SHARE

PROGRAM LIBRARY AGENCY

User's Guide

and

Catalog of Programs

1977 EDITION

Triangle Universities Computation Center

Research Triangle Park, N.C.

SHARE

USER'S GUIDE AND CATALOG

January 1, 1977

SHARE INC.

The principal purpose of SHARE Inc. is to foster the development, free exchange, and public dissemination of research data pertaining to SHARE computers in the best scientific tradition. To achieve these ends, SHARE conducts meetings, discussion groups, forums, panels, lectures, and other similar programs concerned with the development and exchange of research and technological data. SHARE publishes the results of its scientific research through its SHARE Secretary's Distribution (SSD) and other publications and makes such publications available to the interested public on a noncommittal and non-discriminatory basis. SHARE attempts to establish and continually improve standards for communicating computer scientific research and programming information to interested members of the public. All inquiries and requests to SHARE, other than for programs and their associated documentation elements, should be directed to:

> SHARE Inc.
> 111 East Wacker Drive
> Chicago, IL 60601
> Telephone: (312) 822-0932

The SHARE Program Library Agency

The SHARE Program Library is a collection of generally useful programs created and administered to promote the exchange of technical information, to lower software development costs, and to help avoid redundant effort. Programs and their documentation are made available to all at distribution costs. The SHARE Program Library Agency (SPLA) is operated on a non-profit basis by the Triangle Universities Computation Center (TUCC) for SHARE Inc.

TUCC serves as the distribution agent for contributed programs and does not test or maintain the programs. Programs and documentation are distributed in the original form as submitted by the author. Neither TUCC nor SHARE Inc. makes any warranty, expressed or implied, as to the documentation, function, or performance of contributed programs.

HOW TO ORDER FROM SPLA

General Procedures

SHARE membership is not required to order programs from the Library. The price for programs is the same for both SHARE members and non-SHARE members.

All orders should be accompanied by either a purchase order or payment.

When ordering from SPLA, please send all materials relevant to an order (e.g., purchase orders, checks, order forms, etc.) in the same envelope. This is necessary to prevent duplication of orders.

A $5.00 handling fee is charged on all orders that are not prepaid.

All orders from outside the North American Continent must be prepaid.

All shipments will be sent via airmail (first class for U.S.A.), postpaid.

Telephone orders cannot be accepted.

All orders should be written on a SPLA order form (contained in this catalog) and sent to the following address:

> SHARE Program Library Agency
> Triangle Universities Computation Center
> Post Office Box 12076
> Research Triangle Park, NC 27709
> Telephone: (919) 549-0671 (ext. 283)

Program Orders

The standard distribution includes one copy of all machine-readable material and one copy of the documentation (some documentation is in machine-readable form only).

Only programs in the 360D, 370D, 360E or 1130 series, as indexed in this catalog, are currently shipped by SPLA.

The price of a standard distribution is $35.00 per program for orders from the North American Continent, and $40.00 per program for all others. Other applicable charges are listed below:

* The number of pages of documentation is listed at the bottom of each program abstract. An additional charge of $ .05 per page is made for each page over 20 pages.

* Machine-readable material is available on 9-track 800 or 1600 bpi tapes. Do not send tapes; SPLA will provide all required materials as part of the distribution.

- Some programs require a tape longer than 600'; this is
  noted at the bottom of the program abstract. There is
  an additional charge of $5.00 per 600' (tapes are avail-
  able in 600', 1200', and 2400' only).

- Punched cards may be requested for programs for which the
  number of cards does not exceed 1,000; a tape will be
  substituted for any program requiring more than 1,000 cards
  (except by special arrangement). Some programs include
  files which are not suitable to punched card distribution,
  e.g., print files. The availability of punched cards is
  noted at the bottom of each abstract.

Documentation Only Orders

Documentation can be ordered at a cost of $5.00 per document plus $ .05 per
page for all pages over the first 20.

Some documentation is in machine-readable form only and is unavailable as
"documentation only".

Documentation availability and a page count are given at the bottom of each
program abstract.

SHARE Catalog Orders

Copies of the SHARE Program Library User's Guide and Catalog of Programs are
available through SPLA at a cost of $10.00. Catalogs ordered from SPLA in-
clude 4 update mailings on a calendar year basis. If an update has been
mailed prior to a catalog order, the update will be shipped with the catalog.

SHARE

ORDER FORM

Date: _____

Ship To: _____	Invoice To: _____
_____	_____
_____	_____
_____	_____
_____ Zip _____	_____
Attention: _____	_____

Program Number(s):

Dist
Medium

					-			•		•							
1																	

Distribution Medium:

DO Documentation Only
CC Cards (Check catalog
      for availability)
T1 9-track 800 BPI
T2 9-track 1600 BPI

ORDER AUTHORIZED BY: _____

TITLE: _____

SPLA USE ONLY.	RUN NO. _____
Date Rec'd: _____	Date Shipped: _____
Remittance Rec'd with Order: _____	
Invoice No: _____	

Send This Form & Remittance To:

SHARE Program Library Agency
Triangle Universities Computation Center
Post Office Box 12076
Research Triangle Park, North CArolina 27709

Note: A $5.00 handling fee will be charged if remittance is not enclosed. All overseas orders must be prepaid. Do not send tapes. All materials will be supplied by SPLA. One copy (only) of printed documentation will be provided for each program ordered.

SPLA 1000 11-76

iv

SPLA FEE SCHEDULE

(Effective July 1, 1976)

Program Distribution Fee (per program) - North American Continent $35.00
Program Distribution Fee (per program) - Overseas (<u>must</u> be prepaid) $40.00

    Includes:

    Prepaid air mailing

    Documentation (up to 20 pages)

    Magnetic tape (600') (Cards may be substituted when
    fewer than 1,000).

Documentation (only) Fee (up to 20 pages)   <u>$ 5.00</u>

Catalog Subscription (annual)   <u>$10.00</u>

    Current catalog and four updates

Additional Charges:

    Documentation in excess of first 20 pages (per page)   <u>$ .05</u>

    Handling charge (if not prepaid)   <u>$ 5.00</u>

    Magnetic tape in excess of 600' (per 600')   <u>$ 5.00</u>

Media and services not listed will be quoted upon request.

SUBMITTAL OF PROGRAMS TO THE SHARE LIBRARY

Submittal of programs is no longer restricted to SHARE member installations provided that certain standards are met. The Library endeavors to distribute well-documented useful programs. For this reason, certain items must be included with each submittal. A complete program package includes:

* Completed and signed SHARE Library Submittal Form;
* Acknowledgement of Assistance Statement;
* Program Documentation (machine-readable preferred);
* Source Program;
* Sample Problem(s).

At the author's discretion, the following items may also be submitted:

* Object program - specify system release and type;
* Flowcharts.

The above items will be discussed in greater detail in the following sections. Questions, comments, or suggestions concerning these requirements or the SHARE Program Library at TUCC may be addressed to the SHARE Program Library Project Manager as listed in Section 1.0 of the SHARE Reference Manual.

Completed submittal packages should be mailed to SPLA at the following address:

SHARE Program Library Agency
Triangle Universities Computation Center
Post Office Box 12076
Research Triangle Park, NC 27709

The availability of these programs is announced via the SHARE Program Library User's Guide and Catalog, published as a special edition of the SSD. Periodic supplements and announcements will be included in the back of the regular SSDs. These supplements are also sent to purchasers of the SHARE Catalog.

SUBMITTAL REQUIREMENTS

Program Submittal Form

Each program submitted must include a completed and signed SHARE Program Library Submittal Form. Blank forms with instructions for completion are available from the Library. A copy of this form is shown at the end of this section.

The program submittal form is reproduced as part of the distributed program package.

Acknowledgement of Assistance Statement

Each submittal must include, in letter form on a separate sheet, signed and dated, the following statement:

To the best of my knowledge, my program entitled "_____"
is free of any proprietary, secret, or confidential information belonging to
any person or organization. (Continue with a. or b. below.)

      a. Where I have used the work, plans, procedures, systems, programs
          or names of companies or individuals, I have obtained their per-
          mission to do so.

      b. I have not used the work, plans, procedures, systems, programs or
          names of any companies or individuals.

This statement is not reproduced as part of the distributed program package.

Documentation

All documentation supporting a contributed program is reproduced for distribu-
tion (machine-readable documentation is preferred).

For non-machine-readable documentation, the following graphic guidelines should
be observed:

* Submit clean copy (originals if possible).
* Use 8½ x 11 white paper, typed ON ONE SIDE ONLY, for text material.
* Pasteovers are preferred to the opaque method for correcting typographical errors.
* Provide adequate margins for all documents -- about one inch on all sides.
* Machine generated documents should use six lines to the inch spacing and not be larger than 8½ x 11 inches; a new ribbon should be used with unlined white paper; extra comments may be typed or handwritten in black ink.
* Illustrations, hand-drawn flow-charts, and layout forms should be drawn in black ink on sheets 8½ x 11 inches.
* Each page of documentation should be sequentially numbered.

The documentation should cover the items from the following list plus any other
information helpful to users of the program:

* Purpose -- a concise description of the task that the program is designed to accomplish.
* Functional and mathematical methods -- briefly describe and state why the particular method was selected.

vii

- Limitations -- range, accuracy, floating or fixed numbers, restrictions and dependencies on other programs.
- Environment requirements.
- Input/Output -- description and layouts.
- Instructions on how to use the program (control cards, data structure, etc.).
- Statement indicating the amount of testing and how the program has been used prior to submission. Include a description of the test data.
- Table of Contents (helpful in long documentation and User's Manuals).

Program

Program submittals are accepted in magnetic tape form only.

Tape Key

A tape key is required and should list the title and description of each file, followed by the data record length, blocking factor, and block length. Specify the mode of each file, e.g., Binary EBCDIC, etc. If relevant, indicate the standard IBM utility program which can be used to punch a deck or print a listing. Also specify the control card information for the utility program.

Please specify the exact number of tape marks on the tape. When reproducing the tape for distribution, SPLA utilizes the tape mark count in controlling the amount of data to be copied.

EXAMPLE: Tape Key

This volume contains 3 Files and 3 Tape Marks arranged as follows:

File 1   Assembled Object Deck
          EBCDIC
          Sequence 0001 through 0200 in cols. 77-80;
          PRG in cols. 73-75; 200 cards
          200 card images blocked 20 per block
          10 blocks of 1600 characters each
          T/M

File 2   Sample Data Input
          EBCDIC
          SMPL in cols 77-80; 160 cards
          8 blocks of 1600 characters each
          T/M

File 3   Program Source Deck
                              Sequence 0001 through 1160 in cols. 77-80;
                              SPRG in cols. 73-76; 1160 cards
                              1160 card images blocked 20 per block
                              58 blocks of 1600 characters each
                              T/M

NOTE: The tape key portion of the program documentation should not specify
recording track and density since these options may be specified by persons
ordering programs from SPLA. However, the original submittal tape should be
labeled with this information.

Sample Problem

A sample problem is defined for purposes of these standards as a set of test
inputs to the program and the corresponding output from the program. Listings
of the sample input and output data should be included when meaningful.

Program Package Revisions

The submittal of program revisions must always be accompanied by a new SHARE
Program Library Submittal Form and identified as a REVISION in Item 8 of that
submittal form. A completely new program package must be submitted.

SHARE PROGRAM LIBRARY SUBMITTAL FORM

SHARE

SPLA   CONTROL NUMBER:

SHARE PROGRAM LIBRARY AGENCY
Triangle Universities Computation Center
Post Office Box 12076
Research Triangle Park, North Carolina USA 27709

This form should be completed and submitted with the program package to the SHARE Program Library Agency at the address shown above. Standards and instructions for submitting programs are in the SHARE Reference Manual, Section 6.

(1)   Program Number (to be filled by SPLA) . . . . _____

(2)   Title of Program . . . . . . _____

_____

_____

_____

_____

(3)   System Type(s) (Machine). . . . . _____

(4)   Search Key(s) . . . . _____

_____

_____

_____

_____

(5)   Programming Systems/Languages . . . . . _____

(6)   Primary Subject Code . . . . _____

(7)   Minimum System Requirements_____

(8)   New (N) or Revision (R) (if revision, show prior Program Number in Item 1) _____

(9)   Date of Submittal . . . . _____

(10) Documentation (number of original pages submitted) . . . . _____

(11) Author's Name and Address . . . . . . _____

_____

_____

_____

(12) Direct Technical Inquiries to Name & Address   _____
         (if different than Author)

_____

_____

_____

(13) Submitter's Installation Membership Code . . . . . _____

(14) Abstract (should contain sufficient information for a reader to determine the value of the program). Listed on the reverse side of this form are subjects which may serve as a guide for a descriptive abstract.

SPLA 1001 Revised 11-76

SHARE PROGRAM LIBRARY SUBMITTAL FORM

Subject Guide:

    a. Purpose
    b. Programming Language used
    c. Version and modification level or release number
    d. Field of application
    e. Type of routine (main program, subroutine, etc.)
    f. Specific description of machine requirements

(Please attach additional pages if necessary) . . . . . Total pages attached _____

An "Acknowledgement of Assistance" statement must be attached to this Submittal Form.

Permission to Publish
    "I hereby give the SHARE Program Library Agency permission to reprint, reproduce, and distribute this program"

(15) Signature of Submitter and Date _____

(15) Signature of Installation Addressee _____

SPLA 1001 (R) Revised 11-76

CLASSIFICATION CODES

00. Utility (External) Programs

    0 Unclassified
    1 Multiple Utility
    2 Flowcharting
    3 Tape Handling
    4 Disk Handling
    5 Drum and Direct Data Devices
    6 Graphic Display Devices

01. Utility (Internal) Programs

    0 Unclassified
    1 Loading
    2 Clear/Reset Memory
    3 Check Sum Accumulative and
      Correction
    4 Internal Housekeeping
    5 Dump to Reload/Restore
      Operations
    6 File Organization
    7 Self Checking Digit
    8 Packed Data Handlers

02. Diagnostics

    0 Unclassified
    5 Status Recorders

03. Programming Systems

    0 Unclassified
    1 Assemblers
    2 Compilers
    3 Interpretive Systems
    4 Input/Output Control
    5 Report Generators
    6 Preprocessing and Editing
    7 Macros and Macro Generators
    8 Functions and Subroutines

04. Testing and Debugging

    0 Unclassified
    1 Dumping
    2 Tracing
    3 Test Data Preparation
    4 Testing Systems
    5 Break Point Printing
    6 Memory Verification and
      Searching

05. Executive Routines

    0 Unclassified
    1 Monitor
    2 Supervisor
    3 Disassembly and Derelativizing
    4 Relativizing
    5 Relocation

06. Data Handling

    0 Unclassified
    1 Sorting
    2 Merging
    3 Data Transmission
    4 Tape Operations
    5 Conversion and/or Scaling
    6 Character and Symbol Manipulation
    7 Information Classification,
      Storage, and Retrieval
    8 List Processing
    9 Bit String

07. Input

    0 Unclassified
    1 Binary
    2 Octal
    3 Decimal
    4 BCD
    5 Hexadecimal
    6 Composite

08. Output

    0 Unclassified
    1 Binary
    2 Octal
    3 Decimal
    4 BCD
    5 Hexadecimal
    6 Plotting
    7 Display
    8 Composite

09. Service Routines; Programming Aids

    0 Unclassified
    1 Program Timers
    2 Interrupt Handlers
    3 Source Language Programming Aids

10. Systems Analysis

   0 Unclassified
   1 Network Design
   2 File and Core Requirement
   3 Systems Design
   4 Configurator

11. Simulation of Computers and Components

   0 Unclassified
   1 Computers
   2 Peripheral Equipment
   3 System Component or Feature
   4 Pseudo-Computer

12. Conversion of Programs and Data

   0 Unclassified
   1 Data Conversion
   2 Computer Language Translators

13. Statistical

   0 Unclassified
   1 Descriptive
   2 Univariate and Multivariate Parametric
   3 Non-Parametric
   4 Time Series and Auto Correlation
   5 Probability Distribution Sampling, and Random Number Generators
   6 Correlation and Regression Analysis
   7 Analysis of Variance and Covariance
   8 Sequential Analysis
   9 Discriminant Analysis

14. Internal Information Transfer

   0 Unclassified
   1 Drum
   2 Disk
   3 Tape
   4 Relocation
   5 Direct Data Devices

15. Management Science/Operations Research

   0 Unclassified
   1 Simulations
   2 Linear Programming
   3 Non-Linear Programming/Constrained Optimization
   4 Scheduling/Critical Path/Pert/Less
   5 Games, Game Like Models and Game Theory
   6 General Problem Solvers
   7 Inventory Control
   8 Transportation and Network Codes

16. Engineering

   0 Unclassified
   1 Aeronautical
   2 Civil
   3 Chemical
   4 Electrical
   5 Mechanical and Hydraulic
   6 Petroleum
   7 Nuclear
   8 General

17. Sciences

   0 Unclassified
   1 General
   2 Nuclear Physics
   3 Chemistry
   4 Geology, Oceanography, and Geophysics
   5 Biology
   6 Social and Behavioral
   7 Astronomy and Celestial Navigation

18. Nuclear Codes

   0 Unclassified

19. Financial

   0 Unclassified
   1 Investing and Borrowing
   2 Capital Stock
   3 Taxes
   4 Cash Custody and Forecasting
   5 General Accounting
   6 Auditing
   7 Banking Operations

20. Cost Accounting

    0 Unclassified
    1 Material Only
    2 Labor Only
    3 Work in Progress

21. Payroll and Benefits

    0 Unclassified
    1 Payroll
    2 Employee Benefits
    3 Profit Sharing
    4 Retirement
    5 Insurance
    6 Credit Union

22. Personnel

    0 Unclassified
    1 Recruiting and Hiring
    2 Inventorying Employees
    3 Training
    4 Performance Review
    5 Administering Wages and Salary

23. Manufacturing

    0 Unclassified
    1 Scheduling/Loading
    2 Job Reporting
    3 Bill of Materials Processors
    4 Numerical Control
    5 Control Systems

24. Quality Assurance/Reliability

    0 Unclassified
    1 Testing
    2 Performance Analysis

25. Inventory

    0 Unclassified
    1 Stocking and Issuing
    2 Inventory Analysis
    3 Equipment and Tool Inventory
      and Maintenance

26. Purchasing

    0 Unclassified
    1 Preparing Purchase Orders
    2 Matching Invoices
    3 Accounts Payable
    4 Purchase Analysis

27. Marketing

    0 Unclassified
    1 Sales and Billings Forecasting
    2 Promotion and Advertising
    3 Bid or Request Analysis
    4 Distribution or Territory
      Analysis

28. Sales Entered and Billed

    0 Unclassified
    1 Order Entry and Scheduling
    2 Invoicing
    3 Accounts Receivable
    4 Sales and Billing Analysis
    5 Backlog Reporting

29. General Business Services

    0 Unclassified
    1 Records Retention
    2 Forms Management
    3 Transportation
    4 Printing and Reproduction

30. Demonstrations

    0 Unclassified
    1 Display
    2 Participation

32. Graphics

    0 Unclassified
    1 Cathode-Ray Tube (CRT)
    2 Hard Copy Devices

34. Logical and Symbolic

    0 Unclassified
    1 Formal Logic
    2 Symbol Manipulation

Organization of the Catalog

The Catalog is divided into three parts:

* Table of Contents;

* KWIC Index of Program Titles;

* Abstracts of Available Programs.

The Table of Contents and the Abstracts are listed in program number order. The KWIC Index of Program Titles gives the program number as the reference point.

All currently available programs have the prefix 360D, 360E, 370D, or 1130. Pre-3000, 3000, and 7000 series programs are not available through SPLA. It is possible to obtain some of these programs from the following address:

    Mr. Robert Bell
    Campus Computing Network (C0012)
    UCLA
    Los Angeles, CA 90024

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

END OF TABLE OF CONTENTS

TITLE		PROGRAM NO.
NT INTERNAL CONVERTER (	'CVFL08')	360D-06.5.006
A SYSTEM TO PROCESS	ABSTRACT CATALOGS AND R	360D-03.5.005
370 APT-	AC (PTF3), APTLFT IMPLE	370D-23.4.005
GASP III - GENERALIZED	ACADEMIC SIMULATION PRO	360D-15.1.004
BSEARCH - A RANDOM	ACCESS BINARY-SEARCH TE	360D-06.7.018
RONOUS COMMUNICANTIONS	ACCESS METHOD	360D-06.3.012
DIRECT	ACCESS VOLUME COPY PROG	360D-00.5.007
OPERATING SYSTEM	ACCOUNTING	360D-01.4.003
MIDAS - AN	ADAPTATION OF THE CONVA	360D-43.2.001
THE NRIMS	ADDRESSING SYSTEM	360D-06.7.026
AN	ADJACENT EFFICIENT EXTR	360D-15.2.014
DASD SEEK MAPPING	AID (SEEKER)	370D-00.4.021
- A TOOL FOR COMPUTER	AIDED ENGINEERING DESIG	360D-08.7.004
	ALDEP: AUTOMATED LAYOUT	360D-23.0.004
ONE-WAY ENCIPHERING	ALGORITHM FOR PASSWORD	360D-01.0.010
FFICIENT EXTREME POINT	ALGORITHM FOR VECTOR- M	360D-15.2.014
CRAFT-M - COMPUTERIZED	ALLOCATION OF FACILITIE	360D-15.6.004
COMPUTERIZED RELATIVE	ALLOCATION OF FACILITIE	360D-15.6.003
DASD	ALTERNATE TRACK ANALYSI	370D-00.4.020
ERNATE TRACK ANALYSIS (	ALTTRACK)	370D-00.4.020
LING MIDAS-III DIGITAL	ANALOG SIMULATION SYSTE	360D-43.2.001
DASD ALTERNATE TRACK	ANALYSIS (ALTTRACK)	370D-00.4.020
TSO	ANALYSIS / SYSTEM MEASU	360D-04.4.012
PLANET: PLANT LAYOUT	ANALYSIS AND EVALUATION	360D-23.0.003
LEAST SQUARES DIALLEL	ANALYSIS OF VARIANCE	360D-13.7.001
BAYLOR INFORMATION	ANALYSIS SYSTEM (BIAS)	360D-06.7.027
QUANTITATIVE	ANALYSIS WITH ELECTRON	360D-17.1.001
TH ELECTRON MICROPROBE	ANALYZER	360D-17.1.001
PL/I EXECUTION	ANALYZER (PLEA)	360D-04.2.008
	APL/SV (OS/MVT VERSION)	370D-03.3.014
	APL/SV ASCII MODIFICATI	370D-03.3.015
360	APT - V4M3/SSX3A/SSIP	360D-23.4.004
370	APT-AC (PTF3), APTLFT I	370D-23.4.005
370 APT-AC (PTF3),	APTLFT IMPLEMENTATION	370D-23.4.005
TIVE PLOTTING ROUTINE;	ARBITRARY GRID	360D-08.6.011
NARGS - NUMBER OF	ARGUMENTS	360D-99.0.002
INTFORT - INTERVAL	ARITHMETIC INTERPRETER	36CD-40.0.003
ECISION FLOATING-POINT	ARITHMETIC PACKAGE	360D-40.4.003
APL/SV	ASCII MODIFICATIONS	370D-03.3.015
	ASP TO HASP LINK	360D-05.1.024
ANIPULATION FOR OS/360	ASSEMBLER LANGUAGE PRO	360D-06.8.004
ER FOR S/360 AND S/370	ASSEMBLER LANGUAGE (VER	360D-03.1.014
D DEBUGGING MACROS FOR	ASSEMBLER LANGUAGE USER	360D-04.0.010
FAST	ASSEMBLER-INTERPRETER F	360D-03.1.014
IO2260 DISPLAY/	ATTENTION PACKAGE	360D-00.6.008
ALDEP:	AUTOMATED LAYOUT DESIGN	360D-23.0.004
CAMIVA - CARTOGRAPHIC	AUTOMATIC MAPPING SYSTE	360D-17.4.004
UCARDS: UNION CARBIDE	AUTOMATIC ROUTINE AND D	360D-16.0.001
ISION TABLE TRANSLATOR	BASED ON LIST PROCESSIN	360D-03.6.022
RAN2, A PORTABLE MACRO-	BASED STRUCTURED FORTRA	360D-03.6.026

TITLE		PROGRAM NO.
	BAYLOR EXECUTIVE SYSTEM	360D-05.1.018
	BAYLOR INFORMATION ANAL	360D-06.7.027
SIFT	BCD CODES TO EBC AND DI	360D-12.0.003
EM FOR TELEPROCESSING (	BEST)	360D-05.1.018
INTERFACE	BETWEEN PL/I USER PROGR	360D-08.6.002
ATION ANALYSIS SYSTEM (	BIAS)	360D-06.7.027
ARCH - A RANDOM ACCESS	BINARY-SEARCH TECHNIQUE	360D-06.7.018
UAGE FOR CHEMISTRY AND	BIOCHEMISTRY	360D-03.2.008
A HIGH SPEED	BISYNCHRONOUS COMMUNICA	360D-06.3.012
GN FOR PRINTED CIRCUIT	BOARDS	360D-16.0.001
	BPS/DOS/TCS FORTRAN FLO	360D-00.2.001
	BSEARCH - A RANDOM ACCE	360D-06.7.018
PILOT	CAI LANGUAGE	360D-03.3.016
SYSTEM TO OS/360 WITH	CALCOMP PLOTTING	360D-43.2.001
PL/I USER PROGRAMS AND	CALCOMP ROUTINES	360D-08.6.002
PROGRAMS FOR	CALCULATION OF MICROWAV	360D-16.0.002
TIVE HEX DECIMAL OCTAL	CALCULATOR	360D-12.1.024
FACE ENABLING STANDARD	CALLS TO FORTRAN PROGRA	360D-03.8.016
	CAMIVA - CARTOGRAPHIC A	360D-17.4.004
UCARDS: UNION	CARBIDE AUTOMATIC ROUTI	360D-16.0.001
CAMIVA -	CARTOGRAPHIC AUTOMATIC	360D-17.4.004
EM TO PROCESS ABSTRACT	CATALOGS AND RELATED IN	360D-03.5.005
	CDC TO IBM FORTRAN CONV	360D-12.2.010
	CERN SUMX - A DATA SUMM	360D-17.2.006
T SOLUTIONS FOR MARKOV	CHAINS	360D-15.0.005
	CHANGE1 - OS/360 DASD E	360D-00.4.014
	CHARACTER FILTER PL/I	360D-06.6.004
FORTRAN	CHARACTER STRING PACKAG	360D-06.6.003
ODULE INDEXER AND LOOP	CHECKER	360D-03.6.024
COBOL MODULE AND GO TO	CHECKER	360D-03.6.023
IMULATION LANGUAGE FOR	CHEMISTRY AND BIOCHEMIS	360D-03.2.008
	CHGPASS COMMAND PROCESS	360D-01.4.012
AND DESIGN FOR PRINTED	CIRCUIT BOARDS	360D-16.0.001
	CLOCK	360D-04.0.006
	COBFORT - AN INTERFACE	360D-03.8.016
	COBOL MODULE AND GO TO	360D-03.6.023
	COBOL MODULE INDEXER AN	360D-03.6.024
	COBOL SOURCE CROSS-REFE	360D-03.6.007
360 LINEAR PROGRAMMING	CODE	360D-15.2.007
SIFT BCD	CODES TO EBC AND DIAGNO	360D-12.0.003
	COFAD: COMPUTERIZED FAC	360D-23.0.001
PL/I SUBPROCEDURE	COLLECTION - RELEASE 1	360D-45.0.001
PROGRAM	COLLECTION: STRUCTURED	360D-99.0.009
	COMIT/360	360D-03.3.011
CHGPASS	COMMAND PROCESSOR	360D-01.4.012
	COMMERCIAL FEATURE EMUL	360D-11.3.015
GH SPEED BISYNCHRONOUS	COMMUNICANTIONS ACCESS	360D-06.3.012
	COMPARE DATA SET UIILIT	360D-06.0.009
THE XPL	COMPILER GENERATOR SYST	360D-03.2.015
ION OF THE CONVAIR PRE-	COMPILING MIDAS-III DIG	360D-43.2.001

TITLE	PROGRAM NO.	TITLE	PROGRAM NO.
COFAD: COMPUTERIZED FAA INTEGRATED NOISE MO	360D-16.0.003	SPLOT - ONE PAGE GRAPH-PRINTING SUBROUTI	360D-08.7.006
UTERIZED ALLOCATION OF FACILITIES DESIGN	360D-23.0.001	ENGINEERING DESIGN AND GRAPHIC DISPLAY	360D-08.7.004
RELATIVE ALLOCATION OF FACILITIES TECHNIQUE (I	360D-15.6.004	GEMS - A GRAPHICAI EXPERIMENTAL	360D-03.0.015
ACT - DOUBLE PRECISION FACILITIES TECHNIQUE, C	360D-15.6.003	G ROUTINE; RECTANGULAR GRID	360D-08.6.012
FACTORIAL	360D-40.0.001	ING ROUTINE; ARBITRARY GRID	360D-08.6.011
FAST ASSEMBLER-INTERPRE	360D-03.1.014	DIFICATIONS TO FORTRAN H AND G WITH NOSOURCE	360D-03.2.017
COOLEY-TUKEY FAST FOURIER TRANSFORM	360D-13.4.001	FORTRAN H SYMBOLIC DEBUGGING PA	360D-04.1.012
PULSE TESTING VIA THE FAST FOURIER TRANSFORM	360D-16.3.002	REMOTE HASP TO HASP	360D-05.1.021
COOLEY-TUKEY FAST FOURIER TRANSFORM	360D-13.4.002	VS1 HASP	370D-05.1.022
D MAINTENANCE PACKAGE, FATSO	360D-00.5.008	ASP TO HASP LINK	360D-05.1.024
COMMERCIAL FEATURE EMULATOR FOR SY	360D-11.3.015	RANSLATORS, SIMULATOR, HASP MODIFICATIONS, AND	360D-99.0.009
CHNIQUE FOR SEQUENTIAL FILES ON DISK OR DRUM	360D-06.7.018	ENHANCED HASP RTP1130 WORKSTATIO	1130-06.3.017
CHARACTER FILTER PL/I	360D-06.6.004	REMOTE HASP TO HASP	360D-05.1.021
AR LEAST-SQUARES CURVE FITTING PROGRAM	360D-13.6.008	HASP V4.0 RETROFIT TO M	370D-05.0.004
AR LEAST-SQUARES CURVE- FITTING PROGRAM	360D-13.6.007	TEGER PROGRAMMING WITH HEURISTICS	360D-15.2.011
UNIVAC-1108 TO IBM-360 FLOATING POINT INTERNAL	360D-06.5.006	INTERACTIVE HEX DECIMAL OCTAL CALCU	360D-12.1.024
MULTIPLE - PRECISION FLOATING-POINT ARITHMET	360D-40.4.003	A HIGH SPEED BISYNCHRCNOU	360D-06.3.012
NEOUS SOLUTE AND WATER FLOW IN SOILS	360D-17.4.003	HISTOGRAM DISPLAY SUBRO	360D-08.7.003
BPS/DOS/TOS FORTRAN FLOWCHART PROGRAM	360D-00.2.001	A HYPERTEXT EDITING SYSTE	360D-00.6.011
DATASETS IN MANUSCRIPT FORM	360D-03.5.008	CDC TO IBM FORTRAN CONVERSION	360D-12.2.010
SHARE FORMAC/FORMAC/73	360D-03.3.013	IBM S/360 MODEL 20 MULT	360E-00.1.016
SHARE FORMAC/ FORMAC/73	360D-03.3.013	PLT360; IBM 1627 PLOTTING ROUTI	360D-08.6.013
FORMAT, A TEXT-PROCESSI	360D-06.0.007	CISION PACKAGE FOR THE IBM 360/370 SYSTEMS	360D-40.4.004
PRINT - A TEXT FORMATTING PROGRAM	360D-06.0.008	UNIVAC-1108 TO IBM-360 FLOATING POINT	360D-06.5.006
FORTRAN CHARACTER STRIN	360D-06.6.003	ZATION PROGRAM FOR THE IBM/360	360D-17.2.010
CDC TO IBM FORTRAN CONVERSION	360D-12.2.010	APT-AC (PTF3), APTLFT IMPLEMENTATION	370D-23.4.005
FORTRAN CROSS REFERENCE	360D-03.6.001	FACILITIES TECHNIQUE (INCLUDING DEPT. MOVE CO	360D-15.6.004
MACRO-BASED STRUCTURED FORTRAN EXTENSION	360D-03.6.026	COBOL MODULE INDEXER AND LOOP CHECKE	360D-03.6.024
BPS/DOS/TOS FORTRAN FLOWCHART PROGR	360D-00.2.001	OS/360 QUIC (KWIC INDEXING)	360D-06.7.022
AVING MODIFICATIONS TO FORTRAN H AND G WITH NO	360D-03.2.017	T CATALOGS AND RELATED INDICES	360D-03.5.005
FORTRAN H SYMBOLIC DEBU	360D-04.1.012	BAYLOR INFORMATION ANALYSIS SY	360D-06.7.027
ES TO EBC AND DIAGNOSE FORTRAN IV CONVERSION P	360D-12.0.003	SIMPLIFIED INPUT - OUTPUT AND DEBU	360D-04.0.010
FORTRAN IV TO PL/I TRAN	360D-12.2.002	ZERO-ONE INTEGER PROGRAMMING WIT	360D-15.2.011
MORTRAN, A FORTRAN LANGUAGE EXTENS	360D-03.6.020	FAA INTEGRATED NOISE MODEL	360D-16.0.003
LING STANDARD CALLS TO FORTRAN PROGRAMS, SUBPR	360D-03.8.016	INTER-SYSTEM SHARED ENQ	360D-05.2.015
FORTRAN RANDOM I/O SUBR	360D-03.4.027	INTERACTIVE HEX DECIMAL	360D-12.1.024
ROCKET - FORTRAN 4 VERSION	360D-16.1.001	TEXAS INTERACTIVE PROGRAMMING	360D-05.1.023
COOLEY-TUKEY FAST FOURIER TRANSFORM	360D-13.4.001	INTERFACE BETWEEN PL/I	360D-08.6.002
COOLEY-TUKEY FAST FOURIER TRANSFORM	360D-13.4.002	COBFORT - AN INTERFACE ENABLING STAN	360D-03.8.016
E TESTING VIA THE FAST FOURIER TRANSFORM	360D-16.3.002	SIMPLIFIED INTERFACE FOR INVOKING	360D-06.1.006
ND LIBRARY SUBPROGRAMS FROM OTHER LANGUAGES.	360D-03.8.016	LCULATION OF MICROWAVE INTERFERENCE	360D-16.0.002
FACE FOR INVOKING SORT FROM PL/I OPTIMIZER PRO	360D-06.1.006	IBM-360 FLOATING POINT INTERNAL CONVERTER ('CV	360D-06.5.006
PL/I STRING FUNCTIONS	360D-03.8.013	- INTERVAL ARITHMETIC INTERPRETER AND SUBROUT	360D-40.0.003
TIONS TO FORTRAN H AND G WITH NOSOURCE OPTION	360D-03.2.017	FAST ASSEMBLER- INTERPRETER FOR S/360 A	360D-03.1.014
360 GASP III - GENERALIZED	360D-15.1.004	INTERSECTION DETECTION	360D-08.7.004
GEMS - A GRAPHICAL EXPE	360D-03.0.015	INTFORT - INTERVAL ARITHMETIC INT	360D-40.0.003
DIALL - GENERAL LEAST SQUARES D	360D-13.7.001	OR VECTOR- MAXIMUM AND INTERVAL WEIGHTED-SUMS	360D-15.2.014
360 GASP III - GENERALIZED ACADEMIC SI	360D-15.1.004	INTFORT - INTERVAL ARIT	360D-40.0.003
THE XPL COMPILER GENERATOR SYSTEM	360D-03.2.015	MPLIFIED INTERFACE FOR INVOKING SORT FROM PL/I	360D-06.1.006
COBOL MODULE AND GO TO CHECKER	360D-03.6.023	IO2260 DISPLAY/ATTENTIO	360D-00.6.008

TITLE		PROGRAM NO.	TITLE		PROGRAM NO.
ZERO-	ONE INTEGER PROGRAMMING	360D-15.2.011	/I EXECUTION ANALYZER (	PLEA)	360D-04.2.008
SPLOT -	ONE PAGE GRAPH-PRINTING	360D-08.7.006		PLOT - A SUBROUTINE FOR	360D-08.6.003
TRANSIENT	ONE-DIMENSIONAL AND SIM	360D-17.4.003		PLOTS - A SUBROUTINE FO	360D-08.6.001
	ONE-WAY ENCIPHERING ALG	360D-01.0.010	TO OS/360 WITH CALCOMP	PLOTTING	360D-43.2.001
	OPERATING SYSTEM ACCOUN	360D-01.4.003	LOT - A SUBROUTINE FOR	PLOTTING ON A PRINTER	360D-08.6.003
NVOKING SORT FROM PL/I	OPTIMIZER PROGRAMS (A#S	360D-06.1.006	OUTINE FOR TIME-SERIES	PLOTTING ON A PRINTER	360D-08.6.001
H AND G WITH NOSOURCE	OPTION	360D-03.2.017	PLT360; IBM 1627	PLOTTING ROUTINE	360D-08.6.013
APL/SV (	OS/MVT VERSION) MODIFIC	370D-03.3.014	PNRG; PERSPECTIVE	PLOTTING ROUTINE; ARBIT	360D-08.6.011
SLAC MODIFICATIONS TO	OS/VS LOADER	360D-05.5.002	PRG; PERSPECTIVE	PLOTTING ROUTINE; RECTA	360D-08.6.012
VERSION PROBLEMS UNDER	OS/360	360D-12.0.003	PLT360; IBM 1627 PLCTTI	PNRG; PERSPECTIVE PLOTT	360D-08.6.013
STACK MANIPULATION FOR	OS/360 ASSEMBLER LANGUA	360D-06.8.004		PNRG; PERSPECTIVE PLOTT	360D-08.6.011
CHANGE1 -	OS/360 DASD EXPIRATION	360D-00.4.014	CENT EFFICIENT EXTREME	POINT ALGORITHM FOR VFC	360D-15.2.014
	OS/360 QUIC (KWIC INDEX	360D-06.7.022	E - PRECISION FLOATING-	POINT ARITHMETIC PACKAG	360D-40.4.003
G SIMULATION SYSTEM TO	OS/360 WITH CALCOMP PLO	360D-43.2.001	08 TO IBM-360 FLOATING	POINT INTERNAL CONVERTE	360D-06.5.006
BRARY SUBPROGRAMS FROM	OTHER LANGUAGES.	360D-03.8.016	ROGRAM FOR DETERMINING	POLYNOMIAL ZEROS	360D-42.2.001
SIMPLIFIED INPUT -	OUTPUT AND DEBUGGING MA	360D-04.0.010	MORTRAN2, A	PORTABLE MACRO-BASED ST	360D-03.6.026
2260 DISPLAY/ATTENTION	PACKAGE	360D-00.6.008	PTATION OF THE CONVAIR	PRE-COMPILING MIDAS-III	360D-43.2.001
1.1 - TSO ENHANCEMENT	PACKAGE	360D-05.2.014	MAP/II MACRO	PRE-PROCESSOR	360D-03.6.025
L 1 SIMULATION SUPPORT	PACKAGE	360D-03.4.033	SIMPLE: A SIMPLE	PRECEDENCE TRANSLATOR W	360D-03.6.019
RTRAN CHARACTER STRING	PACKAGE	360D-06.6.003	DFACT - DOUBLE	PRECISION FACTORIAL	360D-40.0.001
N H SYMBOLIC DEBUGGING	PACKAGE	360D-04.1.012	MULTIPLE -	PRECISION FLOATING-POIN	360D-40.4.003
RPRETER AND SUBROUTINE	PACKAGE	360D-40.0.003	A MULTIPLE	PRECISION PACKAGE FOR T	360D-40.4.004
ATING-POINT ARITHMETIC	PACKAGE	360D-40.4.003		PRG; PERSPECTIVE PLOTTI	360D-08.6.012
ED NOISE MODEL PROGRAM	PACKAGE (VERSION 2)	360D-16.0.003		PRINT - A TEXT FORMATTI	360D-06.0.008
A MULTIPLE PRECISION	PACKAGE FOR THE IBM 360	360D-40.4.004	ROUTINE AND DESIGN FOR	PRINTED CIRCUIT BOARDS	360D-16.0.001
RATION AND MAINTENANCE	PACKAGE, FATSO	360D-00.5.008	TINE FOR PLOTTING ON A	PRINTER	360D-08.6.003
SPLOT - ONE	PAGE GRAPH-PRINTING SUB	360D-08.7.006	E-SERIES PLOTTING ON A	PRINTER	360D-08.6.001
	PAPER SAVING MODIFICATI	360D-03.2.017	SPLOT - ONE PAGE GRAPH-	PRINTING SUBROUTINE	360D-08.7.006
NONLINEAR	PARAMETER ESTIMATION AN	360D-13.6.003	IED I/O AND DIAGNOSTIC	PRINTOUTS	360D-04.0.011
TIMATION OF NON-LINEAR	PARAMETERS	360D-13.2.003	UTOMATED LAYOUT DESIGN	PROBLEM	360D-23.0.004
PROCESS MEMBERS OF	PARTIONED DATA SETS WIT	360D-01.6.008	UMS LINEAR PROGRAMMING	PROBLEMS	360D-15.2.014
IPHERING ALGORITHM FOR	PASSWORD PROTECTION	360D-01.0.010	QUADRATIC PROGRAMMING	PROBLEMS	360D-15.3.003
UREMENT / TIME-SHARING	PERFORMANCE / SIMULATIO	360D-04.4.012	FORTRAN IV CONVERSION	PROBLEMS UNDER OS/360	360D-12.0.003
PNRG;	PERSPECTIVE PLOTTING RO	360D-08.6.011	A SYSTEM TO	PROCESS ABSTRACT CATALO	360D-03.5.005
PRG;	PERSPECTIVE PLOTTING RO	360D-08.6.012		PROCESS MEMBERS OF PART	360D-01.6.008
	PILOT CAI LANGUAGE	360D-03.3.016	*1 (STAR-1) - LIST	PROCESSING LANGUAGE	360D-03.2.016
A COMPLEMENTARY	PIVOT METHOD FOR SOLVIN	360D-15.3.003	FORMAT, A TEXT-	PROCESSING PROGRAM	360D-06.0.007
CHARACTER FILTER	PL/I	360D-06.6.004	ANSLATOR BASED ON LIST	PROCESSING TECHNIQUES	360D-03.6.022
RTIONED DATA SETS WITH	PL/I	360D-01.6.008	MAP/II MACRO PRE-	PROCESSOR	360D-03.6.025
	PL/I EXECUTION ANALYZER	360D-04.2.008	CHGPASS COMMAND	PROCESSOR	360D-01.4.012
FOR INVOKING SORT FROM	PL/I OPTIMIZER PROGRAMS	360D-06.1.006	SNAP	PROCESSOR (PROTOTYPE)	360D-03.3.010
	PL/I REPORT WRITER MACR	360D-03.5.009	NSCRIPT -	PRODUCES TEXT DATASETS	360D-03.5.008
NEATER: A	PL/I SOURCE STATEMENT R	360D-03.6.018	MAT, A TEXT-PROCESSING	PROGRAM	360D-06.0.007
	PL/I STRING FUNCTIONS	360D-03.8.013	SELECT	PROGRAM	360D-06.7.028
	PL/I SUBPROCEDURE COLLE	360D-45.0.001	MACRO CROSS-REFERENCE	PROGRAM	360D-03.7.034
FORTRAN IV TO	PL/I TRANSLATOR	360D-12.2.002	SUSAN, DISK MAPPING	PROGRAM	360D-00.4.019
INTERFACE BETWEEN	PL/I USER PROGRAMS AND	360D-08.6.002	NT - A TEXT FORMATTING	PROGRAM	360D-06.0.008
	PLANET: PLANT LAYOUT AN	360D-23.0.003	ECT ACCESS VOLUME COPY	PROGRAM	360D-00.5.007
ED RELATIONSHIP LAYOUT	PLANNING	360D-23.0.002	/TOS FORTRAN FLOWCHART	PROGRAM	360D-00.2.001
PLANET:	PLANT LAYOUT ANALYSIS A	360D-23.0.003	MODEL 20 MULTIUTILITY	PROGRAM	360E-00.1.016

TITLE		PROGRAM NO.
IV CONVERSION PROBLEMS	UNDER OS/360	360D-12.0.003
UCARDS:	UNION CARBIDE AUTOMATIC	360D-16.0.001
	UNIVAC-1108 TO IBM-360	360D-06.5.006
INTERFACE BETWEEN PL/I	USER PROGRAMS AND CALCO	360D-08.6.002
FOR ASSEMBLER LANGUAGE	USERS	360D-04.0.010
G SYSTEM FOR THE S/360	USING THE 2250 DISPLAY	360D-00.6.011
TRUCTURED PROGRAMMING,	UTILITIES, TRANSLATORS,	360D-99.0.009
COMPARE DATA SET	UTILITY	360D-06.0.009
	VARIABLE LENGTH RECORD	360D-00.5.009
ES DIALLEL ANALYSIS OF	VARIANCE	360D-13.7.001
D DELETION SUBROUTINE,	VBDMLET	360D-00.5.009
ME POINT ALGORITHM FOR	VECTOR- MAXIMUM AND INT	360D-15.2.014
ROCKET - FORTRAN 4	VERSION	360D-16.1.001
MODEL PROGRAM PACKAGE (	VERSION 2)	360D-16.0.003
70 ASSEMBLER LANGUAGE (	VERSION 4), SPASM	360D-03.1.014
APL/SV (OS/MVT	VERSION) MODIFICATIONS	370D-03.3.014
PULSE TESTING	VIA THE FAST FOURIER TR	360D-16.3.002
DIRECT ACCESS	VOLUME COPY PRCGRAM	360D-00.5.007
AC MODIFICATIONS TO OS/	VS LOADER	360D-05.5.002
	VS1 HASP	370D-05.1.022
	VTOC4MAT	360D-01.6.005
HASP	V4.0 RETROFIT TO MFT-II	370D-05.0.004
360 APT -	V4M3/SSX3A/SSIP	360D-23.4.004
IMULTANEOUS SOLUTE AND	WATER FLOW IN SOILS	360D-17.4.003
ONE-	WAY ENCIPHERING ALGORIT	360D-01.0.010
- MAXIMUM AND INTERVAL	WEIGHTED-SUMS LINEAR PR	360D-15.2.014
ENHANCED HASP RTP1130	WORKSTATION FOR DISK I/	1130-06.3.017
	WRIMAT MATRIX WRITER	360D-08.0.003
0 DASD EXPIRATION DATE	WRITER	360D-00.4.014
REPORT	WRITER	360D-03.5.007
WRIMAT MATRIX	WRITER	360D-08.0.003
PL/I REPORT	WRITER MACROS	360D-03.5.009
PRECEDENCE TRANSLATOR	WRITING SYSTEM	360D-03.6.019
THE	XPL COMPILER GENERATOR	360D-03.2.015
	ZERO-ONE INTEGER PROGRA	360D-15.2.011
DETERMINING POLYNOMIAL	ZEROS	360D-42.2.001
HASP V4.	0 RETROFIT TO MFT-II	370D-05.0.004
E COLLECTION - RELEASE	1	360D-45.0.001
*	1 (STAR-1) - LIST PROCE	360D-03.2.016
NETUCC 1.	1 - TSO ENHANCEMENT PAC	360D-05.2.014
A 2250 MODEL	1 SIMULATION SUPPORT PA	360D-03.4.033
NETUCC	1.1 - TSO ENHANCEMENT P	360D-05.2.014
ARING LANGUAGE/ONE (TL/	1)	360D-03.6.027
*1 (STAR-	1) - LIST PROCESSING LA	360D-03.2.016
UNIVAC-	1108 TO IBM-360 FLOATIN	360D-06.5.006
PLT360; IBM	1627 PLOTTING ROUTINE	360D-08.6.013
OGRAM PACKAGE (VERSION	2)	360D-16.0.003
IBM S/360 MODEL	20 MULTIUTILITY PROGRAM	360E-00.1.016
OR THE S/360 USING THE	2250 DISPLAY	360D-00.6.011
A	2250 MODEL 1 SIMULATION	360D-03.4.033

TITLE		PROGRAM NO.
	370 APT-AC (PTF3), APTL	370D-23.4.005
PRETER FOR S/360 AND S/	370 ASSEMBLER LANGUAGE	360D-03.1.014
SOL-	370 SIMULATION SYSTEM	360D-15.1.008
ACKAGE FOR THE IBM 360/	370 SYSTEMS	360D-40.4.004
ROCKET - FORTRAN	4 VERSION	360D-16.1.001
BLER LANGUAGE (VERSION	4), SPASM	360D-03.1.014
R FOR SYSTEM/360 MODEL	44	360D-11.3.015
SHARE FORMAC/FORMAC/	73	360D-03.3.013

END-OF-KWIC

370D-00.0.024
COMPRESSED SOURCE LIBRARY SYSTEM

AUTHOR: P. MICHAEL HENDERSON

DIRECT TECHNICAL INQUIRIES TO:
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GRETNA, LOUISIANA 70053

DESCRIPTION - THE COMPRESSED SOURCE LIBRARY SYSTEM ALLOWS A
USER TO EASILY ADD, REPLACE OR CHANGE AND OPTIONALLY
COMPILE/ASSEMBLE SOURCE CODE ON A DIRECT ACCESS COMPRESSED
LIBRARY. IN ADDITION, A TRANSPORTABLE COPY OF THE SOURCE
CODE IN UNCOMPRESSED EBCDIC FORM MAY ALSO BE PRODUCED. THE
SYSTEM HAS PROVED TO BE ABLE TO PRODUCE COMPRESSION FACTORS
OF ABOUT 3/1 FOR MOST PROGRAMMING LANGUAGES. THE SYSTEM WAS
WRITTEN FOR AND TESTED ON AN IBM 370 MACHINE USING OS/360
MVT RELEASE 20.6 AND 21.6. THERE APPEARS TO BE NO REASON
WHY THE SYSTEM WILL NOT OPERATE UNDER MFT OR VS1 BUT IT HAS
NOT BEEN SUBMITTED TO ANY FORMAL TESTING ON EITHER SYSTEM.
HOWEVER, THE SYSTEM AS WRITTEN WILL NOT OPERATE ON A 360
MACHINE DUE TO THE USE OF 370 INSTRUCTIONS. THE 370
INSTRUCTIONS ARE NOT IRREPLACABLE AND THE SYSTEM COULD BE
CONVERTED TO OPERATE ON A 360 MACHINE BY A USER INSTALLATION
IF DESIRED.

