Welcome to CS141 Lab 7 - Debugging!

Today’s lab is structured as follows:

5 Mins - Quiz
35 Mins - Lab exercise on Debugging
10 Mins - Grading

Lab Exercise:

In today’s lab, you will need to use your debugging skills to find all the bugs within the program. You can use the debugger in your IDEs, but using “cout” statements throughout the code to see what’s happening and to assess values of different variables, is recommended.

Instructions:

1. No intergroup discussions allowed for this one. You need to work in teams of two and can only take help from your partner.
2. The output of the given program should reverse the string as input. For example, if the original string is: “Hello”, the reversed string should be: “olleH”. You can change the hard-coded string in the program, and try different strings if you like.
3. Your job is to find as many bugs as you can find, make a list of them, and show it to an instructor by the end of the lab.
4. Remember that any bug would require a change of around two symbols (insert, replace or delete) to make the code work.
5. Run the completed program and get extra credit.

Grading Scale is as follows:

You get 0.5 credit for each bug you find and fix. Keep your list ready by the end of the lab to get your score.

The Program:

```cpp
#include <iostream>
using namespace std;

/*
Swap the ith and jth elements of the character array letters[].

Example: swapping the 2nd and 4th elements of "palindrome" is "panildrome"
*/
void swap(char letters[], int i, int j){
    char temp = letters[j];
    letters[j] = letters[i];
    letters[i] = temp;
}
```

/*
Display the contents of the character array letters[].
```
Example: if letters[] = "palindrome", then this function should print "palindrome" to the output console.

void displayLetters(char letters){
    cout << letters << endl;
}

Reverse the contents of the character array letters[].

Example: if letters[] = "palindrome", then this function updates to letters[] = "emordnilap"

void reverseLetters(char letters[]){

    // Length of string
    int length_of_string = 17;

    // Reversing the letters in the string
    for(int i = 0; i < length_of_string; i++) {
        int j = length_of_string - i;
        swap(letters, i, j);
    }
}

This program will reverse the contents of the character array letters[].

int main()
{
    // Instructions
    cout << "Welcome to Lab 7 << endl;
    cout << "Enter a Yes(y) or No(n) to decide if you want to reverse your string: " << endl;

    // initialize yes/no counter
    char yn;

    // initialize string
    char string[100];

    // initialize loop counter
    bool continueloop = true;

    // Loop for main program
    while((continueloop = true)) {

        // Ask the question
        cout<< "Do you want to reverse a string?" << endl;

        // Take the answer as input to yes/no counter
        cin >> yn;

        // End loop if answer is no
        if (yn == 'n') {
            continueloop = false;
// Continue otherwise with string reverse function
else {
    // initialize the character array letters[]
    char letters[] = "never odd or even";

    // display the contents of the character array letters[]
    cout << "The original string is: ";
    displayLetters(letters);

    // reverse the contents of the character array letters[]
    reverseLetters(letters);

    // display the contents of the character array letters[]
    cout << "The reversed string is: ";
    displayLetters(letters);
}

return 0;