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1  ! Name : Ankush Bhowmik
2  ! Date : 04-10-2024
3  ! Program Name : Matrix Addition and Subtraction with File Inputs
4
5  program matrix_addition_subtraction
6
7      IMPLICIT NONE
8
9      INTEGER :: i, j, k
10     REAL :: M(4,3), N(4,3), S(4,3), D(4,3)
11
12     ! Reading & Printing Matrix M
13     OPEN(unit = 1, file = "matrix_M.txt", action="read")
14     READ(1,*)(M(i,j), j=1,3), i=1,4
15     WRITE(*,*)"Matrix M : "
16
17     DO i=1,4
18         write(*,*)(M(i,j), j=1,3)
19     END DO
20
21     ! Reading & Printing Matrix N
22     OPEN(unit = 2, file = "matrix_N.txt", action="read")
23     READ(2,*)(N(i,j), j=1,3), i=1,4
24     WRITE(*,*)"Matrix N: "
25
26     DO i=1,4
27         WRITE(*,*)(N(i,j), j=1,3)
28     END DO
29
30     ! Performing Matrix Addition,  $S = M + N$ 
31     DO i = 1,4
32         DO j = 1,3
33             S(i,j) = M(i,j) + N(i,j)
34         END DO
35     END DO
36
37     ! Performing Matrix Subtraction,  $D = M - N$ 
38     DO i = 1,4
39         DO j = 1,3
40             D(i,j) = M(i,j) - N(i,j)
41         END DO
42     END DO
43
44     ! Output (Matrix Addition)
45     WRITE(*,*)"Result of the matrix addition (M+N) is given by Matrix S : "
46     DO i = 1,4
47         WRITE(*,*)(S(i,j), j=1,3)
48     END DO
49
50     ! Output (Matrix Subtraction)
51     WRITE(*,*)"Result of the matrix subtraction (M-N) is given by Matrix D : "
52     DO i = 1,4
53         WRITE(*,*)(D(i,j), j=1,3)
54     END DO
55
56 end program
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