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1. Park Street : Know Your Park
2. Our project Park Street, provides localities having parking spaces a platform to manage the incoming traffic in a simpler, digitised way. Clients are given tools to layout their parking spaces in our platform. Users can check the availability of these parking spaces on our platform. This way, they will know if the parking space is packed or not, avoiding the hassle of parking their car in the nearby neighbourhood, or moving to a whole new location just to park their car.

Our platform also provides tools to tackle the problems faced in a traditional Valet parking system. When the customers are about to leave, they will simply scan the QR code given to them. With this system, the problem of having to wait for your vehicle to be fetched, as being done in the traditional valet parking system, is solved. This project converts the existing parking system into a smart parking system.

1. I have chosen this particular project for my semester because nowadays parking is a big issue and very less spaces are available where one can park their vehicle safely and securely and also according to the new guidelines related to parking norms comes into effect, one has to pay a heavy amount for not doing the parking correctly. And the motive of choosing this project is that the idea of having the QR code for the customer when they enter into the parking spot which is unique as one can’t find this in the traditional parking system and getting a proper bill generated before leaving the spot. I am interested in the web developing part, and this project involves building a full website which will be fully functional with database connectivity which will be a challenging for me as well as for my team.
2. 1) The highly focused manoeuvres we used to perform to park our cars, the searching with all the honking behind us is no longer needed, we need not hunt for the parking spaces anymore. 2)With the traditional valet parking system, we have to wait at the exit for quite a bit of time before our car arrives. 3)We don't have information regarding the parking space of our opted destination prior to reaching the destination. 4)There is no alert system regarding the occupancy of parking spaces for the places we regularly visit, Cause in numerous places, there has been an issue of crammed parking spaces. 5) There is no user-friendly management system for the vehicles parked in the parking spaces, and also the real time availability of those spaces for the customers.

1. Parking is an emerging problem. The search for a parking space is becoming more and more frustrating for people. Factors like lack of sufficient parking space and a constant increase in the number of vehicles only add to the difficulties. Hotels, restaurants, malls and other such localities which provide the facility of parking, have a hard time managing their parking lots. The current method used by them is entirely manual and time consuming. Our potential users are these people, who are tired of the traditional parking system and are looking for a better solution to their problems. Our application will not only make it easier for the public to find a parking spot, but will also allow hotels/malls/restaurants to manage their parking lots in a much more efficient way.
2. Nowadays fast is just not enough. Every approach that we have followed so far is being looked through a magnifying glass, on how to do it better, how to make it faster. With much data being generated every second, fetching real-time data is of great importance in this era. We must look for the acquisition of data in real-time. By considering these issues, we have tweaked the motivation behind our project to make it different from traditional ways and the competitors. In the traditional valet parking system, the customers are made to wait, until their vehicle is being fetched, but with our application, the customers are provided with a QR code as soon as they enter the gate, which they are advised to scan while they are about to leave so that there is no delay in fetching the car and the customers can directly get into the car without having to wait for it.

After working hours, there are places that the populace regularly visit, for team dinners, or to dine or to a party. But they often encounter the problem of having the parking place filled in the busy hours, but through our application, End users (customers) can mark hotels/restaurants that they regularly visit, to get alerts when the parking spaces are about to get packed.The clients (proprietors) are also given tools to reserve parking spaces so that they can reserve parking spaces for their staff, or to whomever they want.

1. In today’s fast moving world, parking is an emerging issue. People spend most of their time searching for a parking spot. The traditional parking process is in dire need of change. Although there are some applications which aim at digitizing the process, this sector is still in its infancy and has a long way to go.

One such application is Get My Parking. It provides real time information of the parking spots to users. The suppliers (parking contractors and managers) replace the traditional systems with their android based ticketing system. They also provide the option of pre-booking to customers. PparkE is another such application which uses IoT based wireless devices to connect the users to the parking spot and then navigate from their current location. ParkingRhino is a smart parking application which allows the user to search for an available parking spot nearby and then navigates them to the spot. All these applications provide almost similar features. Users first search for a parking spot using their platform and then they navigate the user to the spot.

