

E - PARKING

A Course project report submitted in partial
fulfilment of requirement of

SOFTWARE ENGINEERING

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Abstract

The objective of our project is to digitalize the existing manual approach to park the vehicles. Usually, users need to wait in a line and complete the registration process for parking. Also, to park the vehicles the vehicle owners need to look over all the parking slots that are available and then decide which slot is available to park the vehicle. This is a tedious task for the user and it's a waste of time. Instead, we aim to develop an online parking system such that it will be user friendly and reduce the burden for the user.

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1. Introduction

In this Digital era everyone is in a hurry. Nowadays, Parking is the most common issue whenever we go out. There is a drastic increase in number of people who are using their own vehicles to travel. Usually, we don't find parking slots in the public places. But these days some malls are offering parking slots. In this scenario finding a parking slot to park their vehicles is very important. Here, people find it difficult to get their desired parking slot.

E Parking is an efficient tool to manage the parking space in busy areas such as shopping malls, restaurants and others during their peak hour. It is very difficult for the vehicle owner to go through all the parking slots and park their vehicle. In addition, in these busy life style people would prefer online system rather than a offline process which takes a lot of time.

Online Parking system saves the time of the user and also avoid the huge burden to stand in a queue and wait for their chance to book a slot. If it's a peak time of the mall then it will take a lot of time. Also, in the online parking system we can reduce the possibility of manual error. It also reduces the ambiguity to the user in choosing the slots and the whole process will be user friendly.



Fig 1.1 Parking Slots

2. Literature Review

In these modern days, parking the vehicles through online mode has become very easy and convenient to the user. So, here we have analysed the work of people who worked on this issue.

According to Shem, S, S.Park and S.Hong (2006), an online vehicle parking reservation system is introduced in such a way that the drivers are no longer disturbed to choose their parking slot. The system itself generates a parking slot number to the user [2].

Another researcher Ndayisaba Corneille, also worked on this topic. He tried to create an application such that the employees can book the parking for the client. Also, clients can view the parking available and reserve the parking slot online. And the system administrators can manage the parking lot, transaction and also the clients [1].

In the paper proposed by Floris, Alessandro, et al a magnetometer is placed to automatically detect the presence of a vehicle in the parking slot. At first, they have involved 15 different vehicles and tested the reliability of magnetometer. They have observed that if the magnetometer is placed at the front, then it can easily detect the presence of vehicle. But if the magnetometer is placed under the center of the vehicle, then it may not be detected [7].

3. Proposed System

Here we propose an online parking system that will enable the vehicle drivers to reserve a parking slot in online mode. In this project we aim to come up with an application which allows the user to choose their slot. The user is new he should first enter a few basic details and after registering he can directly login to the site.

After entering the details such as vehicle number, vehicle type and number of hours they want to book the slot another slot module is displayed. Now we will display a map of all the slots available in a place and the user can choose the slot by clicking on a particular slot. After choosing the slot a receipt is displayed so that the user can view all the details about the slot booking.