THE COMPRESSED SOURCE LIBRARY SYSTEM IS WRITTEN IN IBM
OS/360 ASSEMBLER F AND REQUIRES THE IBM PROGRAMS IEBUPDTE,
IEBCOPY, AND IEHMOVE TO GENERATE AND OPERATE THE SYSTEM.

PROGRAMMING LANGUAGE - OS/360 ASSEMBLER F

MINIMUM SYSTEM REQUIREMENTS - OS/360, S/370 HARDWARE

DOCUMENTATION: 52 PAGES, $1.60 ADDITIONAL CHARGE.
CARD COUNT: 8,850 APPROXIMATE.
SUBMITTAL/REVISION DATE: 2/74.

360E-00.1.016
IBM S/360 MODEL 20 MULTIUTILITY PROGRAM

AUTHOR: R. KOLAR

DIRECT TECHNICAL INQUIRIES TO:

TECHNICAL ASSISTANCE
CURRENTLY NOT AVAILABLE

DESCRIPTION - THE S/360 MULTIUTILITY PROGRAM IS A CORE-
RESIDENT PROGRAM DESIGNED TO PERFORM THE FOLLOWING
FUNCTIONS: LISTING, REPRODUCING, INTERPRETING, TRANSLATING,
DECK SEQUENCING, AND MAILING LABEL PRODUCTION. ADDITIONAL
LISTING OPTIONS INCLUDE - SINGLE SPACE (EDCDIC), DOUBLE
SPACE (EBCDIC), SINGLE SPACE (BCD), SINGLE SPACE
(HEXADECIMAL). THE DECK SEQUENCING PROGRAM IS NOT
RESTRICTED TO THE TRADITIONAL FORMAT OF A 3 CHARACTER
IDENTIFICATION FIELD AND A 5 DIGIT SEQUENCE NUMBER. THROUGH
THE USE OF A CONTROL CARD, THE USER MAY SPECIFY THE
IDENTIFICATION FIELD CONSTANT, THE STARTING VALUE FOR
THE SEQUENCE NUMBERS, AND THE INCREMENT FOR THE SEQUENCE
NUMBERS. THE ONLY RESTRICTION IS THAT THE IDENTIFICATION
FIELD CONSTANT MUST BE AT LEAST 1 CHARACTER. A RESEQUENCING
FACILITY IS ALSO PROVIDED. THE MAILING LABEL PROGRAM IS
INDEPENDENT OF LABEL SIZE SINCE IT REQUIRES NO SPECIAL
CARRIAGE TAPE. A CONTROL CARD IS USED TO SPECIFY THE LABEL
SIZE, THE NAME FIELD, THE ADDRESS FIELD, AND THE CHARACTER
WHICH IS USED AS A DELIMITER WITHIN THE ADDRESS FIELD.
HENCE THE PROGRAM IS NOT RESTRICTED TO PROCESSING ADDRESS
CARDS OF A PARTICULAR FORMAT. RESTRICTIONS ARE THAT ALL
INFORMATION PERTAINING TO AN ADDRESS MUST BE PUNCHED ON
A SINGLE CARD AND THE ADDRESS MAY NOT EXCEED 4 LINES.

ONCE THE PROGRAM IS LOADED, SEVERAL UTILITY FUNCTIONS CAN
BE PERFORMED CONSEQUETIVELY BY INTERROGATING THE DATA
SWITCHES ON THE CONSOLE. ANY OF THE FUNCTIONS - SINGLE
SPACE (EBCDIC LIST), REPRODUCE, AND INTERPRET MAY BE
PERFORMED SIMULTANEOUSLY ON A SINGLE PASS. THE PROGRAM
USES A CARD SCANNING ALGORITHM TO DETERMINE THE DATA CONTENT
OF EACH SOURCE CARD SO THAT THE REPRODUCING AND INTERPRETING
FUNCTIONS ARE PERFORMED WITH A HIGHER DEGREE OF EFFICIENCY.

PROGRAMMING SYSTEMS - WRITTEN IN BASIC ASSEMBLER LANGUAGE.

MINIMUM SYSTEM REQUIREMENTS - 2020 CPU (4K), 2203 PRINTER
(120 PRINT POSITIONS), 2560 MCFM (WITH INTERPRETING

CONTINUED FROM PRIOR COLUMN

FEATURE). THE PROGRAM CAN ALSO BE USED WITH OTHER
INPUT/OUTPUT UNITS BY MODIFYING THE SOURCE DECK.

DOCUMENTATION: 18 PAGES, NO ADDITICNAL CHARGE.
CARD COUNT: 100 APPROXIMATE.
SUBMITTAL/REVISION DATE: 07/68

360D-00.2.001
    BPS/DOS/TOS FORTRAN FLOWCHART PROGRAM

    AUTHOR: G. E. GAUTNEY, JR.

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        DEPUTY DIRECTOR FOR COMPUTING RESOURCES
        COMMONWEALTH OF VIRGINIA
        DIVISION OF AUTOMATED DATA PROCESSING
        8TH STREET OFFICE BUILDING
        RICHMOND, VIRGINIA 23219

    DESCRIPTION - THE BPS/DOS/TOS FORTRAN FLOWCHART PROGRAM
    IS INTENDED PRIMARILY AS A DEBUGGING DOCUMENTATION AID.
    IT ACCEPTS AS INPUT BPS, DOS, OR TOS FORTRAN SOURCE PROGRAMS
    AND PREPARES AUTOMATICALLY A BLOCK DIAGRAM FLOW CHART OF
    THE INPUT PROGRAM.

    PROGRAMMING SYSTEMS - PROGRAM SOURCE LANGUAGE IS BPS FORTRAN
    BUT CAN ALSO BE USED AS A DOS/TOS FORTRAN PROGRAM SINCE
    NO STATEMENTS UNIQUE TO EITHER VERSION OF 360 FORTRAN ARE
    USED.

    MINIMUM SYSTEM REQUIREMENTS - THOSE NEEDED FOR BPS/DOS/TOS
    FORTRAN ARE ADEQUATE.

    DOCUMENTATION: 18 PAGES, NO ADDITICNAL CHARGE.
    CARD COUNT: 600 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 03/67

360D-00.4.014
    CHANGE1 - OS/360 DASD EXPIRATION DATE WRITER

    AUTHOR: J. E. NORTH

    DIRECT TECHNICAL INQUIRIES TO:
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        P.O. BOX 25
        WILLOW SPRINGS, ILL.   60480

    DESCRIPTION - CHANGE1 WRITES AN EXPIRATION DATE FOR ANY
    DATASET RESIDING ON A DIRECT ACCESS VOLUME OF THE DEVICE
    TYPES SUPPORTED BY OS/360. THE PROGRAM HAS BEEN TESTED
    ON THE MODELS 40, 50, 65, AND 75 IN THE PCP.14, MFT-HASP.14,
    MVT.14, AND EMFT.13 ENVIRONMENTS. CHANGE1 RECEIVES ALL
    OF ITS INPUT FROM THE JCL WHICH INVOKES THE UTILITY. THE
    VTOC IS SEARCHED FOR A FORMAT-ONE OSCB WHOSE DSNAME IS
    THAT OF THE DD STATEMENT. THAT OSCB IS READ, THE NEW
    EXPIRATION DATE, OBTAINED FRCM THE PARM FARAMETER OF THE
    EXEC STATEMENT, IS ADDED, AND THE DSCB IS WRITTEN BACK
    INTO THE VTOC. ONE EXPIRATION DATE IS WRITTEN PER STEP,
    AND THE TIME IS VIRTUALLY THAT OF THE SCHEDULER. CHANGE1
    IS PRIMARILY A SYSTEMS PROGRAM, BUT IT CAN EASILY BE USED
    BY THE APPLICATIONS PROGRAMMER.

    PROGRAMMING SYSTEMS - PROGRAMMING LANGUAGE - OS ASSEMBLER
    LANGUAGE. OPERATING SYSTEM - CS/360.

    MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED BY OS/360.

    DOCUMENTATION: 4 PAGES, NO ADDITIONAL CHARGE.
    CARD COUNT: 200 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 09/68

360D-00.4.019
    SUSAN, DISK MAPPING PROGRAM

    AUTHOR: SUSAN CANTER

    DIRECT TECHNICAL INQUIRIES TC:
        J. H. FULTON
        COMPUTING CENTER
        BOX 5445
        N. C. STATE UNIVERSITY
        RALEIGH, NORTH CAROLINA 27607

CONTINUED FROM PRIOR COLUMN

DESCRIPTION - SUSAN IS A PROGRAM THAT MAPS DATA SETS GIVING
INFORMATION NEEDED TO RECREATE THE DATA SET, CREATION DATE,
EXPIRATION DATE, NUMBER OF EXTENTS, AND TRACKS AND RECORDS
USED. THIS INFORMATION CAN BE GIVEN FOR A SINGLE DATA SET,
A GROUP OF DATA SETS, OR ALL DATA SETS FROM ONE TO TWENTY
VOLUMES. OPTIONALLY, THE PROGRAM WILL LIST THE CATALOG
ENTRIES (DATA SET NAME, DEVICE TYPE, AND VOLUME) AND
LIST DIRECTORY USE INFORMATION ABOUT PDS'S. MEMBERS OF
PDS'S CAN BE MAPPED TO SHOW NAMES AND ALIASES AND, FOR LOAD
MODULES, SYSTEM STATUS BITS, ENTRY POINTS, SIZES, ETC.
INFORMATION ABOUT THE INDEX TRACKS AND OVERFLOW AREAS AND
REORGANIZATION STATISTICS ARE GIVEN FOR ISAM DATA SETS.
SUSAN REQUIRES PL/I(F) OR VERSION 1, RELEASE 1.2 OR HIGHER
OF THE OPTIMIZING COMPILER FOR COMPILATION. THE LOAD
MODULE DISTRIBUTED WILL EXECUTE PROVIDING THAT THE PL/I
TRANSIENT LIBRARY, PROGRAM NUMBER 5734-LM5, IS AVAILABLE.

WITH SUITABLE OS MODIFICATIONS TO OPEN, SUSAN WILL ALSO
SHOW THE DATE OF THE LAST OPEN AND NUMBER OF TIMES OPENED.

PROGRAMMING LANGUAGE - PL/I

MINIMUM SYSTEM REQUIREMENTS - OS/360

DOCUMENTATION: 13 PAGES, NO ADDITICNAL CHARGE.
CARD COUNT: 1480 CARDS APPROXIMATE.
SUBMITTAL/REVISION DATE: 6/74

370D-00.4.020
    DASD ALTERNATE TRACK ANALYSIS (ALTTRACK)

    AUTHOR: BILL SCHMIDT

    DIRECT TECHNICAL INQUIRIES TO:
        BILL SCHMIDT
        LITTON RESTON COMPUTER CENTER
        1831 MICHAEL FARADAY DRIVE
        RESTON, VA 22070

    DESCRIPTION - THIS PROGRAM ANALYZES DASD VOLUME SURFACES FOR
    DEFECTIVE TRACKS. A LISTING OF ALL MARKED DEFECTIVES AND
    ASSIGNED ALTERNATES BY RELATIVE TRACK AND CCHH IS GENERATED.
    ALTTRACK HAS BEEN SCCESSFULLY TESTED ON 2314, 3330-1, AND
    3330-11.

    PROGRAMMING LANGUAGE - ASSEMBLER F.

CONTINUED FROM PRIOR COLUMN

    MINIMUM SYSTEM REQUIREMENTS - 370/VS 12K VIRTUAL.

    DOCUMENTATION: 3 PAGES, NO ADDITICNAL CHARGE.
    CARD COUNT: 380 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 4/75.

370D-00.4.021
    DASD SEEK MAPPING AID (SEEKER)

    AUTHOR: BILL SCHMIDT

    DIRECT TECHNICAL INQUIRIES TO:
        BILL SCHMIDT
        LITTON RESTON COMPUTER CENTER
        1831 MICHAEL FARADAY DRIVE
        RESTON, VA 22070

    DESCRIPTION - THIS PROGRAM FACILITATES THE ATTACHMENT OF
    HARDWARE PROBES FOR SEEK MAPPING ON DASD SPINDLES. THE
    PROGRAM DOES ONE SEEK TO EACH HEAD ON THE VOLUME, STARTING
    FROM CCHH 0000. THERE IS NO OUTPUT FOR NORMAL PROGRAM
    COMPLETION. SEEKER HAS BEEN SUCCESSFULLY TESTED ON 3330-1
    AND 3330-11. ONE EXCP IS PERFORMED TO EACH PHYSICAL TRACK
    IN BETWEEN TWO WTOR'S. THE WTOR'S ARE ISSUED TO ALLOW THE
    HARDWARE MONITOR TO BE STARTED AND STOPPED.

    PROGRAMMING LANGUAGE - ASSEMBLER F.

    MINIMUM SYSTEM REQUIREMENTS - 370/VS 12K VIRTUAL.

    DOCUMENTATION: 3 PAGES, NO ADDITICNAL CHARGE.
    CARD COUNT: 225 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 4/75.

360D-00.5.007
DIRECT ACCESS VOLUME COPY PROGRAM

AUTHOR: KARL BARNHARDT

DIRECT TECHNICAL INQUIRIES TO:
KARL BARNHARDT
BELL TELEPHONE LABORATORIES, INC.
6200 E. BROAD ST.
COLUMBUS, OHIO 43213

DESCRIPTION - THIS UTILITY PROGRAM COMPRESSES USED DIRECT
ACCESS SPACE ON AN OS VOLUME INTO CONTIGUOUS AREAS THEREBY
GATHERING FREE AREAS INTO ONE OR MORE LARGER FREE AREAS.
THIS IS DONE BY COPYING ALL DATA SETS FROM ONE DIRECT ACCESS
VOLUME TO ANOTHER VOLUME OF THE SAME TYPE.
INDEXED SEQUENTIAL AND UNMOVABLE DATA SETS ARE COPIED TO THE
SAME LOCATION ON THE RECEIVING VOLUME AS THEY OCCUPIED ON
THE ORIGINAL VOLUME. THE USED EXTENTS OF ALL REMAINING
DATA SETS ARE ALLOCATED ON THE RECEIVING VOLUME STARTING
AT THE FIRST AVAILABLE TRACK AFTER THE VOLUME LABEL AND
PROCEEDING UPWARD. PARTITIONED DATA SETS ARE NCT COMPRESSED
WHEN COPIED. IF A CATALOG DATA SET EXISTS IT IS ALLOCATED
NEXT TO THE VTOC. ASSUMING SOME ORIGINAL FRAGMENTATION
THE RESULT IS A DIRECT ACCESS VOLUME WITH LARGER CONTIGUOUS
FREE AREAS. THE NUMBER OF RESULTING FREE AREAS DEPENDS ON
THE NUMBER AND THE LOCATION OF LOCATION DEPENDENT DATA SETS.

PROGRAMMING LANGUAGE - OS ASSEMBLER (G OR H)

MINIMUM SYSTEM REQUIREMENTS - OS/360

DOCUMENTATION: 6 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 1,100 APPROXIMATE.
SUBMITTAL/REVISION DATE: 7/73

360D-00.5.008
TSO DATASET MIGRATION AND MAINTENANCE PACKAGE, FATSO

AUTHORS: MICHAEL W. ROHRER
JAMES E. REMMELL

DIRECT TECHNICAL INQUIRIES TO:
MICHAEL W. ROHRER
LORENDAS PROJECT
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
BLACKSBURG, VIRGINIA 24061
TELEPHONE (703) 951-6506

DESCRIPTION - THE FATSO PACKAGE IS INTENDED TO PROVIDE A
COMPREHENSIVE SET OF PROGRAMS FOR MAINTAINING DISK PACKS
USED TO HOLD DATASETS GENERATED BY TSO USERS UNDER
OS/MVT/TSO. THE PACKAGE INCLUDES:
• THE PRIMARY MAINTENANCE PRCGRAM, FATSO;
• A REPLACEMENT CSECT FOR IEHMOVE TO PERMIT DATASET
MIGRATION TO OFF-LINE TAPE;
• A TSO COMMAND TO PERMIT RETRIEVAL OF MIGRATED DATASETS;
• TWO REPORT AND CATALOG MAINTENANCE PROGRAMS FOR MIGRATED
DATASETS;
• FOUR TSO COMMAND PROCESSORS USED FOR DATASET
MAINTENANCE;
• INFORMATION ON SEVERAL PERTINENT SUPERZAPS INCLUDED IN
THE DOCUMENTATION.

ALL PROGRAMS ARE IN OS ASSEMBLER (F) EXCEPT THE TWO REPORTS,
WHICH ARE IN PL/1 (F).

THE PACKAGE IS DESIGNATED TO RUN ON ANY IBM S/360 OR S/370
SYSTEM RUNNING OS/MVT/TSO, AND HAVING DISK AND TAPE UNITS.
SOME CODE MAY REQUIRE MODIFICATION FOR A PARTICULAR
INSTALLATION'S REQUIREMENTS, AND THESE PLACES HAVE BEEN
CLEARLY MARKED IN THE COMMENTS ACCOMPANYING THE SOURCE CODE.
FOR THE MOST PART, HOWEVER, THE CODE HAS BEEN KEPT
INSTALLATION-INDEPENDENT.

DUE TO DEPENDENCE ON VARIOUS CS FEATURES AS WELL AS THE OS
CATALOG, THE PACKAGE WILL NOT RUN ON VS/TSO.

PROGRAMMING LANGUAGE - OS ASSEMBLER (F), PL/1 (F).

MINIMUM SYSTEM REQUIREMENTS - CS/360 (MVT), TSO.

DOCUMENTATION: 5 PAGES, NO ADDITIONAL CHARGE.
(PLUS MACHINE READABLE DOCUMENTATION)
CARD COUNT: 6300 APPROXIMATE.

CONTINUED FROM PRIOR COLUMN

SUBMITTAL/REVISION DATE: 12/73.

360D-00.5.009
    VARIABLE LENGTH RECORD DELETION SUBROUTINE, VBDMDLET

    AUTHOR: MARK WITTE

    DIRECT TECHNICAL INQUIRIES TO:
        DOUGLAS KUNKEL
        LIBRARY SYSTEMS
        WASHINGTON STATE UNIVERSITY
        PULLMAN, WA   99163

    DESCRIPTION - FOR INSTALLATIONS USING IBM COMPATIELE DIRECT
    ACCESS STORAGE DEVICES (DASD) AND THE BASIC DIRECT ACCESS
    METHOD (BDAM), USERS OF VOLATILE FILES WITH KEYED, VARIABLE
    LENGTH RECORDS ARE FACED WITH THE PROBLEM OF WASTED STORAGE
    SPACE CAUSED BY 'LOGICAL' RECORD DELETION, WHICH EVENTUALLY
    REQUIRES EXPENSIVE FILE REORGANIZATION.

    PASSED THE RECORD ADDRESS (MBBCCHHR OR TTR) OF A RECORD TO
    BE DELETED, VBDMDLET WILL PHYSICALLY DELETE THE RECORD IN
    TWO (2) I/O COUNTS, REGARDLESS OF THE NUMBER OF RECORDS ON
    THE TRACK OR THE RELATIVE POSITION OF THE RECORD TO BE
    DELETED.

    WRITTEN IN IBM 360 ASSEMBLER AND IMPLEMENTED FOR THE 2314
    DASD ON AN IBM 360/67 WITH OS/MVT, THE ROUTINE IS DESIGNED
    TO BE DEVICE DEPENDENT AND MINIMIZE CORE USAGE. THUS
    DYNAMIC BUFFER ALLOCATION IS EMPLOYED. THE ROUTINE REQUIRES
    LESS THAN 2K OF CORE STORAGE, AND SINCE IT IS REENTRANT, IT
    IS SUITABLE FOR EITHER ON-LINE OR BATCH MODE APPLICATION.

    VBDMDLET OFFERS THE USER CONSIDERABLE SAVINGS OVER FILE
    REORGANIZATION COSTS SINCE ONLY TWO I/O COUNTS ARE REQUIRED
    PER RECORD DELETED, AS OPPOSED TO FOUR I/O COUNTS FOR EACH
    RECORD RETAINED DURING REORGANIZATION.

    PROGRAMMING LANGUAGE - OS ASSEMBLER

    MINIMUM SYSTEM REQUIREMENTS - OS/360, 2314 OR EQUIVALENT

    DOCUMENTATION: 27 PAGES, $.35 ADDITIONAL CHARGE.
    CARD COUNT: 1650 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 8/74.

360D-00.6.008
    IO2260 DISPLAY/ATTENTION PACKAGE

    AUTHOR : H. A. GARNER

    DIRECT TECHNICAL INQUIRIES TO:

                TECHNICAL ASSISTANCE
                CURRENTLY NOT AVAILABLE.

    DESCRIPTION - THE IO2260 DISPLAY/ATTENTION PACKAGE PROVIDES
    A MEANS FOR THE FORTRAN OR ASSEMBLY LANGUAGE PROGRAMMER
    TO CONTROL ANY NUMBER OF IBM 2260'S, WITH CALLS FROM
    FORTRAN, OR SIMILAR CODE IN ASSEMBLY PROGRESS, IN A 44/PS
    ENVIRONMENT.

    PROGRAMMING SYSTEMS - OPERATING SYSTEM REQUIRED - UNMODIFIED
    44/PS, AND USES THE IO AND SCHEDULING SERVICES OF THAT
    SYSTEM.

    MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED OF 44/PS.

    DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
    CARD COUNT: 620 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 03/68

360D-00.6.011
    A HYPERTEXT EDITING SYSTEM FOR THE S/360 USING THE 2250
    DISPLAY

    AUTHOR: ANDRIES VAN DAM

    DIRECT TECHNICAL INQUIRIES TO:
                PROFESSOR ANDRIES VAN DAM
                BOX F
                PROGRAM IN COMPUTER SCIENCE
                BROWN UNIVERSITY
                PROVIDENCE, R. I.   02912

    DESCRIPTION - THE HYPERTEXT EDITING SYSTEM IS A MULTIPURPOSE
    TEXT HANDLING SYSTEM WHICH CAN BE USED FOR TEXT EDITING
    AND REVISION, INFORMATION RETRIEVAL, PROGRAMMED LEARNING,
    TYPESETTING (THROUGH IBM'S TEXT 360 PROGRAM), AND THE
    PRESENTATION OF NON-SEQUENTIAL FORMS OF WRITING, CALLED
    HYPERTEXT.

CONTINUED FROM PRIOR COLUMN

PROGRAMMING SYSTEM - THE SYSTEM WAS WRITTEN IN ASSEMBLY
LANGUAGE.

MINIMUM SYSTEM REQUIREMENTS - THE SYSTEM WILL RUN ON THE
IBM SYSTEM 360/40 AND UP WITH AT LEAST 128K OF CORE STORAGE,
UNDER CONTROL OF PCP, MFT (IN A 108K PARTITION), OR MVT
(IN A 108K REGION). IT CURRENTLY SUPPORTS EITHER THE 2250
MODEL I (WITH AN 8K BUFFER AND THE GRAPHIC DESIGN FEATURE)
OR THE 2250 MODEL III, AND REQUIRES AT LEAST ONE 2311 OR
2314 DISK DRIVE, AND A 1403 PRINTER.

DOCUMENTATION: 80 PAGES, $3.00 ADDITIONAL CHARGE.
CARD COUNT: 30,000 APPROXIMATE.
SUBMITTAL/REVISION DATE: 05/69

360D-01.0.010
ONE-WAY ENCIPHERING ALGORITHM FOR PASSWORD PROTECTION

AUTHOR: H. D. KNOBLE

DIRECT TECHNICAL INQUIRIES TO:
         H. D. KNOBLE
         214 COMPUTER BUILDING
         THE PENNSYLVANIA STATE UNIVERSITY
         UNIVERSITY PARK, PA 16802

DESCRIPTION - SUBROUTINE PURDY IS A RE-ENTERABLE SYSTEM
UTILITY PROGRAM WHICH EVALUATES A FAMILY OF MATHEMATICALLY
SOUND, ONE-WAY ENCIPHERING FUNCTIONS WITH KNOWN PROPERTIES.
THE ALGORITHM IS IMPLEMENTED HERE TO ENABLE 8-CHARACTER
PASSWORDS TO BE IRREVERSIBLY ENCIPHERED FOR SECURITY
APPLICATIONS (COMPUTER RESOURCE AUTHORIZATIONS). UNLIKE
MANY EXISTING METHODS USED FOR SEVERAL CURRENT OPERATING
SYSTEM SECURITY APPLICATIONS (E.G. MVS PASSWORDS), THIS
METHOD DOES NOT RELY ON KEEPING THE ALGORITHM OR LIST OF
ENCIPHERED KEYS SECRET; THIS IS TRUE BECAUSE NO KNOWN
ALGORITHM EXISTS TO INVERT THE ENCIPHERING FUNCTION, AND
IF ONE WERE DISCOVERED, DECIPHERING A KEY WOULD STILL
REQUIRE, ON THE AVERAGE, MANY YEARS OF CPU TIME ON MODERN,
HIGH-SPEED EQUIPMENT. BECAUSE THE FAMILY ENCIPHERING
FUNCTIONS UPON WHICH THIS ROUTINE IS BASED HAS ESSENTIALLY
AN INFINITE NUMBER OF PARAMETERIZATIONS, THIS IMPLEMENTATION
ALLOWS COMPUTER RESOURCE AUTHORIZATION TO BE INDEPENDENT
AND UNIQUE ACROSS APPLICATIONS.

PROGRAMMING LANGUAGE - STANDARD 360 ASSEMBLER

CONTINUED FROM PRIOR COLUMN

MINIMUM SYSTEMS REQUIREMENTS - S/360 2K BYTES MEMORY

DOCUMENTATION: 13 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 1,000 CARDS APPROXIMATE.
SUBMITTAL/REVISION DATE: 10/76

360D-01.4.003
OPERATING SYSTEM ACCOUNTING

AUTHOR: D. JACOBS

DIRECT TECHNICAL INQUIRIES TO:

         TECHNICAL ASSISTANCE
         CURRENTLY NOT AVAILABLE.

DESCRIPTION - THIS PROGRAM WAS WRITTEN TO-

1. DETERMINE TASK TIME OF EACH STEP OF JOB.
2. DETERMINE WAIT/OVERHEAD TIME OF JOB.
3. INFORM OPERATOR OF TAPE ASSIGNMENTS BY DD NAME.
4. DETERMINE STARTING ADDRESS CF PROBLEM PROGRAM RE.
5. DETERMINE MAXIMUM TAPES AND DISKS USED IN JOB.
6. PRINT ACCOUNTING INFORMATION OF JOB ON SYSOUT AND SYSTEM
   RESIDENCE PACK.
7. PUNCH ACCOUNTING RECORDS FROM DISK.

STEP INITIATOR HAS BEEN MODIFIED SO THAT IT ACCOMPLISHES
(3), (4), AND (5) ABOVE. IT ALSO ISSUES A TIMER MACRO
PRIOR TO ISSUING THE "XCTL" TC THE PROBLEM PROGRAM. STEP
TERMINATION ACCOMPLISHES (1) AND (2) ABOVE. JOB TERMINATION
ACCOMPLISHES (7) ABOVE.

PROGRAMMING SYSTEMS - RUNS UNDER OS/360.

MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED FOR OPERATING
SYSTEM/360.

DOCUMENTATION: 14 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 1,650 APPROXIMATE.
SUBMITTAL/REVISION DATE: 11/66

360D-01.4.009
SUPER-SCRATCH (SUPERSCR)

AUTHOR: R. D. SEAWRIGHT

DIRECT TECHNICAL INQUIRIES TO:
        R. D. SEAWRIGHT
        INTERACTIVE DATA CORPORATION
        486 TOTTEN POND ROAD
        WALTHAM, MASS.   02154

DESCRIPTION - SUPERSCR IS DESIGNED TO SCRATCH ALL USER DATA
SETS FROM A DIRECT ACCESS DEVICE OTHER THAN THOSE
SPECIFICALLY REQUESTED TO REMAIN. A LIST OF DATA SET NAMES
IS CONSTRUCTED AND PLACED IN EITHER OR BOTH OF TWO
LOCATIONS:
    (1) SYS1.PROCLIB, MEMBER=SAVE.
    (2) SYSIN DD * WHEN SUPERSCR IS EXECUTED.
THE LIST OF DATA SET NAMES ARE THOSE THAT THE USER WILL WANT
PERMANENT TO THE SYSTEM.

FOR STATISTICAL PURPOSES A SEQUENTIAL DATA SET NAMED
SYS1.STATLOG CAN BE ALLOCATED INTO WHICH SUPERSCR WILL WRITE
INFORMATION CONCERNING ANY PURGING OF THE DIRECT ACCESS
FILES. THIS FEATURE IS OPTIONAL TO THE USER.

SUPERSCR HAS BEEN TESTED SUCCESSFULLY ON SYSTEM/360 MODELS
40, 50, AND 65 RUNNING OS/360 PCP OR MFT/I. SUPERSCR WILL
RUN IN THE MINIMUM OS/360 SCHEDULER PARTITION. PROGRAM
EXECUTION TIME IS NEGLIGIBLE.

PROGRAMMING SYSTEMS - RUNS UNDER OS/360.

MINIMUM SYSTEM REQUIREMENTS - S/360 MODEL 40.

DOCUMENTATION: 16 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 700 APPROXIMATE.
SUBMITTAL/REVISION DATE: 02/68

360D-01.4.012
CHGPASS COMMAND PROCESSOR

AUTHOR: ARNIE BERG

DIRECT INQUIRIES TO:
  ARNIE BERG
  SASKCOMP
  2112 8TH STREET E
  SASKATOON, SASKATCHEWAN
  CANADA

DESCRIPTION - THE CHGPASS COMMAND PROCESSOR IS DESIGNED
TO ALLOW THE TSO USER TO CHANGE ANY OF HIS LOGON
PASSWORDS. THE USER MAY NOT ADD A PASSWORD. THE PROGRAM
IS WRITTEN IN ASSEMBLER (F).

PROGRAMMING LANGUAGE - ASM(F)

MINIMUM SYSTEM REQUIREMENTS - S/360, TSO

DOCUMENTATION: 3 PAGES, NO ADDITIONAL CHARGE.
                (PLUS MACHINE READABLE DOCUMENTATION)
CARD COUNT: 450 APPROXIMATE.
SUBMITTAL/REVISION DATE: 5/76

360D-01.6.005
VTOC4MAT

AUTHOR: M. WAPNITSKY

DIRECT TECHNICAL INQUIRIES TO:

        TECHNICAL ASSISTANCE
        CURRENTLY NOT AVAILABLE

DESCRIPTION - THE VTOC4MAT UTILITY PROGRAM WAS WRITTEN
IN ASSEMBLY LANGUAGE TO PRODUCE A READABLE LIST OF THE
VTOC (VOLUME TABLE OF CONTENTS) ON ANY 2311 OR 2314 DEVICE.

PROGRAMMING SYSTEMS - WRITTEN IN ASSEMBLER LANGUAGE AND
OPERATES UNDER OS/360.

MINIMUM SYSTEM REQUIREMENTS - A CARD READER (OR OTHER
SUITABLE SOURCE OF INPUT), A PRINTER AND A 2311 OR 2314

CONTINUED FROM PRIOR COLUMN

DIRECT ACCESS DEVICE.

DOCUMENTATION: 5 PAGES, $.25 ADDITIONAL CHARGE.
CARD COUNT: 700 APPROXIMATE.
SUBMITTAL/REVISION DATE: 08/68

360D-01.6.008
    PROCESS MEMBERS OF PARTIONED DATA SETS WITH PL/I

    AUTHOR: MICHAEL BATE

    DIRECT TECHNICAL INQURIES TO:

            TECHNICAL ASSISTANCE
            CURRENTLY NOT AVAILABLE.

    DESCRIPTION - THIS ASSEMBLY LANGUAGE SUBROUTINE ALLOWS
    PL/I PROGRAMMERS (OPTIMIZER OR CHECKOUT) TO PROCESS
    ANY NUMBER OF MEMBERS OF PARTITIONED DATA SETS, WITHOUT
    THE NEED OF EITHER (A) PROVIDING A DD CARD FOR EACH
    MEMBER OR (B) OPENING AND CLOSING THE DATA SET BETWEEN
    MEMBERS. MEMBERS MAY BE READ, WRITTEN, UPDATED IN PLACE,
    OR SCRATCHED.   RECORD FORMATS F, FB, FS, FBS, V, VB, OR
    U CAN BE USED.

    PROGRAMMING LANGUAGE - BAL (CALLED FROM PL/I OPTIMIZER-
                                CHECK)
    MINIMUM SYSTEM REQUIREMENTS - OS PL/I OPTIMIZER OR
                                CHECKOUT ENVIRONMENT

    DOCUMENTATION: 3 PAGES, NO ADDITICNAL CHARGE.
                    (PLUS MACHINE READABLE DOCUMENTATION)
    CARD COUNT: 825 APPROXIMATE.
    SUBMITTAL/REVISION CATE: 11/75

360D-03.0.010
    STENO TO ENGLISH TRANSLATION

    AUTHOR: OFFICE OF JOINT COMPUTER SUPPORT

    DIRECT TECHNICAL INQUIRIES TO:
                W. EISNER
                OFFICE OF DATA PROCESSING
                CENTRAL INTELLIGENCE AGENCY
                WASHINGTON, DC 20505

    DESCRIPTION - THE S/360 STENO TO ENGLISH PROGRAM IS DESIGNED
    TO TRANSLATE STENOGRAPHIC INPUT INTO ENGLISH OUTPUT.   THE
    OUTPUT TAKES FORM IN ALL UPPER CASE WITH AN @ SIGN
    REPRESENTING INITIAL CAPITALIZATION.

    PROGRAMMING SYSTEMS - WRITTEN IN ALC AND HAS BEEN COMPILED
    AND TESTED USING OS VERSION 17 ON A S/360 MODEL 40, 50
    AND 65 SYSTEM.

    MINIMUM SYSTEM REQUIREMENTS - STENO PROGRAM SHOULD RUN
    ON ANY S/360 MODEL 30 AND UP.   AN ON-LINE PRINTER, 132
    PRINT POSITIONS, CONSOLE TYPEWRITER, AND ONE TAPE AND 2314
    DISK DRIVE ARE REQUIRED.

    DOCUMENTATION: 50 PAGES, $1.50 ADDITICNAL CHARGE.
    CARD COUNT: 550 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 06/69

360D-03.0.014
    MULTIPROGRAMMING SYSTEM (MPS)

    AUTHOR: DR. M.W. SACHS

    DIRECT TECHNICAL INQUIRIES TO:
                DR. M.W. SACHS
                NUCLEAR STRUCTURE LABORATORY
                YALE UNIVERSITY
                NEW HAVEN, CONNECTICUT   06520

    DESCRIPTION - MPS IS A MULTIPROGRAMMED OPERATING SYSTEM
    FOR THE 360 MODEL 44.   THE SYSTEM, DESIGNED FOR REAL TIME
    DATA ACQUISITION, SUPPORTS MULTIPLE USERS IN A FULLY
    PROTECTED ENVIRONMENT.   FEATURES OF THE SYSTEM INCLUDE
    DYNAMIC STORAGE ALLOCATION, RE-ENTRANT SUPERVISOR, FORTRAN
    COMPILER, LOADER EDITOR JOB CONTROL PROCESSOR, VIRTUAL

DEVICE UTILITIES, INTERTASK COMMUNICATION FACILITIES AND OPERATOR CONTROL PROGRAMS.

PROGRAMMING SYSTEMS - 360/44 PROGRAMMING SYSTEM.

MINIMUM SYSTEM REQUIREMENTS - THE SYSTEM REQUIRES AT LEAST 64K BYTES OF CORE, FLOATING POINT FEATURE, STORAGE PROTECTION, READER, PUNCH, PRINTER, ONE SDSD, ONE OTHER RANDOM ACCESS DRIVE AND ONE TAPE FOR SYSTEM MAINTENANCE.

DOCUMENTATION: 62 PAGES, $2.10 ADDITIONAL CHARGE.
CARD COUNT: 105,200 APPROXIMATE.
SUBMITTAL/REVISION DATE: 10/69
REQUIRES 1200 FT. TAPE FOR DISTRIBUTION.

360D-03.0.015
GEMS - A GRAPHICAL EXPERIMENTAL META SYSTEM

AUTHOR: JAMES E. GEORGE

DIRECT TECHNICAL INQUIRIES TO:
            DR. JAMES E. GEORGE
            LOS ALAMOS SCIENTIFIC LABORATORY
            P.O. BOX 1663,   MS 272
            LOS ALAMOS, NEW MEXICO 87545

DESCRIPTION - THE IMPLEMENTATION OF GRAPHICAL LANGUAGES AND GRAPHICAL SYSTEMS HAS BECOME TOO COMPLEX TO PERMIT ECONOMICAL EXPERIMENTATION WITH MANY NEW LANGUAGES OR SYSTEMS. FURTHER, MANY APPLICATIONS FUNCTION ONLY AS AN INTERACTIVE STAND ALONE SYSTEM OR AS A SLAVE SYSTEM; SOME ARE FURTHER RESTRICTED TO PARTICULAR INPUT OR OUTPUT DEVICES.

A MODEL FOR GRAPHICAL SYSTEMS WITH A LINGUISTIC BASE IS PRESENTED; THE MODEL PROVIDES SYMMETRY BETWEEN RECOGNITION AND GENERATION OF PICTURES, ALTHOUGH EMPHASIZING GENERATION. THIS MODEL FACILITATES A MORE ECONOMICAL EXPERIMENTATION WITH GRAPHICAL SYSTEMS WITH A LINGUISTIC BASE AND PROVIDES DEVICE DEPENDENCE. A GRAPHICAL SYSTEM DEFINED UTILIZING GEMS CAN FUNCTION INTERACTIVELY OR AS A SLAVE SYSTEM.

THE MODEL IS IMPLEMENTED BY DEFINING ITS COMPONENTS UTILIZING A SIMPLE PRECEDENCE TRANSLATOR WRITING SYSTEM. THIS IMPLEMENTED GRAPHICAL MODEL IS ILLUSTRATED BY TWO APPLICATIONS. FIRST, A TWO DIMENSIONAL MATHEMATICAL EXPRESSION DISPLAY SYSTEM IS DEFINED AND IMPLEMENTED USING

GEMS. AND SECOND, A DRAWING SYSTEM FOR SYNTHESIZING DIGITAL PICTURES FOR PATTERN RECOGNITION EXPERIMENTS IS ALSO DEFINED AND IMPLEMENTED USING THE MODEL. THE USE OF BOTH IMPLEMENTATIONS IS ILLUSTRATED IN BOTH INTERACTIVE AND SLAVE MODES; DEVICE DEPENDENCE IS ALSO ILLUSTRATED FOR BOTH APPLICATIONS.

PROGRAMMING LANGUAGE - PL/I (F LEVEL)

MINIMUM SYSTEM REQUIREMENTS - OS/360

DOCUMENTATION: 193 PAGES, $8.65 ADDITIONAL CHARGE.
CARD COUNT:. 4,250 APPROXIMATE.
SUBMITTAL/REVISION DATE: 5/73

360D-03.1.014
FAST-ASSEMBLER-INTERPRETER FOR S/360 AND S/370 ASSEMBLER LANGUAGE (VERSION 4), SPASM

AUTHOR: JOHN R. EHRMAN

DIRECT TECHNICAL INQUIRIES TO:
            DR. JOHN R. EHRMAN
            STANFORD CENTER FOR INFORMATION PROCESSING
            SLAC - BIN 97
            P.O. BOX 4349
            STANFORD, CALIF. 94305

DESCRIPTION - THE FAST SINGLE-PASS ASSEMBLER-INTERPRETER SYSTEM PROVIDES A PROCESSOR FOR THE SYSTEM/360/370 ASSEMBLER LANGUAGE WITH THE FOLLOWING FEATURES: (1) ALMOST FULL LANGUAGE COMPATIBILITY (INCLUDING LITERALS, MACROS, CSECTS AND DSECTS) WITH THE OS ASSEMBLER LANGUAGE, (2) EXTREMELY HIGH ASSEMBLY RATE, (3) AN OPTIONALLY INVOKED INTERPRETER FOR THE SYSTEM/360/370 INSTRUCTION SET, (4) EXTENSIVE AND DETAILED ASSEMBLY-TIME AND EXECUTION-TIME DIAGNOSTIC MESSAGES AND FACILITIES, (5) SIMPLE MACRO-LIKE INSTRUCTIONS FOR DIAGNOSTIC AND INPUT/OUTPUT OPERATIONS, (6) AN EXTENDED SYNTAX FOR DC AND DS STATEMENTS, (7) A SUB-MONITOR WHICH PERMITS BATCHED ASSEMBLIES AND EXECUTIONS, AND (8) EXTENSIONS TO THE ASSEMBLER LANGUAGE. THE FEW RESTRICTIONS ON THE LANGUAGE DERIVE FROM THE ONE-PASS LOAD-AND-GO NATURE OF THE ASSEMBLER.

THE SYSTEM IS RE-ENTRANT AND REQUIRES 65K BYTES (DEPENDING ON THE OPTIONS SELECTED) PLUS A WORKSPACE WHOSE SIZE IS AN INVOCATION PARAMETER: FOR MOST STUDENT PROGRAMS AN

CONTINUED FROM PRIOR COLUMN

ADDITIONAL 10K IS AMPLE. ALL I/O USES QSAM, AND THE SYSTEM
IS PROGRAMMED ENTIRELY IN ASSEMBLER LANGUAGE.

A GUIDE TO THE USE OF THE SYSTEM IS INCLUDED AS A FILE ON
THE DISTRIBUTION TAPE.

PROGRAMMING LANGUAGE - OS ASSEMBLER F.

MINIMUM SYSTEM REQUIREMENTS - OS/360 OR DOS/360.

