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1:
2: *****
3: ./part1.f90
4:
5: PROGRAM classproj1
6: !*** Program to multiply together two matrices mat1 & mat2 and store
7: !*** the result in mat3.
8:
9: IMPLICIT NONE
10:
11: INTEGER, PARAMETER :: m=3,n=4,k=3
12: INTEGER :: matno,i,j,p
13: INTEGER, DIMENSION(2) :: row=(/m,n/)
14:
15: REAL, DIMENSION(m,n) :: mat1
16: REAL, DIMENSION(n,k) :: mat2
17: REAL, DIMENSION(m,k) :: mat3,mat4
18:
19:
20:
21: !*** Input the two matrices from the keyboard
22: !*** Press return after each element
23: !*** matrix one then matrix two
24: !*** NOTE you could read each matrix is separately if you prefer!
25:
26: DO matno=1,2
27:   DO i=1,row(matno)
28:     PRINT*, "Enter matrix", matno, " row", i
29:     IF (matno=1) THEN
30:       READ*, mat1(i,:)
31:     ELSE
32:       READ*, mat2(i,:)
33:     ENDIF
34:   ENDDO
35: ENDDO
36:
37: !*** Perform the matrix multiplication
38: !*** using three DO loops
39:
40: DO i=1,m !** rows in result matrix
41:   DO j=1,k !** cols in result matrix
42:     mat3(i,j)=0
43:     DO p=1,n
44:       !** Along cols of mat1 and rows of mat2
45:       mat3(i,j)=mat3(i,j)+mat1(i,p)*mat2(p,j)
46:     ENDDO
47:   ENDDO
48: ENDDO
49:
50: !*** Perform the matrix multiplication
51: !*** using Fortran's C=MATMUL(A,B)
52:
53: mat4=MATMUL(mat1,mat2)
54:
55: !*** Print out each matrix to the screen
56:
57: PRINT*, "Matrix One"
58: PRINT*, ""
59: DO i=1,m
60:   PRINT*, mat1(i,:)
61: ENDDO
62:
63: PRINT*, ""
64: PRINT*, "Matrix Two"
65: PRINT*, ""
66:
67: DO i=1,n

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68:   PRINT*, mat2(i,:)
69: ENDDO
70:
71: PRINT*, ""
72: PRINT*, "Matrix1 * Matrix2 (My Answer)"
73: PRINT*, ""
74:
75: DO i=1,m
76:   PRINT*, mat3(i,:)
77: ENDDO
78:
79:
80: PRINT*, ""
81: PRINT*, "Matrix1 * Matrix2 (Fortran Answer)"
82: PRINT*, ""
83:
84: DO i=1,m
85:   PRINT*, mat4(i,:)
86: ENDDO
87:
88:
89: END PROGRAM classproj1
90: *****
91:

```