Flood Fill v2.0
EE 312
Due: Thursday 3/14/19 at 10:00 PM

50 points

No loops in the flood fill algorithm. You can use a loop to read in the original "picture" file and to prompt the user for the input. Obviously the Flood Fill will have to be implemented in a function that can be called recursively.

Flood Fill

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

```
yyywwbbbbbbbggggg
yyybbbbbbbgggbbbb
ybybybybybwwwwwyy
ybbbbggwwwwwwbbbg
ggggggwwbbbbbbbbb
yyyyyyyyybbbyyyyy
ggggyyyygggggyyyy
```

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
ggggggwwbbbbbbbbb
yyyyyyyyybbbyyyyy
ggggyyyygggggyyyy
```

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 linux prompt) 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. You will use solve the problem with a recursive function.

Example Run:

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

```
yyywwbbbbbbbggggg
yyybbbbbbbgggbbbb
```

```
ybybybybybwwwwwyy
ybbbbggwwwwwwbbbg
ggggggwwbbbbbbbbb
yyyyyyyyybbbyyyyy
ggggyyyygggggyyyy
```

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

```
yyywwPPPPPPPggggg
yyyPPPPPPPgggbbbb
yPyPyPyPyPwwwwwyy
yPPPPggwwwwwwbbbg
ggggggwwbbbbbbbbb
yyyyyyyyybbbyyyyy
ggggyyyygggggyyyy
```

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

```
GGGwwPPPPPPPggggg
GGGPPPPPPPgggbbbb
GPGPyPyPyPwwwwwyy
GPPPPggwwwwwwbbbg
ggggggwwbbbbbbbbb
yyyyyyyyybbbyyyyy
ggggyyyygggggyyyy
```

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

NOTES:

- You must do these program by yourself.
- The programs must be done using a Linux environment. Note: Your code must compile and run on kamek.ece.utexas.edu.
- The programs must be modular, with significant work done by functions. Each function should perform a single, well-defined task. When possible, create re-usable functions. Do not write trivial functions such as a function to read a single value from an input file.
- You will be turning in one zipped project.

Turn in: One zipped file that includes: readme.txt (gives instructions for compiling and running code) and your source file(s). The makefile should create a executable program named "flood_fill". To make this process work better, zip the files on kamek before you transfer them back to your computer for turnin.

Upload: Turn in a zipped file named prog04ff_xxxxx.zip where xxxxxx is your UT EID to Canvas.

Be sure to follow the style standards for the course.

rlp 2/25/19