	LSR-360
OBJERR - Changing Fortran Reference Numbers	012.	LS-072
OCDIS(IMSL) Pairwise Euclidean Distances Bet. Matrix Cols.	147.	LS-287
OCLINK (IMSL) Observation Structure	147.	LS-287
OCR		
OCRSCRIP - Convert OCR Scanning Tape to SCRIPT Input	194.	Note 2
OCRSCRIP - Convert OCR Scanning Tape to SCRIPT Input	194.	Note 2
ODFISH (IMSL) Observation Structure	147.	LS-287
ODNORM (IMSL) Observation Structure	147.	LS-287
OFCOEF (IMSL) Observation Structure	147.	LS-287
OFCOMM (IMSL) Observation Structure	147.	LS-287
OFHARR (IMSL) Observation Structure	147.	LS-287
OFIMAG (IMSL) Observation Structure	147.	LS-287
OFIMA3 (IMSL) Observation Structure	147.	LS-287
OFPRI (IMSL) Observation Structure	147.	LS-287
OFPROT (IMSL) Observation Structure	147.	LS-287
OFRESI (IMSL) Observation Structure	147.	LS-287
OFROTA (IMSL) Observation Structure	147.	LS-287
OFSCHN (IMSL) Observation Structure	147.	LS-287
OFSCOR (IMSL) Observation Structure	147.	LS-287
OIND (IMSL) Observation Structure	147.	LS-287
ONEWAY (SPSS-X) One-way Analysis of Variance	137.	LS-102
ONSTMT - PL/I Debugging Aid	077.	LS-045
OPENMEM (PL/I Sub) Connect a Program File to a Member	306.	LS-305
OPERATING SYSTEMS		
MVS - A New Operating System for TUCC's Batch/RJE Service	178.	GI-080
OPERATIONS MANAGEMENT		
BALANCE (Harris-Maggard) Assembly Line Balancing	216.	LIB-ECS-39
BEARSIM (Harris-Maggard) Maintenance Policy Simulation	216.	LIB-ECS-39
Berry-Whybark Package - Logistics Management	217.	LIB-ECS-40
BUYCAR (Harris-Maggard) Cost Effectiveness Model	216.	LIB-ECS-39
CRIT (Harris-Maggard) Project Scheduling Model	216.	LIB-ECS-39
EOQ (Harris-Maggard) Inventory Ordering Model	216.	LIB-ECS-39
FUTURE (Harris-Maggard) Statistical Forecasting Model	216.	LIB-ECS-39
GAME (Berry-Whybark) Policy Testing	217.	LIB-ECS-40
Harris-Maggard Package - Management Analysis	216.	LIB-ECS-39
HORN (Berry-Whybark) Warehouse Location Simulation	217.	LIB-ECS-40
HUTC (Berry-Whybark) Variable Costs of Shipping	217.	LIB-ECS-40
INSYS (Harris-Maggard) Inventory System Model	216.	LIB-ECS-39
INVSYM (Harris-Maggard) Inventory System Model, II	216.	LIB-ECS-39
MARQ (Berry-Whybark) Alternate Quality Control	217.	LIB-ECS-40

MCAL (Berry-Whybark) Marketing Assembly Operation	217.	LIB-ECS-40
NATB (Berry-Whybark) Production Scheduling	217.	LIB-ECS-40
NATD (Berry-Whybark) Alternative Production Scheduling	217.	LIB-ECS-40
NICK (Berry-Whybark) Adaptive Smoothing	217.	LIB-ECS-40
OROA (Berry-Whybark) Finish Production Forecasts	217.	LIB-ECS-40
OROB (Berry-Whybark) Total Costs of Production	216.	LIB-ECS-39
QUESIM (Harris-Maggard) Queuing Simulation Model	216.	LIB-ECS-39
SQC (Harris-Maggard) Statistical Growth Chart Modeling	216.	LIB-ECS-39
UNISIM (Harris-Maggard) One-Product Company Simulation		
OPERATIONS RESEARCH		
ASSIGN (APL STATPACK2) Solve Minimizing Assignment Problem	141.	LS-114
ASSIGN (SAS/OR) Find Cost Assignment	159.	LS-118
Berry-Whybark Package - Logistics Management	217.	LIB-ECS-40
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
COSTFLOW (APL STATPACK2) Minimum Cost of a Given Flow	141.	LS-114
CPM (APL STATPACK2) Critical Path Method	141.	LS-114
CPM (SAS/OR) Critical Path Analysis	159.	LS-118
CPM1 (APL STATPACK2) Critical Path Analysis	141.	LS-114
CTRANSPORT (APL STATPACK2) Capacitated Transportation Prob	141.	LS-114
DYNAMO II - Continuous Dynamic Modeling System	195.	LS-115
GANTT (SAS/OR) Print Gantt Charts	159.	LS-118
GPSS V - General Purpose Simulation System	193.	LS-080
Harris-Maggard Package - Management Analysis	216.	LIB-ECS-39
LP (SAS/OR) Solve Linear Programs	159.	LS-118
MPS - Mathematical Programming System	197.	LSR-022
NETFLOW (APL STATPACK2) Ford-Fulkerson Algorithm	141.	LS-114
NETFLOW (SAS/OR) Find Minimum Cost Flow in a Network	159.	LS-118
RSIM (APL STATPACK2) Linear Programming	141.	LS-114
RSIM1 (APL STATPACK2) Linear Programming	141.	LS-114
SAS/OR - Operations Research	159.	LS-118
SIMPLEX (APL STATPACK2) Linear Programming	141.	LS-114
SIMSCRIPT II - Discrete Simulation Modeling Language	196.	LS-135
TRANS (SAS/OR) Solve Transportation Problem	159.	LS-118
OPRINC (IMSL) Observation Structure	147.	LS-287
OPSCAN (SAS) - Analyze OPSCAN/100 Output	138.	LS-118
OPTECH (ICES/360) Mathematical Optimization	201.	LS-044
OPTIMIZATION		
AMP - Argonne Minimization Package	322.	LS-310
MINOS -- A Program for Linear and Nonlinear Optimization	057.	LS-363
MPS - Mathematical Programming System	197.	LSR-022
OPTIONS (SAS) Lists SAS System Options	138.	LS-118
OR - FORTRAN Boolean Function	094.	LS-008
ORDER Command (CMS) Orders Closed Spool Files	130.	Note 12
ORDER STATISTICS		
MSENO (IMSL) Expected Values of Normal Order Statistics	147.	LS-287
ORDERING POLICY MANUAL		
EOQ (Harris-Maggard) Inventory Ordering Model	216.	LIB-ECS-39
ORGANIC CHEMISTRY		
IDGAME - Qualitative Organic Identification Game	208.	LS-319
ORIENTAL (LERNER) Generate a Firm's Cash Flow	212.	LIB-ECS-47
OROA (Berry-Whybark) Finish Production Forecasts	217.	LIB-ECS-40
OROB (Berry-Whybark) Total Costs of Production	217.	LIB-ECS-40
ORTANS (PL/I SPC) Matrix of Hessenberg Transformations	259.	LSR-347
ORTBAK (EISPACK) Compute Eigenvectors	260.	LS-286
ORTBAK (PL/I SPC) Eigenvectors of Original Matrix	259.	LSR-347
ORTHES (EISPACK) Similarity Transformations	260.	LS-286
ORTHES (PL/I SPC) Reduces Submatrix	259.	LSR-347
ORTHOGONAL DECOMPOSITION		
SVD (PL/I SPC) Singular Values, Decomposition of Matrix	259.	LSR-347
ORTHOGONAL POLYNOMIALS		
BMDP5R (BMDP) Polynomial Regression	323.	LS-308
RLPOL (IMSL) Regression Analysis	147.	LS-287
ORTHO1 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
ORTHO2 (PL/I SPC) Inversion of Real Matrix	259.	LSR-347

ORTIN1 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
ORTIN2 (PL/I SPC) Solve System of Equations	259.	LSR-347
ORTRAN (EISPACK) Matrix of Hessenberg	260.	LS-286
OS/VS COBOL Compiler	055.	LS-351
OSRUN Command (CMS) Execute a Load Module	130.	Note 12
OTMLNR (IMSL) Observation Structure	147.	LS-287
Oxford Concordance Program	042.	LS-373
PAIRED T-TESTS		
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TSAR - Tele-Storage and Retrieval System	142.	LS-076
PANDA (LERNER) Cash Management of Firm	212.	LIB-ECS-47
PAPER TAPE TRANSLATION		
PTCXLATE - General Purpose Translator Subroutine	091.	LS-075
PARAMETER ESTIMATION		
LOGLINEAR (SPSS-X) Loglinear Analysis	137.	LS-102
PARCAT - Categorical Data Program	346.	LS-365
PARCOR (TSL) Partial Correlation	146.	Note 3
PARSING ALGORITHMS		
PARZ - PL/I Subroutine for Parsing Strings	307.	LS-304
PARTIAL CORR (SPSS-X) Partial Correlation Analysis	137.	LS-102
PARTIAL CORRELATION		
CORR (APL STATPACK2) Simple and Partial Correlation	141.	LS-114
GLM (SAS) General Linear Models	138.	LS-118
PARCOR (TSL) Partial Correlation	146.	Note 3
PARTIAL CORR (SPSS-X) Partial Correlation Analysis	137.	LS-102
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
PARTIAL PIVOTING		
UNSRAY (PL/I SPC) Compute Eigenvectors of Matrix	259.	LSR-347
PARTITION MATRIX		
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
PARTITIONED DATA SET		
IEHLIST - Directory and Pointer Listing Utility	025.	Note 6
PDS (TSO) Manipulate Partitioned Data Set	068.	LSR-352
PDSPICK - A Partitioned Data Set Access Utility Program	135.	LS-356
PDSUPDTE - Update Partitioned Data Sets	128.	LS-382
SLIBDUMP - Dumping PDSs	031.	LS-282
SUPERLIB - General Library Maintenance Utility Program	026.	LSR-127
PARZ - PL/I Subroutine for Parsing Strings	307.	LS-304
PASCAL		
IBM PASCAL/VS	001.	LS-364
Stony Brook Student Pascal Compiler	220.	LS-346
Waterloo Student Pascal Compiler	235.	LS-350
PASSWORD PROTECTION		
PROTECT Command (TSO) Maintain Data Set Passwords	068.	LSR-352
TUCC Security Features	288.	GI-066
PATH ANALYSIS		
CPM (APL STATPACK2) Critical Path Method	141.	LS-114
CPM (SAS/OR) Critical Path Analysis	159.	LS-118
CPM1 (APL STATPACK2) Critical Path Analysis	141.	LS-114
LISREL V - Analysis of Linear Structural Relationships	164.	LS-367
PC		
PCFTP - File Transfer for the IBM PC	041.	LS-372
PCFTP - File Transfer for the IBM PC	041.	LS-372
PCTL (SAS) Percentiles	138.	LS-118

PDF		
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
PDS (SAS) List, Delete, Rename Members of PDS	138.	LS-118
PDS (TSO) Manipulate Partitioned Data Set	068.	LSR-352
PDSCOPY (SAS) Copy PDS from Disk to Tape, Disk	138.	LS-118
PDSPICK - A Partitioned Data Set Access Utility Program	135.	LS-356
PDSPRINT - Listing of Cataloged Procedures	005.	Note 9
PDSUPDTE - Update Partitioned Data Sets	128.	LS-382
PEARSON CORR (SPSS-X) Pearson Correlations	137.	LS-102
PEARSON CORRELATIONS		
CORR (SAS) Correlations	138.	LS-118
PEARSON CORR (SPSS-X) Pearson Correlations	137.	LS-102
PEARSON'S R		
CROSSTABS (SPSS-X) Contingency Table Analysis	137.	LS-102
PEEK Command (CMS) Display Reader File	130.	Note 12
PER Command (CMS) Monitor Program Execution Events	130.	Note 12
PERC - Compute Inverse after Column Perturbation	028.	LS-230
PERCENTILES		
UNIVARIATE (SAS) Univariate Descriptive Statistics	138.	LS-118
PERFORMANCE MONITORING		
PLEA - PL/I Execution Time Analyzer	075.	LS-243
PERIODOGRAM		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
PERMUTATIONS/COMBINATIONS		
GGPER (IMSL) Random Permutation of Integers 1 to K	147.	LS-287
PERMUTE (APL STATPACK2) Permute Vectors	141.	LS-114
PLAN (SAS) Randomized Experiments Planning	138.	LS-118
PERMUTE (APL STATPACK2) Permute Vectors	141.	LS-114
PERTURBATION		
PERC - Compute Inverse after Column Perturbation	028.	LS-230
PHI COEFFICIENT		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
PHYSICAL AND BIOLOGICAL SCIENCES		
ABC (JCP) Simulate ABC NMR Spectrum	209.	LIB-ECS-50
ABCANL (JCP) Solve Kinetics System	209.	LIB-ECS-50
BOX (JCP) Particle in Finite Box Problem	209.	LIB-ECS-50
CONTOUR (JCP) Display Electron Density Contour Plots	209.	LIB-ECS-50
DIALL, DIALLC - Least Squares Analysis of Diallel Expers.	240.	LS-175
EDTA (JCP) Simulates EDTA Titration	209.	LIB-ECS-50
ENTROPY (JCP) Calculate Entropy of Molecule	209.	LIB-ECS-50
EQUIL (JCP) Calculate Equilibrium Constant	209.	LIB-ECS-50
FRSTLW - First Law of Thermodynamics	207.	LIB-ECS-58
HA (JCP) Simulate Weak Acid/Strong Base Titration	209.	LIB-ECS-50
HMO (JCP) Solves Huckel Molecular Orbital Problems	209.	LIB-ECS-50
IDGAME - Qualitative Organic Identification Game	208.	LS-319
JACOBI (JCP) Diagonalize Hermitian Matrices	209.	LIB-ECS-50
JOHNSON Chemistry Package (JCP)	209.	LIB-ECS-50
LINEAR (JCP) Linear Regression Analysis	209.	LIB-ECS-50
MATINVR (JCP) Invert Matrix	209.	LIB-ECS-50
NERNST (JCP) Cell Potential as a Function of pH	209.	LIB-ECS-50
NEWTON (JCP) Solve Systems of Nonlinear Equations	209.	LIB-ECS-50
NMR (JCP) Simulate NMR Spectra	209.	LIB-ECS-50
NONLIN (JCP) Nonlinear Least Squares Analysis	209.	LIB-ECS-50
RADIAL (JCP) Radial Distribution Functions	209.	LIB-ECS-50
RADIO (JCP) Simulate Overlapping Radio-Decay Curves	209.	LIB-ECS-50
RUNGE (JCP) Solve System of Linear Equations	209.	LIB-ECS-50
SEIDEL (JCP) Solve System of Linear Equatons	209.	LIB-ECS-50
SIMP (JCP) Simpson's Rule Integration	209.	LIB-ECS-50
SOL (JCP) Solubility as a Function of pH	209.	LIB-ECS-50
PHYSICS		
FRSTLW - First Law of Thermodynamics	207.	LIB-ECS-58

