IARE

INSTITUTE OF AERONAUTICAL ENGINEERING

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LABORATORY WORK BOOK

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Class : B.Tech CSE-C Semester : II

Course Code : ACSD06 Course Name : PPS LAB

Name of the Course Faculty : Dr. M. Madhusudhan Reddy Faculty ID : IARE 10881

Exercise Number : 3 Week Number : 3 Date : 13-4-24

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S. No.	Exercise Number	EXERCISE NAME	MARKS AWARDED						
			Aim/ Preparation	Algorithm / Procedure	Performance in the Lab	Source Code Calculations and Graphs	Program Execution Results and Error Analysis	Viva - Voce	Total
			4	4		4	4	4	20
1	2.1	Add 2 Matrices.	4	—	4	4	4	4	20
2	2.2	Multiply 2 Matrices							
3	2.3	Transpose of matrix							
4	2.4	Matrix product							
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Signature of the Student

Signature of the Faculty 18/4/24

START WRITING FROM HERE

2. Matrix operations

2.1 Add two Matrices

Given two matrices x and y, the task is to compute the sum of two matrices and fun point it in python

```
R1 = int (input ("Enter the number of rows in a matrix : "))
C1 = int (input ("Enter the number of columns in a matrix : "))
R2 = int (input ("Enter the number of rows in a matrix : "))
C2 = int (input ("Enter the number of columns in a matrix : "))
if R1 != R2 or C1 != C2:
    print ("Matrix addition is not possible")
else:
    Matrix 1 = []
    Matrix 2 = []
    print ("Enter the elements into matrix (! ")
    for i in range (R1):
        row = []
        for j in range (C1):
            row.append (int (input ()))
        matrix 1. append (row)
    print (matrix 1)
    print ("Enter elements into matrix 2 : ")
    for i in range (R2):
        row = []
        for j in range (C2)
            row. append (int (input ())
                matrix 2. append (row)
    print (matrix 2)
```

```
result = []
print ("Addition of two matrix : \n")
for i in range (R1):
    row = []
    for j in range (C1):
        row.append (matrix1 [i] [j] + matrix2 [i] [j])
    result.append (row)
    print (result)
```

output :- Enter the value of m : 3
Enter the value of n : 3

X = [[1, 2, 3] , [4, 5, 6] , [7, 8, 9]]

Y = [[9, 8, 7] , [6, 5, 4] , [3, 2, 1]]

[[10, 10, 10], [10, 10, 10] , [10 , 10, 10]] .

2.2 Multiply two matrices :-

Given two matrices X and Y , the task is to compute the multiplication of two matrices and then print it.

```
R1 = int (input ("Enter the no. of rows in a matrix : "))
C1 = int (input ("Enter the no. of columns in a matrix : "))
R2 = int (input ("Enter the no. of rows in a matrix : "))
C2 = int (input ("Enter the no. of columns in a matrix : "))
if C1 != R2 :
    print ("matrix multiplication is not possible").
else :
    matrix1 = []
    matrix2 = []
```

```
print ("Enter the elements into matrix 1 : "))
for i in range (R1):
    row = []
    for j in range (C1):
        row.append (int (input ()))
    matrix1.append (row)
print (matrix 1)
print ("Enter elements into matrix 2 : ")
for i in range (R2):
    row = []
    for j in range (C2):
        row.append (int (input ()))
    matrix 2.append (row)
print (matrix 2)
result = []
print ("Multiplication of two matrices : \n")
for i in range (R1):
    row = []
    for j in range (C2):
        temp = 0
        for k in range (R2):
            temp += [matrix 1 [i][k] * matrix 2 [k][j])
        row.append (temp)
    result.append (row)
print (result)
```

ROLL NUMBER :

output.

x = [[1,7,3], [3,5,6], [6,8,9]]

y = [[1,1,1,2], [6,7,3,6], [3,5,9,1]]

[[55, 65, 49, 5],
  [87, 68, 72, 12],
  [90, 109, 111, 21]]

2.3 Transpose of a matrix:

interchanging rows and columns of a matrix to get its transpose.

```
R1 = int(input("Enter the no. of rows in a matrix : "))
C1 = int(input("Enter the no. of columns in a matrix : "))
matrix 1 = []
matrix 2 = []
print("Enter the elements into matrix 1 : ")
for i in range(R1):
    row = []
    for j in range(C1):
        row.append(int(input()))
    matrix 1.append(row)
print(matrix 1)
for i in range(C1):
    row = []
    for j in range[R1] :
        row.append(matrix 1[j][i])
    matrix 2.append(row)
print(matrix 2)
```

ROLL NUMBER :

output:

[[1,2], [3,4], [5,6]]

then the transpose of the given matrix will be

[[1,3,5], [2,4,6]]

2.4 Matrix product:

Matrix product problem we solve using list comprehension as a potential standard to the conventional loops. Iterate and find the product of the nested list and at the end return the cumulative product using function.

```
def prod (val):
    res = 1
    for ele in val:
        res *= ele
    return res
test list = [[1,4,5], [7,3], [4], [46, 7,3]]
print ("the original list : " + str (test list))
res = prod [ele for sub in test list for ele in sub])
print ("the total element product in lists is : " + str(res)).
```

Passed 18/9/24