“”” **Experiment No-3 (Group A)**

Write a **Python** program to compute following computation on matrix:

a) Addition of two matrices b) Subtraction of two matrices

c) Multiplication of two matrices d) Transpose of a matrix “””

```
def Add():
    C = [[0 for j in range(0, n)] for i in range(0, m)]
    for i in range(0,m):
        for j in range(0,n):
            C[i][j] = A[i][j] + B[i][j]
    print("\nAddition of two matrix==>")
    display(C)

def Sub():
    C = [[0 for j in range(0, n)] for i in range(0, m)]
    for i in range(0,m):
        for j in range(0,n):
            C[i][j] = A[i][j] - B[i][j]
    print("\nSubstraction of two matrix==>")
    display(C)

def Mul():
    C = [[0 for j in range(0, n)] for i in range(0, m)]
    for i in range(0,m):
        for j in range(0,q):
            for k in range(0,n):
                C[i][j]=C[i][j]+ A[i][k] * B[k][j]
    print("\nMultiplication of two matrix==>")
    display(C)

def Transpose():
    C = [[0 for j in range(0, n)] for i in range(0, m)]
    for i in range(0,m):
        for j in range(0,n):
            C[i][j] = A[j][i]
    print("\nTranspose of  Matrix A ==>")
    display(C)

def display(C1):
    for i in range(0,m):
        print('\n')
        for j in range(0,n):
            print(' ',C1[i][j],end=" ")

m = int(input('\nEnter no. of rows for Matrix 1:'))
n = int(input('\nEnter no. of columns for Matrix 1:'))
A = [[0 for j in range(0, n)] for i in range(0, m)]
print('\nEnter Elements of Matrix A')
for i in range(0, m):
    for j in range(0, n):
        A[i][j] = int(input('\nEnter element A{}{}:'.format(i, j)))
print('\nMatrix A==>')
display(A)
```

```
p = int(input('\nEnter no. of rows for Matrix 2:'))
q = int(input('\nEnter no. of columns for Matrix 2:'))
B = [[0 for j in range(0, q)] for i in range(0, p)]
print('\nEnter Elements of Matrix B')
for i in range(0, p):
    for j in range(0, q):
        B[i][j] = int(input('\nEnter element B{}{}:'.format(i, j)))
print('\nMatrix B==>')
display(B)

flag =1
while flag==1:
    print('\n1.Add Matrices\n2.Subtract Matrices\n3.Multiply Matrices\n4.Transpose \n5.Exit')
    choice = int(input('Enter Choice:'))
    if choice==1:
        if m==p and n==q:
            Add()
            a = input("\n\nDo you want to continue (y/n) :")
            if a == "y":
                flag = 1
            else:
                flag = 0
                print("Thanks for using this program!")
        else:
                print('Matrices cannot be Added')
    elif choice==2:
        if m==p and n==q:
            print('Matrices can be Subtracted')
            Sub()
            a = input("\n\nDo you want to continue (y/n) :")
            if a == "y":
                    flag = 1
            else:
                    flag = 0
                    print("Thanks for using this program!")
        else:
                print('Matrices cannot be Subtracted')

    elif choice==3:
        if n==p:
            print('Matrices can be Multiplied')
            Mul()
            a = input("\n\nDo you want to continue (y/n) :")
            if a == "y":
                    flag = 1
            else:
                    flag = 0
                    print("Thanks for using this program!")

        else:
                print('Matrices cannot be Multiplied')
```

```
  elif choice==4:
            Transpose()
            a = input("\n\nDo you want to continue (y/n) :")
            if a == "y":
               flag = 1
            else:
               flag = 0
               print("Thanks for using this program!")



  elif choice==5:
     flag=0
     print("Thanks for using this program!")


else:
     print('\nPlease enter a valid choice')
     a = input("\n\nDo you want to continue (y/n) :")
     if a == "y":
        flag = 1
     else:
         flag = 0
         print("Thanks for using this program!")
```