PIECHART (SPSS-X) Pie Charts	137.	LS-102
PILLAI'S TRACE		
ANOVA (SAS) - Analysis of Variance for Balanced Designs	138.	LS-118
GLM (SAS) General Linear Models	138.	LS-118
PILLS - Computer-Augmented Accounting Instruction	211.	LIB-ECS-33
PILLSBURY		
PILLS - Computer-Augmented Accounting Instruction	211.	LIB-ECS-33
PIVOTING		
INV (APL STATPACK2) Matrix Inversion	141.	LS-114
PIZAZ Game - Starting a Small Business	162.	LS-336
PL/C		
PL/C - Cornell PL/I Compiler	056.	LSR-095
PLC Command (TSO) Invoke Interactive PL/C Compiler	068.	LSR-352
Running PL/C Programs Under TSO (Tutorial)	167.	GIR-074
PL/I (F) Scientific Subroutine Package	149.	LS-116
PL/I "Support" Subroutines	306.	LS-305
PL/I OPTIMIZER - Optimizing Compiler	053.	LSR-150
PL/I SPC - PL/I Subprocedure Collection	259.	LSR-347
PLAN (SAS) Randomized Experiments Planning	138.	LS-118
PLANE GEOMETRY		
COGO (ICES/360) Planar Geometrics Problem	201.	LS-044
PLANNING		
PLAN (SAS) Randomized Experiments Planning	138.	LS-118
PLC Command (TSO) Invoke Interactive PL/C Compiler	068.	LSR-352
PLEA - PL/I Execution Time Analyzer	075.	LS-243
PLI Command (TSO) Invoke PL/I Optimizing Compiler	068.	LSR-352
PLOT (SAS) Plotting	138.	LS-118
PLOT (SPSS-X) Two-dimensional Line Printer Plots	137.	LS-102
PLOT - APL Plotting Functions	122.	Note 10
PLOT-10		
AGII - Tektronix Advanced Graphing II	120.	LS-289
Plotter Utility Routines for the Tektronix 4662 Plotter	121.	LS-289
TCS - Tektronix Terminal Control System	119.	LS-289
Tektronix PLOT 10 Interactive Graphics Library	153.	LS-388
Tektronix TCS, AGII, and PLOTTER Utilities	191.	LS-289
PLOTF - Fortran Printer Plotting Subroutine	103.	LS-030
PLOTHOW (APL STATPACK2) Use of Library 1 Plot Functions	141.	LS-114
PLOTP - PL/I Printer Plotting Subroutine	104.	LS-030
Plotter Utility Routines for the Tektronix 4662 Plotter	121.	LS-289
PLOTTER - Plotter Routines	117.	LSR-048
PLOTTING		
AGII - Tektronix Advanced Graphing II	120.	LS-289
BMDP5D (BMDP) Histograms and Univariate Plots	323.	LS-308
BMDP6D (BMDP) Bivariate (Scatter) Plots	323.	LS-308
BMDP9D (BMDP) Multiway Description of Groups	323.	LS-308
CALFORM - A Mapping Program That Uses A Pen Plotter	337.	LS-326
CAMIVA - Cartographic Mapping Program	166.	LS-339
CONTOUR (JCP) Display Electron Density Contour Plots	209.	LIB-ECS-50
DISSPLA	126.	LS-381
EASYGRAF - Tektronix Easy Graphing Package	205.	LS-342
ECAPPLOT - A Procedure for Plotting ECAP Output	115.	LS-054
ECSPLOT - Ordered Pairs Data Plotting	109.	LS-086
ELASPLOT - Plot for Structures and Solids Analysis	202.	LS-168
EZPLOT - Printer Plotting Subroutine	113.	LIB-ECS-36
FORMPLOT - A Forms Design Program	338.	LSR-327
GCHART (SAS/GRAPH) Bar, Star, and Block Charts	264.	LS-118
GCONTOUR (SAS/GRAPH) Produces Contour Plots	264.	LS-118
GENPT - General Printer Plotting	114.	LIB-ECS-36
GENPT - Printer Plotting Routine	170.	LS-340
GMAP (SAS/GRAPH) Produces Choropleth and Surface Maps	264.	LS-118
GPLOT (SAS/GRAPH) Graphs One Variable Against Another	264.	LS-118
GPROJECT (SAS/GRAPH) Applies Map Projections	264.	LS-118

GRAFF - A Plotting Subroutine Package	107.	LSR-048
GRAPHER - Plotting Program	116.	LSR-048
GREPLAY (SAS/GRAPH) Reproduces SAS/GRAPH Pictures	264.	LS-118
GSETUP (SAS/GRAPH) Set Up Plotting Device	264.	LS-118
G3D (SAS/GRAPH) Plots Three-Dimensional Data	264.	LS-118
IGP - Tektronix Interactive Graphing Package	200.	LS-342
IGP and EASYGRAF - Tektronix Interactive Graphics Packages	171.	LS-342
LSQPLOT - Least Squares Plot	110.	LS-086
Picture Saving Routines for TCS and AGII	324.	LS-311
PLOT (SAS) Plotting	138.	LS-118
PLOT (SPSS-X) Two-dimensional Line Printer Plots	137.	LS-102
PLOT - APL Plotting Functions	122.	Note 10
PLOTF - Fortran Printer Plotting Subroutine	103.	LS-030
PLOTHOW (APL STATPACK2) Use of Library 1 Plot Functions	141.	LS-114
PLOTP - PL/I Printer Plotting Subroutine	104.	LS-030
PLOTTER - Plotter Routines	117.	LSR-048
Plotter Utility Routines for the Tektronix 4662 Plotter	121.	LS-289
POLYVRT - A Geographic Base File Converter Program	336.	LS-325
PPLOT - Ordered Pairs Data Plotting	108.	LS-086
SAS/GRAPH - Interactive Computer Graphics System	264.	LS-118
SCADI (TSL) Scatter Diagram	146.	Note 3
SCATTERGRAM (SPSS-X) Bivariate Scatter Plots	137.	LS-102
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SPECSOLV - Spectra Decomposition	292.	LS-301
SPLOT (SAS) Schematic Printer Plots	138.	LS-118
SURFACE2 - A Program for Contour Maps and Transect Plots	221.	LS-355
SYMAP - Synagraphic Computer Mapping	111.	LS-139
SYMVU - Plotting From Gridded Data or SYMAP Output	112.	LS-218
TCS - Tektronix Terminal Control System	119.	LS-289
Tektronix PLOT 10 Interactive Graphics Library	153.	LS-388
Tektronix TCS, AGII, and PLOTTER Utilities	191.	LS-289
TELL-A-GRAF	156.	LS-387
TSAR - Tele-Storage and Retrieval System	142.	LS-076
USBOX (IMSL) Print a Box Plot (K Samples)	147.	LS-287
USSLF (IMSL) Print a Stem and Leaf Display	147.	LS-287
POINT BISERIAL		
TESTAN - Item Analysis	190.	LS-302
POINT Command (WYLBUR) List Lines of Text	287.	LSR-360
POISSON (APL STATPACK2) Poisson Probabilities	141.	LS-114
POISSON DISTRIBUTION		
BELPOS (IMSL) Basic Statistics	147.	LS-287
GGNPP (IMSL) Nonhomogeneous Poisson Process Generator	147.	LS-287
GGPON (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGPOS (IMSL) Gener. and Testing Random Numbers	147.	LS-287
MDTPS (IMSL) Math. and Stat. Special Functions	147.	LS-287
POISSON (APL STATPACK2) Poisson Probabilities	141.	LS-114
POLICY TESTING		
GAME (Berry-Whybark) Policy Testing	217.	LIB-ECS-40
POLITICAL SCIENCE		
ENERGY - Non-political Environment Simulation	304.	LIB-ECS-61
PRINCE - Programmed International Computer Environment	236.	LIB-ECS-44
SETUPS I - American Series - Political Science	303.	LIB-ECS-59
SETUPS II - World and Cross-National Series-Political Sci.	305.	LIB-ECS-60
SIMSTATE - Simulation Model of a State Economy	226.	LIB-ECS-45
POLITICAL SCIENCE DATA BASES		
SPSS Data Bases for Use in Survey Analysis	302.	LIB-ECS-37
POLREG (TSL) Polynomial Regression	146.	Note 3
POLRTA - Real and Imaginary Roots of Polynomials	150.	LIB-ECS-03
POLYCON - Multidimensional Conjoint Scaling	188.	LS-222
POLYNOMIAL		
BMDP5R (BMDP) Polynomial Regression	323.	LS-308
POLRTA - Real and Imaginary Roots of Polynomials	150.	LIB-ECS-03
POLYNOMIAL REGRESSION		
GLM (SAS) General Linear Models	138.	LS-118
POLREG (TSL) Polynomial Regression	146.	Note 3
RLDCQM (IMSL) Regression Analysis	147.	LS-287

RLDCVA (IMSL) Regression Analysis	147.	LS-287
RLDCW (IMSL) Variance of Regression Coeff.	147.	LS-287
RLDOPM (IMSL) Regression Analysis	147.	LS-287
RLFOR (IMSL) Polynomial Regression Analysis	147.	LS-287
RLFOTH (IMSL) Regression Analysis	147.	LS-287
RLFOTW (IMSL) Regression Analysis	147.	LS-287
RLOPDC (IMSL) Regression Analysis	147.	LS-287
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TSAR - Tele-Storage and Retrieval System	142.	LS-076
POLYNOMIAL ROOTS		
POLRTA - Real and Imaginary Roots of Polynomials	150.	LIB-ECS-03
POLYVRT - A Geographic Base File Converter Program	336.	LS-325
PORT SELECTOR		
INFOTRON Port Selector Service Codes	184.	GI-076
POSITIVE-DEFINITE MATRIX		
ACCLVE (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
ACCRSE (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
CCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
CG (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CHODET (PL/I SPC) Matrix Decomposition	259.	LSR-347
CHOET1 (PL/I SPC) Cholesky Decomposition of Matrix	259.	LSR-347
CHOET2 (PL/I SPC) Matrix Decomposition	259.	LSR-347
CHOOL1 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CHOOL2 (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CHOON1 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CHOON2 (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
CHOSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
CPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
CPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
CPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
CPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
CPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
CPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
CPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
CPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
CPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
CPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
CPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
CPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
CPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
DCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
DCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
DPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
DPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
DPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
DPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
DPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
DPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
DPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
DPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
DPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
DPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
DPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
DPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
DPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
GJDEF1 (PL/I SPC) In-Place Matrix Inversion	259.	LSR-347
GJDEF2 (PL/I SPC) In-Place Inversion of Matrix	259.	LSR-347
SCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
SCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
SPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
SPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
SPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
SPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
SPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
SPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
SPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
SPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
SPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
SPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
SPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358

SPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
SPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
SYMDET (PL/I SPC) Decomposition of Matrix	259.	LSR-347
SYMION (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
SYMSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
ZCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
ZCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
ZPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
ZPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
ZPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
ZPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
ZPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
ZPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
ZPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
ZPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
ZPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
ZPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
ZPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
ZPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
ZPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
PPLOT - Ordered Pairs Data Plotting	108.	LS-086
PRDEST Command (TSO) Establish Default Print Destination	068.	LSR-352
PRECIS - Tape Utility Program	029.	LS-042
PREDICTION		
GLM (SAS) General Linear Models	138.	LS-118
RLINPF (IMSL) Regression Analysis	147.	LS-287
RLOPDC (IMSL) Regression Analysis	147.	LS-287
SYSREG (SAS) - TTLS,LIML, and Seemingly-Unrelated Reg.	138.	LS-118
PREPROCESSOR - Conventions for PL/I Preprocessor Routines	273.	GI-054
PRESENT VALUE		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
PRESENTATION GRAPHICS		
DISSPLA	126.	LS-381
PRIME FACTORS		
VDCPS (IMSL) Prime Factor Decomposition	147.	LS-287
PRINCE - Programmed International Computer Environment	236.	LIB-ECS-44
PRINCIPAL COMPONENTS ANALYSIS		
BMDP4R (BMDP) Regression on Principal Components	323.	LS-308
OPRINC (IMSL) Observation Structure	147.	LS-287
PRINCOMP (SAS) Principal Component Analysis	138.	LS-118
PRINCOMP (SAS) Principal Component Analysis	138.	LS-118
PRINT (SAS) Formatted Listing of Data	138.	LS-118
PRINT Command (TSO) Print Data Set	068.	LSR-352
PRINT Command (WYLBUR) Print a Batch Job	287.	LSR-360
PRINT Command (CMS) Send Spool File to Virtual Printer	130.	Note 12
PRINT LABELS		
LABELS - A Formatted-Output Program	101.	LS-142
PRINTER FLOWCHARTS		
AUTOFLOW - For Printer Flowcharts of Input Programs	132.	LS-201
PRINTER PLOT		
BMDP5D (BMDP) Histograms and Univariate Plots	323.	LS-308
BMDP6D (BMDP) Bivariate (Scatter) Plots	323.	LS-308
BMDP9D (BMDP) Multiway Description of Groups	323.	LS-308
EZPLOT - Printer Plotting Subroutine	113.	LIB-ECS-36
GENPT - General Printer Plotting	114.	LIB-ECS-36
GENPT - Printer Plotting Routine	170.	LS-340
PLOTF - Fortran Printer Plotting Subroutine	103.	LS-030
PLOTP - PL/I Printer Plotting Subroutine	104.	LS-030
SCADI (TSL) Scatter Diagram	146.	Note 3
SCATTER (SAS) Plotting	138.	LS-118
SCATTERGRAM (SPSS-X) Bivariate Scatter Plots	137.	LS-102
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TSAR - Tele-Storage and Retrieval System	142.	LS-076

USHHST (IMSL) Print a Horizontal Histogram	147.	LS-287
USHST (IMSL) Print a Vertical Histogram	147.	LS-287
USHST2 (IMSL) Print Vertical Histogram, Two Freqs./Bar	147.	LS-287
USPC (IMSL) Utility Functions	147.	LS-287
USPDF (IMSL) Utility Functions	147.	LS-287
USPLO (IMSL) Printer Plot of up to Ten Functions	147.	LS-287
USPLOD (IMSL) Printer Plot of up to Ten Functions	147.	LS-287
USPRP (IMSL) Probability Plot	147.	LS-287
PRINTING		
PRDEST Command (TSO) Establish Default Print Destination	068.	LSR-352
PRINT (SAS) - Formatted Listing of Data	138.	LS-118
PRINT Command (TSO) Print Data Set	068.	LSR-352
TEXTCOPY- Interactive Control for Text Printing	100.	LS-292
PRINTTO (SAS) - Send Procedure Output to Disk or Tape	138.	LS-118
PROBABILITIES		
BINOM (APL STATPACK2) Binomial Probabilities	141.	LS-114
CTPR (IMSL) Exact Probabilities for Contingency Tables	147.	LS-287
MDGC (IMSL) Probability Distribution Function	147.	LS-287
MDGCI (IMSL) Inverse Probability Distribution Function	147.	LS-287
NDEST (IMSL) Evaluate Prob. Density at Specified Points	147.	LS-287
NDMPLE (IMSL) Estimate Density Function	147.	LS-287
NDXEST (IMSL) Evaluate Probability Estimate	147.	LS-287
POISSON (APL STATPACK2) Poisson Probabilities	141.	LS-114
PROBABILITY		
RANDOM SAMPLER - General Sampling Simulator	256.	LIB-ECS-49
PROBABILITY FUNCTIONS		
NDMPLE (IMSL) Estimate Density Function	147.	LS-287
NDXEST (IMSL) Evaluate Probability Estimate	147.	LS-287
PROBIT (SPSS-X) Maximum Likelihood Estimates	137.	LS-102
PROBIT ANALYSIS		
PROBIT (SAS) - Probit Analysis	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
PROCEDURE LIBRARIES		
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
PROCLIB		
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
PROCTOR'S GUTTMAN MODEL		
GUTTMAN (SAS) Guttman Scale	138.	LS-118
PRODUCTION		
NATB (Berry-Whybark) Production Scheduling	217.	LIB-ECS-40
NATD (Berry-Whybark) Alternative Production Scheduling	217.	LIB-ECS-40
OROA (Berry-Whybark) Finish Production Forecasts	217.	LIB-ECS-40
OROB (Berry-Whybark) Total Costs of Production	217.	LIB-ECS-40
PRODUCTION FORECASTS		
OROA (Berry-Whybark) Finish Production Forecasts	217.	LIB-ECS-40
PRODUCTION SCHEDULING		
NATB (Berry-Whybark) Production Scheduling	217.	LIB-ECS-40
NATD (Berry-Whybark) Alternative Production Scheduling	217.	LIB-ECS-40
PROFILE Command (TSO) Establish User Profile	068.	LSR-352
PROGRAM LIBRARY ORGANIZATION		
TUCC Documentation and Program Library Organization	342.	GI-072
PROGRAMMING SYSTEMS		
ALGOLW - Student Compiler for Extended ALGOL	062.	LS-125
APFTN64 - FORTRAN for the FPS-164	089.	GIR-086
ASSEMBLER U - VS ASSEMBLER with Base Register Usage Map	278.	LS-359
ASSIST - Student-Oriented Assembler	052.	LS-128
COBOL (ANSI) Compiler	063.	Note 4
COMPILE - Algebraic Compile Macro for PL/I Preprocessor	073.	LS-145
Conversational Monitor System (CMS)	130.	Note 12

