CODE : 6115

MAHENDRA INSTITUTE ENGINEERING AND TECHNALOGY

PHASE : 4

SMART PARKING

CONTENS :

- ★ *Implementation*
- ★ *Applications*
- ★ *Reviews*
- ★ *Output*
- ★ *Conclutions*

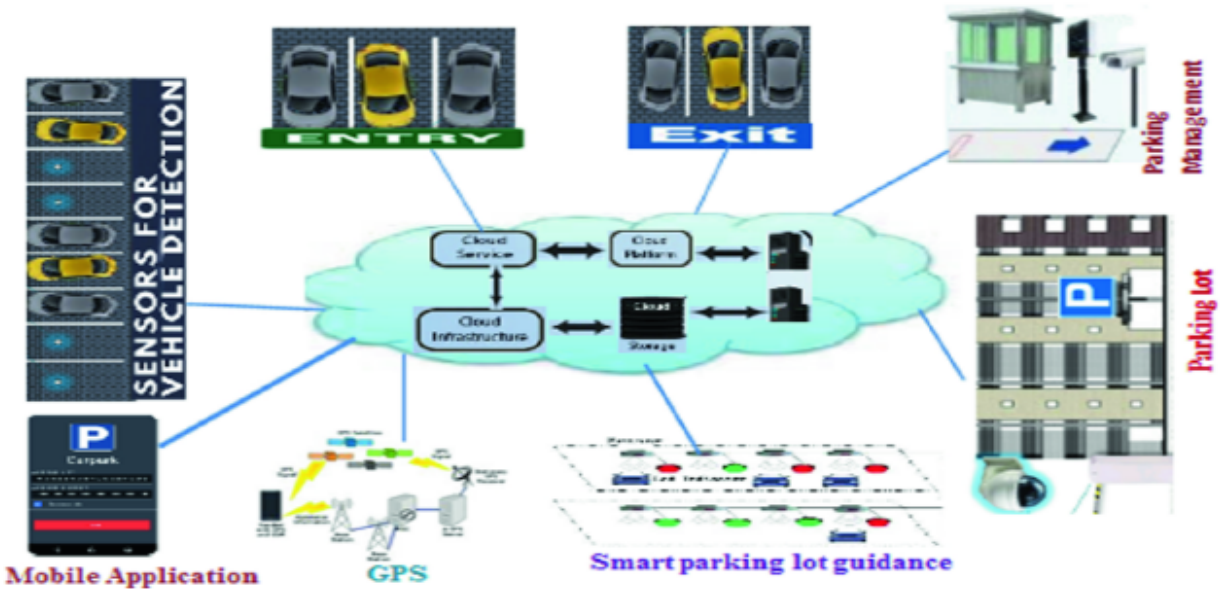
IMPLEMENTATIONS :

