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1 !PROBLEM 7
2 ! Name: Debasis Buxy
3 !PRN: 22020004154
4 !13/7/21
5 !find the sum and product of matrices using 2D array
6 program MATRIX
7     implicit none
8     integer :: M1, N1, M2, N2, M3, N3, M4, N4, I, J, K
9     integer :: A(10,10)
10    integer :: B(10,10)
11    integer :: C(10,10)
12    integer :: D(10,10)
13
14    write(*,*) "Enter dimensions of A"
15    read(*,*) M1, N1
16    write(*,*) "Enter dimensions of B"
17    read(*,*) M2, N2
18
19    write(*,*) "Enter elements of A"
20    read(*,*) ((A(I,J), J=1,N1), I=1,M1)
21    write(*,*) "A = "
22    do I=1,M1
23        write(*,*) (A(I,J), J=1,N1)
24    end do
25
26    write(*,*) "Enter elements of B"
27    read(*,*) ((B(I,J), J=1,N2), I=1,M2)
28    write(*,*) "B = "
29    do I=1,M2
30        write(*,*) (B(I,J), J=1,N2)
31    end do
32
33    if((M1 /= M2) .or. (N1 /= N2)) then
34        write(*,*) "Addition cannot be performed!"
35    else
36        !perform addition
37        C = 0
38        M3 = M1
39        N3 = N1
40        do I=1,M3
41            do J=1,N3
42                C(I,J) = A(I,J)+B(I,J)
43            end do
44        end do
45
46        write(*,*) "A+B = "
47        do I=1,M3
48            write(*,*) (C(I,J), J=1,N3)
49        end do
50    end if
51
52    if(N1 /= M2) then
53        write(*,*) "Multiplication cannot be performed!"
54    else
55        !perform multiplication
56        D = 0
57        M4 = M1
58        N4 = N2
59        do I=1,M4
60            do J=1,N4

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61         do K=1,N1
62             D(I,J) = D(I,J) + A(I,K)*B(K,J)! use temp to sum
63         end do
64     end do
65 end do
66 write(*,*) "A*B = "
67 do I=1,M4
68     write(*,*) (D(I,J), J=1,N4)
69 end do
70 end if
71 end program MATRIX

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