EDITOR - Program for the Maintenance of Sequential Files	082.	LS-126
FORMAC - Formula Manipulation	058.	LS-061
IBM APL2	070.	LS-121
LABELS - A Formatted-Output Program	101.	LS-142
MARVEL - MPS Data Preparation and Output Analysis	199.	LSR-022
OBJERR - Changing Fortran Reference Numbers	012.	LS-072
OS/VS COBOL Compiler	055.	LS-351
PL/C - Cornell PL/I Compiler	056.	LSR-095
PL/I OPTIMIZER - Optimizing Compiler	053.	LSR-150
PLC Command (TSO) Invoke Interactive PL/C Compiler	068.	LSR-352
PLI Command (TSO) Invoke PL/I Optimizing Compiler	068.	LSR-352
READCOMM - MPS, Fortran Communication Interface	198.	LSR-022
RPG - Report Program Generator Compiler	067.	Note 1
SIMSCRIPT II - Discrete Simulation Modeling Language	196.	LS-135
SNOBOL4 String Manipulation Language	065.	LS-051
SPITBOL - Fast SNOBOL4 Compiler	066.	Note 8
TSO (Time Sharing Option) Reference Manual	068.	LSR-352
VS ASSEMBLER - IBM Assembly Language	050.	Note 11
VS FORTRAN - IBM FORTRAN IV and FORTRAN 77	059.	LS-362
WATBOL - Waterloo ANSI COBOL Compiler	064.	LS-130
Waterloo C Compiler on VM/CMS	010.	LS-391
WATFIV - Waterloo Fortran Compiler	060.	LSR-101
WYLBUR Reference Manual	287.	LSR-360
PROGRAMS		
INDEX - Index to Computer Programs at TUCC	273.	GIR-000
LIBRARIES - TUCC Program/Subroutine Resident Libraries	342.	GI-072
PROJECT (ICES/360) Scheduling Projects	201.	LS-044
PROJECT SCHEDULING		
CPM (SAS/OR) Critical Path Analysis	159.	LS-118
PROJECT SCHEDULING PROGRAM		
CRIT (Harris-Maggard) Project Scheduling Model	216.	LIB-ECS-39
PROTECT Command (TSO) Maintain Data Set Passwords	068.	LSR-352
PROTECTION		
RACF Security System	118.	GI-093
PROTOCOL CONVERSION		
Using Full Screen Devices: 3270 Terminals and IBM 7171	169.	GI-095
PRTSCRIP - Convert Print File to SCRIPT Input	265.	Note 2
PTCXLATE - General Purpose Translator Subroutine	091.	LS-075
PUNCH		
COPY - Utility Program	018.	LS-103
FRED - Multipurpose Merge-Copy-Editing Program	027.	LS-176
IEBGENER - Multiple Purpose Utility	024.	Note 6
IEBPTPCH - List and Punch Utility	021.	Note 6
PUNCH Command (TSO) Punch Data Set	068.	LSR-352
PUNCHIT - Card Preparation Aid	022.	LS-147
PUNCH Command (TSO) Punch Data Set	068.	LSR-352
PUNCH Command (WYLBUR) Punch a Batch Job	287.	LSR-360
PUNCH Command (CMS) Send Spool File to Virtual Punch	130.	Note 12
PUNCHIT - Card Preparation Aid	022.	LS-147
PURGE Command (WYLBUR) Delete a Batch Job	287.	LSR-360
PURGE Command (CMS) Delete a Spool File	130.	Note 12
QDINT - Numerical Quadrature Integration	148.	LIB-ECS-13
QED		
Introduction to MVS TSO (A Tutorial)	096.	GIR-083
QED Command (TSO) TUCC Editor	068.	LSR-352
Running PL/C Programs Under TSO (Tutorial)	167.	GIR-074
TSO (Time Sharing Option) Reference Manual	068.	LSR-352
QL METHOD		
TQL1 (EISPACK) Compute Eigenvalues	260.	LS-286
TQL2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
QR METHOD		
CQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358

DQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
HQR (EISPACK) Compute Eigenvalues	260.	LS-286
HQR2 (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
LINPACK - Subroutine Library for Linear Algebra	327.	LS-358
SQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
ZQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
QUADRATIC PROGRAMMING		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
QUADRATURE INTEGRATION		
QDINT - Numerical Quadrature Integration	148.	LIB-ECS-13
QUALITY CONTROL		
MARQ (Berry-Whybark) Alternate Quality Control	217.	LIB-ECS-40
QUANTILES		
RANK (SAS) Ranking	138.	LS-118
QUERY Command (CMS) Display Information on Virtual Machine	130.	Note 12
QUESIM (Harris-Maggard) Queuing Simulation Model	216.	LIB-ECS-39
QUESTIONNAIRE ANALYSIS		
SCORE - Multiple Choice and Questionnaire Scoring	189.	LSR-124
QUEUING		
ASQ - Arithmetic Solution to Queues	321.	LS-309
Harris-Maggard Package - Management Analysis	216.	LIB-ECS-39
SIMQUEUE - A Queuing Simulation Model	290.	LIB-ECS-57
QUEUING SIMULATION MODEL		
QUESIM (Harris-Maggard) Queuing Simulation Model	216.	LIB-ECS-39
QUEUING SYSTEMS		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
QUICKCLUSTER (SPSS-X) Cluster Cases into Groups	137.	LS-102
QUIKJOB III - File Maintenance and Report Generator	276.	LS-294
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
QZ-ITERATION		
EQZTF (IMSL) Eigenanalysis	147.	LS-287
QZHES (EISPACK) Reduce to Upper Hessenburg Form	260.	LS-286
QZIT (EISPACK) Reduce to Triangular Form	260.	LS-286
QZVAL (EISPACK) Generalized Eigenvalues of Real System	260.	LS-286
QZVEC (EISPACK) Generalized Eigenvectors of Real System	260.	LS-286
RACF Security System	118.	GI-093
RADIAL (JCP) Radial Distribution Functions	209.	LIB-ECS-50
RADIO (JCP) Simulate Overlapping Radio-Decay Curves	209.	LIB-ECS-50
RANDALL (LERNER) Price for Outgoing Business	212.	LIB-ECS-47
RANDOM NUMBER GENERATOR		
GENDAT (TSL) Generation of Random Samples	146.	Note 3
GGAMR (IMSL) Pseudo-Random Deviates	147.	LS-287
GGBN (IMSL) Binomial Random Deviate Generator	147.	LS-287
GGBNR (IMSL) Pseudo-Random Deviates	147.	LS-287
GGBTR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGCAY (IMSL) Pseudo-Random Deviates	147.	LS-287
GGCHS (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGCOR (IMSL) Generate Random Orth. and Corr. Matrices	147.	LS-287
GGDA(IMSL) Discrete Random Deviate Generator, Alias Method	147.	LS-287
GGDT(IMSL) Discrete Random Deviate Generator, Table Lookup	147.	LS-287
GGEOT (IMSL) Pseudo-Random Deviates	147.	LS-287
GGEXN (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGEXT (IMSL) Ran. Dev. Gen. for Mix of Two Exponentials	147.	LS-287
GGHPR (IMSL) Pseudo-Random Deviates	147.	LS-287
GGMTN (IMSL) Multinomial Random Deviate Generator	147.	LS-287
GGNLG (IMSL) Pseudo-Random Deviates	147.	LS-287
GGNML (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGNPM (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGNQF (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGNSM (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGPER (IMSL) Random Permutation of Integers 1 to K	147.	LS-287
GGPON (IMSL) Gener. and Testing Random Numbers	147.	LS-287

GGPOS (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGSPH (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGSRS (IMSL) Simple Random Sample from Finite Population	147.	LS-287
GGSTA (IMSL) Stable Distribution Random Deviate Generator	147.	LS-287
GGTAB (IMSL) Generate Random Contingency Table	147.	LS-287
GGTRA (IMSL) Pseudo-Random Deviates	147.	LS-287
GGUBFS (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGUBS (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGUBT (IMSL) Uniform Pseudo-Random Number Generator	147.	LS-287
GGUD (IMSL) Discrete Uniform Random Number Generator	147.	LS-287
GGUW (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGVCR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GGVMS (IMSL) Von Mises Random Deviate Generator	147.	LS-287
GGWIB (IMSL) Pseudo-Random Deviates	147.	LS-287
RANDOM SAMPLER - General Sampling Simulator	256.	LIB-ECS-49
SAS - Statistical Analysis System	138.	LS-118
SHRU - Random Number Generator Subroutine	255.	LS-090
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
VARGEN - Random Distribution Generator Subroutine	257.	LS-110
RANDOM NUMBER TEST		
GTDDU (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTD2T (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTMNT (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTNOR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPKP (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPL (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPOK (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPR (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTPST (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTRN (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTRTN (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTTRT (IMSL) Gener. and Testing Random Numbers	147.	LS-287
GTTT (IMSL) Gener. and Testing Random Numbers	147.	LS-287
RANDOM SAMPLER - General Sampling Simulator	256.	LIB-ECS-49
RANK (SAS) Ranking	138.	LS-118
RANKING		
NMRANK (IMSL) Nonparametric Statistics	147.	LS-287
RANK (SAS) Ranking	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
RATE - Est. of Stochastic Models of Change in Cat. Vars.	160.	LS-389
RATES (TSL) Computation and Comparison of Adjusted Rates	146.	Note 3
RATIONAL QR METHOD		
RATQR (EISPACK) Compute Eigenvalues	260.	LS-286
RATQR (EISPACK) Compute Eigenvalues	260.	LS-286
RATQR (PL/I SPC) Compute Lowest Eigenvalues	259.	LSR-347
RATS - Regression Analysis of Time Series	061.	LS-375
RCLOCK - Real-Time Run Timing Information	272.	LS-014
RDR Command (CMS) Display Info on Reader Files	130.	Note 12
RDRLIST Command (CMS) Display Information on Reader Files	130.	Note 12
RDTERM (PL/I Sub) Read Input from a File	306.	LS-305
READCARD Command (CMS) Read Data from Virtual Reader	130.	Note 12
READCOMM - MPS, Fortran Communication Interface	198.	LSR-022
READY Command (CMS) Cause Device Interrupt	130.	Note 12
REAL NUMBERS		
GCD,GC - APL Greatest Common Divisor Functions	247.	Note 10
REAL ROOTS		
POLRTA - Real and Imaginary Roots of Polynomials	150.	LIB-ECS-03
REAL TIME		
RUNTIME - Run Timing Subroutines	272.	LS-014
TIME - Real Time Clock Read Subroutine	269.	LS-078
REBAK (EISPACK) Backtransform Generalized Eigensystem	260.	LS-286
REBAKA (PL/I SPC) Compute Eigenvectors of Original Problem	259.	LSR-347
REBAKB (EISPACK) Backtransform Generalized Eigensystem	260.	LS-286
REBAKB (PL/I SPC) Compute Eigenvectors of Original Problem	259.	LSR-347

RECALL		
DFHSM - Hierarchical Storage Manager	106.	GI-090
RECATLG Command (WYLBUR) Recatalog a Data Set	287.	LSR-360
RECEIVE		
RECEIVE Command (CMS) Read a File or Note onto Disk	130.	Note 12
Using Electronic Mail	124.	GIR-089
RECEIVE (TSO) Receive Transmitted Files	068.	LSR-352
RECODE - Procedure for SAS Variable Value Changes	044.	LS-374
RECTANGULAR MATRIX		
LINPACK - Subroutine Library for Linear Algebra	327.	LS-358
SVD (PL/I SPC) Singular Values, Decomposition of Matrix	259.	LSR-347
UNSDET (PL/I SPC) Factorization, Determinant of Matrix	259.	LSR-347
RECURSION		
LISP/360 - Symbolic Data Processing	309.	LS-316
REDUC (EISPACK) Reduce Generalized Symmetric Eigenproblem	260.	LS-286
REDUCE - An Algebraic Programming System	125.	LS-380
REDUC1 (PL/I SPC) Reduce Symmetric Eigenproblem	259.	LSR-347
REDUC2 (EISPACK) Reduce Generalized Symmetric Eigenproblem	260.	LS-286
REDUC2 (PL/I SPC) Reduces Symmetric Eigenproblems	259.	LSR-347
REFERENCE Command (WYLBUR) Swap Qwik Files	287.	LSR-360
REFERENCE NUMBERS		
OBJERR - Changing Fortran Reference Numbers	012.	LS-072
UNIT567 - Change FORTRAN Reference Numbers	249.	GI-081
REG (APL STATPACK2) Simple and Multiple Regression	141.	LS-114
REG (SAS) Fit Least-Sq. Estimates to Lin. Reg. Models	138.	LS-118
REGANA (TSL) Multiple Regression	146.	Note 3
REGIONAL PLANNING		
CLUG - Community Land Use Game	231.	LIB-ECS-51
REGRESSION		
AGLMOD (IMSL) Analysis of Experimental Design Data	147.	LS-287
AID - Automatic Interaction Detector	172.	LSR-163
AUTOREG (SAS/ETS) Regression with Autoregressive Errors	263.	LS-118
BEMIRI (IMSL) Basic Statistics	147.	LS-287
BEMIRO (IMSL) Basic Statistics	147.	LS-287
BMDPAR (BMDP) Derivative-Free Nonlinear Regression	323.	LS-308
BMDP1R (BMDP) Multiple Linear Regression	323.	LS-308
BMDP2R (BMDP) Stepwise Regression	323.	LS-308
BMDP3R (BMDP) Nonlinear Regression	323.	LS-308
BMDP4R (BMDP) Regression on Principal Components	323.	LS-308
BMDP5R (BMDP) Polynomial Regression	323.	LS-308
BMDP6D (BMDP) Bivariate (Scatter) Plots	323.	LS-308
BMDP6R (BMDP) Partial Correlation and Multivar. Regression	323.	LS-308
BMDP9R (BMDP) All Possible Subsets Regression	323.	LS-308
DATA-TEXT - Data Analysis Package	143.	LS-167
GENCAT - Categorical Data Program	347.	LS-366
GLM (SAS) General Linear Models	138.	LS-118
LINEAR (JCP) Linear Regression Analysis	209.	LIB-ECS-50
MANOVA (SPSS-X) General Linear Models	137.	LS-102
MANOVA - Multivariate Analysis of Variance	174.	LSR-108
MREG (APL STATPACK2) Conversational Regression	141.	LS-114
MULMOD (TSL) Multivariate Regression	146.	Note 3
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
NONREG (TSL) Nonlinear Regression	146.	Note 3
POLREG (TSL) Polynomial Regression	146.	Note 3
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
RATS - Regression Analysis of Time Series	061.	LS-375
REG (APL STATPACK2) Simple and Multiple Regression	141.	LS-114
REG (SAS) Fit Least-Sq. Estimates to Lin. Reg. Models	138.	LS-118
REGANA (TSL) Multiple Regression	146.	Note 3
REGRESSION (SPSS-X) Multiple Regression Analysis	137.	LS-102
RIDGEREG (SAS/ETS) Ridge and P.C. Regression	263.	LS-118
RLDCQM (IMSL) Regression Analysis	147.	LS-287
RLDCW (IMSL) Variance of Regression Coeff.	147.	LS-287
RLFOR (IMSL) Poylnomial Regression Analysis	147.	LS-287
RLGQMO (IMSL) Regression Analysis	147.	LS-287