Our application not only provides the above-mentioned features, but also provides tools which will make the process of valet parking much simpler. In the traditional valet parking process, the customer is required to wait while their vehicle is being fetched. Using our platform, they will not have to wait. Further, our application also has a feature where the user can mark the hotels/restaurants they visit regularly in order to get notifications/updates about the availability of their parking space

1. Our project Park Street will provide the hotels/malls/restaurants who have sufficient parking space can join with us and then all the parking allotments will be done with our interface. Park Street will also have an option for login for the customer where they can just enter their credentials and they are ready to park their vehicle with full safety. The interfaces that will be involved in the whole makes it worth for a semester project. In Park Street basically there will be 5 components and a separate login page for both customers and hotels/malls. 5 components have the features that will help the user as well as the employee for a better experience in parking the vehicles and saving a lot of time. The proportionate of this project will be approx 3 and half months and basically half a month to test our system for any failure that will occur at the time of deploying this software for its use by the public.
2. In Park Street, a total of 6 components are there on which the whole project is based. These components are further divided into segments that involve the front-end, back-end and the database part. The 1st parameter will be that the user and hotel/malls can easily login into their account without any problem and for hotels they can share their parking information such as a number of slots available and also they will do the pre-booking function. The 2nd parameter involves the data management with full security to the data entered by the user or hotel/malls and secure their data in our database. The 3rd parameter involves the back-end part of our software that will be running all properly or not before the actual deployment of the software for the public to use our services.

1. Park Street is an entirely software based project. We are using MySQL for the database connectivity in which when they login or register themselves the data is stored in our database and it will be easier to assist themselves. For the software part we are going to develop a web application using languages as HTML, CSS and Javascript for the front-end in which we develop a login feature and hyperlinks so that it’s easy for users and hotels/malls to be assessed easily. Python for all the back-end data involving the connectivity to the database and smooth running. The feasibility of these languages is quite easy as these are all open-source software and can be downloaded from standard platforms.
2. In order to work on the project together, as a team of three, we have divided the whole project into three segments - the front-end, the back-end and the database. Two members will be working together on each of these three segments.

The frontend of the web application, containing the login pages and all the other modules, will be developed by **Tarussi Shailendra Singh (E19CSE278) and I** using HTML, CSS and JavaScript.

The backend, which will involve the overall connectivity of the project and ensure an smooth running of the platform, will be developed by **Shourya Mupparapu (E19CSE150) and I** using Python.

The database, which will store all the information, will be developed by **Shourya and Tarussi** using MySQL.

1. We have divided the Operational elements of our project into a short term and long term goals. By taking into consideration the learning process of the essentials, our short-term plans integrate with the learning process with the work being parallelly done by dividing different goals to different members of the team to fasten the process. The first two-three weeks, my teammates are going to brush through the essentials of HTML, CSS, and Javascript, to start working with the user interface as soon as possible, and I am going to go through the topics of Python, MySQL, and PHP for the back-end and also to connect the database to the UI that we are designing. So firstly, we start by developing a simple UI with a login module while connecting it with the database. Then we shift our attention towards the back-end and data management part. Since our project mainly deals with managing the data and how it is presented to the user, we particularly focus on this part, all while taking care of the design elements of the front end. In the later weeks we test our application to find bugs and errors, then conclude our project with the report and video. Our prime long term goal is to ensure the smooth running of the application. We want to make sure that all our features, like the parking spot availability, the bill generation and the valet parking feature, are working at their best.
2. Various articles have been written about smart parking and its impact on the current parking system.  Many research and surveys have also been conducted in this field. All these articles, research papers and surveys talk about how smart parking is the future. How, even though it still has a long way to go, its importance and impact on society will only increase with time.

An article by - M. Y. I. Idris, Y. Y. Leng, E. M. Tamil, N. M. Noor and Z. Razok on Car Parking System states that with  the continuous increase in the number of vehicles on road, the parking and traffic problems were bound to exist, and that the smart parking system will help the current car park facilities and transportation facilities, in coping with the inrush of vehicles.