DOCUMENTATION: 3 PAGES, NO ADDITIONAL CHARGE.
               (PLUS MACHINE READABLE DOCUMENTATION)
CARD COUNT: 32,750 APPROXIMATE.
SUBMITTAL/REVISION DATE: 4/73

360D-03.2.008
    KINETIC SIMULATION LANGUAGE FOR CHEMISTRY AND BIOCHEMISTRY

    AUTHOR: C.G. ROMAN

    DIRECT TECHNICAL INQUIRIES TO:
            D. GARFINKEL (215) 243-8122
            C. B. MARBACH (215) 886-0200
            MOORE SCHOOL OF ELECTRICAL ENGINEERING
            UNIVERSITY OF PENNSYLVANIA
            PHILADELPHIA, PA 19174

    DESCRIPTION - THIS IS A SECOND REVISION OF A PROBLEM
    ORIENTED LANGUAGE FOR CONTINUOUS SIMULATION OF THE KINETICS
    OF CHEMICAL AND BIOCHEMICAL SYSTEMS. IT TRANSLATES
    CHEMICAL REACTIONS INTO DIFFERENTIAL EQUATIONS, SOLVES THEM
    BY NUMERICAL METHODS STARTING FROM SPECIFIED INITIAL
    CONDITIONS, AND EDITS THE RESULTS. THE STIFF DIFFERENTIAL
    EQUATION SOLVING METHOD OF GEAR IS INCLUDED WITH
    MODIFICATIONS (ROMAN ET AL., PROC. NCC, 1976, P. 793) TO
    SPEED THE SOLUTION AND DECREASE THE CORE MEMORY REQUIREMENT
    FOR LARGE PROBLEMS. THE PROGRAM AS SUBMITTED IS BATCH-
    PROCESSOR AND CARD-INPUT ORIENTED, IS WRITTEN IN FORTRAN
    AND HAS BEEN "STRUCTURED" FOR EASE OF PROGRAMMER
    INTERVENTION. IT SHOULD RUN ON ANY LARGE BATCH-PROCESSING
    MACHINE WITH FORTRAN LEVEL G OR ABOVE. A DESCRIPTION OF THE
    ORIGINAL VERSION HAS BEEN PUBLISHED (COMPUTERS AND
    BIOMEDICAL RESEARCH, 2 31, 1968); A REVISED DESCRIPTION WILL
    BE SUBMITTED SOON.

    PROGRAMMING LANGUAGE - FORTRAN

CONTINUED FROM PRIOR COLUMN

MINIMUM SYSTEM REQUIREMENTS - SEE ABSTRACT

DOCUMENTATION: 137 PAGES, $5.85 ADDITIONAL CHARGE.
CARD COUNT: 11,000 APPROXIMATE.
SUBMITTAL/REVISION DATE: 6/76

360D-03.2.014
    THE SIMSCRIPT II PROGRAMMING LANGUAGE

    AUTHOR: P. J. KIVIAT

    DIRECT TECHNICAL INQUIRIES TO:
            P. J. KIVIAT
            DEPARTMENT OF THE AIR FORCE
            FEDERAL COMPUTER PERFORMANCE
              EVALUATION AND SIMULATION CENTER
            WASHINGTON, DC   20330

    DESCRIPTION - THE SIMSCRIPT II COMPILER TRANSLATES SOURCE
    LANGUAGE INPUTS INTO ASSEMBLY PROGRAMS WHICH ARE ASSEMBLED
    BY AN OS MULTIPLE-ASSEMBLER INTO LINK-EDITABLE MODULES.

    PROGRAMMING SYSTEMS - WRITTEN IN SIMSCRIPT II AND HAS BEEN
    COMPILED AND TESTED USING OS VERSION 15/16 ON A S/360 MODEL
    65. IT WILL RUN UNDER MVT, MFT OR PCP. THE PROGRAM SHOULD
    BE STORED IN THE USER'S LOAD LIBRARY AND CALLED OUT LATER
    BY THE COMPILE PROCEDURES.

    MINIMUM SYSTEM REQUIREMENTS - COMPILATION REQUIRES CORE
    STORAGE OF AT LEAST 150K BYTES.

    DOCUMENTATION: 57 PAGES, $1.85 ADDITIONAL CHARGE.
    CARD COUNT: 19,090 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 06/72

360D-03.2.015
   THE XPL COMPILER GENERATOR SYSTEM

   AUTHORS: W. M. MCKEEMAN
            J. J. HORNING
            D. B. WORTMAN

   DIRECT TECHNICAL INQUIRIES TO:
            PROFESSOR W. M. MCKEEMAN
            INFORMATION SCIENCES
            UNIVERSITY OF CALIFORNIA
            SANTA CRUZ, CALIFORNIA 95064

   DESCRIPTION - THE XPL SYSTEM IS A COMPLETE COMPILER
   GENERATOR, DESIGNED TO FACILITATE THE PRODUCTION OF
   EFFICIENT SYNTAX-DIRECTED COMPILERS FOR THE S/360. THE
   SYSTEM CONSISTS OF A DIALECT OF PL/I CALLED XPL DESIGNED TO
   BE CONVENIENT FOR WRITING TRANSLATORS: A COMPILER (XCOM)
   FROM XPL INTO S/360 MACHINE LANGUAGE; A SMALL OS/360
   ASSEMBLY LANGUAGE SUB-MONITOR WHICH PROVIDES THE INTERFACE
   BETWEEN XPL PROGRAMS AND OS/360; A PROGRAM (ANALYZER) WHICH
   BUILDS PARSING DECISION TABLES DIRECTLY FROM BNF GRAMMARS;
   AND A TABLE DRIVEN PARSING ALGORITHM EMBEDDED IN A PROTO-
   COMPILER (SKELETON); AND SEVERAL UTILITY PROGRAMS TO AID IN
   USING THE SYSTEM UNDER OS/360. THE XPL SYSTEM WAS DEVELOPED
   TO RUN UNDER OS/360 RELEASE 20 MFT II. IT WILL RUN UNDER
   OS/360 ON ANY S/360 WITH THE UNIVERSAL INSTRUCTION SET,
   DIRECT ACCESS STORAGE (2311, 2314, OR 2321), AND AT LEAST
   128K BYTES OF STORAGE (ALTHOUGH MORE STORAGE ENHANCES SYSTEM
   PERFORMANCE). THE SYSTEM AS DISTRIBUTED ASSUMES 2311 DISKS
   AND WILL RUN UNCHANGED ON 2314 DISKS. PROGRAMS AND
   INSTRUCTIONS ARE PROVIDED FOR ADAPTING THE SYSTEM TO WORK
   WITH OTHER 2311 DISKS. ALL MAJOR COMPONENTS OF THE SYSTEM
   EXCEPT A SMALL ASSEMBLY-LANGUAGE SUBMONITOR ARE WRITTEN AND
   COMPILED BY XCOM. THE SYSTEM MAY BE ADAPTED TO RUN UNDER
   OPERATING SYSTEMS OTHER THAN OS/360 BY WRITING A NEW VERSION
   OF THE SUBMONITOR. SINCE XCOM WAS WRITTEN IN XPL ITS
   PERFORMANCE (3500-6000 CARDS/MINUTE COMPILATION RATE UNDER
   HASP ON A 360/65) IS TYPICAL OF COMPILERS PRODUCED BY THE
   XPL SYSTEM. A BRIEF DESCRIPTION IS CONTAINED IN THE "THE
   XPL COMPILER GENERATOR SYSTEM" BY MCKEEMAN ET AL,
   PROCEEDINGS OF THE 1968 FALL JOINT COMPUTER CONFERENCE.
   FULL DOCUMENTATION IS GIVEN BY 'A COMPILER GENERATOR' BY
   MCKEEMAN, HORNING, AND WORTMAN (PRENTICE HALL, NOVEMBER
   1970). THE SYSTEM WAS DEVELOPED AT STANFORD UNIVERSITY AND
   AT THE UNIVERSITY OF CALIFORNIA AT SANTA CRUZ. IT HAS BEEN
   IN USE AT STANFORD SINCE 1967 AND AT OTHER INSTALLATIONS
   SINCE NOVEMBER 1967.

   PROGRAMMING SYSTEMS - PROGRAMMING LANGUAGE - OS, XPL

   MINIMUM SYSTEM REQUIREMENTS - ANY S/360 WITH UNIVERSAL
   INSTRUCTION SET, DIRECT ACCESS STORAGE (2311, 2314, OR 2321)
   AND AT LEAST 128K BYTES OF STORAGE.

   DOCUMENTATION: 14 PAGES, NO ADDITICNAL CHARGE.
   NOT AVAILABLE ON CARDS.
   SUBMITTAL/REVISION DATE: 01/72

360D-03.2.016
   *1 (STAR-1) - LIST PROCESSING LANGUAGE

   AUTHOR: RICHARD A. STONE

   DIRECT TECHNICAL INQUIRIES TO:
            D. S. HOUSEL
            WESTERN ELECTRIC CO., INC.
            P. O. BOX 900
            PRINCETON, N. J.   08540

   DESCRIPTION - *1 (CARNEGIE-MELLON DESCENDANT OF BELL
   LABORATORIES' L6) IS A HIGHLY SPEED AND SPACE EFFICIENT
   LIST PROCESSING LANGUAGE. IT IS LOW LEVEL AND EASILY
   LEARNED YET PROGRAMS ARE MACHINE AND DATA INDEPENDENT.
   LINKAGE IS PROVIDED TO OTHER PROGRAMMING LANGUAGES TO ALLOW
   WRITING OF EFFICIENT LIST PROCESSING SUBROUTINES. THE
   COMPILER IS WRITTEN IN SNOBOL4 AND WILL RUN ON ANY MACHINE
   WITH THAT LANGUAGE AVAILABLE. RUNNING UNDER SPITBOL (OBJECT
   MODULES PROVIDED ON TAPE), IT REQUIRES 125K UNDER OS/360.
   ASSEMBLY LANGUAGE MAY BE PRODUCED FOR THE IBM 360/370 AND
   THE DEC PDP-10 AND PDP-11. TAPE INCLUDES OBJECT MODULES,
   SOURCE, AND MACHINE READABLE TEXT.

   PROGRAMMING LANGUAGE - SNOBOL 4

   MINIMUM SYSTEM REQUIREMENTS - OS/360

   DOCUMENTATION: 160 PAGES, $7.00 ADDITIONAL CHARGE.
   CARD COUNT: 9,922 APPROXIMATE.
   SUBMITTAL/REVISION DATE: 5/73

360D-03.2.017
    PAPER SAVING MODIFICATIONS TO FORTRAN H AND G WITH
    NOSOURCE OPTION

    AUTHOR: CHESTER M. SMITH, JR.

    DIRECT TECHNICAL INQUIRIES TO:
        CHESTER M. SMITH, JR.
        214 COMPUTER BUILDING
        THE PENNSYLVANIA STATE UNIVERSITY
        UNIVERSITY PARK, PA 16802

    DESCRIPTION - THE AMOUNT OF PAPER GENERATED BY THE FORTRAN
    G AND H COMPILERS UNDER THE NOSOURCE OPTION IS EXTREMELY
    WASTEFUL. IBM APPEARS UNWILLING TO DO ITS PART IN
    CONSERVING NATURAL RESOURCES AND MONEY BY MODIFYING THE
    COMPILERS. THE PENNSYLVANIA STATE UNIVERSITY COMPUTATION
    CENTER THEREFORE DECIDED TO SEE WHAT THE PROBLEM WOULD
    ENTAIL. THE MODIFICATIONS TO REDUCE PAPER WASTE WITH
    NOSOURCE REQUIRED NINE SOURCE CHANGES IN THE MODULE
    IEKFICOS, AND FIVE CHANGES TO IEYFORT.

    PROGRAMMING LANGUAGE - OS ASSEMBLER.

    MINIMUM SYSTEM REQUIREMENTS - OS/360/MVT (MODS TO REL 21.7)

    DOCUMENTATION: 4 PAGES, NO ADDITIONAL CHARGE.
    CARD COUNT: 2,400 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 6/74.

360D-03.3.010
    SNAP PROCESSOR (PROTOTYPE)

    AUTHORS: W. M. RUHSAM   M. P. BARNETT

    DIRECT TECHNICAL INQUIRIES TO:
        PROFESSOR MICHAEL P. BARNETT
        SCHOOL OF LIBRARY SCIENCE
        ROOM 516 BUTLER LIBRARY
        COLUMBIA UNIVERSITY
        NEW YORK, NY 10027

    DESCRIPTION - THE SNAP PROCESSOR EXECUTES PROCEDURES WRITTEN
    IN THE SNAP LANGUAGE A "BASIC ENGLISH" FOR LIBRARIANS,
    EDUCATORS, PUBLISHERS AND OTHERS TO INSTRUCT THE COMPUTER
    TO PERFORM MECHANICAL TEST PROCESSING. (SEE M. P. BARNETT

CONTINUED FROM PRIOR COLUMN

AND W. M. RUHSAM. IEEE TRANS. EWS. VOL. EWS-11,2,45,1968,
M. P. BARNETT. COMPUTER PROGRAMMING IN ENGLISH. HARCOURT,
BRACE & WORLD, MAY 1969). WHEN COMPILED IT CONSISTS OF
A ROOT SEGMENT OF 56K BYTES, THE TRANSLATOR SEGMENT OF
45K BYTES (THAT CONVERTS SNAP PROCEDURES INTO THE NUMERICAL
SNAPIC CODE) AND THE INTERPRETER SEGMENT OF 48K BYTES THAT
CAN BE OVERLAYED WITH THE TRANSLATOR. SNAP INSTRUCTIONS
TO PUNCH CARDS AND PAPER TAPE, TO READ AND WRITE MAGNETIC
TAPE AND DIRECT ACCESS DEVICES, AND TO PUNCH PAPER TAPE
CAN BE USED IN SNAP PROCEDURES THAT ARE RUN ON EQUIPMENT
WITH APPROPRIATE UNITS. THE COMPILED PROCESSOR CAN BE
STORED IN A LANGUAGE LIBRARY AND USED CONVENIENTLY UNDER
OS/360. IT HAS BEEN USED EXTENSIVELY FOR CLASS EXERCISES
AT COLUMBIA UNIVERSITY.

PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN IV.

MINIMUM SYSTEM REQUIREMENTS - 128K CORE STORAGE, CARD
READER, LINE PRINTER AND 1 TAPE DRIVE (OR AN EQUIVALENT
DRUM OR DISC).

DOCUMENTATION: 22 PAGES, $.10 ADDITIONAL CHARGE.
CARD COUNT: 6,750 APPROXIMATE.
SUBMITTAL/REVISION DATE: 04/69

360D-03.3.011
    COMIT/360

    AUTHOR: D. RITCHIE

    DIRECT TECHNICAL INQUIRIES TO:
        DEAN RITCHIE
        COMPUTING CENTER
        WASHINGTON STATE UNIVERSITY
        PULLMAN, WASHINGTON 99163

    DESCRIPTION - COMIT/360 IS A CONVERSION OF COMIT II
    DISTRIBUTED THROUGH THE INSTITUTE FOR COMPUTER RESEARCH,
    UNIVERSITY OF CHICAGO. IT PROVIDES THE STRING MANIPULATION
    AND LIST PROCESSING FACILITIES OF COMIT FOR USERS OF
    SYSTEM/360. FOR A COMPLETE DOCUMENTATION OF COMIT II,
    CONTACT THE INSTITUTE OF COMPUTER RESEARCH, UNIVERSITY
    OF CHICAGO.

    PROGRAMMING SYSTEMS - WRITTEN IN ASSEMBLER LANGUAGE AND
    HAS BEEN COMPILED AND TESTED USING OS RELEASE 14 ON A

SYSTEM/360 MODEL 67.

MINIMUM SYSTEM REQUIREMENTS - REQUIRES A COMMERCIAL OR
UNIVERSAL INSTRUCTION SET (DECIMAL FEATURE) AND WILL REQUIRE
REASSEMBLING ON A SYSTEM/360 WITH LESS THAN 256K BYTES
OF STORAGE.

DOCUMENTATION: 7 PAGES, NO ADDITICNAL CHARGE.
CARD COUNT: 17,070 APPROXIMATE.
SUBMITTAL/REVISION DATE: 06/69

360D-03.3.013
    SHARE FORMAC/FORMAC73

    AUTHOR: DR. KNUT A. BAHR

    DIRECT TECHNICAL INQUIRIES TO:
        H.D. NOBLE
        214 COMPUTER BUILDING
        THE PENNSYLVANIA STATE UNIVERSITY
        UNIVERSITY PARK, PA   16802

    DESCRIPTION - FORMAC (FORMULA MANIPULATION COMPILER)
    IS A SYMBOLIC ALGEBRAIC MANIPULATION SYSTEM CAPABLE
    OF TAKING GENERAL PARTAIL DERIVATIVES, PERFORMING
    EXACT RATIONAL ARITHMETIC, AND IN GENERAL ENAELING
    MANY TEDIOUS ALGEBRA AND CALCULUS PROBLEMS TO BE
    COMPUTERIZED. SHARE FORMAC/FORMAC73 IS A MAINTENANCE
    AND EXTENTION EFFORT AS PUBLISHED IN THE FEBRUARY 1974
    ISSUE OF THE SIGSAM BULLETIN BY KNUT BAHR. THE SYSTEM
    IS WRITTEN IN 360 ASSEMBLER LANGUAGE AND RUNS ON
    360/370 HARDWARE UNDER OS OR VS/370. MEANINGFUL PROGRAMS
    CAN BE RUN IN A 140 BYTE REGION.

    PROGRAMMING LANGUAGE - ASSEMBLER, PL/I (F)

    MINIMUM SYSTEM REQUIREMENTS - 360 MODEL 50, 140K BYTES
                                  CORE, PL/I (F)

    DOCUMENTATION: 80 PAGES, $3.00 ADDITIONAL CHARGE
                    FORMAC USER'S MANUAL - $9.50 (SEE NOTE)
    NOT AVAILABLE ON CARDS.
    SUBMITTAL/REVISION DATE: 7/75

    NOTE: THE ABOVE DOCUMENTATION CHARGE DOES NOT INCLUDE
    THE FORMAC USER'S MANUAL; THIS MANUAL IS
    UNCHANGED FROM PREVIOUS VERSIONS OF SHARE-FORMAC.

HOWEVER, INSTALLATIONS THAT ARE ORDERING FCRMAC FOR
THE FIRST TIME OR FOR SOME REASON NO LONGER HAVE A COPY,
WILL PROBABLY WISH TO ORDER THIS MANUAL. THE COST IS
$9.50 (THIS IS IN ADDITICN TC THE DOCUMENTATION CHARGE
QUOTED PREVIOUSLY).

370D-03.3.014
    APL/SV (OS/MVT VERSION) MODIFICATIONS

    AUTHOR: JAMES O. KITCHEN

    DIRECT TECHNICAL INQUIRIES TO:
        JAMES O. KITCHEN
        COMPUTATION CENTER
        UNIVERSITY OF NORTH CAROLINA
        CHAPEL HILL, NC 27514

    DESCRIPTION - THIS PACKAGE CONSISTS OF MODIFICATIONS WHICH
    WERE APPLIED TO VERSION 1, MOD LEVEL 1, CF APL/SV TO PERMIT
    IT TO RUN UNDER MVT ON AN IBM 370/165 MACHINE LOCATED AT
    TRIANGLE UNIVERSITIES COMPUTATION CENTER (TUCC). IN
    ADDITION, THESE MODS PERMITTED APL/SV TO BE RUN ON THIS
    MACHINE CONCURRENTLY WITH APL/360. WHILE THESE MODS SHOULD
    ALLOW APL/SV TO BE RUN ON OTHER 370 MVT SYSTEMS, THEY ARE
    NOT CONSIDERED SUFFICIENT TO PERMIT IT TO BE RUN ON A 360
    MACHINE OR UNDER AN MFT SYSTEM.

    NOTE: THIS PACKAGE DOES NOT INCLUDE APL/SV, WHICH MUST BE
    LEASED FROM THE IBM CORPORATICN.

    PROGRAMMING LANGUAGE - OS ASSEMBLER.

    MINIMUM SYSTEM REQUIREMENTS - S/370, MVT, APL/SV.

    DOCUMENTATION: 6 PAGES, NO ADDITICNAL CHARGE.
    NOT AVAILABLE ON CARDS.
    SUBMITTAL/REVISION DATE: 3/75.

370D-03.3.015
    APL/SV ASCII MODIFICATIONS

    AUTHOR: JAMES O. KITCHEN

    DIRECT TECHNICAL INQUIRIES TO:
        JAMES O. KITCHEN
        COMPUTATION CENTER
        UNIVERSITY OF NORTH CAROLINA
        CHAPEL HILL, NC 27514

    DESCRIPTION - THIS PACKAGE CONSISTS OF MODIFICATIONS THAT
    WERE ADDED TO VERSION 1, MOD LEVEL 1, OF APL/SV IN ORDER
    TO PROVIDE DIAL-UP ASCII SUPPORT FOR THREE DIFFERENT ASCII
    APL KEYBOARDS INCLUDING THE ONE USED ON THE TEKTRONIX 4013
    TERMINAL. SEVERAL OTHER MINOR FEATURES ARE ALSO PROVIDED
    INCLUDING A MECHANISM THAT PERMITS AN INSTALLATION TO DEFINE
    AN EXECUTE FUNCTION THAT WILL EXECUTE MOST SYSTEM COMMANDS.
    WHILE THESE MODS WERE DEVELOPED FOR USE WITH A COPY OF
    APL/SV WHICH HAS BEEN PREVIOUSLY MODIFIED TO PERMIT IT TO
    RUN UNDER MVT (SEE 370D-03.3.014) CN AN IBM 370/165 MACHINE
    AT TRIANGLE UNIVERSITIES COMPUTATION CENTER (TUCC), THERE
    ARE NO FEATURES OF THESE ASCII MODS WHICH ARE KNOWN TO
    DEPEND UPON THE MVT MODS.

    PROGRAMMING LANGUAGE - OS ASSEMBLER.

    MINIMUM SYSTEM REQUIREMENTS - S/370, MVT, APL/SV.

    DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
    NOT AVAILABLE ON CARDS.
    SUBMITTAL/REVISION DATE: 3/75.

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360D-03.3.016
    PILOT

    AUTHOR: DAVE GOMBERG

    DIRECT INQUIRIES TO:
        DAVE GOMBERG
        U76 UCSF
        SAN FRANCISCO, CA 94143

    DESCRIPTION - PILOT IS A CAI LANGUAGE DESIGNED TO BE EASILY
    LEARNED AND USED. THIS TSO VERSION IS IMPLEMENTED IN PL/I

FOR THE OPTIMIZING COMPILER VERSION 2.3. IT IS SUITABLE
FOR MOST INTERACTIVE PROGRAMS WHOSE MAIN FUNCTION IS
EXTENSIVE CONVERSATION - SUCH AS TEACHING AND TUTORING
PROGRAMS. SUPPLIED ARE A COMPILER AND EXECUTION ROUTINE.
THE COMPILER REQUIRES ABOUT 200K BYTES TO EXECUTE; A TRIVIAL
PROGRAM CAN BE RUN IN A MINIMUM SIZE (92K) TSO REGION.

PROGRAMMING LANGUAGE - PL/I-OPTIMIZER

MINIMUM SYSTEM REQUIREMENTS - TSO

DOCUMENTATION: 4 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 3,200 APPROXIMATE.
SUBMITTAL/REVISION DATE: 03/76

360D-03.4.027
    FORTRAN RANDOM I/O SUBROUTINE

    AUTHOR: H. P. SIEGLAFF

    DIRECT TECHNICAL INQUIRIES TO:
        H. P. SIEGLAFF
        3610 W. NORTHVIEW
        PHOENIX, ARIZONA 85021

    DESCRIPTION - THIS SUBROUTINE PROVIDES A MEANS TO THE
    FORTRAN PROGRAMMER TO WRITE, READ, AND FIND LOGICAL RECORDS
    IN RANDOM ORDER ON/FROM ANY COMBINATION OF THE 99 FORTRAN
    I/O UNITS.

    PROGRAMMING SYSTEMS - THIS SUBROUTINE WAS WRITTEN AND
    TESTED USING OS FORTRAN 4 G LEVEL, OS VERSION 13 ON A S/360
    MODEL 50, AND A 2311 DISK PACK.

    MINIMUM SYSTEM REQUIREMENTS - THE PACKAGE SHOULD WCRK ON
    ANY S/360 MACHINE WHICH HAS FORTRAN IV G AND OS. (MAXIMUM
    CORE REQUIREMENTS IS 1K.)

    DOCUMENTATION: 18 PAGES, NO ADDITIONAL CHARGE.
    CARD COUNT: 200 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 12/68

360D-03.4.033
A 2250 MODEL 1 SIMULATION SUPPORT PACKAGE

AUTHOR: G.M. STABLER

DIRECT TECHNICAL INQUIRIES TO:
        G.M. STABLER
        BOX F
        BROWN UNIVERSITY
        PROVIDENCE, R.I. 02912

DESCRIPTION - THE 2250 MODEL 1 SIMULATION SUPPORT PACKAGE IS
A SET OF 360 AND 1130 PROGRAMS WHICH ALLOW GRAPHICS PROGRAMS
WRITTEN FOR THE 2250 MOD 1 OR MOD 3 GRAPHICS DISPLAY
TERMINAL TO USE THE FACILITIES OF AN 1130/2250 MOD 4
TERMINAL WITH NO REPROGRAMMING. THE PACKAGE SUPPORTS
ASSEMBLY LANGUAGE GRAPHICS (GPS) AS WELL AS HIGHER LEVEL
LANGUAGES (GSP, GPAK), AND OPERATES AT THE ACCESS METHOD
LEVEL.

PROGRAMMING SYSTEMS - WRITTEN IN ASSEMBLY LANGUAGE AND RUNS
UNDER MVT AND (IN THE 1130) UNDER THE DISK MONITOR. THE 360
SYSTEM MUST INCLUDE GRAPHIC PROGRAMMING SERVICES.
COMMUNICATIONS BETWEEN THE 360 AND THE 1130 SUBSYSTEM ARE
CARRIED OUT OVER A HIGH SPEED (40.8K BAUD) POINT-TO-POINT
LINE USING A HIGH SPEED BISYNCHRONOUS COMMUNICATIONS ACCESS
METHOD (BSCAM) WHICH IS AVAILABLE FROM THE TYPE IV LIBRARY
(PROGRAM NUMBERS 360D-06.3.012 AND 1130-06.3.005).

MINIMUM SYSTEM REQUIREMENTS - A 2250 MODEL 4 TERMINAL AND
THOSE REQUIRED TO RUN OS/360 MVT.

DOCUMENTATION: 18 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 8,570 APPROXIMATE.
SUBMITTAL/REVISION DATE: 10/69

360D-03.5.005
A SYSTEM TO PROCESS ABSTRACT CATALOGS AND RELATED INDICES

AUTHOR: C. A. MERRITT

DIRECT TECHNICAL INQUIRIES TO:
        JOHN C. MORETTI
        IBM DPD HEADQUARTERS
        1133 WESTCHESTER AVENUE
        WHITE PLAINS, NEW YORK   10604

DESCRIPTION - A SYSTEM TO PROCESS ABSTRACT CATALOGS AND
RELATED INDICES IS A PROGRAM WHICH IS A PART OF INFORMATION
DISSEMINATION AND RETRIEVAL ACTIVITIES. THE SYSTEM WILL
PRODUCE MASTER ABSTRACT CATALOGS AND INDICES COVERING ALL
INFORMATION SOURCES PUBLICATIONS, PROGRAMS, AUDIO-VISUAL
AIDS, SEMINARS, ETC.. THE SAME DATA FILES FROM WHICH THESE
MASTER REFERENCES ARE PRODUCED WILL ALSO SERVE AS THE
SOURCE OF INFORMATION FOR PREPARING SELECTIVE CATALOGS,
INDICES AND BIBLIOGRAPHIES OF INTEREST TO USERS OF IBM
SYSTEMS.

THE PURPOSE OF THIS DOCUMENT IS TO DESCRIBE THAT PART OF THE
SYSTEM WHICH IS USED IN THE PREPARATION OF PROGRAM CATALOGS
AND THEIR RELATED INDICES. THE PROGRAMS INVOLVED ARE
DESIGNED TO ACCEPT INPUT TO DATA FILES, TO PROCESS CHANGE
TRANSACTIONS AFFECTING DATA IN THE FILES, TO EXTRACT DATA
FROM THE FILES ACCORDING TO SPECIFIED KEYS, AND TO PRINT
FORMATTED INDICES AND ABSTRACT LISTINGS. FROM DATA STORED
IN THE SYSTEM, THE CATALOG PROCCESSOR WILL PRODUCE A CATALOG
AND A VARIETY OF INDICES. IN DEVELOPING THE PROGRAM, EVERY
EFFORT WAS MADE TO ALLOW AS MUCH FLEXIBILITY AS POSSIBLE IN
ARRANGING DATA AND FORMATTING PRINT-OUTS. PROVISIONS ARE
MADE TO SELECT PARTICULAR SETS OF RECORDS FROM THE TOTAL
FILE, AND TO SEGMENT THE VARIOUS LISTINGS AND INDICES
ACCORDING TO TYPES OF PROGRAM OR OTHER CONTROLS. FORMATS OF
LISTINGS AS TO LINE LENGTH, SPACING, HEADINGS, ETC., CAN
GENERALLY BE SPECIFIED BY THE USER THROUGH CONTROL CARDS
ENTERED AT THE TIME OF EXECUTION OF A PARTICULAR PROGRAM.
A GENERALIZED OVERVIEW OF THE SYSTEM SHOWS TWO BASIC
OPERATING PHASES: THE FIRST UPDATES AND MAINTAINS THE FILE,
THE SECOND IS THE TEXT WRITING PHASE.

EACH PHASE CONSISTS OF SEVERAL PROGRAMS WHICH MANIPULATE THE
INFORMATION STORED IN THE INTEGRAL DATA BASE. THE WORD
INTEGRAL IS USED TO EMPHASIZE THE FACT THAT IT IS A SINGLE
DATA BASE, EVEN THOUGH IT IS SEGMENTED INTO FOUR MAJOR
CATEGORIES AND MAY PHYSICALLY RESIDE IN ONE OR MORE VOLUMES
OR DATA SETS. THE FOUR CATEGORIES ARE AS FOLLOWS (A)

CONTINUED FROM PRIOR COLUMN

TEMPORARY ABSTRACT LIBRARY (B) PERMANENT ABSTRACT LIBRARY
(C) MESSAGE CENTERS (D) AUXILIARY MODULE INFORMATION
CENTER (AMIC). OTHER SECTIONS OF THIS TEXT SHALL BE DEVOTED
TO A DETAILED DISCUSSION OF THE SYSTEM FLOW AND THE DATA
BASE.

PROGRAMMING SYSTEMS - THE CATALOG PROCESSOR IS PROGRAMMED
FOR THE IBM SYSTEM/360 AND WAS TESTED AND INSTALLED UNDER
OPERATING SYSTEM RELEASE 15/16. ALL PROGRAMS ARE WRITTEN IN
PL/I, VERSION IV.

MINIMUM SYSTEM REQUIREMENTS - USES THE QUEUED INDEX
SEQUENTIAL ACCESS METHOD (QISAM) WHEN ACCESSING DATA ON
DIRECT STORAGE DEVICES. THE LARGEST PROGRAM REQUIRES A
PARTITION OF 140K FOR EXECUTION.

DOCUMENTATION: 209 PAGES, $9.45 ADDITIONAL CHARGE.
CARD COUNT: 6,260 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/69

360D-03.5.007
    REPORT WRITER

AUTHOR: R. KARPINSKI

DIRECT TECHNICAL INQUIRIES TO:
    R. H. KARPINSKI
    INFORMATION SYSTEMS, 76-U
    UNIVERSITY OF CALIFORNIA
    SAN FRANCISCO, CA   94143

DESCRIPTION - THIS PACKAGE PROVIDES A REPORT WRITER FACILITY
IN PL/I, SIMILAR TO THAT IN COBOL. THE PACKAGE USES PL/I
COMPILE TIME FACILITIES TO TRANSLATE THE SPECIAL
CONSTRUCTIONS INTO GOTOS, CALLS, LABELS, AND PROCEDURES.
NORMAL USE INVOLVES TWO % INCLUDE STATEMENTS REFERRING
TO AN ON-LINE LIBRARY CONTAINING THE TWO SECTIONS OF CODE,
LABELED REP1 AND REP2.

PROGRAMMING SYSTEMS - WRITTEN IN PL/I.

MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED TO RUN UNDER
OS/360.

DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 750 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/69

360D-03.5.008
    NSCRIPT - PRODUCES TEXT DATASETS IN MANUSCRIPT FORM

AUTHOR: WILLIAM DWYER, YALE UNIVERSITY

DIRECT TECHNICAL INQUIRIES TO:
    ROGER A. ROACH
    MANAGER OF SYSTEMS PROGRAMMING
    MIT, ROOM 39-564
    77 MASSACHUSETTS AVENUE
    CAMBRIDGE, MASS. 02139

DESCRIPTION - THE QUALITY AND ACCURACY OF A DOCUMENT DEPENDS
GREATLY ON THE EASE WITH WHICH REVISIONS CAN BE MADE TO THE
DOCUMENT. THIS STATEMENT IS PARTICULARLY TRUE OF TECHNICAL
DOCUMENTATION (INTO WHICH CLASS THE PRESENT MANUAL FALLS),
WHICH SHOULD ALWAYS ACCURATELY REFLECT THE STATUS OF THE
THINGS THEY DESCRIBE.

IT IS NATURAL, PARTICULARLY AT MIT, THAT COMPUTER SOFTWARE
SOLUTIONS TO THE PROBLEMS OF DOCUMENT PRODUCTION SHOULD BE
DEVISED. CTSS'S "RUNOFF", MULTICS'S "RUNOFF", CMS'S
"SCRIPT" REPRESENT SIMILAR SUCH SOLUTIONS.

"NSCRIPT" IS AN OUTGROWTH OF SCRIPT INTENDED FOR USE UNDER
CMS ON A SYSTEM/360 MODEL 67 RUNNING UNDER CP/67. IT'S SET
OF COMMAND WORDS ENCOMPASSES MOST OF THOSE BELONGING TO
SCRIPT, MULTICS'S "RUNOFF", AND TSO'S FORMAT. IN MOST CASES
THEY PERFORM IDENTICAL FUNCTIONS AND HAVE THE SAME SYMBOLIC
NOTATION.

NSCRIPT RUNNING UNDER 360/OS/TSO, WHICH WAS DEVELOPED BY THE
MIT PROGRAMMING DEVELOPMENT OFFICE, HAS THE SAME OUTWARD
APPEARANCE AS IT DID WHEN RUNNING UNDER CMS. EXCEPT FOR THE
FACT THAT OS I/O CONVENTIONS MAKE IT SOMEWHAT MORE DIFFICULT
TO USE, IT STILL HAS ALL THE CAPABILITIES THAT IT HAD WITH
CMS.

SEVERAL POWERFUL FEATURES ARE AVAILABLE WITH NSCRIPT THAT
ARE NOT AVAILABLE WITH TSO'S FORMAT:

1- THE ABILITY TO ENTER FOOTNOTES AT CONVENIENT PLACES IN
    THE INPUT. FOOTNOTES ARE SAVED AND PRINTED AT THE
    BOTTOMS OF OUTPUT PAGES.

2- THE ABILITY TO USE SYMBOLIC "REFERENCE NAMES" TO
    SIMPLIFY NUMBERING AND CROSS-REFERENCING.

3- THE ABILITY TO DEFINE BOTH HEADING AND FOOTING LINES FOR

CONTINUED FROM PRIOR COLUMN

BOTH EVEN AND ODD NUMBERED PAGES.

4- THE ABILITY TO SPECIFY FORMAT CONTROL INFORMATION OR
   TEXT DYNAMICALLY (DURING PRINTOUT).

5- THE ABILITY TO USE ROMAN NUMERALS (INSTEAD OF ARABIC) IN
   PAGE NUMBERS AND, IN CONJUNCTION WITH THE HEADING AND
   FOOTING CONTROLS, TO PLACE PAGE NUMBERS IN A VARIETY OF
   PLACES ON THE OUTPUT PAGE.

6- THE ABILITY TO SPECIFY TRANSLATION TABLE PAIRS.

7- THE ABILITY TO DEFINE "REMOTE SEQUENCES", WHICH ARE
   INVOKED AT SPECIFIED PLACES IN THE OUTPUT.

8- THE ABILITY TO CONTROL THE OUTPUT CONDITIONALLY.

NSCRIPT CONSISTS OF 2 MODULES, A COMMAND PROCESSOR
(PROMPTER) FOR USE WITH TSO, AND A PROGRAM FOR PROCESSING
NSCRIPT FILES WHICH CAN BE INVOKED EITHER BY THE TSO
PROMPTER OR BY A BATCH JOB.

SINCE NSCRIPT CAN TREAT TAB CHARACTERS INTERNALLY, SEVERAL
(OPTIONAL) MODIFICATIONS TO THE TSO EDITOR FOR TAB
PROCESSING ARE INCLUDED. THE MODIFICATIONS INCLUDE THE
ADDITION OF A SCRIPT FILE TYPE WHICH IS SIMILAR TO A TEXT
FILE TYPE EXCEPT FOR LINE LENGTH AND TAB PROCESSING.

PROGRAMMING LANGUAGE - ASSEMBLER.

MINIMUM SYSTEM REQUIREMENTS - OS/360

DOCUMENTATION: 111 PAGES, $4.55 ADDITIONAL CHARGE.
CARD COUNT: 10,600 APPROXIMATE.
SUBMITTAL/REVISION DATE: 1/74.

360D-03.5.009
   PL/I REPORT WRITER MACROS

   AUTHOR: D. KARPINSKI
            MODIFIED BY SHARON BONNER

   DIRECT TECHNICAL INQURIES TO:
            SHARON BONNER
            MARATHON OIL COMPANY
            FINDLAY, OHIO 45840

   DESCRIPTION - THIS IS A MODIFICATION OF SHARE PROGRAM
   360D-03.5.007 FOR USE WITH THE PL/I OPTIMIZING COMPILER.
   SEE THE ABSTRACT FOR THE ABOVE PROGRAM FOR DETAILS.

   PROGRAMMING LANGUAGE - IBM PL/I OPTIMIZING COMPILER

   MINIMUM SYSTEM REQUIREMENTS - N/A

   DOCUMENTATION: 24 PAGES, $.20 ADDITIONAL CHARGE.
   CARD COUNT: 933 CARDS APPROXIMATE.
   SUBMITTAL/REVISION DATE: 4/76

360D-03.6.001
   FORTRAN CROSS REFERENCE

   AUTHOR: R. H. KARPINSKI

   DIRECT TECHNICAL INQUIRIES TO:
            R. H. KARPINSKI
            INFORMATION SYSTEMS, 76-U
            UNIVERSITY OF CALIFORNIA
            SAN FRANCISCO, CA   94143

   DESCRIPTION - FORTXREF IS A STANDARD PL/I PROGRAM USING
   SYSIN FOR THE INPUT DATA AND SYSPRINT FOR THE OUTPUT.
   THE DATA CONSISTS OF ONE OR MORE FORTRAN PROGRAMS. EACH
   OCCURRENCE OF A FORTRAN END CARD WILL CAUSE THE CROSS-
   REFERENCING TABLE TO BE OUTPUT AND REINITIALIZED. THIS
   WILL ALSO HAPPEN ON END OF DATA IF THE LAST CARD IS NOT
   AN END CARD. EACH INPUT CARD WILL BE OUTPUT WITH A FORTRAN
   LINE NUMBER IF APPROPRIATE. THE CROSS-REFERENCE TABLE
   GIVES (IN 360 COLLATING SEQUENCE) EACH KEYWORD, VARIABLE
   NAME, STATEMENT NUMBER, AND CONSTANT WITH A LIST OF EACH
   USE BY LINE NUMBER. INACCURACIES- IF "FORMAT" IS USED

CONTINUED FROM PRIOR COLUMN

AS AN ARRAY NAME, THE REST OF THE STATEMENT MAY NOT BE
CROSS REFERENCED. LIMITS- 2000 ITEMS MAY BE REFERENCED
APPROXIMATELY 6000 TIMES.

PROGRAMMING SYSTEMS - WRITTEN IN PL/I.

MINIMUM SYSTEM REQUIREMENTS - S/360 MODEL 40.

DOCUMENTATION: 5 PAGES, NO ADDITICNAL CHARGE.
CARD COUNT: 300 APPROXIMATE.
SUBMITTAL/REVISION DATE: 02/67

360D-03.6.007
    COBOL SOURCE CROSS-REFERENCE LISTING

AUTHOR: D. E. OLDHAM

DIRECT TECHNICAL INQUIRIES TO:
          BRUCE LEAKE
          BELL HELICOPTER CO.
          DEPARTMENT 17
          P.O. BOX 482
          FORT WORTH, TEXAS 76101

DESCRIPTION - THE OBJECTIVE OF THIS PROGRAM IS TO PRODUCE
A CROSS-REFERENCE LISTING OF DATA-NAMES, PROCEDURE-NAMES,
AND PARAGRAPH-NAMES FROM COBOL SOURCE STATEMENTS, USING
THE STATEMENT SEQUENCE NUMBER AS THE REFERENCE NUMBER.

PROGRAMMING SYSTEMS - WRITTEN IN COBOL.

MINIMUM SYSTEM REQUIREMENTS - THE COBOL-F SORT VERB IS
UTILIZED BY THE PROGRAM AND REQUIRES THREE (3) SORT WORK
UNITS (TAPE OR DISK).

DOCUMENTATION: 18 PAGES, NO ADDITICNAL CHARGE.
CARD COUNT: 1,150 APPROXIMATE.
SUBMITTAL/REVISION DATE: 01/68

360D-03.6.018
    NEATER: A PL/I SOURCE STATEMENT REFORMATTER

AUTHORS: K. CONROW   R.G. SMITH

DIRECT TECHNICAL INQUIRIES TO:
          KENNETH CONROW
          COMPUTING CENTER
          KANSAS STATE UNIVERSITY
          MANHATTAN, KANSAS 66502

DESCRIPTION - THE PROGRAM (NEATER) ACCEPTS A SYNTACTICALLY
CORRECT PL/I PROGRAM AND OPERATES ON IT TO PRODUCE A
REFORMATTED VERSION. IT EITHER PRINTS OR PRINTS AND PUNCHES
THE REFORMATTED PROGRAM IN A LOGICAL OR IN A COMPRESSED
FORMAT. IT NEATENS THE STATEMENTS BY OMITTING NONESSENTIAL
STRINGS OF BLANKS. LOGICAL STRUCTURE IS INDICATED BY
INDENTATION; THE AMOUNT OF INDENTATION FOR EACH LOGICAL
LEVEL IS CONTROLLED BY THE USER. STATEMENT NUMBERS ARE
PRODUCED WHICH CORRESPOND TO THOSE PRODUCED BY THE COMPILER.
THE PROGRAM IS EXTREMELY USEFUL IN DEVELOPMENT OF
COMPLICATED PL/I SOURCE PROGRAMS BECAUSE AN UNEXPECTED
INDENTATION PATTERN WILL AT ONCE REVEAL LOGIC ERRORS.
LOGICALLY FORMATTED VERSIONS CF COMPLICATED SOURCE PROGRAMS
ARE FAR MORE VALUABLE IN DOCUMENTATION OF SUCH PROGRAMS
THAN AN UNFORMATTED SOURCE LISTING.

PROGRAMMING SYSTEMS - NEATER IS WRITTEN IN PL/I, IT OPERATES
SUCCESSFULLY ON ITSELF, THE SUBMITTED DECK IS IN COMPRESSED
FORMAT, THE SUBMITTED LISTING IS IN LOGICAL FORMAT WITH
THE DEFAULT INDENTATION OF 3 AND SERVES AS AN EXAMPLE OF
NEATER'S OUTPUT. NEATER HAS BEEN COMPILED AND TESTED USING
OS VERSION 17 ON A S360 MODEL 50.

MINIMUM SYSTEM REQUIREMENTS - 360 USING FULL PL/I. CARD
READER, PRINTER, A 2311 DISK CCULD BE USED WITH "HASP"
IF DESIRED.

DOCUMENTATION: 16 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 200 APPROXIMATE.
SUBMITTAL/REVISION DATE: 06/69

360D-03.6.019
    SIMPLE: A SIMPLE PRECEDENCE TRANSLATOR WRITING SYSTEM

    AUTHOR: JAMES E. GEORGE

    DIRECT TECHNICAL INQUIRIES TO:
            DR. JAMES E. GEORGE
            LOS ALAMOS SCIENTIFIC LABORATORY
            P.O. BOX 1663, MS 272
            LOS ALAMOS, NEW MEXICO 87545

    DESCRIPTION - SIMPLE IS A TRANSLATOR WRITING SYSTEM COMPOSED
    OF A SIMPLE PRECEDENCE SYNTAX ANALYZER AND A SEMANTIC
    CONSTRUCTOR AND IS IMPLEMENTED IN PL/I. IT PROVIDES AN
    ERROR DIAGNOSTIC AND RECOVERY MECHANISM FOR ANY SYSTEM
    IMPLEMENTED USING SIMPLE. THE REMOVAL OF PRECEDENCE
    CONFILICTS IS DISCUSSED IN DETAIL WITH SEVERAL EXAMPLES.

    THE UTILIZATION OF SIMPLE IS ILLUSTRATED BY DEFINING A
    COMMAND LANGUAGE META SYSTEM FOR THE CONSTRUCTION OF
    SCANNERS FOR A WIDE VARIETY OF COMMAND ORIENTED LANGUAGES.
    THIS META SYSTEM IS ILLUSTRATED BY DEFINING COMMANDS FROM
    SEVERAL TEXT EDITORS.

