REVISION NOTICE

This publication replaces previous descriptions of "Matrix Multiply 2," program D1-229.2. Program references have been changed to current designations.

FUNCTION

"Matrix Multiply 2" enables the user to multiply two matrices, $A(i \times j)$, where j_a and i_b are the same but the matrices are not necessarily square.

INPUT

The following data must be supplied by the user:

1. Matrix A, consisting of i rows and j columns in floating point form, stored consecutively (row major, column minor) beginning in location A_0.

2. Matrix B, consisting of i rows and j columns in floating point form, stored consecutively (row major, column minor) beginning in location B_0.

3. The Floating Point Interpretive System 1, program H1-24.0 beginning in location F.

4. A calling sequence containing the following information:

    a. The location of Program H1-24.0 (F).
    b. The initial location of the matrix A (A_0).
    c. The number of rows (i_a) at q = 23 and columns (j_a) at q = 29 in matrix A.
    d. The initial location of the matrix B (B_0).
    e. The number of rows (i_b) at q = 23 and columns (j_b) at q = 29 in matrix B.
    f. The initial location for the product matrix C (C_0).

MATRIX MULTIPLY 2

CALLING SEQUENCE

Location	Order	Address	Notes
XXXX	R	L_0	Initial location of
XXXX + 1	U	L_0	this subroutine
XXXX + 2	Z	F	Initial location of Program H1-24.0
XXXX + 3	Z	A_0	Reserve i_a x j_a locations
XXXX + 4	Z	i_a j_a	i_a in track; j_a in sector
XXXX + 5	Z	B_0	Reserve i_b x j_b locations
XXXX + 6	Z	i_b j_b	i_b in track; j_b in sector
XXXX + 7	Z	C_0	Reserve i_a x j_b locations
XXXX + 8	etc.		

OUTPUT

The elements of the product matrix C in floating point form are stored consecutively (row major, column minor) beginning in location C_0.

LIMITS

$$2 \leq i_a \quad \text{and} \quad i_b \leq 63$$

$$2 \leq j_a \quad \text{and} \quad j_b \leq 63$$

TIME

Approximately .85 $(i_a . j_a . j_b)$ seconds are required.

STORAGE

178 locations (2 tracks, 50 sectors) are required in memory for storage of instructions and constants. No temporary storage is used except as required by program H1-24.0.

PROGRAM STOPS

Location	Meaning
Lo + 0241	j_a not equal to i_b. Do not continue.

```
b0000'y0144'y0127'y0143'y0126'y0134'y0135'b0243'
a0000'y0024'a0246'y0026'a0241'y0049'a0243'y0030'
a0131'y0039'y0047'a0241'y0122'u0024',0000002''800000'
b0000'h0163'b0000'h0213'e0200'c0244'b0000'h0162'
e0112'h0238'u0036''n0244'm0023'u0039'a0000'
y0236'b0213'e0112'h0132'a0163's0237'y0239'b0000'
y0128'b0000'h0022'u0205'b0162'm0212's0132't0241'
u0247'b0022'y0137'a0238'y0146'u0113''m0235'
a0022's0237'y0118'u0052'b0128'a0241'y0128's0236'
t0231'b0245'y0113'u0120'xz0063'b0163'y0136'a0237'
y0145'u0134'n0000'xz0000'b0057'y0150'u0000'b0145'
s0239't0157'r0000'u0000'h0000'xe0000'u0104'xz0001'
,0000002'''r0000'u0000'p0000'm0000'u0145'b0218'
u0141'y0113'u0228'r0000'u0000'p0000'n0000'xe0000'
u0123''b0022'a0237'y0137'u0154'c0119'u0220'
'b0145'a0237'y0145'b0146'u0223',0000002'''
xz6300'b0119'a0238'y0146'u0113'b0238'n0132'u0063'
'b0145'a0132'u0215',0000003'2000000'''y0239'
b0145'a0246'h0133'u0139'b0154'y0150'u0201'a0238'
y0146'u0143'xz0001''b0057'y0150'u0057'b0146'
s0118't0150'u0209',0000001'20000000'h0000'xz0001'xz0000'p0000'
xz0000'xz0001''xz0001'xz0000'z0163'xz0001's0226't0057'u0241'
.0000000'
```