PROJECT ON

SMART CAR PARKING SYSTEM

EAST WEST UNIVERSITY

DEPARTMENT OF ECE

Submitted By

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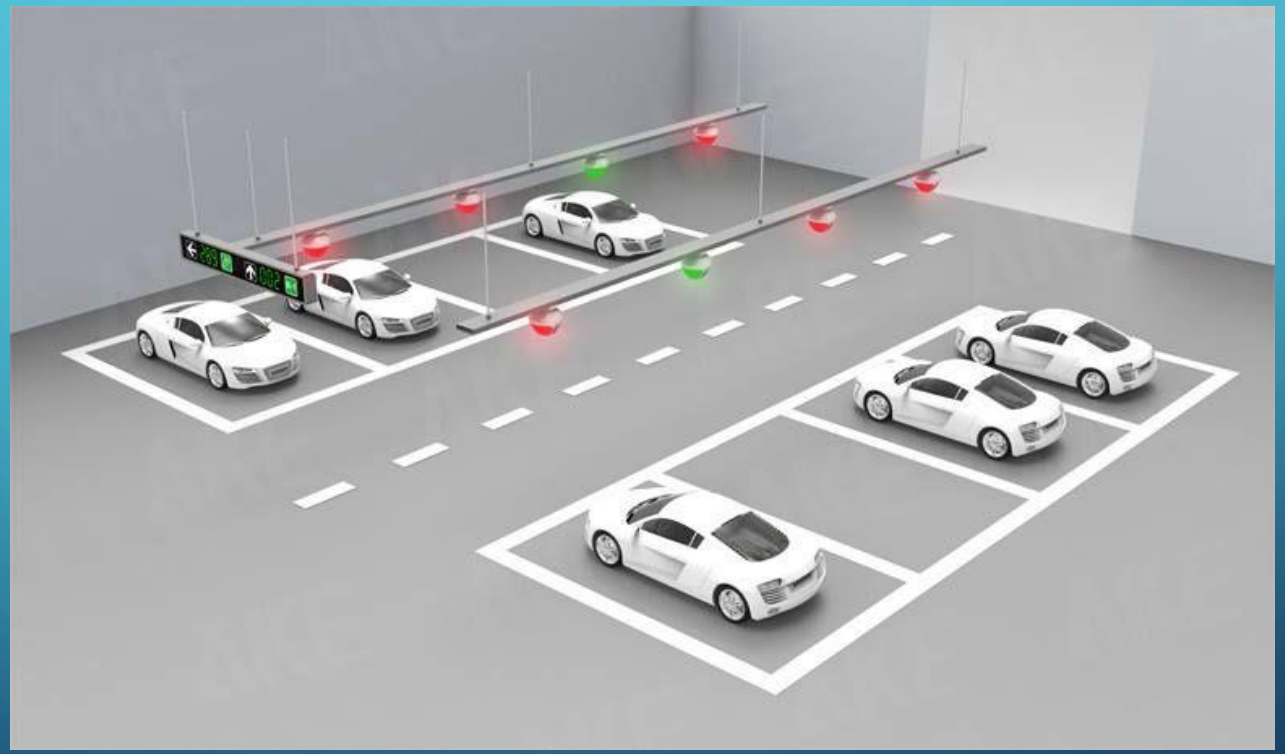
PARKING SYSTEM

