60-140 Introduction to Programming

Assignment 2: Stairs Artist

Due date: Friday Nov. 7, 11:59pm

Instructor: Dr. Ziad Kobti

The famous *Jimmy All-Stairs* was fascinated with drawing sketches of stairs to a point where he wanted to automate his business in order to keep up with global market demand from his fans all around the world!
Jimmy has enlisted your help to draw two types of stairs; he has others of course but these are the most popular. He figured if the computer can draw the stairs as good as him then people won't be able to guess if the stairs were drawn by the computer or Jimmy! A true "Turing test" for stairs art!

Your task is to write a C program that can prompt the user with an interactive menu requesting some information necessary to accomplish the sketch. Ensure at all times that the input is always valid and not outside the range, so you may have to prompt the user repeatedly until he/she provides you with the correct information. Next, you are to execute the sketch and get the output exactly as specified by the user. You know it would be very embarrassing to Mr. All-Stairs if you did not get the right sketch according to the specifications of his fans.

Now here are the parameters that Mr. All-Stairs has decided to use:
Which design pattern? (Single or Pair)
For each design pattern:
Number of steps (min: 1, max 10)
Width of each step (min: 1, max 3)
Fill: yes/no

(note, for simplicity we will always read integer values from the user).

Sample run:

See attached script file.
See attached a.out to try it for yourself.

What you need to do: [15 points total + 2 bonus]

1) Complete the functionality for menu item 1 and 3.
2) Menu item 2 is for bonus + 2pts.
3) Create the three functions as specified below [2pts each x 3]

You are asked to use at least 3 functions in this program [2 pts each] – call them:
void DisplayRandomGreeting();
Will randomly display one of the three following greeting messages:
Hello my fans, welcome to All-Stairs, what design would you like today?
Howdy, you have a design in mind?
It's a beautiful day at All-Stairs, pick a design my friend:

void DisplayMenu();
Will display the menu.
1. Single set of stairs
2. A pair of stairs (for the price of one for limited time only!
3. log out

int ReadInputBetween(int min, int max);
will return a number between min and max inclusive.
Example asking for a number between 1 and 3:
>>7
7 is not valid input, please select a number between 1 and 3!
>>6
6 is not valid input, please select a number between 1 and 3!
>>3

Preparing your C code for submission:

Call your program assign2.c
Create a script file as follows:
0. cp assign2.c assign2.c.bak [backup your file by creating a copy under different name!]
1. script assign2.txt [careful! if you type assign1.c instead you erase your code!]
2. cat assign2.c
3. cc assign2.c
4. a.out [test your program thoroughly, run it a few times and test it with at least 3 different test cases]
5. ls -l
6. exit [do not forget this step!!!]

Submit the files: assign2.txt and assign2.c in the CLEW/Assignment menu for the course.

NOTES:
1. Your assignment must be RECEIVED by the due date and time. Late assignment submissions are NOT accepted. Keep your script file, and all your code unmodified as proof of its completion in case it is not received.

2. It is your responsibility to get an early start on the assignment, research and ask questions ahead of time from the due date.
3. You must use your own uwindsor account to submit your work on CLEW.
4. Undocumented or improperly documented code will NOT be graded and will receive a mark of ZERO.
5. Marks will be deducted for unclear code. (improper spacing and alignment, hard to read programs and missing outputs).
6. Make sure you turn in a complete script file that clearly shows: your code, your compilation process, a listing of the directory showing your source file(s) and the a.out with the date/time stamps, and the output.
7. **PLAGIARISM:** CHEATING IS NOT TOLERATED. You must submit your own work. Students who are suspected of copying someone else's work will be reported to the department's chair and the Dean of Science and be dealt with in accordance with the University policies. You should not share your code with others. Codes that are similar to each other will BOTH be reported as evidence of copying. You are strongly encouraged to write your own code.
8. Authorized/limited help on this assignment may be provided directly from your Lecture or Lab instructors and Teaching Assistants.