RLINCF (IMSL) Regression Analysis	147.	LS-287
RLINPF (IMSL) Regression Analysis	147.	LS-287
RLLAV (IMSL) Linear Regression, Least Absolute Values	147.	LS-287
RLLMV (IMSL) Linear Regression, Minimax Criterion	147.	LS-287
RLMUL (IMSL) Multiple Linear Regression	147.	LS-287
RLONE (IMSL) Simple Linear Regression	147.	LS-287
RLRES (IMSL) Residual Analysis	147.	LS-287
RSQUARE (SAS) All Possible Regressions	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SR (APL STATPACK2) Simple Regression	141.	LS-114
STEPWISE (SAS) - Stepwise Regression	138.	LS-118
STREG (APL STATPACK2) Stepwise Regression	141.	LS-114
SYSREG (SAS) - TTLS, LIML, and Seemingly-Unrelated Reg.	138.	LS-118
TSAR - Tele-Storage and Retrieval System	142.	LS-076
TTLS - Two and Three Stage Least Squares	168.	LSR-140
REGRESSION (SPSS-X) Multiple Regression Analysis	137.	LS-102
REGS - Macro to Equate Registers	099.	LS-067
REINFORCED CONCRETE ANALYSIS		
STRUDL (ICES/360) Structural Engineering Problems	201.	LS-044
RELEASE		
RELEASE (SAS) Release Unused Space in Disk Data Sets	138.	LS-118
RELEASE Command (CMS) Free a Disk	130.	Note 12
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
RELIABILITY (SPSS-X) Item Analysis	137.	LS-102
REMOTE JOB ENTRY (see also BATCH PROCESSING)		
IOF Command (TSO) Cancel, Route Batch Job, View Output	068.	LSR-352
MVS - A New Operating System for TUCC's Batch/RJE Service	178.	GI-080
RUN Command (WYLBUR) Submit a Batch Job	287.	LSR-360
SUBMIT Command (TSO) Submit Jobs for Batch Execution	068.	LSR-352
WYLBUR Reference Manual	287.	LSR-360
WYLBUR User Guide	287.	LSR-353
REMOTE LOGON		
Access to Remote Computers via the INTERNET	176.	GI-097
RENAME Command (TSO) Change Data Set Name	068.	LSR-352
RENAME Command (CMS) Rename CMS File	130.	Note 12
REPLACE Command (WYLBUR) Replace Lines of Text	287.	LSR-360
REPLICATION ERROR		
RLFITI (IMSL) Regression Analysis	147.	LS-287
RLFITO (IMSL) Regression Analysis	147.	LS-287
REPORT (SPSS-X) Report Writing Routine	137.	LS-102
REPORT GENERATOR		
ASAP - File Management and Retrieval System	080.	LS-136
MARK IV - File Management System	312.	LS-317
QUIKJOB III - File Maintenance and Report Generator	276.	LS-294
SPSS-X - Statistical Package for the Social Sciences	137.	LS-102
REPRODUCIBILITY COEFFICIENT		
GUTTMAN (SAS) Guttman Scale	138.	LS-118
REPRODUCING		
COPY - Utility Program	018.	LS-103
IEBGENER - Multiple Purpose Utility	024.	Note 6
PUNCHIT - Card Preparation Aid	022.	LS-147
REQUEST Command (CMS) Cause an Attention Interrupt	130.	Note 12
RESET Command (CMS) Clear Pending Interrupts	130.	Note 12
RESIDUALS		
BMDPAR (BMDP) Derivative-Free Nonlinear Regression	323.	LS-308
BMDP1R (BMDP) Multiple Linear Regression	323.	LS-308
BMDP2R (BMDP) Stepwise Regression	323.	LS-308
BMDP3R (BMDP) Nonlinear Regression	323.	LS-308
BMDP4R (BMDP) Regression on Principal Components	323.	LS-308
BMDP5R (BMDP) Polynomial Regression	323.	LS-308
BMDP9R (BMDP) All Possible Subsets Regression	323.	LS-308

DATA-TEXT - Data Analysis Package	143.	LS-167
GLM (SAS) General Linear Models	138.	LS-118
MREG (APL STATPACK2) Conversational Regression	141.	LS-114
NONREG (TSL) Nonlinear Regression	146.	Note 3
REGANA (TSL) Multiple Regression	146.	Note 3
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
STATRES (APL STATPACK2) Residual Statistics	141.	LS-114
SYSREG (SAS) - TTLS, LIML, and Seemingly-Unrealted Reg.	138.	LS-118
TSAR - Tele-Storage and Retrieval System	142.	LS-076
RESPONSE CONTROL		
RLINCF (IMSL) Regression Analysis	147.	LS-287
RESTORING		
DUMPRSTR - Dump and Restore Direct Access Volumes	274.	LS-290
RESTRICTED LEAST SQUARES		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
RETRIEVAL		
ASAP - File Management and Retrieval System	080.	LS-136
MARK IV - File Management System	312.	LS-317
RETURN CODE		
SETCD or SETCODE - Set Return Codes	074.	LS-015
REVERSE (PL/I Sub) Reverse a Given Character String	306.	LS-305
RG (EISPACK) Solve Eigensystem of General Real Matrix	260.	LS-286
RGG (EISPACK) Solve Generalized Real Eigenproblem	260.	LS-286
RIDGEREG (SAS/ETS) Ridge and P.C. Regression	263.	LS-118
RLCOMP (IMSL) Regression Analysis	147.	LS-287
RLDCQM (IMSL) Regression Analysis	147.	LS-287
RLDCVA (IMSL) Regression Analysis	147.	LS-287
RLDCW (IMSL) Regression Analysis	147.	LS-287
RLDOPM (IMSL) Regression Analysis	147.	LS-287
RLEAP (IMSL) Regression Analysis	147.	LS-287
RLFITI (IMSL) Regression Analysis	147.	LS-287
RLFITO (IMSL) Regression Analysis	147.	LS-287
RLFOR (IMSL) Regression Analysis	147.	LS-287
RLFOTH (IMSL) Regression Analysis	147.	LS-287
RLFOTW (IMSL) Regression Analysis	147.	LS-287
RLGQMI (IMSL) Regression Analysis	147.	LS-287
RLGQMO (IMSL) Regression Analysis	147.	LS-287
RLINCF (IMSL) Regression Analysis	147.	LS-287
RLINPF (IMSL) Regression Analysis	147.	LS-287
RLLAV (IMSL) Linear Regression, Least Absolute Values	147.	LS-287
RLLMV (IMSL) Linear Regression, Minimax Criterion	147.	LS-287
RLMQMO (IMSL) Regression Analysis	147.	LS-287
RLMUL (IMSL) Regression Analysis	147.	LS-287
RLONE (IMSL) Regression Analysis	147.	LS-287
RLOPDC (IMSL) Regression Analysis	147.	LS-287
RLPOL (IMSL) Regression Analysis	147.	LS-287
RLPRDI (IMSL) Regression Analysis	147.	LS-287
RLPRDO (IMSL) Regression Analysis	147.	LS-287
RLRES (IMSL) Regression Analysis	147.	LS-287
RLSEP (IMSL) Regression Analysis	147.	LS-287
RLSTP (IMSL) Regression Analysis	147.	LS-287
RLSUBM (IMSL) Regression Analysis	147.	LS-287
RLSUM (IMSL) Regression Analysis	147.	LS-287
RND (APL STATPACK2) Round	141.	LS-114
RO Command (CMS) Resume Trace	130.	Note 12
ROADS (ICES/360) Highway Location Problems	201.	LS-044
ROOTS		
AMP - Argonne Minimization Package	322.	LS-310
POLRTA - Real and Imaginary Roots of Polynomials	150.	LIB-ECS-03
ZANLYT (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZBRENT (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZCPOLY (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZFALSE (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZPOLR (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZQADC (IMSL) Complex Quadratic Equations	147.	LS-287
ZQADR (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZREAL1 (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZREAL2 (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287

ZRPOLY (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZSRCH (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ROUNDING		
RND (APL STATPACK2) Round	141.	LS-114
ROY'S MAXIMUM ROOT CRITERION		
ANOVA (SAS) - Analysis of Variance for Balanced Designs	138.	LS-118
GLM (SAS) General Linear Models	138.	LS-118
MULMOD (TSL) Multivariate Regression	146.	Note 3
RPG		
IBM OS/VS RPG II	035.	LS-368
RPG - Report Program Generator Compiler	067.	Note 1
RS (EISPACK) Solve Eigensystem of Symmetric Real Matrix	260.	LS-286
RSB (EISPACK) Solve Eigenproblem of Symmetric Band Matrix	260.	LS-286
RSG (EISPACK) Solve Generalized Symmetric Eigenproblem	260.	LS-286
RSGAB (EISPACK) Solve Generalized Symmetric Eigenproblem	260.	LS-286
RSGBA (EISPACK) Solve Generalized Symmetric Eigenproblem	260.	LS-286
RSIM (APL STATPACK2) Linear Programming	141.	LS-114
RSIM1 (APL STATPACK2) Linear Programming	141.	LS-114
RSMITZ (IMSL) Regression Analysis	147.	LS-287
RSP (EISPACK) For Packed Symmetric Matrix	260.	LS-286
RSQUARE (SAS) All Possible Regressions	138.	LS-118
RSREG (SAS) Fit Parameters of Quadratic Response Model	138.	LS-118
RST (EISPACK) For Symmetric Tridiagonal Matrix	260.	LS-286
RT (EISPACK) For Real Tridiagonal Matrix	260.	LS-286
RT Command (CMS) Resume Terminal Display	130.	Note 12
RUN Command (TSO) Compile and Execute Program	068.	LSR-352
RUN Command (WYLBUR) Submit a Batch Job	287.	LSR-360
RUN Command (CMS) Compile, Load, or Execute File	130.	Note 12
RUNGE (JCP) Solve System of Linear Equations	209.	LIB-ECS-50
RUNGE-KUTTA METHOD		
DVERK (IMSL) First Order Equation Solver	147.	LS-287
RUNGE (JCP) Solve System of Linear Equations	209.	LIB-ECS-50
Running Jobs on the CYBER 205 at Colorado State University	092.	GI-087
Running PL/C Programs Under TSO (Tutorial)	167.	GIR-074
Running WATFIV Programs Under TSO (Tutorial)	325.	GIR-070
RUNTIME - Run Timing Subroutines	272.	LS-014
SAMPLING		
RANDOM SAMPLER - General Sampling Simulator	256.	LIB-ECS-49
SSPAND (IMSL) Sampling	147.	LS-287
SSPBLK (IMSL) Sampling	147.	LS-287
SSRAND (IMSL) Sampling	147.	LS-287
SSRBLK (IMSL) Sampling	147.	LS-287
SSSAND (IMSL) Sampling	147.	LS-287
SSSBLK (IMSL) Sampling	147.	LS-287
SSSCAN (IMSL) Sampling	147.	LS-287
SSSEST (IMSL) Sampling	147.	LS-287
SAS		
RECODE - Procedure for SAS Variable Value Changes	044.	LS-374
SAS - Statistical Analysis System	138.	LS-118
SAS/ETS - Econometrics and Time Series Library	263.	LS-118
SAS/FSP - SAS Full Screen Product	158.	LS-118
SAS/GRAPH - Interactive Computer Graphics System	264.	LS-118
SAS/OR - Operations Research	159.	LS-118
SAS72 (SAS) - Call SAS72 Procedure	138.	LS-118
XMITSAS - SAS Data Set Transmission System	177.	LS-390
SAVAGE		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
SAVE (SPSS-X) Save System File	137.	LS-102
SAVE Command (WYLBUR) Store a File on Disk	287.	LSR-360
SBROWN (AMP) - Argonne Minimization Subroutine	322.	LS-310
SCADI (TSL) Scatter Diagram	146.	Note 3
SCALING		
POLYCON - Multidimensional Conjoint Scaling	188.	LS-222
SOUPAC - Statistically Oriented Users' Package	139.	LS-237

TORSCA - Torgerson Nonmetric Multidimensional Scaling	187.	LSR-112
SCALOGRAM		
GUTTMAN (SAS) Guttman Scale	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SCATTER DIAGRAM		
BMDP6D (BMDP) Bivariate (Scatter) Plots	323.	LS-308
POLREG (TSL) Polynomial Regression	146.	Note 3
SCADI (TSL) Scatter Diagram	146.	Note 3
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SCATTERGRAM (SPSS-X) Bivariate Scatter Plots	137.	LS-102
SCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
SCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
SCHEDULING		
NATB (Berry-Whybark) Production Scheduling	217.	LIB-ECS-40
NATD (Berry-Whybark) Alternative Production Scheduling	217.	LIB-ECS-40
SCHEDULING ANALYSIS		
Harris-Maggard Package - Management Analysis	216.	LIB-ECS-39
SCHEDULING PROGRAM		
CRIT (Harris-Maggard) Project Scheduling Model	216.	LIB-ECS-39
SCHEFFE'S TEST		
ONEWAY (SPSS-X) One-way Analysis of Variance	137.	LS-102
SCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
SCHMIDT ORTHOGONALIZATION		
ORTHO2 (PL/I SPC) Inversion of Real Matrix	259.	LSR-347
SCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
SCLR Command (TSO) Specify String to Clear CRT Screen	068.	LSR-352
SCORE (SAS) - Factor Scores	138.	LS-118
SCORE - Multiple Choice and Questionnaire Scoring	189.	LSR-124
SCORING AND ITEM ANALYSIS		
SCORE - Multiple Choice and Questionnaire Scoring	189.	LSR-124
TESTAN - Item Analysis Program	190.	LS-302
SCORR (APL STATPACK2) Simple Correlation	141.	LS-114
SCRATCH		
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
SCREEN Command (TSO) Specify Screen Dimensions of CRT	068.	LSR-352
SCREEN Command (CMS) Change Screen Highlighting	130.	Note 12
SCRIPT		
ADDIX - Add Index Commands to a SCRIPT File	049.	Note 2
Introduction to SCRIPT (Tutorial)	140.	GIR-075
OCRSCRIP - Convert OCR Scanning Tape to SCRIPT Input	194.	Note 2
PRTSCRIP - Convert Print File to SCRIPT Input	265.	Note 2
SCRIPT - Text Processing Program	319.	LS-307
SCRIPT Command (CMS) Invoke SCRIPT Processor	130.	GI-092
Typesetting with SCRIPT	054.	Note 2
SCRIPT Command (TSO) Invoke SCRIPT Processor	068.	LSR-352
SECURITY		
CRYPT - Subroutine for Encrypting and Decrypting Data	085.	LS-138
PROTECT Command (TSO) Maintain Data Set Passwords	068.	LSR-352
RACF Security System	118.	GI-093
TUCC Security Features	288.	GI-066
SEEK - MINUIT Minimizing Method	215.	LS-341
SEIDEL (JCP) Solve System of Linear Equatons	209.	LIB-ECS-50
SEMICONDUCTOR SIMULATION		
SPICE - Program for Electronic Circuit Analysis	069.	LS-376
SEND Command (TSO) Send Message to Operator or User	068.	LSR-352
SENDFILE Command (CMS) Send Files or Notes	130.	Note 12

