80 pts

Name1: _____

Name2: _____

Class Day / Time: _____

Due Date: _____

Lab #9 – Implementing a Stack

Write a program that emulates a stack. Implement the menu using an enumerated type.
Write functions to implement each of the following tasks.

- **Push**
- **Pop**
- **IsEmpty**
- **Peek**
- **Size**

Then provide a menu for the user to choose one of these 5 options (error check the input to ensure it is in the proper range). If they choose **push** allow them to enter in a name, gender, and age. If they choose **pop**, let them know all the info about the person who is being removed (if the list is empty, let them know).   If they **peek**, show them who is at the top of the list. Use an **enumerated type** for the menu. If they choose **size**, tell them how many people are in the list. **Validate the user input**.

➔This lab will **must** be demonstrated.

Turn in (IN THIS ORDER)
1. This page.
2. screen I/O – pasted into a text file within eclipse and printed with line numbers.
3. Your header file.
4. a listing of main.cpp (conforming to style discussed in class)
5. a listing of your functions
6. a listing of your print heading function (should be in a separate file)

OUTPUT MESSAGE FORMAT
Check below for a more detailed description of the expected input and output

Invalid command inputs

Out of range error:

**** The number 12 is an invalid entry   ****
**** Please input a number between 0 and 5 ****

Character input:

**** Please input a NUMBER between 0 and 5 ****

Size

For more than one:

`There are 2 people on the stack.`

For one:

`There is one person on the stack.`

For an empty stack:

`Nobody is on the stack!`

Peek

If the stack is empty:

`There is nobody to PEEK at!!`

Empty

For an empty stack:

`Yes, the stack is empty.`

For a non-empty stack:

`The stack is NOT empty.`

Pop

If the stack is empty:

`Can't POP from an empty stack!`

Example Screen Input/Output should be formatted as follows

(You do not need to format your data into two columns as shown on the next page)

STACK MENU:
1 – Add a person (PUSH)
2 – Remove a person (POP)
3 – Is the stack empty? (ISEMPTY)
4 – Who is on top? (PEEK)
5 – How many people are there? (SIZE)
0 – to Exit
Enter a command? 1

Who would you like to add?

Enter Name: Joe Smith
Enter Gender: M
Enter Age: 32

<redisplay menu>
Enter a command? 1

Who would you like to add?
Enter Name: Grace Hopper
Enter Gender: F
Enter Age: 69

<redisplay menu>
Enter a command? 4

PEEKING at
Name: Grace Hopper
Gender: F
Age: 69

<redisplay menu>
Enter a command? 5

There are 2 people on the stack.

<redisplay menu>
Enter a command? 1

Who would you like to add?

Double Space (1 blank line)

Enter Name: Ada Lovelace
Enter Gender: F
Enter Age: 52
<redisplay menu>
Enter a command? 4

PEEKING at
Name: Ada Lovelace
Gender: F
Age: 52

<redisplay menu>
Enter a command? 3

The stack is NOT empty.

<redisplay menu>
Enter a command? 2

POPPING
Name: Ada Lovelace
Gender: F
Age: 52

<redisplay menu>
Enter a command? 1

Who would you like to add?
Enter Name: Charles Babbage
Enter Gender: M
Enter Age: 25

Enter a command? 4

PEEKING at
Name: Charles Babbage
Gender: M
Age: 25

<redisplay menu>
Enter a command? 5

There are 3 people on the stack.

<redisplay menu>
Enter a command? 2

POPPING
Name: Charles Babbage
Gender: M
Age: 25

<redisplay menu>
Enter a command? 5

There are 2 people on the stack.

<redisplay menu>
Enter a command? 4

PEEKING at
Name: Grace Hopper
Gender: F
Age: 69

<redisplay menu>
Enter a command? 2

POPPING
Name: Grace Hopper
Gender: F
Age: 69

<redisplay menu>
Enter a command? 5

There is one person on the stack.

<redisplay menu>
Enter a command? 3

The stack is NOT empty.

<redisplay menu>
Enter a command? 4

PEEKING at
Name: Joe Smith
Gender: M
Age: 32

<redisplay menu>
Enter a command? 2

POPPING
Name: Joe Smith
Gender: M
Age: 32

<redisplay menu>
Enter a command? 5

Nobody is on the stack!

<redisplay menu>
Enter a command? 2

Can't POP from an empty stack!

<redisplay menu>
Enter a command? 3

Yes, the stack is empty.

\<redisplay menu\>
Enter a command? 4

There is nobody to PEEK at!

\<redisplay menu\>
Enter a command? -1

**** The number -1 is an invalid entry   ****
**** Please input a number between 0 and 5 ****

\<redisplay menu\>
Enter a command? 6

**** The number 6 is an invalid entry   ****
**** Please input a number between 0 and 5 ****

\<redisplay menu\>
Enter a command? abc

**** Please input a number between 0 and 5 ****

\<redisplay menu\>
Enter a command? 0