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SMART PARKING BOOKING SYSTEM

Dr.A.V.SENTHIL KUMAR, Mr.M.ARVINDH, Mr.S.ASHWIN, Mr.S.KARTHICK

Final MCA Students,

Director, MCA, M. Phil, PGDCA, Phd

PG & Research Departments of Computer Applications (MCA),

Hindusthan college of Arts And Science (Autonomous), Coimbatore, India

CHAPTER-1

INTRODUCTION

1.1 ABOUT THE PROJECT

Nowadays parking has become an expensive resource in almost all majorities in the world, and its limited availability is the concurrent cause of urban traffic congestion and air pollution. The common method of ending a parking space is manual where the driver usually and a space on the street through luck and experience. The situation is such that on any given working day approximately 40% of the roads in urban India is taken up for just parking the cars. The problem has been further exacerbated by the fact that nowadays even people from the low-income group are able to own cars.

Particularly in the cities and the big towns, there is a problem where the supply demand ratio makes parking a problem for parking space providers, the motorists or both. This paper describes in detail how such a system can be implemented. It does not make use of any sophisticated devices or gadgets thereby ensuring it is economical to implement at a larger scale too! The prime aim of this research is to develop an application that allows the user to book a parking slot for him using his smart-phone and also make the payment online using internet banking.

In order to book a parking lot, the only thing that the user needs to do is one-time registration and verification on the mobile application. Based on the current location of the user, the app provides all the nearest parking

slots available. Then the user can pick the default shortest parking as provided by the app or pick any other custom location of interest.

The user is expected to reach the allotted slot before time runs out and scan the QR code corresponding to the slot which was selected (as mentioned earlier). In case the user fails to reach the spot in time then either the user needs to book the slot again or the user is liable to pay an extra amount as fine to use the same slot. Once the QR code is successfully scanned the user can park his vehicle.

MODULES

1) USER MODULE:

The user module allows users to register, log in, and log out. Users benefit from being able to sign on because this associates content they create with their account and allows various permissions to be set for their roles.

The user module supports user roles, which can be set up with fine-grained permissions allowing each role to do only what the administrator permits. Each user is assigned one or more roles.

2) VEHICLE MODULE:

The car module is about collecting vehicle details. Manage your vehicle details and resources in real-time the well-structured admin area provides a good overview of the availability of parking spaces in the area/building.

3) BOOKING MODULE:

This booking module is about parking your car/bike in the available slot. This reservation system increases your online booking rates. Set your own booking rules, automate the reservation process, and provide your customers with an easy and reliable online service.

4) PAYMENT MODULE:

The payment gateway that captures and transfers payment data from the customer to the acquirer. A payment gateway validates the customer's card details securely, it acts as an interface between a merchant's app and its acquirer. It encrypts sensitive credit card details, ensuring that information is passed securely from the customer

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to the acquiring bank, via the merchant.

CHAPTER -2

SYSTEM SPECIFICATION

2.1HARDWARE SPECIFICATION:

The hardware requirements for the project development are as follows:

- · PROCESSOR Snapdragon, Exynos
- · SPEED 2200 MHz
- · HARD DISK 2 Gb
- $\cdot RAM 2 Gb$

2.2 SOFTWARE SPECIFICATION:

- · OPERATING SYSTEM Platform Independent(Android) · SOFTWARE TOOLS Android studio, Vs code
- · FRAMEWORK Ionic Framework
- · FRONT-END Angular
- · BACKEND Php
- · DATABASE CONNECTIVITY MySQL Database Server 5.0

2.3ABOUT THE SOFTWARE

IONIC FRAMEWORK

Ionic is an HTML5 Mobile App Development Framework targeted at building hybrid mobile apps. Think of Ionic as the front-end UI framework that handles all the look and feel and UI interactions your app needs to be compelling. Kind of like "Bootstrap for Native", but with the support for a broad range of common native mobile components, slick animations and a beautiful design.

FEATURES OF IONIC FRAMEWORK

ANGULAR JS

Ionic is using AngularJS MVC architecture for building rich single page applications optimized for mobile devices.

