

User Manual

Jiajun Liu

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User Management

Implement User Registration and login functionality.

The User database contains the User ID, First and Last name, Username, Password, and IsCustomer attributes. There are two user types: admin and customer. The user can register and log in as those two user types.

```
*****
Welcome to the Car Rental
*****
1. Register
2. Login
3. Leave
*****
Please enter the specific number:
```

Figure 1. Home Page

When the console website runs, users will see the Home Page shown in Figure 1, and users can choose 1 for Register, 2 for Login, and 3 for Leave to stop the program. When the user chooses 1 to enter the Register Page in Figure 2, they will be asked to enter their first and last name and then set the username and password. After that, users will be asked to register as an admin or a customer. If the user enters 1 to register as a customer, the "IsCustomer" attribute value in the User database will be 1. If the user enters 0 to register as an admin, the "IsCustomer" attribute value in the User database will be 0. The user will have their unique username. Then, when the username the user input already exists, the user will be informed of the message "The Username had already existed, please choose another" to set another username shown in Figure 2, otherwise, the message "Successfully Register" in Figure 3 will be displayed for successfully register.

```

*****
Register
*****
Please enter the first name: Jack
Please enter the second name: Liang
Please enter the username: JL
Please enter the password: 12345
*****
Register as customer or admin (1 for customer, 0 for admin): 1
The Username has already existed, please choose another

```

Figure 2. Register Page (The username had been used)

```

*****
Register
*****
Please enter the first name: John
Please enter the second name: Zhao
Please enter the username: JZH
Please enter the password: 12367
*****
Register as customer or admin (1 for customer, 0 for admin): 1
Successfully Register

```

Figure 3. Register Page (Success Register)

When the user logs in, they need to input the username and password. When the username matches passwords with the "IsCustomer" attribute value as 0 user will be notified of the message "Successfully login as Admin" as Figure 4. Then, when the username matches the password with the "IsCustomer" attribute value as 1, the message "Successfully login as Customer" will be shown in Figure 5. If the username mismatches with the password, the message "The Username does not match the password" will notify the user as Figure 6.

```
*****
Login
*****
Please enter you username: JL
Please enter your password: 12356
*****
Successfully login as Admin
```

Figure 4. Login successfully as admin

```
*****
Login
*****
Please enter you username: RW
Please enter your password: 12345
*****
Successfully login as Customer
```

Figure 5. Login successfully as customer

```
*****
Login
*****
Please enter you username: JLIU
Please enter your password: 12345
*****
The Username does not match the password
```

Figure 6. Login unsuccessfully

Differentiate between customer and admin roles, each with specific privileges.

When the user logs in as an admin successfully. The "Admin Menu" in Figure 7 will display the functionalities for the admin. Then, 1 is for the admin to view all car records (both available and unavailable), 2 is to add the car record, 3 is to update the car record, 4 is to delete the card record, 5 is to view all the car rental book requests, and 6 is to process booking requests, including accepting and rejecting the book request, 7 is to delete the car rental book request records, and 8 is to go back to the home page.

```
*****
Admin Menu:
*****
1. Display All Cars
2. Add Car
3. Update Car
4. Delete Car
5. Show the booking request
6. Process the booking
7. Delete car booking record
8. Go back to the home page
*****
Please enter the specific number:
```

Figure 7. Admin Menu Page

```
*****
Customer Menu:
*****
1. Display Available Cars
2. Search Car
3. Book rental
4. Go Back to home page
*****
Please enter the specific number:
```

Figure 8. Customer Menu Page

When the user logs in as a customer successfully. The "Customer Menu" in Figure 8 shows the functionalities for the customer. 1 is to view all available car records (only available), 2 is to search car records with car make (brand) and car model keywords, 3 is to book the car rental, and 4 is to go back to the home page.

Car Management

Create the Car database.

The Car database contains 9 attributes, including Car ID, Car Make (Brand), Car Model, Year representing the year the car was made, Mileage, Availability (1 for available and 0 for unavailable), Minimum Period and Maximum Period representing the minimum and maximum rental period, respectively, and price representing the car rental price per day.

