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1   ! Name : Ankush Bhowmik
2   ! Date : 04-10-2024
3   ! Program Name : Matrix Multiplication with File Inputs
4
5   program matrix_multiplication
6
7           IMPLICIT NONE
8
9           INTEGER :: i, j, k
10          REAL :: A(4,3), B(3,2), C(4,2)
11
12          ! Reading & Printing Matrix A
13          OPEN(unit = 1, file = "matrix_A.txt", action="read")
14          READ(1,*)((A(i,j), j=1,3), i=1,4)
15          WRITE(*,*)"Matrix A :"
16
17          DO i=1,4
18                  write(*,*)(A(i,j), j=1,3)
19          END DO
20
21          ! Reading & Printing Matrix B
22          OPEN(unit = 2, file = "matrix_B.txt", action="read")
23          READ(2,*)((B(i,j), j=1,2), i=1,3)
24          WRITE(*,*)"Matrix B :"
25
26          DO i=1,3
27                  write(*,*)(B(i,j), j=1,2)
28          END DO
29
30          ! Initialising Result Matrix C
31          DO i = 1,4
32                  DO j = 1,2
33                          C(i,j) = 0.0
34                  END DO
35          END DO
36
37          ! Performing Matrix Multiplication, C = AB
38          DO i = 1,4
39                  DO j = 1,2
40                          DO k = 1,3
41                                  C(i,j) = C(i,j) + A(i,k) * B(k,j)
42                          END DO
43                  END DO
44          END DO
45
46          !Output
47          write(*,*)"Result of the matrix multiplication (AB) is given by Matrix C :"
48          DO i = 1,4
49                  write(*,*)(C(i,j), j=1,2)
50          END DO
51
52  end program
```