MIDTERM PROJECT

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Course name: البرمجة الكينونية الجانب العملي (JAVA)

OBJECTIVES

This project will make you professional in dealing with Java statements, specifically selection statements, loops, files, arrays, and methods.

GUIDELINES

You must make documentation by using comments to easily understand the code after a break.

DEADLINE

- Deadline for this project and report is 11:55 PM on 13-05-2024.
- Students who choose to take the exam face-to-face should discuss the project on time.

PROJECT Description

- Write a program that performs arithmetic operations on matrices. Given two matrices A and B, you are given a list of queries to answer. A query will be one of the following:
- SUM A B
  - (A + B)
- SUBT A B
  - (A - B)
- SUBT B A
  - (B - A)
- MUL A B
  - (A * B)
- MUL B A
  - (B * A)
- Transpose A
- Transpose B

Your task is to write a program which answers these queries.

INPUT

Your program will be tested on one or more test cases. The first line of the input will be a single integer T, the number of test cases (1 ≤ T ≤ 100). After that follow the specifications of T test cases. Each test case starts with a line containing 2 integers separated by a single space N1 M1 (1 ≤ N1 ≤ 30), (1 ≤ M1 ≤ 30) representing the dimensions of the matrix A, followed by N1 lines containing M1 integers separated by spaces. The j-th number in the i-th line is the number in the cell (i, j) in the matrix A. Followed by a line contains 2 integers separated by a single space N2 M2 (1 ≤ N2 ≤ 30), (1 ≤ M2 ≤ 30) representing the dimensions of the matrix B, followed by N2 lines contains M2 integers separated by spaces. The j-th number in the i-th line is the number in the cell (i, j) in the matrix B. Followed by a line containing an integer Q, the number of queries, followed by Q lines, each line contains a single query of the previously defined.

OUTPUT

For each test case print the test case number, then print the result of each query. The output must not contain empty lines between the cases.

NOTE:

it is guaranteed that all queries can be performed on the given matrices, so you do not have to check it

Example

Input	Output
2 1 5 91 26 75 98 86 5 2 30 88 57 12 32 95 93 13 33 28 2 Transpose B MUL A B 4 4 68 64 3 9 49 58 29 37 32 98 33 66 98 38 44 27 4 4 91 60 28 40 21 98 33 19 53 36 5 62 37 7 21 76 5 SUBT A B Transpose A SUM A B MUL A B MUL B A	Case #1: Transpose B 30 57 32 93 33 88 12 95 13 28 MUL A B 18564 19127 Case #2: SUBT A B -23 4 -25 -31 28 -40 -4 18 -21 62 28 4 61 31 23 -49 Transpose A 68 49 32 98 64 58 98 38 3 29 33 44 9 37 66 27 SUM A B 159 124 31 49 70 156 62 56 85 134 38 128 135 45 65 103 MUL A B 8024 10523 4220 4806 8583 9927 4208 7672 9161 13174 5681 10204 13047 11377 4785 9422 MUL B A 13944 13568 4697 5967 9148 10984 4830 6506 11604 8326 4096 3813 10979 7720 4351 4030