RECITATION 16

Q1. Write a program that sums all elements of the matrix diagonals and prints the maximal array element. The matrix dimensions are chosen by the user.

Use a function “readArray” to read the content of the matrix and a function “calculate” to calculate the diagonals and the maximum number. Printing can be done in the “main” function.

```
What is the matrix dimension? 3
Enter the matrix
1  4  2
2  5  1
2  4  8

The diagonal top left to bottom right sums up to 14
The diagonal bottom left to top right sums up to 9
The maximum number in the matrix is 8
```

Q2. Write a program that asks the user to enter the wanted number of rows and columns, creates the matrix dynamically, fills it and prints the content. Use a separate function to fill the matrix and one to print the matrix. Fill every matrix element with (row + 1) * (column + 1).

```
Enter the number of rows and columns for the matrix: 2 4

The matrix contains following elements:
1  2  3  4
2  4  6  8
```

Q3. Write a program with name “clients” that:

- reads customer numbers and corresponding customer names and stores them in an array of structure.
- reads customer numbers and corresponding customer addresses and stores them in a second array of structure. Use a different “struct”.
- can be called from the command line with the size of the arrays as argument (for example; clients 3).
- uses arrays of the correct size (use malloc).
- prints the customer data.

Use a separate function to read the data and one to print the data.

```
clients 3

Enter a list of 3 customer numbers and corresponding names:
AB
John Smith
AC
Tom Black
AD
Sarah White

Enter a list of 3 customer numbers and corresponding
addresses (the customer numbers must be identical to
the ones above but can be entered in an arbitrary order.)
AD
London
AB
Paris
AC
Brussels

All customer data:
AB  John Smith        Paris
AC  Tom Black         Brussels
AD  Sarah White       London
```