Use Cases

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# Introduction

**Project Plan:** Automated Parking Management System

This document lays out a project plan for the development of “Smart Parking System” an Automated Parking Management System by \_\_\_\_\_\_\_\_\_\_\_\_\_.

The intended readers of this document are current and future developers working on “Smart Parking System” and the sponsors of the project. The plan will include summary of the system functionality, the scope of the project from the perspective of the “Smart Parking System” is scheduling and delivery estimates, project risks and how those risks will be mitigated, the process by which we will develop the project, and metrics and measurements that will be recorded throughout the project.

# Overview

Automated Parking Management System is a project, which can transform the parking system of an area in a reliable and efficient way. Generally, people nowadays face hard time in finding the nearby parking in their locality or place they are travelling to and even if they find it then the problem of vacant spaces arises. Hence, to assist people and ease out such cumbersome work our project model facilitates the aforementioned purpose.

This model makes use of mobile development tool and internet support. The flow of process is as follows.

Using the GPS services of mobile our application searches for the location of user and using it marks the nearby public parking’s in fixed radius. It also lists out the list of parking with total capacity of vehicles and then gives user a chance to select the parking. When user makes a choice, he is provided with the directions to the destination parking. All these activities are done using the google APIs. Once the user reaches parking using RFID or number plate on his vehicle the sensors fitted in the system will start calculating parking time and cost. Once user approaches to leave parking, wallet connected with users RFID tag is used to automatically deduct the total amount. Hence automating the whole process and easing out the customer efforts.

# Intended Audience

Anyone in need of parking space can use this application.

# Platform

It will be launched in three phases.

Phase 1: As a Web-based application (Trial Phase).

Phase 2: As a Mobile app for Android users.

Phase 3: As an IOS app for IPhone users.

# Purpose

The purpose of this project is to provide people with an efficient and reliable solution to the parking problem encountered by them. The Automated parking system provides following services:

1. Auto detecting user location.
2. Auto searching nearby parking.
3. Fetching details about capacity and vacant slots in nearby parking.
4. Let user select most feasible parking.
5. Provide with distance and route to the chosen parking.
6. Auto fare calculation once vehicle is parked inside the parking.
7. Auto fare deduction from user’s wallet using RFID technology.

# TECHNOLOGY USED

## USER INTERFACE:

* HTML
* CSS
* JS

## HARDWARE REQUIREMENT:

## SOFTWARE REQUIREMENT:

* Eclipse IDE
* Apache Tomcat-7.0.84
* Chrome Web Browser

## OPERATING ENVIRONMENT:

* Windows 7

# USE CASES

The User of the system is a vehicle driver who would be searching for a vacant parking space, and the use cases are the sequence of actions that provide something of measurable value to the user like checking the parking lot for vacant spaces, checking the parking history to find the most occupied and less occupied parking slots. Finally, after finding a vacant space, he can park his vehicle.

Smart Parking is one of the most adopted and fastest growing Smart City Solutions across the world. Airports, universities, shopping centers and city garages are just a few entities that have begun to realize the significant benefits of automated parking technology. The ability to connect, analyze and automate data gathered from devices, powered by and described as the Internet of Things, is what makes smart parking possible

Below are the Use Cases for Smart Parking System

1. **Optimized parking** – Users find the best spot available, saving time, resources and effort. The parking lot fills up efficiently and space can be utilized properly by commercial and corporate entities.
2. **Reduced traffic** – Traffic flow increases, as fewer cars are required to drive around in search of an open parking space.
3. **Reduced pollution** – Searching for parking burns around one million barrels of oil a day. An optimal parking solution will significantly decrease driving time, thus lowering the amount of daily vehicle emissions and ultimately reducing the global environmental footprint.
4. **Increased Safety** – Parking lot employees and security guards contain real-time lot data that can help prevent parking violations and suspicious activity Also, decreased spot-searching traffic on the streets can reduce accidents caused by the distraction of searching for parking.
5. **Decreased Management Costs** – More automation and less manual activity saves on labor cost and resource exhaustion.
6. **Enhanced User Experience** – A smart parking solution will integrate the entire user experience into a unified action. Driver’s payment, spot identification, location search and time notifications all seamlessly become part of the destination arrival process.

Google maps engine will be used along with the APIs while configuring an application using Android. It is being linked with the google maps so as to provide proper directions to the user, as google maps is a commonly used navigation application among the smart phone based tools.

**Front End** This part of the solution covers the user’s end of the solution. Along with the user interface, it also includes, the way this information is going to reach the user and also the focus of the solution. Central part of the solution is to give the user information about the parking spaces available and give them an option to look for parking spaces. The application will ask for the destination the user wishes to go to and finds the optimal parking spaces nearby based on expected parking availability at the time of arrival.

**Routing:** Routing module intends to provide two solutions to the user – (1) driving directions and route from their current location to their preferred parking location and (2) walking directions from parking location to their intended destination. Google APIs were used to estimate the route and directions. This functionality will help them integrate their experience of finding a suitable parking space on campus and finding directions to it. Added functionality of finding a walking route to their destination from their car might further improve their experience.