CSS COMPONENTS

With the native look and feel, these components offer almost all elements that a mobile application need. The components' default styling can be easily overridden to accommodate your own designs.

JAVASCRIPT COMPONENTS

These components are extending CSS components with JavaScript functionalities to cover all mobile elements that cannot be done only with HTML and CSS.

CORDOVA PLUGINS

Apache Cordova plugins offer API needed for using native device functions with JavaScript code.

IONIC CLI

This is a NodeJS utility powered with commands for starting, building, running and emulating Ionic applications.

IONIC VIEW

Very useful platform for uploading, sharing and testing your application on native devices.

ANGULAR

Angular is an open-source, JavaScript framework written in TypeScript. Google maintains it, and its primary purpose is to develop single-page applications. As a framework, Angular has clear advantages while also providing a standard structure for developers to work with. It enables users to create large applications in a maintainable manner.

ANGULAR FEATURES

Cross-Platform

With Angular, you can develop progressive web applications (PWA). PWA offers an app-like experience to the audience using modern web capabilities. As per your needs, you can deploy an app as native as well as progressive. The hybrid mobile SDK called Ionic can ship your apps to the app store and deploy the same to the mobile web as PWA.

In addition, you can develop apps for the desktop with Angular

High Speed & Optimum Performance

Angular redefines the modern JavaScript virtual machine by turning templates into code. Thus, your handwritten code can leverage on a productive framework. The best thing about Angular is that you can render the code into HTML & CSS and have the first view of the application on any other platform like NodeJS, .Net, PHP, etc.

The loading time of Angular apps is faster than any other front-end framework in the industry. It loads at the speed of Cheetah with any new component router. Further, the code gets split automatically as per user's CR loading and rendering requirements.

Angular Applications for Everyone

Angular is a magical front-end platform that not only allows developing mind-blowing applications, but also enables the creation of high-end animations to enhance the user experience.

PHP

PHP is a server-side scripting language that is embedded in HTML. It is used to manage dynamic content, databases, session tracking, and even build entire e-commerce sites.

It is an open source scripting language so you can download this and use it. PHP is a server side scripting language. It is an open source scripting language. It is widely used all over the world. It is faster than other scripting language

FEATURES OF PHP:

It is the most popular and frequently used worldwide scripting language, the main reason of popularity is; It is open source and very simple.

- · Simple
- · Faster
- · Interpreted
- · Open Source
- · Case Sensitive
- · Simplicity
- · Platform Independent
- · Security
- · Flexibility
- · Familiarity
- · Error Reporting
- · Loosely Typed Language
- · Real-Time Access Monitoring

Simple

It is very simple and easy to use, compared to other scripting languages it is very simple and easy, this is widely used all over the world.

Interpreted

It is an interpreted language, i.e. there is no need for compilation.

Faster

It is faster than other scripting languages e.g. asp and jsp.

Open Source

Open source means you no need to pay to use php, you can download and use. Platform Independent

PHP code will be run on every platform, Linux, Unix, Mac OS X, Windows.

Case Sensitive

PHP is case sensitive scripting language at time of variable declaration. In PHP, all keywords (e.g. if, else, while, echo, etc.), classes, functions, and user-defined functions are NOT case-sensitive.

Error Reporting

PHP has some predefined error reporting constants to generate a warning or error notice.

Real-Time Access Monitoring

PHP provides access logging by creating the summary of recent accesses for the user. Loosely Typed

Language

PHP supports variable usage without declaring its data type. It will be taken at the time of the execution based on the type of data it has on its value.

MySQL

It is the world's most popular open source database, enabling the cost-effective delivery of reliable, high-performance and scalable Web-based and embedded database applications. It is an integrated transaction safe, ACID-compliant database with full commit, rollback, crash recovery, and row-level locking capabilities. MySQL delivers the ease of use, scalability, and high performance, as well as a full suite of database drivers and visual tools to help developers and DBAs build and manage their business-critical MySQL applications. MySQL is developed, distributed, and supported by Oracle, and the latest information about MySQL software can be found on the MySQL website.

