| NAME | RAJ SANJAY JADHAV |
| --- | --- |
| CLASS | BE-3-CSE |
| BATCH | B |
| ROLL NO | 512024 |
| PRN | 2019033800129402 |

**PRACTICAL-5**

**GIT REPOSITORY :** [**PRACTICAL-5**](https://github.com/Rajjadhav1710/.NET_Practical/tree/main/Practical-5)

**GENERICS**

**CODE:**

**using System;**

**class Vehicle{**

**string rentType;//'/km'OR'/day'**

**double rentPerUnit;**

**int age;//in years**

**public string vehicleNumber;**

**DateTime lastMaintenanceDate;**

**public Vehicle(string rentType,double rentPerUnit,int age,string vehicleNumber,DateTime lastMaintenanceDate){**

**this.rentType=rentType;**

**this.rentPerUnit=rentPerUnit;**

**this.age=age;**

**this.vehicleNumber=vehicleNumber;**

**this.lastMaintenanceDate=lastMaintenanceDate;**

**}**

**public string getRentType(){**

**return this.rentType;**

**}**

**public double getRentPerUnit(){**

**return this.rentPerUnit;**

**}**

**public override string ToString(){**

**return "Rent Type:"+this.rentType+"\nRent Per Unit:"+this.rentPerUnit+"\nAge:"+this.age+"\nyears Vehicle Number:"+this.vehicleNumber+"\nLast Maintenance Date:"+this.lastMaintenanceDate.ToString("dd/MM/yyyy")+"\n";**

**}**

**public void printVehicleData(){**

**Console.WriteLine("Rent Type:"+this.rentType+"\nRent Per Unit:"+this.rentPerUnit+"\nAge:"+this.age+"years \nVehicle Number:"+this.vehicleNumber+"\nLast Maintenance Date:"+this.lastMaintenanceDate.ToString("dd/MM/yyyy")+"\n");**

**}**

**}**

**class Indica : Vehicle {**

**string fuelType;**

**int seater;**

**public Indica(string rentType,double rentPerUnit,int age,string vehicleNumber,DateTime lastMaintenanceDate,int seater,string fuelType):base(rentType,rentPerUnit,age,vehicleNumber,lastMaintenanceDate){**

**this.fuelType=fuelType;**

**this.seater=seater;**

**}**

**}**

**class Qualis : Vehicle {**

**string fuelType;**

**int seater;**

**public Qualis(string rentType,double rentPerUnit,int age,string vehicleNumber,DateTime lastMaintenanceDate,int seater,string fuelType):base(rentType,rentPerUnit,age,vehicleNumber,lastMaintenanceDate){**

**this.fuelType=fuelType;**

**this.seater=seater;**

**}**

**}**

**class Davidharley : Vehicle {**

**public Davidharley(string rentType,double rentPerUnit,int age,string vehicleNumber,DateTime lastMaintenanceDate,int seater=1,string fuelType=""):base(rentType,rentPerUnit,age,vehicleNumber,lastMaintenanceDate){**

**}**

**}**

**class MBenzEclass : Vehicle {**

**int seater;**

**public MBenzEclass(string rentType,double rentPerUnit,int age,string vehicleNumber,DateTime lastMaintenanceDate,int seater,string fuelType=""):base(rentType,rentPerUnit,age,vehicleNumber,lastMaintenanceDate){**

**this.seater=seater;**

**}**

**}**

**class RentedVehicle<T> where T : Vehicle{**

**public DateTime startDateOfRent;**

**public DateTime endDateOfRent;**

**double noOfKmsTravelled;//approximately**

**double advancePayment;**

**public bool isBooked;**

**public T myVehicle;**

**public RentedVehicle(string rentType,double rentPerUnit,int age,string vehicleNumber,DateTime lastMaintenanceDate,int seater=1,string fuelType=""){**

**this.myVehicle = (T)Activator.CreateInstance(typeof(T), new object[] { rentType,rentPerUnit,age,vehicleNumber,lastMaintenanceDate,seater,fuelType });**

**this.isBooked=false;**

**}**

**public void giveForRent(DateTime startDateOfRent,DateTime endDateOfRent,double noOfKmsTravelled,double advancePayment){**

