

# RFID BASED CAR PARKING SYSTEM

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**ABSTRACT** RFID based vehicles parking technique uses microcontroller with sensing circuits which sense entry and outgoing of the vehicles. In this technique the RFID card is swiped with the permission of vehicle's parking owner. The RFID card which is given by the parking owners will be recharged by using the two push switches i.e. SW1 and SW2. When the vehicles enter in the parking system the money will automatically be reduced from the RFID card and it displays on the screen. By using the H bridge concept we operate the entry and exit. In this concept DC motors are used for the operation of entry and exit boom. The DC motors operate clock wise and antilock wise as per the program. When the vehicles enter in the parking system the space available in the parking system reduces and vice versa. A standard power supply of 5 volt is given for the operation. An LCD displays all the activities of the parking system

**KEYWORDS**- RFID Technology, Lcd , RFID EM-18 reader module ,microcontroller ,IR Sensor

## INTRODUCTION-

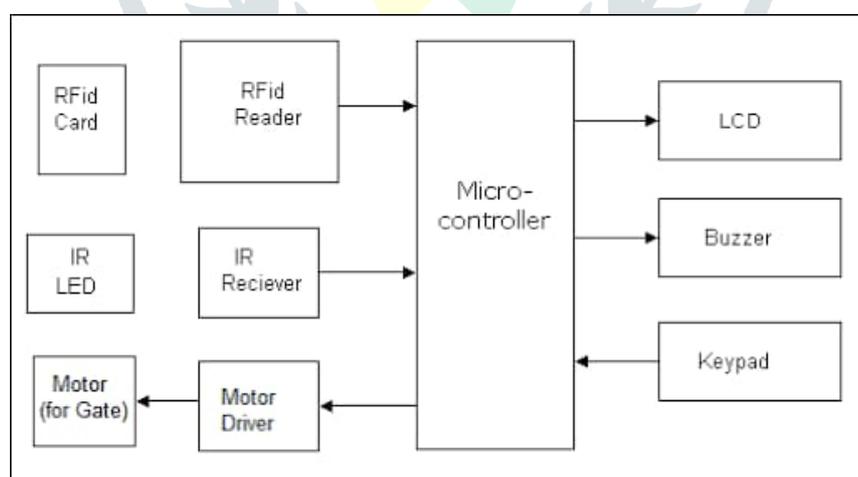
In this project RFID based car parking system we have shown the concept of automatic car parking system. As in the modern world Everything is going automatic we have built a system which will automatically sense the entry and exit of cars through the gates and then display the cars in the parking lots. RFID is a fast and reliable means of identifying objects .Communication between the RFID reader and tags occur wirelessly and generally does not require the line of sight between the device checkins and checkouts will be handled in fast manner without having to stop the cars so that traffic jams problems will be avoided these process.The parking of the vehicles will be done in multistory scheme to minimize the space taken by vehicle.

## LITERATURE REVIEW:

Five reports were reviewed in detail for the literature review, with the majority of these providing some evidence to support the theory that the introduction of .

RFID technology , manually achieved workloads will be decreased considerably [1]. RFID technology is universal, useful and efficient [2].RFID technology is

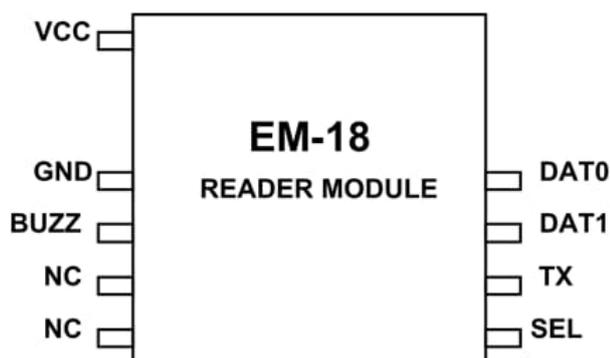
## BLOCK DIAGRAM



## FEATURES OF THE USED COMPONENTS

**LED-** A light-emitting diode (LED) is a two-lead semiconductor light source. It is a pn-junction diode, which emits light when activated. When a suitable voltage is applied to the leads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons. This effect is called electroluminescence, and the color of the light (corresponding to the energy of the photon) is determined by the energy band gap of the semiconductor.

