Answers of chapter9

1.Objects bundle together data and functions. Like other variables, each Python object has a type, or class. The terms class and type are synonymous. An object is an instance of a class.

2. Other names for instance variables include attributes and fields.

3. Methods are like functions, and they are known also as operations

4. The period, pronounced dot, associates an object expression with the method to be called

5. We say that an object provides a service to its clients. The services provided by an object can be more elaborate that those provided by simple functions because objects make it easy to store persistent data in their instance variables.

6.strip

7. In Python, you can use the built-in function "len()" to return the length of its string argument.

8. The open() function in Python returns a file object.

9. The second parameter of the open() function in Python represents the mode in which the file will be opened. The mode can be set to "r" for reading, "w" for writing, "a" for appending, "x" for exclusive creation, "b" for binary mode, "t" for text mode, and so on

10.

```
# Open the file for writing
with open('numbers.txt', 'w') as f:
    # Loop through the first 100 integers
    for i in range(1, 101):
        f.write(str(i) + '\n')
```

11.

```
def sumfile (filename):
    sum = 0
    with open(filename, 'r') as file:
        for line in file:
            sum += int(line.strip))
    return sum
```

12.

- __eq__, relational quality: f.__eq__(g) is equivalent to f == g
- __gt__, greater than: f.__gt__(g) is equivalent to f > g
- __sub__, subtraction: f.__sub__(g) is equivalent to f - g
- __neg__, unary minus: f.__neg__() is equivalent to -f

13. using aTurtle object instead of the global Turtle graphics functions. organizing the code into functions for greater modularity and the potential for reuse.

14.

```
import turtle

def draw_square(some_turtle):
    for i in range (1,5):
        some_turtle.forward(200)
        some_turtle.right(90)

def draw_art():
    t = turtle.Screen()
    t.bgcolor("white")
    b = turtle. Turtle()
    b.color("black")
    b.speed(10)
    b.pensize(2)
    for i in range (1,37):
        draw_square(b)
        b.right(10)

    t.exitonclick()

draw_art()
```

15. Yes, Python allows you to change one symbol in a string object.

16. If a turtle.Turtle object were immutable, it would not be possible to change its properties such as its position, shape, color, and other attributes

17. The term garbage is a technical term used in computer science that refers to memory allocated by an executing program that the program no longer can access.

18. The Python interpreter cleans up garbage through a process called garbage collection.
Python uses a reference counting garbage collector that automatically reclaims the space occupied by abandoned objects.

19.

- 0
- No
- Yes