### **Assignment for today**

### **OOP Exercise 1: Create a Class with instance attributes**

Write a Python program to create a Vehicle class with max\_speed and mileage instance attributes.

class **Vehicle**:

def **\_\_init\_\_**(self, max\_speed, mileage):

self.max\_speed = max\_speed

self.mileage = mileage

car = Vehicle(120, 20000)

print(car.max\_speed, car.mileage)

output: 120 20000

### **OOP Exercise 2: Create a Vehicle class without any variables and methods**

class **Vehicle**:

pass

### **OOP Exercise 3: Create a child class Bus that will inherit all of the variables and methods of the Vehicle class**

**Given**:

class Vehicle:

def \_\_init\_\_(self, name, max\_speed, mileage):

self.name = name

self.max\_speed = max\_speed

self.mileage = mileage

Create a Bus object that will inherit all of the variables and methods of the parent Vehicle class and display it.

class **Bus**(Vehicle):

pass

School\_bus = Bus("School Volvo", 180, 12)

print("Vehicle Name:", School\_bus.name, "Speed:", School\_bus.max\_speed, "Mileage:", School\_bus.mileage)

**Expected Output:**

Vehicle Name: School Volvo Speed: 180 Mileage: 12

### **OOP Exercise 4: Class Inheritance**

**Given**:

Create a **Bus** class that inherits from the **Vehicle** class. Give the capacity argument of Bus.seating\_capacity() a **default** value of 50.

Use the following code for your parent Vehicle class.

class Vehicle:

def \_\_init\_\_(self, name, max\_speed, mileage):

self.name = name

self.max\_speed = max\_speed

self.mileage = mileage

def seating\_capacity(self, capacity):

return f"The seating capacity of a {self.name} is {capacity} passengers"

**Expected Output**:

*# Solution*

class **bus**(Vehicle):

def **seating\_capacity**(self, capacity=50):

return f"The seating capacity of a {self.name} is {capacity} passengers"

bus("school bus", 120, 2990).seating\_capacity()

The seating capacity of a bus is 50 passengers

### **OOP Exercise 5: Define a property that must have the same value for every class instance (object)**

Define a **class** attribute”**color**” with a default value **white**. I.e., Every Vehicle should be white.

Use the following code for this exercise.

class Vehicle:

def \_\_init\_\_(self, name, max\_speed, mileage):

self.name = name

self.max\_speed = max\_speed

self.mileage = mileage

class Bus(Vehicle):

pass

class Car(Vehicle):

pass

**Expected Output**:

Color: White, Vehicle name: School Volvo, Speed: 180, Mileage: 12

Color: White, Vehicle name: Audi Q5, Speed: 240, Mileage: 18

### **OOP Exercise 6: Class Inheritance**

**Given**:

Create a **Bus** child class that inherits from the Vehicle class. The default fare charge of any vehicle is **seating capacity \* 100**. If Vehicle is **Bus** instance, we need to add an extra 10% on full fare as a maintenance charge. So total fare for bus instance will become the **final amount = total fare + 10% of the total fare.**

Note: The bus seating capacity is **50**. so the final fare amount should be **5500.** You need to override the fare() method of a Vehicle class in Bus class.

Use the following code for your parent Vehicle class. We need to access the parent class from inside a method of a child class.

class Vehicle:

def \_\_init\_\_(self, name, mileage, capacity):

self.name = name

self.mileage = mileage

self.capacity = capacity

def fare(self):

return self.capacity \* 100

class Bus(Vehicle):

def **fare**(self):

fare\_car = self.capacity \* 100

total\_fare = fare\_car + (0.1 \*fare\_car)

return total\_fare

School\_bus = Bus("School Volvo", 12, 50)

print("Total Bus fare is:", School\_bus.fare())

**Expected Output**:

Total Bus fare is: 5500.0

### **OOP Exercise 7: Check type of an object**

Write a program to determine which class a given Bus object belongs to.

**Given**:

class Vehicle:

def \_\_init\_\_(self, name, mileage, capacity):

self.name = name

self.mileage = mileage

self.capacity = capacity

class Bus(Vehicle):

pass

School\_bus = Bus("School Volvo", 12, 50)

print(type(School\_bus))

output:

<class '\_\_main\_\_.Bus'>

### **OOP Exercise 8: Determine if School\_bus is also an instance of the Vehicle class**

**Given**:

class Vehicle:

def \_\_init\_\_(self, name, mileage, capacity):

self.name = name

self.mileage = mileage

self.capacity = capacity

class Bus(Vehicle):

pass

School\_bus = Bus("School Volvo", 12, 50)

print(isinstance(School\_bus, Vehicle))

output: True

Assignment 2 Create this landing page





