Lab Report Worksheet 4

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Exercise 1.

Car.java

/\*

 \* A class for car objects, demonstrating the use of methods as behaviours

 \* and variables as properties.

 \*

 \* Ingo Frommholz, October 2011

 \*/

import java.util.Scanner;

// define a class Car

public class Car

{

    /\*

     \* The properties of a car

     \*/

    String model;  // the car model

    String color;  // the car color

    int numOfPassengers; // how many passengers are in the car?

    double amountOfGas;  // the amount of gas

    /\*creating the constructor for 4 parameters for model, color, numOfPassenger and

    amountOfGas of object car.

    \*/

    public Car(String mod, String col, int pass, double gas)

    {

        model = mod;

        color = col;

        numOfPassengers = pass;

        amountOfGas = gas;

    }

    public Car (String mod) {

        model = mod;

        colour = "blue";

    }

    /\*

     \* Initializes the values

     \*/

     /\*now we don’t need initializer because now constructor take now both.

    /\*public void initialize()

    {

        numOfPassengers = 0;

        amountOfGas = 16.5;

    }

    /\*

     \* Sets the amount of gas. This method changes the amount of gas

     \* Property of the object, but does not return anything.

     \*/

    public void setAmountOfGas(double amount) {

        amountOfGas = amount;

    }

    /\*

     \* Gets the current amount of gas. This method returns the current

     \* Amount of gas as a double value.

     \*/

    public double getAmountOfGas()

    {

        return amountOfGas;

    }

    /\*

     \* This adds a passenger to your car.

     \*/

    public void addPassenger() {

        numOfPassengers++;

        // alternatively:

        // numOfPassengers = numOfPassengers + 1;

    }

    /\*

     \* This removes a passenger from your car.

     \*/

    public void removePassenger() {

        numOfPassengers--;

        // alternatively:

        // numOfPassengers = numOfPassengers - 1;

    }

    /\*

     \* This returns the current number of passengers as an integer value.

     \*/

    public int getNumOfPassengers() {

        return numOfPassengers;

    }

    /\*

     \* This returns the model of the car as a String object

     \*/

    public String getModel() {

        return model;

    }

    /\*

     \* This returns the colour of the car as a String object

     \*/

    public String getColour() {

        return colour;

    }

    public static void main (String [] args)

    {

        Scanner sc = new Scanner (System.in);

        System.out.print("Enter Car Model:");

        String model = sc.nextLine();

        System.out.print("Enter Car Color:");

        String color = sc.nextLine();

        System.out.print("Enter Number of Passenger:");

        int numOfPassengers = sc.nextInt();

        System.out.print("Enter Amount of Gas:");

        double amountOfGas = sc.nextDouble();

        sc.close();

        /\*

         \* Create a new Car object.

         \*/

        Car myCar = new Car(model, color, numOfPassengers, amountOfGas);

        //myCar.initialise();

        System.out.println("My car is a " + myCar.getModel()+ " and it is "

         + myCar.getColour() + ".");

        /\*

         \* Get and print the amount of gas

         \*/

        double gasAmount = myCar.getAmountOfGas();

        System.out.println("The current amount of gas is " + gasAmount + ".");

        /\*

         \* Add and print a new passenger

         \*/

        myCar.addPassenger(); // a new passenger

        myCar.addPassenger(); // and another one

        int passengers = myCar.getNumOfPassengers();

        System.out.println("My car carries " + passengers+ " passengers right now.");

        /\*

         \* Refill the tank, print new value

         \*/

        myCar.setAmountOfGas(30); // fill the tank

        gasAmount = myCar.getAmountOfGas();

        System.out.print("I refilled my car! "); // note the use of print()

        System.out.println("Now the current amount of gas is "+gasAmount + ".");

        /\*

         \* Remove one passenger, print updated number of

         \* passengers

         \*/

        myCar.removePassenger(); // 1 passenger stepped off

        passengers = myCar.getNumOfPassengers();

        System.out.println("My car carries "+ passengers+ " passengers right now.");

    }

}

Output:

669cca0d17e200289406c6b698f2f29\redhat.java\jdt\_ws\Worksheet4\_30c36148\bin' 'Car'

Enter Car Model: Nano

Enter Car Color: Red

Enter Number of Passenger:45

Enter Amount of Gas:45.75

My car is a Nano and it is Red.

The current amount of gas is 45.75.

My car carries 47 passengers right now.

I refilled my car! Now the current amount of gas is 30.0.

My car carries 46 passengers right now.

Exercise 2.

StudentGrade.java

import java.util.Scanner;

// define a class StudentGrade

public class StudentGrade {

    //initializes the variable with appropriate datatypes

    String name;

    int studentId;

    int level;

    Scanner sc;

    //define a method with three parameters

    public StudentGrade(String s1, int s2, int s3){

        this.name = s1;

        this.studentId = s2;

        this.level = s3;

    }

    // define method getname and it returns name

    public String getName(){

        return name;

    }

    // define method getStudent and it return student Id

    public int getStudentId() {

        return studentId;

    }

    // define method getlevel and it returns level of student

    public int getLevel(){

        return level;

    }

    // illustrate method average

    public double average(){

        // create an object of scanner class

        Scanner sc = new Scanner(System.in);

        // print the first mark of student

        System.out.println("Enter the first mark:");

        double m1 = sc.nextDouble();

        //disply the second mark of student

        System.out.println("Enter the second mark:");

        double m2 = sc.nextDouble();

        //display the third mark of student

        System.out.println("Enter the third mark:");

        double m3 = sc.nextDouble();

        //display the fourth mark of student

        System.out.println("Enter the fourth mark:");

        double m4 = sc.nextDouble();

        // display the fifth mark of student

        System.out.println("Enter the fifth mark:");

        double m5 = sc.nextDouble();

        // find out the average of five marks

        double average = (m1+m2+m3+m4+m5)/5;

        sc.close();

        return average;// it return average value after calculation

    }

    //illustrate main method

    public static void main (String [] str) {

        // create an object of new scanner class

        Scanner sc = new Scanner(System.in);

       // display the name of student after enter

        System.out.print("Enter Name of Student: ");

        String name = sc.nextLine();

        // display the studentid

        System.out.print("Enter the StudentID: ");

        int studentId = sc.nextInt();

        // display the level of student

        System.out.print("Enter the Student Level: ");

        int level = sc.nextInt();

        // create an object sg with three parameters

        StudentGrade sg = new StudentGrade(name, studentId, level);

        String names = sg.getName();

        int id = sg.getStudentId();

        int levels = sg.getLevel();

        // call method to get average

        double averages = sg.average();

        sc.close();

        //display the name, id, levels and average

        System.out.println(names+" is reading in "+levels+" have student id "+id+" has scored "+averages+".");

    }

}

Output:

Enter Name of Student: Sunil

Enter the StudentID: 45666

Enter the Student Level: 12

Enter the first mark:

76

Enter the second mark:

89

Enter the third mark:

98

Enter the fourth mark:

78

Enter the fifth mark:

89

Sunil is reading in 12 have student id 45666 has scored 86.0.