**this.startDateOfRent=startDateOfRent;**

**this.endDateOfRent=endDateOfRent;**

**this.noOfKmsTravelled=noOfKmsTravelled;**

**this.advancePayment=advancePayment;**

**this.isBooked=true;**

**}**

**public double calculateRent(){**

**if(this.myVehicle.getRentType()=="/km"){**

**return (this.noOfKmsTravelled\*myVehicle.getRentPerUnit())-this.advancePayment;**

**}else if(this.myVehicle.getRentType()=="/day"){**

**return (((this.endDateOfRent-this.startDateOfRent).TotalDays)\*myVehicle.getRentPerUnit())-this.advancePayment;**

**}**

**return 0;**

**}**

**}**

**class Owner{**

**List<RentedVehicle<Indica>> indicaList = new List<RentedVehicle<Indica>>();**

**List<RentedVehicle<Qualis>> qualisList = new List<RentedVehicle<Qualis>>();**

**List<RentedVehicle<Davidharley>> davidharleyList = new List<RentedVehicle<Davidharley>>();**

**List<RentedVehicle<MBenzEclass>> mbenzEclassList = new List<RentedVehicle<MBenzEclass>>();**

**public Owner(){**

**//4 indica**

**this.indicaList.Add(new RentedVehicle<Indica>("/day",500,1,"GJ1",new DateTime(2021,1,1),6,"diesel"));**

**this.indicaList.Add(new RentedVehicle<Indica>("/day",400,2,"GJ2",new DateTime(2020,1,1),6,"petrol"));**

**this.indicaList.Add(new RentedVehicle<Indica>("/day",300,3,"GJ3",new DateTime(2019,1,1),6,"diesel"));**

**this.indicaList.Add(new RentedVehicle<Indica>("/day",200,4,"GJ4",new DateTime(2018,1,1),6,"petrol"));**

**//5 qualis**

**this.qualisList.Add(new RentedVehicle<Qualis>("/day",800,1,"GJ5",new DateTime(2021,1,2),8,"diesel"));**

**this.qualisList.Add(new RentedVehicle<Qualis>("/day",600,2,"GJ6",new DateTime(2020,1,2),8,"diesel"));**

**this.qualisList.Add(new RentedVehicle<Qualis>("/day",500,3,"GJ7",new DateTime(2019,1,2),8,"diesel"));**

**this.qualisList.Add(new RentedVehicle<Qualis>("/day",400,4,"GJ8",new DateTime(2018,1,2),8,"diesel"));**

**this.qualisList.Add(new RentedVehicle<Qualis>("/day",350,5,"GJ9",new DateTime(2017,1,2),8,"diesel"));**

**//2 davidharley**

**this.davidharleyList.Add(new RentedVehicle<Davidharley>("/km",1000,1,"GJ10",new DateTime(2021,1,3)));**

**this.davidharleyList.Add(new RentedVehicle<Davidharley>("/km",800,2,"GJ11",new DateTime(2021,1,3)));**

**//2 mbenzEclass**

**this.mbenzEclassList.Add(new RentedVehicle<MBenzEclass>("/km",2000,1,"GJ12",new DateTime(2021,1,4),4));**

**this.mbenzEclassList.Add(new RentedVehicle<MBenzEclass>("/km",800,1,"GJ13",new DateTime(2021,1,4),4));**

**}**

**public void getCheckListRentedAndAvailableVehicle(){**

**Console.WriteLine("\n--------------------Available Vehicle--------------------\n");**

**Console.WriteLine("\n--------------------Indica--------------------\n");**

**foreach(var vehicle in indicaList){**

**if(!vehicle.isBooked){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**Console.WriteLine("\n--------------------Qualis--------------------\n");**

**foreach(var vehicle in qualisList){**

**if(!vehicle.isBooked){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**Console.WriteLine("\n--------------------Davidharley--------------------\n");**

**foreach(var vehicle in davidharleyList){**

**if(!vehicle.isBooked){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**Console.WriteLine("\n--------------------MBenzEclass--------------------\n");**

**foreach(var vehicle in mbenzEclassList){**

**if(!vehicle.isBooked){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**Console.WriteLine("\n--------------------Rented Vehicle--------------------\n");**

**Console.WriteLine("\n--------------------Indica--------------------\n");**

**foreach(var vehicle in indicaList){**

**if(vehicle.isBooked){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**Console.WriteLine("\n--------------------Qualis--------------------\n");**

**foreach(var vehicle in qualisList){**

**if(vehicle.isBooked){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**Console.WriteLine("\n--------------------Davidharley--------------------\n");**

**foreach(var vehicle in davidharleyList){**

**if(vehicle.isBooked){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**Console.WriteLine("\n--------------------MBenzEclass--------------------\n");**

