



## CS102/IT102-Computer Programming 1

### Programming Exercise 8

#### 1<sup>st</sup> Semester 2023-2024

Write a program that will continuously ask to input a positive integer number until the user inputs **EOF**. For each positive number, the program will determine and output on the screen whether it is a prime and/or a perfect number.

- a **prime number** is a whole number greater than 1 that has only two factors, i.e. 1 and the number itself. Prime numbers are divisible only by the number 1 or itself.
- a **perfect number** is a positive integer that is equal to the sum of its proper positive divisors, i.e. the sum of its positive divisors excluding the number itself.
  - Example: 6 is a perfect number. Its proper divisors are 1, 2, and 3, and  $1 + 2 + 3 = 6$

The task of checking whether a number is a prime or perfect number should be implemented as two separate **functions** named ***isPrime()*** and ***isPerfect()*** with the positive **number** as their parameter. All the input and printing tasks should be handled by the ***main()*** function only, i.e. ***scanf*** and ***printf*** statements cannot be used in the function definition of the functions ***isPrime()*** and ***isPerfect()***. You must also be able to apply a **while**, **for** and **do-while** statements.

**Sample run output on the screen:**

```
Enter a positive integer(Ctrl-Z to end): 10
prime: NO
perfect: NO

Enter a positive integer(Ctrl-Z to end): 13
prime: YES
perfect: NO

Enter a positive integer(Ctrl-Z to end): 6
prime: NO
perfect: YES

Enter a positive integer(Ctrl-Z to end): 17
prime: YES
perfect: NO

Enter a positive integer(Ctrl-Z to end): 28
prime: NO
perfect: YES

Enter a positive integer(Ctrl-Z to end): Ctrl-Z
End of program.Thanks!
```