**Practical No: 3**

Aim: Write a python program to compute following computation on matrix:

1. Addition of two matrices

2. Subtraction of two matrices

3. Multiplication of two matrices

4. Transpose of a matrix

**Program:-**

A=[]

B=[]

def inp(m):

for i in range(row):

a=[]

for j in range(col):

a.append(int(input("Enter element : ")))

m.append(a)

def dis(a):

for i in a:

print(i)

print("FOR MATRIX A \n")

row=int(input("Enter row : "))

col=int(input("Enter COL : "))

inp(A)

dis(A)

print("FOR MATRIX B\n")

row1=int(input("Enter row : "))

col2=int(input("Enter COL : "))

inp(B)

dis(B)

def add(a,b):

c=[]

for i in range(row):

ad=[]

for j in range(col):

ad.append(a[i][j]+b[i][j])

c.append(ad)

print("\nADDITION MATRIX \n")

dis(c)

def sub(a,b):

c=[]

for i in range(row):

ad=[]

for j in range(col):

ad.append(a[i][j]-b[i][j])

c.append(ad)

print("\nSUBRACTED MATRIX \n")

dis(c)

def mul(a,b):

C=[[0 for x in range(row)]for y in range(col)]

for i in range(row):

for j in range(col):

for k in range(col):

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

dis(C)

def trans(a):

T=[]

for i in range(row):

t=[]

for j in range(col):

t.append(a[j][i])

T.append(t)

dis(T)

while True:

print("\n-------------\n \n1:additon\n2:substraction\n3:multiplycation\n4:transpose")

ch=int(input("Enter your choice : "))

if ch==1:

add(A,B)

elif ch==2:

sub(A,B)

elif ch==3:

if(row==col2 and row1==col):

print("\n\n!!!!!!ROW and COLUMN not matched !!!!!!\n\n")

mul(A,B)

elif ch==4:

print("\n!!! WHICH MATRIX WANT TO TRANSPOSE\n1:MATRIX A \n2:MATRIX B")

n=int(input("\nENTER = "))

if n==1:

trans(A)

elif n==2:

trans(B)

else:

break

else:

break

**output:**

Enter row : 2

Enter COL : 2

Enter element : 1

Enter element : 2

Enter element : 3

Enter element : 4

[1, 2]

[3, 4]

FOR MATRIX B

Enter row : 2

Enter COL : 2

Enter element : 5

Enter element : 6

Enter element : 7

Enter element : 8

[5, 6]

[7, 8]

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1:additon

2:substraction

3:multiplycation

4:transpose

Enter your choice : 1

ADDITION MATRIX

[6, 8]

[10, 12]

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1:additon

2:substraction

3:multiplycation

4:transpose

Enter your choice : 2

SUBRACTED MATRIX

[-4, -4]

[-4, -4]

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1:additon

2:substraction

3:multiplycation

4:transpose

Enter your choice : 3

!!!!!!ROW and COLUMN are matched !!!!!!

[19, 22]

[43, 50]

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1:additon

2:substraction

3:multiplycation

4:transpose

Enter your choice : 4

!!! WHICH MATRIX WANT TO TRANSPOSE

1:MATRIX A

2:MATRIX B

ENTER = 1

[1, 3]

[2, 4]