**foreach(var vehicle in mbenzEclassList){**

**if(vehicle.isBooked){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**}**

**public void giveVehicleForRent(){**

**DateTime startDateOfRent;**

**DateTime endDateOfRent;**

**double noOfKmsTravelled;**

**double advancePayment;**

**int year,month,day;**

**Console.Write("\nEnter Start Date:");**

**Console.Write("\nEnter Year:");**

**year=Convert.ToInt32(Console.ReadLine());**

**Console.Write("Enter Month:");**

**month=Convert.ToInt32(Console.ReadLine());**

**Console.Write("Enter Day:");**

**day=Convert.ToInt32(Console.ReadLine());**

**startDateOfRent=new DateTime(year,month,day);**

**Console.Write("\nEnter End Date:");**

**Console.Write("\nEnter Year:");**

**year=Convert.ToInt32(Console.ReadLine());**

**Console.Write("Enter Month:");**

**month=Convert.ToInt32(Console.ReadLine());**

**Console.Write("Enter Day:");**

**day=Convert.ToInt32(Console.ReadLine());**

**endDateOfRent=new DateTime(year,month,day);**

**Console.Write("\nEnter No Of KMs:");**

**noOfKmsTravelled=Convert.ToDouble(Console.ReadLine());**

**Console.Write("\nEnter Advance Amount:");**

**advancePayment=Convert.ToDouble(Console.ReadLine());**

**Console.Write("\nEnter Vehicle Number For Booking:");**

**string vehicleNumber=""+Console.ReadLine();**

**foreach(var vehicle in indicaList){**

**if(!vehicle.isBooked&&vehicle.myVehicle.vehicleNumber==vehicleNumber){**

**Console.WriteLine("\nYour Ride Booked,Enjoy...\n");**

**Console.WriteLine("Details Of Your Indica:\n");**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**vehicle.isBooked=true;**

**vehicle.giveForRent(startDateOfRent,endDateOfRent,noOfKmsTravelled,advancePayment);**

**return;**

**}**

**}**

**foreach(var vehicle in qualisList){**

**if(!vehicle.isBooked&&vehicle.myVehicle.vehicleNumber==vehicleNumber){**

**Console.WriteLine("\nYour Ride Booked,Enjoy...\n");**

**Console.WriteLine("Details Of Your Qualis:\n");**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**vehicle.isBooked=true;**

**vehicle.giveForRent(startDateOfRent,endDateOfRent,noOfKmsTravelled,advancePayment);**

**return;**

**}**

**}**

**foreach(var vehicle in davidharleyList){**

**if(!vehicle.isBooked&&vehicle.myVehicle.vehicleNumber==vehicleNumber){**

**Console.WriteLine("\nYour Ride Booked,Enjoy...\n");**

**Console.WriteLine("Details Of Your Davidharley:\n");**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**vehicle.isBooked=true;**

**vehicle.giveForRent(startDateOfRent,endDateOfRent,noOfKmsTravelled,advancePayment);**

**return;**

**}**

**}**

**foreach(var vehicle in mbenzEclassList){**

**if(!vehicle.isBooked&&vehicle.myVehicle.vehicleNumber==vehicleNumber){**

**Console.WriteLine("\nYour Ride Booked,Enjoy...\n");**

**Console.WriteLine("Details Of Your MBenzEclass:\n");**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**vehicle.isBooked=true;**

**vehicle.giveForRent(startDateOfRent,endDateOfRent,noOfKmsTravelled,advancePayment);**

**return;**

**}**

**}**

**Console.WriteLine("\nPlease Enter Valid Vehicle Number\n");**

**}**

**public void showAvailabilityForBookingForGivenDate(){**

**int year,month,day;**

**Console.Write("\nEnter Year:");**

**year=Convert.ToInt32(Console.ReadLine());**

**Console.Write("Enter Month:");**

**month=Convert.ToInt32(Console.ReadLine());**

**Console.Write("Enter Day:");**

**day=Convert.ToInt32(Console.ReadLine());**

**DateTime givenDate=new DateTime(year,month,day);**

**Console.WriteLine("\n--------------------Available Vehicles--------------------\n");**

**Console.WriteLine("\n--------------------Indica--------------------\n");**

**foreach(var vehicle in indicaList){**

**if(!vehicle.isBooked||!(givenDate>=vehicle.startDateOfRent&&givenDate<=vehicle.endDateOfRent)){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**Console.WriteLine("\n--------------------Qualis--------------------\n");**

**foreach(var vehicle in qualisList){**

**if(!vehicle.isBooked||!(givenDate>=vehicle.startDateOfRent&&givenDate<=vehicle.endDateOfRent)){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**Console.WriteLine("\n--------------------Davidharley--------------------\n");**

**foreach(var vehicle in davidharleyList){**

**if(!vehicle.isBooked||!(givenDate>=vehicle.startDateOfRent&&givenDate<=vehicle.endDateOfRent)){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**Console.WriteLine("\n--------------------MBenzEclass--------------------\n");**

**foreach(var vehicle in mbenzEclassList){**

**if(!vehicle.isBooked||!(givenDate>=vehicle.startDateOfRent&&givenDate<=vehicle.endDateOfRent)){**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**}**

**}**

**}**

**public void calculateRent(){**

**string vehicleNumber;**

**Console.WriteLine("\nEnter Vehicle Number To Calculate Rent:");**

**vehicleNumber=Console.ReadLine();**

**foreach(var vehicle in indicaList){**

**if(vehicle.isBooked&&vehicle.myVehicle.vehicleNumber==vehicleNumber){**

**Console.WriteLine("Vehicle Details:");**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**Console.WriteLine("\nRent:"+vehicle.calculateRent()+"\n");**

**return;**

**}**

**}**

**foreach(var vehicle in qualisList){**

**if(vehicle.isBooked&&vehicle.myVehicle.vehicleNumber==vehicleNumber){**

**Console.WriteLine("Vehicle Details:");**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**Console.WriteLine("\nRent:"+vehicle.calculateRent()+"\n");**

