Computer Programming
Spring 2020

CSI2100-01 Lab 5

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Overview

- Questions
- Programming Problems
- Deliverables, due-date and submission
- Notes:
  1) Please consider using the OnlinePythonTutor when debugging your code.
  2) Some lab problems can be tested with Hyeongjae Python.
     - Please refer to page 9 of this assignment for details.
  3) Because of our coronavirus precautions, you are provided with an excerpt of the relevant sections of the textbook together with this lab assignment.

Questions

- You are kindly asked to submit the answers to the questions on the following page in a file named **README.txt**

- **Question 1:** Textbook page 118, Exercise 9.
- **Question 2:** Textbook page 118, Exercise 10.
- **Question 3:** Textbook page 118, Exercise 11.
- **Question 4:** Textbook page 120, Exercise 18.
  In your answer, you must list all errors that this program contains. There's no code to write here.

Programming Problems

Problem 1: Write a program that finds the largest number in a series of positive numbers entered by the user. The program must prompt the user to enter numbers one by one. When the user enters 0 or a negative number, the program must display the largest **positive** number entered and then terminate. Please use two digits after the decimal point for formatting the largest number (use Python's `format()` function). If the user does not input any positive number, the program must respond as shown in Example 2.

Example 1:

```
Enter a number: 60
Enter a number: 38.3
Enter a number: 40.89
Enter a number: 100.62001
Enter a number: 75.2295
Enter a number: 0
The largest number entered was 100.62
```

Example 2:

```
Enter a number: 0
No positive number was entered
```

Hint: the solution to this problem does **not require a list**! Think about how you can maintain the largest number in a single variable during program execution.

Problem 2: Write a program that counts the number of vowels (a, e, i, o, and u) in a sentence. In your program output, please distinguish between singular and plurals (vowel versus vowels).

Example:
```
Enter a sentence: And that's the way it is.#foo77@
Your sentence contains 8 vowels.
```

Example:
```
Enter a sentence: &^*a@
Your sentence contains 1 vowel.
```

Example:
```
Enter a sentence: &@trmm
Your sentence contains 0 vowels.
```

Hint 1: the input that your program receives from the user is a string. Because strings are **sequences**, you can use the sequence methods discussed in this week's lecture, e.g., **count().**

Hint 2: to solve this problem you do not need a loop (if you follow Hint 1).

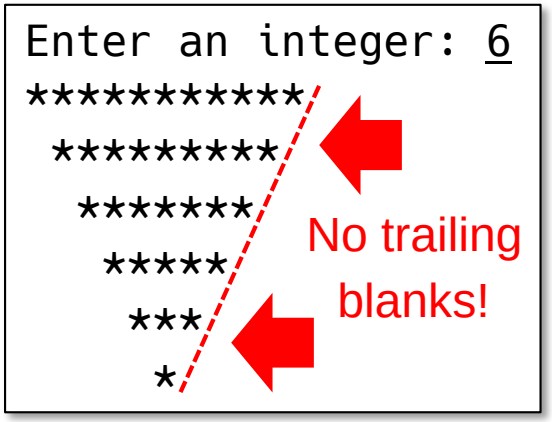
Problem 3: Textbook page 164, Exercise P3. You can assume that the user enters integer values only (no faulty input). If the user inputs 0, the result list must be printed. You can print the entire list using a single print() command.

Examples:

```
Enter an integer: 10
Enter an integer: 101
Enter an integer: 12
Enter an integer: 14
Enter an integer: 999
Enter an integer: 0
[10, 'over', 12, 14, 'over']
```

```
Enter an integer: 0
[]
```

Problem 4: Write a program that asks the user for a positive integer and outputs a triangle of height n and width 2n-1. You can assume that the user input is valid and n >= 1.
Example for n=6:



Problem 5: Textbook page 164, Exercise P4.
You can assume that the user enters one name per line, and that names are well-formed. E.g., there will not be blanks occurring inside of names. However, the letter 'a' can also appear in upper-case format ('A').

Although this problem can be solved without a list, you are asked to use a list for practice!

Example:

```
Enter a name (q to quit): Jinwoo
Enter a name (q to quit): Anna
Enter a name (q to quit): Taekhoon
Enter a name (q to quit): Hwangho
Enter a name (q to quit): q
Appearance of letter 'a': 4
```

Marking Criteria and Plagiarism

- Marking Criteria
  - Score is only given to programs that compile and produce the correct output with Python version 3.
  - Points are deducted for programs that are named wrongly. See the list of deliverables for the required file names.
  - Points are deducted for programs that produce warnings.
  - Points deductions on programming style: please provide comments in your code.
  - Please pay particular attention to the requested output format of your programs. Deviating from the requested output format results in points deductions.

- Plagiarism (Cheating)
  - This is an individual assignment. All submissions are checked for plagiarism.
  - Once detected, measures will be taken for **all** students involved in the plagiarism incident (including the ``source'' of the plagiarized code).

Deliverables

- Please prepare the files for the programming problems and questions. The names of the files, their YSCEC due-dates and the archive file-name is given in the below table.
- Lab problems marked as '✓' can be tested on our Hyongjae Python site http://hyeongjaepython.elc.cs.yonsei.ac.kr/

Problem	File name	Due	Archive name	Hyeongjae Python
1	lab5_p1.py	Wednesday April 22, 2020, 23:00	lab5_<student id>.zip	✓
2	lab5_p2.py			✓
3	lab5_p3.py			✓
4	lab5_p4.py			—
5	lab5_p5.py			—
Questions	README.txt			—