Assignment #6 - String Manipulator - 100 pts

Due: Tuesday, November 20, 11:59:00pm

Objective

This assignment will involve practice with either C-style strings or string objects, as well as some of the libraries that involve manipulations on characters (like cctype) and strings (cstring/string).

Exercise

Filename: `stringfun.cpp` (Note that the filenames are all *lowercase*)
You may choose to complete this assignment using either string objects or cstrings.

Functions

YOU are the programmer. So, decide which functions you'd like to build to complete your program. The only rule is that you must have at least two functions that serve valid use that take in your string/cstring as a parameter. You can name your functions however you'd like. It's up to you to figure out what additional parameters the functions you write should take in, and what you'd like them to return, if anything. You're welcome to write any additional functions to complete the required tasks in your program.

Menu program

Write a main program that performs the following steps:

1. On start, Prompt the user to enter a string, and let them type it in. This could be an entire sentence or a word, etc, with the newline (when the user presses the the enter key) indicating the end of the string. CString info: You may assume the string that the user enters will be no more than 100 characters so you can declare your array accordingly.
2. Display the following menu:

```
String Manipulator Options Menu
-------------------------------
1 - Print the current string
2 - Make the string all Uppercase
3 - Make the string all Lowercase
4 - Replace a character
5 - Show string statistics
6 - Enter a new string
7 - Jazz things up... (You'll lose your current string!)
8 - Show this menu
0 - Quit
```

3. Enter a loop, allowing the user to type in a menu choice each time. Loop should continue until the user

enters the command to exit.

- Option 1 prints the current string to the screen. Nothing fancy here.
- Option 2/3 make the string all uppercase or lowercase. These should change your string.
- Option 4 allows the replacement of one character to another. For instance, the user could replace all ! characters with ?. This task will change the contents of your string.
- Option 5 should print the string stats (see sample runs).
- Option 6 allows the user to enter a new string. If you have trouble here, try inserting the line

  ```
  cin.ignore();
  ```

  right after you read in the user's menu selection.....
- Option 7 changes the string to a new string of a random length between 1 and 50. The new string is made up of random characters that have ascii values between 32-122 (inclusive). (Hint: See c++ basics 1/2 for casting: If you need to cast an int to a character, you can place (char) in front of the value to cast).
- Option 8 shows the menu
- Option 0 Quits
- Your program should not allow any invalid numerical entries (you may assume the user will not enter a character for the menu selection).
- BONUS POINT OPPORTUNITY: Include error checking if the user enters a menu option that is not a digit. You may need to research a little bit on how to do this. Functions like cin.peek() and or cin.ignore() may help. (5 points).

Sample Run

```
To get started, enter anything you'd like, then hit enter:
FSU is the best school coolio wooo

String Manipulator Options Menu
-------------------------------
1 - Print the current string
2 - Make the string all Uppercase
3 - Make the string all Lowercase
4 - Replace a character
5 - Show string statistics
6 - Enter a new string
7 - Jazz things up... (You'll lose your current string!)
8 - Show this menu
0 - Quit
Selection -----> 1
Current String: FSU is the best school coolio wooo

Selection -----> 2
Selection -----> 1
Current String: FSU IS THE BEST SCHOOL COOLIO WOOO

Selection -----> 3
Selection -----> 1
Current String: fsu is the best school coolio wooo

Selection -----> 4
Replace all of these characters: o
```

```
To these characters: ?
8 characters replaced.

Selection -----> 1
Current String: fsu is the best sch??l c??li? w???

Selection -----> 5
Letters: 20
Punctuation: 8
Digits: 0
Whitespace: 6

Selection -----> 6
Enter a new string:
This is the new string!

Selection -----> 1
Current String: This is the new string!

Selection -----> 5
Letters: 18
Punctuation: 1
Digits: 0
Whitespace: 4

Selection -----> 8

String Manipulator Options Menu
-------------------------------
1 - Print the current string
2 - Make the string all Uppercase
3 - Make the string all Lowercase
4 - Replace a character
5 - Show string statistics
6 - Enter a new string
7 - Jazz things up... (You'll lose your current string!)
8 - Show this menu
0 - Quit
Selection -----> 7
Your string is now: *=!6c#.=@e7loZcN

Selection -----> 9
Invalid Choice.

Selection -----> 0
Bye!
```

Requirements

- No global variables, except where specified
- You may use any of these libaries:
    - `iostream`
    - `iomanip`

    - cctype
    - cstring
    - string
    - cstdlib
    - ctime
- Readable and well-documented source code

Submitting:

stringfun.cpp