**CSCE 110: Programming I**

**Lab 7**

**General Instructions:**

* The lab is due online by 11:59 pm of the due date. The assignment must be typed, not handwritten, or scanned.
* Label your Python programs L7q<num>.py, where num is the question number. For example, your solution to the first question will be stored in the file L7q1.py.
* Make sure you understand everything in this lab before getting started. Also, make sure that your programs match the output exactly as given for each question. This is important as one of the keys to being a good programmer is attention to detail.
* Grading is based on correctness and clarity.
* **Copying work from another source and submitting it as your own is plagiarism and a violation of the code of honor. The minimum penalty for plagiarism is a grade of zero and will be reported to the Aggie honor system office.**

**Lab Questions**

1. Write a Python program stored in a file L7q1.py which will ask the user to enter a filename, and open the file for reading. You may assume that the text that is in the file is stored as one sentence per line. Write a program that reads the file’s contents and calculates the average number of words per sentence, rounded to the nearest tenth of a word. A file in the appropriate format (named text.txt) can be downloaded from eCampus.

The sample output showing the behavior of the program is shown below.

**Sample Output #1:**

1. Please enter the name of the file: test.txt
2. There was an error while opening the file.

**Sample Output #2:**

1. Please enter the name of the file: text.txt
2. Average number of words per line: 23.8
3. Write a Python program stored in a file L7q2.py which will ask the user to enter a filename, and open the file for reading. You may assume that the text that is in the file is stored as one sentence per line. Write a program that reads the file’s contents and determines the following:

* The number of uppercase letters in the file
* The number of lowercase letters in the file
* The number of digits in the file
* The numbr of whitespace characters in the file

A file in the appropriate format (named text.txt) can be downloaded from eCampus. The sample output showing the behavior of the program is shown below

**Sample output #1**

1. Please enter the name of the file: text.txt
2. Uppercase letters: 54
3. Lowercase letters: 4425
4. Digits: 33
5. Spaces: 976

**Sample Output #2:**

1. Please enter the name of the file: badfilename.txt
2. There was an error while opening the file.
3. Write a Python program stored in L7q3.py that adds numbers together in binary. The user will be prompted to enter integers to be added and the program will output the addition result in binary.

You must create a toBinary() function that converts an integer to binary. (You are not allowed to use the python bin() function).

You must also create a binaryAdd() function that takes two binary strings and adds them together. You are not allowed to use ‘+’ or sum meaning that you must also convert the integers to binary before adding the binary strings together.

Note: You are not required to create a main() but it is good practice to do so. You are allowed to import the math module.

**Example #1:**

|  |
| --- |
| 1. Enter integers to be added: 1 4 2. The sum is 101 |

**Example #2:**

|  |
| --- |
| 1. Enter integers to be added: 3 6 9 2. The sum is 10010 |

**Example #3:**

|  |
| --- |
| 1. Enter integers to be added: 1 2 3 4 5 6 7 2. The sum is 11100 |

**Submitting Your Assignment**

Once you have completed your programs, submit each of them (L6q1.py, L6q2.py) electronically.

You may resubmit your files as many times as you need until the due date. Only the most recent submission is graded. You are required to include the following lines in the header of all your files:

|  |
| --- |
| **# File: filename.py # Author: Student name # Date: xx/xx/2021 # Section: Student section number  # E-mail: student\_email@tamu.edu  # Description: # e.g. This program asks for ...** |

Submit your files on [gradescope.com](https://www.gradescope.com/)