Lab 1

Question 1:

This is a question to help you get familiar with the operations on matrix.

First, given three numbers *n,m,k*. n is the number of rows of a matrix, m is the number of columns of the matrix and k is the number of operations you will perform. Then, you will get $n \cdot m$ numbers, which is the matrix you will operate on. After that you will get k operations, which contains the operation number and the parameters. There are 4 kinds of operations:

1. parameters: *i,j*. Swap the ith column and the jth column.

2. parameters: *i,j,l,r,t*. Add t to every number of a submatrix, containing the ith row to the jth row and the lth column to the rth column of the matrix.

3. parameters: *i,j,t*. Transpose the submatrix which has t rows and t columns. The number on the ith row and the jth column is the upleft number of the submatrix.

4. parameters: *i,j*. Add the ith row to the jth row.

You may assume every input is valid.

Caution: You shouldn't change the values of numbers in matrix one by one, or you will get no marks. This question uses the function *input(")* to get inputs.

Samples:(In these outputs, I omit the name of the matrix variant. You just output it directly.)

input1:

[2 3 1]
[1 2 3]
[4 5 6]
1
[2 3]

output1:

1 3 2
4 6 5

input2:

[3 3 1]
[1 2 3]
[4 5 6]
[7 8 9]
2
[2 3 1 2 1]

output2:

1 2 3

5 6 6

8 9 9

input3:

[3 3 1]

[1 2 3]

[4 5 6]

[7 8 9]

3

[1 1 2]

output3:

1 4 3

2 5 6

7 8 9

input4:

[3 2 1]

[1 2]

[3 4]

[5 6]

4

[1 3]

output4:

1 2

3 4

6 8

input5:

[3 3 2]

[1 2 3]

[4 5 6]

[7 8 9]

1

[1 2]

2

[2 3 2 3 1]

output5:

2 1 3
5 5 7
8 8 10

Question 2:

This is a question to help you get familiar with the transform between decimal number and the binary number.

You will first get number 10 or 2, representing that you will get a decimal number or a binary number next. If it is a decimal number, you should transform it to a binary number, otherwise, you should transform the binary number to a decimal number.

Caution: The input is a char matrix and the output also should be a char matrix.

Samples:

input1:

2

'1001'

output1:

'9'

input2:

10

'10'

output2:

'1010'

Hint:

- Start early!
- Make good use of search engine (e.g. Google, Bing)