SENTRIES Command (CMS) Determine Lines in Program Stack	130.	Note 12
SEPOL (ICES/360) Calculation of Stresses and Strains	201.	LS-044
SEQUENCE ERRORS		
ERLST - For Data Sequencing Errors	088.	LS-186
SEQUENCE NUMBERS		
CARDSEQ1 - Duplicate Deck, Sequence Numbers col. 73-80	005.	Note 9
CARDSEQ2 - Duplicate Deck, Sequence Numbers col. 1-6	005.	Note 9
IEBUPDTE - Update Utility	019.	Note 6
SUPERLIB - General Library Maintenance Utility Program	026.	LSR-127
SERDATE (PL/I Sub) Produce Serial-Day Date yyddd	306.	LS-305
SERVICE CODES		
INFOTRON Port Selector Service Codes	184.	GI-076
SESSION (PL/I System Sub) Perform SVC252	279.	LS-297
SET Command (CMS) Control Virtual Machine Functions	130.	Note 12
SET/SHOW Command (WYLBUR) Set or Show Session Parameters	287.	LSR-360
SETCD or SETCODE - Set Return Codes	074.	LS-015
SETUPS		
SPSS Data Bases for Use in Survey Analysis	302.	LIB-ECS-37
SETUPS I - American Series - Political Science	303.	LIB-ECS-59
SETUPS II - World and Cross-National Series-Political Sci.	305.	LIB-ECS-60
7171 (SEE IBM 7171)		
SFCFIT - Smooth Bivariate Interpolation	248.	LS-242
SGECO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
SGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
SGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
SGBSL (LINPACK) Solve a Band System	327.	LS-358
SGECO (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
SGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
SGEFA (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
SGESL (LINPACK) Solve System Given Factors of Matrix	327.	LS-358
SGTSL (LINPACK) Solve a Tridiagonal System	327.	LS-358
SHALLOW FOUNDATION ANALYSIS		
SEPOL (ICES/360) Calculation of Stresses and Strains	201.	LS-044
SHOWAPL - Demonstration of APL Language and APL System	239.	LS-133
SHRU - Random Number Generator Subroutine	255.	LS-090
SIGN TEST		
BMDP3S (BMDP) Nonparametric Statistics	323.	LS-308
NBSD (IMSL) N. Nonparametric Statistics	147.	LS-287
NBSDL (IMSL) Nonparametric Statistics	147.	LS-287
NBSIGN (IMSL) N. Nonparametric Statistics	147.	LS-287
NBSL (IMSL) N. Nonparametric Statistics	147.	LS-287
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
SIGRAN (TSL) Wilcoxon Signed-Rank Procedure	146.	Note 3
SIMLIN (SAS/ETS) Simulation of Linear Systems	263.	LS-118
SIMNLIN (SAS/ETS) Simulation of Nonlinear Systems	263.	LS-118
SIMP (JCP) Simpson's Rule Integration	209.	LIB-ECS-50
SIMPLEX (APL STATPACK2) Linear Programming	141.	LS-114
SIMPLEX - MINUIT Minimizing Method	215.	LS-341
SIMPLEX METHOD		
ZX4LP (IMSL) Linear Programming, Revised Simplex Method	147.	LS-287
SIMPSON INTEGRATION		
QDINT - Numerical Quadrature Integration	148.	LIB-ECS-13
SIMP (JCP) Simpson's Rule Integration	209.	LIB-ECS-50
SIMQUEUE - A Queuing Simulation Model	290.	LIB-ECS-57
SIMSCRIPT II - Discrete Simulation Modeling Language	196.	LS-135
SIMSTATE - Simulation Model of a State Economy	226.	LIB-ECS-45
SIMULATIONS		
ACSL - Advanced Continuous Simulation Language	038.	LS-369

Berry-Whybark Package - Logistics Management	217.	LIB-ECS-40
CLUG - Community Land Use Game	231.	LIB-ECS-51
DONMAR II - Media Simulation Game	315.	LS-314
DYNAMO II - Continuous Dynamic Modeling System	195.	LS-115
DYNAMO III - A System for Continuous Dynamic Modeling	339.	LS-328
EMORY Game - Business Management Laboratory Simulation	154.	LS-333
ENERGY - Non-political Environment Simulation	304.	LIB-ECS-61
Executive Game	332.	LS-324
FCHART - Simulation in Design of Solar Heated Homes	163.	LS-337
FINANSIM - Financial Management Simulation	157.	LS-335
GPSS V - General Purpose Simulation System	193.	LS-080
HORN (Berry-Whybark) Warehouse Location Simulation	217.	LIB-ECS-40
IDGAME - Qualitative Organic Identification Game	208.	LS-319
LERNER - Finance Simulation Cases	212.	LIB-ECS-47
MACII - Macroeconomic Policy Game	228.	LIB-ECS-48
MacWharton - Macroeconomic Policy Simulation	227.	LIB-ECS-46
MGMT1/MGMT2 - Harvard Management Simulation	230.	LIB-ECS-52
MGMT2 - Harvard Management Simulation	230.	LIB-ECS-52
PIZAZ Game - Starting a Small Business	162.	LS-336
PRINCE - Programmed International Computer Environment	236.	LIB-ECS-44
QUESIM (Harris-Maggard) Queuing Simulation Model	216.	LIB-ECS-39
RANDOM SAMPLER - General Sampling Simulator	256.	LIB-ECS-49
SIMQUEUE - A Queuing Simulation Model	290.	LIB-ECS-57
SIMSCRIPT II - Discrete Simulation Modeling Language	196.	LS-135
SIMSTATE - Simulation Model of a State Economy	226.	LIB-ECS-45
SLAM - Simulation Language for Alternative Modeling	180.	LS-345
SPICE - Program for Electronic Circuit Analysis	069.	LS-376
TEMPOMATIC IV - A Management Simulation	314.	LS-323
UNISIM (Harris-Maggard) One-Product Company Simulation	216.	LIB-ECS-39
SINGULAR VALUES		
LINPACK - Subroutine Library for Linear Algebra	327.	LS-358
LSVDB (IMSL) Linear Algebraic Equations	147.	LS-287
LSVDF (IMSL) Linear Algebraic Equations	147.	LS-287
MATRIX (SAS) - Matrix Manipulation	138.	LS-118
MINFIT (EISPACK) Minimal Norm Solution	260.	LS-286
MINFIT (PL/I SPC) Singular Values and Solve Equations	259.	LSR-347
SVD (EISPACK) Singular Value Decomposition	260.	LS-286
SVD (PL/I SPC) Singular Values, Decomposition of Matrix	259.	LSR-347
SIR/DBMS - Scientific Information Retrieval	039.	LS-370
SIR/HOST - FORTRAN Interface to SIR/DBMS	040.	LS-371
SLAM - Simulation Language for Alternative Modeling	180.	LS-345
SLEEP Command (CMS) Place Virtual Machine in Dormant State	130.	Note 12
SLIBDUMP - Dumping PDSs	031.	LS-282
SLOPE STABILITY ANALYSIS		
LEASE (ICES/360) Stability Analysis of Slope	201.	LS-044
SMOOTH (APL STATPACK2) Weighted Moving Averages	141.	LS-114
SMOOTHING		
CPDA and CENLIB - Demographic Analysis Programs	320.	LS-320
EXPON - Triple Exponential Smoothing	186.	LIB-ECS-14
ICSMOU (IMSL) Smoothing by Error Detection	147.	LS-287
ICSSCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
ICSSCV (IMSL) Cubic Spline Smoother	147.	LS-287
IHQSCU (IMSL) Interp., Approx., and Smoothing	147.	LS-287
IQHSCV (IMSL) Smooth Surface Fitting, Irreg. Dist. Data	147.	LS-287
NICK (Berry-Whybark) Adaptive Smoothing	217.	LIB-ECS-40
SMOOTH (APL STATPACK2) Weighted Moving Averages	141.	LS-114
SMSG Command (CMS) Send Command to Virtual Machine	130.	Note 12
SNGINT (AMP) - Argonne Minimization Subroutine	322.	LS-310
SNOBOL4 String Manipulation Language	065.	LS-051
SO Command (CMS) Suspend Trace	130.	Note 12
SOCIAL SCIENCES		
CLUG - Community Land Use Game	231.	LIB-ECS-51
MGMT1/MGMT2 - Harvard Management Simulation	230.	LIB-ECS-52
MGMT2 - Harvard Management Simulation	230.	LIB-ECS-52
PRINCE - Programmed International Computer Environment	236.	LIB-ECS-44
SOCIOLOGY		
CLUG - Community Land Use Game	231.	LIB-ECS-51

SPSS Data Bases for Use in Survey Analysis	302.	LIB-ECS-37
SOKOL DATA BASES		
SPSS Data Bases for Use in Survey Analysis	302.	LIB-ECS-37
SOL (JCP) Solubility as a Function of pH	209.	LIB-ECS-50
SOLAR HEATING		
FCHART - Simulation in Design of Solar Heated Homes	163.	LS-337
SOLUBILITY		
SOL (JCP) Solubility as a Function of pH	209.	LIB-ECS-50
SOMER'S D		
ANATAB (TSL) Analysis of Contingency Tables	146.	Note 3
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
CROSSTABS (SPSS-X) Contingency Table Analysis	137.	LS-102
DATA-TEXT - Data Analysis Package	143.	LS-167
SORT (SAS) Sorting	138.	LS-118
SORT (TSO) - Sort Records in Data Set	308.	LS-306
SORT CASES (SPSS-X) Reorder Sequence of Cases	137.	LS-102
SORT Command (CMS) Sort Records in a File	130.	Note 12
SORTING		
SORT (SAS) Sorting	138.	LS-118
SORT (TSO) - Sort Records in Data Set	308.	LS-306
SORT Command (CMS) Sort Records in a File	130.	Note 12
SYNCSORT - Sort/Merge Program and SORT Cataloged Procedure	179.	LS-343
VECSRT - PL/I Vector Sorting Source Procedure	090.	LS-100
VSAD (IMSL) Sort a Double Precision Matrix	147.	LS-287
VSAR (IMSL) Sort a Matrix	147.	LS-287
VSODA (IMSL) Sort Columns of Double Precision Matrix	147.	LS-287
VSORA (IMSL) Sort Columns of a Matrix	147.	LS-287
VSRTxx (IMSL) Vector Sorting Routine	147.	LS-287
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SOURCE (SAS) Print Contents of PDS	138.	LS-118
SPARSE MATRIX		
SPARSPAK - Waterloo Sparse Linear Equations Package	072.	LS-361
SPARSPAK - Waterloo Sparse Linear Equations Package	072.	LS-361
SPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
SPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
SPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
SPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
SPEARMAN CORRELATION		
NONPAR CORR (SPSS-X) Nonparametric Correlation	137.	LS-102
SPEARMAN RANK CORR		
ANATAB (TSL) Analysis of Contingency Tables	146.	Note 3
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
BMDP3S (BMDP) Nonparametric Statistics	323.	LS-308
CORR (SAS) - Correlation	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SPEARMAN RANK CORRELATION		
TSAR - Tele-Storage and Retrieval System	142.	LS-076
SPECSOLV - Spectra Decomposition	292.	LS-301
SPECTRA (SAS) - Spectral Analysis	138.	LS-118
SPECTRA (SAS/ETS) Spectral Analysis	263.	LS-118
SPECTRAL ANALYSIS		
FTFPS (IMSL) Power and Cross-Spectra	147.	LS-287
FTFREQ (IMSL) Forecast.; Econometrics; Timeseries	147.	LS-287
RATS - Regression Analysis of Time Series	061.	LS-375
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SPECSOLV - Spectra Decomposition	292.	LS-301
SPECTRA (SAS) - Spectral Analysis	138.	LS-118
SPELL CHECKING		
SCRIPT - Text Processing Program	319.	LS-307

WORDSCAN - Identifying Misspelled Words	002.	Note 2
WORDUTIL - Maintain Spelling Lists for WORDSCAN	002.	Note 2
SPICE - Program for Electronic Circuit Analysis	069.	LS-376
SPITBOL - Fast SNOBOL4 Compiler	066.	Note 8
SPLCLS - Tektronix Picture Saving Routine	324.	LS-311
SPLOPN - Tektronix Picture Saving Routine	324.	LS-311
SPLOT (SAS) Schematic Printer Plots	138.	LS-118
SPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
SPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
SPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
SPOOL - Tektronix Picture Saving Routine	324.	LS-311
SPOOL Command (CMS) Change Spooling Control Options	130.	Note 12
SPOOL FILE		
CHANGE Command (CMS) Alter Attributes of Closed Spool File	130.	Note 12
SPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
SPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
SPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
SPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
SPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
SPREADSHEETS		
FSCALC (SAS/FSP) Create Spreadsheet	158.	LS-118
SPSS		
SPSS Data Bases for Use in Survey Analysis	302.	LIB-ECS-37
SPSS-X - Statistical Package for the Social Sciences	137.	LS-102
SPS2TSL (TSL) Translate SPSS Data Sets to TSL Data Sets	146.	Note 3
SPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
SQC (Harris-Maggard) Statistical Growth Chart Modeling	216.	LIB-ECS-39
SQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
SQRSL (LINPACK) Compute Coord. Trans., Proj., Least Sq. Sol.	327.	LS-358
SQUARE (TSL) Analysis of Latin Square Experiment	146.	Note 3
SR (APL STATPACK2) Simple Regression	141.	LS-114
SSICO (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
SSIDI (LINPACK) Compute Deter., Inertia, Inverse Sym. Matrix	327.	LS-358
SSIFA (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
SSISL (LINPACK) Solve Symmetric System	327.	LS-358
SSPAND (IMSL) Sampling	147.	LS-287
SSPBLK (IMSL) Sampling	147.	LS-287
SSPCO (LINPACK) Factor Symmetric Matrix	327.	LS-358
SSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
SSPFA (LINPACK) Factor Symmetric Matrix	327.	LS-358
SSPSL (LINPACK) Solve Symmetric System	327.	LS-358
SSRAND (IMSL) Sampling	147.	LS-287
SSRBLK (IMSL) Sampling	147.	LS-287
SSSAND (IMSL) Sampling	147.	LS-287
SSSBLK (IMSL) Sampling	147.	LS-287
SSSCAN (IMSL) Sampling	147.	LS-287
SSSEST (IMSL) Sampling	147.	LS-287
SSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
STANDARD (SAS) - Standardize Variables	138.	LS-118
STANINE ASSIGNMENTS		
TESTAN - Item Analysis	190.	LS-302
START Command (CMS) Activate Communications Link	130.	Note 12
STATE Command (CMS) Verify Existence of a File	130.	Note 12
STATESPACE (SAS/ETS) Statespace Multivariate Forecasts	263.	LS-118
STATEW Command (CMS) Verify Existence of a File	130.	Note 12
STATISTICAL FORECASTING MODEL		
FUTURE (Harris-Maggard) Statistical Forecasting Model	216.	LIB-ECS-39
STATISTICAL GROWTH CHART MODELING		
SQC (Harris-Maggard) Statistical Growth Chart Modeling	216.	LIB-ECS-39
STATISTICAL PACKAGE		
BMDP - Biomedical Computer Programs	323.	LS-308
DATA-TEXT - Data Analysis Package	143.	LS-167
IMSL - Mathematical and Statistical Library	147.	LS-287
LISREL V - Analysis of Linear Structural Relationships	164.	LS-367

