"Car Rental System"

Dept. of Computer Science and Engineering

A Project on Console Based Car Rental System Using Object Oriented Programming

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Declaration

We hereby declare that the Project on Console Based system submitted in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering of Bangladesh University of Business and Technology (BUBT) is our own work and that it contains no material which has been accepted for the award to the candidate(s) of any other degree or diploma, except where due reference is made in the text of the project. To the best of our knowledge, it contains no materials previously published or written by any other person except where due reference is made in the project.

Contents

Introduction

This Car Rental System project is designed to aid the car rental company to enable renting of cars through an online system. It helps the users to search for available cars, view profiles and book the cars for the time period. It has a user-friendly interface which helps the user to check for cars and rent them for the period specified. They could also make payment online. The rental cars are categorized into sports, classics etc. Based on the type of car required by the customer, the user shall be able to make bookings. The use of internet technology has made it easy for the customers to rent a car any time. This Car Rental System makes the bookings easy. It saves time and labor. The tool shall ask the user for information such as the date and time of journey, type of car etc. Also, it will need an identification number. Using these details, the tool shall help the customer to book a car for the journey.

1.2. Introduction and Background:

Car rental system (CRS) is a console based system for a company that rents out cars. This system enables the company to make their services available to the public through the internet and also keep records about their services. This is a company that rents automobiles for a short period of time for a few days or week. Car rental companies operate by purchasing or leasing a number of fees. To make this service more popular and accessible to the public it will be transformed into a web base system and connected to the internet where everyone can be able to have access to it. To develop a web based system that will help manage the business transactions of car renting. Rental fleets can be structured in several ways: they can be owned outright, they can be leased, or they can be owned under a guaranteed buy-back program arranged directly through a manufacturer or manufacturer’s financial arm.

1.3. Problem statement:

The problem with some of the current systems is that; Based on observations, some small companies already have a car rental system which is not a web based system application. This is a limitation that gives them capability to stores customer’s details, but at the same time they cannot make their services more available to the public through the internet they rather make use of posters to advertise their services to the public .These type of companies can overcome these problems by switching to the web based application of their type of system.

They also make use of phone call reservations which are also limited to many features as compared to a web base system.

1.4. Previous work:

In old times, there were no facilities for computerized systems. Nowadays, there are many
facilities of computerized systems. People can rent car for short and long term period and there are many companies that offer opportunities for people who cannot afford to buy a car as well as for those who need car for some period of time.

1.5. Objectives of the project:

The objectives of this project are:
To develop a web based system that will help manage the business transactions of car renting.
To help in advertising the car rental services of a company, through the availability of the system online.

1.6. Specific project goals:

In this car rental system we are going to introduce online booking of car rent.

So the Burden of the customer will be reduced. Our Aim is to design and create a data management System for a car rental company. This enables the admin to rent a vehicle that can be used by a customer by paying the money during a Specified Period of time. This system increases customer retention and simplifies vehicle and staff Management in an efficient way.

This software car Rental System has a very user friendly interface. Thus the users will It feels very easy to work on it. By using this system admin can manage their rental, payment, employment issues and vehicle issues such as insurance. The car information can be added to the system by admin.

And the admin will decide the money for car rent based on the day. Vehicle replacement is available if any problem occurs in the vehicle.

1.7. Scope of the project:

The scope of this project is as follows:

The car rental system to keep detailed records of both the cars and the customers, the duration they rent a car as well as the type of car they rent.
The system will be mainly design for small a company that renders it car rental services to customers.
The system will have the ability to generate and print invoice for each successful Transaction.

Level of Access:
The system will have two levels of access:

- The administrator
- Customer

1.8 Project Overview Statement:

To develop a system of CAR RENTAL MANAGEMENT by completely focusing on customers, our employees, growth, innovation and efficiency. All of these elements will drive us toward success. The process of searching the client's details is slow if it uses a manual system and there are thousands of clients. Besides that, staff have to record the booking manually and it is difficult to improve a monthly report or an annual report. However, this project has a strategic backup system for any eventuality. Vehicles are well maintained and tested for delivering optimum and uninterrupted performance.

