C.V.RAMAN GLOBAL UNIVERSITY

BHUBANESWAR,ODISHA,INDIA

PROBLEM SOLVING WITH C

TOPIC: CAR RENTAL SYSTEM

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ABSTRACT:

This car rental system project would be useful for all the managements which give cars for rent as well as the people who travells a lot, Travel around the world. This system will make the rental system easy and convient for the user.

Many travelers take renting a car for granted especially during the pandemic when isolation is a priority. Customers prefer convenient and timely service, but it's not uncommon for car rentals to lag. Roughly speaking, vehicle pick-ups delay every third time. Considering the tight competition in this business landscape, car rental services can't fail to satisfy their customers.

INTRODUCTION:

A car rental management system is an autonomous system that will preserve the records of all the cars available, cars rented, etc. The user can rent a car based on its efficiency, performance, effort, or cost. The dealer can make a lot of use of this system by providing the cars. The public vehicle is not the best option. Public vehicles are crowded, generally not running on time e.g., trains, buses, etc. Here is our main problem to reach at own place on time with comfort. Thus, Car renting comes up with a solution. People who can't afford a car. They can book a car for trip, marriage, business meeting, office to home, home to office, home to a market where ever they want to travel as simple as that.

FEATURES:

1.All proper keywords has been used to define is function this new system.
2.Basic concepts of C programming language like structures, array and files are used.
3.User will be able to get all details on how to use instruction on offline mode
4.It meets all the dealing out requests needed within system

CONCLUSION:

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 profile 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 shall be categorized into economy, premium 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.

