

CS 1073

FR03A

Assignment #2

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# Section 1

```
/**
 * This class represents a car.
 * @author Ethan McCarthy 3573807
 */
public class Car {

    /**
     * The model of the car (e.g. "Hyundai Accent").
     */
    private String model;

    /**
     * The fuel efficiency of the car (in liters/100 km).
     */
    private double fuelEfficiency;

    /**
     * The amount of gas in the tank (in liters).
     */
    private double tankAmount;

    /**
     * The text that is on the license plate of the car (e.g. "GNB 123").
     */
    private String plateText;

    /**
     * This method constructs a car with the specified model, fuel efficiency,
     * and license plate text. The gas tank is initially empty.
     * @param modelIn the model of the car.
     * @param fuelEfficiencyIn the fuel efficiency of the car (in liters/100 km).
     * @param plateTextIn the license plate text for the car.
     */
    public Car(String modelIn, Double fuelEfficiencyIn, String plateTextIn){
```

```
    model = modelIn;
    fuelEfficiency = fuelEfficiencyIn;
    plateText = plateTextIn;
    tankAmount = 0;
}

/**
 * This method retrieves the model of the car.
 * @return the model of the car.
 */
public String getModel(){
    return model;
}

/**
 * This method retrieves the fuel efficiency of the car.
 * @return the fuel efficiency of the car (in liters/100 km).
 */
public double getFuelEfficiency(){
    return fuelEfficiency;
}

/**
 * This method retrieves the amount of gas in the tank.
 * @return the amount of gas in the tank (in litres).
 */
public double getTankAmount(){
    return tankAmount;
}

/**
 * This method retrieves the license plate text.
 * @return the text that is on the license plate of the car.
 */
public String getPlateText(){
    return plateText;
}
```

```
/**
    This method drives the car for a certain distance, reducing the gas in the
    tank.
    You may assume that the car will never consume more than the available gas
    (you do NOT need to include a check for this in your solution).
    @param distance the distance driven (in km).
    */
public void drive(double distance){
    double gasConsumption = (fuelEfficiency/100) * distance;
    tankAmount -= gasConsumption;
}

/**
    This method adds gas to the tank.
    @param gasAdded the volume of gas added to the tank (in liters).
    */
public void addGas(double gasAdded){
    tankAmount += gasAdded;
}

/**
    This method changes the license plate text.
    @param plateTextIn the text for the new license plate of the car.
    */
public void changePlateText(String plateTextIn){
    plateText = plateTextIn;
}

} //end Car
```

```
/**
 * @author Ethan McCarthy 3573807
 */

public class CarTestDriver{

    public static void main(String[] args){
        Car GTT = new Car("Nissan R34 GTT", 11.76, "G3G 5T5");
        Car Altima = new Car ("Nissan Altima", 9.3, "S2J 8H7");

        //add gas to cars
        GTT.addGas(50);
        Altima.addGas(40);

        //drive both of the cars
        GTT.drive(200);
        Altima.drive(140);

        //change lisencc plate on first car
        GTT.changePlateText("FUN CAR");

        //print information for first car
        System.out.println(GTT.getModel() + ": Information");
        System.out.println("Plate Text: " + GTT.getPlateText());
        System.out.println("Fuel Efficiency: " + GTT.getFuelEfficiency() +
"L/100km");
        System.out.println("Gas In Tank: " + GTT.getTankAmount() + "L" + "\n");

        //print information for second car
        System.out.println(Altima.getModel() + ": Information");
        System.out.println("Plate Text: " + Altima.getPlateText());
        System.out.println("Fuel Efficiency: " + Altima.getFuelEfficiency() +
"L/100km");
        System.out.println("Gas In Tank: " + Altima.getTankAmount() + "L");

    }
}
```