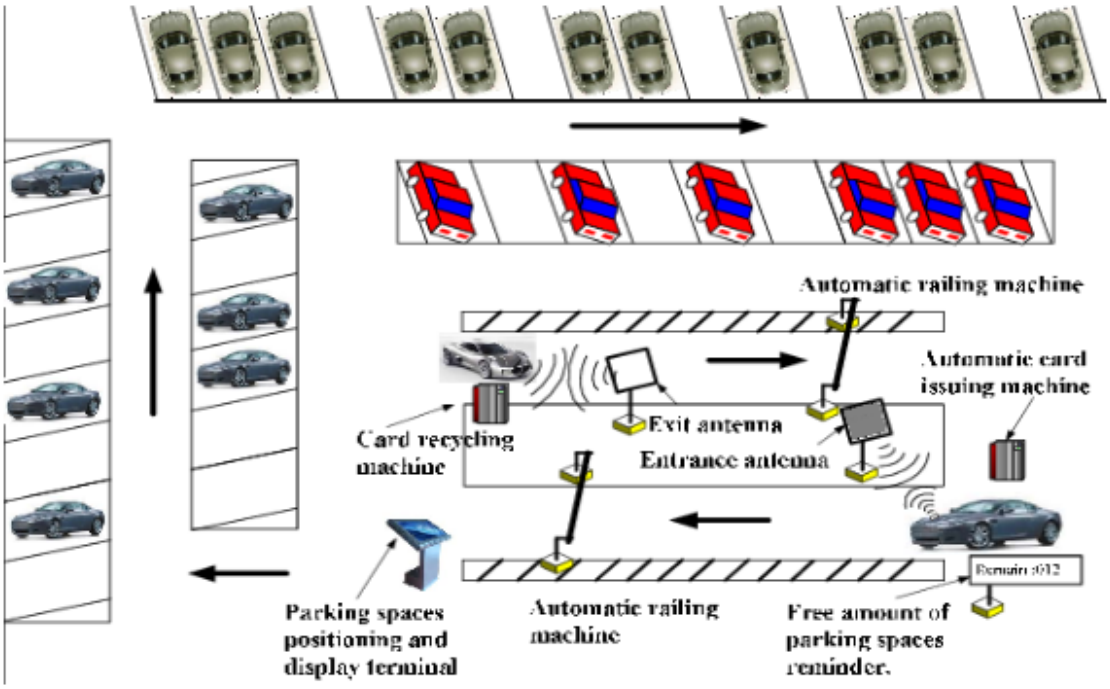
* The availability of parking slots will be displayed to the drivers at the entrance. It also captures the number plate of vehicles by using camera and recognises the number using image processing and stores it in the server at the entrance and also at the exit of parking area for ease of payment purposes.

* IoT-based smart parking system deployment requires integrating various devices, sensors, and microcontrollers. For example, it can be a microcontroller transmitting data to the cloud environment or a Bluetooth beacon. With its help, consumers can control parking locally.

The following steps should be followed to embed the code into the PIC microcontroller,

STEP 1: Download and install the PIC C Compiler
STEP 2: Open the software and select File->New->Source File
STEP 3: Write the code, compile it and run.
STEP 4: Then dump the code into pic microcontroller using pic kit loader.