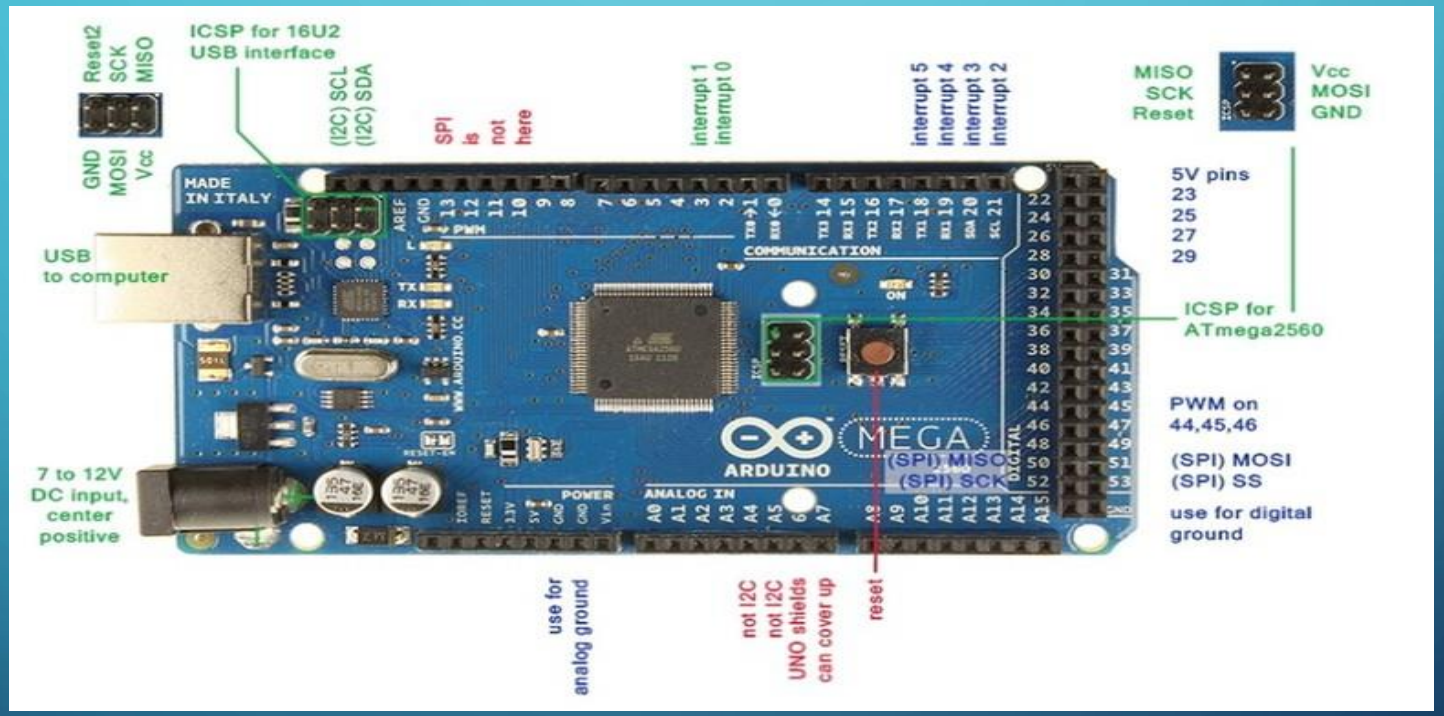


MOTIVATION

- Increase number of population and vehicles
- Not proper Car Parking management
- Time waste
- Waste of space
- Unauthenticated users
- Need more man power

