



# **AUTOMATED VEHICLE PARKING SYSTEM**

A Project Report of Capstone Project - 2

Submitted by

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**BONAFIDE CERTIFICATE**

Certified that this project report “AUTOMATED VEHICLE PARKING SYSTEM” is a bonafide work of “RITIK KUMAR PANDEY (1613101579)” who carried out this project work under my supervision.

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## **TABLE OF CONTENT**

<b>CHAPTER NO</b>	<b>TITLE</b>	<b>PAGE NO</b>
1.	ABSTRACT	3
2.	INTRODUCTION	3-5
3.	EXSITING SYSTEM	6
4.	PROPOSED SYSTEM	6
5.	IMPLEMENTATION AND ARCHITECTURE	7-10
6.	OUTPUT	11-13
7.	CONCLUSION/FUTURE ENCHANCEMENT	14
8.	REFERENCES	14

## **1.ABSTRACT:**

The Automated Vehicle Parking System had been conceived with the view to automate the manual work flows involved in the management of Vehicle Parking Lots. It drastically reduces the effort, inaccuracies, error-prone tendencies, delays and overheads involved in performing the same tasks by hand.

It was aimed to provide a fully automated system that was capable of checking in and out of vehicles entering and exiting the designated parking lot, and recording relevant information about them. Revenue calculation and data entry is automated to the largest possible extent. Only minimum intervention from the manual user is required, with a possibility of eliminating it altogether with further advancement in the technology encompassed by the project, and supporting hardware.

A rich and easy-to-use GUI aids the user in navigating the system easily and comprehensively. Features such as multiple searching and viewing options further add to the capabilities of the system and thereby also help in reducing the entry time. Transactions concurrency and their unambiguous nature have been carefully balanced and user sessions are purposefully managed. Direct implementation of the printing code helps the entry clerks as well as managers/administrators, to print the parking slips, reports and user information as and when required.

With a marked difference in the types of users, and user privileges, the system provides a clear hierarchy and shields private data and administration details from those users, who are not permitted or concerned with them.

A lot of data mining options have also been included, in the form of managerial reports. These provide an insight into the daily working subroutines of the system, such as the total revenue collection, employee sign in times, total vehicles parked in the lot, etc. on a Daily, Monthly, or Yearly basis.

The most fundamental factor, that sets this system apart from others, is the fact that it is a real life application, designed with a specific target audience of India, taken into consideration.

## **2 – INTRODUCTION:**

Everyone who owns or drives a vehicle in India or abroad would be all too familiar with the hassles of finding parking spaces, misbehaving parking attendants, inconsistent or monopolized rates and other problems associated with it.

What is proposed here, is not just another automation of a manual workflow system, it can also be viewed as a solution to the aforementioned problems of the everyday consumer. Rise to the occasion, an Automated Vehicle Parking System.

It not only rids the vehicle owner from the hassles of finding parking spots, it ensures that there is never over or under accommodation of vehicles beyond the lot's capacity. The system completely eliminated even the possibility of embezzlements. The rates are fixed and predefined. No tampering can be done with the automated calculation of the revenue based on the time taken directly from the console.

It has been built using the Java Swings Framework, in lieu of its rich GUI capabilities, robustness and ease of use. Data collected about vehicle entries is stored in an MS Access Database. It is a console based desktop application that can be configured to run on virtually any PC with a Java Virtual Machine (JVM).

In this report, the complete structure of the system, its design and planning, working and conception, will be outlined in distinct sections. A Waterfall Model approach to Software Engineering was undertaken, and hence the steps are detailed in a similar fashion. First we shall deal with the analysis and planning part of the Software Development Life Cycle (SDLC). Then we go on to explain the Technical Architecture and Methodology adopted in building the system. Next there is an insight to the working and functional requirements of the system. A comprehensive view has been presented in the form of screenshots to give the reader an idea about the GUI and working of the system.

