LAB #7
More Functions and Strings

You need to use the TAs office hours and class study sessions to get extra help in understanding the material and what is required from an assignment or lab!!

In this course, all our labs involve paired programming. You do not have to keep the same partner for each lab, but you MUST work with someone in each lab, as specified in the student handout.

At this time, you need to pair with someone in the lab, and finish the rest of the lab as a pair.

(2 pts) Playing with Strings (1-d list of characters)

Write a program that takes a string from the user and prints the string horizontally, by supplying the string to the print function, prints the first and last character in the string, and then print the string vertically, one character at a time.

You will need to use the len() function that determines the length of a string, and you will have to use the brackets, [ ], to access each character in the string, and remember you begin accessing the string at 0.

Notice that the character in the string is accessed using a number in the brackets.
- What do you use in the brackets to access the last character?
- How does the program behave when you access the string using len() in the string brackets, i.e. str[len(str)]?

(4 pts) String Program – Design First

Now, adapt your program to take two strings as input, and you will compare the two strings, character by character. You need to count the number of occurrences where the characters in the two strings match, and you will output the percentage of matching characters between the two strings.

If the two strings are not the same length, then they are not matching for those extra characters. For example, Jennifer and Jen match on 37.5% of the characters.

Your program must have a main() function, and you must have these functions to get_user_input(), percent_matching(), and num_matching_chars().

Begin by designing the interaction and functionality for the 4 functions above.
- How will these functions interact together, i.e. who will call who?
• What are the parameters for these functions?
• What are the pre and post conditions for these parameters?
• What are the return values for the functions?
• Now design the steps needed in each function?

(4 pts) String Program – Implementation Next

Now, implement you design! You must have defined and called the functions above, but you can have more. Make sure each function has a function header (a block of comments describing the function), including the above information. Comments in python are proceeded by the # symbol. This tells the interpreter to ignore the following text on that line. For example:

```
# Function Name: main
# Description: Begin execution for program here
# Parameters: None
# Pre-conditions: None
# Post-conditions: None
# Return values: None

```

Look at the style guideline for our class, and make sure your program adheres to our style guideline for this class: http://classes.engr.oregonstate.edu/eecs/fall2015/cs160-001/160_style_guideline.pdf. You should write a program header, as well as all your function headers.

Now, exchange your design with a different group in the lab/class.

• How does your design differ from theirs?
• How is your design similar?
• Try implementing their design.
  o Did they provide enough detail for the interaction, pre and post conditions, and return values?
  o Did they provide enough detail for the steps needed in the function?

Make sure you sign-up with a TA for demoing/explaining your Assignment #6. The doodle polls are listed on the course home page beside the TA office hours: http://classes.engr.oregonstate.edu/eecs/fall2015/cs160-001/ You are penalized for failure to schedule an appointment within the week or missing a scheduled appointment. In either case, if you are within 1 day (24 hours) of the deadline, you lose 10 points. If you are within 7 days (1 week) of the deadline, then you lose 25 points, anything outside of a week from the deadline to demo is an automatic 50 point deduction.