4. Block diagram

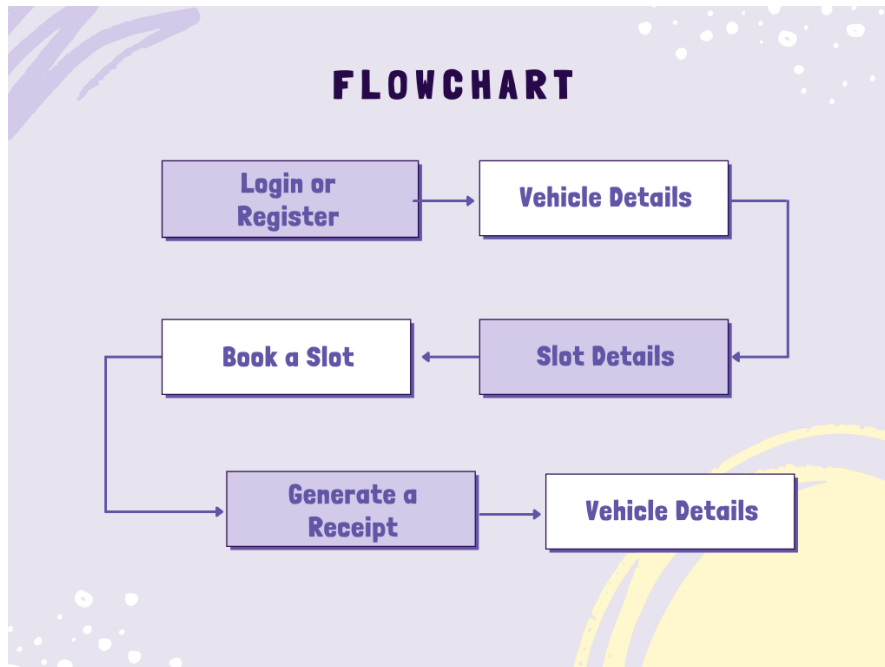


Fig 4.1 Block Diagram

5. Algorithm

Step 1: Open the application.

Step 2: If you are a new user register into it by entering your first name, last name, user name and password.

Step 3: After registering login into the site with the user name and password.

Step 4: Enter the vehicle information such as vehicle number, number of hours you want to park etc.

Step 5: A map of slots will be displayed then choose your desired slot.

Step 6: In the next page, you can view the receipt of the total slot information.

Step 7: Finally, a thank you page will be displayed at the end.

6. Results

The interface of our application consists of different modules such as login, register, vehicle details, slots, receipt generation and a final page. The below shown images are the view of our application.

- At First, the user should enter the user name and password if he is already registered. And these both fields should not be empty. If he is already registered then after entering the details he can click on Login button. If he is not registered then he should click the Register button. Fig 6.1 is the login interface where the user can login to his account if the user is already registered.

The screenshot shows a web application interface for 'E Parking'. On the left, there is a solid blue vertical bar. The main area has a light gray background. At the top center, the text 'E Parking' is displayed. Below it, there are two input fields: 'User name' and 'Password'. Under the 'Password' field, there are two blue buttons: 'Register' and 'Login'.

Fig 6.1 Login Page

- After entering the register page, the user should enter some details such as first name, last name, user name, password and re-enter the same password. For the first time usage the user should enter these details and these should not be empty. Fig 6.2 is the register page where the user can register if he/she is new to the application.

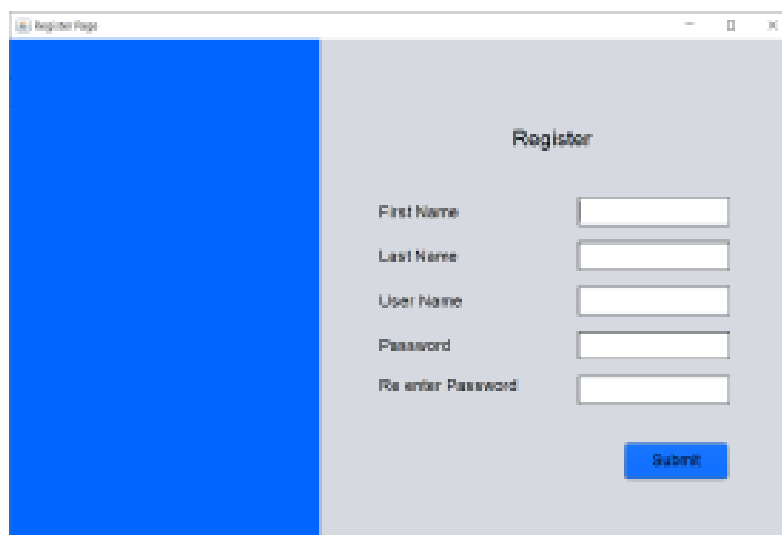
The screenshot shows a web application interface for the 'Register' page. It features a blue vertical bar on the left and a light gray main area. The title 'Register' is centered at the top. Below it, there are five input fields labeled 'First Name', 'Last Name', 'User Name', 'Password', and 'Re enter Password'. At the bottom right of the form area, there is a blue 'Submit' button.

Fig 6.2 Register Page

- If all the details are entered a message is displayed that the user is registered successfully as shown in Fig 6.3.

