CS 1120 – Computer Science II (with Java)

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SOFTWARE LIFE CYCLE REPORT – FOR LAB ASSIGNMENT

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**PHASE 1: SPECIFICATION**

Write a Java application, which can be used to keep track of vehicles (cars, motorcycles, etc.)at a vehicle rental business. Information about the vehicles (including a VIN for each vehicle)will be read in from an input file. Application users shouldbe able to display a list of vehicles owned by the business (with an indication whether a given vehicle is rented or not), as well as rent them (identifying the rented vehicle byitsVINnumber).

**PHASE 2: DESIGN**

Pseudo code

**1.**

Fields: *inputFile, rent*

Constructors: Initialize fields *inputFile, strMotrocycle, rent*

Methods:

Method Menu() Displays the menu and allows you to select *options*

Method ReadFile()Reads the text file line by line storing each into an array of strings

Method: Rent() Asks the user to input the VIN then scans *strCar* and *strMotrocycle* replacing the

Method Calendar() stores current date and the date 7 days from today into *rentDate,* and *returnDate.*

Method Quit() Terminates the program

**2.**

**Class: Vehicle**

Fields: *inputFile, rentDate, returnDate, options, strFile, strTemp, strCar, strMotrocycle, rent*

Constructors: Initialize fields *inputFile, rentDate, returnDate, options, strFile, strTemp, strCar, strMotrocycle, rent*

Methods:

Method Menu() Displays the menu and allows you to select *options*

Method ReadFile()Reads the text file line by line storing each into an array of strings

Repeat following methods for length of file{

Method Split() Takes each line of a string array element and splits it into a new array strings separated by commas stored into *strTemp*. Replaces first with "no"

Method Sort() Sorts strings by length into *strCar* and *strMotrocycle*

string arrays

Method: Rent() Asks the user to input the VIN then scans *strCar* and *strMotrocycle* replacing the

Method Calendar() stores current date and the date 7 days from today into *rentDate,* and *returnDate.*

Method Quit() Terminates the program

**Class: Car**

Fields: *strCar*

Constructors: initialize *strCar*

Methods:

Method displayCar() Displays the fields passed from vehicles to car.

**Class: Motorcycle**

Fields: strMotorcycle

Constructors: Initialize *strCar*

Methods:

Method displayMotorcyle() Displays the fields passed from vehicle to motorcycle.

**3.**

**Class: Vehicle**

Fields: *options, strFile,* *strVehicles, strSort, VIN*

Constructors: Initialize fields

Methods:

Method Menu() Displays the menu and allows you to select *options*

Method ReadFile()Reads the text file line by line storing each into an array of strings

Repeat following methods for length of file{

Method Split() Takes each line of a string array element and splits it into a new array strings separated by commas

Method Sort() Sorts strings by "M" and "C" and passes them to Cars and Motorcycles

string arrays

Method: Rent() Asks the user to input the VIN then scans *strCar* and *strMotrocycle* replacing the

Method loop() repeats the program unless terminating condition is met

**Class: Car**

Fields: *strCar, rentDate*

Constructors: initialize *strCar, rentDate*

Methods:

Method displayCar() Displays the fields passed from vehicles to car. If rented Equals "yes" displays pickup and return dates

**Class: Motorcycle**

Fields: *strMotorcycle, rentDate*

Constructors: Initialize *strMotorcycle, rentDate*

Methods:

Method displayMotorcyle() Displays the fields passed from vehicle to motorcycle. If rented Equals "yes" displays pickup and return dates

**PHASE 3: RISK ANALYSIS**

No risks (to timetable, cost, human health, etc.) are identified by me.

**PHASE 4: VERIFICATION**

The algorithm works as long as the user inputs the values properly

**PHASE 5: CODING**

**public** **class** Vehicle {

**public** **static** **void** main(String[] args) **throws** IOException {

Scanner kb = **new** Scanner(System.*in*);

**int** options = 0,i;

String strFile="",VIN="";

String[] strVehicles,strSort;

Car c1;

Motorcycle m1;

// Reads the File into a String

File inFile = **new** File("vehicles.txt");

Scanner inputFile = **new** Scanner(inFile);

inputFile.nextLine();

**while** (inputFile.hasNextLine()) {

strFile = strFile +"@"+ inputFile.nextLine();

}

inputFile.close();

strFile = strFile.replaceAll("@C", "@C,No");

strFile = strFile.replaceAll("@M", "@M,No");

//Loops the program until user inputs 3

**while**(options != 3){

strVehicles = strFile.split("@");

System.*out*.printf("\n---Menu---\n1) Display Vehicles\n2) Rent a Vehicle\n3) Quit\n");

options = kb.nextInt();

// Displays all of the Vehicles

**if**(options == 1){

**for**(i=2;i<strVehicles.length;i++){

strSort = strVehicles[i].split(",");

**if**(strSort[0].equalsIgnoreCase("C")){

c1 = **new** Car(strVehicles[i]);

c1.Display();

}

**if**(strSort[0].equalsIgnoreCase("M")){

m1 = **new** Motorcycle(strVehicles[i]);

m1.Display();