## **OBJECTIVES:**

Automated Vehicle Parking System is an innovation that can help solve the ever-challenging problem of parking space limitations in India. It was built to be optimized for use in multilevel parking buildings where a huge number of parking spaces are available, but difficult to keep track of. It was planned keeping the following specific objectives in mind:

1. To provide an efficient, user-friendly, hi-performance, reliable system for implementing the workflow involved in a Multi-Level Parking Lot.
2. To provide vehicle owners a fast, hassle-free experience while saving the time wasted in searching the entire lot for a single parking space.
3. To provide multiple login authorizations and user account types based on functionality.
4. To enable separation of entry and exit terminals and allow addition of supplementary terminals in the future.
5. To provide differentiated vehicle based services at the entry and exit terminals.
6. To accommodate multiple user logins at different terminals simultaneously.

7. To electronically calculate revenue based on pre-defined standard parking rates.
8. To automate the manual workflow, and add speed, efficiency and performance to it.
9. To enable easy report generation and viewing features for the administrator by using data mining techniques.

- **HARDWARE REQUIREMENTS:**

- **Minimum Configurations:**

**Processor:** 800MHz Intel Pentium III or equivalent

**Memory:** 128 MB

**Disk space:** 20 MB of free disk space

- **Recommended Configurations :**

**Processor:** 2.6 GHz Intel Pentium IV or equivalent

**Memory:** 256 MB

**Disk space:** 40 MB of free disk space

- **Peripheral & Connectivity Devices:**

Network Interface Card: (for LAN Access)

Monitor: (for Display)

Keyboard: (for Data Entry)

Mouse: (for Navigation)

Printer: (for Receipts/Reports)

## **SOFTWARE REQUIREMENTS**

### **Minimum Software Requirements:**

- Operating System: Windows 95/ME/NT/2000 or equivalent
- Java2 Platform Standard Edition v1.4.2 or higher
- Oracle DB or My SQL

### **3 - EXISTING SYSTEM:**

In the modern age. Many people have vehicles. The vehicle is now a basic need. Every place is under the process of urbanization. There are many corporate offices and shopping centers etc. There are many recreational places where people used to go for a refreshment. So, all these places need a parking space where people can park their vehicles safely and easily. Every parking area needs a system that records the detail of vehicles to give the facility. These systems might be computerized or non-computerized. With the help of the computerized system, we can deliver a good service to the customer who wants to park their vehicle into any organization's premises.

### **4 – PROPOSED SYSTEM:**

Nowadays in parking like valet parking they maintain just with the tokens and they record the vehicle details in books so, during some critical situations like police inquiry for terrorist's car or vehicle, it is difficult to find the details of the particular vehicle but in this case, it is easy to find within few seconds only.

By parking the vehicle in public place the vehicle can be claimed by towing person but in this case, there are no towing problems and no need to give fine for anything we can park our vehicle with security.

The vehicle parking management system is an automatic system that delivers data processing at a very high speed in a systematic manner. Parking is a growing need of the time. The development of this system is very useful in this area of the field. We can sell this system to any organization. By using our system they can maintain records very easily. Our system covers every area of parking management. In the coming future, there will be an excessive need for a Vehicle parking management system.

## 5 – IMPLEMENTATION AND ARCHITECTURE:

PROCESSOR TYPE	Pentium IV or above for optimum performance
SYSTEM RAM	1.00GB and Above
INPUT DEVICE	BASIC KEYBOARD AND TOUCH PAD
OUTPUT DEVICE	STANDARD COLOR MONITOR
OPERATING SYSTEM	WINDOWS 7,8
FRONT END	VISUAL STUDIO 2015
BACK END	SQL SERVER 2008

### Technologies:

This section lists all the technologies for the web based system.

- **Core Java:** Java is a set of computer software and specifications developed by Sun Microsystems, later acquired by Oracle Corporation that provides a system for developing application software and deploying it in a cross-platform computing environment.



- **Servlet:**Java Servlets are programs that run on a Web or Application server and act as a middle layer between requests coming from a Web browser or other HTTP client and databases or applications on the HTTP server.
- **HTML:** HTML is a markup language for describing web documents (web pages). HTML stands for Hyper Text Markup Language. A markup language is a set of markup tags. HTML documents are described by HTML tags. Each HTML tag describes different document content.
- **SQL:** SQL is a fast, easy-to-use RDBMS being used for many small and big businesses. SQL is becoming so popular because of many good reasons like SQL is released under an open-source license. So we have nothing to pay to use .

