UNIVERSITY OF ILLINOIS
DIGITAL COMPUTER LABORATORY
STATISTICAL LIBRARY

KSL 5.50 - 261

TITLE: Delete Rows and Columns from a Matrix (SADOI Only)

TYPE: Entire program

SYMBOLS:
r* rows in input matrix
c* columns in input matrix
r rows in extracted matrix
c columns in extracted matrix
d decimal places per element

DURATION: $(.006)\ r^* c^* d^* + (.017)\ r\ c\ d$ seconds

CAPACITY: $(r^* - r) + (c^* - c) + c^* < 822$

PURPOSE: The purpose of this routine is to extract a submatrix of size r x c from a larger matrix of size r* x c* by specifying which rows (if any) and which columns (if any) are to be deleted.

METHOD OF USE:

	Stops
1. Master tape	34070
2. Specification tape	24087
3. Data tape	24087

To repeat step 3 at stop 24087 with an additional data tape, raise the black switch.
To change the specifications at stop 24087, insert the new tape in the reader and raise the white switch. The computer will again stop at 24087 for the data tape.

SPECIFICATION TAPE: The specification tape consists of three parts:
1. A set of signed integers to indicate the rows to be deleted terminated by an N. If no rows are to be deleted, only an N is punched on tape.
2. A set of signed integers to indicate the columns to be deleted terminated by an N. An N only will indicate that no columns are to be deleted.
3. An unsigned number followed by a fifth-hole character to indicate the number of decimal places desired in the results.

Examples of specification tapes are given below:

A.	+5 +6 N +10+11+12+14N 10 space	Delete rows 5 and 6; delete columns 10, 11, 12, and 14; print to 10 places.
B.	N +10+11+12+14N 3 space	Delete columns 10, 11, 12, and 14 only and print to 3 places.

DATA TAPE: The data tape consists of rows of signed fractions with each row terminated by an N and the final row terminated by an NJ. (See NOTE 2)
If an F terminating symbol is used instead of an N the computer will stop at 34090. An additional part of the data tape can be inserted in the reader; by raising the black switch, the problem is continued. (See NOTE 3)

NOTE 1: If the computer stops on FF from location 057 after the master tape has been read, this indicates that the sum check has failed and a reading error probably has been made.

NOTE 2: If the number of elements in subsequent rows of the matrix does not agree with the number for the first row, the computer will stop on FF from location 092.

NOTE 3: If the terminating symbol at the end of the first row is either an F, J, or L, the computer will stop at 24093. If the black switch is raised, the computer will continue as if the first terminating symbol were an N.

DATE April 2, 1959
SUBMITTED BY K. W. Dickman
APPROVED BY J. N. Snyder

LOCATION			ORDER		NOTES PAGE 1 KSL 5.50
Abs.	Rel.	Sym.			
			003K		
3			00F 00200F		
4			00F 00F	by 4(A)	200 + (r* - r) + 1
5			00F 00F	by 5(A)	200 + (r* - r) + (c* - C) + 2
			00K		
6		(NT)	00F 00F	by 2(B1)	End test for vector
7		(T1)	75(R) L0F	by 3(A)	
8		(T2)	N2(C) L5F	by 8(A)	Test constants
9		(T3)	801F L5F	by 3(B1)	
10		(R)	00F 00F		Row tally
11		(10)	00F 0010F		
12		(1)	00F 001F		
13		(X)	80F 00F	by 21(A)	Number per line
14		(70)	00F 0070F		
15		(C)	00F 00F		Column counter
16		(Y)	00F 00F		Counter
17		(N12)	00K		Input Routine
56		(P16)	00K		Print Routine
			00K		
112	0	(A)	9259F 9259F		
	1		52S3 501L		
	2		26(N12) L521(N12)		Read row deletion integers
	3		1020F 42(T1)		
	4	F5(T1)	424F		
	5		0020F 466L		
	6		52F 506L		
	7		26(N12) L521(N12)		Read column deletion integers
	8		1020F 42(T2)		
	9		F5(T2) 425F		
	10		0020F 46(B1)		
	11		46(B2) 92139F		
	12		411 814F		Read print parameter
	13		50F 74(10)		

LOCATION			ORDER	NOTES
Abs.	Rel.	Sym.		
	14		S5F 40F	
	15		914F 3613L	
	16		L5F 0020F	
	17		46(PR) 50(1)	
	18		F5F 0010F	
	19		40F L5(70)	
	20		66F S5F	
	21		1029F 42(X)	
	22		92707F 24(B1)	Stop: 24087
			00K	
135	0	(B1)	50F 50L	by 10(A) Read first row
	1		26(N12) 40F	
	2		L521(N12) 40(NT)	
	3		1020F 42(T3)	
	4		41(R) L3F	
	5		366(B2) 246(B2)	Stop if J, F, L terminating symbol
			00K	
141	0	(B2)	50F 50L	by 11(A) Read subsequent rows
	1		26(N12) 40F	
	2		L0(1) 3631L	Test for F or J
	3		L521(N12) L0(NT)	
	4		401F L31F	
	5		366L FFF	If elements in each row are not equal,
	6		L53F 428L	stop on FF
	7		F5(R) 40(R)	
	8		L5(R) L0F	by 6L
	9		40F L3F	
	10		36L F58L	Test if row is to be deleted
	11		428L L0(T1)	
	12		368L L55F	
	13		4221L 41(C)	
	14		41(Y) L54F	
	15		4216L F5(C)	
	16		42(C) L5F	

LOCATION Abs.	Rel.	Sym.	ORDER		NOTES
	17		L0(C) 40F		
	18		L3F 3627L		Test if column is to be deleted
	19		F516L 4216L		
161	20		L0(T2) 3216L		
	21		001F L5F		
	22	(PR)	50F 5022L	by 17(A)	
	23		26(P16) F5(Y)		Print element
	24		42(Y) L0(X)		
	25		3627L 41(Y)		
	26		92131F 92519F		
	27		F521L 4221L		
	28		L0(T3) 3214L		
	29		92770F 92131F		
	30		92519F 26L		
	31		L0(1) 343L		Stop if F on 34090
	32		92135F 92834F		
	33		92131F 9259F		
	34		24(B1) L53F		Stop if J on 24087; raise black
	35		4236L L55F		for additional data tapes;
	36		42 40L 41F		raise white switch for
	37		F536L 4236L		new parameters
	38		L040L 3236L		
	39		26(A) 00F		
181	40		N240L 41F	by 36L	
			00K		Sum check
182			L3F 34(A)		Stop: 34070
183			FFF 26(A)		
			FF0934F L50908F		
			26L 261N		