Allow admins to add, update, and delete car records.

When the admin inputs 1 for "Add Car" in the "Admin Menu", the Add Car Page in Figure 9 will be displayed, and they will be asked to input values for every attribute in the Car database. After this, the user will be informed of the message "The car has been successfully added".

```

*****
Add Car
*****
Please enter the Car Make (brand): BMW
Please enter the Car Model: X6
Please enter the year when the car was made: 2018
Please enter the mileage (km): 98000
Please enter the availability (1 for available or 0 for not available): 1
Please enter the Minimum period for rental (day): 4
Please enter the Maximum period for rental (day): 65
Please enter the price for this rented car per day in NZ dollar: 350.3
*****
The car has been successfully added.

```

Figure 9. Add Car Page

Then, when the admin inputs 2 for "Update Car" in the "Admin Menu", then, the Update Car Page in Figure 10 will be shown, and they will be asked to input the Car ID and updated values of every attribute of the car record that they want to update to. After that, the success message will display. If the Card ID does not exist, the message "The Car ID is not identified" will be shown.

```

*****
Update Car
*****
Please enter the the car id for updating car: 4
Please enter the updated value for Car Make (brand): Audi
Please enter the update value for Car model: A6
Please enter the update value for year when the car was made: 90000
Please enter the update value for mileage (km): 2017
Please enter the update value for availability (1 for available or 0 for not available): 1
Please enter the update value for Minimum period for rental (day): 4
Please enter the update value for Maximum period for rental (day): 60
Please enter the update value for price for this rented car per day in NZ dollar: 410
*****
The car detail has been updated

```

Figure 10. Update Car Page

Finally, when the admin inputs 3 for "Delete Car" in the "Admin Menu", the Delete Car Page in Figure 11 will be displayed, and they will be asked to input the Car ID of the car record they want to delete, then a success message will come up. When the car ID inputted does not exist, the message "The Car ID is not identified" will be displayed as well.


```

*****
Delete Car
*****
Please enter the Car ID of the car that you want to delete: 5
*****

The Car record is successfully deleted

```

Figure 11. Delete Car Page

Rental Booking

Enable customers to view available cars and their details.

When the customer chooses "Display All Available Cars" in the "Customer Menu", the car records with Availability attribute value as 1 in the Car database will show like Figure 12. The customer can know the Car ID that is related to the car they want to rent. They will need to use the Car ID to book a car rental.

```

*****
Customer Menu:
*****
1. Display Available Cars
2. Search Car
3. Book rental
4. Go Back to home page
*****
Please enter the specific number: 1
CarID: 3 CarMake: Toyota CarModel: Corola Mileage: 98000 Year: 2016 Availability: 1 MinimumPeriod: 3 MaximumPeriod: 60 Price: 360
CarID: 4 CarMake: Audi CarModel: A6 Mileage: 2017 Year: 90000 Availability: 1 MinimumPeriod: 4 MaximumPeriod: 60 Price: 410
CarID: 6 CarMake: Honda CarModel: Accord Mileage: 90000 Year: 2017 Availability: 1 MinimumPeriod: 3 MaximumPeriod: 65 Price: 350.4
CarID: 7 CarMake: BMW CarModel: X6 Mileage: 98000 Year: 2018 Availability: 1 MinimumPeriod: 4 MaximumPeriod: 65 Price: 350.3

```

Figure 12. Display All Available Cars

Then The customer can also search the car records with Car Make or Car Model keywords. At that time, the customer will be asked to choose to search by car make or car model (1 for car make and 2 for car model), and then, they can type the keywords. After that, all car records that contain keywords will be displayed, and it is case-insensible. If there are no related records, the customer will be informed by the message "There are not related results". Figures 13, 14, and 15 show the results about the car record with Available attribute value as 1 searched by Car Make, by Car Model, and no results found, respectively.

```

*****
Customer Menu:
*****
1. Display Available Cars
2. Search Car
3. Book rental
4. Go Back to home page
*****
Please enter the specific number: 2
*****
Please enter search response (1 for searching for Car Make (brand), 2 for searching for the Car Model): 1
Please enter the key word: t
*****
CardID: 3 Car Make: Toyota Car model: Corola Mileage: 98000 Year: 2016 Availability: 1 Minperiod: 3 Maxperiod: 60 Price: 360

