



LABORATORY WORK BOOK

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Class : B.Tech CSE-C Semester : II

Course Code : ACSD06 Course Name : PPS LAB

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Roll Number

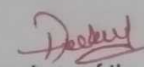
2 3 9 5 1 A 0 5 5 H

Faculty ID : IARE 10881

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

Exercise Number			MARKS AWARDED						
S. No.	Exercise Number	EXERCISE NAME	Aim/	Algorithm / Procedure		Source Code	Program Execution	Viva - Voce	Total
			Preparation	Performance in the Lab		Calculations and Graphs	Results and Error Analysis		
				4	4				
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							
5									
6									
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12									


Signature of the Student


Signature of the Faculty

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 run 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 1 : ")
```

```
    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 is")
for i in range (R1):
    row = []
    for j in range (C1):
        row.append (matrix 1 [i] [j] + matrix 2 [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 (matrix1)

```

```

print ("Enter elements into matrix 2 : ")

```

```

for i in range (R2):
    row = []
    for j in range (C2):
        row.append (int (input ()))
    matrix2.append (row)

```

```

print (matrix2)

```

```

result = []

```

```

print ("Multiplication of two matrices : In ")

```

```

for i in range (R1):

```

```

    row = []

```

```

    for j in range (C2):

```

```

        temp = 0

```

```

        for k in range (C1):

```

```

            temp += matrix1 [i] [k] * matrix2 [k] [j]

```

```

        row.append (temp)

```

```

    result.append (row)

```

```

print (result)

```


output:

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

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

$[[55, 65, 49, 5],$

$[37, 68, 72, 12],$

$[90, 109, 111, 21]]$

2.3 Transpose of a matrix:

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

$R_1 = \text{int}(\text{input}("Enter the no. of rows in a matrix: "))$

$C_1 = \text{int}(\text{input}("Enter the no. of columns in a matrix: "))$

matrix 1 = []

matrix 2 = []

print("Enter the elements into matrix 1: ")

for i in range(R_1):

row = []

for j in range(C_1):

row.append(int(input()))

matrix 1.append(row)

print(matrix 1)

for i in range(C_1):

row = []

for j in range(R_1):

row.append(matrix 1[j][i])

matrix 2.append(row)

print(matrix 2)

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)).

Handwritten signature
18/10/24