## **Section 2**

Nissan R34 GTT: Information

Plate Text: FUN CAR

Fuel Efficiency: 11.76L/100km

Gas In Tank: 26.48L

Nissan Altima: Information

Plate Text: S2J 8H7

Fuel Efficiency: 9.3L/100km

Gas In Tank: 26.97999999999997L

## Section 3

```
/**
 * @author Ethan McCarthy 3573807
 */

public class Tab{

    //member running the tab
    private String member;

    //seat number of the tab
    private int seatNumber;

    //amount owed on the tab
    private double amountOwed;

    /**
     * constructor method to initialize the variables
     * @param memberIn
     * @param seatNumberIn
     */
    public Tab(String memberIn, int seatNumberIn){
        member = memberIn;
        seatNumber = seatNumberIn;
        amountOwed = 0.00;
    }

    //methods to recieve the information in the constructed variable
    public String getMemberName(){
        return member;
    }

    public int getSeatNumber(){
        return seatNumber;
    }

    public double getAmountOwed(){
        return amountOwed;
    }

    /**
     *method that adds the price of an item to the tab
```

```
    @param itemPrice
    */
    public void buyItem(double itemPrice){
        amountOwed += itemPrice;
    }

    /**
     * method to calculate the tip and output it
     * @param tipPercent
     * @param tip
     */
    public double addTip(double tipPercent){
        double tip;
        tip = (tipPercent/100) * amountOwed;
        return tip;
    }
}
```



```
/**
@author Ethan McCarthy 3573807
*/

public class FriendsMeetup{

    public static void main(String[] args){

        Tab mikesTab = new Tab("Mike Smith", 3);

        mikesTab.buyItem(2.50);

        Tab sarahsTab = new Tab("Sarah Jones", 1);

        sarahsTab.buyItem(2.85);

        Tab jinsTab = new Tab("Jin Chen", 2);

        jinsTab.buyItem(5.50);

        Tab ellasTab = new Tab("Ella Paul", 7);

        ellasTab.buyItem(2.75);
        ellasTab.buyItem(7.50);

        sarahsTab.buyItem(15.50);

        jinsTab.buyItem(12.75);

        mikesTab.buyItem(8.75);
        mikesTab.buyItem(13.45);

        ellasTab.buyItem(4.75);

        System.out.println("Name: " + mikesTab.getMemberName());
        System.out.println("Seat #: " + mikesTab.getSeatNumber());
        System.out.println("Amount Owed: " + mikesTab.getAmountOwed());
        System.out.println();

        System.out.println("Name: " + sarahsTab.getMemberName());
        System.out.println("Seat #: " + sarahsTab.getSeatNumber());
        System.out.println("Amount Owed: " + sarahsTab.getAmountOwed());
        System.out.println();
```

```
System.out.println("Name: " + jinsTab.getMemberName());
System.out.println("Seat #: " + jinsTab.getSeatNumber());
System.out.println("Amount Owed: " + jinsTab.getAmountOwed());
System.out.println();

System.out.println("Name: " + ellasTab.getMemberName());
System.out.println("Seat #: " + ellasTab.getSeatNumber());
System.out.println("Amount Owed: " + ellasTab.getAmountOwed());
System.out.println();

    System.out.println(mikesTab.getMemberName() + "'s Tip amount: " +
mikesTab.addTip(20));
    System.out.println(sarahsTab.getMemberName() + "'s Tip amount: " +
sarahsTab.addTip(18));
    System.out.println(jinsTab.getMemberName() + "'s Tip amount: " +
jinsTab.addTip(16));
    System.out.println(ellasTab.getMemberName() + "'s Tip amount: " +
ellasTab.addTip(16));

}
}
```

## **Section 4**

Name: Mike Smith

Seat #: 3

Amount Owed: 24.7

Name: Sarah Jones

Seat #: 1

Amount Owed: 18.35

Name: Jin Chen

Seat #: 2

Amount Owed: 18.25

Name: Ella Paul

Seat #: 7

Amount Owed: 15.0

Mike Smith's Tip amount: 4.94

Sarah Jones's Tip amount: 3.303

Jin Chen's Tip amount: 2.92

Ella Paul's Tip amount: 2.4