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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.

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\*/

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");

}

}