ANKARA UNIVERSITY
COMPUTER ENGINEERING DEPARTMENT
SUMMER TERM-COM1002
Lab3– Q2

Name your files as studentNo.c (12345678.c). Do not make any additions or deficiencies in the outputs (outputs produced by the programs) other than those requested from you. Do not make any changes in outputs such as extra spaces, going to the bottom line. Your codes will be passed through the copy program and the legal process will be initiated against the student who have similarity rates higher than the determined rate. For this reason, the assignments you upload should be unique to you.

You can compile your codes as follows:
gcc studentNumber.c
./a.out

Make sure your program is running in Ubuntu environment. Do not forget that there may be programs that run on a different operating system but generate errors or warnings in Ubuntu. Objections to the evaluations made due to such errors will not be accepted. Please carefully review the sample input and output files provided for the correct output format.
To check the accuracy of your program, you need to perform the following operations.

1) gcc studentNumber.c
./a.out> myOutput1.txt
This command saves the output of your program to myOutput1.txt file.
2) diff myOutput1.txt output1.txt

Using this command, compare your own output with the required output. If there is no warning on the screen after entering this command, your program is working correctly for these values. If you see a warning in the command system after entering the command, this indicates a problem with your output, you need to correct your code. Test your program for different inputs that you will create yourself. The input files given to you and the input files used during the evaluation will differ.

QUESTION:
If the sums of the elements on the row, column and diagonal of a 2-dimensional matrix are equal, this matrix is called "Special matrix". You are expected to write the code that will perform "special matrix determination" and "matrix shifting" operations. First of all, the matrix dimensions, number of shifting of matrix elements and the matrix values will be taken from the user respectively.

1. If the number of rows and columns of the matrix is not equal, it is not possible to be a special matrix. You only need to write 0 on the screen.
2. If the number of rows and columns of the matrix is equal to each other and it is the special matrix, 1 and the shifted form of the matrix will be written on the screen.
3. Finally, if the number of matrix rows and columns are equal and it is not a special matrix, 0 and the shifted form of the matrix will be written on the screen.

Special matrix example:
[2,7,6], [9,5,1], [4,3,8] -> special matrix
Sum of rows: 2+7+6 = 9+5+1 = 4+3+8 = 15
Sum of columns:2+9+4 = 7+5+3 = 6+1+8 = 15
Sum of diagonals: 2+5+8 = 6+5+4 = 15

Matrix shifting example:
myarray = [2,7,6], [9,5,1], [4,3,8] and shifting number:2
mynewarray = [3,8,2], [7,6,9], [5,1,4]

Note: While shifting, shifting will always be done by moving the last elements of the matrix to the beginning of the matrix.

Note2: Special matrix determination and shifting must be done with separate functions. If the function is not used, even if your question is correct, it will not be considered valid.

Sample I/O:

```
asus@asus-X550VX:~/Masaüstü/C/Lab9$ gcc Q2.c
asus@asus-X550VX:~/Masaüstü/C/Lab9$ ./a.out
2 2 1
8 7
5 2
0
2 8
7 5
```

```
asus@asus-X550VX:~/Masaüstü/C/Lab9$ ./a.out
3 3 2
2 7 6
9 5 1
4 3 8
1
3 8 2
7 6 9
5 1 4
```