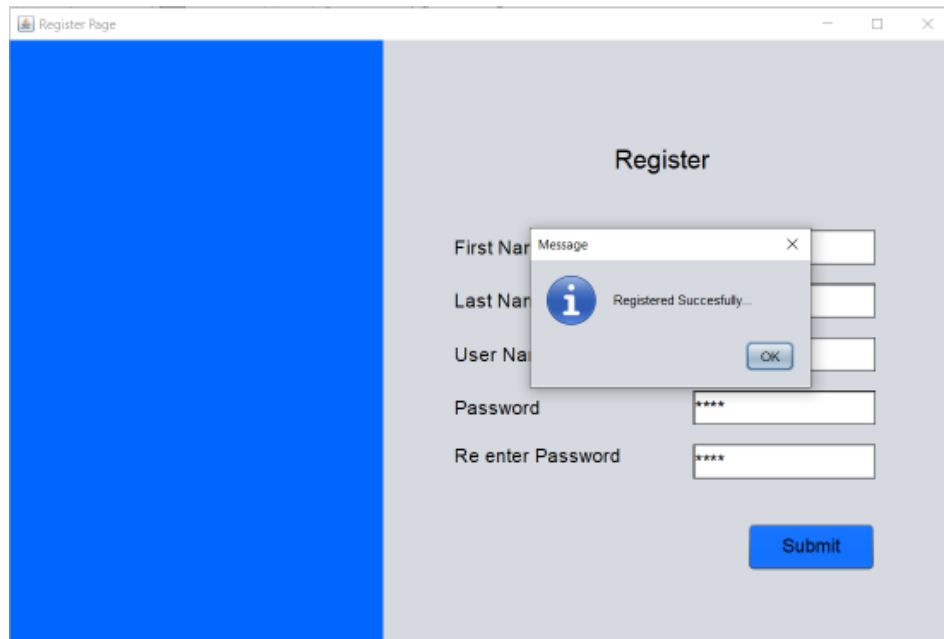


Fig 6.3 Register Page

- Next module is where the user can enter the vehicle details, and if the vehicle number is not in a correct format we can observe a message as shown in Fig 7.4. Here the user should also enter the vehicle type and the number of hours he/she want to book the slot so that the amount required to pay can be calculated.

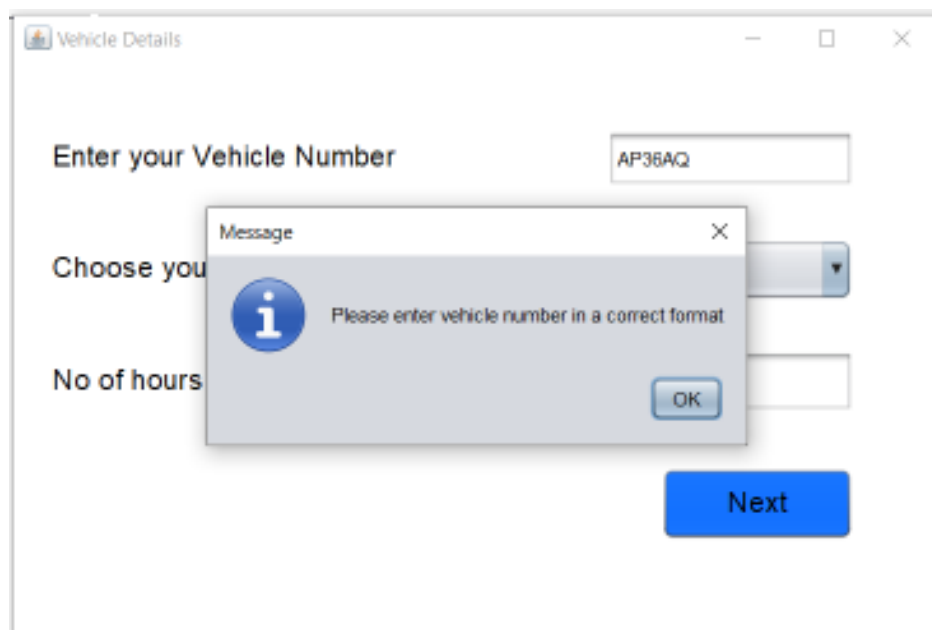


Fig 6.4 Vehicle Details

- The next module is choosing the slots. The user can choose slots based on the map shown. When the user clicks on the image the slot number is displayed as shown in Fig 7.5. The user can also change the slot by clicking on a different slot before submitting the page.

