DATA STRUCTURES AND ALGORITHM PROJECT

CAR RENTAL MANAGEMENT SYSTEM

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ABSTRACT:

Our Aim is to design and create a data management System for a car rental company. This enables admin can 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 simplify vehicle and staff Management in an efficient way.

This software car Rental System has a very user friendly interface. Thus the users will feel very easy to work on it. By using this system admin can manage their rental, payment, employment issues and vehicle issues such as and insurance. The car information can be added to the system. Or existed car information can be edited or deleted too by Administrator. The transaction reports of the car rental system can be retrieved by the admin, when its required .Thus, there is no delay in the availability of any car information, whenever needed, car information can be Captured very quickly and easily.

The customers can also use the system to get car rent. The customer should create a new account before logging in or he / she can log into the System with his/her created account. Then he/she can view the available cars in a branch and make a reservation for a Car. This system will helpful to the admin as well as to the customer also.

EXISTING SYSTEM:

In this system user (or) client will directly interact with the car owner and owner will decide whether the car is available or not. Then if it is available he will give rent a car to the customer. The main drawback of this system is customer need to meet the car owner .this is time waste process**.**

Disadvantages of existing System:

1) User should manually go and book the car.
2) It's time taking process and cost also.
3) Doesn't fulfill the client requirements fully.

PROPOSED SYSTEM:

In this car rental system we are going to introduce online booking of car rent will be available. So the Burdon of the customer will be reduced. Our Aim is to design and create a data management System for a car rental company. This enables admin can 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 simplify vehicle and staff Management in an efficient way.

- This software car Rental System has a very user friendly interface. Thus the users will feel very easy to work on it. By using this system admin can manage their rental, payment, employment issues and vehicle issues such as and insurance. The car information can be added to the system by admin.
- And admin will decide the money for car rent. it bases on the day. Vehicle replacement is available if any problem that occurs in the vehicle.

Advantages of Proposed System:

1) Here user can directly interact through our system or application and the user book a car through online so it ill takes less time.
2) It ill helpful to the car rental person also. so he can maintain his car schedules effectively. And the system maintenance will be easy.

Modules:

1. Authentication module:

The user details should be verified against the details in the user tables and if it is valid user, they should be entered into the system, once entered, based on the user type access to the different modules to be enabled / disabled. If users don't have username and password they should be Register. In our application we are having two types of users like administrator, user.

2. Admin:

Admin can login with username and password and he can add the vehicles. Admin will decide the money for car rent it's based on the day. Vehicle replacement is available if any problem that occurs in the vehicle. And he can collect the rent from the user. He will pay the money for the owner. And he can able to view the booked car details.

3. User:

The customers can also use the system to get a car for rent. If users want to book the car they need authentication. The customer should create a new account before logging in or he / she can log into the System with his/her created account. Then he/she can view the available cars in a branch and make a reservation for a Car. And also directly he/she can pay the amount through his credit card details.

KEYWORDS:

1. Vehicle reservation

2. Rental system

3. Car booking

4. Rental business

INTRODUCTION:

Nowadays, there are online car reservations which give much benefit to user. A rental service is a service in which customers arrive to request the hire of a rental unit. It is more convenient than carrying the cost of owning and maintaining the unit. A car rental or car hire agency is a company that rents automobiles for short period of time for a fee whether in a few hours or a few days or week. It is an extended form of a rental shop, often organized with numerous local branches (which allow a user to return a vehicle to a different location), and primarily 'located near airports or busy city areas and often complemented by a website allowing online reservations. Car rental agencies primarily serve people who have a car that is temporarily out of reach or out of service, for example travellers who are out of town or owners of damaged or destroyed vehicles who are awaiting repair or insurance compensation. Because of the variety of sizes of their vehicles, car rental agencies may also serve the self-moving industry needs, by renting vans or trucks, and in certain markets other types of vehicles such as motorcycles or scooters may also be offered. In short, It is a system design specially for large, premium and small car rental business. The car rental system provides complete functionality of listing and booking car.

1. Client Information

User can register and view client information.

