**Practical 2**

**Aim:** Write a python program to perform 2x2 Matrix multiplication  
**Code:**

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

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

result = [[0,0,0],[0,0,0],[0,0,0]]

for i in range(len(x)):

for j in range(len(y[0])):

for k in range(len(y)):

result[i][j] += x[i][k] \* y[k][j]

for r in result:

print(r)

**OR**

def MatrixOutput(matrix):

for row in matrix:

print(row)

def Matrix():

row = int(input("How many rows do you want: "))

col = int(input("How many columns do you want: "))

matrix = [[int(input(f"Enter value for [{i}][{j}] index: "))

for j in range(col)] for i in range(row)]

MatrixOutput(matrix)

return matrix

def MatMultiplication(a, b):

if len(a[0]) != len(b):

print("Matrix multiplication not possible.")

return None

result = [[0 for \_ in range(len(b[0]))] for \_ in range(len(a))]

for i in range(len(a)):

for j in range(len(b[0])):

for k in range(len(b)):

result[i][j] += a[i][k] \* b[k][j]

return result

print("Matrix multiplication")

print("\nFor 1st matrix: ")

a = Matrix()

print("\nFor 2nd matrix: ")

b = Matrix()

result = MatMultiplication(a, b)

if result:

print("\nResultant matrix:")

MatrixOutput(result)

**1st code output:**

[30, 36, 42]

[66, 81, 96]

[102, 126, 150]

AND

**2nd code output:**

Matrix multiplication

For 1st matrix:

How many rows do you want: 3

How many columns do you want: 3

Enter value for [0][0] index: 1

Enter value for [0][1] index: 2

Enter value for [0][2] index: 3

Enter value for [1][0] index: 4

Enter value for [1][1] index: 5

Enter value for [1][2] index: 6

Enter value for [2][0] index: 7

Enter value for [2][1] index: 8

Enter value for [2][2] index: 9

[1, 2, 3]

[4, 5, 6]

[7, 8, 9]

For 2nd matrix:

How many rows do you want: 3

How many columns do you want: 3

Enter value for [0][0] index: 1

Enter value for [0][1] index: 2

Enter value for [0][2] index: 3

Enter value for [1][0] index: 4

Enter value for [1][1] index: 5

Enter value for [1][2] index: 6

Enter value for [2][0] index: 7

Enter value for [2][1] index: 8

Enter value for [2][2] index: 9

[1, 2, 3]

[4, 5, 6]

[7, 8, 9]

Resultant matrix:

[30, 36, 42]

[66, 81, 96]

[102, 126, 150]