Class, Objects and Encapsulation

1. Write a constructor in the Car class given below that initializes the *brand* class field with the string “Ford”.

import java.util.Scanner;

class Car {

    String brand;

    //your constructor here

    public String getBrand() {

        return brand;

    }

    public static void main (String[] args) {

        Car ford = new Car ();

    }

}

Call the getBrand() method in the main method of the class  and store the value of the brand in a variable, and print the value.

public class Car {

    String brand;

    public Car(String brand) {

        this.brand = brand;

    }

    public String getBrand() {

        return brand;

    }

    public static void main(String[] args) {

        Car ford = new Car("Ford");

String brand = ford.getBrand();

      System.out.println(brand);

    }

}

1. Create a class called Student with six data members (roll no, name, marks in English, math, science and total), a constructor that initializes the data members to the values passed to its parameters.
2. Add a function to the Student class created above called calcTotal() that calculates the total of the marks obtained in the three subjects , and a function called display() that displays the details of the student. Create object of the class student and for each objects call the calcTotal() and display() functions

class Student {

    private String name;

    private int roll\_no;

    private double english\_marks;

    private double maths\_marks;

    private double science\_marks;

    private double total\_marks;

    public Student(String name, int roll\_no, double english\_marks, double maths\_marks, double science\_marks) {

        this.name = name;

        this.roll\_no = roll\_no;

        this.english\_marks = english\_marks;

        this.maths\_marks = maths\_marks;

        this.science\_marks = science\_marks;

        this.total\_marks = calcTotal(english\_marks, maths\_marks, science\_marks);

    }

    double calcTotal(double english\_marks, double maths\_marks, double science\_marks) {

        return english\_marks + maths\_marks + science\_marks;

    }

    void display() {

        System.out.println("Name : " + this.name);

        System.out.println("Roll No : " + this.roll\_no);

        System.out.println("English : " + this.english\_marks);

        System.out.println("Maths : " + this.maths\_marks);

        System.out.println("Science : " + this.science\_marks);

        System.out.println("Total : " + this.total\_marks);

    }

    public static void main(String[] args) {

        Student student = new Student(

                "Nayan Raj Khanal", 8, 91, 77, 78);

        student.display();

    }

}

1. Answer the following giving suitable examples.

Can a default member of a class get accessed by

1. Same class

* Yes

public class Car1 {

    String name;

    public String brand;

    protected String model;

    public Car1(String name, String brand, String model) {

        this.name = name;

        this.brand = brand;

        this.model = model;

    }

    void display() {

        System.out.println(name);

    }

}

1. Other class in the same package

* Yes

public class Car1 {

    String name;

    public String brand;

    protected String model;

    private String HP;

    public Car1(String name, String brand, String HP, String model) {

        this.name = name;

        this.HP = HP;

        this.brand = brand;

        this.model = model;

    }

    void display() {

        System.out.println(HP);

        System.out.println(name);

    }

}

class Main {

    Car1 car1 = new Car1("Chiron", "1500HP", "Bugatti", "V8");

    void display(){

        System.out.println(car1.name);

    }

}

1. Class in any other package

* No

package WPS01.AccessModifier.car2;

import WPS01.AccessModifier.car1.car1;

public class Car2 {

    void display() {

        Car1 car1 = new Car1("Chiron", "1500HP", "Bugatti", "V8");

        System.out.println(car1.name);

    }

}

1. The code contains an error, attempt to compile and observe the resulting error.

class Data {

// private variable

private String name;

}

class Main {

public static void main(String[] main){

// create an object of Data

Data d = new Data ();

// access private variable and field from another class

d.name = "Program";

}

Then, fix whatever is wrong with the programs so that you are able to compile and run them.

Note : the class data and main both belong to the same package

package WPS01.Data;

class Data {

    // private variable

    private String name;

    public String getName() {

        return this.name;

    }

    public void setName(String name) {

        this.name = name;

    }

}

class Main {

    public static void main(String[] main) {

        // create an object of Data

        Data d = new Data();

        // access private variable and field from another class

        d.setName("Program");

        System.out.println(d.getName());

    }

}