PRG355 **LAB #5**

Marks: 1.5% Due: Next lab class

Rewrite your Lab #2 program and change this program to an **object-oriented program** that will meet the requirements described below.

Create a `Gate` class that contains the following members:

- Four **private** data members to store two inputs, the output, and the type of a gate
- Five **private** inline member functions that compute and return the output for the AND, OR, NAND, NOR, and XOR gate respectively . Please note that these functions do not need arguments. They will use appropriate data members of the class and compute and return the output for a corresponding type of a gate.
- A **public constructor** function without arguments (i.e., the default constructor) that obtains the type of a gate and two inputs for the gate from the user.
- A **public constructor** function with two arguments that represent two inputs of a gate. This constructor will obtain the type of the gate from the user and use the two arguments to initialize two inputs of the gate.
- A **public <u>non-inline</u>** member function that uses/calls private inline member functions to compute and return the output of a gate.

The **main()** function should display first a menu with the types of gates that are available. It will create the two Gate objects next (i.e., gate 1 and gate 2 in figure below). The constructor without arguments will be used to obtain a gate's type and inputs for these two gate objects. It will then call two times the member function which will compute and return the output for these two gates. The program will then use the constructor with two arguments to create the third gate object. Please note that the outputs of gate 1 and gate 2 will be passed to this constructor function in order to initialize two inputs of gate 3. The program will then call the member function that will compute and return the output of gate 3. It will print the outputs of all 3 gates at the end.