THE MYSQL FEATURES:

- · High Performance and Scalability to meet the demands of exponentially growing data loads and users.
- · Self-healing Replication Clusters to improve scalability, performance and availability.
- · Online Schema Change to meet changing business requirements.
- · Performance Schema for monitoring user- and application-level performance and resource consumption.
- · SQL and NoSQL Access for performing complex queries and simple, fast Key Value operations.
- · Platform Independence giving you the flexibility to develop and deploy on multiple operating systems.
- · Big Data Interoperability using MySQL as the operational data store for Hadoop and Cassandra.
- To achieve the highest level of MySQL scalability, security, reliability and uptime, MySQL Enterprise Edition includes the most comprehensive set of advanced features, management tools and technical support, including MySQL Enterprise Monitor, MySQL Enterprise Backup, as well as scalability, security.

CHAPTER-3

SYSTEM STUDY

3.1EXISTING SYSTEM

As we all know that the world's population is increasing day by day and automation is also leading to growth. So the entire world is facing a problem of vehicular parking. There is no space for vehicle parking easily available everywhere. The three main problem that the increasing number of vehicles and decreasing efficiency of busy parking lots are:

- 1. Valuable time wasted from inconvenient and inefficient parking lots on average, 3.5- 12 mins spent waiting for a spot in parking lots.
- 2. More fuel consumed while idling or driving around parking lots, leading to more CO2 emission being produced. Average distance traveled looking for a spot =12 KM. Average CO2 produced per car day = 14kg CO2. 14kg of 1000 cars per day and 5110kg per year just for 1000 cars.
- 3. Potential accidents caused by an abundance of moving vehicles in disorganized parking lots. 413 accidents

occurred in public parking lots

3.2PROPOSED SYSTEM

The proposed Smart Parking system consists of an on-site deployment of an IoT module that is used to monitor and signalize the state of availability of each single parking space. A mobile application is also provided that allows an end user to check the availability of parking space and book a parking slot accordingly. The paper also describes a high-level view of the system architecture. Towards The end, the paper discusses the working of the system in form of a use case that proves the correctness of the proposed model.

CHAPTER-4

SYSTEM DESIGN

4.2 TABLE DESIGN

TABLE NAME: Customer

Primary key: id

Foreign key: Customer id

FieldsName	Data Type	Size	Description
id	int	10	id
Customer_id	int	10	Customer_id
Mobile_id	varchar	12	Mobile number
Address_id	varchar	25	address

TABLE NAME: parking

Primary key: id

Foreign key: parking_id

FieldsName	DataType	Size	Description
id	int	10	id
parking_id	Varchar	10	parking_id
Area_id	varchar	10	Area name

TABLE NAME: Parking slot

Primary key: id

Foreign key: slot_id

FieldsName	DataType	Size	Description
id	Int	10	id
slot_id	Int	10	Parking slot id
Vehicle_id	Varchar	10	Vehicle number

TABLE NAME:payment

Primary key: id

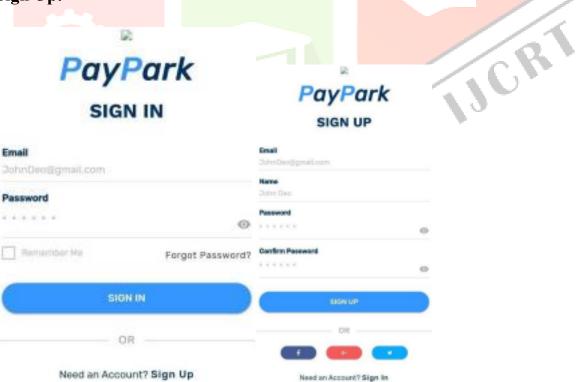
Foreign key: payment_id

FieldsName	DataType	Size	Description
id	Int	10	id
payment_id	int	10	payment_id
customer_name	int	150	customer name
vechile_No	int	100	vechile number

4.3 INPUT DESIGN Sign In:

Sign Up:





PayPark

SIGN UP

4.4OUTPUT DESIGN Parking Details:



CHAPTER-5

SYSTEM TESTING AND IMPLEMENTATION

5.1 SYSTEM TESTING

UNIT TESTING

Unit testing is the testing of an individual unit or group of related units. The purpose of unit testing is to determine the correct working of the individual modules. It involves a precise definition of test cases, testing criteria and management of test cases.

