1. What is the difference between a class and an object?

A class is a group of similar objects. Object is a real-world entity such as book, car, etc. Class is a logical entity. Object is a physical entity.

2. What are some other names for the term instance variable?

The term "instance variable" is another name for non-static field. The term "class variable" is another name for static field.

3. What is another name for the term method? methods another name is Approach.

4. What symbol associates an object with a method invocation?

(.) symbol associates an object with a method invocation

5. How does a method differ from a function?

A method, like a function, is a set of instructions that perform a task. The difference is that a method is associated with an object, while a function is not.

6. What method from the string class returns a new string with no leading or trailing whitespace? The **Trim method** removes from the current string all leading and trailing white-space characters.

7. What function returns the length of its string argument?

**The strlen function** returns the length of the string s in bytes.

8. What type of object does the open function return?

The open() function opens a file, and returns it as a **file object**.

9. What does the second parameter of the open function represent? The second parameter of the open() function is **the mode** , a string with one character. That single character basically tells Python what you are planning to do with the file in your program.

10. Write a program that stores the first 100 integers to a text file named numbers.txt. Each number

should appear on a line all by itself.

with open("numbers.txt", "w") as file:

for i in range(0, 100):

file.write(str(i) + "\n")

11. Complete the following function that reads a collection of integers from a text file named numbers.txt.

Each number in the file appears on a line all by itself. The function accepts a single parameter, a string

text file name. The function returns the sum of the integers in the file.

def sumfile(filename):

# Add your code here . . .

def sumfile(numberstext):

sum = 0

with open(numbertext, 'r') as file:

for line in file:

sum += int(line.strip())

return sum

12. Provide the syntactic sugar for each of the following methods of the Fraction class:

(a) \_\_sub\_\_

(b)\_\_eq\_\_

(c) \_\_neg\_\_

(d) \_\_gt\_\_

a) \_\_sub\_\_, subtraction: f.sub(g) is equivalent to f - g

b) \_\_eq\_\_, relational quality: f.\_\_eq\_\_(g) is equivalent to

f == g

c) \_\_neg\_\_, unary minus: f.neg() is equivalent to -f

D) • \_\_gt\_\_, greater than: f.gt(g) is equivalent to f > g

13. How is using a Turtle object from Python’s Turtle

graphics module different from using the free

functions; for example, t.penup() versus penup()?

for using turtle object from Python's turtle .graphics modle like t.penup() we need to create a turtle class then calling its methods to use but in free functions can be usable directly.

14. For each of the drawings below write a program that draws the shape using a Turtle object from

Circle:

from turtle import\*

t=Turtle()

distance=0.2

for i in range(200):

t.forward(20)

t.left(20)

turtle:

from turtle import\*

t=Turtle();

for i in range(3):

t.forward(100)

t.left(120)

star

from turtle import\*

t=Turtle();

for i in range(5):

t.right(144)

t.forward(380);

15. Does Python permit a programmer to change one symbol in a string object? If so, how?A Python String object is immutable, so you can't change its value. Any method that manipulates a string value returns a new String object.

16. What would be the consequences if a turtle.Turtle object were immutable?

1. Limited functionality

2. Inflexibility

3. Reduced interactivity

17. In the context of programming, what is garbage?

Garbage, in the context of computers, is used to refer to any unwanted or unused data occupying memory space.

18. What is garbage collection, and how does it work in Python?

A garbage collection in Python manages the memory automatically and heap allocation. In simpler terms, the process of automatic deletion of unwanted or unused objects to free the memory is called garbage collection in Python.

19. Consider the following code:

a = "ABC"

b = a

c = b

a = "XYZ"

(a) At the end of this code’s execution what is the reference count for the string object "ABC"? nothing because we don’t have any variable or object to refrence .

(b) At the end of this code’s execution is b an alias of a? no it is not

(c) At the end of this code’s execution is b an alias of c? no it is not