2. Car Information

User can enter, view details about the car like Registration number of the car, name of the car, type of the car, Capacity (Number of seats), whether it is AC or Non- AC.

Client can add booking information while admin will update booking information.

3. New car booking

4. Car availability status

5. Car return

Where clients can book the car of their choice based on the availability

View Booked cars and available cars

The number of days for which the car was rented and the bill for it.

OBJECTIVES

To transform the manual process of hiring car to a computerize system. The main objective of this system is:

•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.

PROJECT SIGNIFICANCE

Client can search the type of car for their need to make booking of the specific car. When client choose the car, system will list out the car details.

Car Rental Management System (CRMS) gives security to the confidential data. Unlike the manual process, it prevents minor and major mistakes during managing of the data. It is much faster compared to manual system when there are more number of clients.

It overcomes the limitations of manual system by making it easy to keep track and record data and minimize the errors.

Scope

The scope of this project is as follows:

•The car rental system to keep detail records of both the cars and the customers, the duration they rent 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

LITERATURE REVIEW

This is the report analysing the fact finding and the approaches and techniques that is

going to be used in completing the Car Rental Management System project. The facts and

findings are being analysed by identifying the objectives and the current situation and the

available resources.

Most of the car rental services are managed using manual way and it cause a lot of

problems to its users and also few clients who rent from them. With the use of Car Rental

Management System, car rental service will be upgraded because it provides convenience to its

user.