TEST CASE	TEST CASE DESCRIPTION	EXPECTED RESULT	OBSERVED RESULT
Enter the	Check whether it enters	It should enter.	It enters successfully
application.	or not.		

INTEGRATION TESTING

Integration testing is testing in which a group of components are combined to produce output. Also, the interaction between software and hardware is tested in integration testing if software and hardware components have any relation.

TEST	TEST CASE	EXPECTED RESULT	OBSERVED
CASE	DESCRIPTION		RESULT
Enter a module	Check whether it works correct and generates output or not.		Output generated successfully.

WHITE BOX TESTING

White-box testing is a testing technique that makes into account the internal mechanism of a system. It is also called structural testing and glass box testing. This testing is used for verification.

TEST CASE	TEST CASE DESCRIPTION	EXPECTED RESULT	OBSERVED RESULT
All modules.	Check whether all modules work properly or not.	It should work correctly.	It works correctly.

BLACK BOX TESTING

Black-box testing is a testing technique that ignores the internal mechanism of the system and focuses on the output generated against any input and execution of the system. It also called functional testing. Black-box testing is often used for validation.

TEST (CA	SE	TEST CASE	EXPECTED	OBSERVED
			DESCRIPTION	RESULT	RESULT
A11	m	odules	Check whether all	It should work	It works correctly
execution			modules work	correctly and	
output.		una	properly and		
~			generate a correct	correct output.	
			output or not.		

SYSTEM TESTING

Testing plays a vital role for the success of this system. System testing makes a logical assumption that if all the parts of the system are correct, the goal will be successfully achieved.

TEST	TEST	TEST CASE	EXPECTED	OBSERVED
CASE NO	CASE	DESCRIPTION	RESULT	RESULT
1.	Testing	It tests all the	By testing all	It tests all the
	all the	modules in the	the modules, it	modules and the
	modules	system whether it is	is accepted by	system accept all
	in the	executing in the	the system and	the modules and
	system.	system or not.	should execute	it produces an
			the result.	expected result

5.2 SYSTEM IMPLEMENTATION

Implementation is the process of converting a newly received system design into an operational one. It is the key stage in achieving a successful new system because usually it involves a lot of upheaval in the user department. It must therefore be carefully planned and controlled. Apart from planning the two major tasks of preparing implementation is education and training of users and testing of the system. Education of users of the system should really take place much easier in the project, that is when they are involved in the investigation and design work Training has to be given to the staff regarding the new system. Once the system has been trained the system can be tested.

Implementation is the stage in the project where the theoretical design is turned into a working system and is giving confidence on the new system for the users that it will work efficiently and effectively. It involves careful planning, investigation of the current system and its constraints on implementation, design of methods to achieve the change over, and evaluation, change over methods.

6. CONCLUSION

The major enablers or drivers for parking, essentially are the problems of urban livability, transportation mobility and environment sustainability. Primarily Smart Parking technology is about enhancing the productivity levels and the service levels in operations. Some of the underlying benefits could be lowering operating costs, while building value for customers to drive occupancy, revenues and facility value. We have evolved from traditional servicing channels like tollbooth and parking attendants to incorporate automated pay stations, meters and gates.

Parking is a \$ 25 billion-dollar industry which has seen minimalistic innovations and implementations. Most investments have always been in creating energy-efficient hybrid and electric vehicles, which in-turn still doesn't solve the problem of global gridlock causing the same burden on urban gridlock. Finally, in the long run, smart parking can transform the very makeup of our urban landscapes, making them more amenable to people rather than cars. Street to Vehicle communication would be pivotal and crucial along with the Vehicle to Vehicle communication as the success and market readiness of the Autonomous vehicle ecosystem lies in collecting and interpreting the data at the Street Level.

7. FUTURE ENHANCEMENT

The Application can be developed for other popular mobile operating systems. In future, our application can be implemented on the existing operating systems like iOS, Windows and BlackBerry and also on the upcoming and promising operating systems like Firefox OS, Jolla and Tizen. Our application can be used as an alternative to the present parking systems in malls, at railway stations, near airports, theaters, etc. as an efficient means to park. Google Wallet can be used to make secure payments fast and convenient.