## MODULES:

### a) Data Records:

**Staff records:** - It helps to provide details of staff that uses the Vehicle parking management System. It provides the descriptions of staffs like:

- Staff first, middle and last name
- Address
- Contact Number
- Gender.

**User Records:** - This record helps for the authorization for using Vehicle Parking Management System. It Provides the Username and Password for the User (staff).It also includes the level of authority that means it separates the normal users and administrator.

**Vehicle Records:** - This most important record which focuses in our Vehicle Parking Management System. It stores the essential Vehicle records like:

- Vehicle Number
- Vehicle Type
- Vehicle Entry Time
- Vehicle Exit Time

## **b) Reports:**

**Vehicle Parking Detail:** - This report is very essential in this system. This report provides a brief summary of vehicle activities. It shows the overall Entry and Exit time. It shows the User at time of Entry and Exit .It also provides the facility for examining the total vehicle details according to date wise.

**Transaction Detail:-**This report will show the Transaction between the customer and the System. . It shows the cost of the vehicle after using the facility of parking. It will show the number of transaction by date wise. It will also have User at time of the Transaction.

## **ARCHITECTURE DESIGN:**

### **Data Flow Diagram:**

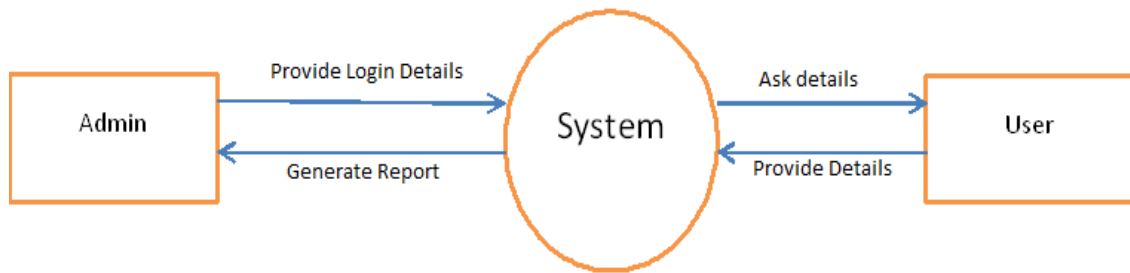
DFD, we give names to data flows, processes, and data stores. Although the names are descriptive of the data, they do not give details.

