Lab 06 - Stack

Direction: Submit the modified cpp file in the Labs directory of your github repository and/or as an attachment on Google classroom under the Lab06 assessment. The submission must be modified cpp file.

Complete the following objectives

Instruction commands list for IAS computer

Opcode	Description
0A	Transfer contents from MQ to AC
09	Transfer M(X) to MQ
21	Transfer contents from AC to memory location X
01	Transfer M(X) to AC
05	Add M(X) to AC; put result in AC
06	Subtract M(X) from AC; put result in AC
0B	Multiply M(X) by MQ put most significant bits of result in AC; least significant in MQ
0C	Divide AC by M(X); put quotient in MQ and remainder in AC
14	Multiply AC by 2
15	Divide AC by 2
12	Transfer AC to left address of M(X)
13	Transfer AC to right address of M(X)
0D	Takes next instruction from left half of M(X)
0E	Takes next instruction from right half of M(X)
0F	If AC >= 0, takes next instruction from the left half of M(X)
10	If AC >= 0, takes next instruction from the right half of M(X)

1. Using the commands above, copy the link

   https://forms.gle/7PgYe82oGgYqK7K19

   to your browser, and complete the form.

2. Computers have built-in finite stack they use for various operations. A stack is a data structure that follows the principle last-in-first-out (LIFO). In the template cpp file provided, you will be defining a few functions listed below for a stack of characters that has a maximum capacity of 100.

   - void function named `Push()` whose header is

     ```
     void Push(string& stack,char item)
     ```

     If *stack* is not full, it adds *item* to the top of *stack*.

   - bool function named `IsEmpty()` whose header is

     ```
     bool IsEmpty(const string& stack)
     ```

     It returns true if *stack* is empty; otherwise, it returns false.

   - char function named `Top()` whose header is

     ```
     char Top(const string& stack)
     ```

     If *stack* is not empty, it returns the top element of *stack*; otherwise, it throws the error message `"Empty Stack"`.

   You cannot include any additional libraries to the file; including additional libraries will result in a zero for the entire lab.