Fall 2024 CS 110: Computer Science Fundamentals
HW2 due on 10/09/2024 Wednesday 11:59 PM

1) Download the Python file Homework2-Exercises.py
2) Please write your name, ID, and initial to the Honor Code statement.
3) For code answers write your lines of code under each instructional comment.
4) Save the python file as yourname_cs110_hw2.py and submit it to Canvas.
5) Submit a singular PDF file that contains a screenshot of the output for each exercise and its tasks along with the written answers in chronological order named yourname_cs110_hw2.pdf
6) Any late submission will be penalized 25% of the earned points per 24 hours.
7) Submissions must follow the instructions. Any incorrect format of submission (e.g., file, errors, etc.) is subject to be penalized.

Exercises

[15 pts] Question 1: Division and Remainders

[10 pts] (Code)

[3 pts] Write a program that asks the user to enter three integers.

[2 pts] Calculate the sum of the first two numbers.

[4 pts] Divide the sum by the third number using integer division (//), floating-point division (/), and find the remainder (%).

[1 pts] Print the results.

[5 pts] (Written) Explain the difference between the //, / and % operators in Python. How would the program behave if the third number were zero?

[15 pts] Question 2: Order of Operations

Consider the following expression:

result = 2 + 3 * 4 - 6 / 2

(Continue on next page.)

[8 pts] (Code + Written)

[4 pts] Without running the code, determine the value of result.

[4 pts] Then explain the order of operations that Python follows to evaluate this expression.

[7 pts] (Code + Written)

[3 pts] How would adding parentheses change the result?

[4 pts] Show the output for the following: result = (2 + 3) * (4 - 6) / 2

[10 PTS] QUESTION 3: VARIABLE TRACKING

Given the following variables:

```
x = 5

y = 10

z = x + y

x = z + 1

y = x * z
```

[5 pts] (Code) What are the values of x, y, and z after the code runs? Print them.

[5 pts] (Written) How does variable storage work and how can losing track of variables cause bugs in more complex programs?

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[15 pts] Question 4: Unary Operators

Given the following Python code:

print(-x + y - z)

Modify the values of x, y, and z as follows:

Set x = 10, y = -5, z = -8

Set x = -10, y = -5, z = 0

Set x = 0, y = 0, z = -8

[10 pts] (Code)

For each combination, try predicting the output before running the code.

Then compare your results after running.

[5 pts] (Written) Explain the role of the unary operator and how it impacts the values of x, y, and z in these calculations.

[15 pts] Question 5: Arithmetic Operations

(Code)

[1 pts] First, prompt the user to input one integer and one floating-point number.

Then, perform the following operations:

[3 pts] Add the two numbers.

[3 pts] Subtract the floating-point number from the integer.

[3 pts] Multiply the integer by the floating-point number.

[3 pts] Divide the floating-point number by the integer.

[2 pts] Print the type and result for each operation as an f-string.

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[10 pts] Question 6: .format() Method with Single-Line Strings (Part 1)

[7 pts] (Code)

Use the .format() method to print the message:

"My name is <your name> and I am <your age> years old."

[3 pts] (Written) Name up to 3 reasons why using .format() method makes the code more readable compared to concatenating strings with +?

[20 pts] Question 7: .format() Method with Multi-Line Strings (Part 2)

[15 pts] (Code)

[5 pts] Write a Python program that asks user input for two questions:

Why are they taking the course?

What interests them most about Python?

[10 pts] Use a multi-line string with triple quotes to display their answers in the following format:

My Course Reflection

I'm taking this course because: <user answer>

What excites me most about learning Python is: <user answer>

[5 pts] (Written) What benefits can you observe from using triple quotes instead of adding \n at every line?