

# Lab 06 - Stacks

## Instructions:

- The lab requires completing a few tasks.
- Your submissions must be submitted to the Lab06 directory of your GitHub repository or uploaded to the Lab06 assignment on Google classroom.
- Accompanying these instructions are a few header files that must be included in the appropriate programs you have to write.
- Besides the header files provided, your programs can only include the libraries *iostream*, *string*, *fstream*, *sstream*, and *cctype*.
- Cheating of any kind is prohibited and will not be tolerated.
- Violating and/or failing to follow any of the rules will result in an automatic zero (0) for the lab.

TO ACKNOWLEDGE THAT YOU HAVE READ AND UNDERSTOOD THE INSTRUCTIONS ABOVE, AT THE BEGINNING OF YOUR SUBMISSION(S), ADD A COMMENT THAT CONSISTS OF YOUR NAME AND THE DATE

## Grading:

| Task  | Maximum Points | Points Earned |
|-------|----------------|---------------|
| 1     | 10             |               |
| Total | 10             |               |

Note: solutions will be provided for tasks colored blue only.

## Task 1

Copy the Project.h file from Lab 04 to Lab 06, and modify the file as follows

- define a string function named ToString() whose header is

```
string ToString(bool data[],int n)
```

Given the *n* represents the size of *data*, the function returns a conversion of *data* to a string where the values true and false are converted to the characters '1' and '0' respectively in the string. For instance, the caller ToString([true,false,false,true,false,true],6) will return "100101".

- define a void function named ToBoolArray() whose header is

```
void ToBoolArray(string values,bool data[],int n)
```

Given the *n* represents the size of *data*, if the size of *values* is equal to *n* and all its elements of *values* are either '0' or '1', the function assigns each element of *data* the converted value of the corresponding element of *values* where the values '1' and '0' are converted to true and false respectively. For instance, after the caller ToBoolArray("100101",*data*,6), *data* = [true,false,false,true,false,true].

- define a class named *GameStack* that inherits *StackInterface*. The class must operate as a stack and contain
  - a private string *Array* field named *data*.
  - a private int field named *top*.
  - a public default constructor that assigns 0 to *top* and makes the capacity of *data* equal to 72.
  - a public copy constructor.
  - a public assignment operator.
  - a public empty destructor.
  - public overridden methods of the *StackInterface* class.
  - a public bool constant method named IsFull() that takes no parameters. It returns true only if *top* is equal to 81.
- add a private *GameStack* field named *stages* to the class *Game*.