LAB 01: REVIEW

1 IN-CLASS

Conditions - Loops:

1. Write the functions to fulfill the following requirements:
   - Solving a quadratic equation.
   - Sum of digits of a given integer.
   - Determine if a given integer is a prime.
   - Indicate the binary form of a given integer.
   - Indicate LCM and GCD of 2 given integer.

Array:

2. Given a 1D array, fulfill the following requirements:
   - Input and output the array.
   - Indicate the positions of Max and Min values of the array.
   - Indicate the maximum value of sum of the absolute value of 2 elements from the array.

Matrix:

3. Given a matrix size m * n, fulfill the following requirements:
   - Input and output the matrix.
   - Calculate the sum of 2 matrices .
   - A matrix can be consider as a magic square if it satisfies the following condtions:
     - m = n
     - Sum of rows's elements = Sum of columns's elements = Sum of main diagonal's elements = Sum of antidiagonal's elements.

   Determine if your input matrix is a magic square.

String:

4. Fulfill the following string operations:
   - Input and output a string.
   - Formalize a fullname-string. (Remove extra spaces / Capitalize the first letter of first name, last name, middle name, the other letters must be in lower case). Output the formalize string.

2 HOMEWORK

1. Write a program that asks the user to input numeric values for day, month and year. The program then checks the validity of the date entered and indicates the previous day and the next day of this date.

2. Given a function $F(x), x > 0$, which is defined as follows
   - $F(x) = x$, if $x \leq 9$
   - $F(x) = F(S(x))$, if $x > 9$
   where $S(x)$ is the sum of digits of x. Write a program to calculate $F(n!), n \geq 1$.

3 PREPARING YOUR SUBMISSION

Create a new folder and name it with your **Student ID**, e.g. 19127001. This folder includes

- **Code**: a sub-folder that contains your source code (*.cpp, *.h, etc.). Do not forget to delete all intermediate files.
- **Report** (if required): a sub-folder that contains your written report (*.pdf).

Zip the the folder (*.zip, *.rar) and submit it to Moodle.

For any kind of cheating and plagiarism, students will be graded 0 for the course. The incident is then submitted to the school and university for further review.