**CEng201-Object Oriented Programming**

**Homework 1**

**Due date: November 6th, 23:55 via Uzem. Sharp. No late submission**

**Q1) (30 pts)** Write a Java program that reads the number of rows and columns of a 2-dimensional square integer matrix (10x10 maximum), and the numbers. The program tests if the sum of numbers in the ith row is equal to the sum of numbers in the ith column for all rows and columns.

**Sample Run:**

|  |  |
| --- | --- |
| Input the number of rows and columns:  3  Input the numbers one row at a time:  3 4 6  8 6 2  2 6 1  Result: Yes | Input the number of rows and columns:  3  Input the numbers one row at a time:  6 4 6  8 6 7  2 9 1  Result: No |

**Q2) (40 pts)** Write a Java program that reads a string and a character from the user. Add a **method** that receives the string and the character. If the character is a lowercase letter, the method converts all the lowercase instances of the character in the string into uppercase and returns the new string. If the character is an uppercase letter, the method converts all the uppercase instances of it into lowercase and returns the new string. The method should look like this:

**public** **static** **String** myConvert(**String** myStr, **Character** myChar)

**Sample Run:**

|  |  |
| --- | --- |
| Input a string and a character: Adam a  Result: AdAm | Input a string and a character: Adam A  Result: adam |

**Q3) (30 pts)** Write a Java program that reads a Turkish Citizen Number (TCKN) and validates it according to the following rules:

* A TCKN must have 11 digits.
* It cannot start with 0.
* If you sum the 1st, 3rd, 5th, 7th, and 9th digits from **its left**, and multiply it with 7, and subtract the sum of the 2nd, 4th, 6th, and 8th digits from the multiplication result, and apply modulus-10 to the final result, you must get the 10th digit.
* If you sum the first 10 digits from its left and get modulus-10 of the summation, you must get the 11th digit.

|  |  |  |
| --- | --- | --- |
| Input a TCKN: 091284185914  Output: Invalid TCKN | Input a TCKN: 6578  Output: Invalid TCKN | Input a TCKN: 10000000146  Output: Valid TCKN |