



IMPLEMENTATION OF SMART PARKING MANAGEMENT SYSTEM USING APACHE TOMCAT SERVER

M Anila¹, Raswitha Bandi², N Shirisha¹, B Durga Sri²

¹ Department of Computer Science and Engineering,
MLR Institute of Technology, Hyderabad, India

² Department of Information Technology,
MLR Institute of Technology, Hyderabad, India

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 customer 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 maintain 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 will be 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 then checks 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 parks the vehicle thereby creating a hassle-free experience [7].

As it is automated system it can perform the complete process through online.

A. Existing System

Existing 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 will be 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 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 sideroads 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.

Field	Description	Data Type	Constraints
Admin_name	Admin name	Varchar (20)	Not Null
Admin_password	Password	Varchar (20)	Not Null

B. User login table Description:

Field	Description	Data Type	Constraints
Username	User name	Varchar(30)	Not Null
User password	Password	Varchar(30)	Not Null

C. User registration Table description:

Field	Description	Data Type	Constraints
Username	Username	Varchar2(10)	Not Null
Password	Password	Varchar2(10)	Not Null
Designation	Designation	Varchar2(10)	Not Null
Date_of_birth	Date_of_birth	0)	Not Null
Gender	Gender	Varchar2(10)	Not Null
Email_id	Email_id	0)	Not Null
Mobile_number	Mobile_number	Varchar2(10)	Not Null
Address	Address	Varchar	Not Null
Vehicle_number	Vehicle_number	(10)	
		Varchar2(10)	
		Number(10)	
)	
		Varchar2(30)	
		0)	
		Varchar2(10)	
		0)	

D. Slot parking table Description:

Field	Description	Data Type	Constraints
Stall1	Stall1	Varchar(10)	Not Null
Slot1	Slot1	Varchar(10)	Not Null
Slot2	Slot2	Varchar(10)	Not Null
Slot3	Slot3	Varchar(10)	Not Null
Slot4	Slot4	Varchar(10)	Not Null

Slot5	Slot5	Varchar(10)	Not Null
Slot6	Slot6	Varchar(10)	Not Null
Slot7	Slot7	Varchar(10)	Not Null
Slot8	Slot8	Varchar(10)	Not Null
Slot9	Slot9	Varchar(10)	Not Null
Slot10	Slot10	Varchar(10)	Not Null

Field	Description	Data Type	Constraints
Username	Username	Varchar(10)	Not Null
Stall number	Stall number	Varchar(10)	Not Null
Slot	Slot	Varchar(10)	Not Null
Vehicle number	Vehicle number	Varchar(10)	Not Null
Date	Date	Varchar2(10)	Not Null
Time	Time	Varchar2(10)	Not Null
Time period	Time period		
Amount	Amount		

		of users registered	d users will be shown in a table.	
8	Update Slots	Vacated slots of users can be updated. Update Successful	Update successful	Success
9	Slot booked users	Displays the number of users booked the slots.	Details of slot booked users can be displayed in a table.	Success

V. TESTING SCENARIOS

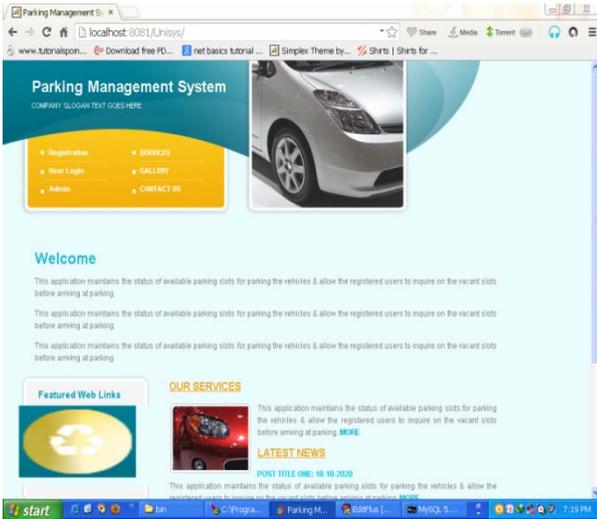
A. Administrator:

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

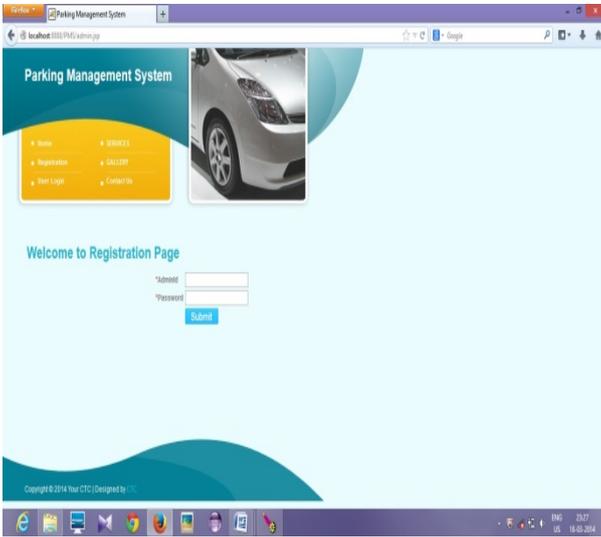
B. User:

S.N O	Text case	Expected value	Actual value	Result
1	Registration	Registration Successful	Registration Successful	success
2	Enter user name and password	True	True	Success
3	User entered wrong password	Invalid password	Login fail	Success
4	Invalid user name	Invalid user name	Login fail	Success
5	If any field is not entered while registration	Registration success	Error will be occur indicating that enter specified field.	Failure
6	Date may specified incorrectly	Registration success	Redirect to date field	Failure
7	Without entering password	Login success	Enter password	Failure
8	Select slot	If vacant available book the slot	Slot booked successfully	Success
9	Select slot	Booking the slot that is already booked	Your selected slot is booked by some other person	Fail

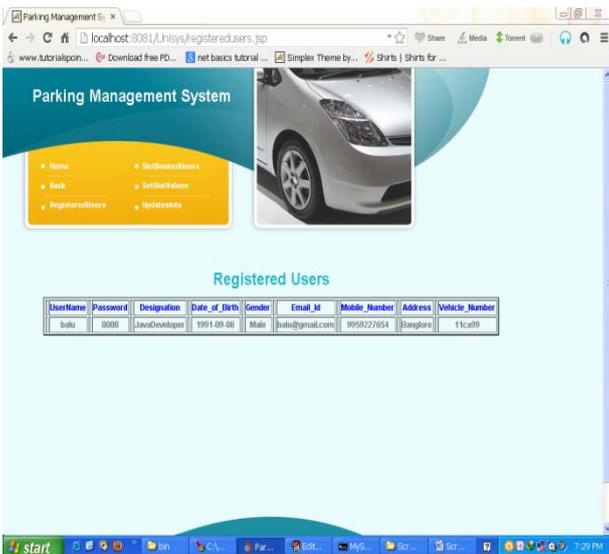
C. HOME PAGE



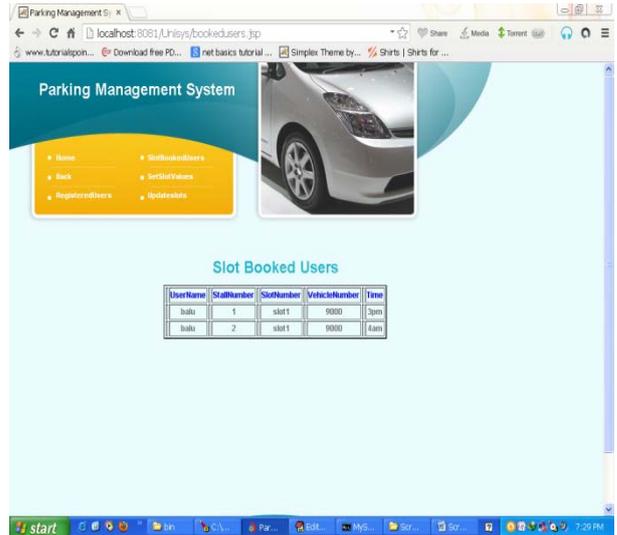
D. ADMIN LOGIN PAGE



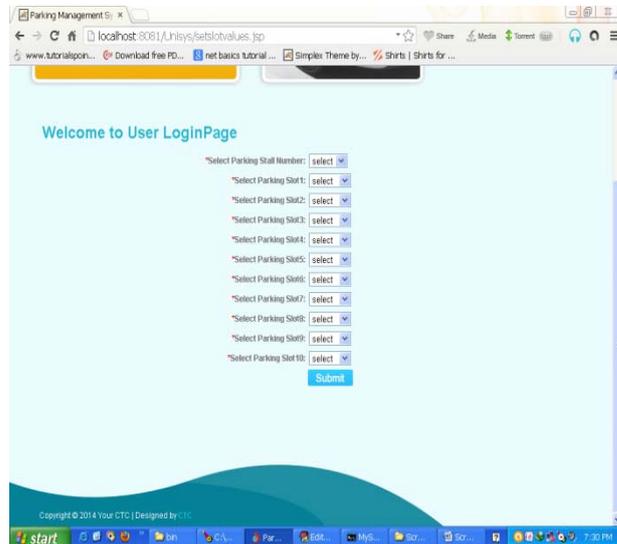
E. REGISTERED USERS



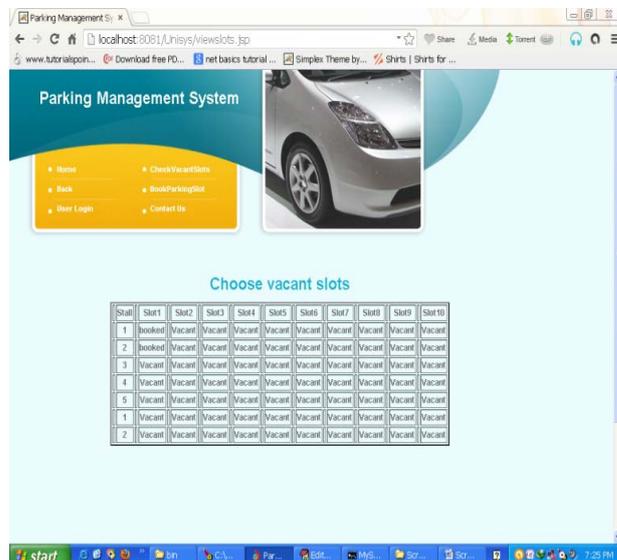
F. SLOT BOOKED USERS



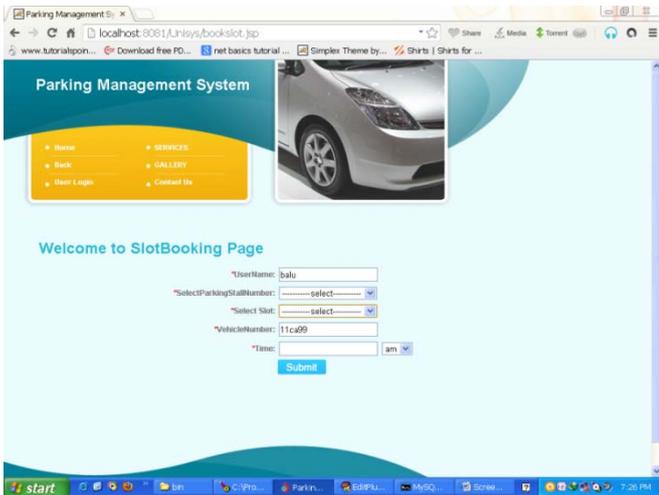
G. SET SLOT VALUES



H. CHECK VACANT SLOTS



I. SLOT BOOKING



VI. USER MANUAL

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

- Mysql database
- Apache Tomcat Server 7.0

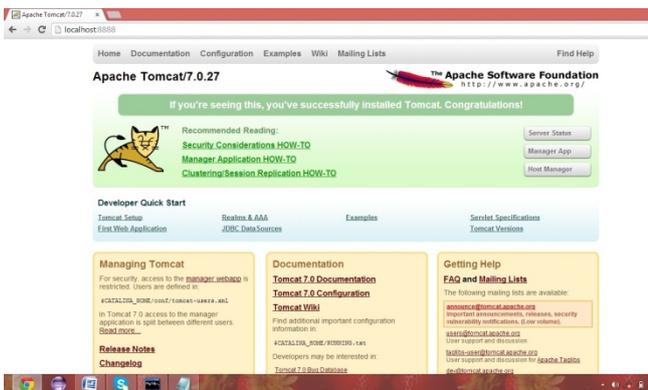
After installing these software's we need to deploy the project in the Tomcat server.

Deployment Procedure:

- Open the location of the Tomcat server.

Apache Software Foundation Tomcat 7.0 Web-apps →

- 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

- [1] Prof. A. D. Potgantwar, A. H. Wad, P. P. Pandit, S. Kumar, "RFID BASED VEHICLE IDENTIFICATION SYSTEM AND ACCESS CONTROL INTO PARKING", Patent No.: 1790/MUM/2013A, 05,2013.