SOURCE CODE

```c
1: #include <stdio.h>        // standard input output library
2: #include <string.h>       // string library functions to work with
   strings
3: #include <time.h>         // library functions for manipulating
   date and time
4:
5: #define MAX_CAR 10
6:
7: // car structure for storing cars details
8: typedef struct car{
9:     char brand[50];
10:    char model[50];
11:    int year;
12:    int rate;
13:    int available;
14: }car;
15:
16: // profile structure for storing user details
17: typedef struct profile
18: {
19:    char name[20];
20:    int id;
21:    int pasw;
22: }profile;
23:
24: // rentData structure for storing rent details
25: typedef struct rentData
26: {
27:    int u_id;
28:    int carNo;
29:    int dr,mr,yr; //rent date
30:    int dret,mret,yret; //return date
31:    int price;
32: }rentData;
33:
34: // cars list
35: car cars[MAX_CAR]={
36:    {"HYUNDAI","Veloster",2020,200,1},
37:    {"SUZUKI","Celerio",2022,250,1},
38:    {"HONDA","Civic",2019,300,1},
39:    {"TOYOTA","Avalon",2021,200,1},
```

```
40:        {"FORD","Explorer",2022,250,1},
41:        {"TATA","Safari",2022,200,1},
42:        {"AUDI","Q3",2021,250,1}
43: };
44:
45: profile user;    // global profile structure type variable
    declaration
46: rentData rent;   // global rentData structure type variable
    declaration
47:
48: // function for display car list in output
49: void display(){
50:     int i,check=0;
51:     printf("+------+----------+------------+---------+--------
    --------+\n");
52:     printf("|CarNo.| %-10s|   %-10s|   %-7s| %-15s|\n","BRAND",
    "MODEL","YEAR","RENT PER DAY");
53:     printf("+------+----------+------------+---------+--------
    --------+\n");
54:     for(i=0;i<MAX_CAR;i++){
55:         if(cars[i].available==1){
56:             printf("|  %2d  | %-10s|   %-10s|   %-7d|   %-
    13d|\n",i+1,cars[i].brand,cars[i].model,cars[i].year,
    cars[i].rate);
57:             check=1;
58:         }
59:     }
60:     if(check==0){
61:         printf("Sorry! No car is available\n");
62:     }
63:     printf("+------+----------+------------+---------+--------
    --------+\n");
64:     return;
65: }
66:
67: // function for login for existing user account
68: int login(){
69:     int id;
70:     int pasw;
71:     profile check;
72:     printf("Enter ID: ");
```

```c
 73:        scanf("%d",&id);
 74:        printf("Enter password: ");
 75:        scanf("%d",&pasw);
 76:        FILE *f1;
 77:        f1=fopen("User_data.dat","r");
 78:        while (fread(&check,sizeof(profile),1,f1))
 79:        {
 80:            if(check.id==id&&check.pasw==pasw){
 81:                user=check;
 82:                fclose(f1);
 83:                return 1;
 84:            }
 85:        }
 86:        fclose(f1);
 87:        return 0;
 88: }
 89:
 90: // function for creating new account and storing user details in
     file
 91: void signup(){
 92:        FILE *f1,*f2;
 93:        f1 = fopen("User_data.dat","a");
 94:        f2 = fopen("User_data.dat","r");
 95:        profile input,check;
 96:        fflush(stdin);
 97:        printf("Name: ");
 98:        scanf("%[^\n]s",input.name);
 99:        printf("ID: ");
100:        scanf("%d",&input.id);
101:        while (fread(&check,sizeof(profile),1,f2))
102:        {
103:            if(check.id==input.id){
104:                printf("ID already exist\n\n");
105:                fclose(f1);
106:                fclose(f2);
107:                chooesLogin();
108:                return;
109:            }
110:        }
111:        printf("Create password: ");
112:        scanf("%d",&input.pasw);
```

```c
113:        fwrite(&input,sizeof(profile),1,f1);
114:        printf("Sign up succesfuly\n\n");
115:        printf("Login\n");
116:        fclose(f1);
117:        fclose(f2);
118:
119:        return;
120: }
121:
122: // function for selecting login or signup
123: void chooesLogin(){
124:        int login_method;
125:        while (1)
126:        {
127:            printf("Chooes your login method:\n");
128:            printf("1.Login\n2.Sign up\n");
129:            scanf("%d",&login_method);
130:            if(login_method==1){
131:                label:
132:                if(login())
133:                {
134:                    printf("\n-----------------------------------------------------------------------\n");
135:                    printf("Login succesfuly\n");
136:                    printf("Name: %s\nID: %d\n",strupr(user.name),
       user.id);
137:                    return;
138:                }
139:                else
140:                {
141:                    printf("Wrong password or ID\n\n");
142:                    chooesLogin();
143:                    return;
144:                }
145:            }else if(login_method==2){
146:                signup();
147:                goto label;
148:                return;
149:            }else{
150:                printf("\nWrong choice!! Try again.\n");
151:            }
```

```c
152:        }
153:        return;
154:  }
155:
156:  // function for count total number of days between two dates
157:  int daysCount(){
158:        int days=0;
159:
160:        // Calculate time in seconds for each date
161:        struct tm date1 = { .tm_mday = rent.dr, .tm_mon = rent.mr -
       1, .tm_year = rent.yr - 1900 };
162:        struct tm date2 = { .tm_mday = rent.dret, .tm_mon =
       rent.mret - 1, .tm_year = rent.yret - 1900 };
163:        time_t t1 = mktime(&date1);
164:        time_t t2 = mktime(&date2);
165:
166:        // Calculate difference in seconds
167:        double diff = difftime(t2, t1);
168:
169:        // Convert difference to number of days