```

Figure 13. Search Car by Car Make

```

*****
Customer Menu:
*****
1. Display Available Cars
2. Search Car
3. Book rental
4. Go Back to home page
*****
Please enter the specific number: 2
*****
Please enter search response (1 for searching for Car Make (brand), 2 for searching for the Car Model): 2
Please enter the key word: c
*****
CardID: 3 Car Make: Toyota Car model: Corola Mileage: 98000 Year: 2016 Availability: 1 Minperiod: 3 Maxperiod: 60 Price: 360
CardID: 6 Car Make: Honda Car model: Accord Mileage: 90000 Year: 2017 Availability: 1 Minperiod: 3 Maxperiod: 65 Price: 350.4

```

Figure 14. Search Car by Car Model

```

*****
Customer Menu:
*****
1. Display Available Cars
2. Search Car
3. Book rental
4. Go Back to home page
*****
Please enter the specific number: 2
*****
Please enter search response (1 for searching for Car Make (brand), 2 for searching for the Car Model): 1
Please enter the key word: z
*****
There are not related results.

```

Figure 15. Search Car without results.

Implement the book feature.

The Car Rental database is created with Rental ID, Car ID, User ID, Start Date, End Date, and Book Status.

When the customer chooses "Book rental", they will be asked to input the Car ID of the car that they want to rent, the value of the Start Date, and the End Date in the format of YYYY-MM-DD. Then, when the rental period is shorter than the minimum rental period or longer than the maximum rental period, the related messages will be shown. When the car rental record is successfully added to the Car Rental database, the message for successful rental will be displayed. Then, the Book Status attribute will become "pending", which means this book request is waiting for admin to process and the Availability attribute value of the car booked to be rented will become 0, which means unavailable.

Figure 16 shows the result when the Car ID that the customer input is not available or does not exist.

```
*****
Customer Menu:
*****
1. Display Available Cars
2. Search Car
3. Book rental
4. Go Back to home page
*****
Please enter the specific number: 3

*****
Please enter the Car Id of car that you want to book: 1
Please enter the startDate in the format of YYYY-MM-DD: 2024-01-23
Please enter the endDate in the format of YYYY-MM-DD: 2024-01-25
*****
The Car id is not identified.
```

Figure 16. Car ID is not found.

Figures 17 and 18 show the result when the car rental period is less than the minimum rental period and more than the maximum rental period.

```
*****
Customer Menu:
*****
1. Display Available Cars
2. Search Car
3. Book rental
4. Go Back to home page
*****
Please enter the specific number: 3

*****
Please enter the Car Id of car that you want to book: 3
Please enter the startDate in the format of YYYY-MM-DD: 2024-01-23
Please enter the endDate in the format of YYYY-MM-DD: 2024-01-25
*****
The rental period is less than minimum period
```

Figure 17. The car rental period is less than the minimum period.

```

*****
Customer Menu:
*****
1. Display Available Cars
2. Search Car
3. Book rental
4. Go Back to home page
*****
Please enter the specific number: 3

*****
Please enter the Car Id of car that you want to book: 3
Please enter the startDate in the format of YYYY-MM-DD: 2024-01-23
Please enter the endDate in the format of YYYY-MM-DD: 2024-10-23
*****
The rental period is more than maximum period

```

Figure 18. The car rental period is more than the maximum period.

Calculate the rental fees.