    PROGRAMMING LANGUAGE - PL/I (F LEVEL)

    MINIMUM SYSTEM REQUIREMENTS - OS/360

    DOCUMENTATION: 99 PAGES, $3.95 ADDITIONAL CHARGE.
    CARD COUNT: 1,900 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 5/73

360D-03.6.020
    MORTRAN, A FORTRAN LANGUAGE EXTENSION

    AUTHOR: A. JAMES COOK

    DIRECT TECHNICAL INQUIRIES TO:
        A. JAMES COOK
        SLAC COMPUTATION GROUP
        P.O. BOX 4349
        STANFORD, CA 94305

    DESCRIPTION - MORTRAN IS A FORTRAN LANGUAGE EXTENSION. ITS
    FEATURES INCLUDE (1) FREE-FIELD FORMAT, (2) ALPHANUMERIC
    STATEMENT LABELS, (3) COMMENTS ALLOWED ANYWHERE IN THE TEXT,

CONTINUED FROM PRIOR COLUMN

    (4) MULTIPLE ASSIGNMENT STATEMENTS, (5) SIMPLE BLOCK
    STRUCTURE, (6) IMPLIED LOOPING CONTROL STATEMENTS, (7) FOR-
    BY-TO, WHILE, UNTIL, IF-THEN-ELSE, UNLESS-ELSE STATEMENTS,
    (8) ABBREVIATIONS FOR SOME COMMON FORTRAN CONSTRUCTIONS, AND
    (10) USER-DEFINED MACRO-INSTRUCTIONS.

    THE FORTRAN PROCESSOR IS WRITTEN IN STANDARD FORTRAN IV SO
    THAT IT CAN BE IMPLEMENTED ON ANY COMPUTER THAT HAS A
    STANDARD FORTRAN COMPILER.

    PROGRAMMING LANGUAGE - FORTRAN IV

    MINIMUM SYSTEM REQUIREMENTS - OS/360 + FORTRAN IV

    DOCUMENTATION: 3 PAGES, NO ADDITIONAL CHARGE.
                   (PLUS MACHINE READABLE DOCUMENTATION)
    CARD COUNT: NOT AVAILABLE ON CARDS.
    SUBMITTAL/REVISION DATE: 8/73.

360D-03.6.022
    DECTALB, A DECISION TABLE TRANSLATOR BASED ON LIST
    PROCESSING TECHNIQUES

    AUTHOR: KENNETH CONROW (WITH RONALD G. SMITH)

    DIRECT TECHNICAL INQUIRIES TO:
        KENNETH CONROW
        COMPUTING CENTER
        KANSAS STATE UNIVERSITY
        MANHATTAN, KANSAS 66502

    DESCRIPTION - DECTALB, A DECISION TABLE ALGORITHM BASED ON
    LIST PROCESSING TECHNIQUES, IS A TRANSLATOR WHICH CONVERTS
    PROGRAMS OR PROGRAM SEGMENTS WRITTEN IN DECISION TABLES
    INTO COMPILABLE PL/I CODING. THE USE OF A DIRECTORY VECTOR
    TO CONTROL EXECUTION ENABLES COMPLETE ELIMINATION OF
    DUPLICATE CODING OF STUBS, COMPLETE FREEDOM OF REUSE OF
    STUBS THROUGHOUT A DECTALB BLOCK, AND AUTOMATIC
    REARRANGEMENT OF CONDITION STUBS TO REDUCE THE OVERHEAD OF
    RULE SELECTION. THE EXECUTION TIME CONTROL SECTION IS SO
    SIMPLE THAT IT ADDS VERY LITTLE OVERHEAD AT EXECUTION TIME.
    THE VERSION SUBMITTED IS THE BOOTSTRAP WHICH WAS EMPLOYED
    TO IMPLEMENT A MORE COMPLETE SYSTEM. THE BOOTSTRAP
    IMPLEMENTS THE BASIC FEATURES MENTIONED ABOVE BUT DOES NOT
    INCORPORATE ELABORATIONS LIKE PROCESSING EXTENDED ENTRY
    DECISION TABLES, PROVISION OF DIAGNOSTICS, AND ACCEPTANCE
    OF CONTROL OPTIONS.

CONTINUED FROM PRIOR COLUMN

PROGRAMMING LANGUAGE - PL/I (F)

MINIMUM SYSTEM REQUIREMENTS - OS/360 (TESTED UNDER MFT)

DOCUMENTATION: 75 PAGES, $2.75 ADDITIONAL CHARGE.
CARD COUNT: 1,220 APPROXIMATE.
SUBMITTAL REVISION DATE: 2/74.

360D-03.6.023
COBOL MODULE AND GO TO CHECKER

AUTHOR: HAROLD P. SIEGLAFF

DIRECT TECHNICAL INQUIRIES TO:
        HAROLD P. SIEGLAFF
        3610 WEST NORTHVIEW
        PHOENIX, ARIZONA 85021

DESCRIPTION - THIS COBOL PROGRAM CHECKS A COBOL PROGRAM FOR
MODULARITY AND UPWARD GO TO STATEMENTS. A MODULAR PROGRAM
CONSISTS OF 1-N MODULES IN THIS FORM: BEGIN-X ... END-X.
EXIT. OR STOP RUN. TO EXECUTE CODE OUTSIDE OF A MODULE USE
PERFORM ... THRU ... OR CALL SUBR. AMONG 9 DETECTED ERRORS
ARE ALTER, GO TO ... DEPENDING ON, PERFORM WITHOUT THRU, AND
GO TO A PARAGRAPH OUTSIDE A MODULE. UPWARD GO TO STATEMENTS
ARE PRINTED WITH A WARNING. THIS COBOL PROGRAM IS MODULAR
AND MAY BE USED AS INPUT FOR A SAMPLE RUN. THIS PROGRAM
MAY BE RUN ON ANY COMPUTER WITH A COBOL COMPILER, CARD
READER, AND PRINTER. ADDITIONAL DOCUMENTATION AND JCL
NEEDED TO RUN THE PROGRAM ARE INCLUDED WITH THE PROGRAM AS
COMMENTS.

THIS PROGRAM PROGRAM IS THE FIRST PROGRAM OF A TRILOGY.
IDEA 59 COBOL MODULE AND GO TO CHECKER
IDEA 60 COBCL MODULE INDEXER AND LOOP CHECKER
IDEA 61 COBOL MODULE SEGMENTER

A MODULAR PROGRAM CAN DECREASE DEBUGGING, SIMPLIFY
MAINTENANCE, AND FORCE PROGRAMS TO BE WRITTEN IN FUNCTIONAL
MODULES, (E.G. READ/WRITE A RECORD, CREATE/UPDATE A MESSAGE,
SEARCH/SORT A TABLE, ETC.)

PROGRAMMING LANGUAGE - COBOL

MINIMUM SYSTEM REQUIREMENTS - COBOL COMPILER.

CONTINUED FROM PRIOR COLUMN

DOCUMENTATION: 2 PAGES, NO ADDITIONAL CHARGE.
                (PLUS SOURCE CODE COMMENTS)
CARD COUNT: 650 CARDS.
SUBMITTAL/REVISION DATE: 10/74.

360D-03.6.024
COBOL MODULE INDEXER AND LOOP CHECKER

AUTHOR: HAROLD P. SIEGLAFF

DIRECT TECHNICAL INQUIRIES TO:
        HAROLD P. SIEGLAFF
        3610 WEST NORTHVIEW
        PHOENIX, ARIZONA 85021

DESCRIPTION - THIS COBOL PROGRAM CREATES AN N LEVEL INDEX OF
A MODULAR COBOL PROGRAM. THE INDEX IS THE STRUCTURE OF THE
PROGRAM. ENDLESS PERFORM LOOPS ARE DETECTED. THE COBOL
PROGRAM MUST SATISFY THE DEFINITION OF MODULARITY GIVEN IN
COBOL MODULE AND GO TO CHECKER, 360D-03.6.023. THIS PROGRAM
IS MODULAR AND MAY BE USED AS INPUT FOR A TEST RUN. THIS
PROGRAM SHOULD RUN ON ANY COMPUTER WITH A COBOL COMPILER,
CARD READER, AND PRINTER. ADDITIONAL DOCUMENTATION AND JCL
NEEDED TO RUN THE PROGRAM ARE INCLUDED WITH THE PROGRAM AS
COMMENTS. RESTRICTIONS ARE 99 MODULES PER PROGRAM, 50
PERFORM STATEMENTS PER MODULE, 20 LEVELS OF MODULES (20
ACTIVE PERFORM STATEMENTS (ONE WHOSE THRU PARAGRAPH HAS NOT
BEEN EXECUTED)).

THIS PROGRAM IS THE SECOND PROGRAM OF A TRILOGY:
        IDEA 59 COBOL MODULE AND GO TO CHECKER
        IDEA 60 COBOL MODULE INDEXER AND LOOP CHECKER
        IDEA 61 COBOL MODULE SEGMENTER

PROGRAMMING LANGUAGE - COBOL

MINIMUM SYSTEM REQUIREMENTS - COBOL (TESTED ON 370/158).

DOCUMENTATION: 2 PAGES, NO ADDITIONAL CHARGE.
                (PLUS SOURCE CODE COMMENTS)
CARD COUNT: 750 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/74.

360D-03.6.025
MAP/II MACRO PRE-PROCESSOR

AUTHOR: NORM CASSELMAN

DIRECT TECHNICAL INQUIRIES TO:
NORM CASSELMAN
DEPARTMENT 522
THE MAGNAVOX COMPANY
4624 EXECUTIVE BLVD.
FORT WAYNE, INDIANA 46808

DESCRIPTION - MAP II IS A MACRO-DRIVEN PRE-PROCESSOR USED
TO PROCESS INPUT DATA SETS CONSISTING OF 80 BYTE LOGICAL
RECORDS UNDER CONTROL OF USER-SUPPLIED MACRO ROUTINES. THESE
MACRO ROUTINES MAY BE PROVIDED WITH THE SOURCE INPUT OR
STORED IN A STANDARD OS PDS IN SOURCE FORM. ALTHOUGH MAP/II
MAY BE USED IN A NUMBER OF DIFFERENT APPLICATIONS, IT IS
SPECIFICALLY DESIGNED TO PRE-PROCESS FORTRAN SOURCE
PROGRAMS. THE MACRO ROUTINES THEMSELVES ARE WRITTEN IN A
MODIFIED FORTRAN LANGUAGE AND ARE INTERPRETIVELY EXECUTED
BY MAP/II. ALL MACRO ROUTINES HAVE DECISION-MAKING
INSTRUCTIONS AND BRANCHING CAPABILITY.

MAP/II ONLY RECOGNIZES MACRO COMMANDS FROM THE SOURCE
INPUT - ALL OTHER RECORDS ARE IGNORED AND DIRECTLY
PASSED TO AN OUTPUT DATA SET. WHEN MACRO COMMANDS
ARE DETECTED, CONTROL IS TRANSFERRED TO THE
APPROPRIATE MACRO ROUTINE WHICH GENERATES THE DESIRED
EXPANDED RECORDS.

PROGRAMMING LANGUAGE - OS ASSEMBLER (F)

MINIMUM SYSTEM REQUIREMENTS - OS/360

DOCUMENTATION: 7 PAGES, NO ADDITIONAL CHARGE.
                (PLUS MACHINE READABLE DOCUMENTATION)
CARD COUNT: 9000 APPROXIMATE.
SUBMITTAL/REVISION DATE: 5/75

360D-03.6.026
MORTRAN2, A PORTAELE MACRO-BASED STRUCTURED
FORTRAN EXTENSION

AUTHOR: A.J. COOK AND L.J. SHUSTEK

DIRECT TECHNICAL INQUIRIES TO:
A.J. COOK OR L.J. SHUSTEK
SLAC COMPUTATION RESEARCH GROUP 88
P.O. BOX 4349
STANFORD, CA 94305

DESCRIPTION - MORTRAN2 IS A FORTRAN LANGUAGE EXTENSION
THAT PERMITS A RELATIVELY EASY TRANSITION FROM FORTRAN
TO A MORE CONVENIENT AND STRUCTURED LANGUAGE. THE LANGUAGE
IS IMPLEMENTED BY A MACRO-BASED PRE-PROCESSOR AND IS
FURTHER EXTENSIBLE BY USER-DEFINED MACROS. ITS FEATURES
INCLUDE (1) FREE-FIELD FORMAT, (2) ALPHANUMERIC STATEMENT
LABELS, (3) FLEXIELE COMMENT CONVENTION, (4) NESTED
BLOCK STRUCTURE, (5) FOR-BY-TO,DO, WHILE,UNITL,LOOE,IF-
THEN-ELSEIF-ELSE,EXIT AND NEXT STATEMENTS, (6) MULTIPLE
ASSIGNMENT STATEMENTS, (7) CONDITIONAL COMPILATION, AND
(8) AUTOMATIC LISTING INDENTATION.

THE MORTRAN2 PRE-PROCESSOR IS WRITTEN IN ANSI STANDARD
FORTRAN, AND THE OUTPUT IS ALSO FORTRAN SO THAT
TRANSPORTABILITY OF BOTH THE PRE-PROCESSOR AND ITS
GENERATED PROGRAMS IS ASSURED. MORTRAN2 IS AN EXTENSION
OF THE PROCESSOR (AND LANGUAGE) CALLED MORTRAN.

PROGRAMMING LANGUAGE - FORTRAN IV

MINIMUM SYSTEM REQUIREMENTS - ANSI STANDARD FORTRAN IV
                                          SYSTEM

DOCUMENTATION: 37 PAGES, $.85 ADDITIONAL CHARGE.
CARD COUNT: 6,000 APPROXIMATE.
SUBMITTAL/REVISION DATE: 7/75.

360D-03.6.027
    TIME SHARING LANGUAGE/ONE (TL/1)

    AUTHORS: ALFRED S. BAKER
               JOHN A. CHAPMAN

    DIRECT TECHNICAL INQUIRIES TO:
               MR. JOHN A. CHAPMAN
               STANDARD OIL CO. (INDIANA)
               200 EAST RANDOLPH DRIVE
               CHICAGO, ILLINOIS 60601

    DESCRIPTION - TIME SHARING LANGUAGE/ONE IS A TSO
    COMMAND LANGUAGE PROCESSOR LANGUAGE BASED AROUND PL/1.
    IT CAN BE USED FOR HIGHLY SPECIALIZED INTERACTIVE
    APPLICATIONS. WHEN USED AS A CLIST REPLACEMENT - IT
    PROVIDES THE USER WITH ALL OF THE LOGICAL POWER
    AVAILABLE TO THE PL/1 PROGRAMMER. TIME SHARING
    LANGUAGE/ONE IS DISTRIBUTED AS PL/1 PREPROCESSOR MACROS,
    PL/1 SUBPROGRAMS, ASSEMBLY LANGUAGE SUBPROGRAMS, AND
    SAMPLE COMMANDS.

    PROGRAMMING LANGUAGE - ASSEMBLER & PL/1 (OPTIMIZER/F)

    MINIMUM SYSTEM REQUIREMENTS - OS RELEASE 21

    DOCUMENTATION: 98 PAGES, $3.90 ADDITICNAL CHARGE.
    CARD COUNT: 46,000 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 4/76

360D-03.7.034
    MACRO CROSS-REFERENCE PROGRAM

    AUTHOR: EDWIN S. RUSSELL

    DIRECT TECHNICAL INQUIRIES TO:
               EDWIN S. RUSSELL
               SLAC COMPUTING FACILITY, BIN L
               P. O. BOX 4349
               STANFORD, CALIFORNIA 94305

    DESCRIPTION - THE MACRO CROSS-REFERENCE PROGRAM (MACROREF)
    PROCESSES MACROS, COPY ENTRIES, AND/OR ASSEMBLY LANGUAGE
    SOURCE PROGRAMS AND PRODUCES A CROSS-REFERENCE LISTING OF
    THE USAGE OF ALL VARIABLE SET SYMBOLS, SYMBOLIC PARAMETERS,
    SEQUENCE SYMBOLS, AND MACRO CALLS. OPTIONALLY, IT MAY BE

CONTINUED FROM PRIOR COLUMN

    USED TO CROSS-REFERENCE CALLED MACROS AND/OR ALL USAGES OF
    SELECTED OP-CODES. THE PROGRAM IS INTENDED FOR USE WITH
    MACROS WRITTEN FOR THE OS/360 LEVEL F ASSEMBLER: THE MORE
    PERMISSIVE SYNTAX OF THE LEVEL H ASSEMBLER IS NOT
    IMPLEMENTED BY THIS PROGRAM.

    PROGRAMMING SYSTEMS - LANGUAGE - OS/360 ASSEMBLER LEVEL F

    MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED BY OS/360

    DOCUMENTATION: 21 PAGES, $.05 ADDITIONAL CHARGE.
    CARD COUNT: 4,640 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 02/73

360D-03.8.013
    PL/I STRING FUNCTIONS

    AUTHOR: P. LACOUTURE

    DIRECT TECHNICAL INQUIRIES TO:

               TECHNICAL ASSISTANCE
               CURRENTLY NOT AVAILABLE.

    DESCRIPTION - PL/I ALLOWS THE PROGRAMMER TO MANIPULATE
    CHARACTER STRING DATA WITH A GREAT DEAL OF FLEXIBILITY.
    THE OPERATOR, II, AND THE BUILT IN FUNCTIONS INDEX, SUBSTR,
    AND LENGTH PROVIDE A MEANS FOR SCANNING, PREPARING, AND
    PARSING TEXT. WHILE THESE FUNCTIONS ARE SUFFICIENT TO
    PERFORM ALMOST ANY CHARACTER STRING MANIPULATIONS THE
    PROGRAMMER DESIRES, THEY MUST OFTEN BE CALLED REPEATEDLY
    TO ACHIEVE THE DESIRED EFFECT. THE STRING FUNCTIONS
    DESCRIBED IN THE ENCLOSED WRITE UP ARE DERIVED FROM A SET
    OF OPERATORS FOR PL/I PROPOSED BY DR. ROBERT F. ROSIN.
    ("STRINGS IN PL/I", SIGPLAN NOTICES 'PL/I BULLETIN NO.4'
    VOLUME 2 NO. 8, AUG., 1967.) THEY ARE DESIGNED TO
    COMPLEMENT THE FACILITIES ALREADY AVAILABLE IN PL/I (F).

    THEY MAY BE DIVIDED INTO THREE GROUPS FOR PURPOSES OF
    DISCUSSION:
    1.   BEFORE, UPTO, FROM, AFTER, IN, DELETE, DELETS, REPLACE,
         REPLS, REVERSE, AND SCOUNT--ALL OF THESE RETURN STRINGS
         OR VALUES AND ALL EXCEPT DELETE, REPLACE, AND REPLS
         SET A SUCCESS VARIABLE WHICH MAY BE TESTED (SEE BELOW).

    2.   FAIL AND SUC--FUNCTIONS THAT ARE THE RESULT OF THE
         PREVIOUS STRING FUNCTION AND RETURN '0' (FAILURE IN

CONTINUED FROM PRIOR COLUMN

THE PREVIOUS FUNCTION). PRIOR TO THE INVOCATION OF
ANY STRING FUNCTION, THE SUCCESS VARIABLE HAS THE
VALUE '1' (SUCCESS).

3.   SETSUC--FUNCTION THAT IS USED TO SET THE SUCCESS
      VARIABLE TO EITHER VALUE.

PROGRAMMING SYSTEMS - THE FUNCTIONS THEMSELVES ARE WRITTEN
IN PL/I (F) AND HAVE BEEN COMPILED AND TESTED USING
PL/I (F) VERSION 4 ON AN OS/MFT BASED SYSTEM ON AN S/360
MODEL 50.

MINIMUM SYSTEM REQUIREMENTS - 360/30 64K.

DOCUMENTATION: 13 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 300 APPROXIMATE.
SUBMITTAL/REVISION DATE: 02/69

360D-03.8.016
    COBFORT - AN INTERFACE ENABLING STANDARD CALLS TO FORTRAN
    PROGRAMS, SUBPROGRAMS, AND LIBRARY SUBPROGRAMS FROM OTHER
    LANGUAGES.

    AUTHOR: ROGER CHETWYND

    DIRECT TECHNICAL INQUIRIES TO:
      ROGER CHETWYND
      COMPUTER SCIENCE DEPARTMENT
      UNIVERSITY OF MONTANA
      MISSOULA, MONTANA   59801

    DESCRIPTION - COBFORT IS AN INTERFACE SYSTEM FOR OS/360
    USERS THAT ENABLES STANDARDIZATION OF CALLS TO FORTRAN
    PROGRAMS, SUBPROGRAMS, AND MOST LIBRARY SUBPROGRAMS, THUS
    MAKING THE POWERFUL NUMERICAL CAPABILITY OF FORTRAN
    AVAILABLE TO PROGRAMS WRITTEN IN OTHER LANGUAGES. THE
    INTERFACE IS DESIGNED PARTICULARLY FOR USE WITH OS ANS COBOL
    PROGRAMS AND THE DOCUMENTATION REFLECTS THIS BIAS BUT ITS
    COMPATIBILITY WITH OTHER LANGUAGES SHOULD BE WIDESPREAD.

    THE DISTRIBUTED PACKAGE CONSISTS OF TWO ASSEMBLY LANGUAGE
    MACRO-INSTRUCTIONS WITH DOCUMENTATION AND MAY BE IMPLEMENTED
    SIMPLY BY ADDING THE MACROS TO A LIBRARY WITH NO FURTHER
    SYSTEM CHANGE. THE USER TAILORS AN INTERFACE TO HIS NEEDS
    BY ASSEMBLING THESE MACROS WITH PROPER PARAMETERS. THE
    INTERFACE IS SUBSTITUTED FOR CERTAIN MODULES IN THE FORTRAN
    LIBRARY, WHICH SUBSTITUTION MAY BE DONE AS LATE AS THE TIME

CONTINUED FROM PRIOR COLUMN

OF LINKEDITING THE USER'S FINAL LOAD MODULE.

FACILITIES ARE PROVIDED FOR THE RETURN OF FORTRAN FUNCTION
AND LIBRARY FUNCTION EVALUATIONS AND FOR THE HANDLING OF
SOME FORTRAN EXECUTION-TIME ERRORS. THE MOST IMPORTANT
RESTRICTION IMPOSED IS THE PROHIBITION OF FORTRAN INPUT-
OUTPUT; AS COBOL PROVIDES EXCELLENT INPUT-OUTPUT FACILITIES,
THIS RESTRICTION IS NOT SERIOUS AND IT ALLOWS THE INTERFACE
TO REMAIN SMALL (LESS THAN 1K FOR MOST APPLICATIONS).

COBFORT WILL RUN UNDER ANY VERSION OF OS SINCE RELEASE 18.

PROGRAMMING LANGUAGE - OS MACRO ASSEMBLER.

MINIMUM SYSTEM REQUIREMENTS - OS/360

DOCUMENTATION: 22 PAGES, $.10 ADDITIONAL CHARGE.
CARD COUNT: 500 APPROXIMATE.
SUBMITTAL/REVISION DATE: 8/74.

360D-04.0.006
    CLOCK

    AUTHOR: W. S. PAGE

    DIRECT TECHNICAL INQUIRIES TO:
      H. R. HAMILTON
      NORTH CAROLINA STATE UNIVERSITY
      P. O. BOX 5445
      RALEIGH; N. C. 27607

    DESCRIPTION - A SUBROUTINE TO DELIVER READINGS OF THE S/360
    REAL TIME CLOCK TO PROGRAMS CALLING WITH A S/360 FORTRAN
    IV COMPATIBLE LINKAGE. TIME ELAPSED SINCE LAST CALL OF
    SUBROUTINE CAN ALSO BE COMPUTED BY THE SUBROUTINE. MANY
    SEPARATE "CLOCKS" CAN BE KEPT RUNNING WITHIN THE CALLING
    PROGRAM.

    PROGRAMMING SYSTEMS - REQUIRES S/360 OS.

    MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED FOR OS/360.

    DOCUMENTATION: 9 PAGES, NO ADDITIONAL CHARGE.
    CARD COUNT: 100 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 06/68

360D-04.0.010
SIMPLIFIED INPUT - OUTPUT AND DEBUGGING MACROS FOR
ASSEMBLER LANGUAGE USERS

AUTHOR: JOHN R. EHRMAN

DIRECT TECHNICAL INQUIRIES TO:
        DR. JOHN R. EHRMAN
        STANFORD CENTER FOR INFORMATION PROCESSING
        SLAC - BIN 97
        POST OFFICE BOX 4349
        STANFORD, CALIFORNIA 94305

DESCRIPTION - THIS SET OF FIVE MACRO-INSTRUCTIONS AND FOUR
ASSOCIATED LIBRARY ROUTINES PROVIDE THE ASSEMBLER LANGUAGE
PROGRAMMER WITH AN EXTREMELY SIMPLE AND USEFUL SET OF
INPUT-OUTPUT AND DIAGNOSTIC TOOLS.

(1) THE PRINTOUT MACRO PRINTS THE CONTENTS OF MEMORY AREAS
IN A FORMAT DETERMINED BY THE TYPE OF DATA IT CONTAINS.
(2) THE PRINTLIN MACRO PRINTS SINGLE LINE IMAGES. (3) THE
READCARD MACRO READS INPUT DATA CARDS. (4) THE PROLOGUE
AND EPILOGUE MACROS SET UP AN ERROR-HANDLING LINKAGE THAT
ALLOWS A PROGRAM TO CONTINUE AFTER PROGRAM INTERRUPTIONS,
AND PROVIDE PSW, REGISTER, AND CORE DUMPS. THE INTERFACE
ROUTINES CALLED BY THE MACROS USE THE FORTRAN I/O LIBRARY
TO DO THE ACTUAL INPUT AND OUTPUT, AND DATA FORMATTING.

PROGRAMMING SYSTEMS - WRITTEN IN ASSEMBLER LANGUAGE F,
OPERATES UNDER OS/360.

MINIMUM SYSTEM REQUIREMENTS - SAME AS THOSE REQUIRED FOR
OS/360.

DOCUMENTATION: 18 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 1,200 APPROXIMATE.
SUBMITTAL/REVISION DATE: 09/69

360D-04.0.011
MACROS FOR SIMPLIFIED I/O AND DIAGNOSTIC PRINTOUTS

AUTHORS: JOHN R. EHRMAN   JAMES R. LOW
         PAUL M. DANTZIG

DIRECT TECHNICAL INQUIRIES TO:
        DR. JOHN R. EHRMAN
        STANFORD CENTER FOR INFORMATION PROCESSING
        SLAC - BIN 97
        P. O. BOX 4349
        STANFORD, CALIFORNIA 94305

DESCRIPTION - THESE MACROS PROVIDE A VERY SIMPLE MEANS FOR
THE BEGINNING ASSEMBLER LANGUAGE PROGRAMMER TO (1) READ
CARD IMAGES INTO HIS PROGRAM, AND DETECT ENDFILE CONDITIONS;
(2) WRITE PRINTER LINE IMAGES OF VARYING OR DEFAULT LENGTHS;
(3) PRINT A FORMATTED AND NAMED LINE GIVING THE CONTENTS OF
A SYMBOLICALLY DESCRIBED AREA OF MEMORY; (4) PRINT THE
CONTENTS OF THE GENERAL PURPOSE AND FLOATING POINT
REGISTERS; (5) GIVE A FORMATTED HEXADECIMAL DUMP OF
SPECIFIED AREAS OF MEMORY; (6) CLOSE THE INPUT AND OUTPUT
FILES AND RETURN CONTROL TO THE SUPERVISOR.

THE MACROS ARE VERY EASY TO USE, ALLOW A FLEXIBLE MEANS OF
SPECIFYING OPERANDS, AND HAVE NO ADVERSE OR UNTOWARDS
EFFECTS ON THE USER'S PROGRAM.

DOCUMENTATION: 9 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 950 APPROXIMATE.
SUBMITTAL/REVISION DATE: 09/72

360D-04.1.012
FORTRAN H SYMBOLIC DEBUGGING PACKAGE

AUTHOR: JOHN STEFFANI

DIRECT TECHNICAL INQUIRIES TO:
        JOHN STEFFANI
        COMPUTATION GROUP - BIN 88
        SLAC
        2575 SANDHILL ROAD
        MENLO PARK, CALIFORNIA 94025

DESCRIPTION - THE FORTRAN H SYMBOLIC DEBUGGING PACKAGE
ALLOWS THE USER TO VIEW HIS FORTRAN H PROGRAM'S VARIABLES

CONTINUED FROM PRIOR COLUMN

AND THEIR CONTENTS UPON DEMAND (VIA SUBROUTINE CALL) OR
UPON PROGRAM TERMINATION, EITHER NCRMAL OR ABNORMAL. THE
PACKAGE CONSISTS OF A MODIFIED FORTRAN H COMPILER, A
MODIFIED LINKAGE EDITOR AND AN EXECUTICN TIME SUPERVISOR.

THE CURRENT DISTRIBUTION INCLUDES OBJECT CODE ONLY. THE
DOCUMENTATION INCLUDES AN INSTALLATION GUIDE, A USER'S GUIDE
AND AN APPENDIX WHICH CONTAINS THE ORIGINAL WORK ON THIS
PROGRAM. IN ORDER TO IMPROVE THE PROGRAM, THE AUTHOR WOULD
WELCOME COMMENTS AND/OR SUGGESTIONS FROM USER INSTALLATIONS.

PROGRAMMING LANGUAGE / SYSTEM - FORTRAN H, 88K LINKAGE
EDITOR.

MINIMUM SYSTEM REQUIREMENTS - OS/360 MVT, 100 TRACKS OF
2314 DISK STORAGE OR EQUIVALENT.

DOCUMENTATION: 44 PAGES, $1.20 ADDITIONAL CHARGE.
CARD COUNT: 800 APPROXIMATE.
SUBMITTAL/REVISION DATE: 11/72

360D-04.2.008
    PL/I EXECUTION ANALYZER (PLEA)

    AUTHOR: I. M. CUTHILL

    DIRECT TECHNICAL INQUIRIES TO:
        I. M. CUTHILL
        GENERAL RESOURCES, COATS 14P,
        STATISTICS CANADA
        TUNNEY'S PASTURE
        OTTAWA, ONTARIO, CANADA K1A OT6

    DESCRIPTION - PLEA, THE PL/I EXECUTION ANALYZER, IS DESIGNED
    TO GIVE A PL/I PROGRAMMER A STATISTICAL ANALYSIS OF WHERE
    CPU TIME IS BEING SPENT IN HIS PROGRAM, PLUS A LISTING OF
    ALL LOAD MODULES USED DURING EXECUTION.

    PLEA CONSISTS OF 2 COMPONENTS, A MONITOR AND TABULATOR. THE
    MONITOR LOADS THE PL/I PROGRAM TO BE ANALYZED AND THEN
    SAMPLES EXECUTION AT REGULAR INTERVALS UNTIL THE PROGRAM
    TERMINATES. DURING EACH SAMPLE, THE MCNITOR DETERMINES
    WHICH STATEMENT WAS BEING EXECUTED IF THE COMPILER STATEMENT
    OPTION WAS ACTIVE, OTHERWISE THE SAMPLE IS TRACED TO THE
    PL/I BLOCK. MONITOR DATA IS RECORDED ON A SEQUENTIAL
    DATASET, AND THIS DATA IS AGGREGATED AND TABULATED BY THE
    TABULATOR STEP WHICH FOLLOWS EXECUTION OF THE SAMPLED

CONTINUED FROM PRIOR COLUMN

    PROGRAM.

    PLEA FOR BOTH OPTIMIZER AND PL/I-F ARE SUPPLIED, BUT ONLY
    THE OPTIMIZER VERSION WILL BE SUPPORTED BY THE AUTHOR. BOTH
    SYSTEMS WILL RUN ON MVT OR VS2, BUT NCT MFT. THE MONITOR
    IS AN ASSEMBLER PROGRAM REQUIRING 4K, THE TABULATOR IS A
    PL/I PROGRAM REQUIRING 100K. DOCUMENTATION INCLUDES
    INSTALLATION INSTRUCTIONS, USERS GUIDE AND JCL.

    DOCUMENTATION: 5 PAGES, NO ADDITIONAL CHARGE.
                   (PLUS MACHINE READABLE DOCUMENTATION)
    CARD COUNT: 2,660 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 6/74.

360D-04.2.009
    DUMBBELL OR DEBUGGER

    AUTHOR: JOHN M. FITZ

    DIRECT TECHNICAL INQURIES TO:
        JOHN M. FITZ
        1043 SIERRA AVENUE
        BERKELEY, CA 94707

    DESCRIPTION - THIS PROGRAM EXECUTES BCUND LINK-EDITED
    LOAD MODULES INTERPRETIVELY WITH OPTIONS TO PRINT OUT
    TRACE INFORMATION CONSISTING OF INSTRUCTION IMAGES,
    REGISTER CONTENTS, AND CORE CCNTENTS TO AID IN CEBUGGING.
    IT IS WRITTEN IN IBM 360 ASSEMBLY LANGUAGE (BAL). THIS
    IS VERSION 1. THE FIELD OF APPLICATION IS IN TESTING AND
    DEBUGGING PROGRAMS ESPECIALLY WHEN NORMAL METHODS FAIL.
    SINCE ITS METHOD OF EXECUTION IS TO EXECUTE MODELS
    INTERPRETIVELY, IT IS ACTUALLY A SIMULATCR OF THE IBM
    360. IT IS A MAIN PROGRAM WHICH LOADS AND EXECUTES A
    SPECIFIED LOAD MODULE; IT FULLY CONTROLS THE PARTITION
    IN WHICH IT IS LOADED. THIS VERSION RUNS ON AN IBM 360
    UNDER OS/MFT REQUIRING ONLY A PRINTER PLUS ALL DEVICES
    REQUIRED BY SUBJECT PROGRAMS BEING TESTED.

    PROGRAMMING LANGUAGE - 360 ASSEMBLY LANGUAGE

    MINIMUM SYSTEM REQUIREMENTS - IBM 360 OS/MFT 132K

    DOCUMENTATION: 13 PAGES
    CARD COUNT: 2250 APPROXIMATE.

CONTINUED FROM PRIOR COLUMN

SUBMITTAL/REVISION DATE: 9/75

360D-04.4.012
    TSO ANALYSIS - SYSTEM MEASUREMENT - TIME-SHARING PERFORMANCE
    - SIMULATION

    AUTHORS: B. J. DIMARSICO
              W. V. DIETRICH
              J. F. MARANZANO

    DIRECT TECHNICAL INQUIRIES TO:

              TECHNICAL ASSISTANCE
              NOT CURRENTLY AVAILABLE.

    DESCRIPTION - THE TSO ANALYSIS PACKAGE IS A SET OF PROGRAMS
    THAT ALLOWS AN INSTALLATION TO MEASURE THE PERFORMANCE OF
    THE TIME SHARING OPTION (TSO) OF THE IBM-360-OS/MVT. THE
    PACKAGE IS COMPOSED OF:

        1. A TERMINAL SIMULATOR THAT READS TSO COMMANDS FROM A
           DATA SET AND DRIVES TCAM IN A CONTROLLED MANNER.
        2. COMMAND MEASUREMENT ANALYSIS ROUTINE THAT PRODUCES
           COMMAND USAGE STATISTICS.
        3. TIME HISTORY PLOTTING ROUTINE THAT SHOWS HOW ONE USER
           INTERACTS WITH AND AFFECTS OTHERS.
        4. STATE TRANSITION ANALYSIS ROUTINE THAT DIVIDES TIME
           SHARING TRANSACTIONS INTO STATES OF INTEREST AND
           ACCUMULATES TIME AND COUNTS FOR THOSE STATES.
        5. REPORT GENERATOR TO PRODUCE HISTOGRAMS OF THE EVENTS
           OF INTEREST.

    THE PROGRAMS ARE WRITTEN IN PL/I, FORTRAN IV, AND OS
    ASSEMBLER LANGUAGE.

    PROGRAMMING SYSTEM - PROGRAM LANGUAGE - OS/360-MVT; PL/I,
    FORTRAN IV AND OS ASSEMBLER LANGUAGE.

    MINUMUM SYSTEM REQUIREMENTS - IBM-360/370

    DOCUMENTATION: 154 PAGES, $6.70 ADDITIONAL CHARGE.
    CARD COUNT: 5,120 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 09/73

370D-05.0.004
    HASP V4.0 RETROFIT TO MFT-II

    AUTHOR: JIM ALLEN

    DIRECT TECHNICAL INQUIRIES TO:
        JIM ALLEN
        COMPUTATION CENTER
        DUKE UNIVERSITY
        DURHAM, NC 27706

    DESCRIPTION - THIS MODIFICATION RETROFITS HASP V4.0 TO
    MFT-II. ITS PURPOSE IS TO MAKE V4.0 A SUBSYSTEM WHICH RUNS
    UNDER MFT-II JUST AS V3.1 DOES. THE MODIFICATION IS
    APPLICABLE TO R21.7 MFT, BUT THERE IS SOME CODE WHICH WILL
    AID IN THE CONVERSION TO EITHER MVT OR VS1. THE
    MODIFICATION HAS BEEN SUBMITTED FOR DISTRIBUTION SINCE THE
    AUTHOR CONSIDERS IT A GOOD BASE FOR THE GENERAL RETROFIT
    PROBLEM.

    PROGRAMMING LANGUAGE - ADVANCED FUNCTION ASSEMBLER

    MINIMUM SYSTEM REQUIREMENTS - MFT-II

    DOCUMENTATION: 3 PAGES, NO ADDITIONAL CHARGE.
                   (PLUS MACHINE READABLE DOCUMENTATION)
    CARD COUNT: 1400 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 9/73.

360D-05.1.018
    BAYLOR EXECUTIVE SYSTEM FOR TELEPROCESSING (BEST)

    AUTHORS: W. HOBBS, J. MCBRIDE, T. BROWN,
              T. KENDRICK AND A. BEALE

    DIRECT TECHNICAL INQUIRIES TO:
        ALAN BEALE
        INSTITUTE OF COMPUTER SCIENCE
        BAYLOR COLLEGE OF MEDICINE
        HOUSTON, TEXAS 77025

    DESCRIPTION - BEST IS A TELEPROCESSING SYSTEM
    WHICH SUPPORTS INTERACTIVE EXECUTION OF MULTIPLE
    JOBS FROM TERMINALS WHILE THE USUAL BATCH JOB STREAMS
    ARE OPERATIONAL. HIGH-LEVEL LANGUAGE INTERFACES ARE
    INCLUDED WITH THE SYSTEM SO THAT INTERACTIVE PROGRAMS

CONTINUED FROM PRIOR COLUMN

MAY BE WRITTEN IN PL/I (F OR X), COBOL, OR FORTRAN, AS
WELL AS ASSEMBLER LANGUAGE. ALL JOBS IN THE SYSTEM ARE
STORAGE-PROTECTED AND CAN BE TIME-SLICED.

BEST RUNS ON ANY SYSTEM 360/370 RUNNING OS/MFT OR OS/MVT
WITH AT LEAST 256K. IT SUPPORTS THE FOLLOWING TERMINAL
TYPES: 1050, 2740, 2741,2260 (LOCAL OR REMOTE), 3277
(LOCAL), 3284 OR 3286 (LOCAL), AND TELETYPE MOD 33/35.

PROGRAMMING LANGUAGE - ASSEMBLER (F)

MINIMUM SYSTEM REQUIREMENTS - SEE DESCRIPTION

DOCUMENTATION: 4 PAGES, NO ADDITICNAL CHARGE.
               (PLUS MACHINE READABIE DOCUMENTATION)
NOT AVAILAELE ON CARDS.
SUBMITTAL/REVISION DATE: 5/75

360D-05.1.021
     REMOTE HASP TO HASP

     AUTHOR: JAMES F. WALKER

     DIRECT TECHNICAL INQUIRIES TO:
             JAMES F WALKER
             TRIANGLE UNIVERSITIES COMPUTATION CENTER
             P. O. BOX 12076
             RESEARCH TRIANGLE PARK, N. C. 27709

DESCRIPTION - THE HASP TO HASP CODE IS A MODIFICATION TO THE
IBM HASP VERSION 3.0 AND 3.1 CODE TO ALLOW TWO OR MORE HASP
SYSTEMS TO TRANSMIT JOBS TO EACH OTHER VIA TELEPROCESSING.
INPUT JOBS, OUTPUT JOBS, AND OPERATOR COMMANDS MAY BE
TRANSMITTED OVER ALL LINE TYPES SUPPORTED BY HASP
MULTILEAVING. ASSEMBLER SOURCE IS PROVIDED, ALONG WITH
NECESSARY UPDATE CARDS TO INSERT IN A STANDARD HASPGEN DECK.
OS HASP MUST BE INSTALLED IN EACH COMMUNICATING SYSTEM. THE
MODIFICATIONS ADD APPROXIMATELY 2K TO AN UNMODIFIED SYSTEM.

SPECIFICATIONS OF THE SYSTEM ARE: 1- MINIMUM HASP
MODIFICATIONS, 2- TOTALLY SYMETRICAL, 3- NO SPECIAL
HARDWARE, 4- INPUT AND OUTPUT SPOOLING AT EACH HASP SYSTEM
5- FULLY AUTOMATIC OPERATION, 6- TRANSMISSION OF JOB CONTROL
DATA, 7- FULL MULTILEAVING DATA TRANSMISSION, 8- FULL REMOTE
CONSOLE FACILITY, 9- STANDARD HASP DATA FORMATS OF INPUT
QUEUE, OUTPUT QUEUE, AND MULTILEAVING TRANSMISSION BLOCKS,
10- UNLIMITED NETWORK SIZE (CURRENT DISTRIBUTION CONTAINS

CONTINUED FROM PRIOR COLUMN

SOME RESTRICTIONS).

PROGRAMMING SYSTEMS - OS/360 ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - CS/360, HASP, STANDARD IBM
COMMUNICATIONS CONTROLLERS ON EACH SYSTEM.

DOCUMENTATION: 20 PAGES, NO ADDITICNAL CHARGE.
               (PLUS MACHINE READABLE DOCUMENTATION)
NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 02/73

370D-05.1.022
     VS1 HASP

     AUTHOR: JIM ALLEN

     DIRECT TECHNICAL INQUIRIES TO:
             JIM ALLEN
             COMPUTATION CENTER
             DUKE UNIVERSITY
             DURHAM, N.C. 27706

DESCRIPTION - VS1 HASP IS A MODIFICATION TO HASP II V4.0
WHICH PROVIDES THE BASIC CAPABILITY TO RUN HASP ON A VS1
RELEASE 4.0 HOST SYSTEM, THE GOAL OF THE MODIFICATION IS
TO PROVIDE A VS1-HASP INTERFACE WHICH IS EQUIVALENT TO THE
FORMAL INTERFACE BETWEEN VS2 RELEASE 1 AND HASP V4.0. THUS
THE HASP SYSTEM OPERATES AS A JOB ENTRY SUBSYSTEM FOR VS1
WITH NO LOSS OF HASP FUNCTION. THE VS1-HASP INTERFACE IS
IMPLEMENTED BY USING SVC TABLE INTERCEPTS AND SMF EXITS
SO THAT THE INTERFACE IS INDEPEDENT OF THE VS1 HOST AS
MUCH AS POSSIBLE. THE TWO MAJCR FEATURES OF THE INTERFACE
ARE AN INTERFACE BETWEEN HASP CONSOLE SERVICES AND VS1
MULTIPLE CONSOLE SUPPORT (MCS), AND THE INTERFACE EETWEEN
HASP PSEUDO DEVICE I/O SERVICES AND THE VS1 INPUT/OUTPUT
SUPERVISOR. THE BULK OF THE MODIFICATIONS ARE ISOLATED
INTO HASPINTF, A NEW ASSEMBLY.

THIS MODIFICATION INCLUDES FIXES TO ALL KNCWN EUGS, THE
INTEGRATION OF PTF OY09762, AND SUPPORT FOR MULTIPLE
CONCURRENT READER/INTERPRETERS.

PROGRAMMING LANGUAGE - OS/VS ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - CAPABILITY TO RUN VS1

CONTINUED FROM PRIOR COLUMN

RELEASE 4.0

DOCUMENTATION: 15 PAGES, NO ADDITICNAL CHARGE.
CARD COUNT: NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 6/76

360D-05.1.023
    TEXAS INTERACTIVE PROGRAMMING SYSTEM (TIPS)

    AUTHORS: TOM WORSHAM AND GARY COHEN

    DIRECT INQUIRIES TO:
        TOM WORSHAM OR GARY COHEN
        UNIVERSITY OF TEXAS REGIONAL COMPUTER CENTER
        5601 MEDICAL CENTER DRIVE
        DALLAS, TEXAS 75235

    DESCRIPTION - TIPS, THE TEXAS INTERACTIVE PROGRAMMING
    SYSTEM, IS BOTH AN ON-LINE APPLICATION MONITOR AND A
    GENERALIZED UTILITY SYSTEM. TIPS IS CURRENTLY BEING
    RUN ON AN IBM 370/155 UNDER OS/MVT. NO OS MODIFICATIONS
    ARE REQUIRED FOR ITS INSTALLATION.

                ON-LINE APPLICATION SYSTEM

    THE ON-LINE APPLICATION SYSTEM CAN RUN AS A MILTEN
    SUBSYSTEM OR USING BTAM FOR TERMINAL I/O. THE BTAM
    VERSION, WHICH IS NC LONGER RUN AT UTRCC, SUPPORTS
    ONLY A SINGLE TERMINAL TYPE (DISTRIBUTED FOR 2741
    CORRESPONDENCE). TIPS PROVIDES EASY USER INTERFACES
    THROUGH THE CALL FACILITY FOR: TERMINAL I/O, IN-CORE
    WORK AREA ACCESS, DISK WORK AREA ACCESS, ENC/DEQ
    ROUTINES, AND DISK DATA SET OPEN ROUTINES. AN
    APPLICATIONS PROGRAMMER GUIDE IS PROVIDED. TIPS USES
    MULTI-TASKING TO ALLOW FOR CONCURRENT PROGRAM EXECUTION.
    APPLICATIONS MAY USE ALL STANDARD OS ACCESS METHODS.
    AN INTERFACE IS PROVIDED TO ALLOW TIPS TRANSACTIONS
    TO BE ENTERED FROM THE OPERATOR'S CONSOLE. THE REGION
    REQUIREMENT FOR TIPS IS 14K PLUS 1K PER USER, PLUS A
    DYNAMIC AREA FOR LOADING AND EXECUTING USER PROGRAMS.

