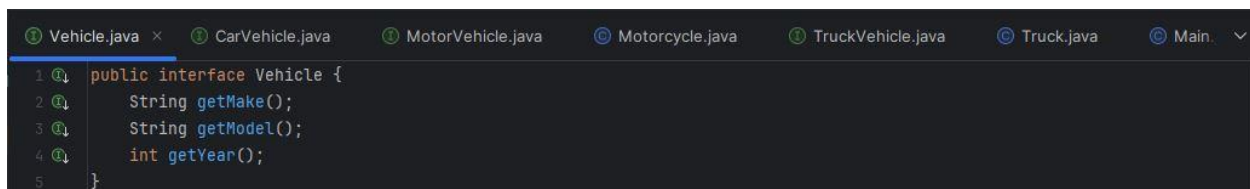


VEHICLE MANAGEMENT SOFTWARE APPLICATION

This project is a command-line based vehicle management system that enables users to manage a variety of vehicles, including cars, motorcycles, and trucks. The system allows for the creation of different vehicle types, setting their specific attributes, and displaying their details. It consists of four interfaces – Vehicle, CarVehicle, MotorVehicle, TruckVehicle – and three main classes: Car, Motorcycle and Truck.

Vehicle Interface:

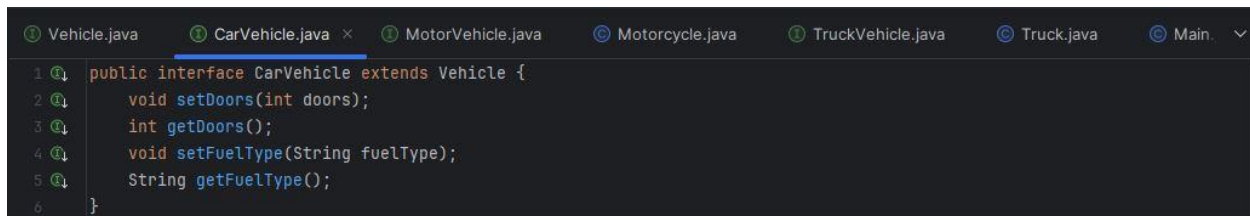
A screenshot of a code editor with a dark theme. The top of the editor shows a tab bar with several files: Vehicle.java (selected), CarVehicle.java, MotorVehicle.java, Motorcycle.java, TruckVehicle.java, Truck.java, and Main.java. The main editing area shows the code for the Vehicle interface. It is a public interface with three methods: getMake() returning a String, getModel() returning a String, and getYear() returning an int. The code is as follows:

```
1 public interface Vehicle {  
2     String getMake();  
3     String getModel();  
4     int getYear();  
5 }
```

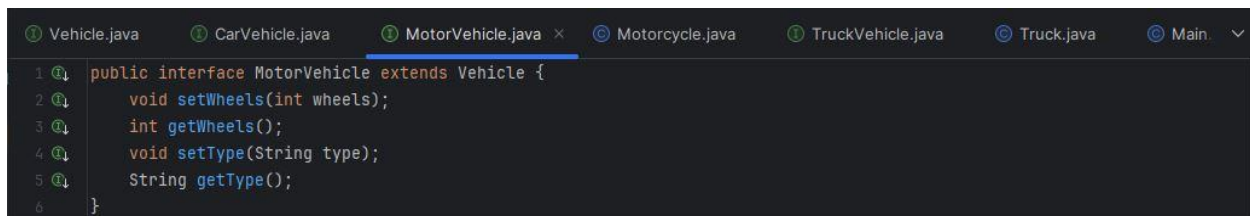
The Vehicle interface defines the common methods that all vehicle types must implement, such as retrieving the make, model, and year of manufacture.

