Laboratory Work No. 6

Classes and Objects

This laboratory work covers the following concepts in C++ programming language:

- class declaration (access specifiers: public, private)
- data members, member functions
- constructors, destructor

⇨ Create a Win32 Console application and an empty C++ source file in Visual Studio IDE to be able to start typing programs.

Task-1: Write a C++ program that implements the geometric shape "rectangle" as an object. For that, you should decide the data members that represent the object first, and then you should write the necessary member functions for the correct operation of the class. The class declaration should also include at least one constructor function. Remember that, for a rectangle, we can calculate the area, circumference, and diagonal length. You should define all member functions within the class declaration.

- ✓ Test all member functions written!
- ✓ Try to define member functions outside the class declaration.

Task-2: Consider the C++ program written in part-1 and rewrite it separating the *interface* from the *implementation*. Thus, the program should include a header file, an implementation file, and a driver program for testing.

[Optional task] Revisit the problem above. Figure out that one can use a Cartesian coordinate pair to represent one corner of the rectangle. That is, we may use four coordinate pairs to represent the whole rectangle. However, we do not need to store all coordinate pairs in memory. We can keep only one corner's information and the side lengths. Other corners can easily be calculated afterwards.