Answer the following 10 questions (and subparts) using information you find in Chapter 1 of “The Practice of Computing Using Python.” You can use the book’s exact text for your answers. Answers should be short, clear, and reasonably complete. The answers must be in this document.

**1.** According to the textbook, what is a computer program?

Answer: A program is a human-readable essay on problem solving that also happens to execute on a computer

**2.** Python is an **interpreted** language. What does “interpreted” mean in this context?

Answer: By interpreted, it means that there is a program within Python called the interpreter that takes each line of Python code, one line at a time, and executes that code.

**3.** What is a Python *comment?* In what ways can you indicate a comment? What are some purposes for writing comments?

Answer: A Python comment begins and is indicated with a pound sign (#). Comments are for the human reader, and the python interpreter ignores it. Comments provide the reader with more information on the intent of the program.

**4.** In Python , what is a *namespace*?

Answer: Namespace is a special structure that the interpreter maintains to keep this list of names and their associated values. Each name in that list is associated with a value, and the Python interpreter updates both names and values during the course of its operation.

**5.** Regarding Whitespace in python:

a. What is whitespace? Include examples.

Answer: The spaces that seperate words is typically called whitespace. In python, these characters are counted as white space: space, tab, return, linefeed, formfeed, and vertical tab.

b. When does whitespace matter?

Answer: Leading whitespace, whitespace at the beginning of a line – which is indentation. Python requires consistency in whitespace indentation. If previous statements use an indentation of four spaces to group elements, then that must be done consistently throughout the program. It also helps with the readability of the code.

c. When does whitespace not matter?

Answer: Whitespace is ignored within both expressions and statements ( Y = X + 5 → the white space doesn’t matter). Blank lines are also considered whitespace, but they are also allowed and ignored.

**6.** Regarding Python statement and expressions:

a. Explain the difference between a statement and an expression

Answer: An expression is a combination of values and operations that creates a new value called a return value. A statement does not return a value, but performs some task.

b. Give an example of both a statement and an expression

Answer: An expression: x + 5. A statement x = 2.

c. Explain what is meant by a statement having a *side effect*

Answer: A side effect is some change that results from executing the statement.

**7.** Mixed operations:

a. What data type results when you divide an integer by a float?

Answer: float

b. What data type results when you divide a float by an integer?

Answer: float

c. Why do the resulting data type(s) answered above make sense - as opposed to other data type(s)?

Answer: According to the textbook, whenever you do division, regardless of the types of the operands, the type yielded is a float.

**8.** Consider integer values of a, b, and c, and the expression **(a + b) \* c**.   
In mathematics, we can substitute square brackets [] or curly braces {} for parentheses ().   
Is that same substitution valid in Python? Explain why or why not and be specific.

Answer: The substitution is not valid in Python because square brakets and curly braces define different types in python. Curly braces indicate dictionaries, and square brakets indicate lists.

**9.** Evaluate the following 3-line Python program:

1> my\_int = 4 + 3 \* 2  
2> my\_int = my\_int + 5  
3> print(my\_int)

a. If you execute the three lines of code above, what will be printed?

Answer: 15

b. Explain your answer using the rules of assignment.

Answer: In the first line, after the operation is executed, it assigns the number 10 into the variable my\_int. In the second line, 5 is added to my\_int, which brings the value to 15, and the new value is then reassigned to my\_int. Then in the third line, the value of my\_int is printed out.

c. Rewrite line 2 using the += symbol

Answer: my\_int+=5

**10.** Evaluate the following 3-line Python program:

1> my\_var1 = 9.0  
2> my\_var2 = 4  
3> print(my\_var1 % my\_var2)

If you execute this program, what will be printed and why?

Answer: 1.0 because % gives you the remainder when you divide the two numbers.

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