**return;**

**}**

**}**

**foreach(var vehicle in davidharleyList){**

**if(vehicle.isBooked&&vehicle.myVehicle.vehicleNumber==vehicleNumber){**

**Console.WriteLine("Vehicle Details:");**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**Console.WriteLine("\nRent:"+vehicle.calculateRent()+"\n");**

**return;**

**}**

**}**

**foreach(var vehicle in mbenzEclassList){**

**if(vehicle.isBooked&&vehicle.myVehicle.vehicleNumber==vehicleNumber){**

**Console.WriteLine("Vehicle Details:");**

**Console.WriteLine(vehicle.myVehicle.ToString());**

**Console.WriteLine("\nRent:"+vehicle.calculateRent()+"\n");**

**return;**

**}**

**}**

**Console.WriteLine("\nEnter Valid Vehicle Number");**

**}**

**}**

**public class Driver**

**{**

**public static void Main(string[] args)**

**{**

**Owner o1=new Owner();**

**int choice;**

**while(true){**

**Console.WriteLine("\n\nEnter 1:List Of Available And Rented Vehicles.");**

**Console.WriteLine("Enter 2:Get Vehicle On Rent.");**

**Console.WriteLine("Enter 3:Show Availability For Booking For Given Date.");**

**Console.WriteLine("Enter 4:Calculate Rent For A Given Car.");**

**Console.WriteLine("Enter 5:To Exit");**

**choice=Convert.ToInt32(Console.ReadLine());**

**switch(choice){**

**case 1:**

