IMPLEMENTATION OF SMART PARKING MANAGEMENT SYSTEM USING APACHE TOMCAT SERVER

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Abstract: Parking Management System is implemented to manage occupancy of parking slots and allow customers to find and reserve available parking place and to inquire on the vacant slots before vehicle arriving at parking. Parking management system is implemented so that user can book the parking slots in internet before arriving to the parking place. The parking management system will encourage customers to book parking slots in online and make the parking process a hassle-free experience.

Keywords: parking, TOKEN, Register, Admin, Apache manager.

I. INTRODUCTION

Parking Management system is a web based Application to the events of customers. In this system, customer can register in the application and get user id and password. Administrator will manage all the events adding, deleting and updating the slots. Existing system is very difficult to manage and it is a time consuming process. More manual work is needed. We have to face high-level risk in maintaining the existed system. In order to overcome all these problems the project is developed from manual procedure to automate. This project has been developed in order to overcome the difficulties encountered while using the existing system [1-2].

Parking Management System is developed to support the customers and also the management of parking with a flexible and hassle-free experience. The system enables the customer to make registrations and reservations in online [3-5]. Manually the customer has to check the available slot and wait until the slot is free or they search for any alternative like any side of roads. This wills a problem for Traffic. To avoid this problem Parking Management System is useful for both the customers and the management. In this system all the events are managed by the Admin only [6]. Admin adds, delete and update the information in the application. The user or customer login with his login-id and password and check for availability of slots. If the customer has selected a particular slot in a particular stall then he/she must register by giving the required details. Upon successful registration the customer can simply go to that parking place and park the vehicle thereby creating a hassle-free experience.

II. PURPOSE & SCOPE

The main purpose of Parking Management System is to reduce the manual work and waiting time of the customer. The customer simply registers in the site and after registration he then login into the system and he/she check for the available slots. Then the customer reserves the slot by giving the details like name, address, date and time. After completing the reservation the customer simply went to that parking stall and parked the vehicle thereby creating a hassle-free experience [7]. As it is an automated system it can perform the complete process through online.

A. Existing System

Exiting system is very difficult to manage parking system because all the events are handled manually. There are many facts in parking management system like giving place to park customer vehicles in any company is done in Parking Area where TOKEN system is used. It is very Time Consuming and the customer wants to wait until the slot is free or parking in any sides of Roads [8-10].

A. Drawbacks:

It is very Time Consuming process.
Manually the users check where the slot is free and park the vehicle with a lot of physical work.
Manually the parking team must provide the Token generation and then they select the vehicles to park and number of human power is needed.

The Customer has to wait until the slot is free or they search for any alternative like any side of roads. This wills a problem for Traffic.

There will be some Security issues may arise with this system.

To reach within the time with this existing system is very difficult.

B. Proposed System:
In this proposed system we are trying to automate the manual process.

In this system the customer should be able to check the parking space availability by specifying the desired date and time using a client device such as a web browser.

The website will allow customers to reserve a time slot in which to park days, weeks, or even months ahead of time and the system will store this information and properly arrange parking reservations to maximize the number of reservations that can be made.

Upon successful reservation, the customer is issued a reservation confirmation number.

By this customer can book the parking slots before parking the vehicle.

Advantages:

As this system is automated system, it reduces the manual power.

This system provides Flexibility for reserving the parking slots effectively without any manual power.

There will be no waiting time for the customers.

Using this system there will be no problem with the fines by keeping in the side roads thereby saving our Money.

III. MODULE DESCRIPTION

A. Admin:

In this module all the events related to slots and parking events will be maintained and prepared by Admin. Admin can also add, delete and update the slots available for customers. He checks for the registered users and slot booked users. Admin is responsible for maintaining all the events related to this parking management system.

B. Functionalities:

- Admin can add the new slots to the customers.
- Admin can update the slots.
- Admin checks the registered users and the slot booked users.

C. Customer:

In this module, information about all the events will be maintained by the customer belonging to the particular slot. He can register with the application and get user login-id and password. After login with the user id and password the customer checks the vacant slots available and book that selected slot.

C. Functionalities:

- Customer registers with the application.
- Customer login with the login-id and password.
- Customer checks the vacant slots book the selected slot.

D. Data Dictionary

IV. DATABASE:

We are having 5 Database tables.

