

**Informatics Institute of Technology**

Department of Computing   
(B.Sc.) in Computer Science

**Module: 5COSC007C.1 Object Oriented Programming**

**Coursework 1**

**Phase 1**

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# Code

## Add a new vehicle

@Override  
 **public void** addVehicle(){  
  
 ConnectionClass connectionclass = **new** ConnectionClass();  
 Connection connection = connectionclass.getConnection();  
  
 Scanner scanner = **new** Scanner(System.***in***);  
  
 *//Checking if the space if available* System.***out***.print(**"\n"** +  
 **"Select vehicle type"** +  
 **"\n"** +  
 **"1. Car \n"** +  
 **"2. Motorbike \n"** +  
 **"Choose: "**);  
 **while** (!scanner.hasNextInt()){  
 System.***out***.println(**"Invalid Data Type!!!"**);  
 scanner.next();  
 System.***out***.print(**"Select vehicle type"** +  
 **"\n"** +  
 **"1. Car \n"** +  
 **"2. Motorbike \n"**+  
 **"Choose: "**);  
 }  
 **int** optionVehicle = scanner.nextInt();  
  
 **if** (optionVehicle==1) {  
 **int** totalVehicles=0;  
 **try** {  
 Statement statement = connection.createStatement();  
  
 String query = **"select count(\*) from vehicles"**;  
 PreparedStatement preparedStatement = connection.prepareStatement(query);  
 ResultSet resultSet = preparedStatement.executeQuery();  
 **while** (resultSet.next()){  
 totalVehicles=resultSet.getInt(1);  
 }  
 System.***out***.println((50-totalVehicles)+ **" spaces left in the park."**);  
  
 Scanner carOptionScanner = **new** Scanner(System.***in***);  
 **if** (totalVehicles<50) {  
 *//Input car plate number* System.***out***.print(**"Please enter the plate number (ABC-1234): "**);  
 String carPlateNumber = carOptionScanner.nextLine();  
  
 *//Input car make* System.***out***.print(**"Please enter the make: "**);  
 String carMake = carOptionScanner.nextLine();  
  
 *//Input number of car doors* System.***out***.print(**"Please Enter the number of doors: "**);  
 **while** (!carOptionScanner.hasNextInt()) {  
 System.***out***.println(**"Invalid Data Type !!!"**);  
 carOptionScanner.nextLine();  
 System.***out***.print(**"Please enter the number of doors: "**);  
 }  
 **int** numberOfCarDoors = carOptionScanner.nextInt();  
 carOptionScanner.nextLine();  
  
 *//Input the fuel type* System.***out***.print(**"Please enter the fuel type (92 or 95): "**);  
*// while(!(carOptionScanner.equals("95") || carOptionScanner.equals("92"))){  
// System.out.println("Insert the correct fuel type!!!");  
// carOptionScanner.next();  
// System.out.print("Please enter the fuel type: ");  
// }* String carFuelType = carOptionScanner.nextLine();  
  
 **carExtend**.setVehiclePlateNumber(carPlateNumber);  
 **carExtend**.setVehicleMake(carMake);  
 **carExtend**.setNumberOfDoors(numberOfCarDoors);  
 **carExtend**.setFuelType(carFuelType);  
  
 String databaseVehiclePlateNumber = **carExtend**.getVehiclePlateNumber();  
 String databaseCarMake = **carExtend**.getVehicleMake();  
 **int** databaseNumberOfDoors = **carExtend**.getNumberOfDoors();  
 String databaseFuelType = **carExtend**.getFuelType();  
  
 String sql = **"insert into vehicles"** + **"(VehicleType, VehiclePlateNumber, VehicleMake, NumberOfDoors, FuelType)"** + **"values('"** + **"Car"** + **"','"** + databaseVehiclePlateNumber + **"','"** + databaseCarMake + **"','"** + databaseNumberOfDoors + **"','"** + databaseFuelType + **"')"**;  
 statement.executeUpdate(sql);  
 }**else** {  
 System.***out***.println(**"Parking is full!"**);  
 }  
 }**catch** (Exception exc){  
 exc.printStackTrace();  
 }  
 }  
  