## EM-18-



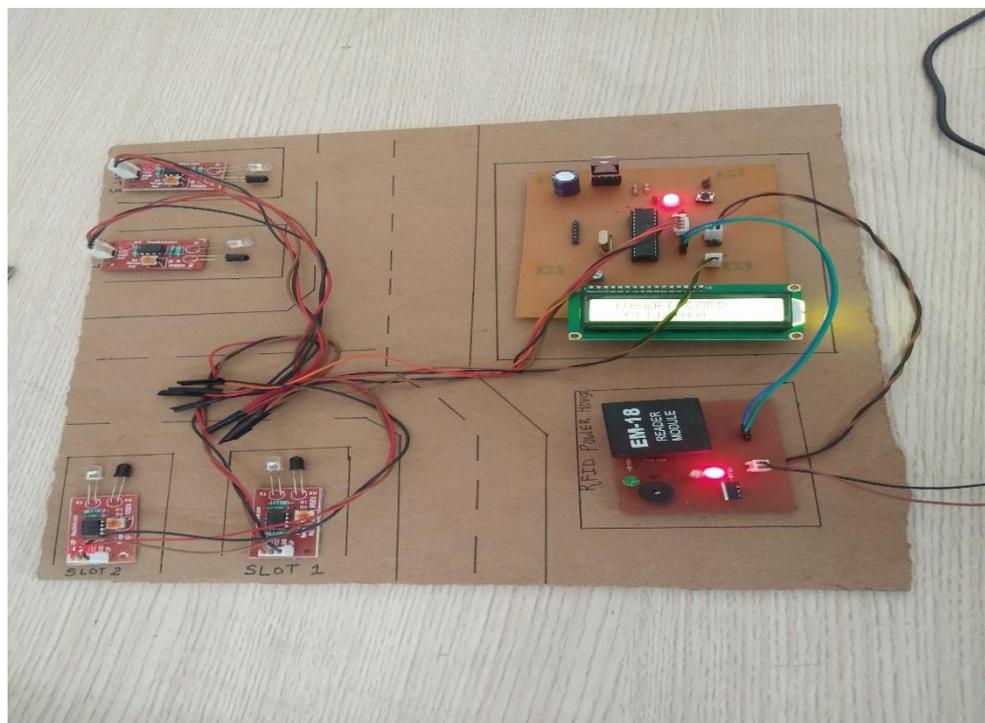
**RFID**-Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically stored information. Passive tags collect energy from a nearby RFID reader's interrogating radio waves. Active tags have a local power source (such as a battery) and may operate hundreds of meters from the RFID reader. Unlike a barcode, the tag need not be within the line of sight of the reader, so it may be embedded in the tracked object. RFID is one method of automatic identification and data capture (AIDC).[1]

RFID tags are used in many industries. For example, an RFID tag attached to an automobile during production can be used to track its progress through the assembly line; RFID-tagged pharmaceuticals can be tracked through warehouses; and implanting RFID microchips in livestock and pets enables positive identification of animals.

**LCD**- Liquid crystal displays (LCD) are widely used in recent years as compares to LEDs. This is due to the declining prices of LCD, the ability to display numbers, characters and graphics, incorporation of a refreshing controller into the LCD, their by relieving the CPU of the task of refreshing the LCD and also the ease of programming for characters and graphics. HD 44780 based LCDs are most commonly used.

**IR TRANSMITTER AND RECIEVER**-Two IR transmitter-receiver pairs are used. The IR LEDs are connected in forward-biased condition to the +5V power supply through 2200-ohm resistors. These emit IR light, which is interrupted when an object comes into its way to the IR receiver. The IR receiving photodiodes are connected in reverse-biased condition to +5V power supply through 1-mega-ohm resistors. When the IR light falls on the photodiodes, their resistance changes and so does their output [5]. This output is compared with a fixed voltage to give a digital output to the microcontroller in order to judge the entry and exit of the vehicles.

**RFID READER**-The RFID reader is an electronic device ,which includes two basic parts: an antenna and a transreciever.The antenna is designed to allow the open communication between the tags while the transreciever is responsible for acquiring the RFID data. Moreover the the RFID reader has a function of reading data from RFID tag and writing data from RFID tag.



### FUTURE MODIFICATION

- 1- This project can be enhanced for tracking the vehicle speed on the roads.
- 2- By using GPS system we can find where the car park and also we can find number of vacancy available in parking system.
- 3- To differentiate the vehicles from VIPs and staff.
- 4- The camera can be used for security.

### APPLICATION AREA

- 1- It used in pay& park place.
- 2- It used in Market place, cinema theatre, hotels, Hospital, in crowded cities...etc.

### CONCLUSION

I would like to conclude this project as a very great and enriching experience. During the project labs I familiarized myself with P.C.B designing, application of I.C. (its pin diagram), mounting of components using soldering process and interfacing of the hardware circuit with the computer. The circuit can be used at all places starting from domestic to the industrial sectors. The simplicity in the usage of this circuit helps it to be used by a large number of people as people with less knowledge of hardware can also use it without facing any problem. The I also learned about the engg. Responsibility and about their hard work. This project was not only good for personality development but also great in terms of imparting practical knowledge. Thus I conclude our project with a very nice and wonderful experience.

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