DBMS in Parking management system

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Abstract

When a person is visiting for an event in a new place, they are most often dealing with finding a place for a car to park it. This can be a very frustrating situation for a number of reasons. In most cases, we do not know the available parking space where we plan to go. Even if it is known, the parking location is not easily feasible (might not to be the closest or cheapest). Furthermore, if one is visiting a location for some event,one of the major tasks is to find the space for parking among the limited availability at events attended by a large group of the people . There are also restrictions attached to them for parking spaces. There are some places where we can park the vehicle on hourly basis by the people with permits. Navigation systems help to find or through all these issues. MySQL software used for the parking management system. Relational database management system developed by Oracal that is based on structured query language(SQL). Structured collection of data is known as a database.

Introduction

The economy is developing continuously, the need for personal vehicles is becoming a part of our daily lives. For working class people the commodity has become affordable which is providing a comfortable way of life; however there are multiple problems which need to be solved. One of daily life problems is

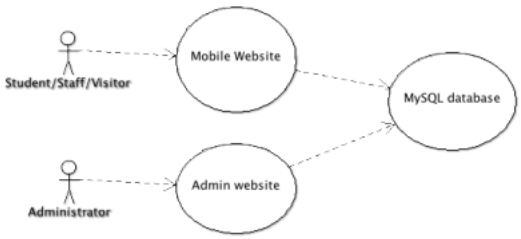

Figure 1: Architecture of park and spot

finding parking spaces for the cars nowadays.However it requires considerable design time,maintenance and installation cost. In many areas counter management systems at the checkpoint in order to check or track their own parking system are installed but it not easy for the system itself to confirm whether a free space parking area truly exists or not.

In the days of the availability of the internet we can find general information about the specific location.let an example google maps, here we can do location specific search and find address, gas station, restaurants and many other things , all relative to the user current location.

Unfortunately, the information about specific locations is only available for important entities like gas stations, restaurants, addresses, etc. Information for things like parking is not available or is only sparsely available. For example, if we look up parking information for the NIT Raipur campus on Google Maps, we just see the location of the main parking lots on the campus. Information regarding availability of parking lots is not available. We do not know the timings the parking lots are available or whether there are any restrictions in parking in the lots.

Here is one example of the issue of sparsely available parking data at campus. We also find the similar type of data on the different types of location. We can find detailed information regarding parking in major hubs like railway stations,

bus stations, airports etc. or there are such locations where we an get the real time information for location and availability of parking lots.let example , at parking station next to the swami vivekananda airport raipur one can exactly see the number of open and parking spots displayed on electronic display board.

Operating of parking lots?

Customers who enter parking lots belong to one of the following groups:

1. First type of customers are those who purchase weekly or monthly passes.
2. Second type of customers are booked slot in an online method.
3. Third type of customers are those who directly visit the parking slots. A slot will assigned at that time.

SPOT AND PARK ARCHITECTURE

A mobile web based application is mainly used in spot and park.we can think from driver side, using application from mobile phone for spot and park system is very convenient,using these type of technology for this tool make sense.there are also important thing to play a very important role for spot and parking,first for the database centralized system so that data sent by the user via their mobile phones or internet connection. Second thing there is website for the admins for spot and park so that users can book their parking slot during planning any occasions.

MYSQL DATABASE

For the parking availability information here we used MySQL database. Basic information like for the system name ,location, geo-coordinates ,description these all the data is to be entered manually into the database. There is dynamic information related like a calendar of events which will be entered by the

admin interface. In the database here we are also able to track the number of open spots for each parking lot.. We can enter the data through the mobile website(function by admin only) but the system provides the open nature of the database, and we can access it through other sources . For example ,if we can feed the realtime availability of parking spots from other sources .we can access the data directly through the database. We can easily used by the mobile interface so that all users see the availability of parking lots.

USER INTERFACE

The user interface of the mobile website is designed from the perspective of 3 types of users: student/staff who go to UMD, visitors who frequently have to come to campus for meetings and events, and administrators who need to manage the parking lots and events.

Student/Staff

Students and staff typically have assigned parking area on campus. They come regularly to campus so they are aware of the roads and the general structure and location of the parking lots. They regularly attend events on-campus and sometimes these events are not close to their designated parking areas so they also have to find nearest parking. Because certain events on campus (like football or basketball games) tend to take over parking lots allotted to people, students/staff are often asked to move their car before an event starts. So, this set of users could benefit from being notified if there is an event happening on campus that would affect their parking situation on a certain day. We have added this feature in the interface and is discussed below in detail.

1. **Parking for events:** Users can look at the list of parking lots to decide which is most appropriate for them or they can look at the parking lots

in a map by clicking the View on Map button. In either of the views (list or map), a user can click on a parking lot, get more information about it, or get driving directions to the parking lot from their current location or some other address.

2. **Campus map:**The campus map function will show the location of all parking lots on campus. The parking lots can be viewed in a list or on a map. Same as the Parking for events feature, user can click on any of the parking lots to get more information about it or to get driving directions to it.

3. **Signup for notifications:**As previously mentioned, this feature allows a student/staff to sign up for notifications of any upcoming disruptions to their parking assignments . Users need to specify their parking lot assignment and their email address. If in the future, there are any disruptions, we would email the user with the details of the event including instructions on what to do for alternative parking. Note, that this targeted notification is better than blasting the entire campus community with an email regarding an event that might not affect everyone on campus.

Visitor

In most cases, visitors have similar needs as student/staff. They need to be able to find parking for events that they might come to campus for. Visitors might come to campus for also other reasons like attend meetings. In these situations, they are not coming in for some large event but are coming in to meet someone in a certain building. So, they just need to know where they can find closest parking for their meeting. So, we provide them the functionality that helps them find that information.

The mobile interface for visitor provides 2 main functions

1. **Parking for events and campus map:**This works exactly the same way as it does for students/staff (explained above).

2. **Parking for buildings:**This allows a user to select a building on campus and then look at the closest available parking. User can view the parking lots on a map or in a list view. User can also get to see if a parking lot has fees attached to it and the hours of operation. They can also look up driving directions to any of the available parking lots.

Admin Website

As we mentioned above ,the parking administrators manage who are managing the events and parking by the admin website. New events can be created by the administrators, an event is associated with parking lots, parking lot availability can be changed, and also be able to do other administrative tasks through this interface.

Future Work

Here in this application currently we provide the real time availability for spot parking, parking administrators to update manually the parking availability. If the automated systems of the parking availability data are provided by sensors (like parking sensors in the spot areas), then integration of data in the application of the system. Furthermore there is the possibility of involving the visitor and students for collecting the real time data.

Currently in this application, the location of the parking spot in the buildings is fixed and data can be fed into the database. In the future, there are possibilities to add the functionality to the mobile website(or the admin website) . Since specifying parking lots and requirement of specifying geo-coordinates

for those entities, the collection of the data is suited to be built in the mobile website and the use of GPS on mobile devices to find the geo-coordinates of the parking lot by the administrators.

CONCLUSION

In this application we are trying to solve the general problem of the people who are struggling to find parking when he /she go to the office, party, parks, mall etc. the flexible architecture of the application and interface is easy to use interface it also helpful for the transportation oe easy for the parking management system in their organizations to deploy it. It is also useful for the mobile interface that will help guide visitor people to find parking spots in their destination.