- [2] Ms. AsmitaJondhale, Ms. Gautami Das, Prof. SamadhanSonavane, "OCR & RFID Based Vehicle Identification & Parking Allocation System", IEEE Paper No. 538, vol. 1, pp. 1-5, May. 2015.
- [3] Mr. Amrut Ram Selokar, Prof. Shweta Jain, "Automatic Number Plat Recognition System using A Fast Stroke-Based Method", IEEE TRANSACTIONS ON MULTIMEDIA, vol. 1, no. 7, pp. 1-5, APRIL 2014, ISSN 2347-3622.
- [4] Vandini Sharma, Prakash Mathpal, Akanksha Kaushik, "Automatic license plate recognition using optical character recognition and template matching on yellow color license plate", vol. 3, no. 5, pp. 1-7, May 2014, ISSN 2319-8753.
- [5] Lei Xie, Yafeng Yin, Athanasios V. Vasilakos, Sanglu Lu, Managing RFID Data: Challenges Opportunities and Solutions IEEE Paper No.: 06757191, vol. 16, no. 3, pp. 1294-1311, THIRD QUARTER 2014.
- [6] Roy Want, "An Introduction to RFID Technology", January-March 2006.
- [7] Markus Friedrich, Prokop Jehlicka, Johannes Schlaich, "AUTOMATIC NUMBER PLATE RECOGNITION FOR THE OBSERVANCE OF TRAVEL BEHAVIOUR", 8th International Conference on Survey Methods in Transport, May 25-31, 2008.
- [8] Christos Nikolaos, E. AnagnostopoulosIoannis, E. AnagnostopoulosVassili, LoumosEleftherios, A Kayafas, "License Plate-Recognition Algorithm for Intelligent Transportation System Applications", vol. 7, no. 3, SEPTEMBER 2006.
- [9] C.Y. Suen, R. Plamondon, A. Tappert, A. Thomassen, J.R. Ward, K Yamamoto, "Future Challenges in Handwriting and Computer Applications", vol. 9, no. 4, 2005.
- [10] Ron Weinstein, "RFID: Technical Overview and its application to the enterprise", May 2005.