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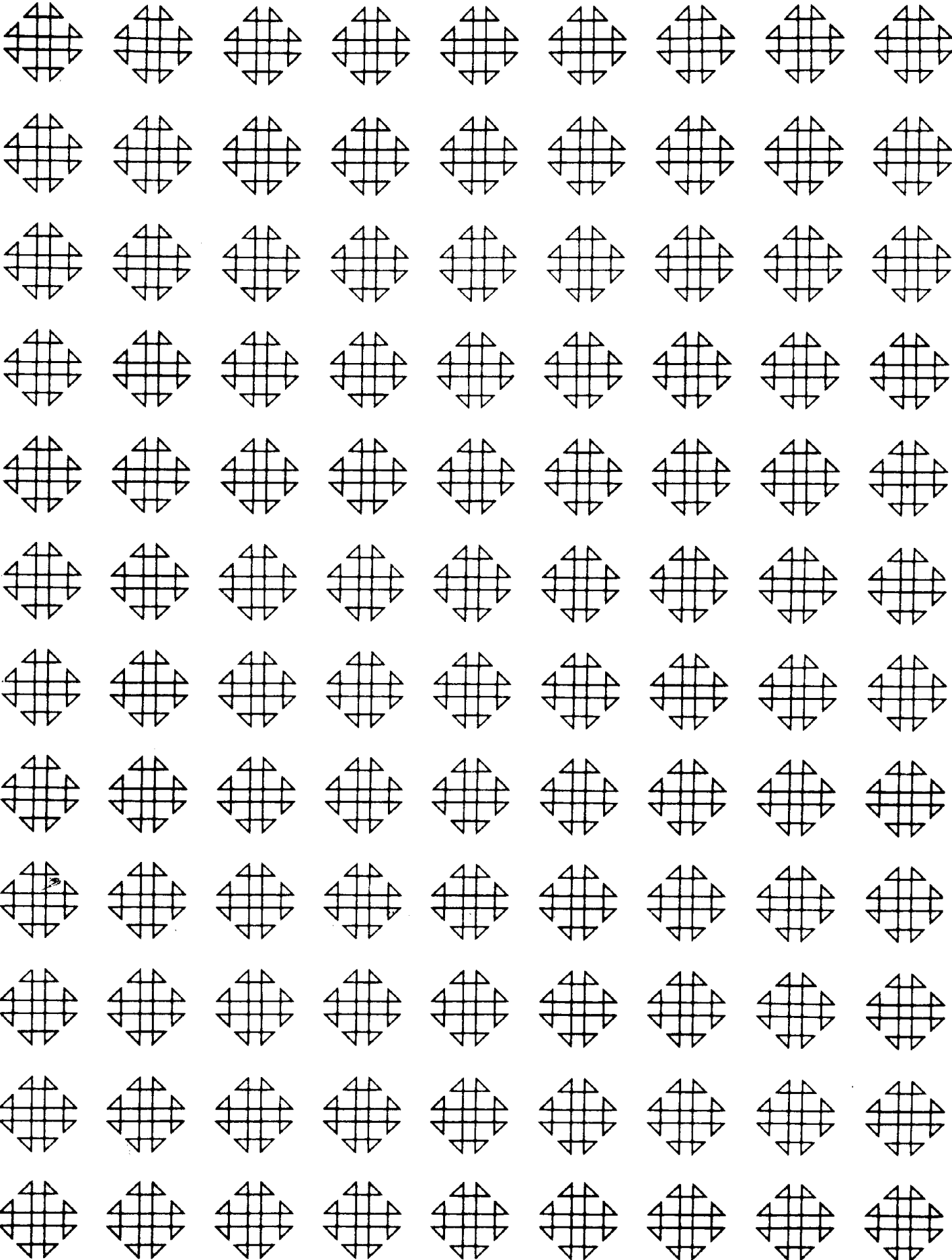
University of Miami

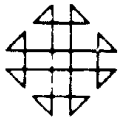
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WRIMAT- Matrix Writer

360D-08.0.003

CONTRIBUTED PROGRAM LIBRARY





CONTRIBUTED PROGRAM LIBRARY SUBMITTAL FORM
(for IBM S/360, 1130 and 1800)

IBM Corporation
Program Information Department (PID)
40 Saw Mill River Road
Hawthorne, New York 10532, U.S.A.
Attention: Program Control Desk

This form should be completed and submitted with the program package to PID at the address shown above. Standards and instructions for submitting programs are in your *User Group Reference Manual* or the *Contributed Program Submittal Standards Manual* available from PID.

