**Basics through to Inheritance**

Below is the code for the classes created in Wednesday evening’s class. This code looks at simple classes and inheritance, starting with the Vehicle class. Vehicle is used as the base class for Car (single level inheritance) and Car is then used as the base class for SportsCar (multilevel inheritance). The Garage class (which contains main()) creates an ArrayList of objects which can be used, in conjunction with a loop, to print out the details of each vehicle.

**package** intro;

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

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

}

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

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

}

@Override

**public** String toString() {

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

}

}

**package** intro;

**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** accelerate() {

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

}

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

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

}

**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 + "]" ;

}

}

**package** intro;

**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;

}

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

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

}

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

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

}

@Override

**public** String toString() {

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

}

}

**package** intro;

**import** java.util.ArrayList;

**public** **class** Garage {

**public** **static** **void** main(String[] args)

{

//Vehicle myVeh = new Vehicle("Audi", "A3 Sport", "Silver", 160);

//Vehicle myVeh = new Vehicle();

//Car myVeh = new Car("Audi", "A3 Sport", "Silver", 160, 6);

//SportsCar myVeh = new SportsCar("Audi", "A3 Sport", "Silver", 160, 6, false);

/\*myVeh.setMake("Audi");

myVeh.setModel("A3 Sport");

myVeh.setColour("Silver");

myVeh.setMaxSpeed(160);\*/

//System.out.print(myVeh.toString());

ArrayList<Vehicle> myVehs = **new** ArrayList<Vehicle>();

myVehs.add(**new** Vehicle("Audi", "A3 Sport", "Silver", 160));

myVehs.add(**new** Car("BMW", "M3", "Black", 150, 6));

myVehs.add(**new** SportsCar("Ferrari", "812 GTS", "Red", 160, 6, **true**));

myVehs.add(**new** Vehicle("VW", "Golf", "Blue", 110));

//Car myCar = (Car)new SportsCar("Ferrari", "X4", "Red", 160, 6, true);

Car myCar = **new** Car("Ferrari", "812 GTS", "Red", 160, 6);

**for**(**int** i = 0; i < myVehs.size(); i++)

{

System.***out***.println(myVehs.get(i));

myVehs.get(i).accelerate();

System.***out***.println();

myVehs.get(i).brake();

System.***out***.println();

}

//System.out.println("\n\n" + myCar.toString());

myCar.printDesc();

myCar.printDesc();

}

}