CarVehicle, MotorVehicle and TruckVehicle Interfaces:

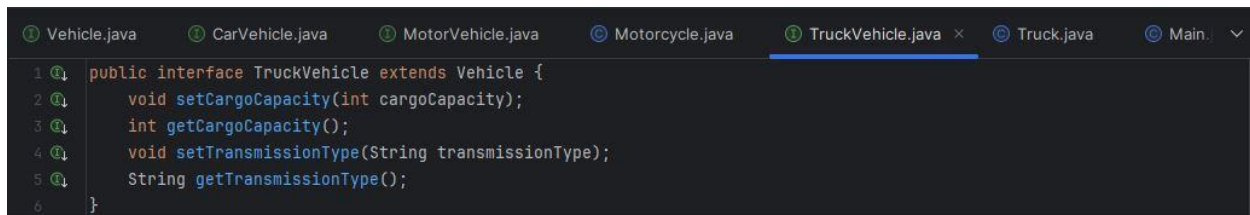
The CarVehicle, MotorVehicle, and TruckVehicle interfaces extend the Vehicle interface and include methods specific to cars, motorcycles, and trucks, respectively. These methods allow for setting and retrieving attributes such as the number of doors, fuel type, number of wheels, type of motorcycle, cargo capacity, and transmission type.



```
1 public interface CarVehicle extends Vehicle {
2     void setDoors(int doors);
3     int getDoors();
4     void setFuelType(String fuelType);
5     String getFuelType();
6 }
```



```
1 public interface MotorVehicle extends Vehicle {
2     void setWheels(int wheels);
3     int getWheels();
4     void setType(String type);
5     String getType();
6 }
```



```
1 public interface TruckVehicle extends Vehicle {
2     void setCargoCapacity(int cargoCapacity);
3     int getCargoCapacity();
4     void setTransmissionType(String transmissionType);
5     String getTransmissionType();
6 }
```

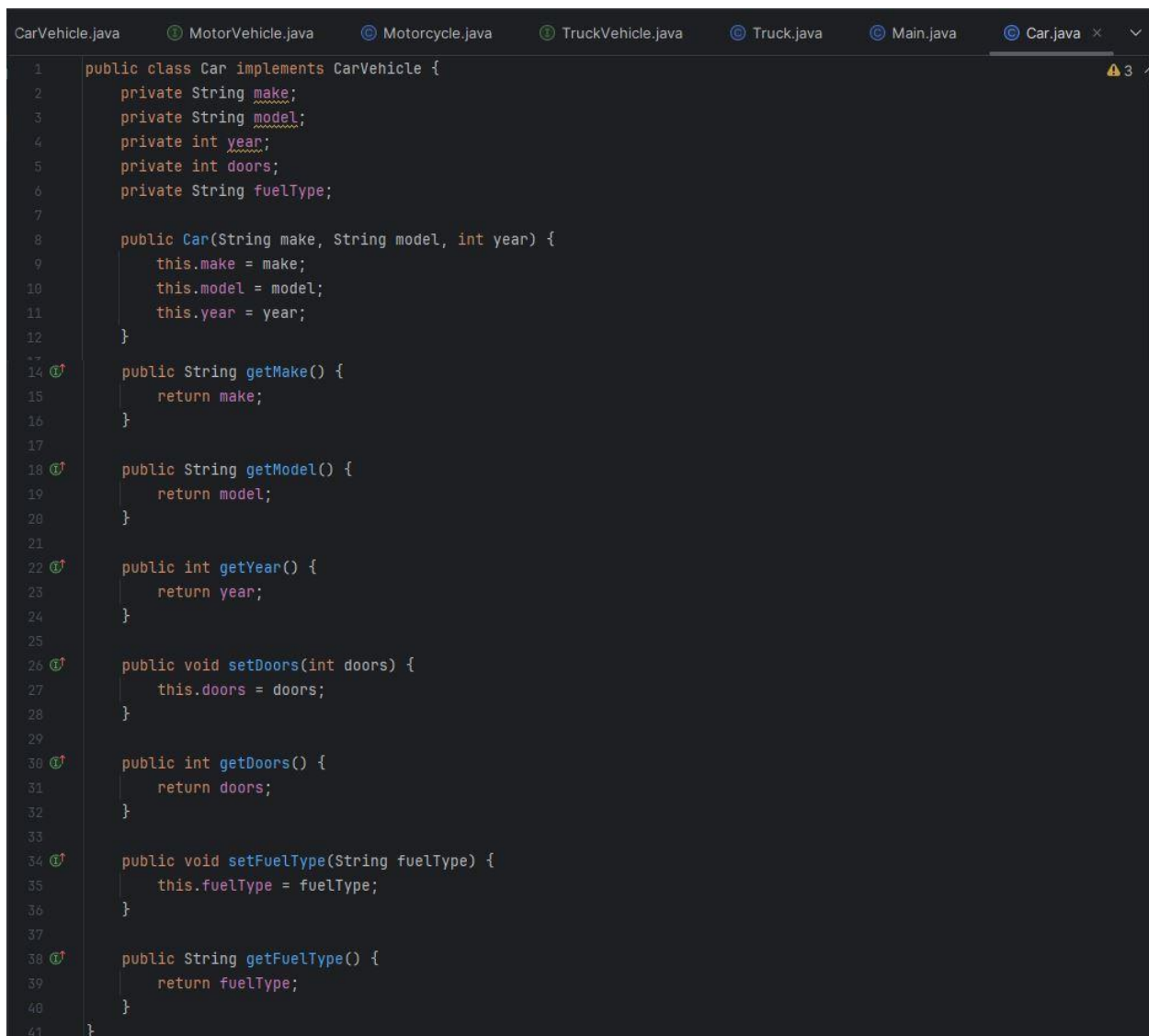
Car, Motorcycle and Truck Classes:

The Car, Motorcycle, and Truck classes implement their respective interfaces, providing the necessary fields and methods to represent and manage each vehicle type. The classes include private fields for the attributes specific to each vehicle type and provide getter and setter methods for these fields.

Car Class:

The Car class implements the CarVehicle interface, which extends the Vehicle interface. This class represents a car and includes private fields for make, model, year, doors, and fuelType. It provides the following methods:

- getMake(), getModel(), and getYear(): These methods retrieve the make, model, and year of manufacture of the car, respectively.
- setDoors(int doors) and getDoors(): These methods set and retrieve the number of doors of the car.
- setFuelType(String fuelType) and getFuelType(): These methods set and retrieve the fuel type (petrol, diesel, or electric) of the car.



```
1 public class Car implements CarVehicle {
2     private String make;
3     private String model;
4     private int year;
5     private int doors;
6     private String fuelType;
7
8     public Car(String make, String model, int year) {
9         this.make = make;
10        this.model = model;
11        this.year = year;
12    }
13
14    public String getMake() {
15        return make;
16    }
17
18    public String getModel() {
19        return model;
20    }
21
22    public int getYear() {
23        return year;
24    }
25
26    public void setDoors(int doors) {
27        this.doors = doors;
28    }
29
30    public int getDoors() {
31        return doors;
32    }
33
34    public void setFuelType(String fuelType) {
35        this.fuelType = fuelType;
36    }
37
38    public String getFuelType() {
39        return fuelType;
40    }
41 }
```

Motorcycle Class:

The Motorcycle class implements the MotorVehicle interface, which extends the Vehicle interface. This class represents a motorcycle and includes private fields for make, model, year, wheels, and type. It provides the following methods:

- `getMake()`, `getModel()`, and `getYear()`: These methods retrieve the make, model, and year of manufacture of the motorcycle, respectively.
- `setWheels(int wheels)` and `getWheels()`: These methods set and retrieve the number of wheels of the motorcycle.
- `setType(String type)` and `getType()`: These methods set and retrieve the type of motorcycle (sport, cruiser, or off-road).

