**Abstract Classes**

Below is the code for the abstract classes created in second part of Wednesday evening’s class. This code takes the Vehicle class which was created previously, converts it to an abstract class and sets two of its methods to abstract. Vehicle is again used as the base class for Car with the exception that, now, Car is responsible for implementing the abstract methods created in Vehicle. Car is still used as the base class for SportsCar and the ArrayList of objects is created in Garage.

**package** abstractClass;

**public** **abstract** **class** Vehicle {

**private** String make, model, colour;

**private** **int** maxSpeed;

**public** Vehicle(String make, String model, String colour, **int** maxSpeed) {

**this**.make = make;

**this**.model = model;

**this**.colour = colour;

**this**.maxSpeed = maxSpeed;

}

**public** Vehicle() {

**this**.make = "";

**this**.model = "";

**this**.colour = "";

**this**.maxSpeed = 0;

}

**public** String getMake() {

**return** make;

}

**public** **void** setMake(String make) {

**this**.make = make;

}

**public** String getModel() {

**return** model;

}

**public** **void** setModel(String model) {

**this**.model = model;

}

**public** String getColour() {

**return** colour;

}

**public** **void** setColour(String colour) {

**this**.colour = colour;

}

**public** **int** getMaxSpeed() {

**return** maxSpeed;

}

**public** **void** setMaxSpeed(**int** maxSpeed) {

**this**.maxSpeed = maxSpeed;

}

**public** **abstract** **void** accelerate();

**public** **abstract** **void** brake();

@Override

**public** String toString() {

**return** "Vehicle [make=" + make + ", model=" + model + ", colour=" + colour + ", maxSpeed=" + maxSpeed + "]";

}

}

**package** abstractClass;

**public** **class** Car **extends** Vehicle {

**private** **int** noOfGears;

**public** Car(String make, String model, String colour, **int** maxSpeed, **int** noOfGears) {

**super**(make, model, colour, maxSpeed);

**this**.noOfGears = noOfGears;

}

**public** Car() {

**super**();

**this**.noOfGears = 4;

}

**public** **int** getNoOfGears() {

**return** noOfGears;

}

**public** **void** setNoOfGears(**int** noOfGears) {

**this**.noOfGears = noOfGears;

}

**public** **void** printDesc() {

System.***out***.println("I am a car!");

}

**public** **void** printDesc (Car myCar) {

System.***out***.println("This is me!");

}

@Override

**public** String toString() {

**return** "Car " + **super**.toString() + " [noOfGears=" + noOfGears + "]" ;

}

@Override

**public** **void** accelerate() {

// **TODO** Auto-generated method stub

System.***out***.print("Car accelerate");

}

@Override

**public** **void** brake() {

// **TODO** Auto-generated method stub

System.***out***.print("Car brake");

}

}

**package** abstractClass;

**public** **class** SportsCar **extends** Car {

**private** **boolean** sunRoof;

**public** SportsCar(String make, String model, String colour, **int** maxSpeed, **int** noOfGears, **boolean** sunRoof) {

**super**(make, model, colour, maxSpeed, noOfGears);

**this**.sunRoof = sunRoof;

}

**public** SportsCar() {

**super**();

**this**.sunRoof = **false**;

}

**public** **boolean** isSunRoof() {

**return** sunRoof;

}

**public** **void** setSunRoof(**boolean** sunRoof) {

**this**.sunRoof = sunRoof;

}

@Override

**public** String toString() {

**return** "SportsCar " + **super**.toString() + "[sunRoof=" + sunRoof + "]";

}

}