1.9. Project / Product Scope:

The car rental system project has the scope of online application, by searching cars online and customers can book the car. We will be a growth-oriented car rental organization by efficiently serving value-conscious customers for all of their car rental occasions. The functions which cover this project are focusing on making rental cars and online reservations.

2.0. Direct Customers / Beneficiaries of the Project:

The beneficiaries of the project are as follows:

Convenient to use:

This system helps a lot and provides a convenient service in booking the cars for rental. Customers can directly see the information about all cars available for them and the prices.

Reliability:

The car rental system allows only the authenticated users with the integration of the secured payment gateway the transaction becomes safe and reliable. This system is built with the effective multiple modules so the data will be secured securely.

Vehicle management:

With a car rental system it easily connects riders and car owners can control and manage the vehicle, also find and track the status of the car. It includes owner and rider management, seamless booking, detailed listing and earning report.

High security:

The system should provide high level security and integrity of data. Only authorized persons of the system can access the system. An inquiry is easily done by a user in the system.

User satisfaction level:

This system gives each and every service to customers at their doorstep. They can book, visit and enjoy the trip.

2.1. Outputs Expected from the Project:

Often confused within activities, outputs are the direct immediate term results associated with a project, In other words they are usually what the project has achieved in the short term. An easy way to think about outputs is to quantify the project activities that have a direct link on the project goal.

2.2. Project/ Product Feasibility Report:

A feasibility report is a document that assesses potential solutions to the business problem or opportunity and determines which of these are viable for further analysis.

Outputs of the project are:

This system must send reminder message to the customer to notify them with the work progress in terms of the flexibility of the workflow.
This system will display and print the expenditure of the day and the amount spent on each other.

2.3. Technical Feasibility:

A technical feasibility study examines how you intend to customers. Think about the materials, labor, transportation, where your business will be locked, and the technology that will be needed to bring it all together. The researchers involved in this project will go through the same process, as the system progresses, the researchers will move forward in the same way. It is also important to check the state of the software and hardware because of the development of these things. Each time the researchers develop a system and put all their education into practice.

2.4. Operational Feasibility:

The main purpose of this project is to provide a system that is useful and beneficial to the client.
All requirements are required for client applications. As such, the system collects information from the user and generates reports so that the client can monitor their entire vehicle, drivers and booking transaction information.

2.5. Economic Feasibility:

One of our top priorities is to adjust each package to offer our customers exactly what they need.
We offer a variety of options that can enhance your experience. The economic feasibility stage of business development is the period during which the business venture develops an intermittent financial model that is sufficient to take the product from the idea to the market and meet the needs of the loan or investment. To a certain extent they are associated with getting sales.

2.6. Schedule Feasibility:

Schedule feasibility is defined as the probability that a project will be completed within its schedule time frame. If there is a high probability of timely completion of a project then its schedule feasibility is highly assessed. Schedule feasibility will see if it is possible to develop a successful solution to a given time. The researchers have planned keeping in view the given timeline.

2.7. Specification Feasibility:

Our project has the ability to increase the features in future. In which we have to embed.

- GPS\GSM System
- Advertisement of new models.
- Sale point for vehicle.

2.8. Information Feasibility:

We have covered all the information about the rental system. As it is based on online services, it will manage all their information and facilitate online registration which will also help consumers save their time and money.

3.0. SS of Encountered Interfaces:

The Screenshots of the interfaces we are going to face inside the Program are shown below:

Front page:

```
'CAR RENTAL SYSTEM'

........Select an option from below:

        1) Manage Cars (Only for administration)
        2) Rent a car
        0) Exit

        Enter option:
```

Select 1 for Admin:

```
    Please Enter your password:
```

After Correct Password:

```
 ........Select an option:

        1) See all car
        2) See Cars brand list
        3) Add new car
        4) Remove car
        5) See rent records
        6) Remove rent records
        0) Go to main menu

        Enter option:
```

