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class Matrix:
    def __init__(self, row, col):
        self.row = row
        self.col = col
        self.matrix_A = [i[:] for i in [[0]*self.col]*self.row]
        self.matrix_B = [i[:] for i in [[0]*self.col]*self.row]
        self.matrix_C = [i[:] for i in [[0]*self.col]*self.row]

    def getinp(self, mat):
        for i in range(self.row):
            for j in range(self.col):
                mat[i][j] = int(input(f'Enter the element of row {i+1} and column {j+1}: '))

    def printmat(self, mat):
        for i in mat:
            print('\t'.join(map(str, i)))

    def getmatrix(self):
        print('\n\nEnter Matrix A data: ')
        self.getinp(self.matrix_A)

        print('\n\nEnter Matrix B data: ')
        self.getinp(self.matrix_B)

        print('\n\nMatrix A')
        self.printmat(self.matrix_A)

        print('\n\nMatrix B')
        self.printmat(self.matrix_B)

    def addition(self):
        for i in range(self.row):
            for j in range(self.col):
                self.matrix_C[i][j] = self.matrix_A[i][j] + self.matrix_B[i][j]

        print("\n\nAddition matrix: ")
        self.printmat(self.matrix_C)

    def subtraction(self):
        for i in range(self.row):
            for j in range(self.col):
                self.matrix_C[i][j] = self.matrix_A[i][j] - self.matrix_B[i][j]

        print("\n\nSubtraction matrix: ")
        self.printmat(self.matrix_C)
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def multiply(self):
    for i in range(self.row):
        for j in range(self.col):
            self.matrix_C[i][j] = 0
            for k in range(self.row):
                self.matrix_C[i][j] += self.matrix_A[i][k] * self.matrix_B[k][j]

    print("\n\nMultiplication matrix: ")
    self.printmat(self.matrix_C)

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def transpose(self):
    for i in range(self.row):
        for j in range(self.col):
            self.matrix_C[i][j] = self.matrix_A[j][i]

    print("\n\nTranspose of Matrix A: ")
    self.printmat(self.matrix_C)

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    for i in range(self.row):
        for j in range(self.col):
            self.matrix_C[i][j] = self.matrix_B[j][i]

    print("\n\nTranspose of Matrix B: ")
    self.printmat(self.matrix_C)

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def main():
    row = int(input('\nEnter number of rows: '))
    col = int(input('Enter number of columns: '))
    mat = Matrix(row, col)
    mat.getmatrix()
    mat.addition()
    mat.subtraction()
    mat.multiply()
    mat.transpose()

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if __name__ == "__main__":
    main()

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"""

OUTPUT

Enter number of rows: 3

Enter number of columns: 3

Enter Matrix A data:

Enter the element of row 1 and column 1: 1

Enter the element of row 1 and column 2: 5

Enter the element of row 1 and column 3: 2

Enter the element of row 2 and column 1: 4

Enter the element of row 2 and column 2: 3

Enter the element of row 2 and column 3: 2

Enter the element of row 3 and column 1: 7

Enter the element of row 3 and column 2: 4

Enter the element of row 3 and column 3: 5

Enter Matrix B data:

Enter the element of row 1 and column 1: 5

Enter the element of row 1 and column 2: 4

Enter the element of row 1 and column 3: 1

Enter the element of row 2 and column 1: 2

Enter the element of row 2 and column 2: 7

Enter the element of row 2 and column 3: 4

Enter the element of row 3 and column 1: 3

Enter the element of row 3 and column 2: 6

Enter the element of row 3 and column 3: 1

Matrix A

1 5 2

4 3 2

7 4 5

Matrix B

5 4 1

2 7 4

3 6 1

Addition matrix:

6 9 3

6 10 6

10 10 6

Subtraction matrix:

-4 1 1

