

REVISION NOTICE

This publication replaces previous descriptions of "Matrix Add-Subtract 3," program D1-330.3. The program designations have been changed to their current nomenclature.

FUNCTION

"Matrix Add-Subtract 3" enables the user to add or subtract two matrices A_{ij} and B_{ij} , which are the same size but not necessarily square

$$A \pm B = C$$

INPUT

The following data must be in memory:

1. Matrices A and B, each consisting of i rows and j columns of elements are stored in consecutive memory locations in the extended range floating point format 2, as described by Floating Point Interpretive System 2, program H1-24.1. Both matrices must be the same sort, i.e., both row major, column minor; or both column major, row minor.
2. The Program H1-24.1 is stored beginning at location F.
3. A calling sequence consisting of the following information:
 - a. The initial location of program H1-24.1 (F).
 - b. The initial location of matrix A (A_0).
 - c. The number of rows (i) at $q=23$, and the number of columns (j) at $q=29$, in each matrix.
 - d. The initial location of matrix B (B_0).
 - e. The initial location of matrix C (C_0).

MATRIX ADD-SUBTRACT 3

CALLING SEQUENCE

| <u>LOCATION</u> | <u>ORDER</u> | <u>ADDRESS</u> | <u>NOTES</u> |
|-----------------|--------------|----------------|--------------------------|
| XXXX | R | L ₀ | Initial location of |
| XXXX + 1 | U | L ₀ | program D1-330.3 |
| XXXX + 2 | Z | F | Initial location of |
| | | | program H1-24.1 |
| XXXX + 3 | Z | A ₀ | |
| XXXX + 4 | Z | ij | i in track; j in sector |
| XXXX + 5 | 800A or 800S | B ₀ | A for A + B; S for A - B |
| XXXX + 6 | Z | C ₀ | |
| XXXX + 7 | etc. | | |

OUTPUT

Matrix C_{ij} in extended range floating point format 2 is stored in consecutive memory locations beginning in location C₀.

TIME

Approximately .93ij seconds are required.

STORAGE

80 locations (1 track 16 sectors) in memory are required for storage of instructions and constants. No temporary storage is required except as used by program H1-24.1.

NOTES

It is possible to store the computed elements of matrix C in locations A or B as well as in any non-A or non-B locations.

Job No. _____ Prog. No. 30.3 Prep. by WEN GERT Ck'd. by _____

Problem EXT. RANGE FLT. PT. MATRIX ADD-SUB. Track _____

| Program Input Codes | Stop | Location | Instruction Op. | Address | Contents of Address | Notes |
|---------------------|-------------------------------------|----------|-----------------|---------|--|-------|
| | | | | | | |
| | <input checked="" type="checkbox"/> | | | | | |
| | | 00.3.2 | H00.46 | | | |
| | | 3.3 | E00.22 | | | |
| | | 3.4 | S00.45 | | | |
| | | 3.5 | H00.30 | | <input checked="" type="checkbox"/> Z[B ₀ -A ₀] | |
| | | 3.6 | B[α+4] | | i _j | |
| | | 3.7 | H00.16 | | | |
| | | 3.8 | E0.106 | | XZ0063 | |
| | | 3.9 | H00.61 | | <input checked="" type="checkbox"/> j @ 29 | |
| | | 4.0 | V00.51 | | | |
| | | 4.1 | A[α+6] | | | |
| | | 4.2 | H00.63 | | C ₀ +2 i _j | |
| | | 4.3 | R[] | | <input checked="" type="checkbox"/> } 24.1 | |
| | | 4.4 | V[] | | } | |
| | | 4.5 | 800BL [] | | A _i | |
| | | 4.6 | [] | | 800(S ₀ or A)[B _i] | |
| | | 4.7 | 800HL [] | | <input checked="" type="checkbox"/> | |
| | | 4.8 | XE0000 | | | |
| | | 4.9 | V0.100 | | | |
| | | 5.0 | XZ0002 | | 2 @ 29 | |
| | | 5.1 | B00.16 | | <input checked="" type="checkbox"/> i _j | |
| | | 5.2 | E00.17 | | XZ6300 i _a @ 23 | |
| | | 5.3 | N00.61 | | j _a @ 29 | |
| | | 5.4 | V00.55 | | | |
| | | 5.5 | M0.10.7 | | <input checked="" type="checkbox"/> 2 @ 8 | |
| | | 5.6 | A00.46 | | B ₀ | |
| | | 5.7 | Y00.36 | | B ₀ + 2 i _j | |
| | | 5.8 | S00.46 | | B ₀ | |
| | | 5.9 | V00.41 | | <input checked="" type="checkbox"/> | |
| | | 6.0 | [] | | Z[C ₀ -A ₀] (0110) | |
| | | 6.1 | [] | | j _a @ 29 | |
| | | 6.2 | XZ636.3 | | (0112) | |
| | | 6.3 | [] | | <input checked="" type="checkbox"/> C ₀ + 2 i _j | |

Conditional Stop Code



Carriage Return

Job No. _____ Prog. No. 30.3 Prep. by WENGERT Ch'd. by _____

Problem EXT. RANGE FLT. PT. MATRIX ADD-SUB. Track _____

| Program Input Codes | Stop | Location | Instruction Op. | Address | Stop | Contents of Address | Notes |
|---------------------|------|-------------------------------------|-----------------|---------|-------------------------------------|---------------------|-------|
| | | | | | | | |
| | | <input checked="" type="checkbox"/> | | | | | |
| | | 0 0 | B | 0050 | | 2 @ 29 | |
| | | 0 1 | A | 0030 | | B-A | |
| | | 0 2 | A | 0045 | | A | |
| | | 0 3 | Y | 0046 | <input checked="" type="checkbox"/> | B | |
| | | 0 4 | U | 0108 | | | |
| <u>,0000.003</u> | | 0 5 | [| | | A0 (0026) | |
| | | 0 6 | | WJ | | XZ0043 (0038) | |
| | | 0 7 | L | 0000 | <input checked="" type="checkbox"/> | 2 @ 8 (0055) | |
| | | 0 8 | S | 0030 | | B-A | |
| | | 0 9 | Y | 0045 | | A | |
| | | 1 0 | A | 0060 | | C-A | |
| | | 1 1 | Y | 0047 | <input checked="" type="checkbox"/> | C | |
| | | 1 2 | E | 0062 | | XZ6363 | |
| | | 1 3 | S | 0063 | | C ₀ + 2y | |
| | | 1 4 | T | 0043 | | | |
| | | 1 5 | U | [A+7] | <input checked="" type="checkbox"/> | | |
| | | 1 6 | | | | | |
| | | 1 7 | | | | | |
| | | 1 8 | | | | | |
| | | 1 9 | | | <input checked="" type="checkbox"/> | | |
| | | 2 0 | | | | | |
| | | 2 1 | | | | | |
| | | 2 2 | | | | | |
| | | 2 3 | | | <input checked="" type="checkbox"/> | | |
| | | 2 4 | | | | | |
| | | 2 5 | | | | | |
| | | 2 6 | | | | | |
| | | 2 7 | | | <input checked="" type="checkbox"/> | | |
| | | 2 8 | | | | | |
| | | 2 9 | | | | | |
| | | 3 0 | | | | | |
| | | 3 1 | | | <input checked="" type="checkbox"/> | | |

Conditional Stop Code



Carriage Return