### **DFD Symbols:**

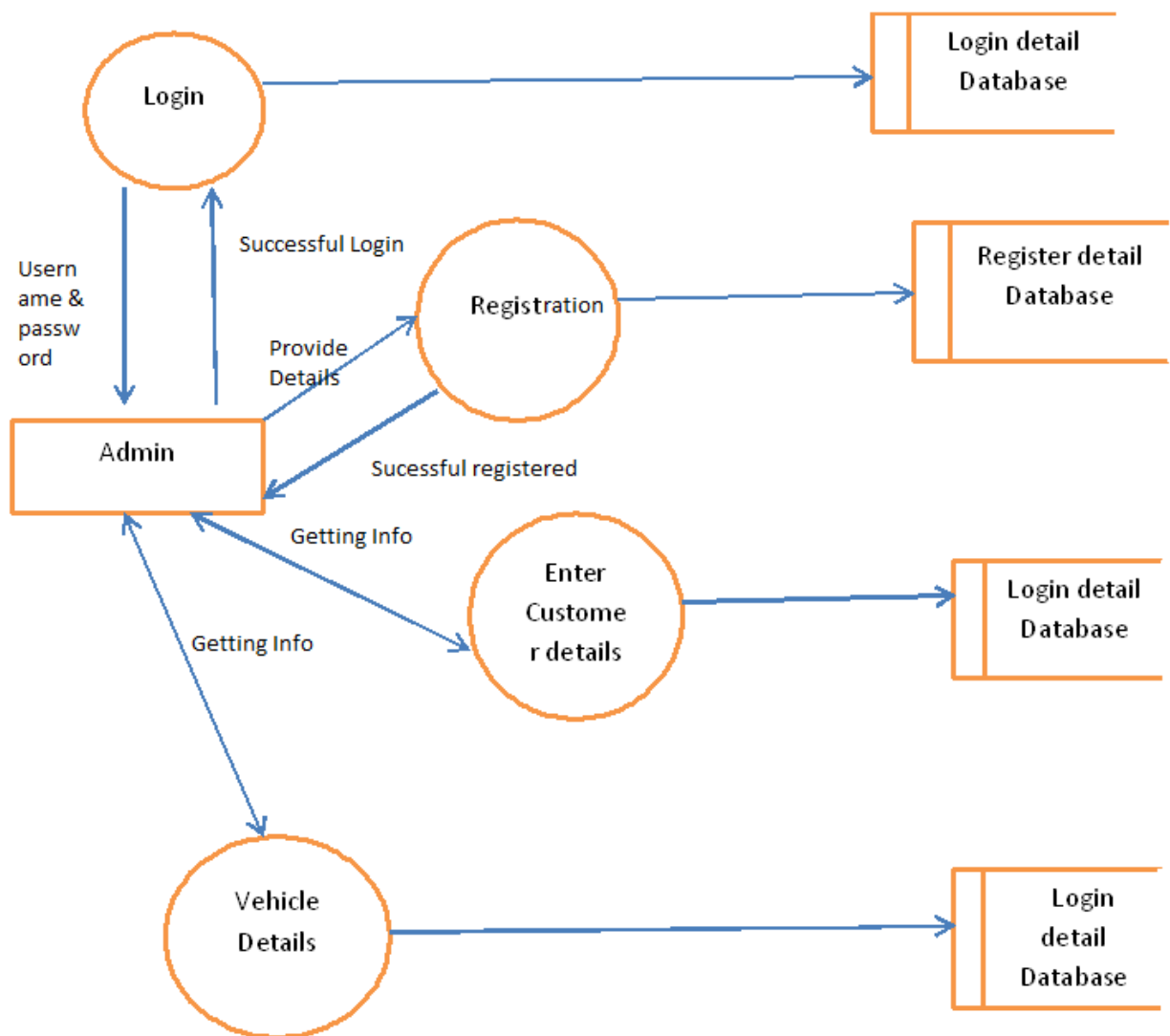
In the DFD, there are five symbols,

- 1 A Square defines a source (originator) or destination of system data.
- 2 An Arrow identifies data flow- data in motion .It is pipeline through which information flows.
- 3 A circle or a bubble (or a oval bubble) represents a process that transforms incoming data flow(s) into outgoing data flow(s)
- 4 An Open rectangle is a data store-data at rest, or temporary repository of data.

