

CS 1337/1337L Introduction to Object-Oriented Programming Fall 2017

Assignment 4

Points: 60

Chapter: Chapter 5

General guidelines

Naming

When creating the filenames for your programs, please use the following files names: p5-1_sales_tax.py, p5-2_guessues.py

When creating names for variables and functions, please use the guidelines and recommendations specified by your instructor. Otherwise, use the guidelines and recommendations specified in Murach's Python Programming.

User interfaces

You should think of the user interfaces that are shown for the projects as starting points. If you can improve on them, especially to make them more user-friendly, by all means do so.

Specifications

You should think of the specifications that are given for the projects as starting points. If you have the time to enhance the programs by improving on the starting specifications, by all means do so.

Top-down development

Always start by developing a working version of the program for a project. That way, you'll have something to show for your efforts if you run out of time. Then, you can build out that starting version of the program until it satisfies all of the specifications.

Coding Style (10 points)

Shebang Line

- The first line of all your Python programs should be a shebang line, which tells your computer that you want Python to execute this program.
On Linux, the shebang line is `#!/usr/bin/env python3`

Layout

- Use 4 spaces per indentation level.
- Tabs or Spaces? Spaces are the preferred indentation method. Tabs should be used solely to remain consistent with code that is already indented with tabs. Python 3 disallows mixing the use of tabs and spaces for indentation.
- Limit all lines to a maximum of 79 characters.

Naming conventions

Here are some general principles when choosing names for your variables.

- Use meaningful names that convey the purpose of the variable.
- Choose names that are easy to pronounce, and avoid cryptic abbreviations. For example, use `wagePerHour` or `hourlyWage` instead of `wph`. Use `polygon` instead of `p` or `poly` or `pgon`.
- Be consistent.

Commenting

Programmers use comments to annotate a program and help the reader (or grader) understand how and why your program works. As a general rule, the code explains to the computer and programmer what is being done; the comments explain to the programmer why it is being done.

- Make sure that comments agree with the code. Be careful to update the comments when you update the code.
- Do not write comments that merely restate the code. Generally, comments should describe what or why you are doing something, rather than how.
- Comment any potentially confusing code, or better yet, rewrite the code so that it isn't confusing.

Files to upload to WTClass: `p5-1_sales_tax.py`, `p5-2_guesses.py`

Problem 1: Tax Calculator (Debug) (20 points)

Debug an existing program.

Console

```
Sales Tax Calculator  
Total amount: 99.99  
Total after tax: 105.99
```

Specifications

- You are provided with a program file named p5-1_sales_tax.py (posted to WTClass along with this file).
- Your job is to test this program and to find and fix all of the syntax, runtime, and logic errors that it contains.
- The sales tax should be 6% of the total.

Problem 2 : Guessing Game (Debug) (30 points)

Debug an existing program.

Console

```
Guess the number!

Enter the upper limit for the range of numbers: 100
I'm thinking of a number from 1 to 100.

Your guess: 50
Too low.
Your guess: 75
Too low.
Your guess: 87
Too low.
Your guess: 94
Too low.
Your guess: 97
Too high.
Your guess: 95
Too low.
Your guess: 96
You guessed it in 7 tries.

Play again? (y/n): y

Enter the upper limit for the range of numbers: 10
I'm thinking of a number from 1 to 10.

Your guess: 5
Too low.
Your guess: 7
Too low.
Your guess: 9
Too low.
Your guess: 10
You guessed it in 4 tries.

Play again? (y/n): n

Bye!
```

Specifications

- You are provided with a program file named p5-2_guesses.py (posted to WTClass along with this file).
- Your job is to test the program and to find and fix all the errors that it contains.