Figure 19 shows when the customers input the Car ID of the available car, and the difference between the start and end date is between than minimum rental period and the maximum rental period (including minimum and maximum rental period), the car rental will be successfully booked, the success message “The car is successfully rented.” will be displayed and the rental fee is also calculated and shown in Figure 19. The rental fee is calculated based on the rental price per day multiplied by the rental period (the end date minus the start date).

```
*****
Customer Menu:
*****
1. Display Available Cars
2. Search Car
3. Book rental
4. Go Back to home page
*****
Please enter the specific number: 3

*****
Please enter the Car Id of car that you want to book: 4
Please enter the startDate in the format of YYYY-MM-DD: 2024-01-23
Please enter the endDate in the format of YYYY-MM-DD: 2024-01-28
*****
The car is successfully rented
The Rental fee is 2050
```

Figure 19. Successfully book the car rental

Rental Management

Allow admins to process the rental booking, including approving and rejecting requests.

When the admin chooses "Show the booking request", all car rental records in the "Car Rental" database will be displayed in Figure 20.

After that, the admin can choose "Process the booking" to accept or reject the book request, the admin will be asked to input the Rental ID of the booking request that they want to process. Then, they will be asked to accept or reject the request. When they choose to accept the request, the Book Status value of the related car rental record in the Car Rental database will become "accept", and the message "The booking request has been accepted." will be shown in Figure 21. If the admin chooses to reject the request, the Book Status value will become "reject", and the message "The booking request has been rejected." is shown in Figure 22 and the Availability value of the related car record in the Car database will become 1, representing available status.

```

*****
Admin Menu:
*****
1. Display All Cars
2. Add Car
3. Update Car
4. Delete Car
5. Show the booking request
6. Process the booking
7. Delete car booking record
8. Go back to the home page
*****
Please enter the specific number: 5
RentalID: 14 CarID: 4 UserID: 1 StartDate: 2024-01-23 EndDate: 2024-01-28 BookStatus: pending

```

Figure 20. The booking requests are shown

```

*****
Admin Menu:
*****
1. Display All Cars
2. Add Car
3. Update Car
4. Delete Car
5. Show the booking request
6. Process the booking
7. Delete car booking record
8. Go back to the home page
*****
Please enter the specific number: 6

*****
Please enter the rental id of that you want to process: 14
Please enter the number for booking requests, 1 for accept and 0 for reject: 1
*****
The booking request has been accepted.

```

Figure 21. Accept the booking request.

```
*****
Admin Menu:
*****
1. Display All Cars
2. Add Car
3. Update Car
4. Delete Car
5. Show the booking request
6. Process the booking
7. Delete car booking record
8. Go back to the home page
*****
Please enter the specific number: 6

*****
Please enter the rental id of that you want to process: 15
Please enter the number for booking requests, 1 for accept and 0 for reject: 0
*****
The booking request has been rejected.
```

Figure 22. Reject the booking request.

If the Rental ID inputted does not exist or the booking status of the related booking request is not pending, the message "The Rental ID is not identified." will be shown in Figure 23.


```
*****
Admin Menu:
*****
1. Display All Cars
2. Add Car
3. Update Car
4. Delete Car
5. Show the booking request
6. Process the booking
7. Delete car booking record
8. Go back to the home page
*****
Please enter the specific number: 6

*****
Please enter the rental id of that you want to process: 15
Please enter the number for booking requests, 1 for accept and 0 for reject: 1
*****
The Rental ID is not identified
```

Figure 23. The Rental ID is not identified.

Finally, the admin can also delete the car rental records in the Car Rental database by inputting the available Rental ID as Figure 24. At the same time, if the Rental ID inputted does not exist in the Car Rental database, the message “The Rental ID is not identified” will be shown as well.

```
*****
Admin Menu:
*****
1. Display All Cars
2. Add Car
3. Update Car
4. Delete Car
5. Show the booking request
6. Process the booking
7. Delete car booking record
8. Go back to the home page
*****
Please enter the specific number: 7
*****
Please enter the rental id of that you want to delete: 15
*****
The Rental record is successfully deleted
```

Figure 24. Delete booking request record.