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Implementation%20Challeges_0.pdf

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2&sortType%3Dasc_p_Sequence%26filter%3DAND(p_IS_Number%3A6320721)

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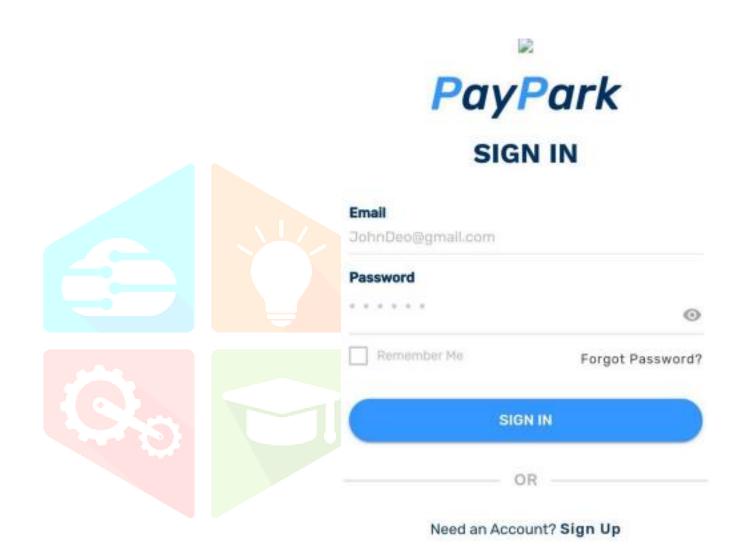
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APPENDIX

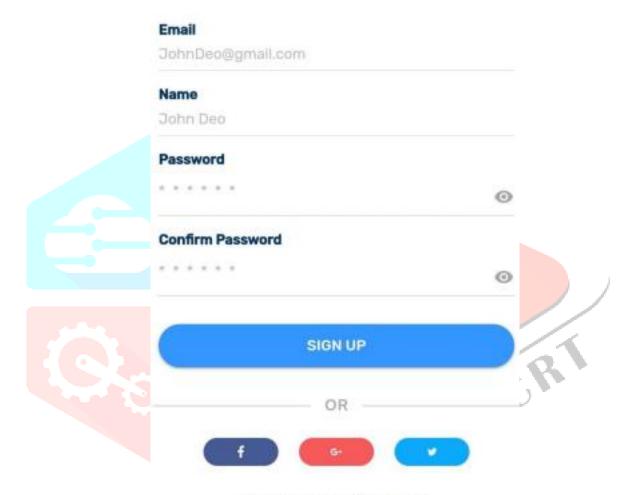
A. Screenshot

Sign In:



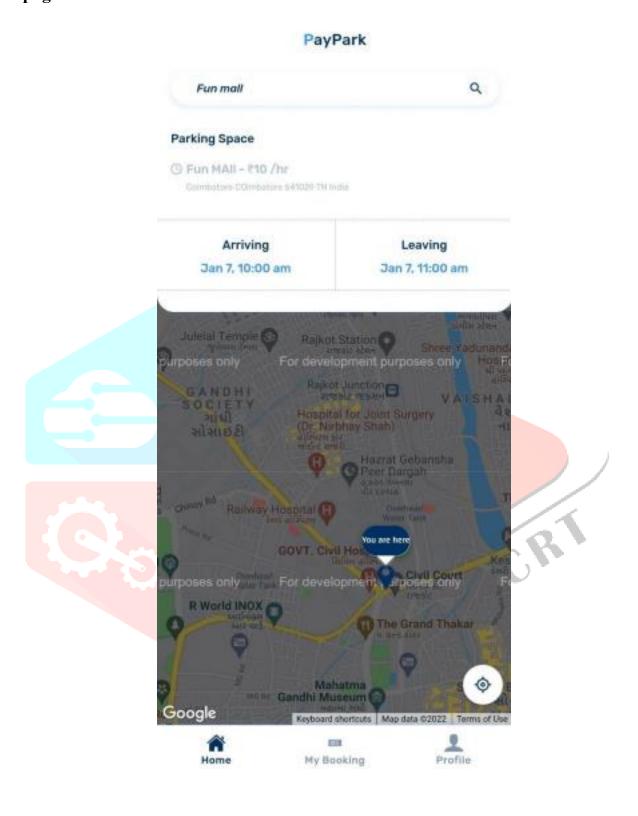
Sign Up:





