**Checkpoint 2.1**

1. 2.1 Who is a programmer’s customer?

Answer: The term customer to describe the person, group, or organization that is asking you to write a program. This could mean someone who is paying you to write a program. It could be your boss, or the manager of a department within your company. Regardless of whom it is, the customer will be relying on your program to perform an important task.

1. 2.2 What is a software requirement?

Answer: A software requirement is simply a single task that the program must perform to satisfy the customer.

1. 2.3 What is an algorithm?

Answer: A set of well-defined logical steps that must be taken to perform a task.

1. 2.4 What is pseudocode?

Answer: It’s like a blueprint of a program with no regard to syntax rules, more to get the idea of the design of the program and then convert this “fake code” to actual code. (Inte plagiat)

1. 2.5 What is a flowchart?

Answer: A flowchart is a diagram that graphically depicts the steps that take place in a program

1. 2.6 What do each of the following symbols mean in a flowchart?

Oval: The ovals, which appear at the top and bottom of the flowchart, are called terminal symbols. The Start terminal symbol marks the program’s starting point, and the End terminal symbol marks the program’s ending point.

Parallelogram: Parallelograms are used as input symbols and output symbols. They represent steps in which the program reads input or displays output.

Rectangle: Rectangles are used as processing symbols. They represent steps in which the program performs some process on data, such as a mathematical calculation.

**Checkpoint 2.2**

1. 2.7 Write a statement that displays your name.
2. print("Ali Adrian Nasrat")

2. 2.8 Write a statement that displays the following text:

Python's the best!

Answer:

print("Python's the best!")

3. 2.9 Write a statement that displays the following text:

The cat said "meow."

Answer:

print('The cat said "meow."')

**Checkpoint 2.3**

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**Checkpoint 2.4**

1. 2.10 What is a variable?

Answer: A variable is a name that represents a value stored in the computer’s memory.

1. 2.11 Which of the following are illegal variable names in Python, and why?

X: illegal, it should give an indication to what it’s for

99bottles: illegal, the first characters can’t be numbers

july2009: legal, contains numbers after lowercase letters

theSalesFigureForFiscalYear: legal, use of camelCase

r&d: illegal, must not contain special characters

grade\_report: legal, use of underscore to separate words

3. 2.12 Is the variable name Sales the same as sales? Why or why not?

4. 2.13 Is the following assignment statement valid or invalid? If it is invalid, why?

72 = amount

5. 2.14 What will the following code display?94

val = 99

print('The value is', 'val')

6. 2.15 Look at the following assignment statements:

value1 = 99

value2 = 45.9

value3 = 7.0

value4 = 7

value5 = 'abc'

After these statements execute, what is the Python data type of the values referenced by each

variable?

7. 2.16 What will be displayed by the following program?

my\_value = 99

my\_value = 0

print(my\_value)95

**Checkpoint 2.7**

1. 2.19 Complete the following table by writing the value of each expression in the Value column:

Expression Value

6 + 3 \* 5 21

12 / 2 – 4 2

9 + 14 \* 2 – 6112 -6075

(6 + 2) \* 3 24

14 / (11 − 4) 2

9 + 12 \* (8 − 3) 69

2. 2.20 What value will be assigned to result after the following statement executes?

result = 9 // 2

Answer: 4

3. 2.21 What value will be assigned to result after the following statement executes?

result = 9 % 2

Answer: 1

**Checkpoint 2.8**

1. 2.22 How do you suppress the print function’s ending newline?

Answer: By adding the “end: ‘’” inside the print function.

1. 2.23 How can you change the character that is automatically displayed between multiple items that are passed to the print function?

Answer: By for example adding a comma in the “end” attribute, as following: “end: ‘, ‘”.

1. 2.24 What is the '\n' escape character?

Answer: Adds a new line.

1. 2.25 What does the + operator do when it is used with two strings?

Answer: It appends the string together, also called string concatenation.

1. 2.26 What does the statement print(format(65.4321, '.2f')) display?

Answer: It prints two numbers after the whole number, as follows: 65.43.

1. 2.27 What does the statement print(format(987654.129, ',.2f')) display?

Answer: It prints two numbers after the whole number and rounds off the last number, as follows: 987,654.13.

**Checkpoint 2.9**

1. 2.28 What are three advantages of using named constants?

2. 2.29 Write a Python statement that defines a named constant for a 10 percent discount.

**Algorithm Workbench**

1. Write Python code that prompts the user to enter his or her height and assigns the user’s input to

a variable named height.

2. Write Python code that prompts the user to enter his or her favorite color and assigns the user’s

input to a variable named color.156

3. Write assignment statements that perform the following operations with the variables a, b, and

c:

1. Adds 2 to a and assigns the result to b

2. Multiplies b times 4 and assigns the result to a

3. Divides a by 3.14 and assigns the result to b

4. Subtracts 8 from b and assigns the result to a

4. Assume the variables result, w, x, y, and z are all integers, and that w = 5, x = 4, y = 8,

and z = 2. What value will be stored in result after each of the following statements execute?

1. result = x + y

2. result = z \* 2

3. result = y / x

4. result = y – z

5. result = w // z

5. Write a Python statement that assigns the sum of 10 and 14 to the variable total.

6. Write a Python statement that subtracts the variable down\_payment from the variable total and

assigns the result to the variable due.

7. Write a Python statement that multiplies the variable subtotal by 0.15 and assigns the result to

the variable total.

8. What would the following display?

a = 5

b = 2

c = 3

result = a + b \* c

print(result)

9. What would the following display?

num = 99

num = 5

print(num)

10. Assume the variable sales references a float value. Write a statement that displays the value

rounded to two decimal points.

11. Assume the following statement has been executed:

number = 1234567.456

Write a Python statement that displays the value referenced by the number variable formatted as

1,234,567.5157

12. What will the following statement display?

print(‘George’, ‘John’, ‘Paul’, ‘Ringo’, sep='@')

13. Write a turtle graphics statement that draws a circle with a radius of 75 pixels.

14. Write the turtle graphics statements to draw a square that is 100 pixels wide on each side and

filled with the color blue.

15. Write the turtle graphics statements to draw a square that is 100 pixels wide on each side and a

circle that is centered inside the square. The circle’s radius should be 80 pixels. The circle

should be filled with the color red. (The square should not be filled with a color.)158