170:        days = (int) (diff / (24 * 60 * 60));
171:
172:        return days;
173:  }
174:
175:  // function for deleteing a rentData structure record from file
176:  void deleteRecord(int inp_carNo){
177:        rentData temp;
178:        FILE *f1,*f2;
179:        f1=fopen("Rented_car_data.dat","r");
180:        f2=fopen("temp.dat","w");
181:        fclose(f2);
182:        f2=fopen("temp.dat","a");
183:        while (fread(&temp,sizeof(rentData),1,f1))
184:        {
185:            if(temp.carNo!=inp_carNo || temp.u_id!=user.id){
186:                fwrite(&temp,sizeof(rentData),1,f2);
187:            }
188:        }
189:        fclose(f1);
190:        fclose(f2);
```

```c
191:
192:        f1=fopen("Rented_car_data.dat","w");
193:        fclose(f1);
194:        f1=fopen("Rented_car_data.dat","a");
195:        f2=fopen("temp.dat","r");
196:        while (fread(&temp,sizeof(rentData),1,f2))
197:        {
198:            fwrite(&temp,sizeof(rentData),1,f1);
199:        }
200:        fclose(f2);
201:        fclose(f1);
202:        f2=fopen("temp.dat","w");
203:        fclose(f2);
204:        return;
205: }
206:
207: // funtion for rent a car
208: void car_rent(){
209:        int sl;
210:        printf("\nWELCOME DEAR CUSTOMER!!! \n");
211:        display();
212:        printf("ENTER THE CarNO. OF THE CAR YOU WANT TO RENT: ");
213:        scanf("%d",&sl);
214:        sl--;
215:        printf("BRAND: %s\nMODEL: %s\nYEAR: %d\nRENT PER DAY: %d/-
       \n\n",cars[sl].brand,cars[sl].model,cars[sl].year,cars[sl].rate);
216:        printf("ENTER DATE ON WHICH YOU WILL TAKE THE CAR(dd mm
       yyyy): ");
217:        scanf("%d%d%d",&rent.dr,&rent.mr,&rent.yr);
218:        printf("ENTER THE DATE ON WHICH YOU WILL RETURN THE CAR(dd
       mm yyyy): ");
219:        scanf("%d%d%d",&rent.dret,&rent.mret,&rent.yret);
220:        rent.u_id=user.id;
221:        rent.carNo=sl;
222:        int days = daysCount();
223:        rent.price=cars[sl].rate*days;
224:        FILE *f1;
225:        f1 = fopen("Rented_car_data.dat","a");
226:        fwrite(&rent,sizeof(rentData),1,f1);
227:        fclose(f1);
228:        printf("Car rented sucessfuly\n\n");
```

```c
229:        printf("Details:\n");
230:        printf("-------------------------------------------------------------------------------------------\n");
231:        printf("NAME: %s\nCUSTOMER ID: %d\nCAR RENTED: %s %s\nNUMBER
       OF DAYS: %d\nRENT: %d/-\n",strupr(user.name),user.id,
       cars[sl].brand,cars[sl].model,days,cars[sl].rate*days);
232:        printf("-------------------------------------------------------------------------------------------\n");
233:        printf("WARNING: If any damage is done to the car then you
       are entirely responsible. The car has to be returned in its
       initial condition.\n");
234:        printf("-------------------------------------------------------------------------------------------\n");
235:        FILE *f2;
236:        char fileName[50];
237:        strcat(strcpy(fileName,user.name),"_bill.txt");
238:        f2=fopen(fileName,"w");
239:        fprintf(f2,"Details:\n");
240:        fprintf(f2,"-------------------------------------------------------------------------------------------\n");
241:        fprintf(f2,"NAME: %s\nCUSTOMER ID: %d\nCAR RENTED: %s
       %s\nNUMBER OF DAYS: %d\nRENT: %d/-\n",strupr(user.name),user.id,
       cars[sl].brand,cars[sl].model,days,cars[sl].rate*days);
242:        fprintf(f2,"-------------------------------------------------------------------------------------------\n");
243:        fprintf(f2,"WARNING: If any damage is done to the car then
       you are entirely responsible. The car has to be returned in its
       initial condition.\n");
244:        fprintf(f2,"-------------------------------------------------------------------------------------------\n");
245:        fclose(f2);
246:        return;
247: }
248:
249: // function for return a car
250: void car_return(){
251:        printf("\nWelcome back dear customer \n");
252:        FILE *f1;
253:        f1 = fopen("Rented_car_data.dat","r");
254:        rentData check;
255:        int flag=0;
```

```c
256:        while (fread(&check,sizeof(rentData),1,f1))
257:        {
258:            if(check.u_id == user.id)
259:            {
260:                if(flag==0){
261:                printf("Rented cars of yours\n");
262:                }
263:                rent=check;
264:                printf("\n%s %s\nCarno.: %d\nRent date:%02d-%02d-
    %04d\nReturn date:%02d-%02d-%04d\n",cars[rent.carNo].brand,
    cars[rent.carNo].model,rent.carNo,check.dr,check.mr,check.yr,
    check.dret,check.mret,check.yret);
265:                flag=1;
266:            }
267:        }
268:        printf("\nEnter carno. which you want to return\n");
269:        int in_car;
270:        scanf("%d",&in_car);
271:        deleteRecord(in_car);
272:        if(flag==0){
273:            printf("no car found to reaturn\n");
274:        }
275:        printf("thank you!!");
276:        return;
277: }
278:
279: int main(){
280:        printf("\tWELCOME TO OUR CAR RENTAL SYSTEM!!\n");
281:        chooesLogin();
282:        int n1;
283:        label:
284:            printf("\n\aHI!! ARE YOU HERE TO TAKE THE CAR SERVICE OR
    RETURN BACK THE CAR? \n 1.WANT TO RENT A CAR.\n 2.WANT TO RETURN
    THE CAR.\n");
285:            scanf("%d",&n1);
286:            switch(n1)
287:            {
288:                case 1:{car_rent();
289:                break;}
290:                case 2:car_return();
291:                break;
```

```c
292:              default:{printf("Wrong choice!! Try again.\n");
293:              goto label;}
294:         }
295:     return 0;
296: }
```