**o1.getCheckListRentedAndAvailableVehicle();**

**break;**

**case 2:**

**o1.giveVehicleForRent();**

**break;**

**case 3:**

**o1.showAvailabilityForBookingForGivenDate();**

**break;**

**case 4:**

**o1.calculateRent();**

**break;**

**case 5:**

**Environment.Exit(0);**

**break;**

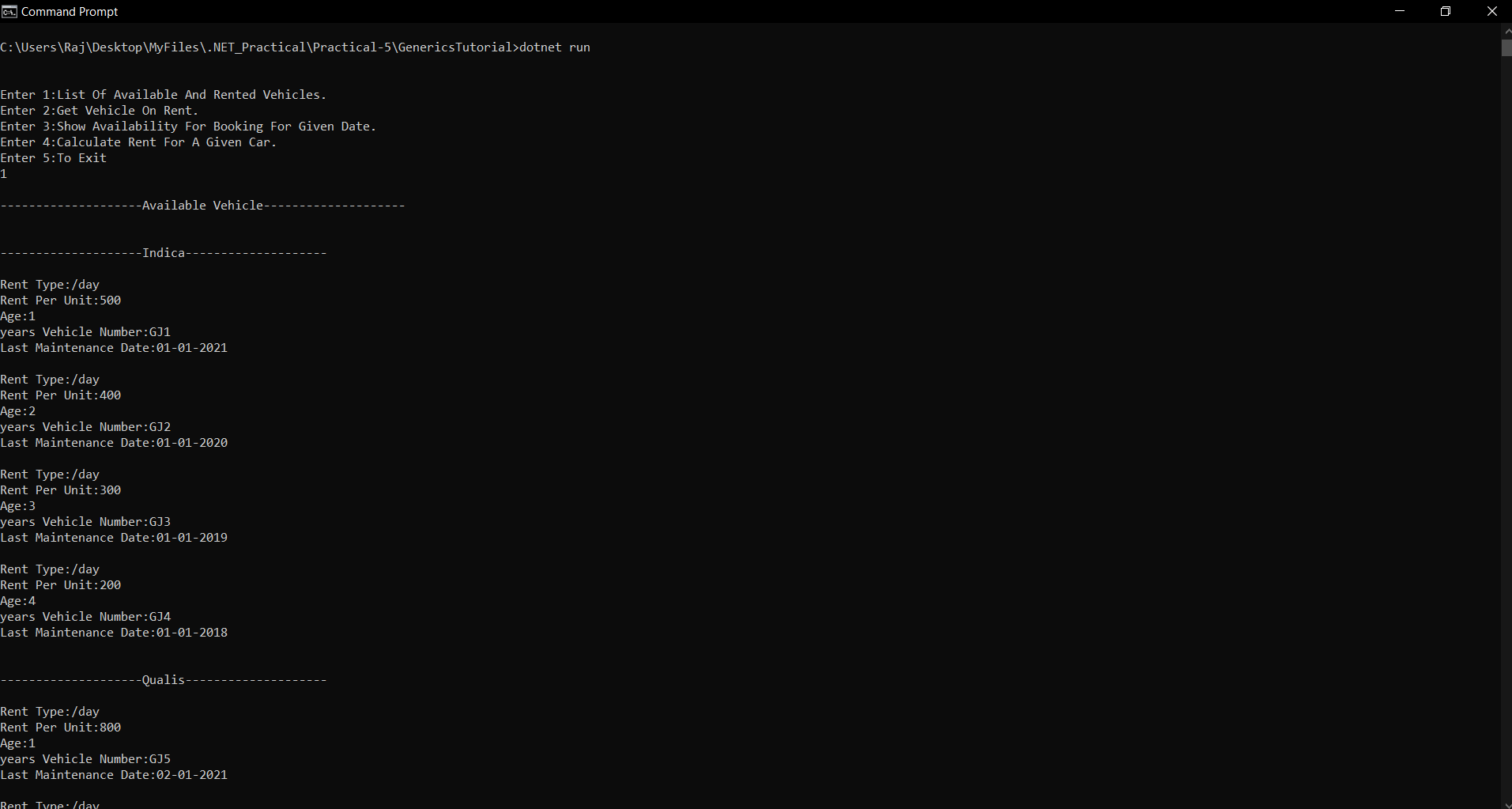
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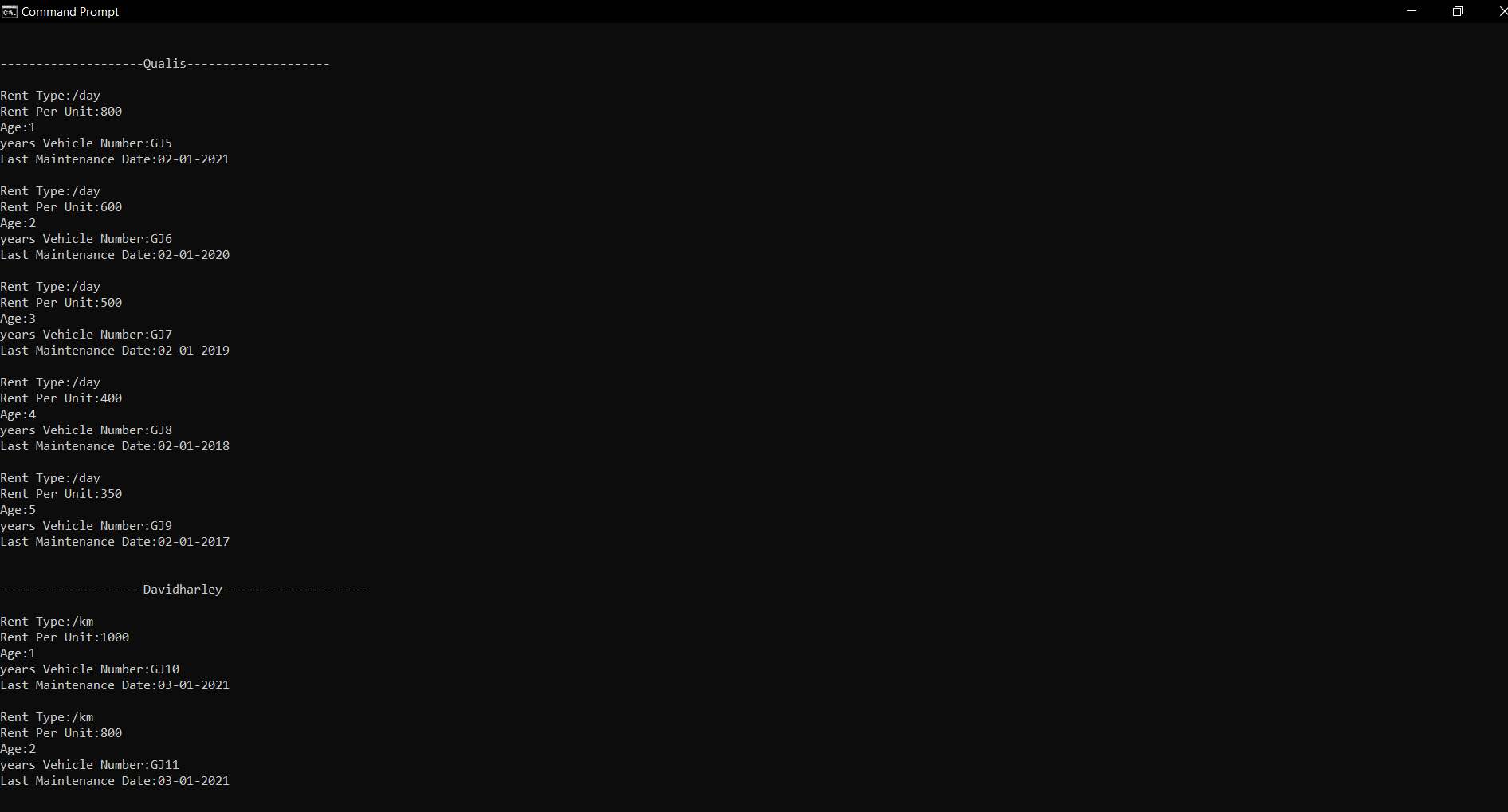