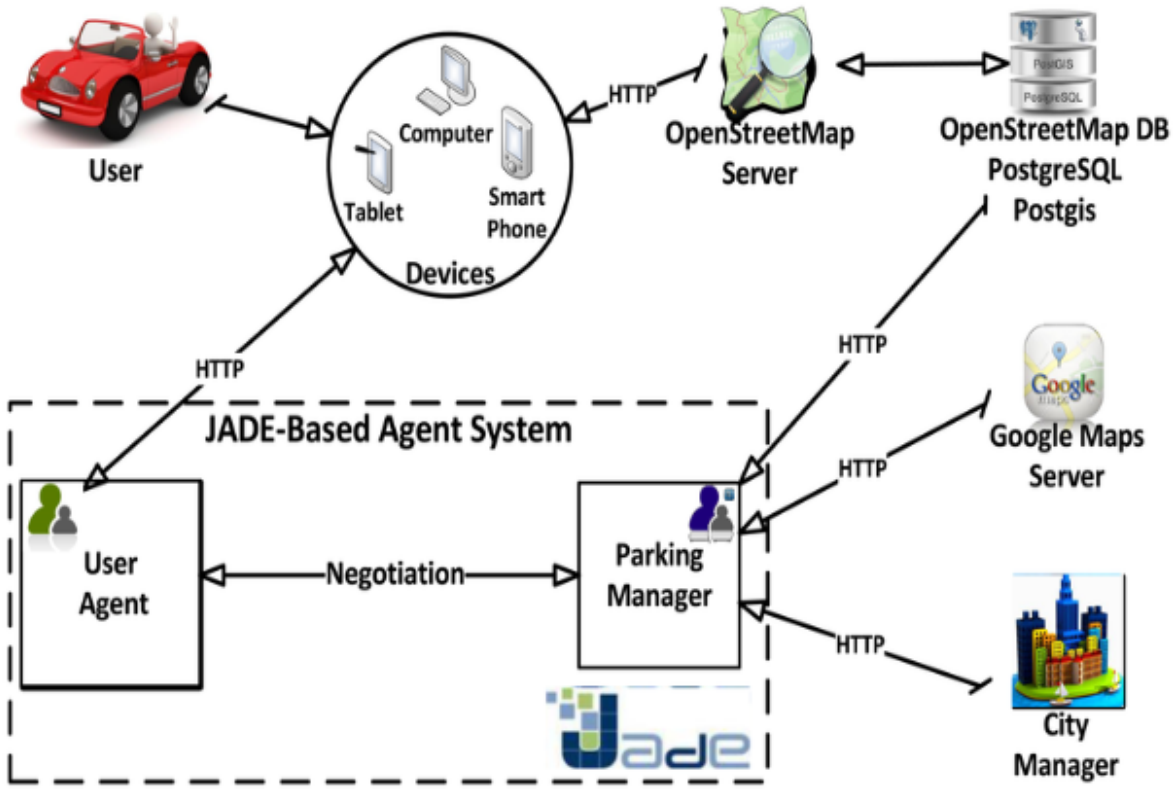




APPLICATIONS :

There are already many free smart parking applications available online in web and mobile stores of Android or iOS. Previously, reservation of parking space was done by calling to the service provider and now with the current usage of internet and smartphones, these services are provided online using mobile and web applications. These applications serve as decision support systems for the driver in occupying a vacant parking space.

- Guide the driver to parking lot using display boards.
- Reserve and authorise the driver to a parking lot.
- Reserve and guide the driver to a specific parking space using navigational information.



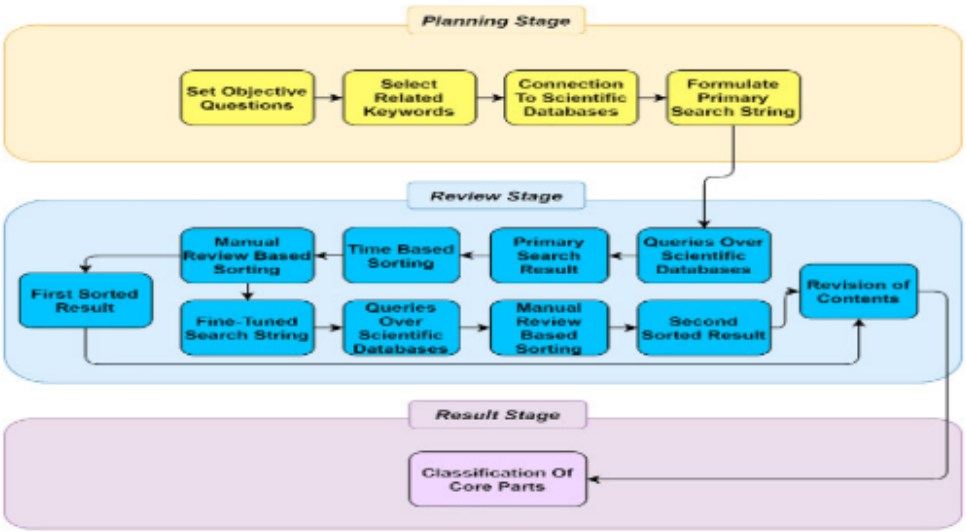
REVIEWS :

> In the planning stage, numerous pieces of literature came out as findings from which only the papers published within the last twenty years were selected. Although in this selection, papers published within the twenty years were chosen, but the main focus was given to the papers published within the last ten years period.

> After the first sorting, the chosen papers from different online repositories were manually sorted by reviewing the title, abstract, and conclusion. In this stage of sorting, a paper is selected if it included the keywords and could provide the details that might answer the set of questions regarding the objective of the paper. A paper is disregarded if it fails to portray any topic related to the aim of the paper.

> In the third stage, the primary search strings, which were based on the keywords, were modified by adding some additional keywords such as: "intelligent sensors", "multiagent system", "cloud", "wireless", "autonomous", "IoT". After that, another search was made through the scientific databases using the fine-tuned search strings.

> This search's findings were again sent through the manual review process of the title, abstract, and conclusion. Later, all the selected contents were thoroughly revised for the result stage. The overall process of search string formulation to querying scientific databases and their search results are illustrated.



