CSC 1300 LAB 4

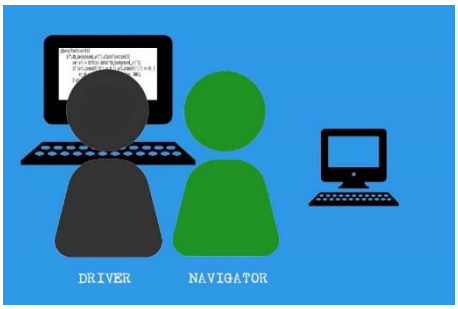
Fall 2024, Written by Kelsey Rainey, Last Updated Sept 19, 2024

Learning Objectives

- String Functions
- While Loops
- Do-While Loops
- Character Testing Functions

Paired Programming Option

You may complete this lab assignment alone or you have an OPTION to complete this lab with a lab partner using paired programming techniques. If you choose to pair program, follow the directions in this section. Your first step is to **exchange preferred contact information** just in case you are unable to complete the lab during lab and need to meet outside of lab class to finish.



Submission in iLearn

You will both upload the same exact zip file to your Lab 3 assignment in ilearn. Each source file should have both of your names in the comment block at the top. Both students will receive the same feedback and grade.

How to Pair Program

One of you can start writing (or debugging) the initial code (DRIVER) while the other reviews and suggests improvements (NAVIGATOR). **Take turns regularly (every 10 to 15 minutes)** to ensure both of you are actively involved.

Part 1: Password Generator

1. Write a program in a source file named **lab4a.cpp**
2. Your program should take in a string from the user and validate that the string has no spaces
3. The program should change a random index of the string to be a capitol letter if that index is a letter
4. Then, the program should change the first 'a' to be '-alpha-', the first 'g' to be '-gamma-', and the first 'd' to be '-delta'
5. Finally, the program should append a random 3-digit number to the end of the password

Check out these helpful links with some C++ functions: https://www.geeksforgeeks.org/cpp-string-functions/
https://www.geeksforgeeks.org/isalpha-isdigit-functions-c-example/

Also, `static_cast<char>(num)` can be used to convert an integer into a character and `to_string(num)` to convert an integer to a string.

Sample Outputs

User input is highlighted in **yellow**.

Sample Output 1

```
***The Password Program***

Please enter a word with no spaces: Ed Sheeran
```

```
Please enter a word with no spaces: Bandana
Your updated password: BFn-delta--alpha-na870
```

Sample Output 2

```
***The Password Program***

Please enter a word with no spaces: apples
Your updated password: -alpha-ppVes85
```

Sample Output 3

```
***The Password Program***

Please enter a word with no spaces: Debugging
Your updated password: DebuJ-gamma-ing297
```

Part 2: Testing Time

1. Write a program in a source file named **lab4b.cpp**
2. First the program should print out the menu (go to lab, go to office hours, or take the test) and take in the user's choice. The program should validate the user's input is in the correct range.
3. The program should use a **do-while loop** to keep displaying the menu and options until the user chooses to take the test
    a. If the user chose to go to lab, the program should ask if they were playing games during lab. If the user answers 'y' or 'Y', the program should print out a sad message. Otherwise (no matter the character), the program should add 1 to the total labs.
    B. If the user chose to go to office hours, the program should print a message and add 1 to the total office hours.
    C. If the user chose to take the test, the program should print out a good luck message and exit the loop.
4. Results:
    A. Print out the total lab attendances and office hours attendance
    B. If they attended at least 3 labs or 3 office hours, the program should print a message that they passed easily.
    C. If they attended at least 1 lab or 1 office hour, the program should print a message that their attendance paid off.
    D. If they didn't attend any labs or office hours, the program should print 'Risky, risky…'

Sample Outputs

User input is highlighted in **yellow**.