CODE

```cpp
#include <iostream>
using namespace std;
#include<stdio.h>
#include<conio.h>
#include <fstream>
#include<string.h>
#include <map>
#include <vector>
void showavailable();
class car
{
    private:
         Nchar regno[20];
        char name[50];
        char ac[5];
        int seats;
    public:
        int refno;
        float cost;
        void get()
        {
            cout<<"Enter register number of car:";
            gets(regno);
            cout<<"Enter the name of the car:"
            gets(name);
            cout<<" AC (y/n):";
            gets(ac);
            cout<<"Enter the number of seats in the car :";
            cin>>seats;
            cin.ignore(255,'\n');
            cout<<"Enter the cost of renting the car for one
    day: ";
            cin>>cost;
```

```cpp
                cin.ignore(255,'in');
        }
        İntger.seats()
        {
                return seats;
        }
        Void display()
        {
                Cout<<"REFERENECE NUMBER:"<<refno<<endl;
                Cout<<"Regno:"<<regno<<endl;
                Cout<<"Name:"<<name<<endl;
                Cout<<"Seats:"<<seats<<endl;
                Cout<<"AC:"<<ac<<endl;
                Cout<<"Cost per day:"<<cost<<endl;
        }
};
Class Customer
{
        Char cname[30];
        Char phno[20];

        Public:
                İntreq_seats;
                Car booked;
                Void cust_get()
                {
                        Cout<<"Customer Name:";
                        Gets(cname);
                        Cout<<"Phone Number:";
                        Gets(phno);
                        Cout<<"Seats Required:";
                        cin>req seats;
                        cin.ignore(255,In');
                        showavailable();
```

```cpp
            }
            void show()
            {
                    cout<<"Name: "<<cname<<endl;
                    cout<<"Phone Number: "<<phn0<<endl;
                    cout"Car Booked:In";
                    booked.display0;
            }
            void bill(int d)
            {
                    cout<c"nBILLn"
                    showO
                    cout<<"Amount: Rs."<<d booked.cost<<endl;
            }
};
map <int, vector<car>> available;
vector<car> unavailable
intmax_seats=8;
Customer New;
Customer cust[40];
Intcust_count=0;
void filecreate
{
    car c;
    ofstream f
    char op[3]:
    int count=/o
    fopen("cars4.dat" ios: outjios:binary)
    //cin ignore(255,'\n');
    Do
    {
        c.get0;
        c.refno-++count
        f.write((char )&c,sizeof(c));
```

```cpp
                cout<s"Do you want to enter details of another car? (1
        for yes and 0 for no): "

                gets(op);

        }while( stremp(op,"I");

        f.close();

}
/*

void fileread()

{

        fstream fl;

        car s;

        fl.open("cars.dat", ios::injios:binary);

        while(ⴀ.read((char*)&s, sizeof(s)))

                s.display

        fl.close():

}
*/

void filecheck()

{

        fstream f;

        Customer a1;

        car b1;

        fopen("cars4.dat",ios::in | ios:binary):

        if(!f)

        {

                F.close();

                Filecreate()

        }

        Else

        {

                fclose();

                /*f.open("count.dat", ios: int:ios:binary);

                f.write(char*)&cust_count, sizeof(cust_count)):

                fclose();
```

```cpp
        fopen("customer.dat", ios:inlios:binary)

        whileff.read((char)&al, sizeoffal))

            cust[cust count++]-al;

        fclose();

        fopen("bcars.dat", ios: injios:binary):

        while(f.read(char)&bl, sizeof(bl)

            unavailable.push back(bl);

        fclose():

    }

}

void av()

{

    //vector<car>xyz

    car y;

    int j;

    fstream f1;

    for(j=1;j<=max_seats;j++)

    {

        f1.open("cars4.dat", ios::inlios::binary)

        vector<car> x

        while(f1.read ((char*)&y, sizeof(y)))

        {    if(y.get_seats()==j))

                x.push_back(y);

        }

        available[j]=x;

        f1.close();

    }

    for(j=1;j<=max_seats;j++)

    {

         cout<<j<<"seats"<<endl;

         xyz=available[j];

        for(int i=0;i<xyz.size();i++)

                xyz[i].display();

    }
```

```cpp
    */
    f1.close();
}
void dispfree()
{
    vector<car>xyz;
    int j,k,flag;
    for(j=1;j<=max_seats;j++)
    {
        xyz=available[j];
        if (xyz.size()>0)
        {
            cout<<j<<"seats"<<endl;
            for(int i=0;i<xyz.size();i++)
            {
                flag=0;
                for(k=0;k<unavailable.size();k++)
                    if(xyz[i].refno==unavailable[k].refno)
                    {
                        flag=1;
                        break;
                    }
                if(flag==0)
                    xyz[i].display();

            }
        }
    }
}
void showavailable()
{
    int i,s,j;
    int flag=0,dontshow=0;
    vector<car>x1;
```

```cpp
        s=New.req_seats;

        x=available[s];

        for(i=0;i<x1.size();i++)

        {

            dontshow=0;

            for(j=0;j<unavilable.size();j++)

                if(unavilabel[j].refno==x1[i].refno)

                    dontshow=1;

            if(dontshow==0)

                x1[i].dislplay();

            cout<<"\n";

        }

    getref:

    cout<<"Enter the reference number of car that customer is
booking:";

    cin>>New.booked.refno;

    for(i=0;i<x1.size();i++)