SAS - Statistical Analysis System	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SPSS-X - Statistical Package for the Social Sciences	137.	LS-102
STATPACK2 - APL Package for Statistics and Mathematics	141.	LS-114
TSAR - Tele-Storage and Retrieval System	142.	LS-076
TSL - Biostatistics Timesharing Library	146.	Note 3
STATISTICS		
BESTAT (IMSL) Basic Univariate Statistics	147.	LS-287
CITIBASE Economic Database	045.	GI-084
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
RANDOM SAMPLER - General Sampling Simulator	256.	LIB-ECS-49
SPSS Data Bases for Use in Survey Analysis	302.	LIB-ECS-37
TABULATE (SAS) Produce 3-Dim. Table of Statistics	138.	LS-118
STATPACK2 - APL Package for Statistics and Mathematics	141.	LS-114
STATRES (APL STATPACK2) Residual Statistics	141.	LS-114
STATUS Command (TSO) Display Status of Batch Job	068.	LSR-352
STEPDISC (SAS) Perform Stepwise Discriminant Analysis	138.	LS-118
STEPWISE (SAS) Stepwise Regression	138.	LS-118
STEPWISE CORRELATION		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
STEPWISE REGRESSION		
BMDP2R (BMDP) Stepwise Regression	323.	LS-308
DATA-TEXT - Data Analysis Package	143.	LS-167
MREG (APL STATPACK2) Conversational Regression	141.	LS-114
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
REGRESSION (SPSS-X) Multiple Regression Analysis	137.	LS-102
RLGQMI (IMSL) Regression Analysis	147.	LS-287
RLMQMO (IMSL) Regression Analysis	147.	LS-287
RLSTP (IMSL) Regression Analysis	147.	LS-287
RLSUBM (IMSL) Regression Analysis	147.	LS-287
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
STEPWISE (SAS) Stepwise Regression	138.	LS-118
STREG (APL STATPACK2) Stepwise Regression	141.	LS-114
TSAR - Tele-Storage and Retrieval System	142.	LS-076
STIFDIF - Solve Initial Value Problem	034.	LS-236
Stony Brook Student Pascal Compiler	220.	LS-346
STORE Command (CMS) Alter Virtual Machine Storage	130.	Note 12
STRCO (LINPACK) Estimate Condition of Tri. Matrix	327.	LS-358
STRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
STREG (APL STATPACK2) Stepwise Regression	141.	LS-114
STRESSES		
SEPOL (ICES/360) Calculation of Stresses and Strains	201.	LS-044
STRING MANIPULATION		
LISP/360 - Symbolic Data Processing	309.	LS-316
SNOBOL4 String Manipulation Language	065.	LS-051
SPITBOL - Fast SNOBOL4 Compiler	066.	Note 8
TPUT - TSO PL/I Access to Special Characters	046.	LS-220
STRSL (LINPACK) Solve Triangular System	327.	LS-358
STRUCTURAL EQUATION MODELS		
LISREL V - Analysis of Linear Structural Relationships	164.	LS-367
STRUCTURES AND SOLIDS		
ELAS75 - Structures and Solids Analysis	202.	LS-168
MSC NASTRAN	129.	LS-385
STRUDL (ICES/360) Structural Engineering Problems	201.	LS-044
STRUDL (ICES/360) Structural Engineering Problems	201.	LS-044
STUDENT-NEWMAN-KEULS TEST		
ASNKMC (IMSL) Analysis of Experimental Design Data	147.	LS-287
ONEWAY (SPSS-X) One-way Analysis of Variance	137.	LS-102
STUDENT'S T-TRANSFORMATION		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237

STURM SEQUENCING		
BISECT (EISPACK) Compute Eigenvalues	260.	LS-286
TSTURM (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
SUB - Fortran Selective Substitution Subroutine	094.	LS-008
SUBHYPOTHESIS TABLES		
ANATAB (TSL) Analysis of Contingency Tables	146.	Note 3
SUBMIT Command (TSO) Submit Jobs for Batch Execution	068.	LSR-352
SUBROUTINE LIBRARY		
IMSL - International Mathematical and Statistical Library	147.	LS-287
LINPACK - Subroutine Library for Linear Algebra	327.	LS-358
PL/I SPC - PL/I Subprocedure Collection	259.	LSR-347
SPARSPAK - Waterloo Sparse Linear Equations Package	072.	LS-361
"Support" Subroutines for PL/I	306.	LS-305
SYS1.WATLIB - Library Routines for WATFIV	328.	LS-027
SUBSETTING		
SAS - Statistical Analysis System	138.	LS-118
SUBSTITUTION		
RECODE - Procedure for SAS Variable Value Changes	044.	LS-374
SUMMARY (SAS) Summary Statistics	138.	LS-118
SUMMARY STATISTICS		
AGGREGATE (SPSS-X) Aggregates	137.	LS-102
BECTR (IMSL) Bivariate Normal RHO	147.	LS-287
BEGRPS (IMSL) First Four Moments	147.	LS-287
BESRB (IMSL) Biserial Correlation Coeff.	147.	LS-287
BESRN (IMSL) Biserial Correlation Coeff.	147.	LS-287
BMDP1D (BMDP) Simple Data Description	323.	LS-308
BMDP2D (BMDP) Detailed Data Descrip., Including Freqs.	323.	LS-308
BMDP9D (BMDP) Multiway Description of Groups	323.	LS-308
BREAKDOWN (SPSS-X) Subpopulation Means	137.	LS-102
CONDESCRIPTIVE (SPSS-X) Univariate Descriptive Statistics	137.	LS-102
DATA-TEXT - Data Analysis Package	143.	LS-167
DSTAT (APL STATPACK2) Descriptive Statistics	141.	LS-114
MAKTAB (TSL) Crosstabulation	146.	Note 3
MEANS (SAS) Means and Descriptive Statistics	138.	LS-118
MULDE (TSL) Multivariate Descriptive Statistics	146.	Note 3
MVSD (APL STATPACK2) Mean, Variance, and Standard Deviatio	141.	LS-114
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SUMMARY (SAS) Summary Statistics	138.	LS-118
TSAR - Tele-Storage and Retrieval System	142.	LS-076
UNIDES (TSL) Univariate Descriptive Statistics	146.	Note 3
UNIVARIATE (SAS) Univariate Descriptive Statistics	138.	LS-118
SUPERCOMPUTING		
Access to Remote Computers via the INTERNET	176.	GI-097
Running Jobs on the CYBER 205 at Colorado State University	092.	GI-087
SUPERLIB - General Library Maintenance Utility Program	026.	LSR-127
SUPERMKT (LERNER) Forecasting Inventory Requirements	212.	LIB-ECS-47
SUPERS (PL/I Sub) Return Superscript Characters	306.	LS-305
SURANET		
Access to Remote Computers via the INTERNET	176.	GI-097
SURFACE2 - A Program for Contour Maps and Transect Plots	221.	LS-355
SURVEY ANALYSIS		
SPSS Data Bases for Use in Survey Analysis	302.	LIB-ECS-37
SURVIVAL (SPSS-X) Life Tables and Survival Functions	137.	LS-102
SURVIVAL RATE		
BMDP1L (BMDP) Life Tables and Survival Functions	323.	LS-308
SURVIVAL (SPSS-X) Life Tables and Survival Functions	137.	LS-102
SVCTRACE Command (CMS) Trace Supervisor Calls	130.	Note 12
SVD (EISPACK) Singular Value Decomposition	260.	LS-286

SVD (PL/I SPC) Singular Values, Decomposition of Matrix	259.	LSR-347
SYMAP - Synagraphic Computer Mapping	111.	LS-139
SYMBOL MANIPULATION		
FORMAC - Formula Manipulation	058.	LS-061
REDUCE - An Algebraic Programming System	125.	LS-380
SYMBOLIC DATA		
LISP/360 - Symbolic Data Processing	309.	LS-316
SYMDET (PL/I SPC) Decomposition of Matrix	259.	LSR-347
SYMION (PL/I SPC) Compute Matrix Inverse	259.	LSR-347
SYMRAY (PL/I SPC) Compute Eigenvectors	259.	LSR-347
SYMSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
SYMVU - Plotting From Gridded Data or SYMAP Output	112.	LS-218
SYNCSORT - Sort/Merge Program and SORT Cataloged Procedure	179.	LS-343
SYNONYM Command (CMS) Define Alternate Command Names	130.	Note 12
SYSNLIN (SAS/ETS) Estimation of Nonlinear Systems	263.	LS-118
SYSREG (SAS) - TTLS, LIML, and Seemingly-Unrelated Reg.	138.	LS-118
SYSREG (SAS/ETS) Estimation of Linear Systems	263.	LS-118
SYSTEM Command (CMS) Simulate Console Functions	130.	Note 12
SYSTEM STATUS		
Telephone Numbers for Terminal Services and System Status	273.	GI-057
SYSTEM SUBROUTINES for PL/I	279.	LS-297
SYS1.WATLIB - Library Routines for WATFIV	328.	LS-027
T DISTRIBUTION		
CFTDIS (TSL) Chi-Square,F, and t Distribution	146.	Note 3
MDSTI (IMSL) M. Math. and Stat. Special Functions	147.	LS-287
MDTD (IMSL) M. Math. and Stat. Special Functions	147.	LS-287
MDTN (IMSL) M. Math. and Stat. Special Functions	147.	LS-287
MDTNF (IMSL) M. Math. and Stat. Special Functions	147.	LS-287
T-TEST		
BMDP1V (BMDP) One-Way Analysis of Variance and Covariance	323.	LS-308
BMDP3D (BMDP) Comparison of Two Groups with t Tests	323.	LS-308
DATA-TEXT - Data Analysis Package	143.	LS-167
QUISTA (TSL) Quick Statistics on Terminal-Entered Data	146.	Note 3
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TSAR - Tele-Storage and Retrieval System	142.	LS-076
TTEST (SAS) - T-tests	138.	LS-118
T-TESTS (SPSS-X) Comparison of Sample Means	137.	LS-102
TAB CHARACTER		
GTAB Command (TSO) Establish Tab Character, Tab Settings	068.	LSR-352
TABLE (ICES/360) Handling Files of Tabular Information	201.	LS-044
TABULATE (SAS) Produce 3-Dim. Table of Statistics	138.	LS-118
TABULATION		
BDCOU1 (IMSL) Basic Statistics	147.	LS-287
BDCOU2 (IMSL) Basic Statistics	147.	LS-287
FREQ (SAS) Frequencies	138.	LS-118
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TAG Command (CMS) Append TAG text to Spool File	130.	Note 12
TAPE HANDLING		
CARDTAPE - Store Card Deck on Tape	005.	Note 9
FATS - Fast Analysis of Tape Surfaces	317.	LS-312
Introduction to Tape and Disk Usage	326.	GIR-071
JCL and Data Management for SAS and SPSS Users	032.	GIR-082
LABELDEF Command (CMS) Describe Tape Label Information	130.	Note 12
PRECIS - Tape Utility Program	029.	LS-042
RESET Command (CMS) Clear Pending Interrupts	130.	Note 12
TAPECOPY (SAS) Copy Tape Volumes	138.	LS-118
TAPECOPY - Copy A Tape Data Set to Another Tape	005.	Note 9
TAPEDISK - Copy a Tape Data Set To Disk	005.	Note 9
TAPEHEXL - Hexadecimal Listing of Tape Data Set	005.	Note 9
TAPELABEL (SAS) Print Contents of Tape Volumes	138.	LS-118
TAPEPRNT - List Tape Data Set	005.	Note 9
TAPE7TO9 - Copy 7-Track Tape Data Set to 9-Track Tape	005.	Note 9

TPVOLCPY - Tape Copying Program	004.	LS-291
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
UCC One Tape Management System	105.	GI-094
VOLCHK - Magnetic Tape Volume Checking Program	316.	LS-313
TAPE IDENTIFICATION		
VOLCHK - Magnetic Tape Volume Checking Program	316.	LS-313
TAPE QUALITY		
FATS - Fast Analysis of Tape Surfaces	317.	LS-312
TAPECOPY (SAS) Copy Tape Volumes	138.	LS-118
TAPECOPY - Copy A Tape Data Set to Another Tape	005.	Note 9
TAPEDISK - Copy a Tape Data Set To Disk	005.	Note 9
TAPEHEXL - Hexadecimal Listing of Tape Data Set	005.	Note 9
TAPELABEL (SAS) Print Contents of Tape Volumes	138.	LS-118
TAPEPRNT - List Tape Data Set	005.	Note 9
TAPE7TO9 - Copy 7-Track Tape Data Set to 9-Track Tape	005.	Note 9
TCBTIOQ (PL/I System Sub) Locate TCB, TIOT, DEB	279.	LS-297
TCP/IP		
Access to Remote Computers via the INTERNET	176.	GI-097
TCS - Tektronix Terminal Control System	119.	LS-289
TE Command (CMS) Halt Trace	130.	Note 12
TEACHING		
DEMO2 (TSL) Illustrate Law of Large Numbers and C.L.T.	146.	Note 3
FREQD (TSL) Tutorial on Descriptive Statistics, Grouped Da	146.	Note 3
Introduction to MVS TSO (A Tutorial)	096.	GIR-083
TEACHING LANGUAGE		
PL/C - Cornell PL/I Compiler	056.	LSR-095
WATBOL - Waterloo ANSI COBOL Compiler	064.	LS-130
WATFIV - Waterloo Fortran Compiler	060.	LSR-101
TEACHING PROGRAMS		
DONMAR II - Media Simulation Game	315.	LS-314
LEARNTSO - Interactive Instruction in TSO	275.	LS-293
SHOWAPL - Demonstration of APL Language and APL System	239.	LS-133
TEKTRONIX		
AGII - Tektronix Advanced Graphing II	120.	LS-289
EASYGRAF - Tektronix Easy Graphing Package	205.	LS-342
IGP - Tektronix Interactive Graphing Package	200.	LS-342
IGP and EASYGRAF - Tektronix Interactive Graphics Packages	171.	LS-342
Picture Saving Routines for TCS and AGII	324.	LS-311
Plotter Utility Routines for the Tektronix 4662 Plotter	121.	LS-289
TCS - Tektronix Terminal Control System	119.	LS-289
TELL-A-GRAF	156.	LS-387
Tektronix PLOT 10 Interactive Graphics Library	153.	LS-388
Tektronix TCS, AGII, and PLOTTER Utilities	191.	LS-289
TELENET		
EDUNET and TELENET	343.	GI-073
TELEPHONE NUMBERS		
Telephone Numbers for Terminal Services and System Status	273.	GI-057
TELETYPE		
EZPLOT - Printer Plotting Subroutine	113.	LIB-ECS-36
GENPT - General Printer Plotting	114.	LIB-ECS-36
TELL Command (CMS) Send a Message	130.	Note 12
TELL-A-GRAF	156.	LS-387
TELNET		
Access to Remote Computers via the INTERNET	176.	GI-097
TEMPOMATIC IV - A Management Simulation	314.	LS-323
TERMINAL Command (TSO) Define Terminal Characteristics	068.	LSR-352
TERMINAL Command (CMS) Control Virtual Console Functions	130.	Note 12