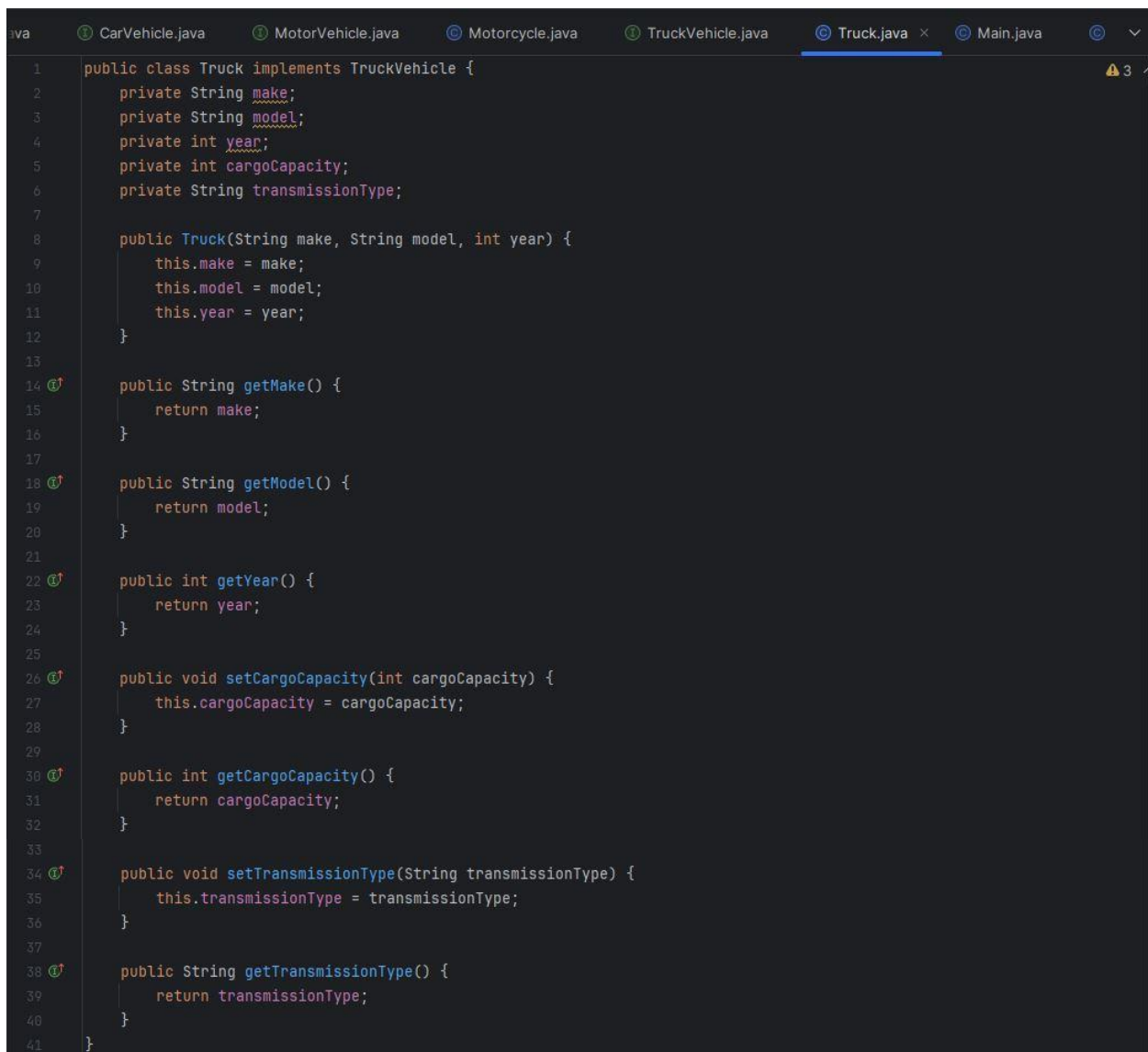
```
1 public class Motorcycle implements MotorVehicle {
2     private String make;
3     private String model;
4     private int year;
5     private int wheels;
6     private String type;
7
8     public Motorcycle(String make, String model, int year) {
9         this.make = make;
10        this.model = model;
11        this.year = year;
12    }
13
14    public String getMake() {
15        return make;
16    }
17
18    public String getModel() {
19        return model;
20    }
21
22    public int getYear() {
23        return year;
24    }
25
26    public void setWheels(int wheels) {
27        this.wheels = wheels;
28    }
29
30    public int getWheels() {
31        return wheels;
32    }
33
34    public void setType(String type) {
35        this.type = type;
36    }
37
38    public String getType() {
39        return type;
40    }
41 }
```

Truck Class:

The Truck class implements the TruckVehicle interface, which extends the Vehicle interface.

