Labs # 2

Assignment 1

Create the **ComplexCalculator** class. This class should have:

- A method that receives, as its input parameters, two real numbers, divides the first number by the second, and returns the result.

- A method that receives, as its input parameters, two integers, divides the first number by the second, and returns the result as an integer value (integer division).

- A method that receives, as its input parameters, two integers, divides the first number by the second, and returns the remainder[1].

- A method that receives, as its input parameter, an integer and prints it (on the console) 50 times.

- A method that prints (on the console) all numbers from 1 to 100.

- A <u>static</u> method that calculates the sum of the first N positive integers and returns the result. The formula for computing this sum is: SUM(N) = 1+2+3+4+5+...+(N-1)+N . N is passed to the method as its input parameter.

- A <u>static</u> method that calculates X^n (X to the power of N) and returns the result. X is a real number, while N is an integer. Both values are passed to the method as its input parameters.

- A <u>static</u> method that calculates and returns the minimal 2^n that is larger than the given number (passed to the method as its input parameter). For example, if the number is 6, the method should return 8 (2^3) because it is the minimal 2^n that is larger than 6.

- A <u>static</u> method that has one input parameter - an integer number. This number should be repeatedly divided by 2 as long as the result is greater than or equal to 1. After each division, the method should print (on the console) the current result. If, for example, one enters 33 as the input number, the method should display 16 (as the result of 33/2), 8 (as the result of 16/2), 4 (as the result of 8/2), 2 (as the result of 4/2), and 1 (as the result of 2/2).

Create a class named **TestComplexCalculator**. In the main method of this class test the methods of the *ComplexCalculator* class.

Assignment 2

Create the **ComplexCalculator2** class. This class should have:

- A method that prints (on the console) all the numbers from 0 to 55, but in the reverse order (55, 54, 53, 52, ..., 2, 1, 0)

- A static method that calculates the factorial of the given number N (N is an integer that the method receives as its input parameter) and returns the result. Factorial of number N is calculated using the following formula: N! = 1*2*3*4*5*...*(N-1)*N

- A static method that calculates $(A+B)^n$ and returns the result. A, B and N are integers and should be passed to the method as its input parameters.

Create a class named **TestComplexCalculator2**. In the *main* method of this class test the static methods from the *ComplexCalculator2* class.

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[1] the integer "left over" after dividing one integer by the other