### **Level 0:**



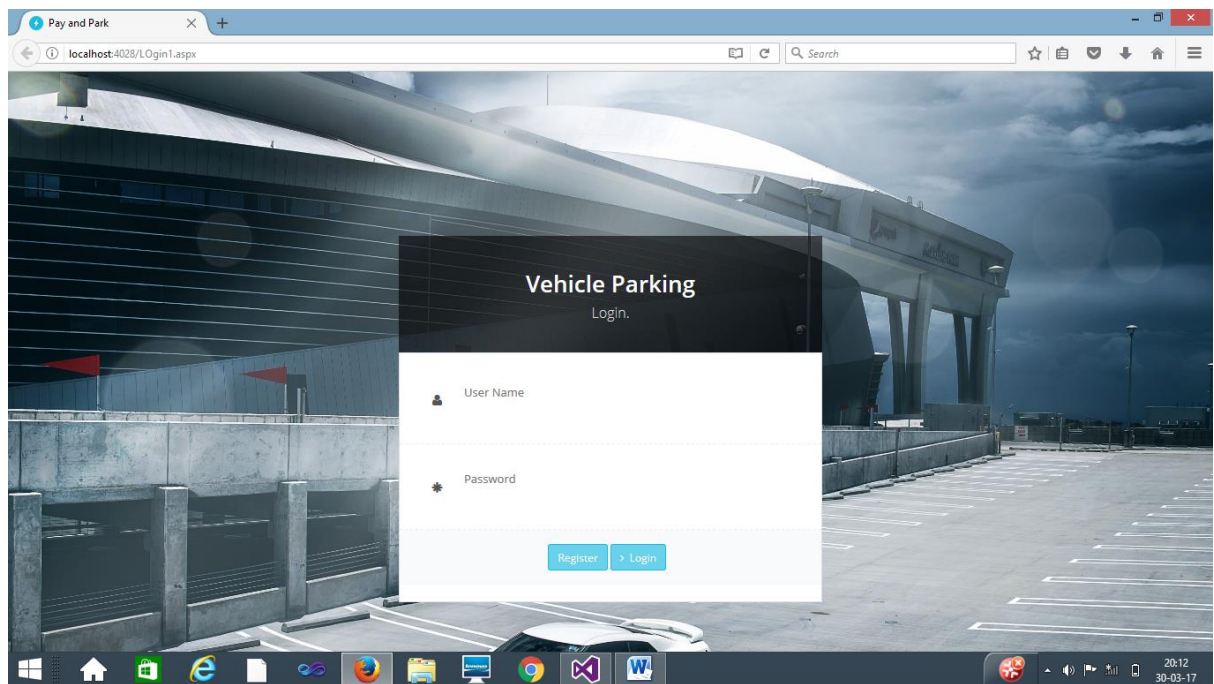
**Level 1:**



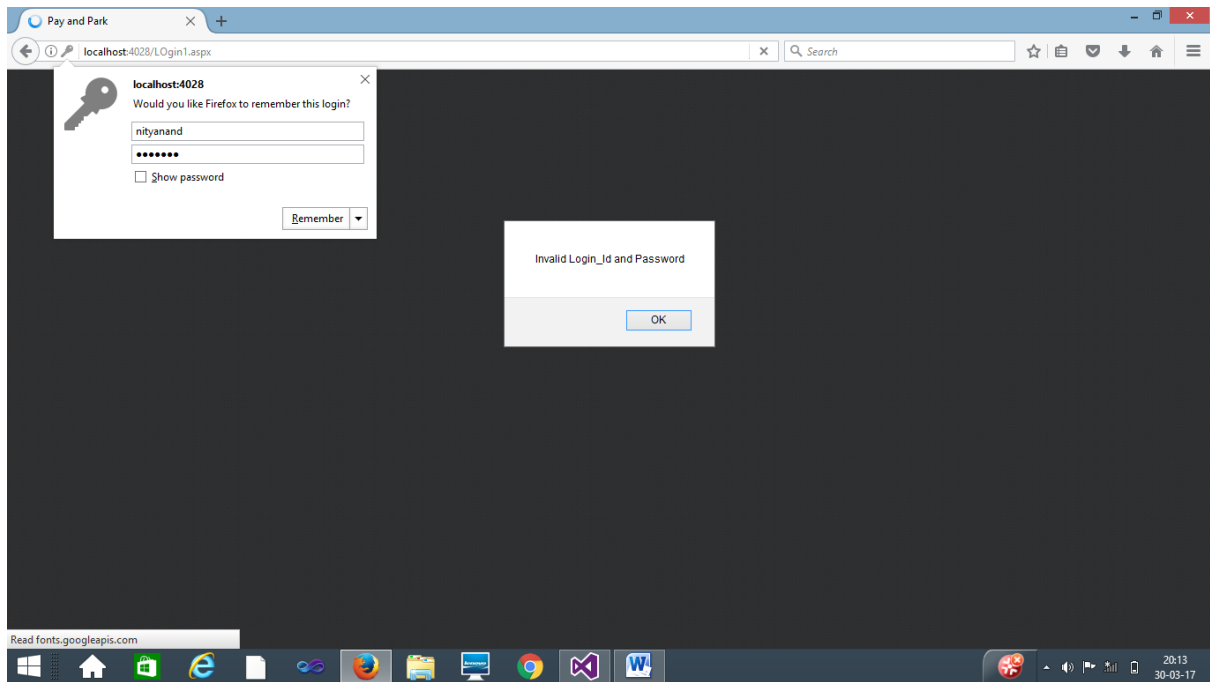
## 6 – OUTPUT:

### User Interface:

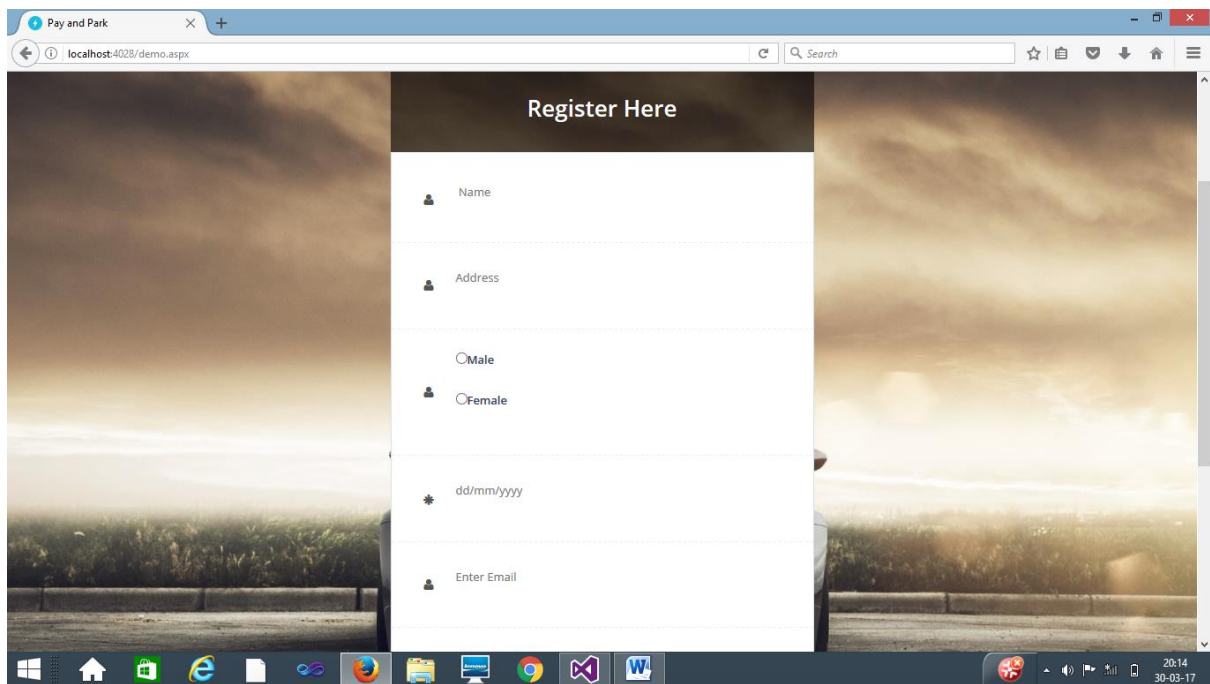
#### 1) Admin Login:



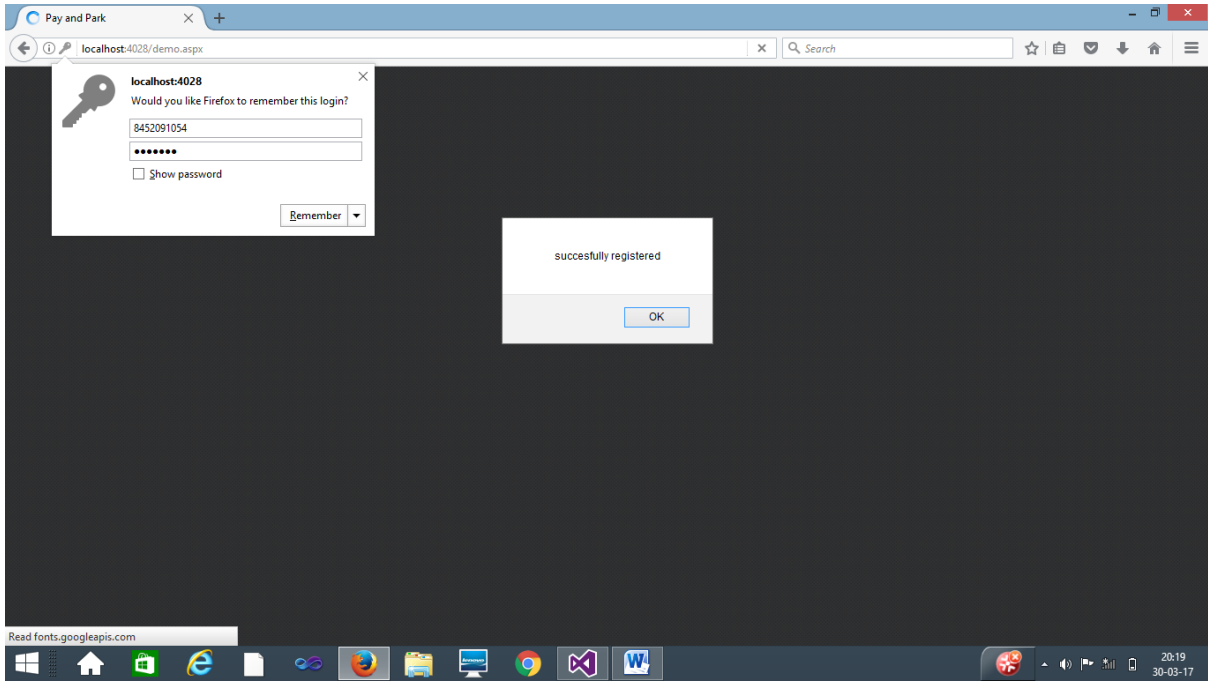
#### 2) Invalid Login and Password:



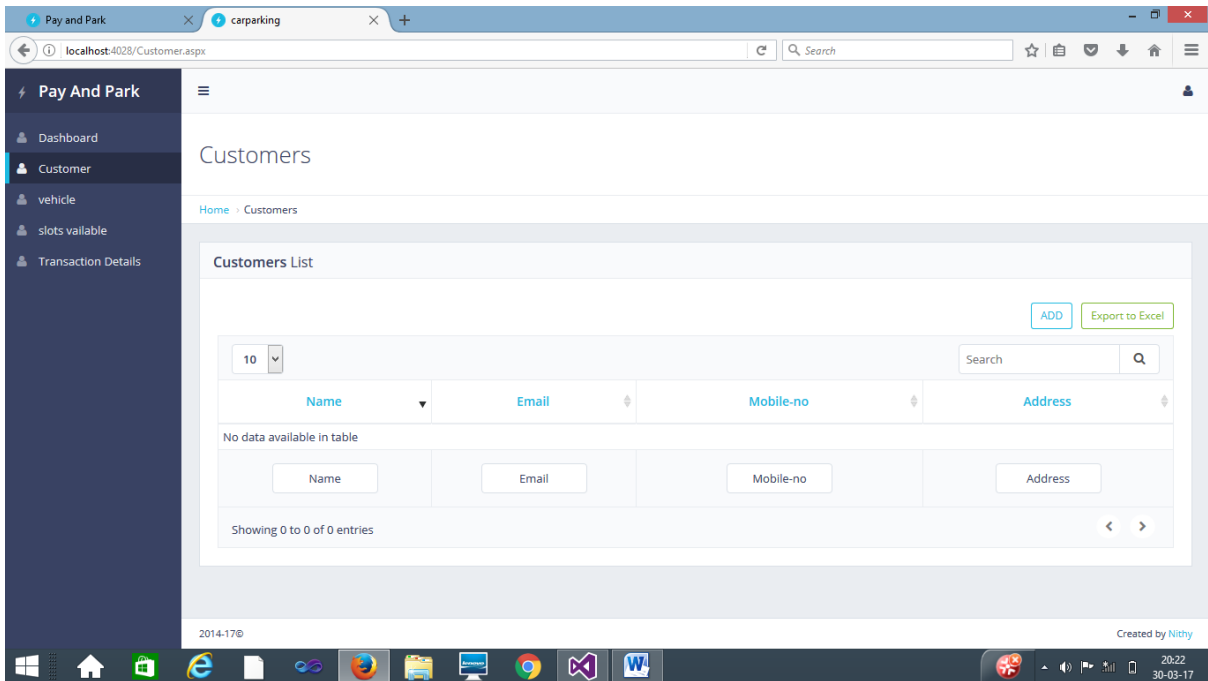
### 3) Register Page:



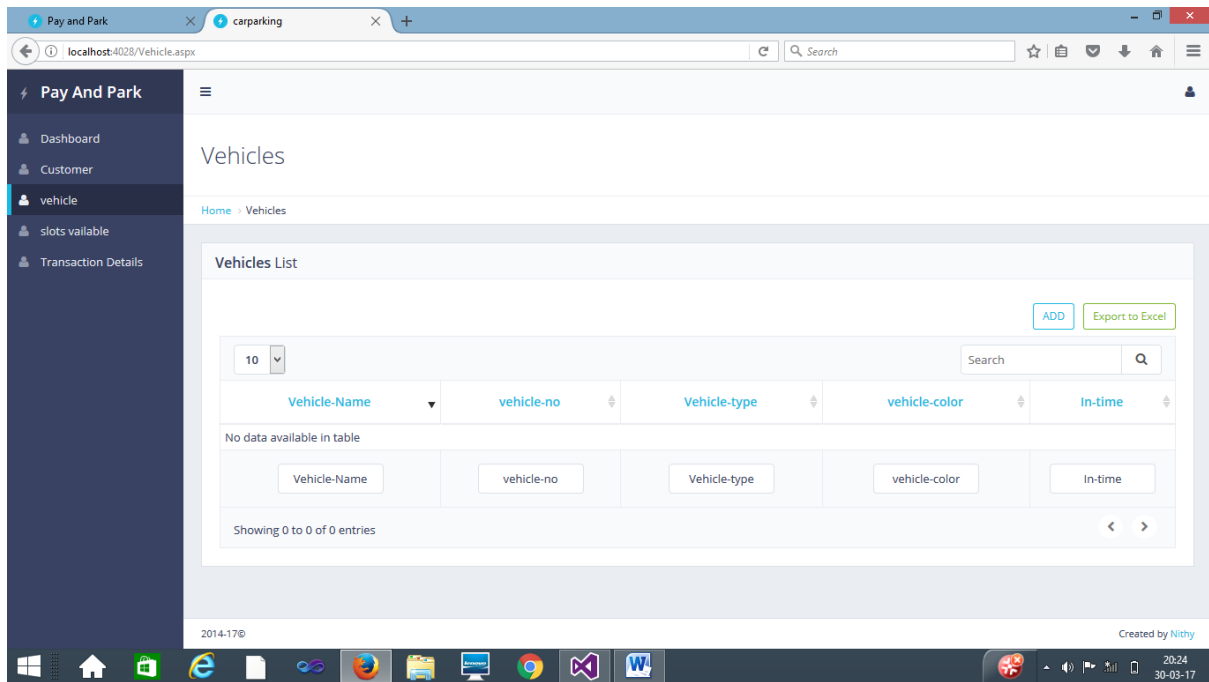
### 4) Registration Successful Prompt:



**5) Search for Customer Details:**



**6) Search for Vehicle Detail:**



## 7 – CONCLUSION:

This Project is minimizing the task of parking a vehicle by paying and saying some details about customer and vehicle to save data .In this the vehicle is parked as a safe and secure. This project is done as Efficient as possible.

Hereby I concludes that the project was completely and slowly developed by me. I also conclude that this project has helped us gain more knowledge about the topic that we are indulged ourselves into “ Visual Studio ”. I would be glad to enhance and promote this project if given chance and help ourselves and society in the near future.

The developed application is tested with sample inputs and outputs obtained in according to the requirement. Even though I have tried our level best to make it a dream project. Due to time constraints I could not add more facilities to it.

The efficiency of the developed system can be enhanced with some minor modifications. Future development can be made in proposed system by integration more services like:

- It can be implemented through web pages.
- New effectives modules can be added time to time

## **8 – REFERENCES**

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