TERMINAL DEFINITION TABLES		
Using Full Screen Devices: 3270 Terminals and IBM 7171	169.	GI-095
TERMINALS		
DEFINE Command (WYLBUR) Establish PF Keys	287.	LSR-360
PROFILE Command (TSO) Establish User Profile	068.	LSR-352
SCREEN Command (CMS) Change Screen Highlighting	130.	Note 12
SCREEN Command (TSO) Specify Screen Dimensions of CRT	068.	LSR-352
SET/SHOW Command (WYLBUR) Set or Show Session Parameters	287.	LSR-360
Telephone Numbers for Terminal Services and System Status	273.	GI-057
TERMINAL Command (CMS) Control Virtual Console Functions	130.	Note 12
TERMINAL Command (TSO) Define Terminal Characteristics	068.	LSR-352
Using Full Screen Devices: 3270 Terminals and IBM 7171	169.	GI-095
TEST Command (TSO) Execution Debugging Aid	068.	LSR-352
TEST SCORING		
SCORE - Multiple Choice and Questionnaire Scoring	189.	LSR-124
TESTAN - Item Analysis Program	190.	LS-302
TESTAN - Item Analysis Program	190.	LS-302
TESTING AND DEBUGGING		
ABEND - Force Abnormal Termination of a Program	079.	LS-015
AMASPZAP - Load Module and Data Set Corrector	007.	Note 5
DEBUG Command (CMS) Test and Debug a Program	130.	Note 12
ONSTMT - PL/I Debugging Aid	077.	LS-045
PLEA - PL/I Execution Time Analyzer	075.	LS-243
SETCD or SETCODE - Set Return Codes	074.	LS-015
TEST Command (TSO) Execution Debugging Aid	068.	LSR-352
TRACE Command (CMS) Trace Program Execution	130.	Note 12
TETRACHORIC CORRELATION		
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TEXT FORMATTING		
SCRIPT Command (CMS) Invoke SCRIPT Processor	130.	GI-092
SCRIPT Command (TSO) Invoke SCRIPT Processor	068.	LSR-352
TEXT PROCESSING		
ADDIX - Add Index Commands to a SCRIPT File	049.	Note 2
ALIGN Command (WYLBUR) Justify Text	287.	LSR-360
CENTER Command (WYLBUR) Center Text	287.	LSR-360
Evaluating Your Word Processing Needs	261.	Note 2
FORMAT - A Text Processing Program	098.	LSR-033
Introduction to SCRIPT (Tutorial)	140.	GIR-075
JUSTIFY Command (WYLBUR) Justify Lines of Text	287.	LSR-360
OCRSCRIP - Convert OCR Scanning Tape to SCRIPT Input	194.	Note 2
Oxford Concordance Program	042.	LS-373
PRTSCRIP - Convert Print File to SCRIPT Input	265.	Note 2
SCRIPT - Text Processing Program	319.	LS-307
SCRIPT Command (TSO) Invoke SCRIPT Processor	068.	LSR-352
TEXT 360 - Text Processing System	097.	LS-049
TEXTCOPY - Interactive Control for Text Printing	100.	LS-292
Typesetting with SCRIPT	054.	Note 2
UPTOLOW - Translate Uppercase Text to Lowercase Text	181.	LS-344
WORDSCAN - Identifying Misspelled Words	002.	Note 2
WORDUTIL - Maintain Spelling Lists for WORDSCAN	002.	Note 2
WYLBUR Reference Manual	287.	LSR-360
WYLBUR User Guide	287.	LSR-353
TEXT 360 - Text Processing System	097.	LS-049
TEXTCOPY - Interactive Control for Text Printing	100.	LS-292
THERMODYNAMICS		
FRSTLW - First Law of Thermodynamics	207.	LIB-ECS-58
3270 TERMINALS		
FULLOFF Command (TSO) Turn off FULLSCREEN Mode	068.	LSR-352
FULLON Command (TSO) Turn on FULLSCREEN Mode	068.	LSR-352
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
Using Full Screen Devices: 3270 Terminals and IBM 7171	169.	GI-095

TRUST (LERNER) Stocks/Bonds Portfolio Proportions	212.	LIB-ECS-47
TS Command (CMS) Begin Trace	130.	Note 12
TSAR - Tele-Storage and Retrieval System	142.	LS-076
TSCSREG (SAS) Time Series Cross Section Regression	138.	LS-118
TSL - Biostatistics Timesharing Library	146.	Note 3
TSO		
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
Introduction to MVS TSO (A Tutorial)	096.	GIR-083
LEARNTSO - Interactive Instruction in TSO	275.	LS-293
QED Command (TSO) TUCC Editor - Create, Modify, Store Data	068.	LSR-352
Running PL/C Programs Under TSO (Tutorial)	167.	GIR-074
TSO (Time Sharing Option) Reference Manual	068.	LSR-352
TSOBATCH - Procedure to Run TSO Commands in Batch	068.	LSR-352
TSOBATCH - Procedure to Run TSO Commands in Batch	068.	LSR-352
TSP - Time Series Processor	311.	LSR-315
TSTPN - Check Data Preparation Errors	086.	LS-185
TSTURM (EISPACK) Compute Eigenvalues, Eigenvectors	260.	LS-286
TTEST (SAS) - T-tests	138.	LS-118
TTLS - Two and Three Stage Least Squares	168.	LSR-140
TTYPLOT - Ordered Pairs Data Plotting	108.	LS-086
TUCC Documentation and Program Library Organization	342.	GI-072
TUCC Job Control Language (JCL) Features, OS/VS2 MVS	249.	GI-081
TUCC TIME		
RUNTIME - Run Timing Subroutines	272.	LS-014
TUCFTP Command (TSO) Invoke File Transfer Program	068.	LSR-352
TUCKER-MESSICK MODEL		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
TUKEY'S ALTERNATE TEST		
ONEWAY (SPSS-X) One-way Analysis of Variance	137.	LS-102
TUKEY'S TEST FOR ADDITIVITY		
RELIABILITY (SPSS-X) Item Analysis	137.	LS-102
TUTORIAL		
Beginning WYLBUR	266.	Note 2
FRSTLW - First Law of Thermodynamics	207.	LIB-ECS-58
Introduction to ISPF/PDF (A Tutorial)	175.	GIR-096
Introduction to MVS TSO (A Tutorial)	096.	GIR-083
Introduction to SCRIPT (Tutorial)	140.	GIR-075
Introduction to Tape and Disk Usage	326.	GIR-071
Introduction to Using CMS at TUCC	011.	GIR-098
JCL and Data Management for SAS and SPSS Users	032.	GIR-082
LEARNTSO - Interactive Instruction in TSO	275.	LS-293
Running PL/C Programs Under TSO (Tutorial)	167.	GIR-074
Running WATFIV Programs Under TSO (Tutorial)	325.	GIR-070
TWO-STAGE REGRESSION		
ESP - Econometric Software Package	222.	LSR-178
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
SYSREG (SAS) - TTLS, LIML, and Seemingly-Unrelated Reg.	138.	LS-118
TSP - Time Series Processor	311.	LSR-315
TTLS - Two and Three Stage Least Squares	168.	LSR-140
TXTLIB Command (CMS) Update TEXT Files (Object Modules)	130.	Note 12
TYPE Command (CMS) Display File	130.	Note 12
TYPEDFLT Command (TSO) Establish Default QED Data Set Type	068.	LSR-352
TYPESETR		
Typesetting with SCRIPT	054.	Note 2
TYPESETTING		
Typesetting with SCRIPT	054.	Note 2
UCBIOB (PL/I System Sub) Locate UCB, IOB	279.	LS-297
UCC One Tape Management System	105.	GI-094
UERSET (IMSL) Utility Functions	147.	LS-287
UERTST (IMSL) Generate an Error Message	147.	LS-287
UGETIO (IMSL) Utility Functions	147.	LS-287
UHELP (IMSL) Utility Functions	147.	LS-287

UHELP1 (IMSL) Utility Functions	147.	LS-287
UHELP2 (IMSL) Utility Functions	147.	LS-287
UHELP3 (IMSL) Utility Functions	147.	LS-287
UHELP4 (IMSL) Utility Functions	147.	LS-287
UNCATLG Command (WYLBUR) Uncatalog a Data Set	287.	LSR-360
UNEQUAL CELL SIZES		
DATA-TEXT - Data Analysis Package	143.	LS-167
GLM (SAS) General Linear Models	138.	LS-118
MANOVA - Multivariate Analysis of Variance	174.	LSR-108
MULTVAR - Multivariate and Univariate Analysis	173.	LS-232
UNHEX (PL/I Sub) Return Bit Value of Hexadecimal String	306.	LS-305
UNIDES (TSL) Univariate Descriptive Statistics	146.	Note 3
UNISIM (Harris-Maggard) One-Product Company Simulation	216.	LIB-ECS-39
UNIT567 - Change FORTRAN Reference Numbers	249.	GI-081
UNIVARIATE (SAS) Univariate Descriptive Statistics	138.	LS-118
UNIVARIATE ANALYSIS		
CANDISC (SAS) Canonical Discriminant Analysis, etc.	138.	LS-118
UNSDET (PL/I SPC) Factorization, Determinant of Matrix	259.	LSR-347
UNSLVE (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
UNSRAY (PL/I SPC) Compute Eigenvectors of Matrix	259.	LSR-347
UNSSOL (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
UNSYMMETRIC MATRIX		
COMDET (PL/I SPC) Factorization, Determinant of Matrix	259.	LSR-347
UNSLVE (PL/I SPC) Solve Systems of Linear Equations	259.	LSR-347
UPALPHA (PL/I Sub) Return String of Uppercase Alphabetics	306.	LS-305
UPCASE (PL/I Sub) Convert Lowercase to Uppercase	306.	LS-305
UPDATE		
EDITOR - Program for the Maintenance of Sequential Files	082.	LS-126
IEBUPDTE - Update Utility	019.	Note 6
PDSUPDTE - Update Partitioned Data Sets	128.	LS-382
SUPERLIB - General Library Maintenance Utility Program	026.	LSR-127
UPDATE Command (CMS) Change Source File	130.	Note 12
UPLOAD Command (TSO) Receive Data from a Terminal	068.	LSR-352
UPLOADING		
KERMIT - Mainframe-Microcomputer File Transfer	134.	LS-386
KERMIT Command (CMS) Transfer Files to, from Other Systems	130.	GI-092
PCFTP - File Transfer for the IBM PC	041.	LS-372
TUCFTP Command (TSO) Invoke File Transfer Program	068.	LSR-352
UPLOAD Command (TSO) Receive Data from a Terminal	068.	LSR-352
UPTOLOW - Translate Uppercase Text to Lowercase Text	181.	LS-344
URBAN PLANNING		
CLUG - Community Land Use Game	231.	LIB-ECS-51
USBOX (IMSL) Print a Box Plot (K Samples)	147.	LS-287
USE Command (WYLBUR) Create a Copy of a Data Set to Edit	287.	LSR-360
USER (PL/I System Sub) Return User Name, Acct. No., jobname	279.	LS-297
USHHST (IMSL) Print a Horizontal Histogram	147.	LS-287
USHST (IMSL) Print a Vertical Histogram	147.	LS-287
USHST2 (IMSL) Print Vertical Histogram, Two Freqs./Bar	147.	LS-287
Using Electronic Mail	124.	GIR-089
Using Full Screen Devices: 3270 Terminals and IBM 7171	169.	GI-095
USLEAP - Utility Function	147.	LS-287
USMNMX (IMSL) Utility Functions	147.	LS-287
USPC (IMSL) Utility Functions	147.	LS-287
USPDF (IMSL) Utility Functions	147.	LS-287
USPLO (IMSL) Printer Plot of up to Ten Functions	147.	LS-287
USPLOD (IMSL) Printer Plot of up to Ten Functions	147.	LS-287
USPRP (IMSL) Probability Plot	147.	LS-287
USSLF (IMSL) Print a Stem and Leaf Display	147.	LS-287
USTREE (IMSL) Utility Functions	147.	LS-287
USWBM (IMSL) Utility Functions	147.	LS-287
USWBS (IMSL) Utility Functions	147.	LS-287
USWCH (IMSL) Print Complex Hermitian Matrix	147.	LS-287
USWCM (IMSL) Print a Complex Matrix	147.	LS-287