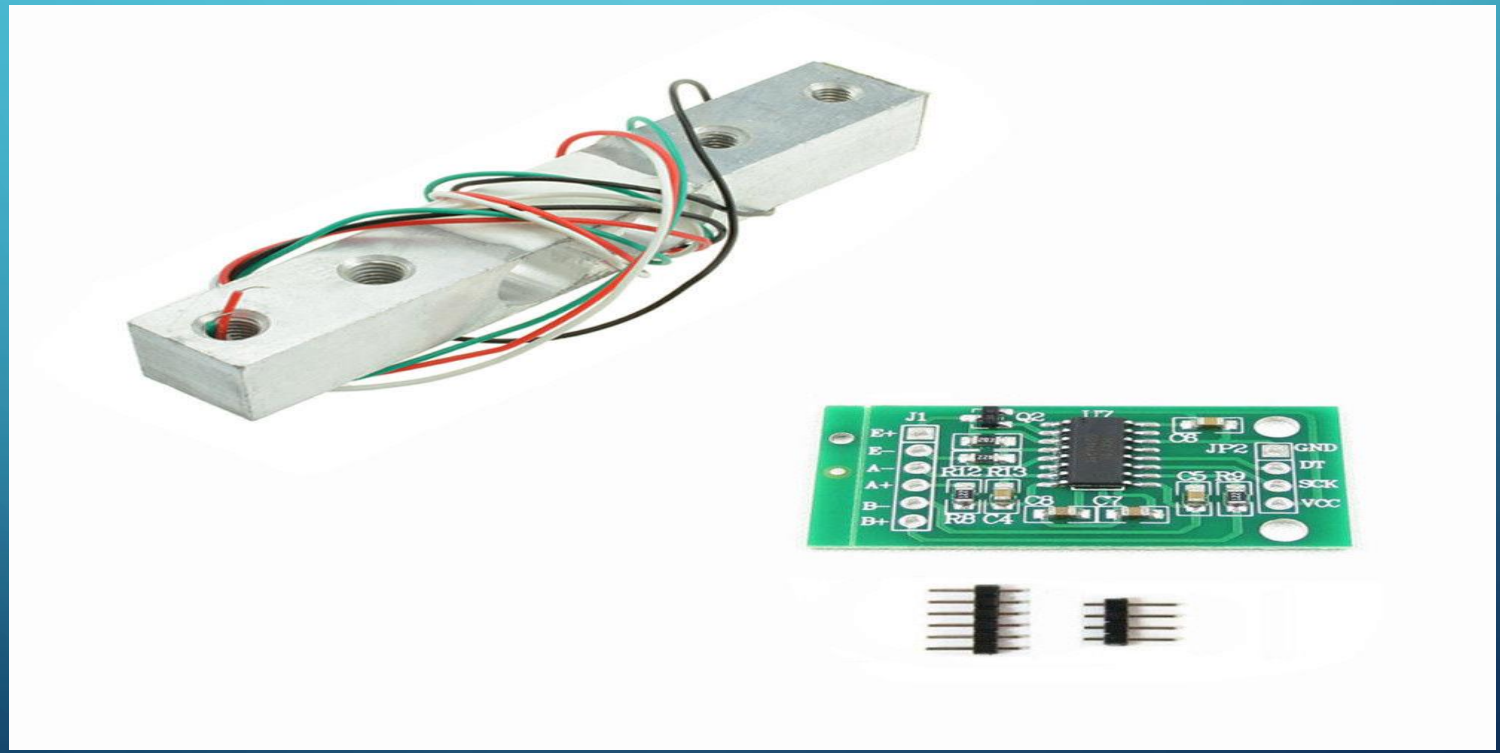
EQUIPMENT

1. Arduino Mega2560



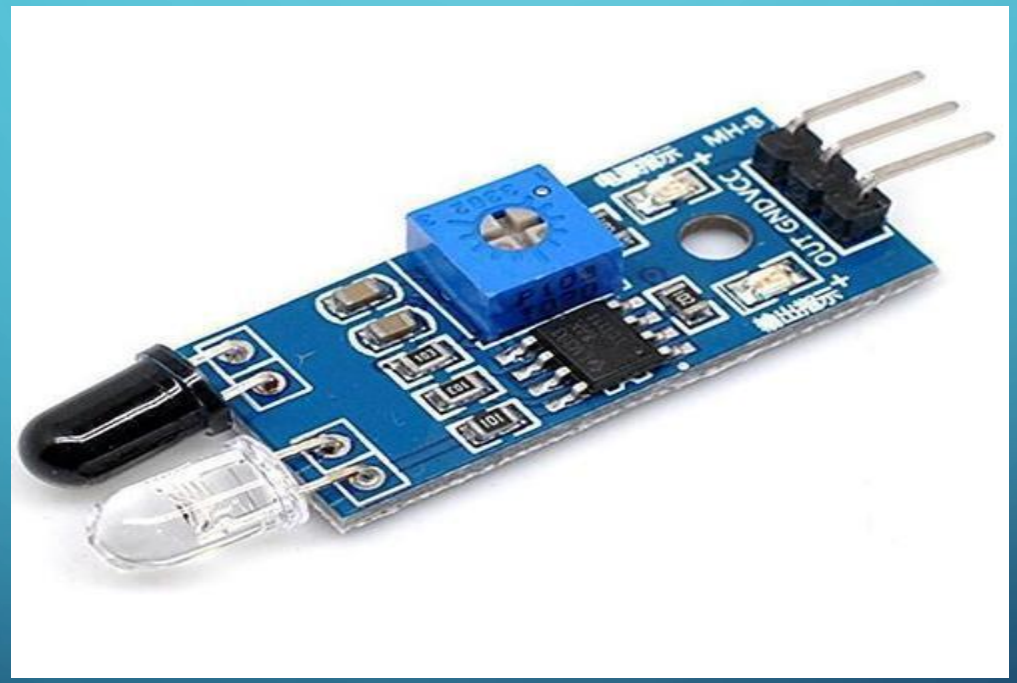
- RFID RC-522 Module

- Load Cell HX711



- Servo Motor

- IR sensor



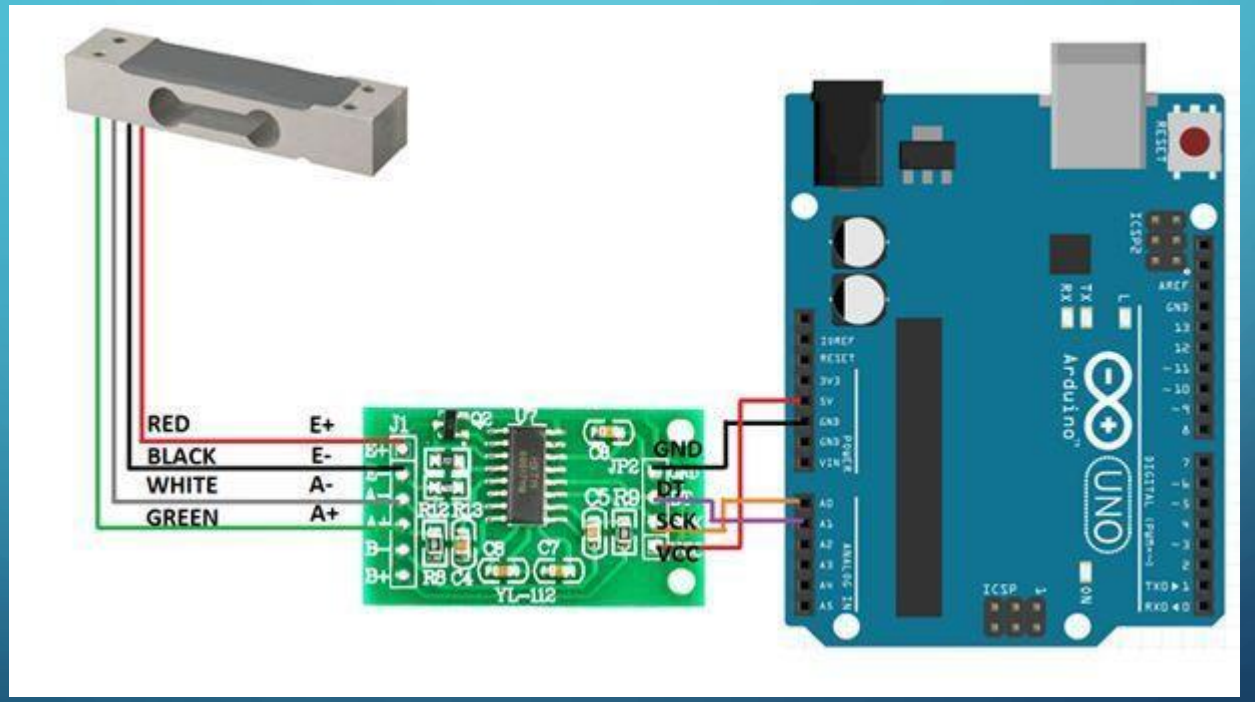
- LED