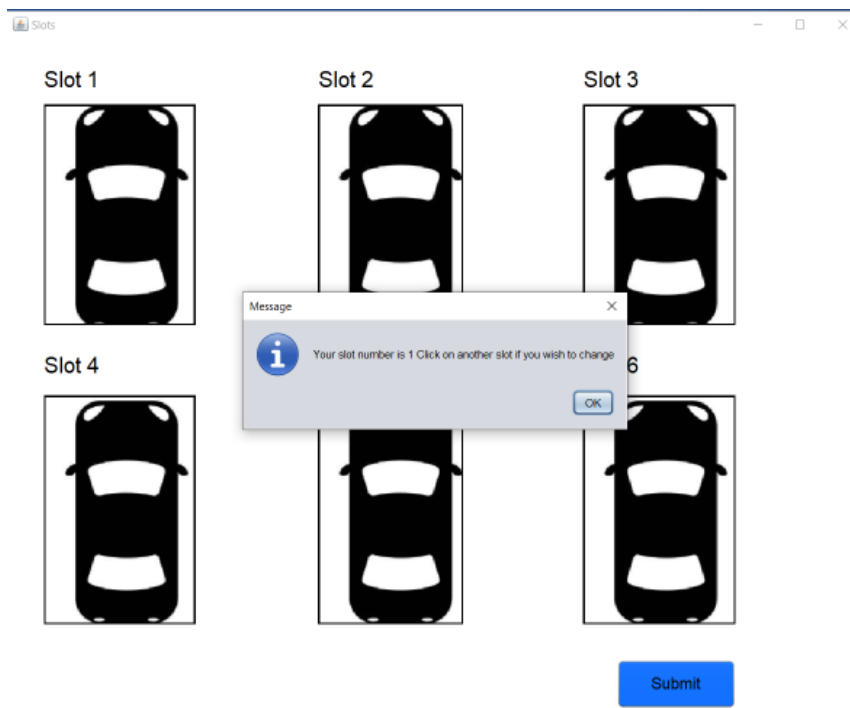


Fig 6.5 Slots

- After choosing the slots a confirmation message is displayed that the slot is booked as shown in Fig 6.6.