                TIPS UTILITY SYSTEM

    A POWERFUL BATCH UTILITY PROGRAM IS PROVIDED WITH
    COMPREHENSIVE DOCUMENTATION. IT HAS BEEN SUCCESSFULLY
    RUN ON A MVT AND MFT SYSTEM. IT OFFERS THE FOLLOWING

CONTINUED FROM PRIOR COLUMN

ADVANTAGES OVER STANDARD OS UTILITIES:
    (1) CONCISE AND FLEXIBLE CCNTROL LANGUAGE
    (2) NO USER JCL IS REQUIRED
    (3) IDEALLY SUITED TO A BATCHER OR EXPRESS ENVIRONMENT
    (4) CONSOLIDATES THE MOST FREQUENTLY USED FUNCTIONS
        INTO A SINGLE PROGRAM
    (5) PROVIDES CAPABILITIES NOT AVAILABLE IN STANDARD
        IBM-OS UTILITIES
    (6) BUILT-IN DATA SET SECURITY
    (7) PROVIDES INTERACTIVE EXECUTICN IN A MILTEN OR ETAM
        ENVIRONMENT

                AVAILABLE FUNCTIONS

A	ALLOCATE A DATA SET
AL	ADD AN ALIAS FOR A MEMBER OF A PCS
BLDG	BUILD A GENERATION INDEX
C	CATALOG A DATA SET
CALC	DECIMAL / HEXIDECIMAI CALCULATOR
CONN	CONNECT CONTROL VOLUMES
DCONN	DISCONNECT CONTRCI VCLUMES
DLTX	DELETE A CATALOG INDEX
DSCB	DISPLAY CR MODIFY A DSCB
DUMP	DISPLAY MEMORY
FIND	FIND A DATA SET
I	DISPLAY THE ATTRIBUTES OF A DATA SET
L	LOCATE A DATA SET VIA THE CATAIOG
LISTLIB	LIST A PARTITIONED DATA SET
LM	LIST THE DIRECTORY OF A PDS
PRINT	PRINT A DATA SET
PUNCH	PUNCH A DATA SET
PURGE	PURGE A PDS
R	RENAME A DATA SET
RM	RENAME A MEMBER OF A PDS
RPT	CALCULATE REQUIRED DISK STORAGE
S	SCRATCH A DATA SET
SM	SCRATCH A MEMBER OF A PDS
SPACE	DISPLAY AVAILABLE DISK STORAGE
U	UNCATALOG A DATA SET
ZAP	INVOKE IMASPZAP

PROGRAMMING LANGUAGE - ALC

MINIMUM SYSTEM REQUIREMENTS - SEE ABSTRACT.

DOCUMENTATION: 11 PAGES, NO ADDITICNAL CHARGE.
CARD COUNT: NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 04/76

360D-05.1.024
    ASP TO HASP LINK

    AUTHORS: KAREN ETHINGTON
             CHRIS RECHLY
             KENDALL WHITE

    DIRECT TECHNICAL INQUIRIES TO:
             GEORGE COVERT
             B-7 COMPUTER SCIENCE BLDG.
             IOWA STATE UNIVERSITY
             AMES, IOWA 50010

    DESCRIPTION - THIS IS A MODIFICATION TO ASP 3.1 WITH
    PTF 5 APPLIED TO SUPPORT JOB SUBMITTAL BETWEEN ASP AND
    HASP SYSTEMS OR BETWEEN TWO ASP SYSTEMS. WITH
    THIS MODIFICATION TO ASP AND THE REMOTE HASP TO HASP
    MODIFICATION (SHARE PROGRAM LIBRARY 360D-05.1.021) TO
    HASP3, JOBS CAN BE SUBMITTED AT ONE COMPUTER SITE AND
    EXECUTED AT ANOTHER COMPUTER SITE USING TELEPROCESSING.
    SPECIAL FORMS FOR PRINT DATA SETS ARE SUPPORTED BETWEEN
    SITES USING THE CONTROL CARDS RECOGNIZED BY THE EXECUTING
    COMPUTER'S SYSTEM, BUT THE DATA SET ROUTING OF ASP IS NOT
    SUPPORTED.

    THE DISTRIBUTION CONSISTS OF SOURCE UPDATES TO MODIFY MACROS
    AND SOURCE MODULES OF ASP, DOCUMENTATION OF INSTALLATION
    PROCEDURES AND A UTILITY PROGRAM FROM THE UNIVERSITY OF
    IOWA FOR TRANSMITTING DATA SETS BETWEEN TWO COMPUTER SITES
    USING TELEPROCESSING.

    PROGRAMMING LANGUAGE - OS/360 ASSEMBLER

    MINIMUM SYSTEM REQUIREMENTS - ASP RELEASE 3.1 PTF 5,
                                  HASP 3.0

    DOCUMENTATION: 6 PAGES, NO ADDITIONAL CHARGE.
                    (PLUS MACHINE READABLE DOCUMENTATION)
    CARD COUNT: 4,700 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 6/76

360D-05.2.014
    NETUCC 1.1, TSO ENHANCEMENT PACKAGE

    AUTHOR: OLE REITZEL JENSEN

    DIRECT TECHNICAL INQUIRIES TO:
      OLE REITZEL JENSEN
      TECHNICAL UNIVERSITY OF DENMARK
      BLDG. 305
      L800 LYNGBY
      DENMARK

    DESCRIPTION - NETUCC IS A TSO ENHANCEMENT PACKAGE DEVELOPED
    TO SPEED UP LOGON/LOGOFF AND DYNAMIC ALLOCATION. THE
    PACKAGE REDUCES THE AMOUNT OF I/O REQUESTS RELATED TO
    SEVERAL SUPERVISOR FUNCTIONS, INVOLVED DATA SETS BEING
    LINKLIB, BROADCAST, JOBQUEUE, CATALOGS. VTOC'S AND VTOC
    USAGE IS OPTIMIZED THROUGH THE USE OF CATALOG DSCB-TTR
    INFORMATION (NORMALLY ONLY USED FROM BATCH).

    THE PACKAGE IS MADE UP OF FIVE INDEPENDENT MODS, EACH
    AIMED AGAINST SPECIAL SYSTEM DATA SETS. INSTALLATION
    OF ALL (OR SOME) OF THE MODS CAN BE DONE VERY EASILY
    THROUGH THE USE OF A SPECIAL INSTALLATION TEST ROUTINE
    (INCLUDED IN THIS PACKAGE). ONLY CHANGES TO PARMLIB ARE
    NECESSARY TO GET THIS CODE TO RUN. ASSEMBLER IS USED
    FOR ALL PARTS OF THE PACKAGE, SOME SYSTEM EXPERIENCE IS
    RECOMMENDED FOR INSTALLATIONS ORDERING NETUCC.

    NETUCC IS DEVELOPED FOR MVT RELEASE 21.X (AND SVS).
    STORAGE REQUIREMENTS FOR RUNNING THE PACKAGE ARE 20-30K.
    (THESE ENHANCEMENTS WERE DEVELOPED BY MR. REITZEL JENSEN
    AT TRIANGLE UNIVERSITIES COMPUTATION CENTER AS PART OF A
    6-MONTH PROGRAMMER EXCHANGE BETWEEN TUCC AND THE TECHNICAL
    UNIVERSITY OF DENMARK.)

    PROGRAMMING LANGUAGE - ASSEMBLER

    MINIMUM SYSTEM REQUIREMENTS - OS-MVT WITH TSO

    DOCUMENTATION: 16 PAGES, NO ADDITIONAL CHARGE.
    CARD COUNT: NOT AVAILABLE ON CARDS.
    SUBMITTAL/REVISION DATE: 12/75

360D-05.2.015
INTER-SYSTEM SHARED ENQUE

AUTHOR: STANDARD OIL CO. (INDIANA)

DIRECT INQUIRIES TO:
  SOFTWARE DEVELOPMENT DIVISION
  STANDARD OIL COMPANY (INDIANA)
  200 EAST RANDOLPH DRIVE
  CHICAGO, ILLINOIS 60601

DESCRIPTION - INTER-SYSTEM SHARED ENQUE, AS IMPLEMENTED BY
STANDARD OIL CO., IS DESIGNED TO REPLACE THE RESERVE OF A
COMPLETE VOLUME WITH AN ENQ ACROSS SYSTEM FOR ONLY THE
RESOURCES REQUIRED. THIS IS ACCOMPLISHED BY ENQUING THE
SAME RESOURCE IN BOTH SYSTEMS VIA A CHANNEL TO CHANNEL
ADAPTER.

PROGRAMMING LANGUAGE - ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - OS REL 21

DOCUMENTATION: 94 PAGES, $3.70   ADDITIONAL CHARGE.
CARD COUNT: 18,200 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/75

360D-05.2.016
DDSS - DYNAMIC DATA SET SECURITY SHARED DASD ENQUE

AUTHORS: JAMES CLAYTON, STEVE JONEZ, RICK CROWELL

DIRECT TECHNICAL INQUIRIES TO:
    JAMES CLAYTON
    TRANSAMERICA INFORMATION SERVICES
    1149 S. BROADWAY STREET
    LOS ANGELES, CA 90015

DESCRIPTION - DDSS WAS DESIGNED TO SOLVE THE 'SHARED DASD'
EXCESSIVE RESERVE PROBLEMS IN A MULTIPLE-CPU ENVIRONMENT.
DDSS PROVIDES DATA SET LEVEL 'LOGICAL RESERVES' THEREBY
LIMITING THE NEED FOR DEVICE LEVEL PHYSICAL RESERVES.
DDSS FACILITIES ARE PROVIDED VIA OPEN/CLOSE INTERFACE
ROUTINES AND INTER-SYSTEM COMMUNICATION FOR EACH SELECTED
DIRECT ACCESS DATA SET SUBJECT TO DDSS PROTECTION.

CONTINUED FROM PRIOR COLUMN

ALTHOUGH DDSS IS SPECIFICALLY DESIGNED FOR A MULTIPLE-CPU,
SHARED DASD ENVIRONMENT, SOME OF THE PHILOSOPHIES AND
FEATURES INCORPORATED INTO DDSS MAY HAVE UTILITY IN A NON
SHARED DASD ENVIRONMENT. SOME OF THESE FEATURES ARE:
    -DATA SET USE RESTRICTED TO THE DURATION OPEN/CLOSE
     RATHER THAN JOB DURATION.
    -THREE LEVELS OF DATA SET 'ENQUE'; SHARED, EXCLUSIVE AND
     WRITE/EXCLUSIVE.
    -EXTENSIVE OPERATOR/USER COMMUNICATION.

PROGRAMMING LANGUAGE - OS ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - MFT/MVS/SVS

DOCUMENTATION: 3 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 10/76

360D-05.5.002
SLAC MODIFICATIONS TO OS/VS LOADER

AUTHOR: JOHN R. EHRMAN

DIRECT TECHNICAL INQUIRIES TO:
    JOHN R. EHRMAN (MAIL BIN 97)
    STANFORD LINEAR ACCELERATOR CENTER
    P. O. BOX 4349
    STANFORD, CA 94305

DESCRIPTION - THESE MODIFICATIONS TO THE OS/VS LOADER
PROVIDE TWO MAJOR CONVENIENCE FEATURES FOR THE USER:
    (1) ALL NAMES CALLED FROM SYSLIB DATA SETS (VIA AUTOCALL)
        ARE FLAGGED IN THE LOAD MAP, AND ARE LISTED IN THE
        CONCATENATION NUMBER DICTIONARY WITH THE DATA SET
        NAME AND VOLUME ID FROM WHICH THEY WERE LOADED;
    (2) UNRESOLVED EXTERNAL REFERENCES (ER) ARE CAUGHT, AND
        A DIAGNOSTIC MESSAGE IS PRINTED, IF A BRANCH TO A
        NON-EXISTENT ROUTINE IS ATTEMPTED.

IN ADDITION, THE DATA DERIVED FROM (1) ABOVE IS WRITTEN TO
THE SMF DATA SET, USING A SPECIAL SVC ROUTINE. THIS DATA
CAN BE USED TO MONITOR PROGRAM USAGE, LOAD LIBRARY ACCESS
PATTERNS, DISTRIBUTE COSTS OF USER LIBRARIES, ETC.

USER AND SYSTEMS DOCUMENTATION IS INCLUDED ON THE
DISTRIBUTION TAPE.

CONTINUED FROM PRIOR COLUMN

PROGRAMMING LANGUAGE/SYSTEMS - OS/VS, OS/MVT

MINIMUM SYSTEM REQUIREMENTS - OS/MVT/MFT, OS/VS

DOCUMENTATION: 3 PAGES, NO ADDITICNAL CHARGE.
                 (PLUS MACHINE READABLE DOCUMENTATION)
CARD COUNT: 11,000 APPROXIMATE.
SUBMITTAL/REVISION DATE: 7/76

360D-06.0.007
    FORMAT, A TEXT-PROCESSING PROGRAM

    AUTHOR: GERALD M. BERNS, JOHN R. EHRMAN

    DIRECT TECHNICAL INQUIRIES TO:
            DR. JOHN R. EHRMAN
            STANFORD CENTER FOR INFORMATION PROCESSING
            SLAC - BIN 97
            POST OFFICE BOX 4349
            STANFORD, CALIFORNIA 94305

    DESCRIPTION - FORMAT IS A PROGRAM FOR S/360 AND S/370
    DESIGNED TO MEET THE NEED FOR A RAPIC METHOD OF EDITING AND
    PRODUCING PAPERS, REPORTS, AND OTHER FINISHED AND
    REPRODUCIBLE DOCUMENTS DIRECTLY ON THE SYSTEM PRINTER, USING
    UPPER/LOWER CASE AND SPECIAL CHARACTERS. IT HAS
    FACILITIES WHICH SIMPLIFY THE TASK OF INDEX CONSTRUCTION.
    INPUT TO THE PROGRAM IS FREE-FORM CARD-IMAGE TEXT. THE
    DOCUMENT IS FORMATTED AND CONTROLLED ACCORDING TO CONTROL
    CARDS AND COMMAND WORDS INTERSPERSED THROUGHOUT THE INPUT.
    FORMAT IS A SINGLE PROGRAM REQUIRING NO AUXILARY PROGRAMS
    FOR ITS OPERATION. FORMAT PRODUCES ITS NORMAL OUTPUT FOR
    THE TN PRINT TRAIN, AND HAS FACILITIES TO PRINT ALL OF THE
    120 POSSIBLE CHARACTERS. NOTE THAT NO SUBSCRIPTS ARE
    PROVIDED BY THE TN PRINT TRAIN, NOR, THEREFORE, BY FORMAT.

    PROGRAMMING SYSTEMS - FORMAT IS WRITTEN ENTIRELY IN FULL
    FORTRAN IV AND REQUIRES THE FULL FORTRAN LIBRARY.

    MINIMUM SYSTEM REQUIREMENTS - FORMAT REQUIRES A MINIMUM
    MEMORY SIZE OF 64K IN A STANDARD OS/360. NO ADDITIONAL
    DEVICES ARE REQUIRED BEYOND THOSE NECESSARY TO OPERATE
    S/360. HOWEVER, THE AVAILABILITY OF MAGNETIC TAPE DRIVES
    TO THE PROGRAM GREATLY ENHANCE ITS USEFULNESS. NORMAL
    OUTPUT MODE IS UPPER AND LOWER CASE. MEANS ARE PROIVDED
    TO ALLOW THE USER TO SPECIFY UPPER CASE ONLY AND SPECIAL

CONTINUED FROM PRIOR COLUMN

    CHARACTERS.

    DOCUMENTATION: 76 PAGES, $2.80 ADDITIONAL CHARGE.
    CARD COUNT: 6,140 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 06/71

360D-06.0.008
    PRINT - A TEXT FORMATTING PROGRAM

    AUTHOR: JAMES E. GEORGE

    DIRECT TECHNICAL INQURIES TO:
            DR. JAMES E. GEORGE
            LOS ALAMOS SCIENTIFIC LABORATORY
            P.O. BOX 1663, MS 272
            LOS ALAMOS, NEW MEXICO 87545

    DESCRIPTION - PRINT IS A TEXT FORMATTING PROGRAM WRITTEN IN
    PL/I TO PRODUCE DOCUMENTS USING THE PRINTER. THE INPUT TO
    PRINT CONTAINS THE TEXT TO BE PRINTED INTERSPERSED WITH THE
    NECESSARY CONTROL INFORMATION TO GENERATE THE DESIRED FORMAT
    OF THE TEXT. THE FEATURES SUPPORTED BY PRINT ARE:
            AUTOMATIC OR MANUAL PAGING
            PAGE NUMBERING WITH OR WITHOUT TITLING
            PARAGRAPHING WITH OR WITHOUT INDENTATION (LEFT
                OR RIGHT), NUMBERING AND/OR TITLING
            UNDERLING
            TABLES WITH OR WITHOUT NUMBERING
            PRINT DIRECT IMAGE (I.E. PRINT TEXT AS IS)
            RIGHT JUSTIFICATION OF TEXT
            TABS
    ALSO, THE MARGIN, LINE LENGTH AND SPACING BETWEEN LINES ARE
    VARIABLE. THE AIM WAS TO PROVIDE A MODULAR SYSTEM WHICH
    WOULD BE EASY TO CHANGE AND WOULD ALLOW THE VALUE OF ANY
    CONTROL VARIABLE TO BE CHANGED BY INPUT CONTROL.

    PROGRAMMING LANGUAGE - PL/I (F)

    MINIMUM SYSTEM REQUIREMENTS - OS/360

    DOCUMENTATION: 32 PAGES, $.60 ADDITIONAL CHARGE.
    CARD COUNT: 1,150 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 4/73

360D-06.0.009
COMPARE DATA SET UTILITY

AUTHOR: DAVID GOMBERG

DIRECT TECHNICAL INQUIRIES TO:
    DAVID GOMBERG
    U76
    UNIVERSITY OF CALIFORNIA AT SAN FRANCISCO
    SAN FRANCISCO, CA   94143

DESCRIPTION - COMPARE IS A PL1 MAIN PROGRAM DESIGNED TO
COMPARE TWO DATA SETS, REPORTING ON AND RECOVERING FROM
COMMON DISCREPANCIES. IT IS USEFUL FOR TESTING OUTPUT FROM
A NEW VERSION OF A PROGRAM AGAINST AN OLDER VERSION OF A
PROGRAM WHERE DISCREPANCIES (SUCH AS ADDITIONAL RECORDS IN
THE NEW VERSION) ARE EXPECTED. BY USING AN OPTION WHICH
ALLOWS THE PROGRAM TO IGNORE LEADING OR TRAILING COLUMNS,
SOURCE DECKS WHICH HAVE BEEN RESEQUENCED CAN BE COMPARED FOR
CHANGES IN CODE.

COMPARE REQUIRES ABOUT 100K MAIN MEMORY PLUS STORAGE FOR
BUFFERS AND STACKS OF UNMATCHED RECORDS. IT USES AN
ASSEMBLER LANGUAGE SUBROUTINE TO ATTEMPT TO PREDICT IN-
SUFFICIENT MAIN MEMORY AND TERMINATE NEATLY.

PROGRAMMING LANGUAGE - PL/1 OPTIMIZING COMPILER.

MINIMUM SYSTEM REQUIREMENTS - 360/370 OS, 100K MEMORY.

DOCUMENTATION: 3 PAGES, NO ADDITIONAL CHARGE.
               (PLUS MACHINE READABLE DOCUMENTATION)
NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 12/74

360D-06.1.006
SIMPLIFIED INTERFACE FOR INVOKING SORT FROM
PL/I OPTIMIZER PROGRAMS (A#SORT)

AUTHOR: FRITZ SCHNEIDER

DIRECT TECHNICAL INQUIRIES TO:
    FRITZ SCHNEIDER
    AMDAHL CORPORATION
    1250 EAST ARQUES AVENUE
    SUNNYVALE, CALIF. 94086

DESCRIPTION - THIS SUBROUTINE ALLOWS PL/I OPTIMIZER
PROGRAMS TO DYNAMICALLY INVOKE OS SORT/MERGE AND PASS
RECORDS TO BE SORTED USING WRITE AND READ STATEMENTS
RATHER THAN THE CUMBERSOME PLISRTD METHOD SUPPLIED WITH
THE SYSTEM.

TO USE IT, THE PROGRAMMER CALLS A#SORT PASSING A DUMMY
FILE NAME AND THE PARAMETERS NECESSARY TO DESCRIBE TO
SORT. THEN A WRITE STATEMENT CAN BE USED TO TRANSMIT
EACH RECORD TO BE SORTED INTO SORT. WHEN ALL RECORDS
HAVE BEEN PASSED, A READ STATEMENT WILL RETRIEVE THE
SORTED RECORDS. ENDFILE WILL BE USED TO INDICATE THAT
NO MORE SORTED RECORDS ARE AVAILABLE. ERROR CONDITIONS
ARE SIGNALED VIA ON CONDITIONS.

PROGRAMMING LANGUAGE - ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - CS OR OS/VS, PL/I OPTIMIZER,
                              MULTITASKING

DOCUMENTATION: 3 PAGES, NO ADDITIONAL CHARGE.
                (PLUS MACHINE READABLE DOCUMENTATION)
CARD COUNT: 533 APPROXIMATE.
SUBMITTAL/REVISION DATE: 6/76

360D-06.3.012
A HIGH SPEED BISYNCHRONOUS COMMUNICATIONS ACCESS METHOD

AUTHOR: G.M. STABLER

DIRECT TECHNICAL INQUIRIES TO:
        G.M. STABLER
        BOX F
        BROWN UNIVERSITY
        PROVIDENCE, R.I. 02912

DESCRIPTION - THE BISYNCHRONOUS COMMUNICATIONS ACCESS
METHOD IS A SET OF 360 PROGRAMS WHICH SUPPORT QUEUED
TELECOMMUNICATIONS OVER A HIGH SPEED (40.8K BAUD) POINT-
TO-POINT HALF DUPLEX LINE CONNECTING A 360 AND AN 1130
OR ANOTHER 360.

THE SYSTEM, WHICH EMPLOYS EXCP FOR ALL I/O AND HANDLES
ALL MESSAGE BLOCKING, LINE PROTOCOL, AND ERROR CHECKING
INTERNALLY, IS CALLED AT THE GET/PUT LEVEL FROM ASSEMBLY
LANGUAGE PROGRAMS. THE SYSTEM WILL SUPPORT ANY NUMBER
OF LOGICAL USERS (MESSAGE DESTINATIONS) IN EITHER MACHINE,
AND CAN SUPPORT ANY NUMBER OF REMOTE TERMINALS. SINCE
ALL USER MESSAGES ARE TRANSMITTED IN "TRANSPARENT TEXT"
MODE, THERE ARE NO RESTRICTIONS ON THE TYPE OF DATA A USER
MAY SEND. LINE PROTOCOL CONFORMS TO CONVERSATIONAL
BISYNCHRONOUS COMMUNICATIONS STANDARDS.

PROGRAMMING SYSTEMS - SUPPORT ANALOGOUS TO THIS PACKAGE
IS PROVIDED FOR AN 1130 SYSTEM BY THE TYPE 4 PROGRAM
ENTITLED "AN 1130 HIGH SPEED BISYNCHRONOUS COMMUNICATIONS
SYSTEM". WRITTEN IN ASSEMBLER LANGUAGE; OPERATES UNDER
OS/360 MVT.

MINIMUM SYSTEM REQUIREMENTS - SAME AS THOSE REQUIRED FOR
OS/360 MVT.

DOCUMENTATION: 14 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 2,400 APPROXIMATE.
SUBMITTAL/REVISION DATE: 09/69

1130-06.3.017
ENHANCED HASP RTP1130 WORKSTATION FOR DISK I/O

AUTHOR: WILLIAM F. DECKER

DIRECT TECHNICAL INQUIRIES TO:
        WILLIAM F. DECKER
        COMPUTER CENTER - LCM
        UNIVERSITY OF IOWA
        IOWA CITY, IOWA 52240

DESCRIPTION - ALLOWS CURRENT USERS OF THE HASP 1130
WORKSTATION (RTP1130) TO ADD DISK INPUT AND OUTPUT ACCESS.
WHILE ONLINE TO HASP, DMS-II DISK FILES MAY BE TRANSMITTED
TO HASP OR WRITTEN WITH DATA RETRIEVED FROM HASP. NO
MODIFICATIONS TO HASP ARE REQUIRED. SUPPORTS ANY AND ALL
IBM DISKS FOR THE 1130. ANY NUMBER OF DISKS MAY BE ONLINE
CONCURRENTLY. DISKS MAY BE LOADED AND UNLOADED WHILE
ONLINE.

PROGRAMMING LANGUAGE - S/360 BASIC ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - 1130 DMS-II AND HASP

DOCUMENTATION: 25 PAGES, $.25 ADDITIONAL CHARGE.
CARD COUNT: 1525 APPROXIMATE.
SUBMITTAL/REVISION DATE: 3/74.

360D-06.5.006
UNIVAC-1108 TO IBM-360 FLOATING POINT INTERNAL CONVERTER
('CVFL08')

AUTHOR: UN YOUNG RHEE

DIRECT TECHNICAL INQUIRIES TO:

        TECHNICAL ASSISTANCE
        CURRENTLY NOT AVAILABLE.

DESCRIPTION - THE S/360 ASSEMBLER CVFL08 PROGRAM IS DESIGNED
TO CONVERT UNIVAC 1108 FLOATING POINT SINGLE PRECISION
NUMBER(S) TO 360 FLOATING POINT SINGLE OR DOUBLE PRECISION
NUMBER(S). THIS SUBROUTINE CAN BE CALLED BY EITHER FORTRAN
OR PL/I PROGRAMS. HOWEVER, IN A PL/I PROGRAM, PARTICULAR
ATTENTION SHOULD BE PAID TO ATTRIBUTES OF PASSING
PARAMETERS. (MORE DETAILED INFORMATION SUCH AS CALLING

CONTINUED FROM PRIOR COLUMN

SEQUENCE, ACCURACY OF SIGNIFICANT BITS, ETC., CAN BE FOUND
IN COMMENT SECTION OF THE PROGRAM LISTING).

PROGRAMMING SYSTEMS - WRITTEN IN ASSEMBLER (F), AND HAS
BEEN COMPILED AND TESTED USING OS ON A S/360 MODEL 50.

MINIMUM SYSTEM REQUIREMENTS - THE CVFL08 PROGRAM SHOULD
RUN ON ANY S/360 MODEL 30 AND UP.

DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 200 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/68

360D-06.6.003
FORTRAN CHARACTER STRING PACKAGE

AUTHOR: H. P. SIEGLAFF

DIRECT TECHNICAL INQUIRIES TO:
        H. P. SIEGLAFF
        3610 W. NORTHVIEW
        PHOENIX, ARIZONA 85021

DESCRIPTION - THE PACKAGE ENABLES THE FORTRAN PROGRAMMER
TO PROCESS CHARACTER STRINGS. THE FORTRAN PROGRAMMER CAN
COMPARE, FILTER, INSERT, MOVE, SCAN, AND BINARY SEARCH
CHARACTER STRINGS BY CALLING ONE OR MORE OF THE SIX
SUBROUTINES.

PROGRAMMING SYSTEMS - THE PACKAGE CONSISTS OF SUBROUTINES
WRITTEN IN OS ASSEMBLY LANGUAGE F AND WAS TESTED USING
OS FORTRAN LANGUAGE 4 G LEVEL AND OS VERSION 13.

MINIMUM SYSTEM REQUIREMENTS - THE PACKAGE SHOULD WORK ON
ANY S/360 MACHINE WHICH HAS FORTRAN IV G AND OS. (MAXIMUM
CORE REQUIREMENTS IS 1K).

DOCUMENTATION: 17 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 350 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/68

360D-06.6.004
CHARACTER FILTER PL/I

AUTHOR: H. P. SIEGLAFF

DIRECT TECHNICAL INQUIRIES TO:
        H. P. SIEGLAFF
        3610 W. NORTHVIEW
        PHOENIX, ARIZONA 85021

DESCRIPTION - THE SUBROUTINE PROVIDES A MEANS TO SKIP OR
SEEK SPECIFIED CHARACTERS WHILE SCANNING A STRING OF
CHARACTERS FOR A PL/I PROGRAM. THE ROUTINE CAN BE USED
TO FILTER IN/OUT ALPHABETIC, NUMERIC, ALPHANUMERIC, OR
OTHER CHARACTERS WHILE SCANNING A CHARACTER STRING.

PROGRAMMING SYSTEMS - THE SUBROUTINE IS WRITTEN IN OS
ASSEMBLY LANGUAGE F AND WAS TESTED USING OS PL/I LANGUAGE
F LEVEL AND OS VERSION 13 ON A S/360 MODEL 50.

MINIMUM SYSTEM REQUIREMENTS - THE PACKAGE SHOULD WORK ON
ANY S/360 MACHINE WITH FORTRAN IV G AND OS. (MAXIMUM CORE
REQUIREMENTS IS 1K).

DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 150 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/68

360D-06.7.018
BSEARCH - A RANDOM ACCESS BINARY-SEARCH TECHNIQUE FOR
SEQUENTIAL FILES ON DISK OR DRUM

AUTHOR: R. K. SIPHERD

DIRECT TECHNICAL INQUIRIES TO:

        TECHNICAL ASSISTANCE
        CURRENTLY NOT AVAILABLE

DESCRIPTION - TO SEARCH A SEQUENTIALLY ORGANIZED FILE ON
A DIRECT-ACCESS DEVICE CONTAINING FIXED LENGTH RECORDS,
BLOCKED OR UNBLOCKED, BY MEANS OF A BINARY-SEARCH TECHNIQUE.
THE DESIRED LOGICAL RECORD IS PLACED INTO USER-SPECIFIED
RECEIVING AREA IF IT CAN BE FOUND; IF IT IS NOT FOUND,
BLANKS ARE PUT INTO THE AREA.

WHEN SEARCH A LARGE, SEQUENTIALLY ORGANIZED FILE ON A DISK
OR DRUM THIS ROUTINE WILL SIGNIFICANTLY IMPROVE RUN TIME
BY REQUIRING ONLY AN ABSOLUTE MINIMUM NUMBER OF I/O
OPERATIONS, AS OPPOSED TO A SEQUENTIAL SEARCH WHICH MUST
READ ON THE AVERAGE, HALF THE FILE TO FIND THE RECORD.
IMPROVEMENT IS PARTICULARLY NOTICEABLE IN CASES WHERE THE
SAME FILE MUST BE SEARCHED REPETITIVELY.

PROGRAMMING SYSTEMS - WRITTEN IN OS/360 ASSEMBLER LANGUAGE.
TIMING: RANGES FROM UNDER 0.25 SEC. TO ABOUT 0.90 SEC.,
DEPENDING ON DEVICE TYPE, NUMBER OF EXTENTS, BLOCKING
FACTOR, AND FILE SIZE. SEE PROGRAM WRITE-UP FOR
OPTIMIZATION TECHNIQUES.

MINIMUM SYSTEM REQUIREMENTS - STORAGE REQUIRED, 1440 BYTES
FOR PROGRAM, PLUS EITHER 350 BYTES OR THE FILE BLOCKSIZE,
WHICH EVER IS LARGER.

NOTES: CURRENTLY IMPLEMENTED ONLY FOR 2311, 2314, AND
2301 DEVICES.

DOCUMENTATION: 18 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 550 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/68

360D-06.7.019
    KWADE - KEYWORD AS A DICTIONARY ENTRY

    AUTHOR: H. P. SIEGLAFF

    DIRECT TECHNICAL INQUIRIES TO:
             H. P. SIEGLAFF
             3610 W. NORTHVIEW
             PHOENIX, ARIZONA 85021

    DESCRIPTION - THESE FORTRAN SUBROUTINES GENERATE KWOC AND
    LEFT JUSTIFIED KWIC OUTPUT FROM A CHARACTER STRING SUPPLIED
    BY THE USER.

    THE OUTPUT CAN VARY IN SIZE AS FOLLOWS:
        OUTPUT RECORD - INPUT RECORD + MAXIMUM SIZE KEYWORD + 2
        OUTPUT RECORD MUST BE LESS THAN OR EQUAL TO 256
          CHARACTERS.
    THE SUBROUTINES CAN BE USED TO PROCESS TITLES AND/OR
    KEYWORDS OF ARTICLES OF A JOURNAL.

PROGRAMMING SYSTEMS - THE SUBROUTINES WERE TESTED USING
OS FORTRAN LANGUAGE 4 G LEVEL, OS FORTRAN LANGUAGE 4 H
LEVEL, AND OS VERSION 13 ON A S/360 MODEL 50.

MINIMUM SYSTEM REQUIREMENTS - 4K BYTES OF CORE ARE REQUIRED
IN ADDITION TO MEANS OF GETTING INFORMATION INTO AND FROM
CORE (E.G. CARD READER, CRT, DISK, DRUM, PRINTER OR TAPE).
THE PACKAGE SHOULD WORK ON ANY S/360 MACHINE WHICH HAS
FORTRAN IV G AND OS. (MAXIMUM CORE REQUIREMENT IS 1K).

DOCUMENTATION: 20 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 400 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/68

360D-06.7.022
    OS/360 QUIC (KWIC INDEXING)

    AUTHOR: J. A. STARKWEATHER
             R. KARPINSKI

    DIRECT TECHNICAL INQUIRIES TO:
             R. KARPINSKI
             INFORMATION SYSTEMS, 76-U
             UNIVERSITY OF CALIFORNIA
             SAN FRANCISCO, CA   94143

    DESCRIPTION - QUIC PRODUCES KWIC INDEXES FOR A VARIETY
    OF PURPOSES. MANY OPTIONS PERMIT MODIFYING VARIOUS ASPECTS
    OF THE PROCESS AND RESULTS. THE PROGRAM IS RUN AS A THREE
    STEP JOB: INPUT-(PL/I); SORT-(OS/360 SORT-MERGE); OUTPUT-
    (PL/I).

    PROGRAMMING SYSTEMS - WRITTEN IN PL/1F FOR OS/360.

    MINIMUM SYSTEM REQUIREMENTS - APPROXIMATELY 100K BYTES
    ARE USED BUT THE PROGRAM REQUIRES NO SPECIAL EQUIPMENT.

    DOCUMENTATION: 15 PAGES, NO ADDITIONAL CHARGE.
    CARD COUNT: 1,550 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 12/68

360D-06.7.026
THE NRIMS ADDRESSING SYSTEM

AUTHOR: ANDRZEJ P. K. DABROWSKI

DIRECT TECHNICAL INQUIRIES TO:
ANDRZEJ P. K. DABROWSKI
COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH
P. O. BOX 395
PRETORIA. SOUTH AFRICA

DESCRIPTION - THE NRIMS ADDRESSING SYSTEM PROVIDES FOR THE
MAINTENENCE AND OPERATION OF A SINGLE ADDRESS LIST FOR A
WIDE SPECTRUM OF SUBSCRIBERS. THE RECORD FOR EACH
SUBSCRIBER CONTAINS IN ADDITION TO HIS ADDRESS, INFORMATION
REGARDING THE PARTICULAR PUBLICATIONS HE WISHES TO RECEIVE,
HIS DISCIPLINARY FIELDS OF INTEREST, AND HIS CATEGORY OF
EMPLOYMENT AND PROFESSIONAL STATUS. THESE THREE CRITERIA
CAN BE USED TO GENERATE A MAILING LIST, PRINTED ON
CONTINOUS FORM ADDRESS LABEL PAPER, FOR THE PARTICULAR
MATERIAL WHICH IS TO BE MAILED.

PROGRAMMING SYSTEMS - PROGRAMMING LANGUAGE - OS/360
ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED BY OS/360

DOCUMENTATION: 35 PAGES, $.75 ADDITIONAL CHARGE.
CARD COUNT: 5,650 APPROXIMATE.
SUBMITTAL/REVISION DATE: /71

360D-06.7.027
BAYLOR INFORMATION ANALYSIS SYSTEM (EIAS)

AUTHOR: ALAN BEALE

DIRECT TECHNICAL INQUIRIES TO:
ALAN BEALE
INSTITUTE OF COMPUTER SCIENCE
BAYLOR COLLEGE OF MEDICINE
1200 MOURSUND
HOUSTON, TEXAS 77025

DESCRIPTION - BIAS, THE BAYLOR INFORMATION ANALYSIS
SYSTEM, IS A VERSATILE DATA BASE SYSTEM. IT ALLOWS
ACCESS TO ANY NUMBER OF DATA BASES, CONTAINING RECORDS

CONTINUED FROM PRIOR COLUMN

OF VARYING LENGTH, COMPLEXITY AND INDEXING STRUCTURE,
BY ANY NUMBER OF USERS, BOTH IN BATCH AND INTERACTIVELY.
COMPONENTS OF THE SYSTEM ARE:

1. THE BIAS FILER. THIS COMPONENT MAKES ALL
ADDITIONS, DELETIONS AND UPDATES TO BIAS DATA.
BECAUSE THIS ACTIVITY IS CONCENTRATED IN ONE
TASK, VARIOUS SYNCHRONIZATION AND RELIABILITY
PROBLEMS ARE AVOIDED.

2. THE BIAS TP PROGRAM. THIS IS A MULTI-USER
INTERACTIVE PROGRAM TO RETRIEVE, MODIFY, DELETE
AND ADD INDIVIDUAL DATA RECORDS.

3. THE BIAS TABLE ASSEMBLER. THIS IS A BATCH
PROGRAM USED TO DEFINE TO BIAS THE LAYOUT AND
INDEXING STRUCTURE OF THE RECORDS OF A DATA
BASE. IT ALSO PROVIDES DATA PASSWORDS AND THE
DEGREE OF PROTECTION DESIRED.

4. THE BIAS RETRIEVAL PROGRAM (EOOLRET). THIS IS AN
INTERACTIVE PROGRAM ALLCWING A DATA EASE TO BE
SEARCHED FOR RECORDS THAT SATISFY ONE OR MORE
PROPERTIES, GATHERING STATISTICS AND FREQUENCY
COUNTS ON SELECTED ITEMS IN THE PROCESS. THE
PROPERTIES ARE EXPRESSED IN THE FCFM OF "EOOLEAN
QUESTIONS", USING AN ALGOL-LIKE LANGUAGE.

5. VARIOUS UTILITIES, BOTH SYSTEM AND USER. USER
UTILITIES INCLUDE A LOADER, TC LOAD DATA INTO THE
SYSTEM, AND AN INTERACTIVE PASSWORD MODIFICATION
UTILITY. SYSTEM UTILITIES INCLUDE A FILE RECOVERY
PROGRAM AND A SYSTEM ACCCUNTING ROUTINE.

6. ALL FACILITIES OF BIAS ARE AVAILAEIE TO PROGRAMS
WRITTEN IN PL/I, THROUGH USE OF SEVERAL LIBRARIES
OF INTERFACE ROUTINES. THESE INCLUDE RECORD
MODIFICATION AND RETRIEVAL ROUTINES, PASSWORD
VERIFICATION ROUTINES, AND CCNVERSICN ROUTINES.

IMPORTANT FEATURES OF THE SYSTEM ARE:

1. ALL DATA IS STORED IN ONE OS DATA SET, THEREBY
REDUCING OVERHEAD AND THE NEED TO PROVIDE ROOM
FOR GROWTH FOR EACH DATA BASE INDEPENDENTLY.
DATA STORED ON THIS FILE IS GENERALLY STORED IN
"BLANK-SUPPRESSED" FORM, SO THAT NC SPACE IS
OCCUPIED BY MISSING DATA. THE FILER IS THE ONLY
TASK IN THE BIAS SYSTEM THAT CAN USE THE BIAS
DATA FILE FOR OUTPUT. EVEN THOUGH ALL DATA IS

STORED IN THE SAME DATA SET, A USER MAY ONLY
RETRIEVE OR MODIFY DATA FOR WHICH HE PROVIDES
THE CORRECT PASSWORD. FURTHUR, PASSWORDS MAY BE
EASILY (AND INTERACTIVELY) CHANGED AT ANY TIME.

2. A DATA CLASS MAY BE REFINED AFTER CREATION, IF
   APPROPRIATE. THE INDEXING STRUCTURE MAY NOT BE
   CHANGED, BUT DATA ITEMS MAY BE ADDED, REMOVED
   OR CHANGED IN CHARACTERISTICS. THE RECORD SIZE
   MAY ALSO BE INCREASED OR DECREASED. HOWEVER, ANY
   RECORD WHOSE MEANING IS CHANGED BY THIS PROCESS
   SHOULD BE REFILED.

3. FILE REORGANIZATION IS PERIODICALLY NECESSARY.
   HOWEVER, THE REORGANIZATION PROCESS (CALLED
   "DATASPACE RECLAMATION") IS PERFORMED BY THE FILER,
   AND DOES NOT INHIBIT THE COMPLETE USE OF THE SYSTEM,
   OTHER THAN BY FRACTIONALLY INCREASING RESPONSE TIME.

4. FILE INTEGRITY IS PRESERVED EVEN IF THE FILER
   ABENDS, OR THE OPERATING SYSTEM CRASHES.
   ADDITIONALLY, THE SYSTEM MAY BE GENERATED TO
   RECORD ALL UPDATE TRANSACTIONS. IF THE FILE IS
   HARMED OR LOST, IT MAY BE RESTORED FROM A BACKUP,
   AND BROUGHT UP TO DATE THROUGH APPLICATION OF THE
   RECORDED TRANSACTIONS, USING A SYSTEM UTILITY.

SYSTEM CHARACTERISTICS OF BIAS ARE:

1. THE INTERACTIVE PARTS OF BIAS WERE WRITTEN UNDER
   BEST (THE BAYLOR EXECUTIVE SYSTEM FOR TELEPROCESSING),
   WHICH IS IN THE SHARE PROGRAM LIBRARY (360D-05.1.018).
   THE SYSTEM IS ADAPTABLE TO OTHER TP SYSTEMS (E.G.,
   TSO), AND SUGGESTIONS ARE INCLUDED IN THE
   DOCUMENTATION FOR CONVERSION.

2. BIAS RUNS EXCLUSIVELY AS A PROBLEM PROGRAM. IT MAKES
   USE OF ONE USER SVC (TYPE II OR III) FOR INTER-REGION
   COMMUNICATION.

3. BIAS IS CURRENTLY RUNNING UNDER OS/MFT, RELEASE 21.8.
   IT SHOULD RUN WITHOUT CHANGE UNDER MVT, BUT THIS HAS
   NOT BEEN TESTED. BIAS SHOULD ALSO RUN UNDER VS1,
   PROVIDED THE TP INTERFACES WERE CHANGED TO USE A
   VS1-SUPPORTED SYSTEM. IT SHOULD ALSO RUN UNDER VS2
   WITH AN APPROPRIATE TP SYSTEM, IF THE COMMUNICATION
   SVC WERE REWRITTEN.

4. BIAS IS WRITTEN IN ASSEMBLY LANGUAGE AND PL/I. THE
   CRITICAL SYSTEM COMPONENTS, SUCH AS THE FILER AND

THE TP PROGRAM, ARE WRITTEN IN ASSEMBLY LANGUAGE.
THE PL/I COMPONENTS WERE WRITTEN FOR USE WITH THE
PL/I OPTIMIZING COMPILER. HOWEVER, THEY WILL COMPILE
AND RUN USING PL/I (F). ALSO, THE INTERFACE ROUTINES
MAY BE GENERATED FOR USE WITH EITHER VERSION OF THE
PL/I COMPILER.

5. NO SPECIAL ACCESS METHODS OR APPENDAGES ARE NEEDED
   FOR BIAS. ALL I/O IS PERFORMED THROUGH QSAM, BSAM,
   BPAM AND BDAM.

6. THE AMOUNT OF CORE REQUIRED FOR BIAS DEPENDS ON
   GENERATION PARAMETERS, SUCH AS MAXIMUM RECORD SIZE
   AND MAXIMUM NUMBER OS SIMULTANEOUS USERS. PRACTICAL
   MINIMA ARE 52K EACH FOR THE FILER AND TP PROGRAM AND
   100K FOR BOOLRET.

ABOUT 350 PAGES OF DOCUMENTATION (MACHINE-READABLE), BOTH
USER AND SYSTEM, IS PROVIDED WITH BIAS.

BIAS HAS BEEN RUNNING FOR PRODUCTION AT BAYLOR FOR A YEAR
AND A HALF. THERE ARE CURRENTLY ABOUT 30 DATA CLASSES IN
USE, TOTALING 200,000 RECORDS AND 24,000,000 BYTES OF DATA.

PROGRAMMING LANGUAGE - ASSEMBLER AND PL/I

MINIMUM SYSTEM REQUIREMENTS - SEE DESCRIPTION

DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
                (PLUS MACHINE READABLE DOCUMENTATION)
CARD COUNT: NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 12/75
REQUIRES 1200 FT. TAPE FOR DISTRIBUTION AT 800 BPI.

360D-06.7.028
  SELECT PROGRAM

  AUTHORS: DORON STEGER & GUNNAR GRUVAEUS

  DIRECT TECHNICAL INQUIRIES TO:
          DORON STEGER OR GUNNAR GRUVAEUS
          HOECHST-ROUSSEL PHARMACEUTICALS, INC.
          ROUTE 202-206 NORTH
          SOMERVILLE, NJ 08876

  DESCRIPTION - IN CASES WHERE MANY PROGRAMS MAKE USE OF THE
  SAME DATA, IT IS AS A RULE BOTH DIFFICULT AND EXPENSIVE TO

CONTINUED FROM PRIOR COLUMN

MAINTAIN A SEPARATE DATA FILE FOR EACH PROGRAM AND INSTEAD
ONLY A COMPLETE DATA FILE IS MADE AVAILABLE. THE SELECT
PROGRAM WAS DESIGNED TO ACT AS AN INTERFACE BETWEEN SUCH A
DATA STRUCTURE AND PROGRAMS THAT WILL ANALYZE THIS DATA.
SELECT LOGICALLY PARTITIONS ANY FIXED LENGTH RECORD
SEQUENTIAL FILE ACCORDING TO USER SPECIFICATIONS AND THEN
SELECTS THOSE PORTIONS OF DATA WHICH ARE SPECIFIC TO THE
REQUIREMENTS OF THE USER PROGRAM. SELECT ALSO PROVIDES
COUNTS OF VARIOUS BREAKDOWNS OF THE DATA (NUMBER OF GROUPS,
NUMBER OF CASES IN EACH GROUP, ETC.). THE USER DESCRIBES
FIELDS USED BY SELECT BY SUPPLYING POSITION AND LENGTH OF
THE FIELD WITHIN THE DATA, THUS ELIMINATING THE NEED FOR A
DATA BASE DICTIONARY.

