

Python – Class and Object



Class

Definition:

A **class** is a **blueprint** for creating objects in Python. It defines properties (**attributes**) and actions (**methods**) that objects created from the class can have.

Example:

```
class Car:
    # Class attributes
    brand = "Toyota"
    wheels = 4

    # Method
    def start_engine(self):
        return "The engine has started."
```

Key Points:

- Car is the name of the class.
- **Attributes:** brand and wheels describe the properties of a car.
- **Method:** start_engine() is an action the car can perform.



Object

Definition:

An object is an **instance of a class**. It **inherits all the attributes and methods** of the class from which it is created.

Example:

```
# Create an object of the Car class
my_car = Car()

# Access object properties
print(my_car.brand) # Output: Toyota

# Call object method
print(my_car.start_engine()) # Output: The engine has started.
```

Key Points:

- my_car is an object of the Car class.
- The object can access the attributes (brand) and methods (start_engine()) defined in the class.



Developing Class and Object

Step 1:

```
class ClassName:  
    # Class attributes  
    attribute1 = value1  
    attribute2 = value2
```

Step 2:

```
# Constructor (Optional)  
def __init__(self, parameter1, parameter2):  
    self.parameter1 = parameter1  
    self.parameter2 = parameter2
```

Step 3:

```
# Method  
def method_name(self):  
    return "Action performed"
```

Step 4:

```
# Create an object  
object_name = ClassName(argument1, argument2)
```



Example – Class and Object

Example:

```
class Calculator:
    # Constructor
    def __init__(self, num1, num2):
        self.num1 = num1 # Object-specific attribute
        self.num2 = num2

    # Method to add numbers
    def add(self):
        return self.num1 + self.num2
```

Usage:

```
# Create an object
calc = Calculator(5, 3)

# Call the add method
print(calc.add()) # Output: 8
```

Key points:

- **Class:** Calculator is the class name.
- **Constructor:** __init__(self, num1, num2) initializes two numbers.
- **Attributes:** self.num1 and self.num2 store numbers for the object.
- **Method:** add() defines the action of adding two numbers.



Thank You!