- Admin table
- User login table
- User registration table
- Slot parking table
- Booked slots_info table

A. Admin table Description:

The Admin table is used for maintaining the Admin login_id and password.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Data Type</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin_name Admin_password</td>
<td>Admin name Password</td>
<td>Varchar (20) Varchar (20)</td>
<td>Not Null Not Null</td>
</tr>
</tbody>
</table>

B. User login table Description:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Data Type</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Username User password</td>
<td>User name Password</td>
<td>Varchar(30) Varchar(30)</td>
<td>Not Null Not Null</td>
</tr>
</tbody>
</table>

C. User registration Table description:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Data Type</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Username</td>
<td>Username</td>
<td>Varchar2(100)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Password</td>
<td>Password</td>
<td>Varchar2(100)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Designation</td>
<td>Designation</td>
<td>Varchar2(100)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Date_of_birth</td>
<td>Date_of_birth</td>
<td>Varchar2(100)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Gender</td>
<td>Gender</td>
<td>Varchar(10)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Email_id</td>
<td>Email_id</td>
<td>Varchar(10)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Mobile_number</td>
<td>Mobile_number</td>
<td>Varchar2(300)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Address</td>
<td>Address</td>
<td>Varchar2(100)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Vehicle_number</td>
<td>Vehicle_number</td>
<td>Varchar2(100)</td>
<td>Not Null</td>
</tr>
</tbody>
</table>

D. Slot parking table Description:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Data Type</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stall1</td>
<td>Stall1</td>
<td>Varchar(10)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Slot1</td>
<td>Slot1</td>
<td>Varchar(10)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Slot2</td>
<td>Slot2</td>
<td>Varchar(10)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Slot3</td>
<td>Slot3</td>
<td>Varchar(10)</td>
<td>Not Null</td>
</tr>
<tr>
<td>Slot4</td>
<td>Slot4</td>
<td>Varchar(10)</td>
<td>Not Null</td>
</tr>
</tbody>
</table>
### Field | Description | Data Type | Constraints
--- | --- | --- | ---
Username | Username | Varchar(10) | Not Null
Stall number | Stall number | Varchar(10) | Not Null
Slot | Slot number | Varchar(10) | Not Null
Vehicle number | Vehicle number | Varchar(10) | Not Null
Date | Date | Varchar(10) | Not Null
Time | Time | Varchar(10) | Not Null
Time period | Time period | Varchar2(10) | Not Null
Amount | Amount | Varchar2(10) | Not Null

#### V. TESTING SCENARIOS

**A. Administrator:**

<table>
<thead>
<tr>
<th>S.N O</th>
<th>Text case</th>
<th>Expected value</th>
<th>Actual value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Enter user name and password</td>
<td>True</td>
<td>True</td>
<td>Success</td>
</tr>
<tr>
<td>2</td>
<td>Admin entered wrong password</td>
<td>Invalid password</td>
<td>Login fail</td>
<td>Success</td>
</tr>
<tr>
<td>3</td>
<td>Invalid user name</td>
<td>Invalid user name</td>
<td>Login fail</td>
<td>Success</td>
</tr>
<tr>
<td>4</td>
<td>If any field is not entered while login</td>
<td>Login success</td>
<td>Error will be occur indicating that enter specified field.</td>
<td>Failure</td>
</tr>
<tr>
<td>5</td>
<td>Date may specified incorrectly</td>
<td>Login success</td>
<td>Redirect to date field</td>
<td>Failure</td>
</tr>
<tr>
<td>6</td>
<td>Without entering password</td>
<td>Login success</td>
<td>Enter password</td>
<td>Failure</td>
</tr>
<tr>
<td>7</td>
<td>Registered Users</td>
<td>Displays the number</td>
<td>Details of registere</td>
<td>success</td>
</tr>
</tbody>
</table>

### B. User:

<table>
<thead>
<tr>
<th>S.N O</th>
<th>Text case</th>
<th>Expected value</th>
<th>Actual value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Update Slots</td>
<td>Vacated slots of users can be updated. Update Successful</td>
<td>Update successful</td>
<td>Success</td>
</tr>
<tr>
<td>9</td>
<td>Slot booked users</td>
<td>Displays the number of users booked the slots. Details of slot booked users can be displayed in a table.</td>
<td></td>
<td>Success</td>
</tr>
</tbody>
</table>
VI. USER MANUAL

In order to use this Application, we need to install the following software’s.

- Mysql database
- Apache Tomcat Server 7.0

After installing these software’s we need to deploy the project in the Tomcat server.

Deployment Procedure:

- Open the location of the Tomcat server.
- Deploy your project in the web-apps folder.
- Start the tomcat server.
- Open mysql command line and connect to the Car Parking Database.
- Open the web-browser and connect to the server by using the port number (http://localhost:8080)
- Login in to the server by user name and the password.

- Click on ‘manager App’.
- Click on your project ‘Parking Management System’. You will get the Home page.

J. Home Page:

The Home page consists of the following Fields.

- Registration
- User login
- Admin
- Services
- Gallery
- Contact us

These are the following events and operations that can be performed by the Admin and the user.

IV. CONCLUSION:

This paper presents the implementation of a smart parking management system. In this work, we have developed a web application to know the web availability of different parking slots in the respective areas. To implement this, we have used Apache Tomcat server using database SQL server. This technology can be used in the Society viz. Shopping malls, Theatres etc. This system will encourage customers to make parking slots in online and make parking process a Hassle free experience. In future, this application flexibility can be improved by sending the registered id to the user as a text message or e-mail and alerts about the slot information.

REFERENCES