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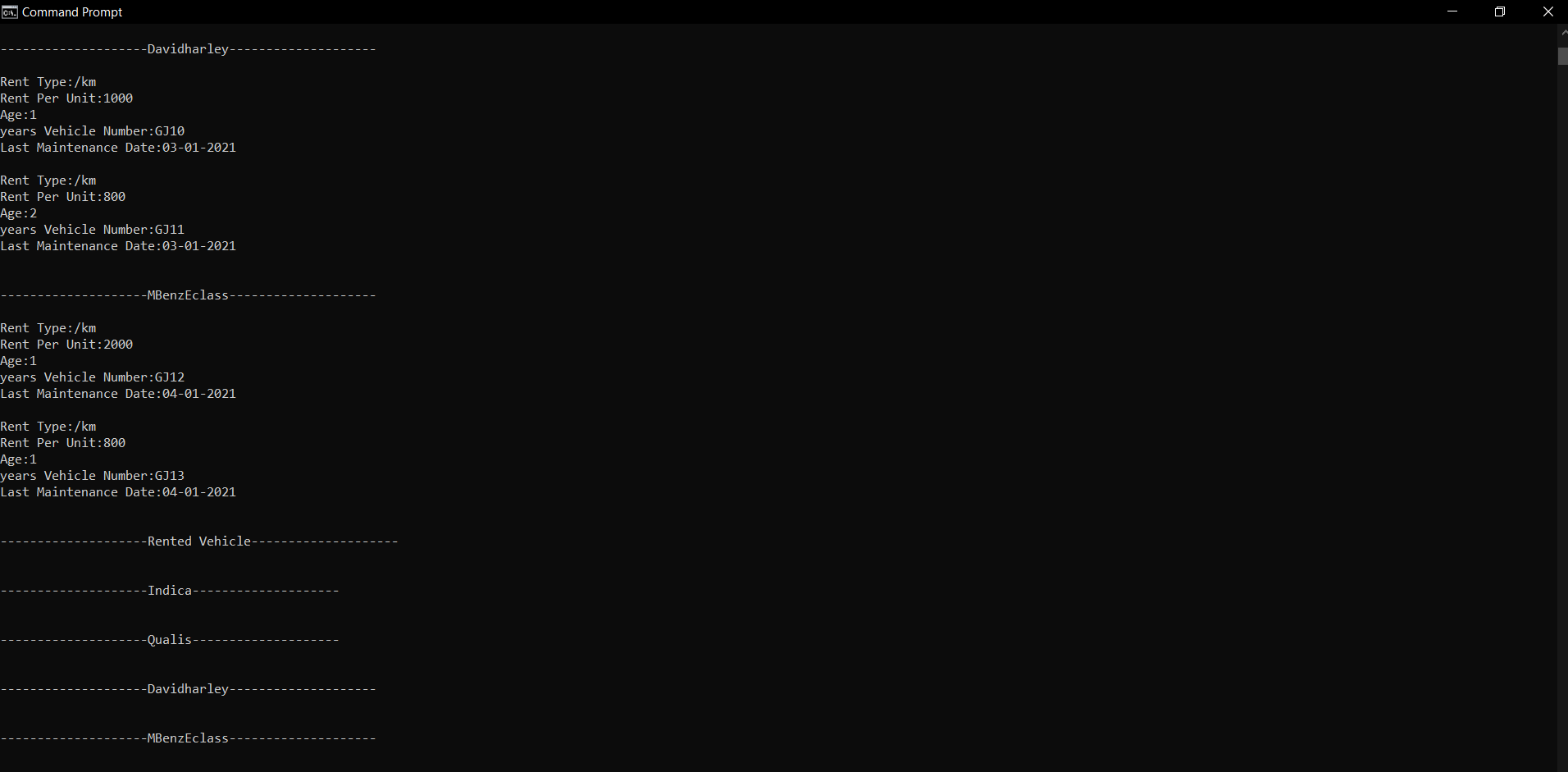
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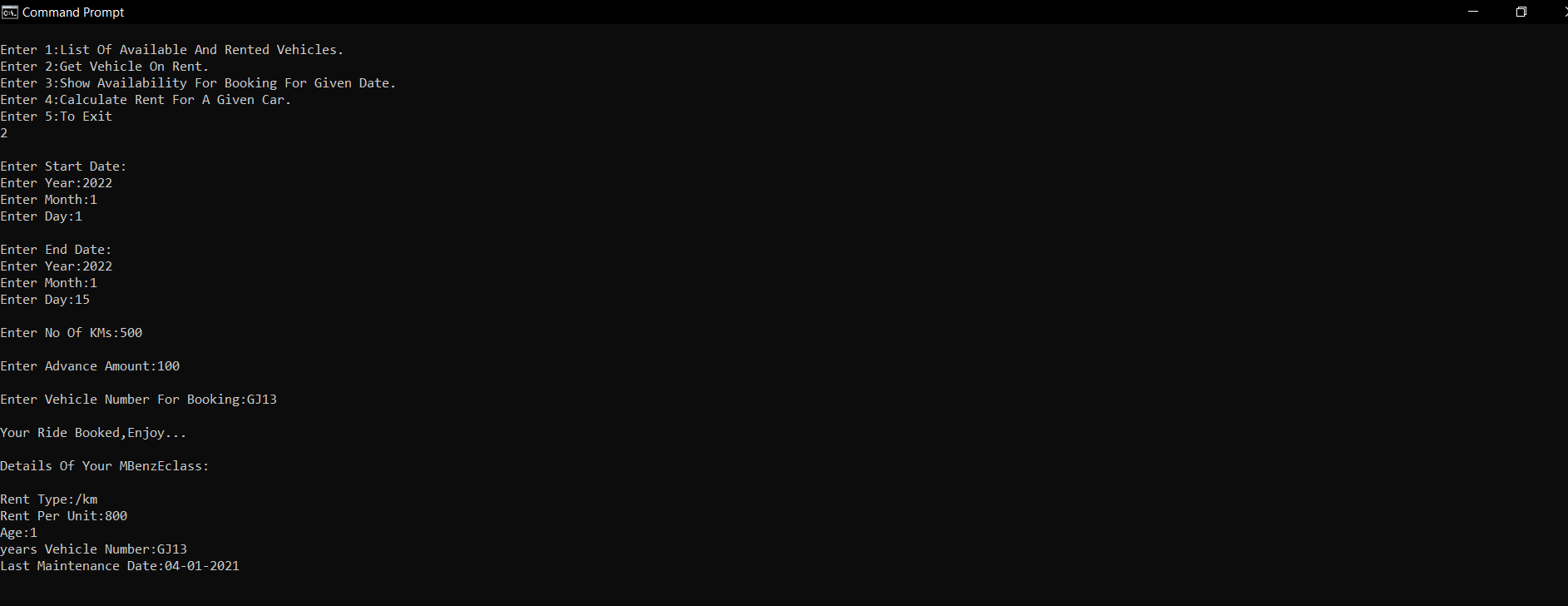
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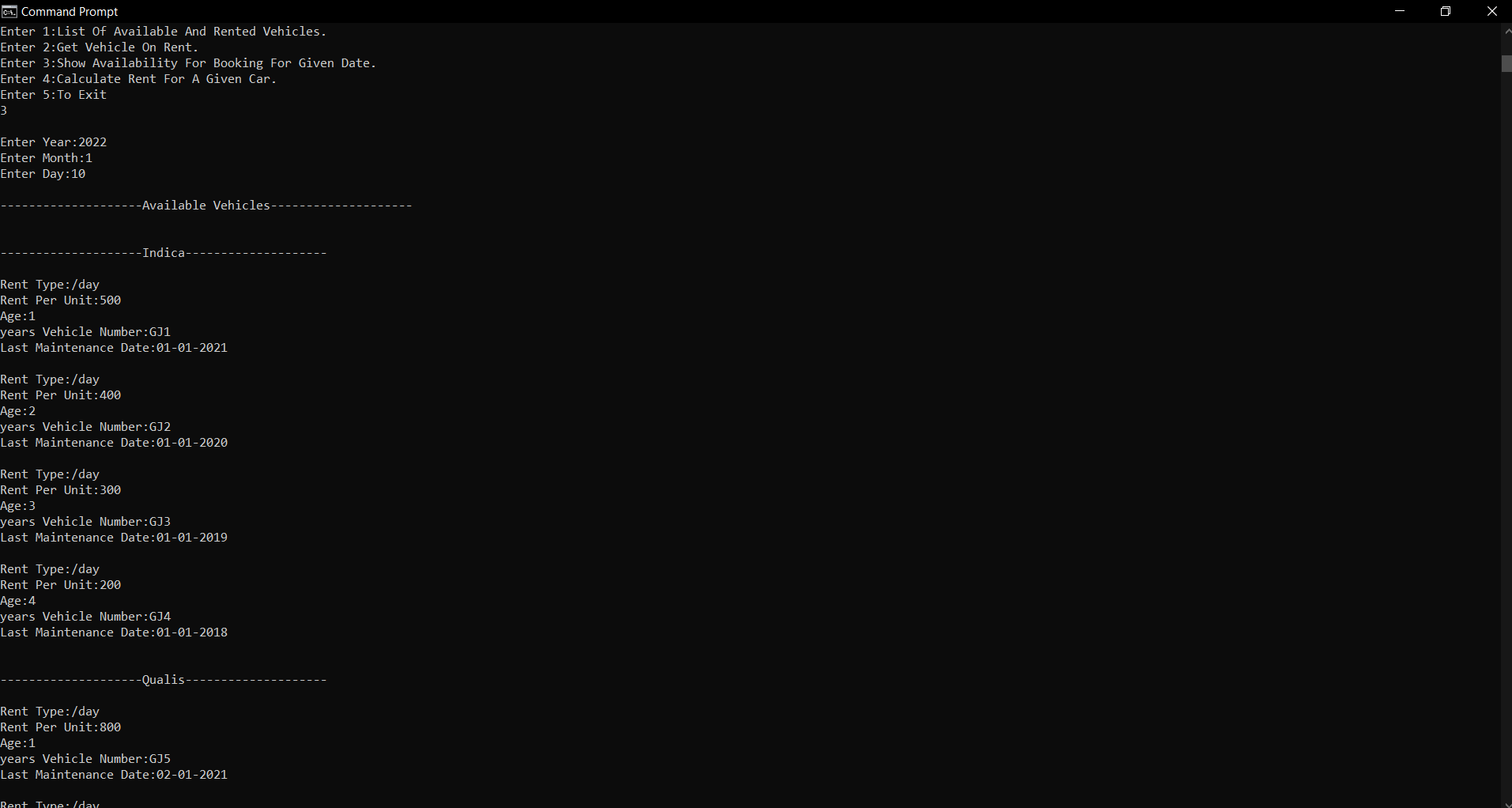
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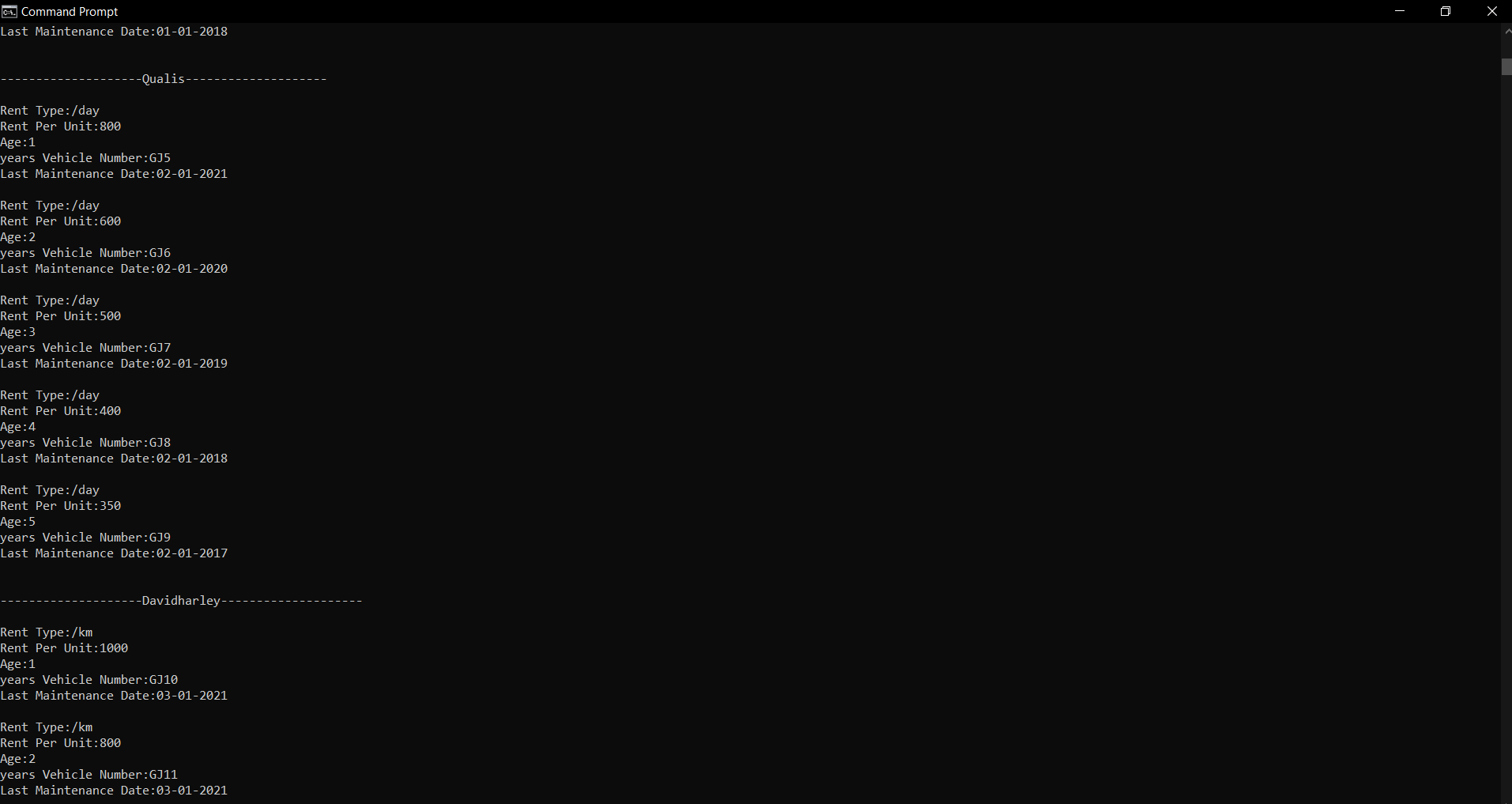
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