This class represents a truck and includes private fields for make, model, year, cargoCapacity, and transmissionType. It provides the following methods:

- getMake(), getModel(), and getYear(): These methods retrieve the make, model, and year of manufacture of the truck, respectively.
- setCargoCapacity(int cargoCapacity) and getCargoCapacity(): These methods set and retrieve the cargo capacity (in tons) of the truck.
- setTransmissionType(String transmissionType) and getTransmissionType(): These methods set and retrieve the transmission type (manual or automatic) of the truck.



```
1 public class Truck implements TruckVehicle {
2     private String make;
3     private String model;
4     private int year;
5     private int cargoCapacity;
6     private String transmissionType;
7
8     public Truck(String make, String model, int year) {
9         this.make = make;
10        this.model = model;
11        this.year = year;
12    }
13
14    public String getMake() {
15        return make;
16    }
17
18    public String getModel() {
19        return model;
20    }
21
22    public int getYear() {
23        return year;
24    }
25
26    public void setCargoCapacity(int cargoCapacity) {
27        this.cargoCapacity = cargoCapacity;
28    }
29
30    public int getCargoCapacity() {
31        return cargoCapacity;
32    }
33
34    public void setTransmissionType(String transmissionType) {
35        this.transmissionType = transmissionType;
36    }
37
38    public String getTransmissionType() {
39        return transmissionType;
40    }
41 }
```

Main Class:

```
CarVehicle.java  MotorVehicle.java  Motorcycle.java  TruckVehicle.java  Truck.java  Main.java x  Car.java v
1  public class Main {
2      public static void main(String[] args) {
3          Car car = new Car("Toyota", "Camry", 2021);
4          car.setDoors(4);
5          car.setFuelType("Petrol");
6
7          Motorcycle motorcycle = new Motorcycle("Yamaha", "YZF-R1", 2020);
8          motorcycle.setWheels(2);
9          motorcycle.setType("Sport");
10
11         Truck truck = new Truck("Ford", "F-150", 2019);
12         truck.setCargoCapacity(3);
13         truck.setTransmissionType("Automatic");
14
15         System.out.println("Car details:");
16         System.out.println("Make: " + car.getMake());
17         System.out.println("Model: " + car.getModel());
18         System.out.println("Year: " + car.getYear());
19         System.out.println("Doors: " + car.getDoors());
20         System.out.println("Fuel type: " + car.getFuelType());
21
22         System.out.println("\nMotorcycle details:");
23         System.out.println("Make: " + motorcycle.getMake());
24         System.out.println("Model: " + motorcycle.getModel());
25         System.out.println("Year: " + motorcycle.getYear());
26         System.out.println("Wheels: " + motorcycle.getWheels());
27         System.out.println("Type: " + motorcycle.getType());
28
29         System.out.println("\nTruck details:");
30         System.out.println("Make: " + truck.getMake());
31         System.out.println("Model: " + truck.getModel());
32         System.out.println("Year: " + truck.getYear());
33         System.out.println("Cargo capacity: " + truck.getCargoCapacity() + " tons");
34         System.out.println("Transmission type: " + truck.getTransmissionType());
35     }
36 }
```

Output:

```
Run  Main x
C:\Program Files\Java\jdk-21.0.2\bin\java.exe -javaagent:C:\Program Files\IntelliJ\ideaIC-2023.3.3.win\lib\idea_rt.jar=57562:C:\Program Files\IntelliJ\ideaIC-2023.3.3.win\bin
Car details:
Make: Toyota
Model: Camry
Year: 2021
Doors: 4
Fuel type: Petrol

Motorcycle details:
Make: Yamaha
Model: YZF-R1
Year: 2020
Wheels: 2
Type: Sport

Truck details:
Make: Ford
Model: F-150
Year: 2019
Cargo capacity: 3 tons
Transmission type: Automatic

Process finished with exit code 0
```