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CS 1073 (FR02A)
Assignment 2
3429069

Section A

Output:

```
car1:
    Model: 2020 Honda Civic LX Automatic
    Fuel Efficiency: 7.1 L/100km
    Gas Left: 34.6312 L
car2:
    Model: 2020 Ford F-150 XLT Automatic
    Fuel Efficiency: 10.7 L/100km
    Gas Left: 75.56384 L
```

Section B

Source Code (Car.java):

```
/**
 This class represents a car.
 @author Isaac Shoebottom (3429069)
*/
public class Car {

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



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

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




  /**
   This method constructs a car with the specified model and fuel
efficiency.
   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).
  */
    public Car(String modelIn, double fuelEfficiencyIn){
        this.model = modelIn;
        this.fuelEfficiency = fuelEfficiencyIn;
        this.tankFilledVolume = 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 getTankVolume(){
        return tankFilledVolume;
    }



  /**
   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 driveCar(double distance){
        tankFilledVolume = tankFilledVolume - ((distance/100) *
fuelEfficiency);
```

```
    }



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



} //end Car
```

Source Code (CarDriver.java):

```
/**
 @author Isaac Shoebottom (3429069)
 **/
public class CarDriver {
    public static void main(String[] args){
        driveCars();
    }

    private static void driveCars(){
        Car car1 = new Car("2020 Honda Civic LX Automatic", 7.1);
        Car car2 = new Car("2020 Ford F-150 XLT Automatic", 10.7);

        car1.addGas(46.9);
        car2.addGas(87.0);

        car1.driveCar(172.8);
```

```
        car2.driveCar(106.88);


        System.out.println("car1:" +
                           "\n    Model: " + car1.getModel() +
                           "\n    Fuel Efficiency: " +
car1.getFuelEfficiency() + " L/100km" +
                           "\n    Gas Left: " + car1.getTankVolume()
+ " L");


        System.out.println("car2:" +
                           "\n    Model: " + car2.getModel() +
                           "\n    Fuel Efficiency: " +
car2.getFuelEfficiency() + " L/100km" +
                           "\n    Gas Left: " + car2.getTankVolume()
+ " L");
    }
}
```

Section C

Output:

```
dawnsTab:
    Name: Dawn MacIsaac
    Room Number: 42
    Amount Owed: $5.85
luigisTab:
    Name: Luigi Benedicenti
    Room Number: 112
    Amount Owed: $20.25
nataliesTab:
    Name: Natalie Webber
    Room Number: 214
    Amount Owed: $15.25
leahsTab:
    Name: Leah Bidlake
```

```
    Room Number: 78
    Amount Owed: $13.0


Leah Bidlake leaves a $2.34 tip
Natalie Webber leaves a $1.95 tip
Dawn MacIsaac leaves a $1.17 tip
Luigi Benedicenti leaves a $4.05 tip
```

Section D

Source Code (ActivityTab.java):

```
/**
@author Isaac Shoebottom (3429069)
 **/
public class ActivityTab {


    //Initialize name in class
    private final String name;


    //Initialize room number in class
    private final int roomNumber;


    //Initialize amount owed
    private double amountOwed;


    /**Make the class to hold the information for the name, room
number and amount owed
     * @param nameIn The name of the person to be put on file
     * @param roomNumberIn The room number the person on file is to be
put in
     * @param amountOwedIn The amount owed when initializing the class
(Always 0.00 as of now, can be changed for modularity)
     */
```

```
    public ActivityTab(String nameIn, int roomNumberIn, double
amountOwedIn){
        this.name = nameIn;
        this.roomNumber = roomNumberIn;
        this.amountOwed = amountOwedIn;
    }

    /**Getter method to get the amount owed
     * @return amountOwed The amount of money the person owes at the
time called
     */
    public double getAmountOwed() {
        return this.amountOwed;
    }

    /**
     * Getter method to get the name of person on tab
     * @return name The name of the person on file
     */
    public String getName(){
        return this.name;
    }

    /**Getter to get the room number of person on tab
     * @return roomNumber The room number of the person on file
     */
    public int getRoomNumber(){
        return this.roomNumber;
    }
```

```
    /**Accumulator to add the amount that the person owes to their
total
     * @param activityPrice The price of the activity
     */
    public void addAmountOwed(double activityPrice){
        this.amountOwed = this.amountOwed + activityPrice;
    }

    /**Calculate the tip with the percentage they wish to use
     * @param percentageAmount The percentage amount (e.g. 18% = 18)
     * @return A double representing the tip the person will pay
     */
    public double processTip(double percentageAmount){
        return (this.amountOwed * (percentageAmount/100));
    }
}
```

Source Code (ComputerScienceRetreat.java):

```
/**
 @author Isaac Shoebottom (3429069)
 **/
public class ComputerScienceRetreat {
    public static void main(String[] args){
        runRetreat();
    }

    private static void runRetreat(){
        ActivityTab dawnsTab = new ActivityTab("Dawn MacIsaac", 42,
0.00);
        dawnsTab.addAmountOwed(3.25);
```

```
        ActivityTab luigisTab = new ActivityTab("Luigi Benedicenti",
112, 0.00);
        luigisTab.addAmountOwed(8.50);


        ActivityTab nataliesTab = new ActivityTab("Natalie Webber",
214, 0.00);
        nataliesTab.addAmountOwed(4.00);
        nataliesTab.addAmountOwed(6.00);


        ActivityTab leahsTab = new ActivityTab("Leah Bidlake", 78,
0.00);
        leahsTab.addAmountOwed(7.75);


        nataliesTab.addAmountOwed(5.25);
        leahsTab.addAmountOwed(5.25);


        luigisTab.addAmountOwed(11.75);


        dawnsTab.addAmountOwed(2.60);


        System.out.println("dawnsTab:" +
                "\n    Name: " + dawnsTab.getName() +
                "\n    Room Number: " + dawnsTab.getRoomNumber() +
                "\n    Amount Owed: $" + dawnsTab.getAmountOwed());


        System.out.println("luigisTab:" +
                "\n    Name: " + luigisTab.getName() +
                "\n    Room Number: " + luigisTab.getRoomNumber() +
                "\n    Amount Owed: $" + luigisTab.getAmountOwed());


        System.out.println("nataliesTab:" +
```

```
                "\n    Name: " + nataliesTab.getName() +
                "\n    Room Number: " + nataliesTab.getRoomNumber() +
                "\n    Amount Owed: $" + nataliesTab.getAmountOwed());


        System.out.println("leahsTab:" +
                "\n    Name: " + leahsTab.getName() +
                "\n    Room Number: " + leahsTab.getRoomNumber() +
                "\n    Amount Owed: $" + leahsTab.getAmountOwed());


        System.out.print("\n");
        System.out.println(leahsTab.getName() +" leaves a $" +
leahsTab.processTip(18) + " tip");
        System.out.println(nataliesTab.getName() + " leaves a $" +
leahsTab.processTip(15) + " tip");
        System.out.println(dawnsTab.getName() + " leaves a $" +
dawnsTab.processTip(20) + " tip");
        System.out.println(luigisTab.getName() + " leaves a $" +
luigisTab.processTip(20) + " tip");
    }
}
```