PROGRAMMING LANGUAGE - FORTRAN G OR PL/I

MINIMUM SYSTEM REQUIREMENTS - 90K AND A FORTRAN IV OR
                              PL/I COMPILER

DOCUMENTATION: MACHINE READABLE DOCUMENTATION ONLY.
CARD COUNT: NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 11/76

360D-06.8.002
     LPI

   AUTHOR: D. RITCHIE

   DIRECT TECHNICAL INQUIRIES TO:
            DEAN RITCHIE
            COMPUTING CENTER
            WASHINGTON STATE UNIVERSITY
            PULLMAN, WASHINGTON 99163

   DESCRIPTION - LPI IS A SMALL SET OF SUBPROGRAMS FOR USE BY
   FORTRAN PROGRAMMERS TO PERFORM THE BASIC FUNCTIONS OF LIST
   PROCESSING. THIS PAPER DESCRIBES AND EVALUATES LPI,
   COMPARING IT SPECIFICALLY WITH SLIP, A SIMILAR SYSTEM.

   PROGRAMMING SYSTEMS - OPERATES UNDER OS/360.

   MINIMUM SYSTEM REQUIREMENTS - LPI REQUIRES ONLY SUFFICIENT
   HARDWARE TO COMPILE AND EXECUTE FORTRAN PROGRAMS.

   DOCUMENTATION: 22 PAGES, $.10 ADDITIONAL CHARGE.
   CARD COUNT: 250 APPROXIMATE.
   SUBMITTAL/REVISION DATE: 06/69

360D-06.8.003
     THE DATA STRUCTURES PROGRAMMING SYSTEM

   AUTHOR: F.W. TOMPA

   DIRECT TECHNICAL INQUIRIES TO:
            F.W. TOMPA
            CENTER FOR COMPUTER & INFORMATION SCIENCES
            182 GEORGE STREET
            PROVIDENCE, R.I. 02912

   DESCRIPTION - THE DATA STRUCTURES PROGRAMMING SYSTEM (DSPS)
   ALLOWS A USER TO BUILD AND MANIPULATE COMPLEX DATA (LIST)
   STRUCTURES. THE STRUCTURES, WRITTEN IN THE DATA STRUCTURES
   PROGRAMMING LANGUAGE (DSPL) AND TRANSLATED INTO ASSEMBLER
   LANGUAGE BY A COMPILER, ARE DESIGNED COMPLETELY BY THE
   USER IN ORDER THAT THEY MAY BEST FIT HIS PARTICULAR
   APPLICATION. THE RUN-TIME PAGING COMPONENT PERMITS THE
   STRUCTURE TO BE ARBITRARILY LARGE WHILE IMPOSING ONLY
   MINIMAL MANIPULATION HANDICAPS ON THE USER.

   USERS OF DSPS INCLUDE THOSE WHO NEED TO DESIGN POWERFUL
   DATA STRUCTURES OPTIMIZED FOR RUN-TIME SPEED. DSPL IS
   COMPLETELY COMPATIBLE WITH ASSEMBLER LANGUAGE IN ORDER
   TO PERMIT A USER TO CONVENIENTLY INTERMIX SIMPLE
   ARITHMETICS, SHIFTS, ETC. FOR MANIPULATING DATA.

   MINIMUM SYSTEM REQUIREMENTS - DSPS WAS WRITTEN FOR A
   SYSTEM/360 MODEL 50 OR HIGHER, USING 2314 OR 2311 DIRECT
   ACCESS DEVICES (DISKS) FOR SECONDARY STORAGE.

   PROGRAMMING SYSTEMS - IT HAS BEEN RUN UNDER RELEASES 14,
   15/16, AND 17 OF THE 360 OPERATING SYSTEM, USING BOTH MVT
   AND MFT. THE PROGRAM IS WRITTEN IN SYSTEM/360 ASSEMBLER
   LANGUAGE AND HAS BEEN TESTED UNDER IBM'S ASSEMBLER F AND
   WATERLOO'S ASSEMBLER G.

   DOCUMENTATION: 31 PAGES, $.55 ADDITIONAL CHARGE.
   CARD COUNT: 10,450 APPROXIMATE.
   SUBMITTAL/REVISION DATE: 01/69

360D-06.8.004
       IN-CORE STACK MANIPULATION FOR OS/360 ASSEMBLER
       LANGUAGE PROGRAMS

AUTHOR: ROGER J CHETWYND

DIRECT TECHNICAL INQUIRIES TO:
       ROGER J CHETWYND
       COMPUTER SCIENCE DEPARTMENT
       UNIVERSITY OF MONTANA
       MISSOULA, MONTANA 59801

DESCRIPTION - WSUSTACK IS A RE-ENTERABLE SUBPROGRAM WHICH
DYNAMICALLY CREATES AND MAINTAINS CORE-RESIDENT STACKS IN AN
OS/360 ASSEMBLER LANGUAGE ENVIRONMENT. IT MAY BE ASSEMBLED
AND USED ON AN IBM S/360 UNDER ANY VERSION OF OS SINCE
RELEASE 14.

STACK LENGTHS ARE LIMITED ONLY BY THE MAIN STORAGE AVAILABLE
TO THE TASK, THE SIZE OF THE STACK NODE MAY VARY FROM 1 TO
256 BYTES AND IS CONSTANT FOR A GIVEN STACK, AND ANY NUMBER
OF STACKS MAY BE MAINTAINED CONCURRENTLY.

AS ONE OF THE DESIGN OBJECTIVES WAS OPTIMIZATION OF STORAGE
AND EXECUTION TIME, THE CALLING SEQUENCES ARE NON-STANDARD.
ACCORDINGLY A COMPANION SET OF MACRO INSTRUCTIONS IS
PROVIDED TO GENERATE THE PROPER CALLING SEQUENCES. THE
FUNCTIONS AVAILABLE, EACH OF WHICH IS CALLED BY A
CORRESPONDING MACRO INSTRUCTION, ARE: ALLOCATE AND
INITIALIZE STACK, DELETE STACK, STACK A NODE, UNSTACK A
NODE, RESET STACK TO THE EMPTY CONDITION, INDEX STACK
(LOCATE N'TH NODE), SEARCH STACK (LOCATE A NODE SATISFYING
GIVEN CONDITIONS).

PROGRAMMING LANGUAGE - ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - OS/360

DOCUMENTATION: 26 PAGES, $.30 ADDITIONAL CHARGE.
CARD COUNT: 600 APPROXIMATE.
SUBMITTAL/REVISION DATE: 8/73.

360D-08.0.003
       WRIMAT MATRIX WRITER

AUTHORS: R. A. USANIS   H. E. SCHAFFER

DIRECT TECHNICAL INQUIRIES TO:
       DR. R. A. USANIS
       DIRECTOR, COMPUTING CENTER
       POST OFFICE BOX 5445
       N. C. STATE UNIVERSITY
       RALEIGH, NORTH CAROLINA 27607

DESCRIPTION - THIS SUBROUTINE PRINTS LARGE MATRICES IN
EASILY READABLE FORM. GIVEN A MATRIX STORED IN SINGLY
OR DOUBLY SUBSCRIPTED FORM, SUBROUTINE WRIMAT WILL PRINT
THE MATRIX IN RECTANGULAR, UPPER TRIANGULAR, OR LOWER
TRIANGULAR FORM DEPENDING ON THE ARGUMENTS PASSED FROM
THE CALLING PROGRAM. THE OUTPUT IS DIVIDED INTO PAGES
WITH A MAXIMUM OF NINE COLUMNS AND 27 ROWS PER PAGE. EACH
PAGE IS TITLED, THE ROWS AND COLUMNS ARE NUMBERED AND THE
ROWS ARE DOUBLE SPACED. TRIANGULAR MATRICES CAN BE PRINTED
ONLY AS STORED AND ARE PRINTED WITH THEIR MAIN DIAGONAL.
THE OUTPUT FOR ANY SHAPE MATRIX WILL BE SUCH THAT THE PAGES
CAN BE ARRANGED TOGETHER TO FORM THE ENTIRE MATRIX.

PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN IV G AND TESTED
ON RELEASE 11 AND 14 OF OS/360.

MINIMUM SYSTEM REQUIREMENTS - SAME AS THOSE REQUIRED FOR
OS/360. USES APPROXIMATELY 3330 BYTES OF MEMORY. A MAXIMUM
OF 132 PRINT POSITIONS ARE USED.

DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 300 APPROXIMATE.
SUBMITTAL/REVISION DATE: 09/69

360D-08.6.001
>   PLOTS - A SUBROUTINE FOR TIME-SERIES PLOTTING ON A PRINTER

AUTHOR: MR. R. H. KARPINSKI

DIRECT TECHNICAL INQUIRIES TO:
>   MR. R. H. KARPINSKI
>   INFORMATION SYSTEMS, 76-U
>   UNIVERSITY OF CALIFORNIA
>   SAN FRANCISCO, CA   94143

DESCRIPTION - TO USE "PLOTS" TO PLOT N CURVES - CALL PLOTS
(-N, RANGES) WHERE N EQUALS NUMBER OF CURVES (THIS ARGUMENT
SHOULD BE NEGATIVE FOR THE SETUP CALL, CAUSING A NEW PLOT
TO BE STARTED), AND RANGES EQUALS AN ARRAY OF SIZE 3N PLUS
3:

  - RANGES (1) - TIME ZERO (TIME OF BEGINNING OF PLOT).
  - RANGES (2) - DELTA TIME (TIME INCREMENT PER PLOT LINE).
  - RANGES (3) - 1(TIME WILL BE PRINTED EVERY 1 LINES, UNLESS
                   1 IS LESS THAN ZERO).
  - RANGES (4) - X(1)MIN. (MINIMUM VALUE TO BE PLOTTED FOR
                   FIRST CURVE).
  - RANGES (5) - X(1)MAX. (MAXIMUM VALUE TO BE PLOTTED FOR
                   FIRST CURVE).
  - RANGES (6) - X(1)CHAR. (CHARACTER TO BE PLOTTED TO
                   INDICATE FIRST CURVE).
  - RANGES (3N PLUS 1) - X(N) MIN.
  - RANGES (3N PLUS 2) - X(N) MAX.
  - RANGES (3N PLUS 3) - X(N) CHAR.

FOR EACH LINE DESIRED (I.E. CALL "PLOTS" MANY TIMES ONCE
FOR EACH TIME INCREMENT), CALL PLOTS (N,X) WHERE N EQUALS
THE NUMBER OF CURVES AND X(I) EQUALS THE CURRENT VALUE
OF THE ITH CURVE. "PLOTS" WILL ACTUALLY PLOT A VALUE UP
TO, BUT NOT INCLUDING, MAX. PLUS (MAX-MIN) *0.01 IN THE
101ST POSITION. N SHOULD BE BETWEEN 1 AND 100.

PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN IV.

MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED FOR OS/360.

DOCUMENTATION: 6 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 100 APPROXIMATE.
SUBMITTAL/REVISION DATE: 02/67

360D-08.6.002
>   INTERFACE BETWEEN PL/I USER PROGRAMS AND CALCOMP
>   ROUTINES

AUTHOR: MR. E. H. REMY

DIRECT TECHNICAL INQUIRIES TO:
>   MR. E. H. REMY
>   EASTMAN KODAK CO.
>   BLDG. 56, KODAK PARK
>   ROCHESTER, NEW YORK 14650

DESCRIPTION - THE OS/360 PLOTTING ROUTINES PROVIDED BY
CALCOMP ARE WRITTEN IN FORTRAN AND ASSEMBLER AND ARE
DESIGNED TO BE USED BY A FORTRAN PROGRAM. THESE ROUTINES
MAY BE CALLED BY A PL/I PROGRAM BUT SUCH USE DOES NOT
PERMIT SOME COMMONLY USED PL/I FEATURES SUCH AS CHARACTER
STRINGS. IT IS ALSO AN INCONVENIENCE FOR A PL/I PROGRAMMER
TO ADHERE TO FORTRAN LINKAGE CONVENTIONS SUCH AS AVOIDING
PASSING DOPE VECTORS. TO PERMIT THE PL/I PROGRAMMER TO
USE STRAIGHT-FORWARD PL/I STATEMENTS IN PLOT PROGRAMS,
THIS INTERFACE HAS BEEN WRITTEN TO INTERCEPT THE LINKAGE
BETWEEN THE USER'S PROGRAM AND THE ROUTINES PROVIDED BY
CALCOMP. LINKAGE EDITOR "CHANGE" CARDS ARE USED TO PERMIT
THE INTERFACE TO HAVE ENTRY POINTS WITH THE SAME NAMES
AS THE ROUTINES PROVIDED BY CALCOMP. THE JCL MAY BE
MODIFIED TO CONFORM TO AN INSTALLATION'S PROCEDURES AND
NAMING CONVENTIONS.

PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN.

MINIMIM SYSTEM REQUIREMENTS - THOSE REQUIRED FOR OS/360.

DOCUMENTATION: 14 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 200 APPROXIMATE.
SUBMITTAL/REVISION DATE: NOT KNOWN

360D-08.6.003
    PLOT - A SUBROUTINE FOR PLOTTING ON A PRINTER

    AUTHOR: MR. L. ISRAEL

    DIRECT TECHNICAL INQUIRIES TO:

            TECHNICAL ASSISTANCE
            NOT CURRENTLY AVAILABLE.

    DESCRIPTION - THE SUBROUTINE PLOT IS USED FOR PLOTTING
    ON A PRINTER. IT WILL PRINT ONE TO NINE SETS OF DEPENDENT
    VARIABLES AGAINST AN INDEPENDENT VARIABLE, AND/OR A CURVE
    OF CALCULATED VALUES.

    PROGRAMMING SYSTEMS - WRITTEN IN BASIC FORTRAN IV.

    MINIMUM SYSTEM REQUIREMENTS - THCSE REQUIRED FOR OS/360.

    DOCUMENTATION: 18 PAGES, NO ADDITICNAL CHARGE.
    CARD COUNT: 250 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 10/67

360D-08.6.011
    PNRG, PERSPECTIVE PLOTTING ROUTINE, ARBITRARY GRID

    AUTHOR: B. KUBERT

    DIRECT TECHNICAL INQUIRIES TO:

            TECHNICAL ASSISTANCE
            CURRENTLY NOT AVAILABLE.

    DESCRIPTION - THIS SUBROUTINE GENERATES PERSPECTIVE PLOTS
    OF CURVES AND SURFACES. THE SURFACES REPRESENT FUNCTIONS
    OF TWO VARIABLES, F(X,Y), WHICH SATISFY CERTAIN
    RESTRICTIONS. AS AN OPTION THE SURFACES MAY BE TAKEN TO
    BE OPAQUE, IN WHICH CASE ALL HIDDEN LINES ARE ELIMINATED.
    THE INPUT DATA FOR A SURFACE ARE THE MESH POINTS OF TWO
    FAMILIES OF CURVES LYING ON THE SURFACE. THEY ARE GIVEN
    IN THREE ARRAYS, ONE CONTAINING X-COORDINATES, ONE
    CONTAINING Y-COORDINATES, AND THE OTHER CONTAINING Z-
    COORDINATES OF THE MESH POINTS. THE INPUT DATA FOR A CURVE
    IS A SET OF CONSECUTIVE POINTS LYING ON THE CURVE. PNRG
    IS A MODIFICATION OF A SUBROUTINE WRITTEN BY J. SZABO AND

CONTINUED FROM PRIOR COLUMN

    S. GIULIERI. IT IS COMPATIBLE WITH FORTRAN H, HOWEVER,
    IT HAS ONLY BEEN CHECKED OUT ON FORTRAN G.

    PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN.

    MINIMUM SYSTEM REQUIREMENTS - THE PROGRAM WAS RUN ON AN
    IBM 360-IH65 USING LESS THAN 270K.

    DOCUMENTATION: 46 PAGES, $1.30 ADDITIONAL CHARGE.
    CARD COUNT: 2,000 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 08/69

360D-08.6.012
    PRG, PERSPECTIVE PLOTTING ROUTINE, RECTANGULAR GRID

    AUTHOR: B KUBERT

    DIRECT TECHNICAL INQUIRIES TC:

            TECHNICAL ASSISTANCE
            NOT CURRENTLY AVAILABLE.

    DESCRIPTION - PRG IS AN OS/360 FORTRAN SUBROUTINE WHICH
    GENERATES PERSPECTIVE PLOTS OF CURVES AND SURFACES. THE
    SURFACES REPRESENT FUNCTIONS OF TWO VARIABLES, F(X,Y),
    WHICH SATISFY CERTAIN RESTRICTIONS. THE PLOT OF A SURFACE
    IS CONSTRUCTED FROM TWO FAMILIES OF CURVES ON THE SURFACE,
    ONE FAMILY HAVING CURVES ON THE SURFACE, ONE FAMILY HAVING
    CURVES WITH FIXED X COORDINATES, THE OTHER FAMILY HAVING
    CURVES WITH FIXED Y COORDINATES. THE PLOTTING OF THE
    LATTER CAN BE SUPPRESSED. THE SURFACES CAN BE ROTATED
    OR TRANSLATED. AS AN OPTION THE SURFACES MAY BE TAKEN
    TO BE OPAQUE, IN WHICH CASE ALL HIDDEN LINES ARE ELIMINATED.
    THE INPUT DATA FOR THE SURFACE IS GIVEN IN FIVE ARRAYS
    WHICH CONTAIN THE STARTING X AND Y VALUES, THE X AND Y
    INCREMENTS AND THE Z VALUES. THE INPUT DATA FOR A CURVE
    IS A SET OF CONSECUTIVE PCINTS LYING CN THE CURVE. THIS
    PROGRAM REPLACED PRG (D003A). THIS SUBROUTINE IS A
    MODIFICATION OF A PROGRAM ORIGINALLY WRITTEN BY J. SZABO
    AND S. GIULIERI. IT IS COMPATIBLE WITH FORTRAN H, HOWEVER,
    IT HAS ONLY BEEN CHECKED OUT ON FORTRAN G.

    PROGRAMMING SYSTEMS - WRITTEN IN OS/360 FORTRAN.

    MINIMUM SYSTEM REQUIREMENTS - THE PROGRAM WAS RUN ON AN
    IBM 360-IH65 USING LESS THAN 270K.

CONTINUED FROM PRIOR COLUMN

DOCUMENTATION: 31 PAGES, $.55 ADDITIONAL CHARGE.
CARD COUNT: 1,450 APPROXIMATE.
SUBMITTAL/REVISION DATE: 08/69

360D-08.6.013
    PLT360, IBM 1627 PLOTTING ROUTINE

    AUTHOR: MAUREEN CLARK

    DIRECT TECHNICAL INQUIRIES TO:

            TECHNICAL ASSISTANCE
            CURRENTLY NOT AVAILABLE.

    DESCRIPTION - THIS ROUTINE WILL PLOT FROM ONE TO SEVEN
    DEPENDENT VARIABLES VS. AN INDEPENDENT VARIABLE FROM USER-
    SUPPLIED INFORMATION. PLT360 IS ON THE S/360 LIBRARY.
    ALL CALLS FROM FORTRAN ARE TO PLT. SUBROUTINES PLT1 AND
    PLTW ARE CALLED BY PLT. PLT360 IS THE OS/360 ASSEMBLER
    LANGUAGE VERSION OF THE 7040-7094 DCS ROUTINES PLT(AM01B),
    PLT1(AM10A), AND PLTW(AM11A), WHICH WERE MAJOR REVISIONS
    OF RW CCP AND RW CCP2, WRITTEN BY K. G. TOMIKAWA AND J.
    R. BLACKMER, RESPECTIVELY, IN AUGUST OF 1962, AT SPACE
    TECHNOLOGY LABORATORIES, REDONDO BEACH, CALIFORNIA.

    PROGRAMMING SYSTEMS - WRITTEN IN OS/360 ASSEMBLER LANGUAGE.

    MINIMUM SYSTEM REQUIREMENTS - TOTAL STORAGE REQUIRED (BYTES)
    IS 236C(16) OR 9046(10). THIS PROGRAM WAS RUN ON AN IBM
    360-IH65.

    DOCUMENTATION: 52 PAGES, $1.60 ADDITICNAL CHARGE.
    CARD COUNT: 2,300 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 08/69

360D-08.7.003
    HISTOGRAM DISPLAY SUBROUTINE

    AUTHOR: D. ASHLER

    DIRECT TECHNICAL INQUIRIES TO:
            DR. D. ASHLER
            OFFICE OF RESEARCH AND EVALUATION
            ROOM 400
            SCHOOL DISTRICT OF PHILADELPHIA
            21ST ST. AND BENJ. FRANKLIN PARKWAY
            PHILADELPHIA, PA 19103

    DESCRIPTION - SUBROUTINE HIST MAY BE CALLED TO OBTAIN THE
    MEAN, STANDARD DEVIATION, QUARTILES, AND A HISTOGRAM OF
    A DISTRIBUTION. THE CALL MUST SUPPLY THE NAME AND THE
    LENGTH OF A ONE-DIMENSIONAL ARRAY OF REAL*4 NUMBERS; HIST
    SORTS THESE NUMBERS IN PLACE, SUBDIVIDES THEIR RANGE INTO
    FOURTEEN EQUAL INTERVALS, AND PRINTS A 14-BAR HISTOGRAM
    ON A SINGLE PAGE. THE MEAN AND THE QUARTILE BOUNDARIES
    ARE MARKED ON THE HISTOGRAM. THE VALUES OF THE FOURTEEN
    FREQUENCIES ARE PRINTED ABOVE IT, THE VALUES OF THE INTERVAL
    BOUNDARIES AND OF THE MEAN, QUARTILE BOUNDARIES, ANC THE
    STANDARD DEVIATION ARE PRINTED BELOW IT. PROVISION IS
    ALSO MADE FOR DISPLAYING A LEGEND AT THE BOTTOM OF THE
    PAGE AND IN THE UPPER LEFT CCRNER.

    PROGRAMMING SYSTEMS - UTILIZES OS/360.

    MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED FOR OS/360.

    DOCUMENTATION: 14 PAGES, NO ADDITIONAL CHARGE.
    CARD COUNT: 300 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 04/68

360D-08.7.004
INTERSECTION DETECTION IN THREE DIMENSIONS - A TOOL FOR
COMPUTER AIDED ENGINEERING DESIGN AND GRAPHIC DISPLAY

AUTHOR: P. G. COMBA

DIRECT TECHNICAL INQUIRIES TO:
        DR. P. G. COMBA
        IBM CORPORATION
        CAMBRIDGE SCIENTIFIC CENTER
        545 TECHNOLOGY SQUARE
        CAMBRIDGE, MA   02139

DESCRIPTION - THE INTERSECTION DETECTION PROGRAM (ID/3D)
IS A SYSTEM OF FORTRAN SUBROUTINES THAT ENABLES THE USER
TO - DEFINE 3-DIMENSIONAL CONVEX OBJECTS BOUNDED BY PLANES
AND QUADRIC SURFACES - DEFINE LINE SEGMENTS IN 3-SPACE
- TEST FOR INTERSECTIONS BETWEEN PAIRS OF OBJECTS - TEST
FOR INTERSECTIONS BETWEEN SEGMENTS AND OBJECTS. THE PROGRAM
IS PRIMARILY A TOOL FOR THE SOLUTION OF PIPE ROUTING AND
COMPONENT PLACEMENT PROBLEMS. THE SEGMENT-OBJECT
INTERSECTION TEST CAN ALSO BE USED TO SOLVE THE HIDDEN
LINE PROBLEM IN COMPUTING GRAPHIC DISPLAYS OF 3-DIMENSIONAL
OBJECTS.

PROGRAMMING SYSTEMS - CAN RUN UNDER OS/360 OR BPS.

MINIMUM SYSTEM REQUIREMENTS - REQUIRES 128K CORE STORAGE.
(NOTE- THE AMOUNT OF CORE NEEDED FCR COMPILATION AND LINKAGE
EDITING DEPENDS ON THE VERSION OF THE COMPILER AND LINKAGE
EDITOR BEING USED. THE PROGRAM HAS BEEN COMPILED AND
TESTED UNDER BPS WITH 128K STORAGE, AND UNDER OS FORTRAN
G AND FORTRAN H LEVELS WITH 512K STORAGE).

DOCUMENTATION: 59 PAGES, $1.95 ADDITIONAL CHARGE.
CARD COUNT: 3,000 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/67

360D-08.7.006
SPLOT - ONE PAGE GRAPH-PRINTING SUBROUTINE

AUTHOR: D. ASHLER

DIRECT TECHNICAL INQUIRIES TO:
        DR. D. ASHLER
        OFFICE OF RESEARCH AND EVALUATION
        ROOM 400
        SCHOOL DISTRICT OF PHILADELPHIA
        21ST ST. AND BENJ. FRANKLIN PARKWAY
        PHILADELPHIA, PA   19103

DESCRIPTION - SUBROUTINE SPLOT CONSTRUCTS AND PRINTS A
ONE-PAGE GRAPH ON A PRINTER, E.G., IBM 1403, THAT IS
NORMALLY SET UP TO PRINT TEN CHARACTERS PER INCH
HORIZONTALLY, 132 CHARACTERS PER LINE, AT A VERTICAL LINE
SPACING OF SIX LINES PER INCH. MULTIPLE ENTRIES ARE USED
TO PROVIDE MAXIMUM FLEXIBILITY. AN AREA OF MEMORY SIMULATES
THE GRAPH PAPE. IT IS INITIALIZED TO ALL BLANKS. MAXIMUM
AND MINIMUM VALUES OF THE TWO VARIABLES ARE SUPPLIED FOR
SCALING PURPOSES. POINTS ARE FLOTTED BY REPLACING THE
BLANKS WITH ANY DESIRED CHARACTERS. WHEN THE GRAPH IS
COMPLETE, A CALL TO GRAPH PRINTS IT OUT, TOGETHER WITH
LEGENDS AT BOTTOM AND AT UPPER LEFT IF DESIRED. A SET
OF POINTS TO BE FLOTTED IS SUPPLIED IN THE FORM OF TWO
ARRAYS, ONE OF ABSCISSAS AND ONE OF ORDINATES, SEVERAL
SETS OF POINTS MAY BE PLOTTED, EACH SET WITH A DIFFERENT
CHARACTER. IF DESIRED, THE POINTS WILL BE PRINTED OUT
SUPERIMPOSED ON A GRID, OR ENCLOSED IN A BOX, WITH SCALE
VALUES PRINTED ALONG THE LEFT EDGE AND BOTTOM. AXES ARE
ALSO OPTIONAL. COORDINATES MAY BE SUPPLIED IN SINGLE OR
DOUBLE PRECISION. SPLOT MAY BE USED TO FRINT PICTURES;
GRAPHS OF EQUATIONS, SCATTERGRAMS, ETC.., HOWEVER, FOR
HISTOGRAMS, HIST IS RECOMMENDED.

PROGRAMMING SYSTEMS - RUNS UNDER OS/360.

MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED FOR OS/360.

DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 500 APPROXIMATE.
SUBMITTAL/REVISION DATE: 04/68

360D-11.3.015
COMMERCIAL FEATURE EMULATOR FOR SYSTEM/360 MODEL 44

AUTHOR: ERIC F. BRUBAKER

DIRECT TECHNICAL INQUIRIES TO:

        TECHNICAL ASSISTANCE
        CURRENTLY NOT AVAILABLE.

DESCRIPTION - THE COMMERCIAL FEATURE FOR THE S/360 MODEL 44
PROVIDES A PROGRAM TO EMULATE THE S/360 INSTRUCTIONS NOT
IMPLEMENTED IN HARDWARE. THIS PROGRAM REPLACES THE IBM
LEVEL G EMULATOR. THE NEW EMULATOR, DESIGNATED G1, HAS BEEN
WRITTEN TO INCREASE EMULATION SPEED. IT WILL NORMALLY
PROVIDE AT LEAST A 15% TO 20% REDUCTION IN PROCESSING TIME
FOR A MAINLINE (NON-44) PROGRAM. THIS AMOUNT VARIES, OF
COURSE, ACCORDING TO THE INSTRUCTION MIX (COBOL MAY BE
FASTER, PL/I NOT SO MUCH, DEPENDING UPON THE ACTUAL CODE
GENERATED.) THE G1 EMULATOR SUPPORTS STORAGE PROTECTION
AND ASCII MODE ARITHMETIC AS OPTIONS, ALLOWING A SLIGHT
IMPROVEMENT IF THESE FEATURES ARE NOT DESIRED. THE PROGRAM
INCLUDES A CHANNEL LOADER TO BOOTSTRAP IT INTO THE STORAGE
EXTENSION, AND IS WRITTEN IN ASSEMBLY LANGUAGE.

THE G1 EMULATOR ENTERED TESTING IN SEPTEMBER 1972. SINCE
THAT DATE, TEST SITES HAVE REPORTED PERFORMANCE GAINS
RANGING FROM SLIGHTLY UNDER 10% TO OVER 30% ON PARTICULAR
JOBS. REPORTS OF OVERALL SYSTEM PERFORMANCE UNDER G1 HAVE
BEEN QUITE SATISFYING.

PROGRAMMING LANGUAGE - ASSEMBLY

MINIMUM SYSTEM REQUIREMENTS - S/360 MODEL 44

DOCUMENTATION: 5 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 2585 CARDS APPROXIMATE.
SUBMITTAL/REVISION DATE: 3/73

360D-11.4.002
DCALC

AUTHOR: R. F. ROSIN

DIRECT TECHNICAL INQUIRIES TO:
        MR. RICHARD CSGOOD
        YALE COMPUTER CENTER
        175 WHITNEY AVE.
        NEW HAVEN, CCNN. 06520

DESCRIPTION - THE PURPOSE OF DCALC IS TO PROVIDE AN
INTERACTIVE DESK-CALCULATOR FACILITY UNDER OS IN AN
ENVIRONMENT SUPPORTING 2741'S AND OTHER INTERACTIVE DEVICES.
THE CHARACTER STRINGS IN LINES 80-138 OF THE LISTING
DESCRIBE ITS USE, AND SHOW HOW IT IS MUCH MORE THAN A
SIMPLE DESK-CALCULATOR. DCALC USES SYSIN AND SYSPRINT
FOR ALL I/O.

PROGRAMMING SYSTEMS - WRITTEN IN PL/I.

MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED TO RUN S/360
OS.

DOCUMENTATION: 23 PAGES, $.15 ADDITIONAL CHARGE.
CARD COUNT: 550 APPROXIMATE.
SUBMITTAL/REVISION DATE: 05/68

360D-12.0.003
SIFT BCD CODES TO EBC AND DIAGNOSE FORTRAN IV CONVERSION
PROBLEMS UNDER OS/360

AUTHOR: D. JACOBS

DIRECT TECHNICAL INQUIRIES TO:

        TECHNICAL ASSISTANCE
        CURRENTLY NOT AVAILABLE.

DESCRIPTION - THIS PROGRAM SIFTS BCD CODES INTO EBC AS
WELL AS DIAGNOSING CERTAIN CONVERSION PROBLEMS WHICH A
FORTRAN IV PROGRAM WILL HAVE UPON CONVERTING TO THE 360.
THE PROBLEMS WHICH ARE DIAGNOSED ARE -

 - ALL FORMAT STATEMENTS CONTAINING "A5 FORMATS", OR
   GREATER FLAGGED WITH AN "A". ALL FORMAT STATEMENTS

CONTINUED FROM PRIOR COLUMN

CONTAINING "O FORMATS" ARE FLAGGED WITH AN "O". AT THE
END OF EACH ROUTINE (END INDICATED BY AN "END CARD"),
A REFERENCE TABLE IS PRODUCED INDICATING THE LOCATION OF
EVERY FORMAT STATEMENT (BY ISN) AND THE LOCATION OF THEIR
RESPECTIVE READ/WRITE STATEMENTS (BY ISN).
- EVERY BINARY READ/WRITE STATEMENT IS FLAGGED
  WITH A "B".
- EVERY CALL TO A SUBROUTINE WHICH IS NOT IN THE SUBROUTINE
  LIBRARY IS FLAGGED WITH A "C". THE STANDARD SUBROUTINE
  LIST IS COMPILED BY THE USER AND PUT IN A SEQUENTIAL DATA
  SET. A REFERENCE TABLE OF CALLED SUBROUTINES AND WHETHER
  OR NOT THEY ARE FLAGGED IS PRODUCED AFTER THE FORMAT/
  READ/WRITE REFERENCE TABLE.

PROGRAMMING SYSTEMS - WRITTEN IN ASSEMBLER LANGUAGE.

MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED FOR OS/360.

DOCUMENTATION: 31 PAGES, $.55 ADDITIONAL CHARGE.
CARD COUNT: 700 APPROXIMATE.
SUBMITTAL/REVISION DATE: 11/66

360D-12.1.024
    INTERACTIVE HEX DECIMAL OCTAL CALCULATOR

AUTHOR: D. K. SAKAGUCHI

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    THE AEROSPACE CORPORATION
    P. O. BOX 92957
    LOS ANGELES, CA 90009

DESCRIPTION - THE PROGRAM PROVIDES TSO WITH A CALCULATOR
MODE WHICH WILL ACCEPT HEXADECIMAL, OCTAL, OR DECIMAL
INTEGERS. IT REQUIRES NO KNOWLEDGE TO USE, AND HAS GOOD
RESPONSE TIME. IT IS MEANT TO BE USED TO HELP READ DUMPS,
WORK WITH THE TEST COMMAND TO CHECK OUT PROGRAMS, PROVIDE A
METHOD FOR COMPOSING HEX TO OCTAL TAPE CONVERSIONS, AND AID
IN SIMILAR TASKS WHERE OCTAL OR HEX NUMBERS ARE REQUIRED.

PROGRAMMING LANGUAGE - PL/I

MINIMUM SYSTEM REQUIREMENTS - OS/360, TSO.

DOCUMENTATION: 6 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 150 APPROXIMATE.

CONTINUED FROM PRIOR COLUMN

SUBMITTAL/REVISION DATE: 4/74.

360D-12.2.002
    FORTRAN IV TO PL/I TRANSLATOR

AUTHOR: L. M. LEACH

DIRECT TECHNICAL INQUIRIES TO:

        TECHNICAL ASSISTANCE
        CURRENTLY NOT AVAILABLE

DESCRIPTION - THIS PROGRAM TRANSLATES FORTRAN IV AS
STANDARDIZED BY THE AMERICAN STANDARDS ASSOCIATION
(COMMUNICATIONS OF THE ACM, OCT., 1964) TO PL/I AS DEFINED
BY THE IBM PL/I SPECIFICATIONS (FORM C28-6571). THE
TRANSLATOR IS WRITTEN IN PL/I AND USES THE METHOD OF
RECURSIVE DESCENT TO ACCOMPLISH THE TRANSLATION. THE
TRANSLATOR PRODUCES READABLE PL/I OUTPUT THAT REQUIRES
MINIMUM PROGRAMMER EFFORT TO CETAIN A PERFECT TRANSLATION.
FORTRAN IS ASSUMED TO HAVE RESERVED WORDS WITH SIGNIFICANT
BLANKS. DATA, EQUIVALENCE, AND BACKSPACE STATEMENTS ARE
NOT TRANSLATED. THE TRANSLATOR IS WRITTEN IN A WAY TO
MAKE IT EASILY MODIFIABLE TO INCLUDE ADDITIONAL FORTRAN
STATEMENTS OR ACCEPT A PARTICULAR INSTALLATION VERSION
OF FORTRAN IV RATHER THAN THE ASA STANDARD.

PROGRAMMING SYSTEM - WRITTEN IN PL/I AND RUNS UNDER THE
CONTROL OF OS/360. (REQUIRES PL/I (F) COMPILER).

DOCUMENTATION: 20 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 1,050 APPROXIMATE.
SUBMITTAL/REVISION DATE: 08/67

360D-12.2.010
CDC TO IBM FORTRAN CONVERSION

AUTHOR: GEORGE GORSLINE, JR.

DIRECT TECHNICAL INQUIRIES TO:
        GEORGE GORSLINE, JR.
        UNIVERSITY OF TORONTO LIBRARY
        TORONTO 181, ONTARIO
        CANADA

DESCRIPTION - CONVERT WILL CHANGE MOST CDC FORTRAN*
STATEMENTS TO COMPATIBLE IBM FORTRAN IV, G LEVEL. IT WAS
DESIGNED TO ELIMINATE AS MUCH OF THE HAND-WORK AS POSSIBLE,
BUT NOT TO BECOME A FULL-FLEDGED COMPILER. THE PROGRAM
LISTS ALL STATEMENTS CHANGED, BOTH THE ORIGINAL AND THE
MODIFICATIONS MADE AND PRODUCES FILE OF CONVERTED SOURCE
IMAGES READY FOR COMPILATION. COMPILING OF CONVERT WILL
PRODUCE COMMENTS LISTING OPTIONS AVAILABLE WHILE SUPPRESSING
THE SOURCE LISTING. CONVERT REQUIRES NO SPECIAL SYSTEM
FEATURES AND SHOULD RUN ON ANY SNOBOL4 (AT LEAST VER 3.0)
SYSTEM.

PROGRAMMING LANGUAGE - SNOBOL4

MINIMUM SYSTEM REQUIREMENTS - ANY SNOBOL4 SYSTEM

DOCUMENTATION: 6 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 350 CARDS APPROXIMATE.
SUBMITTAL/REVISION DATE: 3/73

360D-13.2.003
NLIN: LEAST-SQUARES ESTIMATION OF NON-LINEAR PARAMETERS

AUTHOR: R. A. USANIS
        J. A. MIDDLETON

DIRECT TECHNICAL INQUIRIES TO:
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        N. C. STATE UNIVERSITY
        RALEIGH, N.C. 27607

DESCRIPTION - NLIN IS A PL/I MAIN PROGRAM WHICH FITS THE
MODEL y=f(X,B) TO THE SET OF OBSERVATIONS (Yi,Xi) i=1(1)N

CONTINUED FROM PRIOR COLUMN

USING THE MAXIMUM NEIGHBORHOOD METHOD DEVELOPED BY D. W.
MARQUARDT. X IS A VECTOR OF INDEPENDENT VARIABLES AND B
IS A VECTOR OF PARAMETERS ESTIMATED TO MINIMIZE THE SUM
OF SQUARES OF (Y-y).

ANY NUMBER OF PROBLEMS CAN BE PROCESSED IN ONE RUN.
REQUIRED PARTIAL DERIVATIVES CAN BE ESTIMATED OR DEFINED IN
A USER SUPPLIED ROUTINE. OPTIONS ARE PROVIDED TO CONTROL
THE DETAIL OF PRINTED RESULTS, TO OMIT PARAMETRS, TO OBTAIN
NONLINEAR CONFIDENCE LIMITS, TO ALLOW USE OF VALUES FROM A
PREVIOUS PROBLEM, TO USE EITHER PL/I OR FORTRAN EXTERNAL
ROUTINES, AND TO CONSTRAIN SELECTED PARAMETERS.

STORAGE REQUIRED IS PROBLEM DEPENDENT WITH SMALL PROBLEMS
RUNNING IN 114K.

THE CURRENT RELEASE IS VERSION 3.2 CONTAINING SEVERAL
CHANGES IN SOURCE CODE WHICH CORRECT PROBLEMS ENCOUNTERED
WHEN IMPLEMENTING EARLIER VERSIONS WITH THE PL/I OPTIMIZING
COMPILER.

PROGRAMMING LANGUAGE - PL/I, OPTIONAL ALP MODULES.

MINIMUM SYSTEM REQUIREMENTS - OS PL/I F OR OPTIMIZING
COMPILERS.

DOCUMENTATION: 45 PAGES, $1.25 ADDITIONAL CHARGE.
CARD COUNT: 1,350 APPROXIMATE.
SUBMITTAL/REVISION DATE: 6/76

360D-13.4.001
COOLEY-TUKEY FAST FOURIER TRANSFORM

AUTHOR: N. BRENNER

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        3 SUMNER ROAD
        CAMBRIDGE, MA 02138

DESCRIPTION - SUBROUTINE FOURT
(DATA,NN,NDIM,ISIGN,IFORM,WCRK). THE COOLEY-TUKEY FAST
FOURIER TRANSFORM IN USASI BASIC FORTRAN. TRANSFORM
(K1,K2,...) EQUALS SUM(DATA(J1,J2,...)*EXP
(ISIGN*2*PI*SQRT(-1)*((J1-1)*(K1-1))NN(1) PLUS (J2-1)*(K2-
1)(NN (2) PLUS...///, SUMMED FOR ALL J1,K1 BETWEEN 1 AND
NN(1), J2,K2 BETWEEN 1 AND NN(2), ETC. THERE IS NO LIMIT

TO THE NUMBER OF SUBSCRIPTS. DATA IS A MULTIDIMENSIONAL
COMPLEX ARRAY (I.E., THE REAL AND IMAGINARY PARTS ARE
ADJACENT IN STORAGE, SUCH AS FORTRAN IV PLACES THEM).
IF ALL IMAGINARY PARTS ARE ZERO (DATA ARE DISGUISED REAL),
SET IFORM TO ZERO TO CUT THE RUNNING TIME BY UP TO FORTY
PER CENT. OTHERWISE, IFORM EQUALS PLUS 1. THE LENGTHS
OF ALL DIMENSIONS ARE STORED IN ARRAY NN, OF LENGTH NDIM.
THEY MAY BE ANY POSITIVE INTEGERS, THOUGH THE PROGRAM RUNS
FASTER ON COMPOSITE INTEGERS, AND ESPECIALLY IF A MINUS
1 TRANSFORM IS FOLLOWED BY A PLUS 1 (OR VICE VERSA) THE
ORIGINAL DATA REAPPEAR, MULTIPLIED BY NTOT (EQUALS
NN(1)*NN(2)*...). TRANSFORM VALUES ARE NOT ALWAYS COMPLEX,
AND ARE RETURNED IN ARRAY DATA, REPLACING THE INPUT. IN
ADDITION, IF ALL DIMENSIONS ARE NOT POWERS OF TWO, ARRAY
WORK MUST BE SUPPLIED, COMPLEX OF LENGTH EQUAL TO THE
LARGEST NON 2**K DIMENSION. OTHERWISE, REPLACE WORK BY
ZERO IN THE CALLING SEQUENCE. NORMAL FORTRAN DATA ORDERING
IS EXPECTED, FIRST SUBSCRIPT VARYING FASTEST. ALL
SUBSCRIPTS BEGIN AT ONE. RUNNING TIME IS MUCH FASTER THAN
THE NAIVE NTOT**2, BEING PROPORTIONAL TO NTOT*(SUM OF THE
PRIME FACTORS OF NTOT PLUS CONST*(NUMBER OF FACTORS OTHER
THAN TWOS)). ACCURACY IS ALSO GREATLY IMPROVED, AS THE
RMS RELATIVE ERROR IS BOUNDED BY 3*2**(-B)*SUM((PRIME
FACTOR)**1.5), WHERE B IS THE NUMBER OF BITS IN THE FLOATING
POINT FRACTION. THIS IS THE FASTEST AND MOST VERSATILE
VERSION OF THE FFT KNOWN TO THE AUTHOR.

PROGRAMMING SYSTEMS - WRITTEN IN USASI BASIC FORTRAN.

MINIMUM SYSTEM REQUIREMENTS - 8K.

DOCUMENTATION: 8 PAGES, NO ADDITICNAL CHARGE.
CARD COUNT: 800 APPROXIMATE.
SUBMITTAL/REVISION DATE: 09/68

360D-13.4.002
    COOLEY-TUKEY FAST FOURIER TRANSFORM

    AUTHOR: N. BRENNER

    DIRECT TECHNICAL INQUIRIES TO:
            NORMAN BRENNER
            3 SUMNER ROAD
            CAMBRIDGE, MA 02138

    DESCRIPTION - FAST ON NUMBERS RICH IN FACTORS OF TWO.
    ISIGN IS PLUS 1 OR MINUS 1. SUBROUTINE FOUR1

(DATA,NN,ISIGN). THE COOLEY-TUKEY FAST FOURIER TRANSFORM
IN USASI BASIC FORTRAN. TRANSFORM(K) EQUALS
SUM(DATA(J)*EXP(ISIGN*2*PI*SQRT(-1)*(J-1)* (K-1(NN)),
SUMMED OVER ALL J AND K FROM 1 TO NN. DATA IS A ONE-
DIMENSIONAL COMPLEX ARRAY (I.E., THE REAL AND IMAGINERY
PARTS ARE ADJACENT IN STORAGE, SUCH AS FORTRAN IV PLACES
THEM) WHOSE LENGTH NN EQUALS 2**K, K.GE.O. (IF NECESSARY,
APPEND ZEROES TO THE DATA). ISIGN IS PLUS 1 OR MINUS 1.
IF A MINUS 1 TRANSFORM IS FOLLCWED BY A PLUS 1 (OR VICE
VERSA) THE ORIGINAL DATA REAPPEAR, MULTIPLIED BY NN.
TRANSFORM VALUES ARE RETURNED IN ARRAY DATA, REPLACING
THE INPUT. THE TIME IS PROPORTIONAL TO NN*LOG2(NN), RATHER
THAN THE NAIVE NN**2. ACCURACY IS ALSO GREATLY IMPROVED,
THE RMS RELATIVE ERROR BOUNDED BY 6*SQRT(2)*LOG2(NN)*2**(-
B), WHERE B IS THE NUMBER OF BITS IN THE FLOATING POINT
FRACTION.

PROGRAMMING SYSTEMS - WRITTEN IN USASI BASIC FORTRAN.

MINIMUM SYSTEM REQUIREMENTS - 8K.

DOCUMENTATION: 3 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 150 APPROXIMATE.
SUBMITTAL/REVISION DATE: 09/68

360D-13.6.003
    NONLINEAR PARAMETER ESTIMATION AND PROGRAMMING

    AUTHOR: YONATHAN BARD

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    DESCRIPTION - THE PROGRAM IS DESIGNED TO SOLVE THE FOLLOWING
    PROBLEMS:
    (1) ESTIMATE UNKNOWN PARAMETERS IN NONLINEAR MATHEMATICAL
         MODELS, USING ANY OF THE FOLLCWING TECHNIQUES:
         (A) LEAST SQUARES
         (B) WEIGHTED LEAST SQUARES
         (C) MAXIMUM LIKELIHOOD
         (D) BAYESIAN ESTIMATION

         SPECIAL PROVISIONS ARE INCLUDED FCR MODELS INVOLVING
         SOLUTIONS OF ORDINARY DIFFERENTIAL EQUATIONS, AND FOR

CHEMICAL REACTION KINETICS EQUATIONS. CONSTRAINTS MAY BE IMPOSED ON THE PARAMETER VALUES.

