Problem Statement :

2. Write python program for to compute the following computation on matrix

A. Addition of two matrices

B. Subtraction of two matrices

C. Multiplication of two

D. Transpose of matrix

CODE:

def matrix\_addition(matrix1, matrix2):

result = []

for i in range(len(matrix1)):

row = []

for j in range(len(matrix1[0])):

row.append(matrix1[i][j] + matrix2[i][j])

result.append(row)

return result

def matrix\_subtraction(matrix1, matrix2):

result = []

for i in range(len(matrix1)):

row = []

for j in range(len(matrix1[0])):

row.append(matrix1[i][j] - matrix2[i][j])

result.append(row)

return result

def matrix\_multiplication(matrix1, matrix2):

result = []

for i in range(len(matrix1)):

row = []

for j in range(len(matrix2[0])):

element = 0

for k in range(len(matrix2)):

element += matrix1[i][k] \* matrix2[k][j]

row.append(element)

result.append(row)

return result

def matrix\_transpose(matrix):

result = []

for i in range(len(matrix[0])):

row = []

for j in range(len(matrix)):

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

result.append(row)

return result

def main():

matrix1 = [

[1, 2, 3],

[4, 5, 6],

[7, 8, 9]

]

matrix2 = [

[9, 8, 7],

[6, 5, 4],

[3, 2, 1]

]

print("Matrix 1:")

for row in matrix1:

print(row)

print("\nMatrix 2:")

for row in matrix2:

print(row)

print("\nAddition of two matrices:")

addition\_result = matrix\_addition(matrix1, matrix2)

for row in addition\_result:

print(row)

print("\nSubtraction of two matrices:")

subtraction\_result = matrix\_subtraction(matrix1, matrix2)

for row in subtraction\_result:

print(row)

print("\nMultiplication of two matrices:")

multiplication\_result = matrix\_multiplication(matrix1, matrix2)

for row in multiplication\_result:

print(row)

print("\nTranspose of the first matrix:")

transpose\_result = matrix\_transpose(matrix1)

for row in transpose\_result:

print(row)

if \_\_name\_\_ == "\_\_main\_\_":

main()

OUTPUT:

Matrix 1:

[1, 2, 3]

[4, 5, 6]

[7, 8, 9]

Matrix 2:

[9, 8, 7]

[6, 5, 4]

[3, 2, 1]

Addition of two matrices:

[10, 10, 10]

[10, 10, 10]

[10, 10, 10]

Mat1 :

[2 ,4]

[6, 8]

Mat2 :

[1, 3]

[5 ,7]

Subtraction of two matrices:

[1, 1]

[1, 1]

Multiplication of two matrices:

[22, 34]

[46, 74]

Transpose of the first matrix:

[2, 6]

[4, 8]