Another article on Forbes, by Ryan Citron talks about the evolution of the smart parking industry and how its future is expected to be significantly influenced by the arrival of automated vehicles (AVs). It states that several cities around the world have already begun trials for self-parking vehicles, specialized automated vehicle parking tools and robotic parking valets. They are also recognizing that the infrastructure of smart systems (i.e., communication sensors and sensors) can be leveraged to help in enabling the vehicles of the future to park themselves. All these developments are expected to result in an expansion of the smart parking industry.

A paper by Lin, Trista & Rivano, Herve & Le Mouel, Frèdèric called A Survey of Smart Parking Solutions, considers smart parking as a strategic idea to work on, not only from a research point of view, but also for economic interests.

Another paper named - by discusses various smart parking systems which can reduce the problems arising due to the unavailability of as efficient, reliable and modern parking systems.

Links and Citations of some references are:

* <https://guidehouseinsights.com/reports/smart-parking-systems>
* <https://scialert.net/fulltext/?doi=itj.2009.101.113>
* <https://www.forbes.com/sites/pikeresearch/2017/01/26/smart-parking/#29114d1562f6>
* <https://www.elsevier.es/en-revista-journal-applied-research-technology-jart-81-articulo-a-survey-intelligent-car-parking-S1665642313715803>
* <http://urbanmobilityindia.in/upload/conference/f37401ef-affe-4786-935a-39480ee3579c.pdf>
* Parmar, Janak & Das, Pritikana & Azad, Farhat & Dave, Sanjay & Kumar, Ravindra. (2019). Evaluation of parking characteristics: a case study of Delhi.
* Revathi, G. & Dhulipala, V.R.Sarma. (2012). Smart parking systems and sensors: A survey. 2012 International Conference on Computing, Communication and Applications, ICCCA 2012. 10.1109/ICCCA.2012.6179195.
* <http://www.urbanmobilityindia.in/Upload/Conference/a3ee2c08-747d-45b3-b7fb-97395eda4455.pdf>

1. The risk factor of our project is the data part, because at some point of time any users who is using our website at the same time as the other user, so there can be server connectivity issues or our server will go down based on the server location and on which server we are hosting our website. 2nd risk factor involves when many vehicles are entering the parking lot at the same time there can be a mismatch from the staff of the hotel/malls or valet that he enters the wrong parking spot where the vehicle is parked, then there will be a problem in the generation of the bill when the vehicle is leaving the premises. The 3rd risk factor comes when there is a generation of the QR code which the customer scans for letting out his/her vehicle out of the parking area.

1. I have discussed project with below listed people:

Dr. Suneet Kumar Gupta ([suneet.gupta@bennett.edu.in](mailto:suneet.gupta@bennett.edu.in)), teacher and mentor of Design Thinking and Innovation, his reaction towards this project is pretty amazing and he also suggested some of the features that are added to this project which will make a good impact on the customer.

Shiwangi Roy ([shiwangisaket@gmail.com](mailto:shiwangisaket@gmail.com)), my friend - She said it is a good project and there is a lot of parking issues in her society and using this project, parking problem can be resolved.

Sanjay Kumar Agrawal ([sanjaysde2010@gmail.com](mailto:sanjaysde2010@gmail.com)), my father, he said that “being in the service sector it is quite difficult for the vehicle to get arranged” and adding to this he said using this tool in the parking can make a difference with the traditional ones and also saves time.

1. In order to use our platform, the end-users would be required to login into our application. They would have to verify themselves using their username and password. They can enter some personal details, like their mobile number or email id, if they want to. Some sensitive information would also be collected from the hotels/malls/restaurants which decide to register on our application. The protection of this data is an important task, any leakage would be considered a breach of privacy. Since users have entrusted us with their personal information, it is our responsibility to ensure that there isn’t any sort of misuse of this information. We shall make sure that the data is not accessible to any third party. We shall also provide an adequate cookie policy to users.