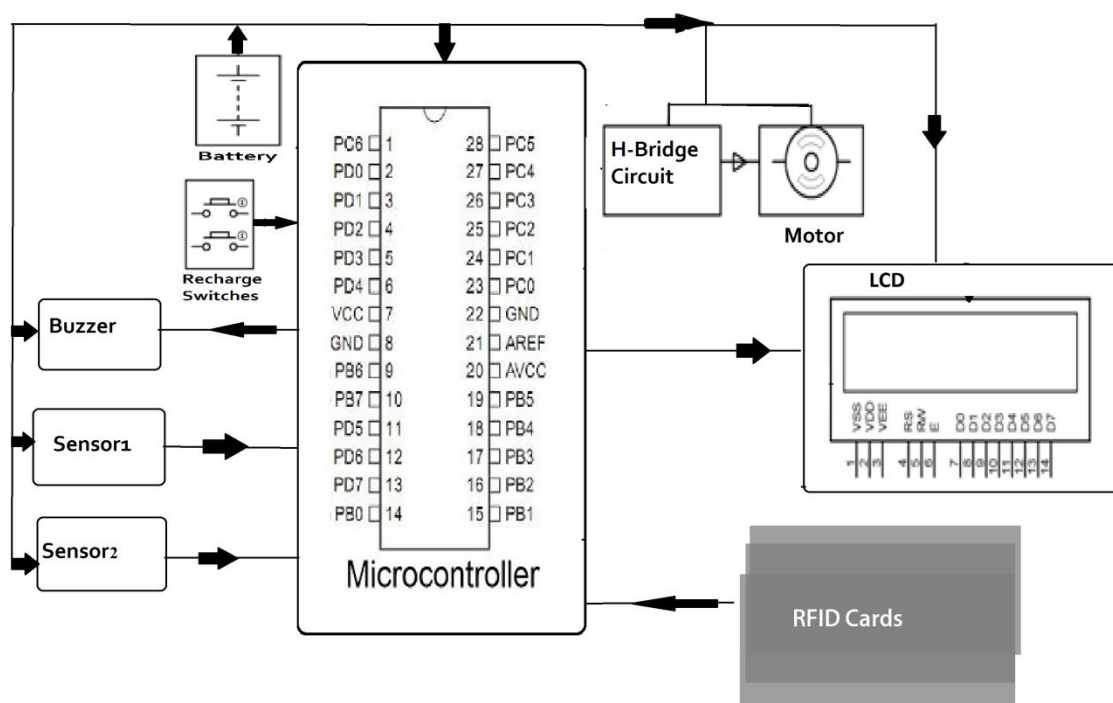# Smart Car Parking

Introduction

The project is a car authorizing system where the system can only allow a car entry when a valid RFID card id swiped by the car owner. The system also had paid parking facility where the amount of parking gets deducted automatically whenever the card is swiped and the available number of car parking are displayed on a seven segment display.

The project requires a sensing circuits and a microcontroller to monitor the entry and exits of cars.

The entry and exit is operated by an H-bridge arrangement. This arrangement operates the motors that enable exit and entry by opening and closing the door clockwise and anticlockwise. Whenever the card is swiped a buzzer sound comes.

With every entry the available number of parking gets reduced by one and with every exit it gets reduced by one and is displayed on seven segment display.

Block Diagram

Component

- Microcontroller

- Rectifier

- LED

- LCD Display

- BUZZER

- Diode

- RFID Reader

- Transistor

- Transformer

- Resistors

- Capacitors

- DC MOTOR

Software Specifications

- compiler

- MC Programming Language: Embedded C

Advantage

- **Less fuel is wasted** Drivers are directed straight to an available parking spot. Therefore they waste fewer kilometre driving around in circles looking for vacant parking space.

- **Save money** Obviously, by driving more efficient when in search of parking space, you will save on fuel waste. Resulting in spending less money on petrol.

- **Save time** Additionally, by driving fewer kilometres when in search of parking space, you will save valuable time which can be spent on work, fun or hobbies. Resulting in spending less money on petrol.

- **Lowering individual environmental footprint** Another benefit of wasting fewer kilometres by searching for a parking spot is that you reduce individual pollution. Fossil fuels, petrol, diesel, and most alternative fuels all produce emissions, especially carbon dioxide (CO_2). This pollution will not directly harm human life. However, CO_2 is the most significant contributor to greenhouse gases and therefore contributor to climate change.

- **Increase in safety.** Drivers are less distracted looking around for a spot because they know where they can park their car. They will have their full attention on the road. By having their eyes on the road, accidents will decrease and safety will increase for themselves, other drivers and pedestrians.

- **Smart parking reducing stress while searching for a parking space**
  Driving through the same street over and over again, cars breathing down your neck and no parking spot to be seen. Having uncertainty and pressure to find a parking spot near your destination can be very stressful. With the use of smart parking, you know where the available parking space is located. You can drive straight to an open parking spot, stress-free.

- **Smart Parking takes away the unpredictability of finding a parking spot**
  Not visiting a particular (part of a) city because you do not want the hassle of finding an available parking spot. Knowing you are going to drive around for many minutes and probably are going to find a place far, far away from your destination can be very discouraging. Smart parking will allow you to see where you can park your car, and at what time it is the busiest.

- **Smart parking will reduce search traffic on the streets.** Smart parking will make sure there are fewer cars on the streets that drive slowly, circling for ages, looking around for a spot. This will benefit traffic flow and will reduce congestions in neighbourhoods with an under capacity in parking space. Therefore there are fewer traffic jams, and drivers will benefit by having less traffic on the streets.