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Assignment 2:

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

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| """  -----------------------------------------------------  Assignment 2:  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  -----------------------------------------------------  """  # Solution  def read(r, c, mat):  # for user input  for i in range(r): # for loop for row entries  a = []  for j in range(c): # for loop for column entries  a.append(int(input()))  mat.append(a)  def dis(r, c, mat): # displaying the matrix according to user input  # for printing the matrix  for i in range(r):  for j in range(c):  print(mat[i][j], end=" ")  print()  def add(r, c, mat1, mat2):  res = [] # initializing resultant matrix  a = []  for i in range(r):  for j in range(c):  a.append(mat1[i][j] + mat2[i][j])  res.append(a)  print("Resultant addition is as follows: ")  dis(r, c, res)  def sub(r, c, mat1, mat2):  res = [] # resultant matrix  a = []  for i in range(r):  for j in range(c):  a.append(mat1[i][j] - mat2[i][j])  res.append(a)  print("Resultant Subtraction is as follows: ")  dis(r, c, res)  def mul(r1, c1, r2, c2, mat1, mat2): # time complexity : if square matrix O(n^3)  res = []  for i in range(r1):  a = []  for j in range(c2):  sum = 0  for k in range(c1):  sum = sum + mat1[i][k] \* mat2[k][j]  a.append(sum)  res.append(a)  print("Resultant Multiplication is as follows: ")  dis(r1, c1, res)  def transpose(r, c, mat):  res = []  for i in range(c):  a = []  for j in range(r):  a.append(mat[j][i])  res.append(a)  dis(c, r, res)  def main():  r1 = int(input("Enter the number of rows of first matrix: "))  c1 = int(input("Enter the number of columns of first matrix: "))  r2 = int(input("Enter the number of rows of second matrix: "))  c2 = int(input("Enter the number of rows of second matrix: "))  # Initialize matrices  mat1 = []  mat2 = []  print("Enter the entries row wise of first matrix: ")  read(r1, c1, mat1)  print("Enter the entries row wise of second matrix: ")  read(r2, c2, mat2)  print("First matrix is as follows: ")  dis(r1, c1, mat1)  print("Second matrix is as follows: ")  dis(r2, c2, mat2)  if r1 == r2 and c1 == c2:  add(r1, c1, mat1, mat2)  else:  print("\nAddition is not possible.")  if r1 == r2 and c1 == c2:  sub(r1, c1, mat1, mat2)  else:  print("\nSubtraction is not possible.")  if c1 == r2:  mul(r1, c1, r2, c2, mat1, mat2)  else:  print("\nMultiplication is not possible.")  print("Resultant transpose if first matrix is as follows: ")  transpose(r1, c1, mat1)  print("Resultant transpose of second matrix is as follows: ")  transpose(r2, c2, mat2)  main() |