Select 2 for brand:

```
1 : Alion
2 : Ferrari
3 : Nissan
4 : Porche
5 : Tesla
```

```
........Below are the cars in stock now........

        Id: 0
        Model: Ferrari
        Type: Sports
        Speed: 500 mph
        Rent Price per hour: 1000 TK

        Id: 1
        Model: Porche
        Type: Luxurious
        Speed: 400 mph
        Rent Price per hour: 500 TK

        Id: 2
        Model: Porche
        Type: Private
        Speed: 300 mph
        Rent Price per hour: 400 TK

        Id: 3
        Model: Ferrari
        Type: Private
        Speed: 400 mph
        Rent Price per hour: 600 TK

        Id: 6
        Model: Alion
        Type: Private
        Speed: 250 mph
        Rent Price per hour: 300 TK

        Id: 7
        Model: Nissan
        Type: Private
        Speed: 200 mph
        Rent Price per hour: 300 TK

        Id: 8
        Model: Tesla
        Type: Electric
        Speed: 330 mph
        Rent Price per hour: 1000 TK
```

For User Select 2:

```
.........Choose Cars brand to rent from below:


        1 : Alion
        2 : Ferrari
        3 : Nissan
        4 : Porche
        5 : Tesla
```

```
.....Please choose a model from below.....

        Id: 6
        Model: Alion
        Type: Private
        Speed: 250 mph
        Rent Price per hour: 300 TK

        Enter the car id to rent:
```

```
.....Now please fill up these form to complete the rent.....

        Enter name: AKASH
        Enter age: 23
        Enter address: Mirpur
        Enter email: akash@gmail.com
        Enter rent duration in hour: 12
```

```
.....Your rent bill is: 3600 TK

.....Please pay the bill via bank account to further proceed

        Now please enter your transaction id to confirm: 012010120

        !!!Congratulation, Your rent has been successfully completed.
        Your voucher id is 0
        Please contact our office with the voucher id to get your car.

        Enter 0 to go to menu:
```

3.1. Result Analysis

Some screenshots of our program output are shown below in order.
Starting With the Main Menu

Front page:

```
while(option) {
    //Options here.
    cout << endl;
    cout << "\t\t\t\tCar Rental System" << endl;
    cout << "\n........Select an option from below: \n\n";
    cout << "\t1) Manage Cars (Only for administration)\n";
    cout << "\t2) Rent a car\n";
    cout << "\t0) Exit\n";
    cout << "\n\tEnter option: ";
    cin >> option;
    while(option != 0 and option > 2) {
        cout << "\tInvalid key!" << endl;
        cout << "\tEnter Again: ";
        cin >> option;
    }
    system("CLS");
    if(!option) {
        break;
    }
```