(2)   SOLVE NONLINEAR PROGRAMMING PROBLEMS.

(3)   SOLVE SIMULTANEOUS EQUATIONS, TWO POINT BOUNDARY VALUE PROBLEMS, AND OTHER PROBLEMS WHICH CAN BE CAST IN THE FORM OF ONE OF THE TWO ABOVE MENTIONED FORMS.

PROGRAMMING SYSTEMS - THE PROGRAM IS WRITTEN IN THE LOWEST LEVEL FORTRAN IV LANGUAGE.

MINIMUM SYSTEM REQUIREMENTS - IT CAN BE RUN ON THE IBM SYSTEM/360 UNDER THE OS OR BPS MONITORS, ON THE IBM 7090 OR 7094 COMPUTER UNDER IBSYS, ETC.

DOCUMENTATION: 97 PAGES, $3.85 ADDITIONAL CHARGE.
CARD COUNT: 2,280 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/67

360D-13.6.007
    NONLINEAR LEAST-SQUARES CURVE FITTING PROGRAM

AUTHOR: FRED S. WOOD

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DESCRIPTION - THE PROGRAM ALLOWS THE USER TO ESTIMATE THE COEFFICIENTS OF A NONLINEAR EQUATION SUCH AS
$Y = A / (X + B)^2$ AND $Y = AX^B + C$ -- EQUATIONS THAT ARE NONLINEAR IN THE COEFFICIENTS. AN ITERATIVE TECHNIQUE IS USED; THE ESTIMATES AT EACH ITERATION ARE OBTAINED BY MARQUARDT'S MAXIMUM NEIGHBORHOOD METHOD WHICH COMBINES THE GAUSS (TAYLOR SERIES) METHOD AND THE METHOD OF STEEPEST DECENT.

SINCE NUMEROUS FORMS OF EQUATIONS CAN BE USED, THE USER MUST SPECIFY THE FORM BY PROVIDING A SUBROUTINE TO COMPUTE THE VALUES OF THE EQUATION'S COEFFICIENTS. IN ADDITION, THE USER MUST PROVIDE A CONTROL CARD, A FORMAT CARD FOR READING DATA AND ESTIMATES OF THE STARTING VALUES OF THE

COEFFICIENTS. IF DESIRED, INFORMATION CARDS AND COEFFICIENT NAME CARDS CAN BE READ FOR DISPLAY ON THE PRINTOUT. SUCH DISPLAYS ARE HELPFUL TO RECORD THE FORM OF THE EQUATION, THE PURPOSE OF THE RUN AND ANY ADDITIONAL INFORMATION THAT MAY HELP IDENTIFY THE PRINTOUT IN THE FUTURE. IDENTIFICATION OF THE COEFFICIENTS BY NAME IS PARTICULARLY HELPFUL WHEN WORKING WITH LARGE OR COMPLEX EQUATIONS.

THE OUTPUT OF THE PROGRAM IS A PRINTED REPORT WHICH INCLUDES A DESCRIPTION OF THE PROBLEM, THE STARTING VALUES OF THE COEFFICIENTS, THE SIZE OF THE INCREMENTAL STEPS, A SUMMARY OF EACH ITERATION AND A SUMMARY OF THE FINAL FIT (IN TERMS SIMILAR TO THOSE IN THE LINEAR LEAST-SQUARES CURVE FITTING PROGRAM). THE STATISTICS CALCULATED INCLUDE THE NUMBER OF OBSERVATIONS, THE NUMBER OF COEFFICIENTS, THE RESIDUAL DEGREES OF FREEDOM, THE MAXIMUM AND MINIMUM VALUE OF THE DEPENDENT VARIABLE AS WELL AS ITS RANGE, THE STANDARD ERROR AND T-VALUE FOR EACH COEFFICIENT, THE RESIDUAL SUM OF SQUARES, THE RESIDUAL MEAN SQUARE, AND THE RESIDUAL ROOT MEAN SQUARE.

LISTINGS ARE MADE OF THE OBSERVED AND FITTED VALUES OF THE DEPENDENT VARIABLE -- BOTH IN THE SEQUENCE IN WHICH OBSERVATIONS WERE GIVEN TO THE COMPUTER, AND IN THE ORDER OF THE MAGNITUDE OF THE DIFFERENCES BETWEEN THE OBSERVED AND FITTED VALUES. PLOTS ARE MADE TO INDICATE (1) WHETHER THESE DIFFERENCES ARE NORMALLY DISTRIBUTED AND (2) HOW THEY ARE DISTRIBUTED OVER ALL THE FITTED VALUES OF THE DEPENDENT VARIABLE. PLOTS OF THESE DIFFERENCES VERSUS EACH OF THE INDEPENDENT VARIABLES CAN BE USED TO CHOOSE THE APPROPRIATE FORM OF THE EQUATION AND TO DETERMINE THE DISTRIBUTION OF THE OBSERVATIONS OVER THE RANGE OF EACH INDEPENDENT VARIABLE.

PROVISIONS ARE MADE TO RUN MULTIPLE PROBLEMS AS WELL AS DIFFERENT EQUATIONS USING THE SAME DATA. THE PROGRAM AS DIMENSIONED (114K) WILL HANDLE UP TO 20 VARIABLES AND 170 OBSERVATIONS. INFORMATION IS GIVEN IN THE PROGRAM LISTINGS ON WHICH DIMENSIONS TO CHANGE IN ORDER TO REDUCE THE OVERALL DIMENSIONS OR TO INCREASE EITHER THE NUMBER OF VARIABLES AND/OR THE NUMBER OF OBSERVATIONS THE PROGRAM WILL HANDLE.

THE MACHINE REQUIREMENTS ARE A FORTRAN IV COMPILER, A CARD READER AND A PRINTER.

EXAMPLES ARE GIVEN.

FOR FURTHER EXAMPLES ON THE USE OF THIS PROGRAM, INTERPRETATION OF RESULTS, GLOSSARY OF TERMS, AND USER'S MANUAL, REFER TO "FITTING EQUATIONS TO DATA", COMPUTER

CONTINUED FROM PRIOR COLUMN

ANALYSIS OF MULTI-FACTOR DATA, BY CULBERT DANIEL AND FRED WOOD, WILEY 1971.

PROGRAMMING SYSTEMS - WRITTEN IN OS FORTRAN IV H LEVEL.

MINIMUM SYSTEM REQUIREMENTS - OS/360 (SEE ABSTRACT).

DOCUMENTATION: 33 PAGES, $.65 ADDITIONAL CHARGE.
CARD COUNT: 1,830 APPROXIMATE.
SUBMITTAL/REVISION DATE: 01/76

360D-13.6.008
    LINEAR LEAST-SQUARES CURVE FITTING PROGRAM

    AUTHOR: FRED S. WOOD

    DIRECT TECHNICAL INQUIRIES TO:
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      CHICAGO, IL 60601

    DESCRIPTION - THIS COMPUTER PROGRAM HAS MANY OPTIONS WHICH
    ALLOW THE USER TO TRANSFORM DATA INTO AN APPROPRIATE FORM,
    FIT SPECIFIED EQUATIONS TO THE TRANSFORMED DATA BY LINEAR
    LEAST-SQUARES, AND PROVIDES BOTH STATISTICS AND PLOTS TO AID
    IN EVALUATING THE FIT. A CP-STATISTIC SEARCH TECHNIQUE
    DETERMINES IF SMALLER SETS OF THE VARIABLES WILL REPRESENT
    THE DATA EQUALLY WELL.

    THE TRANSFORMATIONS WHICH ARE AVAILABLE TO THE USER INCLUDE
    RECIPROCALS, SUMS, DIFFERENCE, PRODUCTS, QUOTIENTS,
    LOGARITHMS, AND EXPONENTIALS. SUCH TRANSFORMATIONS ARE USED
    TO CONVERT THE OBSERVED DATA TO MORE CONVENIENT OR MORE
    RATIONAL UNITS, TO ADD TERMS THAT ARE FUNCTIONS OF THE
    DATA-VARIABLES, TO STABILIZE VARIANCE, AND TO OMIT
    VARIABLES.

    IN ADDITION TO THE USUAL STATISTICS, THE PROGRAM CALCULATES
    THE MAXIMUM AND MINIMUM VALUE OF EACH VARIABLE AS WELL AS
    ITS RANGE, THE RELATIVE INFLUENCE OF EACH VARIABLE AND THE
    WEIGHTED SQUARED STANDARDIZED DISTANCE OF EACH OBSERVATION
    FROM THE CENTROID OF ALL OBSERVATIONS. NEAR NEIGHBORS ARE
    USED TO ESTIMATE THE STANDARD DEVIATION OF THE DEPENDENT
    VARIABLE. A TABLE OF COMPONENT EFFECTS SHOWS HOW EACH
    VARIABLE CONTRIBUTES TO THE FITTED VALUE OF EACH

CONTINUED FROM PRIOR COLUMN

OBSERVATION. CROSS VERIFICATION OF COEFFICIENTS CAN BE MADE
WITH A SECOND SAMPLE OF DATA.

LISTINGS ARE MADE OF THE OBSERVED AND FITTED VALUES OF THE
DEPENDENT VARIABLE -- BOTH IN THE SEQUENCE IN WHICH
OBSERVATIONS WERE GIVEN TO THE COMPUTER, AND IN THE ORDER
OF THE MAGNITUDE OF THE DIFFERENCES BETWEEN THE OBSERVED AND
FITTED VALUES. PLOTS ARE MADE TO INDICATE (1) WHETHER THESE
DIFFERENCES ARE NORMALLY DISTRIBUTED AND (2) HOW THEY ARE
DISTRIBUTED OVER ALL THE FITTED VALUES OF THE DEPENDENT
VARIABLE. PLOTS OF THESE DIFFERENCES, TOGETHER WITH THE
COMPONENT EFFECTS OF EACH INDEPENDENT VARIABLE, CAN ALSO BE
USED (1) TO CHOOSE THE APPROPRIATE FORM OF THE EQUATION, (2)
TO DETERMINE THE DISTRIBUTION OF THE OBSERVATIONS OVER THE
RANGE OF EACH INDEPENDENT VARIABLE AND (3) TO ASCERTAIN THE
INFLUENCE OF EACH OBSERVATION ON EACH COMPONENT OF THE
EQUATION.

THE PROGRAM, AS DIMENSIONED, WILL HANDLE UP TO 105 VARIABLES
BEFORE TRANSFORMATIONS, 80 AFTER, AND 1000 OBSERVATIONS.
PROGRAM CHANGE CARDS ARE INCLUDED TO ALLOW A COMPUTER CENTER
TO ALSO OFFER A SMALLER PROGRAM WHICH WILL HANDLE UP TO 35
VARIABLES BEFORE TRANSFORMATIONS, 10 AFTER, AND 200
OBSERVATIONS. MULTIPLE DEPENDENT VARIABLES ARE FITTED ONE
AT A TIME AND MULTIPLE FORMS OF SPECIFIED LINEAR EQUATIONS
CAN BE FITTED WITH ONE DATA LOADING.

THE MACHINE REQUIREMENTS ARE A FORTRAN IV COMPILER, A CARD
READER, FOUR SCRATCH FILES AND A PRINTER. THE CURRENT
OVERALL DIMENSIONS OF THE 80 VARIABLE PROGRAM IS 200K, THE
10 VARIABLE PROGRAM 66K.

FOR FURTHER EXAMPLES ON THE USE OF THIS PROGRAM,
INTERPRETATION OF RESULTS, GLOSSARY OF TERMS, AND USER'S
MANUAL, REFER TO "FITTING EQUATIONS TO DATA", COMPUTER
ANALYSIS OF MULTIFACTOR DATA FOR SCIENTISTS AND ENGINEERS
BY CUTHBERT DANIEL AND FRED WOOD, WILEY 1971.

PROGRAMMING LANGUAGE - OS FORTRAN H

MINIMUM SYSTEM REQUIREMENTS - SEE ABSTRACT.

DOCUMENTATION: 88 PAGES, $3.40 ADDITIONAL CHARGE
CARD COUNT: 3,700 APPROXIMATE
SUBMITTAL/REVISION DATE: 11/75.

360D-13.7.001
    DIALL - GENERAL LEAST SQUARES DIALLEL ANALYSIS OF VARIANCE

    AUTHOR: H.E. SCHAFFER   R.A. USANIS

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    DESCRIPTION - TWO MAIN PROGRAMS, DIALL AND DIALLC, WHICH
    DO A GENERAL LEAST SQUARES ANALYSIS FOR A GENERAL
    (UNBALANCED) DIALLEL EXPERIMENT, ARE DESCRIBED IN DETAIL.
    THE PROGRAMS, WITH THEIR SUBROUTINES, WILL COMPUTE THE
    ANALYSIS OF VARIANCE AND ANALYSIS OF CROSS-PRODUCTS TABLES
    FOR ANY NUMBER OF VARIABLES INCLUDING THE EXPECTATIONS
    OF THE MEAN SQUARES, CALCULATE THE ESTIMATES OF THE VARIANCE
    COMPONENTS AND ESTIMATE THE CORRELATIONS BETWEEN THE EFFECTS
    FOR DIFFERENT TRAITS. TWO EXAMPLES ARE GIVEN OF THE USE
    OF THESE PROGRAMS. FOR A COMPLETE ANALYSIS OF A 5 LINE
    DIALLEL EXPERIMENT WITH TWO REPLICATES AND ONE VARIABLE
    APPROXIMATELY 42K BYTES OF MEMORY ARE NEEDED. THE MEMORY
    REQUIREMENTS INCREASE MORE RAPIDLY THAN AN INCREASE IN
    THE NUMBER OF LINES.

    PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN IV, G LEVEL AND
    TESTED USING OS/360.

    MINIMUM SYSTEM REQUIREMENTS - OUTPUT RECORDS UP TO 132
    CHARACTERS ARE PRODUCED. NO SPECIAL EQUIPMENT IS REQUIRED.

    DOCUMENTATION: 27 PAGES, $.35 ADDITIONAL CHARGE.
    CARD COUNT: . 1,250 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 06/69

360D-15.0.005
    TRANSIENT SOLUTIONS FOR MARKOV CHAINS

    AUTHOR: WINFRIED K. GRASSMANN AND T. K. NGAI

    DIRECT TECHNICAL INQUIRIES TO:
            DR. WINFRIED K. GRASSMAN
            DEPARTMENT CF COMPUTATIONAL SCIENCE
            UNIVERSITY OF SASKATCHEWAN
            SASKATOON, SASKATCHEWAN
            CANADA

    DESCRIPTION - THE PROGRAM FINDS TRANSIENT SOLUTIONS FOR
    CONTINUOUS MARKOV-CHAINS WITH SPARSE TRANSITION MATRICES.
    SUCH MARKOV-CHAINS OCCUR FREQUENTLY IN QUEUEING THEORY,
    ESPECIALLY IN SITUATIONS WITH MORE THAN ONE QUEUE. THE
    PROGRAM IS WRITTEN IN FORTRAN G. IT CONSISTS OF LESS THAN
    200 STATEMENTS AND HAS NO SUBROUTINES. THE METHOD EMPLOYED
    IS RANDOMIZATION. THE ALGORITHM IS DESCRIBED BY W.
    GRASSMANN IN "TRANSIENT SOLUTIONS IN SIMPLE QUEUES", WORKING
    PAPERS OF THE DEPARTMENT CF COMPUTATIONAL SCIENCE,
    UNIVERSITY OF SASKATCHEWAN, 74-R-2, PAGE 7.

    PROGRAMMING LANGUAGE - FORTRAN G

    MINIMUM SYSTEM REQUIREMENTS - CS/360, FORTRAN G.

    DOCUMENTATION: 25 PAGES, $.25 ADDITIONAL CHARGE.
    CARD COUNT: 350 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 11/74.

360D-15.1.004
    360 GASP III - GENERALIZED ACADEMIC SIMULATION PROGRAM

    AUTHOR: J. LINDERMAN   R. E. HOLZ

    DIRECT TECHNICAL INQUIRIES TO:
            J. L. LINDERMAN
            MASSACHUSETTS INSTITUTE OF TECHNOLOGY
            77 MASSACHUSETTS AVENUE
            CAMBRIDGE, MASSACHUSETTS 02139

    DESCRIPTION - 360 GASP III IS A SYSTEM FCR EDUCATIONAL
    SCHEDULING (TIMETABLE CONSTRUCTION, RESOURCE ALLOCATION,
    SECTIONING, EXAMINATION SCHEDULING, SIMULATION AND
    PLANNING). THIS VERSION, DESIGNED WITH MODERN INSTITUTIONS

CONTINUED FROM PRIOR COLUMN

IN MIND, IS ABLE TO COPE WITH MODULAR SCHEDULING, TEAM
TEACHING, ABILITY TRACKING, INDIVIDUAL STUDIES, ETC. IN
CONTRAST TO MANY DATA PROCESSING ALGORITHMS, GASP IS
BASICALLY HEURISTIC, SEEKING A "SATISFACTORY" SOLUTION
RATHER THAN AN "OPTIMAL" ONE. THE APPROACH HAS PROVEN
BOTH OPERATIONALLY AND ECONOMICALLY FEASIBLE. MAN-MACHINE
INTERACTION IS REQUIRED AND THE SYSTEM IS A SUCCESSFUL
AND POWERFUL "TOOL" WHEN USED PROPERLY AS SUCH. SAVINGS
IN ADMINISTRATIVE TIME AND EFFCRT HAVE BEEN REPORTED AS
HIGH AS 75 PER CENT. MORE DETAILED INFORMATION ABOUT THE
AREA AND METHOD OF APPLICATION IS AVAILABLE IN THE WRITE-
UP. THE TRANSMITTAL TAPE INCLUDES A LOAD LIBRARY, PROGRAM
SOURCE AND OBJECT, AND SAMPLE DATA. 360 GASP III IS SIMILAR
TO 7090/94 GASP III (MI GASP SDA NO. 3455) IN DOCUMENTATION
AND EFFECT.

PROGRAMMING SYSTEMS - UTILIZES THE SYSTEM/360 OPERATING
SYSTEM.

MINIMUM SYSTEM REQUIREMENTS - S/360 WITH 128K CORE STORAGE.

DOCUMENTATION: 152 PAGES, $6.60 ADDITIONAL CHARGE.
CARD COUNT: 30,800 APPROXIMATE.
SUBMITTAL/REVISION DATE: 07/67

360D-15.1.008
     SOL-370 SIMULATION SYSTEM

AUTHOR: HORST E. ULFERS

DIRECT TECHNICAL INQUIRIES TO:
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          DCEC, CODE R830
          1860 WIEHLE AVENUE
          RESTON, VIRGINIA 22090

DESCRIPTION - THE SOL-370 SIMULATION SYSTEM IS A GENERAL
PURPOSE SIMULATOR FOR DISCRETE MODELING AND SIMULATION.
THE SOURCE LANGUAGE IS ENGLISH-LIKE AND HAS BEEN IMPLEMENTED
AS AN EXTENSION TO PL/I. THE SYSTEM PRODUCES OBJECT CODE
AND PROVIDES FOR EXTENSIVE INTERACTIVE POST-SIMULATION
ANALYSIS.

THE SYSTEM IS COMPATIBLE WITH ALL VERSIONS OF THE PL/I-F,
PL/I-OPTIMIZING, AND PL/I-CHECKOUT COMPILERS AND CAN BE
USED IN THE OS/MVT AND OS/MVT-TSO ENVIRONMENT. IT CAN BE
OPERATED IN THE BATCH OR TSO MODE.

CONTINUED FROM PRIOR COLUMN

MINIMUM SYSTEM REQUIREMENTS FCR SOL-370, RELEASE 1/76, ARE
200K OF CORE AND 250 TRACKS OF 3330 DISK OR EQUIVALENT.

THE DOCUMENTATION CONSISTS OF THE "SOL-370 LANGUAGE
REFERENCE MANUAL AND A USER'S GUIDE", TN 25-75, AND THE
"SOL-370 INSTALLATION AND ERROR TRACING GUIDE", TN 23-76.
BOTH DOCUMENTS ARE AVAILABLE ALSO THROUGH THE DEFENSE
DOCUMENTATION CENTER (DDC).

PROGRAMMING LANGUAGE - OS/PL/I

MINIMUM SYSTEM REQUIREMENTS - SEE ABSTRACT

DOCUMENTATION: 58 PAGES, $1.90 ADDITIONAL CHARGE.
CARD COUNT: NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 6/76

360D-15.2.007
     MFOR 360 LINEAR PROGRAMMING CCDE

AUTHOR: J. SHWIMER

DIRECT TECHNICAL INQUIRIES TO:

          TECHNICAL ASSISTANCE
          CURRENTLY NOT AVAILABLE.

DESCRIPTION - MFOR 360 IS AN INDEPENDENT ROUTINE WHICH
USES THE REVISED SIMPLEX METHOD WITH THE PRODUCT FORM OF
THE INVERSE TO SOLVE THE LINEAR PROGRAMMING PROBLEM IN
STANDARD FORM. MFOR 360 HAS BEEN COMPILED AND TESTED USING
OS VERSION 11 ON A S/360 MODEL 65.

THE ROUTINE IS AN ALL-IN-CORE ROUTINE, THEREFORE NO
SECONDARY STORAGE IS NEEDED. SYMBOLIC CCNTROL CARDS DIRECT
THE OPERATION OF MFOR 360.

PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN IV (G LEVEL) WITH
ONE SUBROUTINE IN 360 BASIC ASSEMBLER LANGUAGE.

MINIMUM SYSTEM REQUIREMENTS - THOSE NEEDED TO RUN OS/360.

DOCUMENTATION: 30 PAGES, $.50 ADDITIONAL CHARGE.
CARD COUNT: 1,450 APPROXIMATE.

CONTINUED FROM PRIOR COLUMN

SUBMITTAL/REVISION DATE: 03/68

360D-15.2.011
ZERO-ONE INTEGER PROGRAMMING WITH HEURISTICS

AUTHOR: E. D. HOLCOMB

DIRECT TECHNICAL INQUIRIES TO:
    E. D. HOLCOMB
    UNION CARBIDE CORPORATION
    NUCLEAR DIVISION
    COMPUTING CENTER
    BLDG. K-1007 MAIL STOP 17
    POST OFFICE BOX P
    OAK RIDGE, TENNESSEE 37830

DESCRIPTION - THE ZERO-ONE INTEGER PROGRAMMING WITH
HEURISTICS PROGRAM IS DESIGNED TO SOLVE LINEAR PROGRAMMING
PROBLEMS WHOSE VARIABLES ARE RESTRICTED TO VALUES OF ZERO
OR ONE. THE PROGRAM UTILIZES THE WELL KNOWN ADDITIVE
ALGORITHM OF EGON BALAS COMBINED WITH A GROUP OF USER
SELECTED HEURISTIC TEST OPTIONS DESIGNED TO SPEED SOLUTION
TIME BY TAKING ADVANTAGE OF INDIVIDUAL PROBLEM
CHARACTERISTICS.

PROGRAMMING SYSTEMS - THE PROGRAM DECK CONSISTS OF A MAIN
PROGRAM AND FOUR SUBROUTINES WRITTEN IN FORTRAN PLUS A
THREE CARD OBJECT DECK OF A CLOCK READING FUNCTION.

MINIMUM SYSTEM REQUIREMENTS - THE PROGRAM HAS BEEN TESTED
ON THE IBM 360 MODEL 50 USING OS/360. HOWEVER, THE USE
OF ANY IBM 360 MODEL 40 OR LARGER WITH OS/360 SHOULD NOT
CAUSE DIFFICULTIES.

DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 600 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/68

360D-15.2.014
AN ADJACENT EFFICIENT EXTREME POINT ALGORITHM FOR VECTOR-
MAXIMUM AND INTERVAL WEIGHTED-SUMS LINEAR PROGRAMMING
PROBLEMS

AUTHOR: RALPH E. STEUER

DIRECT TECHNICAL INQUIRIES TO:
    RALPH E. STEUER
    COLLEGE OF BUSINESS AND ECONOMICS
    UNIVERSITY OF KENTUCKY
    LEXINGTON, KY 40506

DESCRIPTION - ADEX IS INTENDED FOR USE IN ANALYZING MULTIPLE
OBJECTIVE LINEAR PROGRAMMING PROBLEMS. ITS PRIMARY
ADVANTAGE IS THAT (RATHER THAN GENERATING JUST ONE SOLUTION)
A LIST OF SEVERAL CANDIDATE SOLUTIONS IS PRODUCED. THIS IS
ACCOMPLISHED BY UTILIZING A VECTOR-MAXIMUM REPRESENTATION
OF LINEAR MULTIPLE OBJECTIVE PROGRAMMING PROBLEMS AND THEN
SOLVING FOR ALL EFFICIENT (I.E., PARETO OPTIMAL) EXTREME
POINTS.

IN ORDER TO CONTROL THE NUMBER OF EFFICIENT EXTREME POINTS
GENERATED, ADEX ALLOWS THE SPECIFICATION OF (RATHER THAN
POINT ESTIMATE WEIGHTS) INTERVAL WEIGHTS FOR EACH OF THE
DIFFERENT OBJECTIVES. THE LOOSER THE INTERVAL CRITERION
WEIGHT BOUNDS, THE GREATER THE NUMBER OF EFFICIENT EXTREME
POINTS GENERATED; THE TIGHTER THE INTERVAL BOUNDS, THE
FEWER EFFICIENT EXTREME POINTS GENERATED.

ADEX CAN ALSO BE APPLIED TO GOAL PROGRAMMING SITUATIONS
WHERE COMBINATIONS OF THE DIFFERENT DEVIATION VARIABLES HAVE
BEEN STRUCTURED AS DISTINCT OBJECTIVES. IN ADDITION, THE
CODE CAN BE USED TO LOCATE ALL OPTIMAL EXTREME POINTS OF A
SINGLE OBJECTIVE LINEAR PROGRAM.

ADEX IS A SELF-CONTAINED PROCEDURE (MAIN PROGRAM AND ALL
NECESSARY SUBROUTINES) THAT IS WRITTEN IN FORTRAN IV. THE
ALGORITHM EMPLOYS A METHOD OF CHERNIKOVA FOR DETERMINING
WHICH EXTREME POINTS OF THE FEASIBLE REGION ARE ADJACENT TO
A GIVEN EFFICIENT EXTREME POINT. IN COMPARISON WITH ADBASE,
AN ALTERNATIVE PROCEDURE FOR THE SAME PURPOSES, ADEX WILL
RUN FASTER ON PROBLEMS WITH HIGHLY DEGENERATE EXTREME POINTS
BUT ONLY AT THE EXPENSE OF LARGE CORE STORAGE REQUIREMENTS.

THE CODE IS ACCOMPANIED BY A COMPREHENSIVE 117 PAGE
OPERATING MANUAL.

PROGRAMMING LANGUAGE - FORTRAN IV

CONTINUED FROM PRIOR COLUMN

MINIMUM SYSTEM REQUIREMENTS - NONE SPECIFIED.

DOCUMENTATION: 120 PAGES, $5.00 ADDITICNAL CHARGE.
CARD COUNT: 2,000 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/74.

360D-15.3.003
A COMPLEMENTARY PIVOT METHOD FOR SOLVING QUADRATIC
PROGRAMMING PROBLEMS

AUTHOR: A. RAVINDRAN

DIRECT TECHNICAL INQUIRIES TO:
          PROFESSOR A. RAVINDRAN
          SCHOOL OF INDUSTRIAL ENGINEERING
          PURDUE UNIVERSITY
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DESCRIPTION - THIS PROGRAM CAN SOLVE ANY CONVEX QUADRATIC
PROGRAMMING OR LINEAR PROGRAMMING PROBLEM. THE ENTIRE
PROGRAM IS WRITTEN IN FORTRAN IV SO THAT IT CAN BE
IMPLEMENTED EASILY IN ANY COMPUTING SYSTEM. THE PROGRAM
IS BASED ON THE COMPLEMENTARY PIVOT METHOD FOR SOLVING
COMPLEMENTARY PROBLEMS. ITS MAIN FIELD OF APPLICATION
IS IN MANAGEMENT SCIENCE/OPERATIONS RESEARCH FOR SOLVING
NONLINEAR PROGRAMMING OR CONSTRAINED OPTIMIZATION PROBLEMS.
THE PROGRAM CONSISTS OF A MAIN PROGRAM AND A NUMBER OF
SUBROUTINES WRITTEN IN FORTRAN LANGUAGE. IN ITS PRESENT
FORM, IT REQUIRES 70K WORDS IN CDC 6500 MACHINE FOR LOADING
AND EXECUTING AND CAN SOLVE QUADRADIC OR LINEAR PROGRAMMING
PROBLEMS WHOSE ROWS DO NOT EXCEED 75. THE PROBLEM SIZE CAN
BE REDUCED TO ACCOMODATE CORE AVAILABILITY OF SMALLER
MACHINES. LARGER PROBLEMS CAN BE SOLVED BY INCREASING THE
SIZE OF THE DIMENSION STATEMENTS.

PROGRAMMING LANGUAGE - FORTRAN IV

MINIMUM SYSTEM REQUIREMENTS - SEE ABSTRACT

DOCUMENTATION: 15 PAGES, NO ADDITICNAL CHARGE.
CARD COUNT: NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 8/76

360D-15.6.003
COMPUTERIZED RELATIVE ALLOCATICN OF FACILITIES
TECHNIQUE, CRAFT 4.2

AUTHOR: G.C. ARMOUR

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  OHE 400
  UNIVERSITY OF SOUTHERN CALIFCRNIA
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DESCRIPTION - COMPUTERIZED RELATIVE ALLCCATION OF FACILITIES
TECHNIQUE (CRAFT) ACCEPTS AN INITIAL LAYOUT PATTERN FOR A
PHYSICAL FACILITY AND GENERATES IMPROVED LAYOUTS. THE
PROGRAM IS GOVERNED BY HEURISTIC RULES WHICH SEQUENTIALLY
ALTER LAYOUT PATTERNS WHILE ATTEMPTING TO MINIMIZE VARIABLE
MATERIAL HANDLING COSTS. INPUTS ARE MATERIAL HANDLING AND
FLOW AND COST DATA, AND AN INITIAL LAYOUT OF DEPARTMENTAL
AREAS. CRAFT GENERATES THE VARIABLE COST OF MATERIAL
HANDLING FOR THE INITIAL LAYOUT. THE PRCGRAM THEN TRIES
COMBINATIONS OF TWO DEPARTMENT EXCHANGES, ATTEMPTING TO
FIND A LESS COSTLY LAYOUT. MCDIFICATIONS CONTINUE UNTIL NO
FURTHER COST REDUCTION IS POSSIBLE. CRAFT CAN ALSO BE
BE APPLIED TO ANY MOVEMENT PROELEM THAT CAN BE REPRESENTED
ON A COST-PER-FOOT BASIS. THE FLOW OF PEOPLE IN AN OFFICE
LAYOUT IS AN EXAMPLE. CRAFT WAS WRITTEN BY ARMOUR
(C.1961), REVISED (CRAFT IV) BY FAGNANI IN 1967, FUTHER
REVISED (CALLED CRAFT 4.1 HERE), AND SUEMITTED TO SHARE IN
1974. CRAFT 4.2 MODIFIES CRAFT 4.1 FOR THE IBM 360/370.
FORTRAN IV WITH SOME ASSEMBLER SUBROUTINES; REQUIRES 220K
TO COMPILE AND LINK-EDIT AND 160K TO LOAD WITHOUT OVERLAYS.

PROGRAMMING LANGUAGE - IBM FORTRAN IV, OS ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - (SEE ABSTRACT)

DOCUMENTATION: 112 PAGES, $4.60 ADDITICNAL CHARGE.
CARD COUNT: 2,550 APPROXIMATE.
SUBMITTAL/REVISION DATE: 04/76

360D-15.6.004
CRAFT-M - COMPUTERIZED ALLOCATION OF FACILITIES
TECHNIQUE (INCLUDING DEPT. MOVE COSTS)

AUTHORS: P. HICKS & T. COWAN

DIRECT TECHNICAL INQUIRIES TO:
MR. TROY COWAN
CONTRACTS DIVISION, ERDA
BOX 5400
ALBUQUERQUE, NM 87115

DESCRIPTION - CRAFT IS A COMPUTER PROGRAM FOR HEURISTICALLY
DETERMINING THE RELATIVE LOCATION OF ACTIVITIES IN A PLANT
LAYOUT IN AN ATTEMPT TO MINIMIZE THE MATERIAL HANDLING COSTS
OF ALL PRODUCTS FLOWING BETWEEN DEPARTMENTS PER UNIT TIME.
INPUT CONSISTS OF AN INITIAL LAYOUT OF ACTIVITY AREAS, AND
FLOW AND MATERIAL HANDLING COST DATA. THE PROGRAM CONSIDERS
SWITCHING DEPARTMENTS IN AN EFFORT TO REDUCE OVERALL
MATERIAL HANDLING COST.

CRAFT-M, AN EXTENSION TO CRAFT, REQUIRES ADDITIONAL INPUTS
OF 1) FIXED COST, AND VARIABLE COST PER UNIT DISTANCE, TO
MOVE EACH ACTIVITY AREA, 2) INTEREST RATE AND NUMBER OF
INTEREST PERIODS FOR PRORATING MOVE COSTS OVER THE LIFE OF
THE REARRANGEMENT, AND 3) EXPECTED MATERIAL HANDLING COST
REDUCTION MADE POSSIBLE BY AN ACTIVITY AREA MOVE. IN
CRAFT-M, DEPARTMENTS ARE SWITCHED IF THE RESULTING MATERIAL
HANDLING COST IMPROVEMENT MORE THAN COVERS THE DEPARTMENTAL
MOVE COSTS OVER THE LIFE OF THE ARRANGEMENT.

PROGRAMMING LANGUAGE - IBM FORTRAN IV, OS ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - NONE STATED

DOCUMENTATION: 18 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 2,200 APPROXIMATE.
SUBMITTAL/REVISION DATE: 6/76

360D-16.0.001
UCARDS: UNION CARBIDE AUTOMATIC ROUTINE AND DESIGN FOR
PRINTED CIRCUIT BOARDS

AUTHOR: J. R. JAMISON

DIRECT TECHNICAL INQUIRIES TO:
B. L. CRASS
UNION CARBIDE CORPORATION
NUCLEAR DIVISION
P. O. BOX P, K1007, STP 53
OAK RIDGE, TENNESSEE 37830

DESCRIPTION - THE S/360 UCARDS PROGRAM IS AN AUTOMATED
DESIGN SYSTEM FOR PRODUCING COMPONENT LAYOUT, CONDUCTOR
LAYOUT AND OTHER AIDS FOR THE FABRICATION OF PRINTED CIRCUIT
BOARDS.

PROGRAMMING SYSTEMS - WRITTEN PRIMARILY IN FORTRAN IV AND
IS PRESENTLY IMPLEMENTED ON AN IBM 360/50-65 INTERCOUPLED
SYSTEM.

MINIMUM SYSTEM REQUIREMENTS - ALL OF THE PROGRAM WAS
COMPILED AND CHECKED OUT USING VERSION 15/16 AND REQUIRES
APPROXIMATELY 280,000 BYTES OF CORE STORAGE, TWO 9-CHANNEL
AND TWO 7-CHANNEL TAPE DRIVES. OF COURSE, A CARD READER
AND PRINTER ARE REQUIRED.

DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 16,050 APPROXIMATE.
SUBMITTAL/REVISION DATE: 06/69

360D-16.0.002
PROGRAMS FOR CALCULATION OF MICROWAVE INTERFERENCE

AUTHOR: M. J. PAGONES

DIRECT TECHNICAL INQUIRIES TO:
MICHAEL J. PAGONES
ROOM 3C-607
BELL LABORATORIES
HOLMDEL, NJ 07733

DESCRIPTION - THE PROGRAMS FMSPREV, ANINTP, AND ARBINTP ARE
INTENDED TO BE USED FOR TERRESTRIAL MICROWAVE RADIO
INTERFERENCE COORDINATION.

CONTINUED FROM PRIOR COLUMN

THE FMSPREY PROGRAM CALCULATES THE SPECTRAL DENSITY OF AN
FDM-FM SIGNAL, AND ANINTP CALCULATES THE INTERFERENCE
BETWEEN TWO ANALOG, FDM-FM SIGNALS, AND ARBINTP CALCULATES
THE INTERFERENCE BETWEEN ONE ANALOG FDM-FM SIGNAL AND
ANOTHER SIGNAL OF ARBITRARY SPECTRAL DENSITY.

THE DOCUMENTATION INCLUDES USER'S MANUALS AND LIMITATIONS
OF THE SOFTWARE.

PROGRAMMING LANGUAGE - PL/I (F).

MINIMUM SYSTEM REQUIREMENTS - OS/360

DOCUMENTATION: 33 PAGES, $.65 ADDITIONAL CHARGE.
CARD COUNT: 2,053.
SUBMITTAL/REVISION DATE: 4/75.

360D-16.0.003
      FAA INTEGRATED NOISE MODEL PROGRAM PACKAGE (VERSION 2)

      AUTHOR: DR. PETER A. MANSBACH

      DIRECT TECHNICAL INQUIRIES TO:
              DR. RONALD G. GADOS, W545
              THE MITRE CORPORATION
              METREK DIVISION
              1820 DOLLEY MADISON BLVD.
              MCLEAN, VIRGINIA 22101

      DESCRIPTION - THE FAA AIRCRAFT NOISE MODEL PROGRAM PACKAGE
      INMPROG PROVIDES THE CAPABILITY TO COMPUTE AIRCRAFT NOISE
      INDICES AS REQUIRED BY THE INTEGRATED NOISE MODEL. TABULAR
      OUTPUT INCLUDES LDN, LEQ, AND DURATIONS OF EXPOSURE ABOVE
      VARIOUS DB(A) THRESHOLDS. PLOTTER OUTPUT IS ALSO GENERATED.
      THE PACKAGE INCLUDES ITS OWN DATA BASE.

      THE PROGRAMS ARE WRITTEN IN PL/I, AND REQUIRE PREPROCESSOR
      AND REGIONAL (1) I/O CAPABILITY. 5 MAIN PROGRAMS, 22 SUB-
      PROGRAMS, AND 5 MACRO FILES COMPRISE THE PROGRAM. THE
      REQUIRED STANDARD NOISE LIBRARY AND ACOUSTIC DATA LIBRARY
      ARE ALSO SUPPLIED; HOWEVER, THESE ARE IN IBM 360/370
      MACHINE READABLE DATA FORMS.
      THE PROGRAMS WERE DEVELOPED ON AN IBM 370/145 UNDER CMS,
      USING A VIRTUAL MACHINE SIZE OF 512K. THEY ARE EXPECTED
      TO RUN ON ANY IBM 360 OR 370, EITHER CMS OR OS, WITH 400K
      OR MORE OF MEMORY, REAL OR VIRTUAL. THE PLOTTER PROGRAM

CONTINUED FROM PRIOR COLUMN

REQUIRES THE BASIC CALCOMP SUBROUTINES WITH FORTRAN
LINKAGES. USERS SHOULD OBTAIN THE "FAA INTEGRATED NOISE
MODEL-USER'S GUIDE", FAA-EQ-76-2, FROM THE NATIONAL
TECHNICAL INFORMATION SERVICE (NTIS), SPRINGFIELD, VA 22151.
A PROGRAMMER'S GUIDE AND DATA BASE DESCRIPTION ARE BEING
PREPARED.

PROGRAMMING LANGUAGE - PL/I, CALCOMP PLOTTER SOFTWARE

MINIMUM SYSTEM REQUIREMENTS - CMS/OS/IBM/360/370, DIRECT
ACCESS STORAGE AND AT LEAST 400K BYTES OF STORAGE

DOCUMENTATION: 20 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 10/76

360D-16.1.001
      ROCKET - FORTRAN 4 VERSION

      AUTHORS: B. BOEHM   J. RIEBER
               MISS P. LEONHARDT

      DIRECT TECHNICAL INQUIRIES TO:
              GARY D. BROWN
              RAND COMPUTER CENTER
              THE RAND CORPORATION
              1700 MAIN STREET
              SANTA MONICA, CA   90406

      DESCRIPTION - ROCKET IV IS A FORTRAN IV PROGRAM WHICH
      MATHEMATICALLY SIMULATES THE FLIGHT OF AEROSPACE VEHICLES
      BY NUMERICAL INTEGRATION OF THEIR EQUATIONS OF MOTION.
      A SPECIAL PURPOSE INPUT FORM ENABLES THE USER TO SPECIFY
      THE CHARACTERISTICS OF HIS VEHICLE AND ITS FLIGHT PLAN,
      BOTH OF WHICH CAN VARY THROUGH A WIDE RANGE OF CHOICES,
      WITH COMPARATIVELY LITTLE EFFORT.

      PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN IV.

      MINIMUM SYSTEM REQUIREMENTS - THE PROGRAM REQUIRES THE
      USE OF A FORTRAN COMPILER, READS INPUT FROM TAPE 5, AND
      WRITES OUTPUT ON TAPE 6. IT OCCUPIES ABOUT 25,000 WORDS
      OF CORE.

      DOCUMENTATION: 18 PAGES, NO ADDITIONAL CHARGE.
      NOT AVAILABLE ON CARDS.
      SUBMITTAL/REVISION DATE: 01/67

CONTINUED FROM PRIOR COLUMN

REQUIRES A 2400 FT. TAPE FOR DISTRIBUTION.

360D-16.3.002
    PULSE TESTING VIA THE FAST FOURIER TRANSFORM

    AUTHORS: CARLOS RAY DOLLAR   CECIL L. SMITH
              PAUL W. MURRILL

    DIRECT TECHNICAL INQUIRIES TO:
             C. RAY DOLLAR
             PROCESS COMPUTER ENGINEERING
             DOW CHEMICAL COMPANY
             FREEPORT, TEXAS 77541

    DESCRIPTION - SUBROUTINE REFFT ACCOMPLISHES A FAST, ACCURATE
    TRANSFORMATION OF TIME DOMAIN PULSE RESPONSE DATA TO
    FREQUENCY RESPONSE DATA USING THE REAL-VALUED FAST FOURIER
    TRANSFORM. THE SUBROUTINE IS WRITTEN IN FORTRAN IV AND
    HAS BEEN COMPILED AND TESTED ON A 7040, A S/360 MODEL 50,
    AND A S/360 MODEL 65. GIVEN TIME DOMAIN INPUT AND OUTPUT
    PULSE DATA THE SUBROUTINE WILL CALCULATE AND PRINT
    MAGNITUDES, PHASE ANGLES AND ASSOCIATED FREQUENCIES.

    PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN IV.

    MINIMUM SYSTEM REQUIREMENTS - A MINIMUM OF 16K OF CORE
    STORAGE IS REQUIRED AND WILL RUN ON A S/360 MODEL 30.

    DOCUMENTATION: 10 PAGES, NO ADDITIONAL CHARGE.
    CARD COUNT: 250 APPROXIMATE.
    SUBMITTAL/REVISION DATE: 10/69

360D-17.1.001
    QUANTITATIVE ANALYSIS WITH ELECTRON MICROPROBE ANALYZER

    AUTHOR : S. S. SO

    DIRECT TECHNICAL INQUIRIES TO:
             DR. SAMUEL S. SO
             IBM CORPORATION K12/282
             5600 COTTLE ROAD
             SAN JOSE, CA 95193

    DESCRIPTION - A DESCRIPTION OF TWO FORTRAN IV COMPUTER

CONTINUED FROM PRIOR COLUMN

PROGRAMS IS PRESENTED TO SIMPLIFY QUANTITATIVE AND
SEMIQUANTITATIVE ANALYSIS WITH THE ELECTRON MICROPROBE
ANALYZER. THE FIRST PROGRAM, EPMP1, DETERMINES THE WEIGHT
FRACTION OF EACH ELEMENT IN A SPECIMEN FROM THE
CHARACTERISTIC X-RAY INTENSITY MEASUREMENTS OF THE SPECIMEN
AND THE STANDARDS. THE SECOND PROGRAM, EPMP2, CALCULATES
THE RELATIVE CHARACTERISTIC X-RAY INTENSITIES OF ALL THE
ELEMENTS IN A SPECIMEN BY ASSUMING THE COMPOSITION OF THE
SPECIMEN TO BE KNOWN. THE CORRECTION PROCEDURE INCLUDES
DEAD TIME CORRECTION, ONE OF TWO BACKGROUND CORRECTIONS
(EITHER CONSTANT BACKGROUND OR BACKGROUND DEPENDING ON
COMPOSITION), PHILIBERTS ABSORPTION CORRECTION MODIFIED
BY DUNCUMB AND SHIELDS, ONE OF THREE FLUORESCENCE
CORRECTIONS (EITHER BIRKS, CASTAINGS, OR REEDS), AND A
COMPOUND STANDARD CORRECTION. THE EFFECTS OF THE ABSORPTION
AND THE FLUORESCENCE OF EACH ELEMENT IN THE SPECIMEN ARE
EASILY SEEN FROM THE OUTPUT RESULTS. VERSATILITY,
EFFICIENCY, AND EASE OF OPERATION ARE EMPHASIZED IN THE
PROGRAMS. PROGRAM LISTINGS, INPUT DATA FORMAT, AND VARIOUS
EXAMPLES SHOWING THE USAGE OF THE PROGRAMS HAVE BEEN
INCLUDED IN THE APPENDICES.

PROGRAMMING SYSTEMS - PROGRAMMING LANGUAGE - FORTRAN IV.
OPERATING SYSTEM REQUIRED - OS/360 WITH FORTRAN IV COMPILER
(LEVEL H).

MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED BY OS/360,
THE FORTRAN IV COMPILER, 36K CORE STORAGE.

