

## **LABORATORY 2 – LAB ACTIVITY**

**Add a new menu item to your existing menu, allowing you to solve one of the problems below:**

1. Generate all the prime numbers smaller than a given natural number  $n$ .
2. Generate the first  $n$  prime numbers ( $n$  is a given natural number).
3. Print the exponent of a prime number  $p$  from the decomposition in prime factors of a given number  $n$  ( $n$  is a non-null natural number).
4. Read a sequence of natural numbers (sequence ended by 0) and determine the number of 0 digits of the product of the read numbers.
5. Determine the value  $x^n$ , where  $x$  is a real number and  $n$  is a natural number, by using multiplication and squared operations.
6. Decompose a given natural number in its prime factors.
7. Decompose a given even natural number, greater than 2, as a sum of two prime numbers (Goldbach's conjecture).
8. Determine the first  $n$  pairs of twin numbers, where  $n$  is a given natural and non-null number. Two prime numbers  $p$  and  $q$  are called twin if  $q - p = 2$ .
9. Determine all the numbers smaller than a given natural and non-null number  $n$  and that are relatively prime to  $n$ .
10. a. Determine the first 10 natural numbers ( $x_1, x_2, \dots, x_{10}$ ) greater than 2 with the following property: all the natural numbers that are smaller than  $x_i$  and that are relatively prime with  $x_i$ , are prime,  $i = 1, 2, \dots, n$ .