 **else if**(optionVehicle==2) {  
  
 **try** {  
 Statement statement = connection.createStatement();  
  
 **int** totalVehicles=0;  
 String query = **"select count(\*) from vehicles"**;  
 PreparedStatement preparedStatement = connection.prepareStatement(query);  
 ResultSet resultSet = preparedStatement.executeQuery();  
 **while** (resultSet.next()){  
 totalVehicles=resultSet.getInt(1);  
 }  
 System.***out***.println((50-totalVehicles)+ **" spaces left in the park."**);  
  
  
 Scanner motorbikeOptionScanner = **new** Scanner(System.***in***);  
 **if**(totalVehicles<50) {  
 *//Input bike number plate* System.***out***.print(**"Please enter plate number: "**);  
 String motorbikeNumber = motorbikeOptionScanner.nextLine();  
  
 *//Input bike make* System.***out***.print(**"Please enter make: "**);  
 String motorbikeMake = motorbikeOptionScanner.nextLine();  
  
 *//Input the number of helmets* System.***out***.print(**"Please enter the number of helmets: "**);  
 **while** (!motorbikeOptionScanner.hasNextInt()) {  
 System.***out***.println(**"Invalid Data type"**);  
 motorbikeOptionScanner.next();  
 System.***out***.print(**"Please enter the number of helmets: "**);  
 }  
 **int** bikeNumberOfHelmets = motorbikeOptionScanner.nextInt();  
  
 *//Input the helmet size* System.***out***.print(**"Please enter the helmet size: "**);  
 **while** (!motorbikeOptionScanner.hasNextDouble()) {  
 System.***out***.println(**"Invalid Data type"**);  
 motorbikeOptionScanner.next();  
 System.***out***.print(**"Please enter the helmet size: "**);  
 }  
 **double** bikeHelmetSize = motorbikeOptionScanner.nextDouble();  
  
 **motobikeExtend**.setVehiclePlateNumber(motorbikeNumber);  
 **motobikeExtend**.setVehicleMake(motorbikeMake);  
 **motobikeExtend**.setHelmetSize(bikeHelmetSize);  
 **motobikeExtend**.setNumberOfHelmets(bikeNumberOfHelmets);  
  
 String databaseVMotorbikePlateNumber = **motobikeExtend**.getVehiclePlateNumber();  
 String databaseMotorBikeMake = **motobikeExtend**.getVehicleMake();  
 **int** databaseNumberOfHelmets = **motobikeExtend**.getNumberOfHelmets();  
 **double** databaseHelmetSize = **motobikeExtend**.getHelmetSize();  
  
 String sql = **"insert into vehicles"** + **"(VehicleType, VehiclePlateNumber, VehicleMake, NumberOfHelmets, HelmetSize)"** + **"values('"** + **"Motorbike"** + **"','"** + databaseVMotorbikePlateNumber + **"','"** + databaseMotorBikeMake + **"','"** + databaseNumberOfHelmets + **"','"** + databaseHelmetSize + **"')"**;  
 statement.executeUpdate(sql);  
  
 }**else**{  
 System.***out***.println(**"Parking is full!"**);  
 }  
 }**catch** (Exception exc){  
 exc.printStackTrace();  
 }  
 }  
 **else** {  
 System.***out***.println(**"Invalid vehicle option!!! "**);  
 }  
 }

## Delete a vehicle

@Override  
**public void** deleteVehicle() {  
  
 ConnectionClass connectionclass = **new** ConnectionClass();  
 Connection connection = connectionclass.getConnection();  
  
 **int** totalVehicles = 0;  
  
 **try** {  
 Statement statement = connection.createStatement();  
  
  
 Scanner deleteVehicleScanner = **new** Scanner(System.***in***);  
  
 System.***out***.print(**"Please enter the plate number of the vehicle that you want to remove: "**);  
 String deleteplateNumber = deleteVehicleScanner.nextLine();  
  