- ① Program Order Number (to be filled in by PID) 360D-08.0.003
- ② System Type (machine) S / 3 6 0
- ③ Search Key M A T R I X / W R I T E R / O U T P U T
- ④ Programming Language F O R T R A N I V
- ⑤ Author's Name and Address Dr. Richard A. Usanis
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- ⑥ Direct Inquiries to Name and Address
(if different than Author)
- ⑦ Title of Program WRIMAT Matrix Writer
- ⑧ Submitter's User Group Affiliation Code and Installation Code S N C S
- ⑨ Submitter's Own Program Identification and Suffix (optional)
- ⑩ Primary Subject Code 0 8 . 0
- ⑪ Secondary Subject Codes 4 5 . 0
- ⑫ Operating or Monitor System Required 0 S / 3 6 0
- ⑬ New or Revision Code (if revision, show prior Program Order Number in item 1) N
- ⑭ Year Completed 6 8
- ⑮ Date of Submittal 0 1 1 3 6 9
- ⑯ Documentation (number of original pages submitted) 8
- ⑰ 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.

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Acknowledgments

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Notice of Permission

This subroutine may be used as is or in modified form in publication or submission to computer users' groups if credit is given to the authors and North Carolina State University.

III. DESCRIPTION OF OUTPUT

The output form is dependent on the input matrix in that matrices stored in lower or upper triangular form can only be printed as stored. The matrix is written in continuous form with 9 columns and 27 rows per page with format G14.6; the first 9 columns and NR rows being printed on the first (NR/27) pages in the printing of a square matrix. The rows and columns are numbered and a heading may be printed at the top of each page. Triangular matrices are printed with their main diagonal.

Triangular portions of rectangular matrices can be printed subject to the following restrictions:

if NR > NC mode 2

mode 4 can be used if NR is
passed as being equal to NC

NR < NC modes 2 and 4 can be used if
NC is passed as being equal
to NR. With MODE = 4 only
the first NR columns will be
printed.

In order to write a matrix that is in single precision, X must be declared REAL*4 in the subroutine. If there are more than 99 columns in the matrix, the dimension of NCOL should be increased to the value of NC. No other changes are needed.

IV. MODIFICATION OF OUTPUT FORMAT

Format statement number 4 is used in writing rectangular and lower triangular matrices, and the square portions of upper triangular matrices. For writing the triangular parts of upper triangular matrices a format is constructed from vectors STW and NCW and put into vector FMT. If another format is desired, substitution should be made in vectors FMT, elements 4 and 5, and NCW, all elements. Vector STW can be changed for spacing the elements across the page. However, efforts to change the subroutine to write other than 9 columns per page (and 27 rows) would require many other changes.

V. VARIABLES USED IN THE SUBROUTINE

Fortran Label	Type	Dimension	Meaning
FMT	I*4	(5)	Contains format for writing upper triangular matrix
I	I*4		Do loop parameter and row counter
IL	I*4		Lower limit of do loops for writing the next nine lines of the matrix X
I2	I*4		Upper limit of do loops for writing the next nine lines of the matrix X
IMODE	I*4		Switch to determine proper write statement for the page and mode being written
ITE	I*4		Switch to determine when page heading is to be written
J	I*4		Do loop parameter
J1	I*4		Lower limit of do loop for writing the next nine columns of the matrix X (see J3)
J2	I*4		Upper limit of the do loop for writing the next nine columns of the matrix X
J3	I*4		Lower limit of do loop for writing the next nine columns of the triangular section of the matrix X.
KJ	I*4		Set equal to 9 and used to increment I2 and J2
JK	I*4		Variable used to determine how many lines to be skipped when writing upper triangular matrix
LL	I*4		Used as subscript to construct the vector FMT from STW and NCW for writing upper triangular matrix
LT	I*4		Argument passed from main program
MODE	I*4		Argument passed from main program
NC	I*4		Argument passed from main program
NCOL	I*4	(99)	Vector containing the column numbers
NCW	I*4	(9)	Vector containing the number of elements to be printed in upper triangular write
ND	I*4		Argument passed from main program
NLS	I*4		Variable containing the no. of double spaced lines to be skipped in upper triangular write
TYR	I*4		Argument passed from main program
STW	I*4	(9)	Vector containing the starting point of an upper triangular write statement
TITLE	R*4	(1)	Argument passed from main program
X	R*8	(1)	Argument passed from main program