DOCUMENTATION: 41 PAGES, $1.05 ADDITIONAL CHARGE.
CARD COUNT: 800 APPROXIMATE.
SUBMITTAL/REVISION DATE: 08/69

360D-17.2.006
    CERN SUMX - A DATA SUMMARIZATION PROGRAM FOR THE IBM/360

    AUTHORS: DR. M. J. BENISTON MR. H. R. PENAFIEL

    DIRECT TECHNICAL INQUIRIES TO:
             DR. M. J. BENISTON
             IBM CORPORATION - 63G
             POST OFFICE BOX 10500
             PALO ALTO, CALIFORNIA 94394

    DESCRIPTION - CERN SUMX ANALYZES INFORMATION ABOUT LARGE
    NUMBER OF EVENTS AND PRODUCES HISTOGRAMS, SCATTER DIAGRAMS,
    LIST AND ORDERED LISTS. FACILITIES ARE PROVIDED TO SELECT

CONTINUED FROM PRIOR COLUMN

SUBSETS OF EVENTS ACCORDING TO CRITERIA DEFINED ON CONTROL-
CARDS, AND TO ALLOW THE USER TO ADD ROUTINES FOR COMPUTING
PROGRAM WAS ORIGINALLY WRITTEN AT BERKELEY, BUT THE PRESENT
VERSION WAS COMPLETELY REWRITTEN AT CERN IN 1965-1966.
(SUMX 466, VERSION 5.25).

PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN IV, LEVEL H FOR
S/360.

MINIMUM SYSTEM REQUIREMENTS - 256K, WITHOUT OVERLAYS, THREE
TAPE DRIVES, RECOMMENDED MINIMUM OF THREE DISK DRIVES.

DOCUMENTATION: 76 PAGES, $2.80 ADDITIONAL CHARGE.
NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 07/67

360D-17.4.003
    TRANSIENT ONE-DIMENSIONAL AND SIMULTANEOUS SOLUTE AND WATER
    FLOW IN SOILS

AUTHOR: H. M. SELIM AND R. S. MANSELL

DIRECT TECHNICAL INQUIRIES TO:
    H. M. SELIM OR R. S. MANSELL
    DEPARTMENT OF SOIL SCIENCE
    2169 MCCARTY HALL
    UNIVERSITY OF FLORIDA
    GAINESVILLE, FLORIDA 32611

DESCRIPTION - A COMPUTER PROGRAM HAS BEEN DEVELOPED FOR THE
PROBLEM OF SOLUTE AND WATER MOVEMENT IN UNSATURATED SOILS OR
POROUS MEDIA UNDER TRANSIENT FLOW CONDITIONS. THE TWO NON-
LINEAR PARTIAL DIFFERENTIAL EQUATIONS GOVERNING THE SOLUTE
AND WATER FLOW ARE SOLVED SIMULTANEOUSLY FOR THE WATER
CONTENT AND SOLUTE CONCENTRATION AT ANY SPECIFIED TIME AND
LOCATION AS DESIRED. THE INITIAL CONDITIONS USED ARE
UNIFORM SALT AND WATER CONTENT DISTRIBUTIONS AT TIME T=0.
THE BOUNDARY CONDITIONS AT THE SOIL SURFACE ARE WATER FLUX
AND CONSTANT SALT CONCENTRATION CONDITIONS. THE METHOD
OF SOLUTION IS A NUMERICAL ONE WHICH UTILIZES THE EXPLICIT-
IMPLICIT FINITE DIFFERENCE TECHNIQUE.

THE COMPUTER PROGRAM IS WRITTEN IN FORTRAN LANGUAGE AND
CONSISTS OF A SOURCE PROGRAM, ELEVEN SUBPROGRAMS, AND AN
INPUT DATA SECTION. AN IMPORTANT FEATURE OF THE PROGRAM IS
THAT INCREMENTAL DISTANCE AND TIME STEPS ARE ADJUSTED
AUTOMATICALLY TO SATISFY STABILITY AND CONVERGENCE CRITERIA

CONTINUED FROM PRIOR COLUMN

FOR THE WATER AND SOLUTE FINITE DIFFERENCE CRITERIA. A
SECOND FEATURE IS THAT THE NUMBER OF NODAL POINTS ARE
AUTOMATICALLY CALCULATED FROM THE LENGTH OF THE FLOW REGION.
A THIRD FEATURE OF THE PROGRAM IS THAT OUTPUT DATA OF WATER
CONTENT, WATER FLUX, SOLUTE CONCENTRATION, AND SOLUTE FLUX
IN THE FLOW REGION ARE PROVIDED AT SPECIFIED TIMES AS
DESIRED.

PROGRAMMING LANGUAGE - FORTRAN IV

MINIMUM SYSTEM REQUIREMENTS - OS/360,128K PROGRAM

DOCUMENTATION: 50 PAGES, $1.50 ADDITIONAL CHARGE.
CARD COUNT: 620 CARDS APPROXIMATE.
SUBMITTAL/REVISION DATE: 9/74.

360D-17.4.004
    CAMIVA - CARTOGRAPHIC AUTOMATIC MAPPING SYSTEM

AUTHOR: WILLIAM G. SCHENK

DIRECT TECHNICAL INQUIRIES TO:
    WILLIAM G. SCHENK
    AFTAC/ADOS, BLDG. 989
    PATRICK AFB, FLORIDA 32925

DESCRIPTION - CAMIVA IS AN IBM SYSTEM 360 FORTRAN
PROGRAM THAT PERFORMS A WIDE VARIETY OF CARTOGRAPHIC
PLOTTING TASKS. IT WILL CONNECT POINTS WITH STRAIGHT
LINES OR GREAT CIRCLES AND DRAW LINE GRIDS, RANGE RINGS,
ELLIPSES, CONES, AZIMUTHS, AND A HOST OF OTHER MAP
FEATURES. INCLUDED ALSO ARE A SELECTION OF 17 MAP
PROJECTIONS THAT CAN BE USED IN CONJUNCTION WITH WORLD
DATA BANK I. THE STRUCTURE OF CAM IS MODULAR TO PERMIT
THE EASY ADDITION OF NEW FEATURES OR SUBROUTINES TO READ
DATA IN A DIFFERENT FORMAT.

PROGRAMMING LANGUAGE - FORTRAN AND ASSEMBLER

MINIMUM SYSTEM REQUIREMENTS - OS/360 AND PLOTTER

DOCUMENTATION: 6 PAGES, NO ADDITIONAL CHARGE.
                (PLUS MACHINE READABLE DOCUMENTATION)
CARD COUNT: NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 6/76
REQUIRES 1200 FT. TAPE FOR DISTRIBUTION.

360D-23.0.001
COFAD: COMPUTERIZED FACILITIES DESIGN

AUTHOR: J. A. TOMPKINS

DIRECT INQUIRIES TO:
  J. A. TOMPKINS
  BOX 5511
  NORTH CAROLINA STATE UNIVERSITY
  RALEIGH, NORTH CAROLINA 27906

DESCRIPTION - COFAD II (COMPUTERIZED FACILITIES DESIGN) IS
A COMPUTER PROGRAM DESIGNED TO DETERMINE SUBOPTIMAL LAYOUT
AND HANDLING SYSTEMS FOR PHYSICAL FACILITIES. THE PROGRAM
IS GOVERNED BY A SET OF HEURISTIC RULES WHICH ITERATIVELY
SELECTS A LAYOUT AND THEN A HANDLING SYSTEM SO AS TO
APPROACH THE MINIMAL MATERIALS HANDLING SYSTEM COST. COFAD
II IMPROVES LAYOUTS IN A MANNER SIMILAR TO CRAFT BUT THEN
DIFFERS SIGNIFICANTLY IN THAT REALISTIC MATERIALS HANDLING
EQUIPMENT COSTS ARE INCLUDED SO AS TO ALLOW THE JOINT
DETERMINATION OF THE LAYOUT AND HANDLING SYSTEM. INPUT
INTO COFAD II INCLUDES THE FLOW DATA WITHIN THE FACILITY,
THE COSTS OF ALTERNATIVE MATERIALS HANDLING EQUIPMENT TYPES
AND AN INITIAL LAYOUT. COFAD II DIFFERS FROM THE ORIGINAL
COFAD IN FLEXIBILITY, EASE OF ALTERING THE MODEL FOR VARIOUS
PROBLEMS AND OUTPUT FORMAT. COFAD II IS WRITTEN IN FORTRAN
IV AND CONTAINS APPROXIMATELY 3,300 CARDS. STORAGE OF 500K
IS REQUIRED TO IMPLEMENT COFAD II.

PROGRAMMING LANGUAGE - FORTRAN IV

MINIMUM SYSTEM REQUIREMENTS - OS/FORTRAN IV

DOCUMENTATION: 10 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 3,300 APPROXIMATE.
SUBMITTAL/REVISION DATE: 04/76

360D-23.0.002
CORELAP: COMPUTERIZED RELATIONSHIP LAYOUT PLANNING

AUTHOR: J. M. MOORE AND J. A. TOMPKINS

DIRECT INQUIRIES TO:
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  NORTH CAROLINA STATE UNIVERSITY
  RALEIGH, NC 27607

DESCRIPTION - CORELAP 9.3 (COMPUTERIZED RELATIONSHIP LAYOUT
PLANNING) IS A COMPUTER PROGRAM DESIGNED TO GENERATE
A LAYOUT FOR A FACILITY BASED UPON THE RELATIONSHIPS AMONG
THE DEPARTMENTS WITHIN THE LAYOUT. CORELAP 9.3 CONSISTS
OF A SELECTION ROUTINE AND A PLACEMENT ROUTINE. THE
DEPARTMENTS ARE SELECTED AND PLACED IN AN EFFORT TO MAXIMIZE
THE RELATIONSHIPS AMONG DEPARTMENTS AS INDICATED ON THE
ORIGINALLY INPUT RELATIONSHIP CHART. CORELAP 9.3 DIFFERS
FROM EARLIER VERSIONS OF CORELAP IN THAT A PLOTTER MAY BE
UTILIZED TO PLOT THE FINAL LAYOUT. CORELAP 9.3 IS WRITTEN
IN FORTRAN IV AND REQUIRES 200K OF STORAGE TO BE
IMPLEMENTED.

PROGRAMMING LANGUAGE - FORTRAN IV

MINIMUM SYSTEM REQUIREMENTS - OS/FORTRAN IV

DOCUMENTATION: 7 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 1,900 APPROXIMATE
SUBMITTAL/REVISION DATE: 04/76

360D-23.0.003
PLANET: PLANT LAYOUT ANALYSIS AND EVALUATION TECHNIQUE

AUTHOR: M. DEISENROTH AND J. A. TOMPKINS

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  RALEIGH, NORTH CAROLINA 27607

DESCRIPTION - PLANET (PLANT LAYOUT ANALYSIS AND EVALUATION
TECHNIQUE) IS A COMPUTER PROGRAM DESIGNED TO DETERMINE
SUBOPTIMAL LAYOUT PATTERNS FOR PHYSICAL FACILITIES. PLANET
IS A CONSTRUCTION ROUTINE WHICH CONSISTS OF THREE SELECTION
ROUTINES AND A PLACEMENT ROUTINE. THE SELECTION ROUTINES
DETERMINE THE ORDER IN WHICH DEPARTMENTS ARE TO ENTER THE
LAYOUT, AND THE PLACEMENT ROUTINE DETERMINES WHERE TO PLACE
THE DEPARTMENTS AS AS TO MINIMIZE HANDLING COSTS. THE INPUT
OF FLOW DATA INTO PLANET MAY BE DONE IN ANY ONE OF THE
THREE FOLLOWING WAYS: (1) EXTENDED PARTS MATRIX, (2) FROM-
TO CHART, (3) PENALTY MATRIX. PLANET IS WRITTEN IN
FORTRAN IV AND CONTAINS APPROXIMATELY 1,000 CARDS. STORAGE
OF 160K IS REQUIRED TO IMPLEMENT PLANET.

PROGRAMMING LANGUAGE - FORTRAN IV

MINIMUM SYSTEM REQUIREMENTS - OS/FORTRAN

DOCUMENTATION: 10 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 1,000 APPROXIMATE.
SUBMITTAL/REVISION DATE: 04/76

360D-23.0.004
    ALDEP: AUTOMATED LAYOUT DESIGN PROGRAM

    AUTHOR: S. M. SEEHOF AND J. A. TOMPKINS

    DIRECT INQUIRIES TO:
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      NORTH CAROLINA STATE UNIVERSITY
      RALEIGH, NORTH CAROLINA 27607

    DESCRIPTION - ALDEP (AUTOMATED LAYOUT DESIGN PROGRAM) IS A
    COMPUTER PROGRAM DESIGNED TO GENERATE AND EVALUATE
    LAYOUTS BASED UPON THE RELATIONSHIPS AMONG DEPARTMENTS
    WITHIN THE LAYOUT. ALDEP CONSTRUCTS SEVERAL LAYOUTS
    UTILIZING A RANDOM NUMBER GENERATOR AND A HEURISTIC
    SELECTION PROCEDURE. THE LAYOUTS RESULTING FROM ALDEP
    ARE EVALUATED AND ASSIGNED A RATING DEPENDING UPON THE
    ADHERENCE OF THE LAYOUT TO THE ORIGINALLY INPUT
    RELATIONSHIP CHART. ALDEP IS THE ONLY WIDELY USED
    ROUTINE WHICH ALLOWS THE INCLUSION OF MORE THAN SINGLE
    FLOOR FACILITIES. THE INPUT INTO ALDEP IS THE DEPARTMENTAL
    AREAS AND RELATIONSHIPS. ALDEP IS WRITTEN IN FORTRAN IV

AND CONTAINS APPROXIMATELY 700 CARDS. STORAGE OF 200K
IS REQUIRED TO IMPLEMENT ALDEP.

PROGRAMMING LANGUAGE - FORTRAN IV

MINIMUM SYSTEM REQUIREMENTS - CS/FORTRAN IV

DOCUMENTATION: 9 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 700 APPROXIMATE.
SUBMITTAL REVISION/DATE: 04/76

360D-23.1.003
    TWO-STAGE, TWO-DIMENSIONAL TRIM PROGRAM II

    AUTHOR: CAROL E. SHANESY

    DIRECT TECHNICAL INQUIREIS TO:
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         NEW YORK, NY 10005

    DESCRIPTION - TWO-STAGE, TWO-DIMENSIONAL TRIM PROGRAM
    PROVIDES A LINEAR PROGRAMMING SOLUTION TO THE TWO-STAGE
    TWO DIMENSIONAL TRIM OR CUTTING STOCK PROBLEM. THIS
    PROBLEM CAN BE DESCRIBED BRIEFLY AS FOLLOWS. WE HAVE A
    SUPPLY OF MATERIAL WHICH IS STOCKED (OR PRODUCED) IN ONE OR
    MORE FIXED RECTANGULAR SIZES, EACH SIZE HAVING A FIXED COST
    PER UNIT ASSOCIATED WITH IT. WE ALSO HAVE A LIST OF SMALLER
    RECTANGLE SIZES TOGETHER WITH THE NUMBERS DESIRED OF EACH
    SIZE, WHICH ARE TO BE PRODUCED BY CUTTING UP STOCK-SIZE
    RECTANGLES. IF ANY OF THESE RECTANGLE SIZES (W X L) MAY BE
    CUT EITHER W OR L OR L X W, THE PROGRAM WILL TAKE ADVANTAGE
    OF THIS FREEDOM. THE STOCK-SIZE RECTANGLES ARE CUT IN TWO
    STAGES -- FIRST THE RECTANGLE IS SLIT INTO STRIPS WITH
    STRAIGHT CUTS PARALLEL TO THE LENGTH EDGE, AND THEN EACH
    STRIP IS CUT INDIVIDUALLY IN THE PERPENDICULAR DIRECTION.
    THE CHEAPEST WAY OF CUTTING UP STOCK IS TO FILL THE ORDERS
    MUST BE DETERMINED. THE PROGRAM WILL HANDLE UP TO 10 STOCK
    SIZES AND 50 ORDER SIZES, AS PRESENTLY COMPILED. FOR THESE
    DIMENSIONS, THE PROGRAM REQUIRES ABOUT 100,000 BYTES OF
    MEMORY FOR EXECUTION.

    PROGRAMMING SYSTEMS - IT IS AN INDEPENDENT ROUTINE, CODED
    ENTIRELY IN FORTRAN.

CONTINUED FROM PRIOR COLUMN

MINIMUM SYSTEM REQUIREMENTS - THERE ARE NO OTHER SPECIAL
MACHINE REQUIREMENTS BEYOND THOSE FOR OS/360.

DOCUMENTATION: 37 PAGES, $.85 ADDITIONAL CHARGE.
CARD COUNT: 550 APPROXIMATE.
SUBMITTAL/REVISION DATE: 03/69

360D-23.4.004
    360 APT - V4M3/SSX3A/SSIP

    AUTHOR: QUINT RYGH

    DIRECT TECHNICAL INQUIRIES TO:
        T. J. CASEY, CI-648 (2-56)
        DOUGLAS AIRCRAFT CO.
        3855 LAKEWOOD BLVD.
        LONG BEACH, CA 90846

    DESCRIPTION - THIS PACKAGE EFFECTS A MERGER BETWEEN IBM'S
    360 APT (V4M3) AND CAM-I'S SCULPTURED SURFACE (SSX3A) BY
    MEANS OF A SCULPTURED SURFACE INTERIM PROCESSOR (SSIP). THE
    PURPOSE OF THE MERGER WAS TO FACILITATE AND THEREBY TO
    ENCOURAGE WITHIN THE NC COMMUNITY A MORE EXTENSIVE EFFORT IN
    THE AREA OF SCULPTURED SURFACE RESEARCH AND DEVELOPMENT.
    THE CODING LANGUAGE IS FORTRAN IV EXCEPT FOR A MODICUM OF
    BASIC ASSEMBLY LANGUAGE IN V4M3. THE PACKAGE WAS PREPARED
    ON A 165/3330 UNDER CONTROL OF OS/MVT 21.7 BUT SHOULD BE
    EXECUTABLE UNDER ANY VERSION OF OS OR OS/VS AND ON ANY 360/
    370 HARDWARE CAPABLE OF MEETING THE 310K CORE REQUIREMENT.
    THE APT PROCESSOR, OF WHICH THIS PACKAGE IS AN OFFSHOOT, IS
    COMPRISED OF FIVE SECTIONS, 0 THRU IV. THE PACKAGE, AS
    AVAILABLE, CONSISTS OF A LOAD MODULE FOR EACH OF THESE
    SECTIONS, A SOURCE MODULE FOR SECTION I, AN OVERLAY AND NINE
    TEST CASES, WHICH MAY BE USED TO VERIFY IMPLEMENTATION AND
    DEMONSTRATE CAPABILITIES. ATTENDANT DOCUMENTATION IS FOR
    THE USE OF THE APT PART PROGRAMMER AND SYSTEM IMPLEMENTOR.

    PROGRAMMING LANGUAGE - FORTRAN IV, ASSEMBLER.

    MINIMUM SYSTEM REQUIREMENTS - OS/360 OR OS/VS

    DOCUMENTATION: 112 PAGES, $4.60 ADDITIONAL CHARGE.
    CARD COUNT: NOT AVAILABLE ON CARDS.
    SUBMITTAL/REVISION DATE: 5/74.

370D-23.4.005
    370 APT-AC (PTF3), APTLFT IMPLEMENTATION

    AUTHOR: ROBERT J. HAUGEN

    DIRECT TECHNICAL INQUIRIES TO:

            TECHNICAL ASSISTANCE
            CURRENTLY NOT AVAILABLE.

    DESCRIPTION - THIS PACKAGE PROVIDES THE NECESSARY UPDATES,
    NEW PROGRAMS, OVERLAYS, TEST PROGRAMS, AND JCL TO IMPLEMENT
    AND TEST SYSTEM/370 APT-AC (PTF3) WITH APTLFT. ALL
    PREPARATION WAS DONE ON A S/370 MODEL 168 WITH 3330 DISK AND
    USING OS-MVT RELEASE 21.7.

    PROGRAMMING LANGUAGE - FORTRAN IV AND ASSEMBLY LANGUAGE.

    MINIMUM SYSTEM REQUIREMENTS - OS/360, 3330, FORTRAN IV,
        ASSEMBLER.

    DOCUMENTATION: 78 PAGES, $2.90 ADDITIONAL CHARGE.
    CARD COUNT:
    SUBMITTAL/REVISION DATE: 11/74.

360D-40.0.001
    DFACT - DOUBLE PRECISION FACTORIAL

    AUTHOR: H. E. SCHAFFER

    DIRECT TECHNICAL INQUIRIES TO:
            DR. H. E. SCHAFFER
            NORTH CAROLINA STATE UNIVERSITY
            DEPT. OF GENETICS
            RALEIGH, N. C. 27607

    DESCRIPTION - THIS SUBROUTINE RETURNS THE DOUBLE PRECISION
    VALUE OF FACTORIAL N. FOR NEGATIVE N, THE ABSOLUTE VALUE
    OF N IS USED AND AN ERROR INDICATION IS RETURNED. FOR
    N GREATER THAN 56 THE MAXIMUM FLOATING POINT VALUE IS
    RETURNED AND AN ERROR INDICATION IS RETURNED. (FACTORIAL
    56 IS THE LARGEST FACTORIAL VALUE WHICH CAN BE REPRESENTED
    IN A FLOATING POINT WORD).

    THIS SUBROUTINE IS VERY FAST SINCE THE FACTORIAL VALUES
    ARE FOUND BY A TABLE LOOK UP. THE TABULAR VALUES WERE

CONTINUED FROM PRIOR COLUMN

GENERATED EXACTLY IN HEXADECIMAL ARITHMETIC AND ROUNDED
TO DOUBLE PRECISION LENGTH. THE ACCURACY OF THESE
HEXADECIMAL TABULAR VALUES IS THUS THE MAXIMUM POSSIBLE
IN A DOUBLE PRECISION WORD, AND IS NOT AFFECTED BY ANY
INACCURACY IN THE CONVERSION OF DECIMAL CONSTANTS TO
HEXADECIMAL.

PROGRAMMING SYSTEMS - THIS SUBROUTINE IS WRITTEN IN FORTRAN
IV.

MINIMUM SYSTEM REQUIREMENTS - ANY S/360 WITH FORTRAN IV
(G OR H LEVEL), AND USES APPROXIMATELY 1,000 BYTES OF CORE
AT OBJECT TIME.

DOCUMENTATION: 8 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 39 APPROXIMATE.
SUBMITTAL/REVISION DATE: 03/68

360D-40.0.003
    INTFORT - INTERVAL ARITHMETIC INTERPRETER AND SUBROUTINE
    PACKAGE

AUTHOR: D. P. LAURIE

DIRECT TECHNICAL INQUIRIES TO:

        TECHNICAL ASSISTANCE
        NOT CURRENTLY AVAILABLE.

DESCRIPTION - THE INTFORT INTERPRETER CONVERTS EXPLICIT
TYPE DECLARATIONS, ASSIGNMENT AND ARITHMETIC IF STATEMENTS
FOR INTERVAL VARIABLES TO EQUIVALENT FORTRAN STATEMENTS.
A SUBROUTINE PACKAGE FOR PERFORMING THE INTERVAL ARITHMETIC
IN SINGLE OR DOUBLE PRECISION IS PROVIDED. THE INTERPRETER
IS ALSO SUITABLE FOR USE WITH ANY FANCY ARITHMETIC
SUBROUTINES (E.G. MULTIPRECISION) THAT USE SYNONOMOUS
SUBROUTINES FOR THE ARITHMETIC OPERATIONS.

PROGRAMMING LANGUAGE - PL/I, FORTRAN, ASSEMBLER - OS

MINIMUM SYSTEM REQUIREMENTS - OS/360

DOCUMENTATION: 18 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: NOT AVAILABLE ON CARDS.
SUBMITTAL/REVISION DATE: 10/73.

360D-40.4.003
    MULTIPLE - PRECISION FLOATING-POINT ARITHMETIC PACKAGE

AUTHOR: J. R. EHRMAN

DIRECT TECHNICAL INQUIRIES TO:
        DR. JOHN R. EHRMAN
        STANFORD CENTER FOR INFORMATION PROCESSING
        SLAC - BIN 97
        P.O. BOX 4349
        STANFORD, CALIFORNIA 94305

DESCRIPTION - THESE ROUTINES PROVIDE THE SYSTEM/360
PROGRAMMER WITH A SIMPLE MEANS FOR PERFORMING FLOATING-
POINT ARITHMETIC TO ANY DESIRED PRECISION, AND IN A FORMAT
COMPATIBLE WITH STANDARD SYSTEM/360 FLOATING-POINT FORMAT.

PROGRAMMING SYSTEMS - THE ROUTINES ARE WRITTEN IN ASSEMBLER
LANGUAGE, AND ARE DESIGNED PRIMARILY FOR USE IN A FORTRAN
ENVIRONMENT. HOWEVER, THEY MAY BE CALLED BY ANY PROGRAM
WHICH OBSERVES STANDARD OS/360 PARAMETER-PASSING AND LINKAGE
CONVENTIONS.

MINIMUM SYSTEM REQUIREMENTS - SAME AS THOSE REQUIRED TO
RUN OS/360.

DOCUMENTATION: 24 PAGES, $.20 ADDITIONAL CHARGE.
CARD COUNT: 3,250 APPROXIMATE.
SUBMITTAL/REVISION DATE: 04/69

360D-40.4.004
    A MULTIPLE PRECISION PACKAGE FOR THE IBM OS 360/370 SYSTEMS

AUTHOR: DR. C. E. REID, UNIVERSITY OF FLORIDA

DIRECT TECHNICAL INQUIRIES TO:
    H. D. KNOBLE
    COMPUTER BUILDING
    THE PENNSYLVANIA STATE UNIVERSITY
    UNIVERSITY PARK, PA   16802

DESCRIPTION - THIS SET OF PROGRAMS ENABLES MULTIPLE
PRECISION ARITHMETIC TO BE PERFORMED IN A FORTRAN
ENVIRONMENT ON IBM 360 OR 370 HARDWARE. THE PRECISION IS
VARIABLE AND MAY BE SET BY THE PROGRAM TO CORRESPOND TO AS

HIGH AS 604 DECIMAL DIGITS; MAGNITUDE RANGE IS 4.13 E-78916
TO 6.29 E+78910. THE STANDARD ARITHMETIC OPERATIONS ARE
SUPPORTED AS WELL AS MULTIPLE PRECISION FUNCTIONS
CORRESPONDING TO ABS, SQRT, EXP, ALOG, SIN, AND COS. INPUT/
OUTPUT CONVERSION ROUTINES ARE ALSO PROVIDED AS WELL AS A
TRACING FACILITY TO ENABLE PROGRAM FLOW AND RESULTS TO BE
PRINTED AS COMPUTATIONS PROCEED. THE PACKAGE WAS DEVELOPED
AND TESTED WITH USE OF THE IBM OS 360 FORTRAN (G) LEVEL
COMPILER. THE 26 PAGE PROGRAM WRITE-UP IS UPPER/LOWER CASE
MACHINE READABLE.

PROGRAMMING LANGUAGE - OS/360 ASSEMBLER AND FORTRAN.

MINIMUM SYSTEM REQUIREMENTS - S/360 - S/370

DOCUMENTATION: 4 PAGES, NO ADDITIONAL CHARGE.
              (PLUS MACHINE READABLE DOCUMENTATION)
CARD COUNT: 3,600 APPROXIMATE.
SUBMITTAL/REVISION DATE: 5/76

360D-42.2.001
EXPERIMENTAL PROGRAM FOR DETERMINING POLYNOMIAL ZEROS

AUTHORS: IRENE GARGANTINI W. MUNZNER

DIRECT TECHNICAL INQUIRIES TO:
        DR. IRENE GARGANTINI
        DEPARTMENT OF COMPUTER SCIENCE
        UNIVERSITY OF WESTERN ONTARIO
        LONDON, ONTARIO N63K7
        CANADA

DESCRIPTION - THE PROGRAM DETERMINES SIMULTANEOUSLY ALL
THE ZEROS OF A POLYNOMIAL TOGETHER WITH ERROR BOUNDS.
IT IS POSSIBLE FOR THE USER TO FOLLOW HOW THE PROCEDURE
WORKS THROUGHOUT THE ENTIRE PROGRAM BY REMOVING THE C FOR
COMMENT IN THE WRITE STATEMENTS AND THE TWO SUBPROGRAMS
PRINTS AND PRINTD. THIS PROGRAM IS NOT INTENDED TO BE
OPTIMAL, NEITHER WITH REGARD TO PROGRAMMING NOR TO COMPUTING
TIME. IT IS THE FIRST DIGITAL TECHNIQUE FOR SEARCHING
ALL THE ZEROS THAT DOES NOT USE DEFLATION AND GIVES
APPROXIMATIONS TO THE ZEROS WITH A PREDICTABLE DEGREE OF
ACCURACY.

PROGRAMMING SYSTEMS - WRITTEN IN FORTRAN IV. OPERATES USING
OS/360.

MINIMUM SYSTEM REQUIREMENTS - A SYSTEM/360 WITH AT LEAST
128K CORE STORAGE.

DOCUMENTATION: 40 PAGES, $1.00 ADDITIONAL CHARGE.
CARD COUNT: 1,100 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/68

360D-43.2.001
MIDAS - AN ADAPTATION OF THE CONVAIR PRE-COMPILING
MIDAS-III DIGITAL ANALOG SIMULATION SYSTEM TO OS/360
WITH CALCOMP PLOTTING

AUTHORS: G. H. BURGIN W. E. LOPER

DIRECT TECHNICAL INQUIRIES TO:
        W. E. LOPER
        NAVAL ELECTRONICS LABORATORY CENTER
        ADVANCED SOFTWARE TECHNOLOGY DIVISION
        CODE 5200
        SAN DIEGO, CA 92152

DESCRIPTION - THIS MIDAS PROGRAM AND REPORT ARE ADAPTATIONS
OF A PROGRAM (MIDAS-III) AND REPORT (GDC-DDE66-022) BY
G. H. BURGIN OF GENERAL DYNAMICS, CONVAIR DIVISION, SAN
DIEGO, CALIFORNIA. THE CONVAIR VERSION WAS A CONTINUATION
OF DEVELOPMENTS IN SIMULATION OF ANALOG COMPUTER ORIENTED
DESCRIPTIONS OF SYSTEMS OF DIFFERENTIAL EQUATIONS BEGINNING
WITH MIDAS ORIGINALLY PRODUCED BY WRIGHT-PATTERSON AIR
FORCE BASE AND MIDAS-II BY NORTH AMERICAN AVIATION. THE
CONVAIR VERSION WAS A CONTRIBUTION TO THE 7094 LITERATURE
IN THAT IT WAS A PRE-COMPILER IN CONTRAST TO THE PREVIOUS
INTERPRETERS WHICH WERE AN ORDER OF MAGNITUDE SLOWER IN
EXECUTION. THIS PROGRAM AND ITS SUPPORTING DOCUMENTATION
MODIFY ONLY THAT WHICH IS NECESSARY TO ACCOMMODATE SPECIFIC
DIFFERENCES IN COMPUTERS, OPERATING SYSTEMS, AND PERIPHERAL
EQUIPMENT DIFFERENCES BETWEEN NWCCL AND CONVAIR.

PROGRAMMING SYSTEMS - RUNS UNDER OPERATING SYSTEM/360.'

MINIMUM SYSTEM REQUIREMENTS - S/360 MODEL 50, OPERATING
SYSTEM CONFIGURATION.

DOCUMENTATION: 58 PAGES, $1.90 ADDITIONAL CHARGE.
CARD COUNT: 6,650 APPROXIMATE.
SUBMITTAL/REVISION DATE: 12/67

360D-45.0.001
PL/I SUBPROCEDURE COLLECTION - RELEASE 1

AUTHOR: H. R. HAMILTON

DIRECT TECHNICAL INQUIRIES TO:
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    COMPUTING CENTER
    P. O. BOX 5445
    N. C. STATE UNIVERSITY
    RALEIGH, NORTH CAROLINA 27607

DESCRIPTION - THE SUBPROCEDURE COLLECTION (SPC) IS
A LIBRARY OF SUBPROCEDURES WRITTEN IN PL/I FOR USE
BY PL/I PROGRAMS. THIS RELEASE OF THE SPC CONTAINS
ABOUT 170 PROCEDURES MOSTLY IN THE AREA OF MATHEMATICS;
MOSTLY, LINEAR ALGEBRA.

SOME OF THE PROCEDURES IN THIS COLLECTION REPRESENT
ORIGINAL ALGORITHMS AND ORIGINAL CODE. SOME WERE
TAKEN FROM THE ALGORITHMS SECTION OF "COMMUNICATIONS
OF THE ACM". SOME ARE ADOPTED FROM THE IBM SCIENTIFIC
SUBROUTINE PACKAGE (PL/I). CURRENTLY, THE MAJORITY
ARE IMPLEMENTATIONS OF ALGORITHMS FROM THE "HANDBOOK
FOR AUTOMATIC COMPUTATION, VOL 2, LINEAR ALGEBRA" BY
WILKINSON AND REINSCH (SPRINGER-VERLAG, 1971).
THIS LATTER GROUP ARE SIMILAR TO THE SUBROUTINES
COMPRISING EISPAC FORTRAN CODE DISTRIBUTED BY
ARGONNE LABS.

ALL PROCEDURES WERE DEVELOPED IN AN OPTIMIZER/CHECKOUT
COMPILER ENVIRONMENT. NO DELIBERATE STEPS WERE TAKEN TO
BE COMPATIBLE WITH PL/I(F), BUT NOTHING DELIBERATE WAS DONE
NOT TO BE.

PROGRAMMING LANGUAGE - PL/I

MINIMUM SYSTEM REQUIREMENTS - PL/I COMPILER

DOCUMENTATION: 175 PAGES, $7.75 ADDITIONAL CHARGE.
CARD COUNT:
SUBMITTAL/REVISION DATE: 2/75

360D-99.0.002
NARGS - NUMBER OF ARGUMENTS

AUTHOR: MR. P. WOLFGANG

DIRECT TECHNICAL INQUIRIES TO:

        TECHNICAL ASSISTANCE
        CURRENTLY NOT AVAILABLE.

DESCRIPTION - NARGS IS A PROGRAM TO DETERMINE THE NUMBER
OF ARGUMENTS SUPPLIED TO A SUBROUTINE OF FUNCTION. IT
ASSUMES THE STANDARD OS/360 CALLING LINKAGE. IT SHOULD
NOT BE CALLED FROM A MAIN PROGRAM. THE VALUE OF DUMMY
IS IGNORED ON ENTRY AND SET EQUAL TO THE VALUE OF THE
FUNCTION. NARGS MAY THEREFORE BE CALLED AS A SUBROUTINE.

PROGRAMMING SYSTEMS - WRITTEN IN ASSEMBLY LANGUAGE AND
REQUIRES OS/360.

MINIMUM SYSTEM REQUIREMENTS - THOSE REQUIRED FOR OS/360.

DOCUMENTATION: 6 PAGES, NO ADDITIONAL CHARGE.
CARD COUNT: 29 APPROXIMATE.
SUBMITTAL/REVISION DATE: 04/68

360D-99.0.009
PROGRAM COLLECTION: STRUCTURED PROGRAMMING, UTILITIES,
TRANSLATORS, SIMULATOR, HASP MODIFICATIONS, AND MACROS

AUTHOR: DONALD S. HIGGINS

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DESCRIPTION - THE FOLLOWING COLLECTION OF PROGRAMS ARE
INCLUDED IN A SINGLE DISTRIBUTION PACKAGE:

GENERAL PURPOSE ASSEMBLER MACROS - SUBENTRY + SUBEXIT,
STANDARD LINKAGE WITH REENTRANT OPTIONS; EDIT PACKED DATA
USING A MASK; EQUAL, COMMONLY USED EQU'S; PERFORM, PENTRY,
PEXIT - STRUCTURED PROGRAMMING BLOCK CONCATENATION USING NO

CONTINUED FROM PRIOR COLUMN

REGISTERS; IF, ELSE, FI - STURCTURED PROGRAMMING ALTERNATE
BLOCK SELECTION; DOCASE, CASE, ESAC, ESACOD - STRUCTURED
PROGRAMMING MULTIPLE ALTERNATE BLOCK SELECTION; ACCEPT +
DISPLAY SIMPLIFIED I/O; DCWV - DEFINE V TYPE ADDRESS FOR
DYNAMIC SUBROUTINES.

RENUMBER - PROGRAM RENUMBERS FORTRAN IV SOURCE PROGRAM AND
PRINTS CROSS REFERENCE.

STRUCTURED FORTRAN TRANSLATOR - TRANSLATE A STRUCTURED GOTO-
LESS FORTRAN PROGRAM WRITTEN IN STRUCTURED FORTRAN INTO ANS
FORTRAN. LANGUAGE EXTENSIONS INCLUDE NESTED IF-ELSE-FI;
NESTED DO WHILE, DO UNTIL, DO-OD; NESTED DOCASE, CASE, ESAC,
ESACOD; NESTED PERFORM (PM)-PENTRY-PEXIT.

STRUCTURED FORTRAN TRANSLATOR - THE TRANSLATED VERSION OF
THIS TRANSLATOR CAN BE USED ON ANY FORTRAN MACHINE.

SAMPLE ASSEMBLER PROGRAM USING STRUCTURED PROGRAMMING MACROS
AND REENTRANT LINKAGE TO SOLVE THE 8 QUEENS CHESS PROBLEM.

TAPESTRY - GENERAL UTILITY TO LIST, DUMP, CR COPY PORTIONS
OF ANY TAPE FILE, REGARDLESS OF THE TYPE OF LABEL ON THE
TAPE AND THE POSITION ON THE TAPE. OUTPUT FORMAT SAME AS
OS ABEND DUMP.

COPYSOME - UTILITY TO SELECT AND COPY, BY RECORD, ANY
SEQUENTIAL FILE.

FPCLABEL - LABELS ANY NEW TAPE OR NON-STANDARD LABEL TAPE
WITH A STANDARD LABEL AS DEFINED FOR YOUR INSTALLATION WITH
YOUR OWN INSTALLATION ID.

TRAN3705 - READS THE OUTPUT OF A SUPERZAP DUMP AND GENERATES
80 BYTE 3705 ASSEMBLY LANGUAGE STATEMENTS WHICH CAN BE FED
INTO THE 3705 ASSEMBLER TO GENERATE A CROSS-REFERENCE TO
ASSEMBLY LISTING OF A 3705 EMULATOR.

HASPMODS - HASPGEN PARAMETERS AND MODS FOR 3.1. INCLUDES
MOD TO PURGE PROCESSOR TO COLLECT ALL CONSOLE MESSAGES AND
ALL SMBS ON A DUMMY SYSOUT FILE MAINTAINED ON THE HASP SPOOL
PACK. THIS SYSOUT CAN THEN BE DUMPED TO A SEQUENTIAL QSAM
FILE BY A PREVIOUSLY MENTIONED UTILITY, AND NUMEROUS
ANALYSIS PROGRAMS CAN BE RUN ON THE SMB AND CONSOLE RECORDS.
SECOND HASP MOD CONSISTS OF A $DC COMMAND TO DISPLAY THE
FIVE LARGEST CONTIGUOUS REGIONS IN MVT. THIRD MOD IS A $DW
COMMAND TO DISPLAY OUTSTANDING RQES AGAINST IOS MVT TO
DETECT LOST INTERRUPTIONS.

PDSDLIST - UTILITY WILL LIST THE DIRECTORY ENTRIES OF ANY

CONTINUED FROM PRIOR COLUMN

NUMBER OF PDS LIBRARIES IN ASCENDING CRDER -- 780 PER PAGE.

PDSMLIST - UTILITY LISTS THE MEMBERS OF ANY PDS SOURCE
LIBRARY IN ALPHABETIC CRDER WITH SELECTICN CONTROL.
GETPDSDE - SUBROUTINE SEQUENTIALLY ACCESSES MEMBERS OF A PDS
IN ALPHABETIC ORDER.

DEBUG AID - PROGRAM TRAPS ANY USER DATA EXCEPTIONS, PRINTS
AN ERROR MESSAGE, NOPS THE FAILING INSTRUCTION AND CONTINUES

DEBUG AID - PROGRAM PERMITS THE FOLLOWING STEPS TO BE
PERFORMED AT EXECUTION TIME: LOAD A FROGRAM INTO CORE,
VERIFY AND/OR REPLACE DATA IN THE LOADED PROGRAM BY RELATIVE
ADDRESS, EXECUTE THE MODIFIED PROGRAM, AND LOAD AND DUMP
ANY PROGRAM.

COPYSPOL - UTILITY PROGRAM WHICH WILL SELECTIVELY DUMP TO A
QSAM FILE THE PRINT RECORDS CONTAINED ON A HASP SPOOL PACK
FOR A JOB WHICH IS WAITING FOR PRINT.

LISTHQUE - UTILITY PROGRAM TO PRINT THE HASP QUEUE IN BATCH
MODE BY READING THE CHECK POINT RECORD ON THE HASP SPOOL
PACK.

TVOLCOPY - COPIES ANY STANDARD LABEL TAPE VOLUME TO ANY
OTHER STANDARD TAPE VOLUME.

SIM370 - USES A SPIE MACRO TC SET UP AN ENVIRONMENT IN
WHICH A USER PROGRAM CAN BE EXECUTED WHICH CONTAINS 370
INSTRUCTIONS RUNNING ON A 360 -- INTERCEPTS AND SIMULATES
370 INSTRUCTIONS.

TEXTEDIT - BATCH TEXT EDIT UTILITY WHICH ALLOWS SCANNING 80
BYTE RECORD FILES, SEARCHING FOR ANY NUMBER OF STRINGS OF
TEXT AND LISTING AND REPLACING STRINGS.

UNITNAME - UTILITY TO EXAMINE THE UCB TABLES ON THE HOST
SYSTEM AND PRODUCE A SOURCE PROGRAM WHICH CAN BE USED TO
ASSEMBLE THE DEVICE NAME AND THE DEVICE MASK CSECTS WHICH
ACTUALLY DEFINE THE UNIT NAMES WHICH CAN BE USED TO
REFERENCE DEVICES.

GETPDSDD - SUBROUTINE ACCESSES PDS DD STATEMENTS
SEQUENTIALLY.

PDSCLIST - UTILITY SCANS PDS LCAD MODULE LIERARY. IT LISTS
EACH MEMBER AND THE CSECTS CONTAINED IN THAT MEMBER AND WILL
THEN PERFORM AN INTERNAL SORT AND PRODUCE ANOTHER LIST
CONSISTING OF EACH CSECT FCLLCWED BY ALL THE MEMBERS IN
WHICH THIS CSECT OCCURS.

CONTINUED FROM PRIOR COLUMN

MRCLEAN - SET OF UTILITY PROGRAMS WHICH WILL PULL ALL THE
DSCB RECORDS OFF OF ANY 3330 VOLUME AND CREATE A SEQUENTIAL
FILE OF THESE DSCBS. PROGRAM SCANS SEQUENTIAL DSCB FILE AND
SCRATCHES ALL TEMPORARY DATA SETS NOT CURRENTLY IN USE BY
A PROGRAM IN EXECUTION. PROGRAM READS SEQUENTIAL FILE OF
DSCBS AND PRINTS CONDENSED LISTING IN ALPHABETICAL ORDER.

DSNLIST - PRINTS REPORT OF CATALOGED DATA SETS WITH CATALOG
INFORMATION -- INTERFACES WITH MRCLEAN.

GETCATLG - READS SYSTEM CATALOG AND CONNECTED CATALOG IN
ASCENDING DATA SET NAME ORDER.

LISTMACS - UTILITY TO SCAN ANY ASSEMBLER SOURCE FILE AND
LIST OCCURRENCES OF ALL MACROS AND/OR INSTRUCTIONS IN THAT
ASSEMBLER SOURCE.

CHKREORG - DETERMINES IF REORGANIZATION OF PDS OR ISAM FILE
IS NEEDED BY COMPARING NUMBERS IN PARM FIELD AGAINST PDS
RELATIVE EOF TRACK NUMBER OR ISAM OVERFLOW RECORD COUNT.

REREAD - SUBROUTINE ALLOWS FORTRAN PROGRAMS TO REREAD THE
SAME INPUT RECORD UNDER DIFFERENT FORMATS.

MVCL - SUBROUTINE ALLOWS FORTRAN PROGRAMS TO MOVE ARRAY DATA
WITH THE MOVE LONG INSTRUCTION. MAY ALSO BE USED TO
INITIALIZE ANY ARRAY WITH ANY CHARACTER VALUE.

KWIC - SUBROUTINE SIMPLIFIES GENERATION OF KEY WORD IN
CONTEXT (KWIC) DATA. EACH TIME IT IS CALLED IT ROTATES A
FIELD TO THE NEXT KEY WORD IN THE FIELD.

KWIC GENERATION - UTILITY READS ANY SEQUENTIAL FILE AND
CREATES AN OUTPUT FILE WITH AS MANY COPIES OF EACH RECORD
AS THERE ARE KEYWORDS IN A KEYWORD FIELD DEFINED BY A
CONTROL CARD. OUTPUT FILE CAN BE SORTED ON KEYWORD FIELD TO
GENERATE KWIC REPORT.

CLCL - SUBROUTINE ALLOWS FORTRAN PROGRAMS TO COMPARE ARRAY
DATA OF ANY LENGTH WITH THE COMPARE LONG INSTRUCTION.

BY NAME CALL - THREE SUBROUTINES ALLOW FORTRAN, COBOL, AND
ASSEMBLER TO DYNAMICALLY CALL AND/OR CANCEL SUBROUTINES OR
PROGRAMS AT EXECUTION TIME.

MPS - MESSAGE PROCESSING SUPERVISOR FOR USE WITH TCAM OR
SIMILAR TELECOMMUNICATIONS LINE CONTROL PROGRAM. ALLOWS TP
APPLICATION PROGRAMS TO BE WRITTEN IN CCBOL, FORTRAN, OR
ASSEMBLER USING A SIMPLE SUBROUTINE INTERFACE; ALLOWS USER

CONTINUED FROM PRIOR COLUMN

TO START AND STOP MESSAGE PROCESSING PROGRAMS AT WILL WITH
SIMPLE COMMANDS. SUPERVISOR HAS A LOG FACILITY. CAN BE RUN
IN BATCH MODE TO TEST NEW TP APPLICATIONS OR MODIFICATIONS.

BISAMSET - SUBROUTINE PERFORMS SAME FUNCTION FOR BISAM THAT
SETL MACRO PROVIDES FOR QISAM.

PROGRAMMING LANGUAGES - FORTRAN, CCBOL, AND ASSEMBLER.

MINIMUM SYSTEM REQUIREMENTS - OS (MFT, MVT, VS2-1.7)

DOCUMENTATION: 68 PAGES, $2.40 ADDITIONAL CHARGE
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END OF ABSTRACTS