 String validate = **"select \* from vehicles where VehiclePlateNumber = '"** + deleteplateNumber + **"'"**;  
  
 ResultSet validReasultSet = statement.executeQuery(validate);  
  
 **while** (!validReasultSet.next()){  
 System.***out***.println(**"Vehicle does now exist. Try Again!"**);  
 System.***out***.print(**"Please enter the plate number of the vehicle that you want to remove: "**);  
 deleteplateNumber = deleteVehicleScanner.nextLine();  
 validate = **"select \* from vehicles where VehiclePlateNumber = '"** + deleteplateNumber + **"'"**;  
 validReasultSet= statement.executeQuery(validate);  
 }  
 ResultSet type = statement.executeQuery(**"select VehicleType from vehicles where VehiclePlateNumber = '"** + deleteplateNumber + **"'"**);  
 **if**(type.next()){  
 System.***out***.println(**"Deletion completed. You deleted"**);  
 }  
 String deleteEntry = **"delete from vehicles where VehiclePlateNumber = '"** + deleteplateNumber+**"'"**;  
 statement.executeUpdate(deleteEntry);  
 String query = **"select count(\*) from vehicles"**;  
 PreparedStatement preparedStatementDelete = connection.prepareStatement(query);  
 ResultSet resultSetDelete = preparedStatementDelete.executeQuery();  
 **while** (resultSetDelete.next()) {  
 totalVehicles = resultSetDelete.getInt(1);  
 }  
 System.***out***.println((1000-totalVehicles) + **" spaces are left."**);  
  
 }**catch** (Exception exc){  
 exc.printStackTrace();  
 }  
}

## Print the list of vehicles

@Override  
**public void** printVehicle() {  
  
 ConnectionClass connectionclass = **new** ConnectionClass();  
 Connection connection = connectionclass.getConnection();  
  
 **try** {  
  
 Statement statement = connection.createStatement();  
  
 ResultSet resultSetPrintData = statement.executeQuery(**"select \* from vehicles order by VehicleMake asc"**);  
 System.***out***.println(**""**);  
 System.***out***.format(**"\_%1$-20s\_%2$-20s\_%3$-20s\n"**, **"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**, **"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**, **"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**);  
  
  
 System.***out***.format(**"|%1$-20s|%2$-20s|%3$-20s|\n"**, **" VEHICLE TYPE"**, **" PLATE NUMBER"**, **" MAKE "**);  
  
 System.***out***.format(**"\_%1$-20s\_%2$-20s\_%3$-20s\n"**, **"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**, **"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**, **"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**);  
 System.***out***.format(**"%1$-20s%2$-20s%3$-20s\n"**, **""**, **""**, **""**);  
  
 **while** (resultSetPrintData.next()){  
 System.***out***.format(**"|%1$-20s|%2$-20s|%3$-20s|\n"**,**" "**+resultSetPrintData.getString(1) ,**" "**+resultSetPrintData.getString(2) ,**" "**+resultSetPrintData.getString(3));  
 System.***out***.println(**""**);  
 }  
 }**catch** (Exception exc){  
 exc.printStackTrace();  
 }  
}

## Write/ save

@Override  
**public void** save() {  
 ConnectionClass connectionclass = **new** ConnectionClass();  
 Connection connection = connectionclass.getConnection();  
  
 **try** {  
 Statement statement = connection.createStatement();  
  
 ResultSet resultSet = statement.executeQuery(**"select \* from vehicles"**);  
  
 File file = **new** File(**"VehicleLst.txt"**);  
 **if** (!file.exists()){ *//checking for existing files.* file.createNewFile();  
 }  
  
 PrintWriter printWriter = **new** PrintWriter(file);  
 printWriter.println(**" Report"**);  
 printWriter.println(**" "**);  
  