USWCV (IMSL) Print a Complex Vector	147.	LS-287
USWFM (IMSL) Utility Functions	147.	LS-287
USWFV (IMSL) Utility Functions	147.	LS-287
USWSM (IMSL) Print a Matrix	147.	LS-287
USWSM (IMSL) Utility Functions	147.	LS-287
UTILITY PROGRAMS		
AMASPZAP - Load Module and Data Set Corrector	007.	Note 5
AMBLIST - Map Load Modules	017.	Note 5
ARRU - ASAP Redefine Record Utility	281.	LS-299
COPY (SAS) Copy SAS Data Sets	138.	LS-118
COPY - Utility Program	018.	LS-103
CVU - Data Set Maintenance Utility Program	030.	LS-284
DATOC - Change Data Set Expiration Date	037.	LS-144
DOWNDATE - A Program That Compares Two Data Sets	340.	LS-329
DUMPRSTR - Dump and Restore Direct Access Volumes	274.	LS-290
EZPLOT - Printer Plotting Subroutine	113.	LIB-ECS-36
FATS - Fast Analysis of Tape Surfaces	317.	LS-312
FIFT - Fortran Editing	016.	LS-064
FIX2TSL (TSL) Trans. Card-Image Data Set to TSL Data Set	146.	Note 3
FRED - Multipurpose Merge-Copy-Editing Program	027.	LS-176
FTBATCH (TSL) Translate Card-Image Data to TSL Data	146.	Note 3
GENPT - General Printer Plotting	114.	LIB-ECS-36
HELPRINT - List HELP for TSO Commands	043.	LS-227
IEBCOMPR - Comparison Utility	020.	Note 6
IEBGENER - Multiple Purpose Utility	024.	Note 6
IEBPTPCH - List and Punch Utility	021.	Note 6
IEBUPDTE - Update Utility	019.	Note 6
IEHLIST - Directory and Pointer Listing Utility	025.	Note 6
IEHMOVE - Data Set Move Utility	023.	Note 6
IFTSO - Batch or TSO Determination	006.	LS-152
LIST (APL STATPACK2) List Available Programs	141.	LS-114
PDS (SAS) List, Delete, Rename Members of PDS	138.	LS-118
PDSCOPY (SAS) Copy PDS from Disk to Tape, Disk	138.	LS-118
PDSPICK - A Partitioned Data Set Access Utility Program	135.	LS-356
PDSUPDTE - Update Partitioned Data Sets	128.	LS-382
PRECIS - Tape Utility Program	029.	LS-042
PRTSCRIP - Convert Print File to SCRIPT Input	265.	Note 2
RELEASE (SAS) Release Unused Space in Disk Data Sets	138.	LS-118
SLIBDUMP - Dumping PDSs	031.	LS-282
SOURCE (SAS) Print Contents of PDS	138.	LS-118
SPS2TSL (TSL) Translate SPSS Data Sets to TSL Data Sets	146.	Note 3
SUPERLIB - General Library Maintenance Utility Program	026.	LSR-127
TAPECOPY (SAS) Copy Tape Volumes	138.	LS-118
TAPELABEL (SAS) Print Contents of Tape Volumes	138.	LS-118
TPUT - TSO PL/I Access to Special Characters	046.	LS-220
TPVOLCPY - Tape Copying Program	004.	LS-291
UTILPROC - Standard Utility Procedures	005.	Note 9
VERIFY - Data Verifying Utility	084.	LS-240
VOLCHK - Magnetic Tape Volume Checking Program	316.	LS-313
UTILPROC - Standard Utility Procedures	005.	Note 9
VABMXF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VABMXS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VABSMF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VABSMS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VARCLUS (SAS) Disjoint or Hierarchical Clustering	138.	LS-118
VARCOMP (SAS) - Variance Component Estimation	138.	LS-118
VARGEN - Random Distribution Generator Subroutine	257.	LS-110
VARIANCE COMPONENT ESTIMATION		
VARCOMP (SAS) - Variance Component Estimation	138.	LS-118
VARIANCE-COVARIANCE MATRIX		
BECOVM (IMSL) Basic Statistics	147.	LS-287
BECOVW (IMSL) Means, Variance-Covariance of Corr. Matrix	147.	LS-287
VBLA=CAXPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CCOPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CDOTC (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CDOTU (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CSCAL (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CSSCAL (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CSWAP (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=CZDOTC (IMSL) Vector, Matrix Arithmetic	147.	LS-287

VBLA=CZDOTU (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DASUM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DAXPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DCOPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DDOT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DNRM2 (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DROT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DROTG (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DROTM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DROTMG (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DSCAL (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DSDOT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=DSWAP (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=ICAMAX (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=IDAMAX (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=ISAMAX (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SASUM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SAXPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SCASUM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SCNRM2 (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SCOPY (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SDOT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SDSDOT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SNRM2 (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SROT (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SROTG (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SROTM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SROTMG (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SSCAL (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VBLA=SSWAP (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VCONVO (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTBF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTCH (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTFB (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTFQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTFS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTHC (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTQF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTQS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTSF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VCVTSQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VDCPS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VECSRT - PL/I Vector Sorting Source Procedure	090.	LS-100
VERIFY		
IEBCOMPR - Comparison Utility	020.	Note 6
VERIFY - Data Verifying Utility	084.	LS-240
VERIFY - Data Verifying Utility	084.	LS-240
VHSH2C (IMSL) Vector Matrix Arithmetic	147.	LS-287
VHSH2R (IMSL) Vector Matrix Arithmetic	147.	LS-287
VHSH3R (IMSL) Vector Matrix Arithmetic	147.	LS-287
VHS12 (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VIPRFF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VIPRSS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VIRTUAL MACHINE		
ADSTOP Command (CMS) Set a Virtual Machine Address Stop	130.	Note 12
BEGIN Command (CMS) Resume Execution of a Virtual Machine	130.	Note 12
Conversational Monitor System (CMS)	130.	Note 12
DEFINE Command (CMS) Reconfigure Virtual Machine	130.	Note 12
VIRTUAL STORAGE		
MVS - A New Operating System for TUCC's Batch/RJE Service	178.	GI-080
VM		
Conversational Monitor System (CMS)	130.	Note 12
VM/CMS		
Introduction to Using CMS at TUCC	011.	GIR-098
VMDUMP Command (CMS) Dump Virtual Machine Storage	130.	Note 12
VMULBB (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULBF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULBS (IMSL) Vector Matrix Arithmetic	147.	LS-287

VMULFB (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULFF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULFM (IMSL) Matrix Multiplication	147.	LS-287
VMULFP (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULFQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULFS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULQB (IMSL) Matrix Multiplication	147.	LS-287
VMULQF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULQQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULQS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULSB (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULSF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULSQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VMULSS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VNRMFI (IMSL) Vector Matrix Arithmetic	147.	LS-287
VNRMF1 (IMSL) Vector Matrix Arithmetic	147.	LS-287
VNRMF2 (IMSL) Vector Matrix Arithmetic	147.	LS-287
VNRMS1 (IMSL) Vector Matrix Arithmetic	147.	LS-287
VNRMS2 (IMSL) Vector Matrix Arithmetic	147.	LS-287
VOLCHK - Magnetic Tape Volume Checking Program	316.	LS-313
VPOLYF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VS ASSEMBLER - IBM Assembly Language	050.	Note 11
VS FORTRAN - IBM FORTRAN IV and FORTRAN 77	059.	LS-362
VSAD (IMSL) Sort a Double Precision Matrix	147.	LS-287
VSAR (IMSL) Sort a Matrix	147.	LS-287
VSODA (IMSL) Sort Columns of Double Precision Matrix	147.	LS-287
VSORA (IMSL) Sort Columns of a Matrix	147.	LS-287
VSRTA (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTAD (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTM (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTMD (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTP (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTPD (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTR (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTRD (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTU (IMSL) Interchange of Rows and Columns	147.	LS-287
VSRTUD (IMSL) Vector, Matrix Arithmetic	147.	LS-287
VSRTxx (IMSL) Vector Sorting Routine	147.	LS-287
VTPROF (IMSL) Vector Matrix Arithmetic	147.	LS-287
VTPROS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VTRAN (IMSL) Vector Matrix Arithmetic	147.	LS-287
VUABQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VUAFB (IMSL) Vector Matrix Arithmetic	147.	LS-287
VUAFQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VUAFS (IMSL) Vector Matrix Arithmetic	147.	LS-287
VUASB (IMSL) Vector Matrix Arithmetic	147.	LS-287
VUASQ (IMSL) Vector Matrix Arithmetic	147.	LS-287
VXADD (IMSL) Extended Precision Analysis	147.	LS-287
VXMUL (IMSL) Extended Precision Arithmetic	147.	LS-287
VXSTO (IMSL) Extended Precision Arithmetic	147.	LS-287
WALD		
CMOR - Computer Models in Operations Research	289.	LIB-ECS-56
WALD-WOLFOWITZ TEST		
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
WALLER-DUNCAN K-RATIO T-TEST		
ANOVA (SAS) Analysis of Variance for Balanced Designs	138.	LS-118
DUNCAN (SAS) - Duncan's Multiple Range Test	138.	LS-118
GLM (SAS) General Linear Models	138.	LS-118
WATBOL - Waterloo ANSI COBOL Compiler	064.	LS-130
Waterloo Student Pascal Compiler	235.	LS-350
Waterloo C Compiler on VM/CMS	010.	LS-391
WATFIV		
Running WATFIV Programs Under TSO (Tutorial)	325.	GIR-070
SYS1.WATLIB - Library Routines for WATFIV	328.	LS-027
WATFIV - Waterloo Fortran Compiler	060.	LSR-101
WATFIV Command (TSO) Invoke WATFIV Processor	068.	LSR-352
WEIERSTRASS FUNCTION		
MMWPL (IMSL) Weierstrass P-Function in Lemniscatic Case	147.	LS-287
MMWPL1 (IMSL) First Derivative of Weierstrass P-Function	147.	LS-287

MMWPQ (IMSL) Weierstrass P-Function in Equianharmonic Case	147.	LS-287
MMWPQ1 (IMSL) First Derivative of Weierstrass P-Function	147.	LS-287
WHITE NOISE		
SPECTRA (SAS) - Spectral Analysis	138.	LS-118
WHOENQ Command (TSO) Determine Users of Data Sets	068.	LSR-352
WILCOXON TEST		
BMDP3S (BMDP) Nonparametric Statistics	323.	LS-308
NPAR TESTS (SPSS-X) Nonparametric Tests	137.	LS-102
NPAR1WAY (SAS) Analysis of Variance on Ranks	138.	LS-118
NRWMD (IMSL) Nonparametric Statistics	147.	LS-287
NRWMP (IMSL) N. Nonparametric Statistics	147.	LS-287
NRWMPD (IMSL) N. Nonparametric Statistics	147.	LS-287
NRWRST (IMSL) N. Nonparametric Statistics	147.	LS-287
SIGRAN (TSL) Wilcoxon Signed-Rank Procedure	146.	Note 3
WILK'S CRITERION		
GLM (SAS) General Linear Models	138.	LS-118
WILK'S LAMBDA		
BMDP7M (BMDP) Stepwise Discriminant Analysis	323.	LS-308
WILK'S LIKELIHOOD TEST		
OIND (IMSL) Observation Structure	147.	LS-287
WILKS' LAMBDA		
SOUPAC - Statistically Oriented Users' Package	139.	LS-237
WINSORIZED MEANS		
BMDP7D (BMDP) Descrip. of Groups (Strata) with Histograms	323.	LS-308
WORD LISTS		
Oxford Concordance Program	042.	LS-373
WORDSCAN - Identifying Misspelled Words	002.	Note 2
WORDUTIL - Maintain Spelling Lists for WORDSCAN	002.	Note 2
WORD PROCESSING - SEE TEXT PROCESSING		
WORDSCAN - Identifying Misspelled Words	002.	Note 2
WORDUTIL - Maintain Spelling Lists for WORDSCAN	002.	Note 2
World Bank Tables From World Bank	095.	GI-088
WYLBUR		
Beginning WYLBUR	266.	Note 2
WYLBUR Reference Manual	287.	LSR-360
WYLBUR User Guide	287.	LSR-353
XEDIT Command (CMS) Create and Edit CMS Files	130.	Note 12
XGAME		
Executive Game	332.	LS-324
XMITSAS - SAS Data Set Transmission System	177.	LS-390
XOR - FORTRAN Boolean Function	094.	LS-008
XRATE		
Executive Game	332.	LS-324
X11 (SAS/ETS) X-11 Seasonal Adjustment	263.	LS-118
YNPRMPT (PL/I Sub) Prompt for, and Read YES/NO Reply	306.	LS-305
YULE'S Q AND Y		
BMDP1F (BMDP) Two-Way Frequency Tables	323.	LS-308
ZANLYT (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZBRENT (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZCHDC (LINPACK) Compute Cholesky Decomposition	327.	LS-358
ZCHDD (LINPACK) Downdate Augmented Cholesky Decomposition	327.	LS-358
ZCHEX (LINPACK) Update Cholesky Factorization	327.	LS-358
ZCHUD (LINPACK) Update Augmented Cholesky Decomposition	327.	LS-358
ZCPOLY (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZFALSE (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287

ZGBCO (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
ZGBDI (LINPACK) Compute Determinant of Band Matrix	327.	LS-358
ZGBFA (LINPACK) Factor Band Matrix by Gaussian Elimination	327.	LS-358
ZGBSL (LINPACK) Solve a Band System	327.	LS-358
ZGECO (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
ZGEDI (LINPACK) Compute Determinant and Inverse	327.	LS-358
ZGEFA (LINPACK) Factor A Matrix by Gaussian Elimination	327.	LS-358
ZGESL (LINPACK) Solve System Given Factors of Matrix	327.	LS-358
ZGTSL (LINPACK) Solve a Tridiagonal System	327.	LS-358
ZHICO (LINPACK) Factor a Hermitian Matrix	327.	LS-358
ZHIFA (LINPACK) Factor a Hermitian Matrix	327.	LS-358
ZHISL (LINPACK) Solve Hermitian System	327.	LS-358
ZHPCO (LINPACK) Factor a Hermitian Matrix	327.	LS-358
ZHPDI (LINPACK) Compute Deter., Inertia, Inverse	327.	LS-358
ZHPFA (LINPACK) Factor a Hermitian Matrix	327.	LS-358
ZPBCO (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
ZPBDI (LINPACK) Compute Determinant of Matrix	327.	LS-358
ZPBFA (LINPACK) Factor Symmetric Positive Band Matrix	327.	LS-358
ZPBSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
ZPOCO (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
ZPODI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
ZPOFA (LINPACK) Factor Symmetric Positive Definite Matrix	327.	LS-358
ZPOLR (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZPOSL (LINPACK) Solve Symmetric Positive Definite System	327.	LS-358
ZPPCO (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
ZPPDI (LINPACK) Compute Deter. and Inverse Pos. Def. Mat.	327.	LS-358
ZPPFA (LINPACK) Factor Symmetric Positive Def. Matrix	327.	LS-358
ZPPSL (LINPACK) Solve Symmetric Positive Def. System	327.	LS-358
ZPTSL (LINPACK) Solve a Positive Def. Tridiagonal System	327.	LS-358
ZQADC (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZQADR (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZQRDC (LINPACK) Compute QR Factorization of Matrix	327.	LS-358
ZQRSL (LINPACK) Compute Coord. Trans., Proj., Least Sq. Sol.	327.	LS-358
ZREAL1 (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZREAL2 (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZRPOLY (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZSCNT (IMSL) Solve a System of Nonlinear Equations	147.	LS-287
ZSICO (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
ZSIDI (LINPACK) Compute Deter., Inertia, Inverse Sym. Matrix	327.	LS-358
ZSIFA (LINPACK) Factor Symmetric Matrix by Elimination	327.	LS-358
ZSISL (LINPACK) Solve Symmetric System	327.	LS-358
ZSPCO (LINPACK) Factor Symmetric Matrix	327.	LS-358
ZSPDI (LINPACK) Compute Det., Inertia, Inverse Sym. Matrix	327.	LS-358
ZSPFA (LINPACK) Factor Symmetric Matrix	327.	LS-358
ZSPOW (IMSL) Solve a System of Nonlinear Equations	147.	LS-287
ZSPSL (LINPACK) Solve Symmetric System	327.	LS-358
ZSRCH (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZSVDC (LINPACK) Reduce Matrix to Diagonal Form	327.	LS-358
ZTRCO (LINPACK) Estimate Condition of Tri. Matrix	327.	LS-358
ZTRDI (LINPACK) Compute Deter., Inverse of Tri. Matrix	327.	LS-358
ZTRSL (LINPACK) Solve Triangular System	327.	LS-358
ZXCGR (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZXGSN (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZXGSP (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZXLSF (IMSL) One-dimensional Minimization of Smooth Func.	147.	LS-287
ZXMIN (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZXMWD (IMSL) Global Minimum w/ Constraints of Function	147.	LS-287
ZXOLP (IMSL) Revised Simplex Method	147.	LS-287
ZXSSQ (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZX3LP (IMSL) Zeroes and Extrema; Linear Programming	147.	LS-287
ZX4LP (IMSL) Linear Programming, Revised Simplex Method	147.	LS-287