OUTPUT:

```
| 4 | TOYOTA    | Avalon    | 2021 | 200         |
| 5 | FORD      | Explorer  | 2022 | 250         |
| 6 | TATA      | Safari    | 2022 | 200         |
| 7 | AUDI      | Q3        | 2021 | 250         |
+----+----------+-----------+------+-------------+
ENTER THE CarNO. OF THE CAR YOU WANT TO RENT: 6
BRAND: TATA
MODEL: Safari
YEAR: 2022
RENT PER DAY: 200/-

ENTER DATE ON WHICH YOU WILL TAKE THE CAR(dd mm yyyy): 20 01 2023
ENTER THE DATE ON WHICH YOU WILL RETURN THE CAR(dd mm yyyy): 25 01 2023
Car rented sucessfuly

Details:
-------------------------------------------------------------------------------------------
NAME: XYZ
CUSTOMER ID: 1234
CAR RENTED: TATA Safari
NUMBER OF DAYS: 5
RENT: 1000/-
-------------------------------------------------------------------------------------------
WARNING: If any damage is done to the car then you are entirely responsible. The car has to be returned in its initial condition.
-------------------------------------------------------------------------------------------

---------------------------------
Process exited after 73.06 seconds with return value 0
Press any key to continue . . .
```

```
        WELCOME TO OUR CAR RENTAL SYSTEM!!
Chooes your login method:
1.Login
2.Sign up
2
Name: xyz
ID: 1234
Create password: 0000
Sign up succesfuly

Login
Enter ID: 1234
Enter password: 0000

----------------------------------------------------------------------------
Login succesfuly
Name: XYZ
ID: 1234

HI!! ARE YOU HERE TO TAKE THE CAR SERVICE OR RETURN BACK THE CAR?
 1.WANT TO RENT A CAR.
 2.WANT TO RETURN THE CAR.
1

WELCOME DEAR CUSTOMER!!!
+------+----------+-----------+------+-------------+
|CarNo.| BRAND    | MODEL     | YEAR | RENT PER DAY |
+------+----------+-----------+------+-------------+
| 1 | HYUNDAI  | Veloster  | 2020 | 200         |
| 2 | SUZUKI   | Celerio   | 2022 | 250         |
| 3 | HONDA    | Civic     | 2019 | 300         |
| 4 | TOYOTA   | Avalon    | 2021 | 200         |
| 5 | FORD     | Explorer  | 2022 | 250         |
| 6 | TATA     | Safari    | 2022 | 200         |
| 7 | AUDI     | Q3        | 2021 | 250         |
+------+----------+-----------+------+-------------+
ENTER THE CarNO. OF THE CAR YOU WANT TO RENT: 6
BRAND: TATA
MODEL: Safari
YEAR: 2022
```

```
              WELCOME TO OUR CAR RENTAL SYSTEM!!
Chooes your login method:
1.Login
2.Sign up
1
Enter ID: 1234
Enter password: 0000

-------------------------------------------------------------------------------
Login succesfuly
Name: XYZ
ID: 1234

HI!! ARE YOU HERE TO TAKE THE CAR SERVICE OR RETURN BACK THE CAR?
 1.WANT TO RENT A CAR.
 2.WANT TO RETURN THE CAR.
2

Welcome back dear customer
Rented cars of yours

TATA Safari
Carno.: 5
Rent date:20-01-2023
Return date:25-01-2023

Enter carno. which you want to return
5
thank you!!
--------------------------------
Process exited after 15.75 seconds with return value 0
Press any key to continue . . .
```

REFERENCE:

- **https://cboard.cprogramming.com/c-programming/149266-car-rental-program.html**
- **https://www.studytonight.com/c-projects/**
- **https://youtu.be/irqbmMNs2Bo**

THANK YOU