 System.***out***.println(**""**);  
 System.***out***.format(**"|%1$-25s|%2$-25s|%3$-25s|%4$-35s|%5$-25s|%6$-25s|%7$-25s|%8$-25s|\n"**,**"Vehicle Type"**,**"Vehicle Plate Number"**,**"Vehicle Make"**,**"Price Per KM"**,**"Number of Doors"**, **"Fuel Type"**, **"Number Of Helmets"**, **"Helmet Size"**);  
 System.***out***.format(**"\_%1$-25s\_%2$-25s\_%3$-25s\_%4$-25s\_%5$-25s\_%6$-25s\_%7$-25s\_%8$-25s\n"**,**"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**,**"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**,**"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**,**"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**,**"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**,**"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**,**"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**,**"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**);  
 System.***out***.format(**"%1$-25s%2$-25s%3$-25s%4$-25s%5$-25s%6$-25s%7$-25s%8$-25s\n"**,**""**,**""**,**""**,**""**,**""**,**""**,**""**,**""**);  
  
 **while** (resultSet.next()){  
 System.***out***.format(**"|%1$-25s|%2$-25s|%3$-25s|%4$-25s||%5$-25s|%6$-25s|%7$-25s|%8$-25s|\n"**,**" "**+resultSet.getString(1) ,**" "**+resultSet.getString(2) ,**" "**+resultSet.getString(3),**" "**+resultSet.getDouble(4),**" "**+resultSet.getInt(5),**" "**+resultSet.getString(6),**" "**+resultSet.getInt(7),**" "**+resultSet.getInt(8) );  
 printWriter.println(**"Vehicle Type: "**+resultSet.getString(1));*// printing in the file* printWriter.println(**"Vehicle Plate Number: "**+resultSet.getString(2) );  
 printWriter.println(**"Vehicle Make: "**+resultSet.getString(3));  
 printWriter.println(**"Price Per KM: "**+resultSet.getDouble(4));  
 printWriter.println(**"Number of Doors: "**+resultSet.getInt(5));*// printing in the file* printWriter.println(**"Fuel Type: "**+resultSet.getString(6) );  
 printWriter.println(**"Number of Helmets: "**+resultSet.getInt(7));  
 printWriter.println(**"Helmet Size: "**+resultSet.getInt(8));  
 printWriter.println(**"\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_"**);  
 }  
 printWriter.close();  
 }**catch** (Exception exc){  
 exc.printStackTrace();  
 }  
}

## Main method

**public static void** main(String[] args) {  
  
 WestminsterRentalManager rent = **new** WestminsterRentalManager();  
 Scanner mainMenuScanner = **new** Scanner(System.***in***);  
  
 **int** menuOption=0;  
 **while** (menuOption!=6){  
 System.***out***.println(**" \n"** +  
 **" \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \n"** +  
 **" Welcome to the Westminster Rental Vehicle Manager \n"** +  
 **" ---------------------------------------------- \n"** +  
 **"\n"** +  
 **"1. Add Vehicle \n"** +  
 **"2. Delete Vehicle \n"** +  
 **"3. Print Vehicle List \n"** +  
 **"4. Open the Console \n"** +  
 **"5. Save vehicle list\n"**+  
 **"6. Exit the programme \n"** +  
 **"\n"**);  
  
 System.***out***.print(**"Choose an option: "**);  
 **while** (!mainMenuScanner.hasNextInt()){  
 String wrongdatatype = mainMenuScanner.next();  
 System.***out***.println( wrongdatatype + **" is an invalid data type!!"**);  
 System.***out***.print(**"Choose an option: "**);  
 }  
  
 menuOption = mainMenuScanner.nextInt();  
 **switch** (menuOption){  
 **case** 1:  
 rent.addVehicle();  
 **break**;  
 **case** 2:  
 rent.deleteVehicle();  
 **break**;  
 **case** 3:  
 rent.printVehicle();  
 **break**;  
 **case** 4:  
 *//open the console* **break**;  
 **case** 5:  
 rent.save();  
 **break**;  
 **case** 6:  
 System.***out***.println(**"------->> Programme End <<--------"**);  
 System.*exit*(0);  
 **default**:  
 System.***out***.println(**"Please the choose the correct option!!"**);  
 }  
 }  
}