Need an Account? Sign In

Homepage:

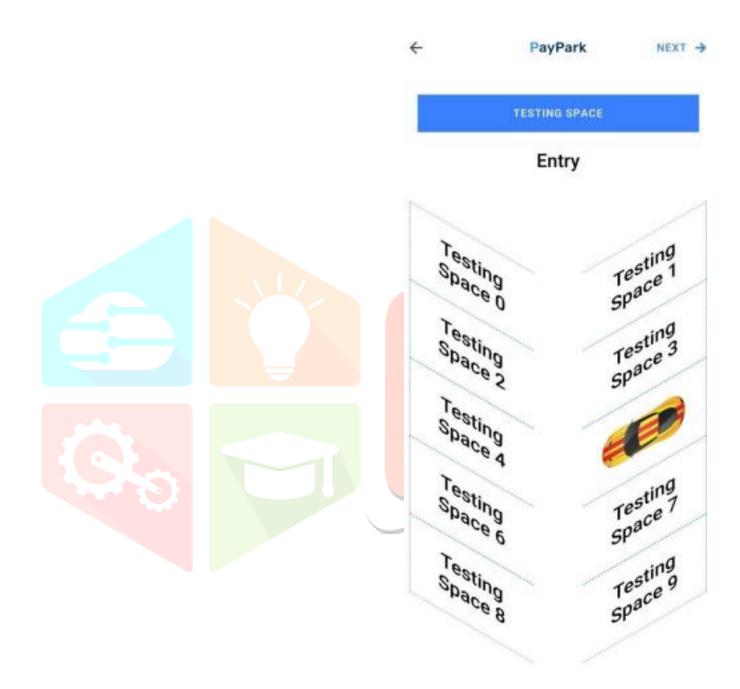


Parking Details:



RESERVE PARKING

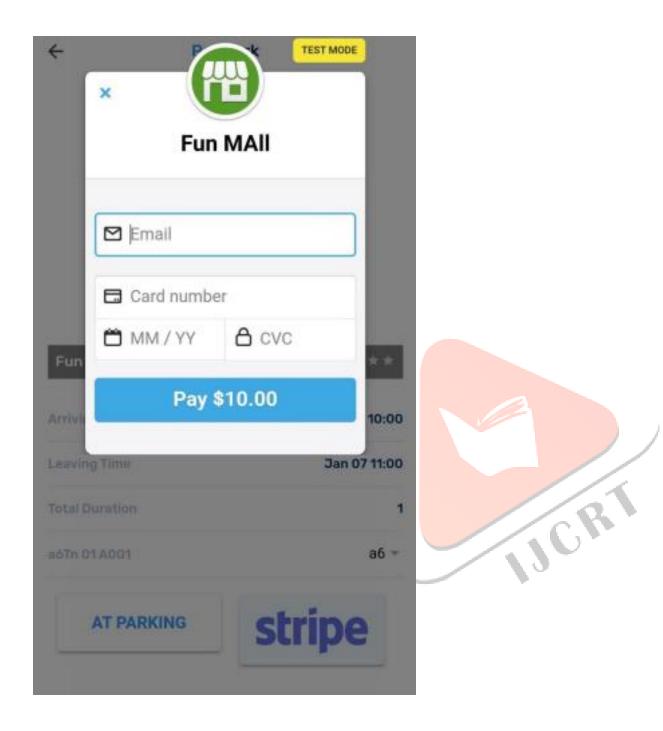
Parking Slot:



Booking Details:



Booking Slot:



Booking Confirmation:



sample coding:

Sample Source Code

```
Login.php
<?php
if(isset($ POST['btnLogin']))
$uname=$_POST['uname'];
pwd = POST[pwd'];
if($uname=="admin" && $pwd=="admin")
{header ("location: AdminPanel.php");
}
else {
echo "<script type='text/javascript'>alert('Enter Valid User id and Password');</script>"; }
}
?>
<!DOCTYPE html>
                                                                  IJCRI
<html>
<head>
<meta charset="UTF-8">
<title>Login Form</title>
<link rel="stylesheet" href="index.css">
</head>
<body>
<hgroup>
<h1>Smart Parking</h1>
<h3>Admin Login</h3>
</hgroup>
<div class="login-page">
<div class="form">
<form method="POST">
<form class="login-form">
<input type="text" name="uname" value=""placeholder="username" />
<input type="password" name="pwd" value=""placeholder="Password" />
<input type="submit" value="login" name="btnLogin" />
</form>
</form>
```

```
</div>
</div>
</body>
</html>
Parking.php
<?php
if(isset($ POST['btnSave']))
define('HOST','localhost');
define('USER','root');
define('PASS',");
define('DB','carparkingdb');
$con = mysqli connect(HOST,USER,PASS,DB) or die('Unable to Connect');
$location=$ REQUEST['location'];
$nslot =$ REQUEST['nslot'];
$longitude=$ REQUEST['longitude'];
$latitude=\$ REQUEST['latitude'];
$price=$ REQUEST['price'];
if(!is numeric($location) &&is numeric($nslot) &&is numeric($longitude) &&is numeric($latitude)
&&is numeric($price))
{
$res = mysqli query($con,"INSERT INTO 'slot' ('id', 'location', 'nslot', 'longitude', 'latitude', 'price')
VALUES (NULL, '$location', '$nslot', '$longitude', '$latitude', '$price');");
if($res)
$result = mysqli query($con, "SELECT MAX(id)as id from slot");
$maxid=0;
while($row=mysqli fetch array($result))
$maxid=$row['id'];
}
i=1;
while($i <= $nslot)
```

```
$result1 = mysqli query($con,"INSERT INTO 'slotinfo1' ('id', 'locationid', 'slotno',
'status', 'location', 'price') VALUES (NULL, $\text{$maxid}, $\text{$i,0,'}\text{$location', $price};''); $\text{$i=$i+1};
}
echo "<script type='text/javascript'>alert('Successfully Saved');</script>";
}
}
else
echo "<script type='text/javascript'>alert('Unable to Save');</script>"; }
?>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title></title>
                                                                   IJCRI
<link rel="stylesheet" href="index.css">
k rel="stylesheet" href="style.css">
</head>
<body>
<div id="header">
<center><h2>Smart Parking</h2></center>
</div>
<div id="menu">
<u1>
<a href="AdminPanel.php">Admin Panel</a>
<a href="viewparking.php">View Details</a>
<a href="Pending.php">Pending Request </a>
<a href="Reset.php">Reset Status </a>
<a class="active" href="index.php">Logout</a>
</div>
<div id="content">
<form method="POST">
<center>
<br>
<h2>Add Parking Details</h2>
```

```
<br>><br>>
Location Name:
<input type="text" name="location" value="" required/> 
Number of slot:
<input type="text" name="nslot" value="" required/> 
Longitude: 
<input type="text" name="longitude" value="" required/> 
Latitude:
<input type="text" name="latitude" value="" required/> 
Price:
<input type="text" name="price" value="" required/> 

<input type="reset" value="Reset"/>
<input type="submit" value="Save" name="btnSave" /> 
</center>
                                                       IJCRT
</form>
</div>
<div id="footer"> MGM's College of Engineering, Nanded. </div>
</body>
</html>
Admin.php
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title></title>
<link rel="stylesheet" href="style.css">
<link rel="stylesheet" href="index.css">
</head>
<body>
<div id="header">
<center><h2>Smart Parking</h2></center>
```

</div><div id="content"> <h1>Welcome To Admin Panel</h1> <center>
br>

> <button>Add Parking Details</button> <button>View Parking Details</button> <button>Pending Request</button> <button>Reset Status</button> <button>Logout</button> </center> </div> <div id="footer"> MGM's College of Engineering, Nanded. </div> </body> </html>

