Programming Assignment #3

Fun with stacks

CS 3358.501, Summer I 2012
Instructor: Jill Seaman

Due: Tuesday, 6/19/2012 (upload electronic copy by 4:30pm)

Problem (two parts):

Implement a Stack:

You will be using List_3358 to implement Stack_3358. That means you will need to create a templated version of List_3358 and of Stack_3358 (use this: stack_3358.h) . You can use whatever actual implementation for the list that you want. Note that the implementations will move to the .h files.

Flood Fill:

Given an input file of the following format (a fake_picture):

```
yyywwbbbbbbbggggg
yyybbbbbbbgggbbbb
ybybybybybwwwwwyy
ybbbbggwwwwwwbbbg
gggggggwwbbbbbbbbb
yyyyyyyyybbbyyyyy
ggggyyyyggggggyyyy
```

that uses characters to represent colors in a picture, you will need to write a function that will "flood fill" an area with another "color." For example. If I were to flood fill the pixel at row 0 col 6 (a"b") with a "P", I would get this:

```
yyywwPPPPPPPggggg
yyyPPPPPPPgggbbbb
yPyPyPyPyPwwwwwyy
yPPPPggwwwwwwbbbg
gggggggwwbbbbbbbbb
yyyyyyyyybbbyyyyy
ggggyyyyggggggyyyy
```

Every pixel that has the same color and is connected to the area of the flood fill is changed to the new color.

Write a program that reads in a file (provided at the command line) that is at most 25 rows and 25 columns and repeatedly prompts the user for a row and column number, and a "color". The program will fill that area with the new color, show the new picture and prompt the user again. The program will end when the user enters -1 for the row or column.

Example Run:

```
linux prompt> ./flood_fill fake_picture.txt

yyywwbbbbbbbggggg
yyybbbbbbbgggbbbb
ybybybybybwwwwwyy
ybbbbggwwwwwwbbbg
gggggggwwbbbbbbbbb
yyyyyyyyybbbyyyyy
ggggyyyyggggggyyyy

Enter a row: 0
Enter a column: 6
Enter a color: P

yyywwPPPPPPPggggg
yyyPPPPPPPgggbbbb
yPyPyPyPyPwwwwwyy
yPPPPggwwwwwwbbbg
gggggggwwbbbbbbbbb
yyyyyyyyybbbyyyyy
ggggyyyyggggggyyyy

Enter a row: 1
Enter a column: 1
Enter a color: G
```

```
GGGwwPPPPPPPggggg
GGGPPPPPPPgggbbbb
GPGPyPyPyPwwwwwyy
GPPPPggwwwwwwbbbg
gggggggwwbbbbbbbbb
yyyyyyyyybbbyyyyy
ggggyyyyggggggyyyy

Enter a row: -1
Enter a column: 1
Enter a color: G
```

NOTES:

- I will put a .cpp file on the class website that will demonstrate how to make your program process command line arguments (so you can input the name of the file on the command line).
- NO makefile is required.

Style:

See the Style Guidelines document on the course website.

Logistics:

Please submit the following files in a single zip file (assign3_xxxxxx.zip):

`list_3358.h stack_3358.h flood_fill.cpp`

The xxxxx is your TX State NetID (your txstate.edu email id).

Submit: an electronic copy only, using the Assignments tool on the TRACS website for this class.