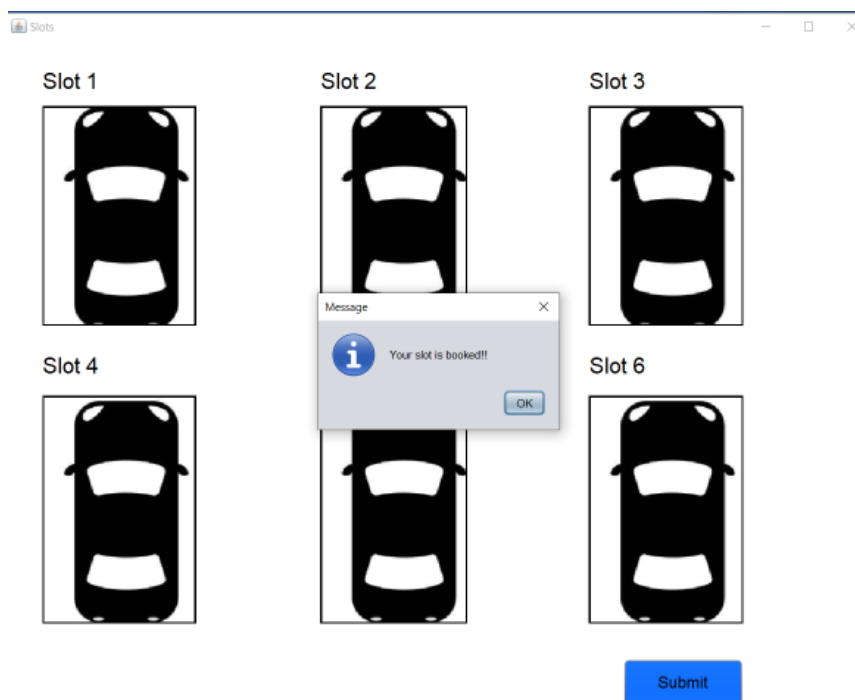
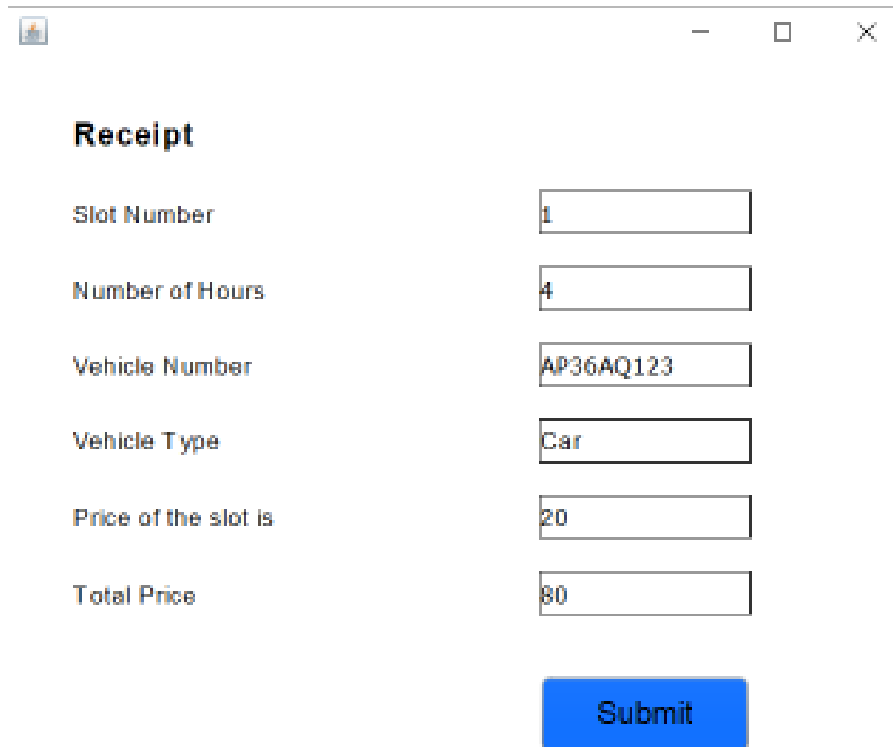


Fig 6.5 Slots

- As shown in Fig 6.6 a receipt is displayed with all the details such as slot number, number of hours, vehicle number, vehicle type, price of slot and the total price.



The screenshot shows a window titled "Receipt" with a standard Windows-style title bar (minimize, maximize, close buttons). The form contains the following fields:

Field Label	Value
Slot Number	1
Number of Hours	4
Vehicle Number	AP36AQ123
Vehicle Type	Car
Price of the slot is	20
Total Price	80

Below the fields is a blue "Submit" button.

Fig 6.6 Receipt

- As shown in Fig 7.7 a final page is displayed.



Fig 6.6 Final Page

7. Comparison table for different applications

Table 7.1 Comparison Table

Various Applications	Our application
A RFID Based parking system is developed to park the vehicles. This is developed to automate the check in and check out process of vehicles [6].	But this application doesn't address the user's choice and updating the parking slots automatically.
An online vehicle parking reservation system is introduced in such a way that the drivers are no longer disturbed to choose their parking slot. The system itself generates a parking slot number to the user [2].	Even in this application it doesn't consider user's choice. But our application is very much efficient and handy to the user.

8. Conclusion

In Conclusion, we have developed an application to park the vehicles in online mode. In this automated world, this is very much needed. Malls and other public areas usually contain rush in the peak hours. Sometimes getting a parking spot is very much difficult. Instead, here we proposed a online parking mechanism to park the vehicles. The user just needs to enter some required information and can book the slot of his choice in online mode.

References

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