}

}

// allows the user to rent a Vehicle then prints dates for rented Vehicle

}**else** **if**(options == 2){

System.*out*.printf("Enter the call number: ");

kb.nextLine();

VIN = kb.next();

strFile = strFile.replace("No,"+VIN.trim(),"Yes,"+VIN.trim());

strVehicles = strFile.split("@");

**for**(i=2;i<strVehicles.length;i++){

strSort = strVehicles[i].split(",");

**if**(strSort[2].equalsIgnoreCase(VIN)){

**if**(strSort[0].equalsIgnoreCase("C")){

c1 = **new** Car(strVehicles[i]);

c1.Display();

}

**if**(strSort[0].equalsIgnoreCase("M")){

m1 = **new** Motorcycle(strVehicles[i]);

m1.Display();

}}}}}}

public class Motorcycle extends Vehicle{

private String strMotorcycle;

public Motorcycle(){

this.strMotorcycle = "";

}

// passes element of Vehicle string to Motorcycle

public Motorcycle(String Motorcycle){

this.strMotorcycle = Motorcycle;

}

@SuppressWarnings("deprecation")

public void Display(){

String[] motorcycles;

int rent;

GregorianCalendar Pick = new GregorianCalendar();

Date rDate;

rDate = Pick.getTime();

rent = rDate.getDate();

motorcycles = strMotorcycle.split(",");

//Displays Motorcycle info

System.out.printf("\nRented: %s\nVIN Number: %s\nMotorcycle Make: %s\nMotorcycle Model: %s\nMotorcycle Year: %s\nCC: %s\n",motorcycles[1],motorcycles[2],motorcycles[3],motorcycles[4],motorcycles[ 5],motorcycles[6]);

if(motorcycles[1].equalsIgnoreCase("Yes")){

System.out.println("Pickup Date: " + rDate);

rDate.setDate(rent+7);

System.out.println("Return Date: " + rDate);

}}}

public class Car extends Vehicle{

private String strCar;

public Car(){

this.strCar = "";

}

// passes element of Vehicle string to Cars

public Car(String Cars){

this.strCar = Cars;

}

public void Display(){

String[] cars;

int rent;

GregorianCalendar Pick = new GregorianCalendar();

Date rDate;

rDate = Pick.getTime();

rent = rDate.getDate();

cars = strCar.split(",");

// Displays Car info

System.out.printf("\nRented: %s\nVIN Number: %s\nCar Make: %s\nCar Model: %s\nCar Year: %s\n",cars[1],cars[2],cars[3],cars[4],cars[5]);

if(cars[1].equalsIgnoreCase("Yes")){

System.out.println("Pickup Date: " + rDate);

rDate.setDate(rent+7);

System.out.println("Return Date: " + rDate);

}}}

**PHASE 6: TESTING**

---Menu---

1) Display Vehicles

2) Rent a Vehicle

3) Quit

1

Rented: No

VIN Number: INS124HANTISHSNI

Motorcycle Make: Harley Davidson

Motorcycle Model: Electra Glide

Motorcycle Year: 2014

CC: 250

Rented: No

VIN Number: JH12CDEI45KBOGMS

Motorcycle Make: Harley Davidson

Motorcycle Model: Heritage Softail Classic

Motorcycle Year: 2010

CC: 500

Rented: No

VIN Number: IHN67NSDM45324KM

Car Make: Honda

Car Model: Accord

Car Year: 2011

---Menu---

1) Display Vehicles

2) Rent a Vehicle

3) Quit

2

Enter the call number: JH12CDEI45KBOGMS

Rented: Yes

VIN Number: JH12CDEI45KBOGMS

Motorcycle Make: Harley Davidson

Motorcycle Model: Heritage Softail Classic

Motorcycle Year: 2010

CC: 500

Pickup Date: Wed Feb 19 16:40:48 EST 2014

Return Date: Wed Feb 26 16:40:48 EST 2014

---Menu---

1) Display Vehicles

2) Rent a Vehicle

3) Quit

1

Rented: No

VIN Number: INS124HANTISHSNI

Motorcycle Make: Harley Davidson

Motorcycle Model: Electra Glide

Motorcycle Year: 2014

CC: 250

Rented: Yes

VIN Number: JH12CDEI45KBOGMS

Motorcycle Make: Harley Davidson

Motorcycle Model: Heritage Softail Classic

Motorcycle Year: 2010

CC: 500

Pickup Date: Wed Feb 19 16:41:19 EST 2014

Return Date: Wed Feb 26 16:41:19 EST 2014

Rented: No

VIN Number: IHN67NSDM45324KM

Car Make: Honda

Car Model: Accord

Car Year: 2011

---Menu---

1) Display Vehicles

2) Rent a Vehicle

3) Quit

**PHASE 7: REFINING THE PROGRAM**

No refinements are needed. In this program, I have already included all required features.

**PHASE 8: PRODUCTION**

I prepared a copy of the entire program for Lab TA’s evaluation, as specified by the TA. Then, I sent

electronically the copy to the Lab TA.

**PHASE 9: MAINTENANCE**

To fully benefit from the program evaluation feedback received from the Lab TA, I will perform program

maintenance. This means that I should use all TAs feedback to improve my program.