        if(x1[i].refno==New.booked.refno)

        {

            New.booked=x1[i];

            unavailable.push_back(x1[i]);

            flag=1;

            break;

        }

}

void dispfree()

{

    vector<car>xyz;

    int j,k,flag;

    for(j=1;j<=max_seats;j++)

    {

        xyz=available[j];

        if (xyz.size()>0)

        {

            cout<<j<<"seats"<<endl;
```

```cpp
            for(int i=0;i<xyz.size();i++)
            {
                flag=0;
                for(k=0;k<unavailable.size();k++)
                    if(xyz[i].refno==unavailable[k].refno)
                    {
                        flag=1;
                        break;
                    }
                if(flag==0)
                    xyz[i].display();


            }
        }
    }
}
void showavailable()
{
    int i,s,j;
    int flag=0,dontshow=0;
    vector<car>x1;
    s=New.req_seats;
    x=available[s];
    for(i=0;i<x1.size();i++)
    {
        dontshow=0;
        for(j=0;j<unavilable.size();j++)
            if(unavilabel[j].refno==x1[i].refno)
                dontshow=1;
        if(dontshow==0)
            x1[i].dislplay();
        cout<<"\n";
    }
    getref:
```

```cpp
    cout<<"Enter the reference number of car that customer is
booking:";

    cin>>New.booked.refno;

    for(i=0;i<x1.size();i++)

        if(x1[i].refno==New.booked.refno)

        {

            New.booked=x1[i];

            unavailable.push_back(x1[i]);

            flag=1;

            break;

        }

    if(flag==0)

    {

        cout<<"Invalid reference number. Please enter again.\n\n";

        gotogetref;

    }

    cust[cust_count++]=New;

}
void show_booked()

{

    int i;

    for(i=0;i<cust_count;i++)

        cust[i].show();

}
void returncar()

{

    int i,j,days;

    customer returning;

    cout<<"Enter the reference number of the car that is being
returned:";

    cin>>r;

    for(i=0;i<unavailable.size();i++)

        if(unavailable[i].refno==r)

            break;

    unavailable.erase(unavailable.begin()+i);
```

```cpp
        for(i=0;i<cust_count;i++)

            if(cust[i].booked.refno==r)

            {

                returnng=cust[i];

                break;

            }

            for(j=i;j<cust_count-1;j++)

            {

                cust[j]=cust[j+1];

                cust_count--;

            }

            cout<<"Enter the number of days for which car was rented:";

            cin>>days;

            cin.ignore(255,"\n");

            returning.bill(days);

}
void exportp()
{

    fstream;

    customer a;

    car b;

    int i;

    f.open("customer.dat",ios::out|ios::binary);

    for(i=0;i<cust_count;i++)

    {

        a=cust[i];

        f.write((char*)&a,sizeof(a));

    }

    f.close();

    f.open("bcars.dat",ios::out|ios::binary);

    for(i=0;i<unavailable.size();i++)

    {

        b=unavailable[i];

        f.write((char*)&b,sizeof(b));
```

```cpp
    }

    f.close();

}

int main()

{

    int option;

    filecheck();

    //fileread();

    cout<<"\n\n";

    av();

    do

    {

        cout<<"\n\n1. New car booking\n2. Car return\n3. View booked
cars\n4. View available cars\n5. Exit\n\nEnter your option:";

        cin>>option;

        cin>>ignore(255,'\n');

        switch(option)

        {

            case 1: New.cust_get();

                    New.show();

                    break;

            case 2: returncar();

                    break;

            case 3: show_booked();

                    break;

            case 4: dispfree();

                    break;

            case 5: exportp();

                    return 0;

            default: cout<<"Invalid option.";

        }

    }

    while(1);

}
```

```
                          ┌──────────┐
                          │  Start   │
                          └────┬─────┘
                               │          User
         Admin                 ▼
      ┌──────────────◇ If registered? ◇────No──────┐
      │              ◇               ◇             │
      │                    │Yes              ┌─────────────┐
      │                    │                 │ Registration│
      │                    │                 └──────┬──────┘
      │              ┌─────▼──────────────┐         │
      └─────────────►│       Login        │◄────────┘
             No      └─────────┬──────────┘
      ┌────────────            │
      │            ◇ Is valid? ◇
      └───────────◇             ◇
                    │Yes
                    ▼
      Yes  ◇   Is Admin?   ◇   No
    ┌──────◇              ◇──────┐
  Admin                         User
    ▼                             ▼
┌──────────────┐          ┌──────────────┐
│Add car details│         │  Car search  │
└──────┬───────┘          └──────┬───────┘
       ▼                         ▼
┌──────────────┐          ┌──────────────┐
│Update all    │          │ Car reserved │
│information   │          └──────┬───────┘
└──────┬───────┘                 ▼
       ▼                  ┌──────────────┐
┌──────────────┐          │E-mail received│
│Travelling    │          │for forgot     │
│information   │          │password       │
│update        │          └──────┬───────┘
└──────┬───────┘                 │
       └──────────┬──────────────┘
                  ▼
           ┌──────────────┐
           │   Logout     │
           └──────┬───────┘
                  ▼
           ┌──────────────┐
           │    Stop      │
           └──────────────┘
```