Admin page:

```
case 1: {
    string pass = "Admin", s;
    cout << "\tPlease Enter your password: ";
    cin >> s;
    while(s != pass) {
        cout << "\tWrong password! Enter again: ";
        cin >> s;
    }
    system("CLS");
```

```
    int sub_opt = 1;
    while(sub_opt and pass == s) {
        //Sub Options for administrator
        cout << "\n........Select an option: \n\n";
        cout << "\t1) See all car\n";
        cout << "\t2) See Cars brand list\n";//From h
        cout << "\t3) Add new car\n";
        cout << "\t4) Remove car\n";
        cout << "\t5) See rent records\n";
        cout << "\t6) Remove rent records\n";
        cout << "\t0) Go to main menu\n";
        cout << "\n\tEnter option: ";
        cin >> sub_opt;
        while(sub_opt != 0 and sub_opt > 7) {
            cout << "\tInvalid key!" << endl;
            cout << "\tEnter Again";
            cin >> sub_opt;
        }
        system("CLS");
```

```
case 2: {
    //Customers will see the outcome of these codes
    int sub_opt = 1;
    cout << "\n........Choose model to rent from below: \n\n";
    while (sub_opt) {
        //Showing the car models
        manage.showModels();
        cout << "\t\nEnter an option: ";
        cin >> sub_opt;
        string model = manage.getModel(sub_opt);
        //Showing of that specific model
        cout << "\n........Please choose a car from below........\n\n";
        manage.showCars(model);
        cout << "\tEnter the car id to rent: ";
        int car_id;
        cin >> car_id;
        //Complete the registration form to rent the car i.e give personal information
        cout << "\n........Now please fill up these form to complete the rent........\n\n";
        string name, address, email;
        int age, transaction_id;
        cin.ignore();
        cout << "\tEnter name: ";
        getline(cin, name);
        cout << "\tEnter age: ";
        cin >> age;
        cin.ignore();
        cout << "\tEnter address: ";
        getline(cin, address);
        cout << "\tEnter email: ";
        cin >> email;
        //Filling personal info
        Renter renter(name, age, address, email);
        //Automatically setting the rent id;
        int rent_duration, rent_bill;
        cout << "\tEnter rent duration in hour: ";
        cin >> rent_duration;
        rent_bill = manage.bills(car_id, rent_duration);
        cout << "\n........Your rent bill is: " << rent_bill << " TK\n\n";
        cout << "........Please pay the bill via bank account to further proceed\n\n";
        cout << "\tNow please enter your transaction id to confirm: ";
        cin >> transaction_id;
        //Filling up rent info
        Booking rent(&renter, rent_id, rent_duration, rent_bill, transaction_id);
        rent_id++;
        cout << "\n\n\t!!!Congratulation, Your rent has been successfully completed.\n\tYour voucher id is ";
        cout << rent_id - 1 << "\n\tPlease contact our office with the voucher id to get your car.\n\n";
        cout << "\tEnter 0 to go to menu: ";
        cin >> sub_opt;
        if (!sub_opt) break;
    }
    break;
}
```

3.2. Vision Document:

We will be a growth-oriented car rental association by efficiently serving value-conscious clients for all of their car rental events. We will constantly deliver a quality product, friendly service and great value that makes customers assured that Cost-effective is their best car rental choice.
The development in Information Technology and internet penetration has greatly improved various corporate processes and communication between services providers and their customers of which the car rental market is not left out. The Internet connects us across the globe.

This means if we start using Renting software like Car Rental System, we would be able to increase our business. This would help us to connect the global world instead of limiting our services to our local domain alone, thus increasing their return on investment (ROI). No more office visits, No more phone calls.

Just Open App, browse through cars, select and book. This would save the customer time and provide them best service in their range

4.0. Risk List:

Technical Risk:
Technical risk refers to the functional risk or performance risk which means this technical risk is mainly associated with functionality of the product or performance part of the software product.

Schedule Risk:
Schedule related risks refer to time related risks or project delivery related planning risks. The wrong schedule affects the project development and delivery.

Budget Risk:
Budget related risks refer to the monetary risks mainly it occurs due to budget overruns. Always the financial aspect for the project should be managed as per decided but if financial aspect of project mismanaged then there budget concerns will arise by giving rise to budget risks.

Unavoidable Risks:
These include changes in government policy, the obsolescence of software or the other risks that cannot be controlled or estimated.

5.0. Product Features / Product Decomposition:

Car rental system gives the following features to the customer:

Renting Car:
User has to fill up his contact information like name, address, mobile number in the renter form.

Online booking:
Online booking is a great feature that gives an access to customer to book their favorite cars. Customers can directly see the information about all the cars available for them and prices.

Less paperwork:
By using this, it is easy to organize all the data, useful stuff, invoices, rental agreements.

Accurate information:
This system should provide up-to-date accurate information at any time. Increase processing speed and avoid errors.

Equipment Configuration:
Processor: Intel core/AMD
RAM: 4GB
Hard Disk: 05/10 GB
Operating System: Windows/Linux/Unix

Implementation Tools and Technology:
Microsoft word (documentation)
Code::blocks, Visual studio code, Sublime text
Object Oriented Programming Language : C++
Compiler : GNU C++

6.0. Conclusion

A Console based software system for customers to search, view and reserve cars for renting andFor businesses to manage and update the details and view business related reports.