Sample Output 1

```
***Testing Soon***


1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 2
You chose to go to office hours. Very demure

1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 1
Did you play minesweeper all of lab? (Y or N) Y
Negative aura..tsk tsk

1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 1
Did you play minesweeper all of lab? (Y or N) N
You chose to go to lab! Your TAs are proud.
```

```
1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 2
You chose to go to office hours. Very demure

1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 2
You chose to go to office hours. Very demure

1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 1
Did you play minesweeper all of lab? (Y or N) N
You chose to go to lab! Your TAs are proud.

1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 1
Did you play minesweeper all of lab? (Y or N) N
You chose to go to lab! Your TAs are proud.

1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 3
Good luck soldier o7

Labs: 3
Office hours: 3
You passed the test without even trying. Good job!
```

Sample Output 2

```
***Testing Soon***


1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 3
Good luck soldier o7

Labs: 0
Office hours: 0
Risky, risky...
```

Sample Output 3

```
***Testing Soon***


1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 7
That's not an option, you silly goose. Enter 1-3: 0
That's not an option, you silly goose. Enter 1-3: 1
```

```
Did you play minesweeper all of lab? y
Negative aura..tsk tsk

1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 1
Did you play minesweeper all of lab? o
You chose to go to lab! Your TAs are proud.

1. Go to Lab
2. Go to Office Hours
3. Take the test
Please choose an option 1-3: 3
Good luck soldier o7

Labs: 1
Office hours: 0
You attendance paid off. Wes the Lab Princess looked upon you kindly.
```

Part 3: Random Number Guessing Game

1. Write a program in a source file named **lab4c.cpp**
2. First, ask the user if they would like to play a game. If the user answers with a 'y' or 'Y', then the program should enter the game loop. If they answer with 'n' or 'N', then the program should print a goodbye message and leave. If they did not enter a 'y', 'Y', 'n', or 'N', then the program should tell the user it's invalid input and should ask the user to enter in valid input. Use a **while loop** for input validation.
3. In the game loop:
    - **A.** Generate a random number between 1-50
    - **B.** Take in the user's guess for the number and validate that it's between 1-50
    - **C.** If the user's guess is correct, print out a congratulations message. If the user's guess is incorrect, print out a sad message.
    - **D.** Then, ask the user if they would like to play again. If the user answers with a 'y' or 'Y', then the program should repeat. If they answer with 'n' or 'N', then the program should print a goodbye message and leave. Otherwise, it's invalid input and the program should ask the user for a valid input.

Sample Outputs

User input is highlighted in **yellow**.

Sample Output 1

```
Would you like to play a game? y

Guess a random number between 1-50: 42

GOOD JOB!
Play again? (enter 'y' or 'n'): o

Not a valid input
Enter a 'y' or 'n': N

BYE BYE
```

Sample Output 2

```
Would you like to play a game? N

BYE BYE
```

Sample Output 3

```
Would you like to play a game? M

Not a valid input
Enter a 'y' or 'n': p

Not a valid input
Enter a 'y' or 'n': y

Guess a random number between 1-50: 77
That's not in the guessing range. Try again: 0
That's not in the guessing range. Try again: 7

The number was 36
You can always try again :)
Play again? (enter 'y' or 'n'): Y

Guess a random number between 1-50: 47

The number was 5
You can always try again :)
Play again? (enter 'y' or 'n'): n

BYE BYE
```

Part 4: Fill Out the Lab Report

You will fill out this lab report for every lab and it is part of your grade. To get credit, you must upload a screenshot of the confirmation page to this lab assignment. Name your screenshot **lab4ReportProof**.

Lab Report Link: https://tntech.co1.qualtrics.com/jfe/form/SV_d6BGc6kzQdSvBmS

What to Turn In

Create a zip file named **labPartner1username_labPartner2username_lab4** containing the following .cpp files and upload it to ilearn. Replace labPartner1username with one lab partner's TTU username and replace labPartner2username with the other lab partner's TTU username. Example: **jdean42_acrockett43_lab4.zip**

- lab4a.cpp
- lab4b.cpp
- lab4c.cpp
- lab4ReportProof

Remember, both lab partners should upload this zip file to their ilearn assignment.