The Planning Stage For Reviewing Stage Methodology

CODING AND OUTPUT :

```
#include<stdio.h>

#include<conio.h>

#include<process.h>
```

```
main()
{
clrscr();
int ParkingCharges,cartype,entry,exit;
int charge,charge1,charge2;
char model[20],car[6];
charge=40;
charge1=50;
charge2=60;
printf("\n\n**********CAR PARKING**********\n\n");
printf("*********PARKING CHARGES*********\n\n");
printf("Charges for Sedan Cars: Rs 40 per hour.\n\n");
printf("Charges for Hatchback Cars: Rs 50 per hour.\n\n");
printf("Charges for SUV Cars: Rs 60 per hour.\n\n");
printf("-----------------------------------\n\n");
printf("Enter car type [1:Sedan/2:Hatchback/3:SUV] \n\n");
scanf("%d", &cartype);
switch (cartype)
{
case 1: printf("\nSedan\n");
break;
case 2: printf("\nHatchback\n");
break;
case 3: printf("\nSUV\n");
break;
default: printf("This is not a car type");
exit();
```

```
}
printf("\nEnter car model: ");
scanf("%s", model);
printf("\nEnter car number: ");
scanf("%s", car);
printf("\nEntry time(24 hour format): ");
scanf("%d", &entry);
printf("\nExit Time(24 hour format):  ");
scanf("%d", &exit);
if (cartype==1)
ParkingCharges=(exit-entry)/100*charge;
if (cartype==2)
ParkingCharges=(exit-entry)/100*charge1;
if (cartype==3)
ParkingCharges=(exit-entry)/100*charge2;
printf("Parking Fee: Rs %d \n\n", ParkingCharges);
printf("********THANK YOU*********");
getch();
return(0);
}
```

OUTPUT :

CONCLUTIONS :

* In conclusion, parking management systems can help to improve the parking experience for drivers, reduce congestion on the roads, and generate revenue for the area.

* In this study, the various types of smart parking system and has been presented. From the various examples of the implementation of the smart parking system being presented, its efficiency in alleviating the traffic problem that arises especially in the city area where traffic congestion and the insufficient parking spaces are undeniable. It does so by directing patrons and optimizing the use of parking spaces.

* It with the study on all the sensor technologies used in detecting vehicles, which are one of the most crucial parts of the smart parking system,

the pros and cons of each sensor technologies can be analyzed. Although, there are certain disadvantages in the implementation of visual based system in vehicle detection as described earlier, the advantages far outweighs its disadvantages.

*This project focuses on implementation of car parking place detection using Internet of Things.

* The system benefits of smart parking go well beyond avoiding time wasting.

* Developing a smart parking solutions with in a city solves the pollution problem.

* There are a number of improvements and modifications that can be made to my design to increase real world practicality and functionality. The symbols used need to have the ability to differentiate between pedestrians and cars. My Development of Smart Parking System garage is so simple that adding more interfaces was unnecessary. With only twelve parking spots in my system, more than five cars moving through the garage at one time would simply produce congestion.

* This system has been developed to provide parking attendance with parking information on how to get to. The parking attendance is committed to working towards a sustainable parking floors and the range of parking choices. The parking plan brings together existing and new initiatives which offer a better choice in the way car's owner can parking. This system also easy to use guide providing parking attendance with high quality parking information.

* This system also is a new service that tracks cars in real time throughout the mall. It means parking attendance can now find out the arrival time of the next car at every parking spot. She/ He can access this system information via database. The ticket parking is available to the entire car that had been parking in that time. Costing just RM1.00 per hour for one car gives unlimited parking spots parking throughout the mall.

* Proper planning needs to be done carefully and suspiciously in order to make sure the business that has been planned will be a profitable and long lived business. The opportunity to develop and implement a well-defined business strategy is very valuable to the business owner, their customer and as well as the community. Business plan reviews 60 visions and strategic focus as adding value to the target market segments, the small business and also the system users in the local.

*THANK YOU !!!..**