- Buzzer
- Breadboard
- Wire

WORK PROCEDURE

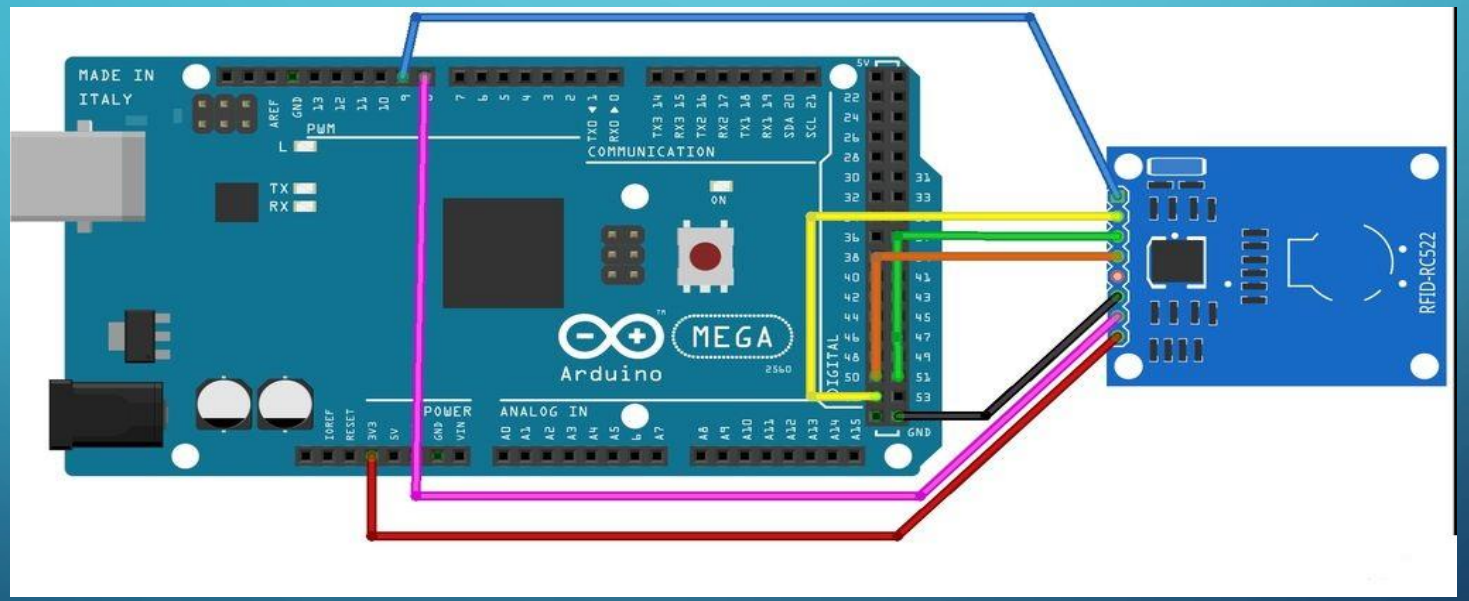
- When RFID tag and Load Cell both are logic 1, then servo motor will turn ON
- Car will entry in the system and take a empty place

BLOCK DIAGRAM

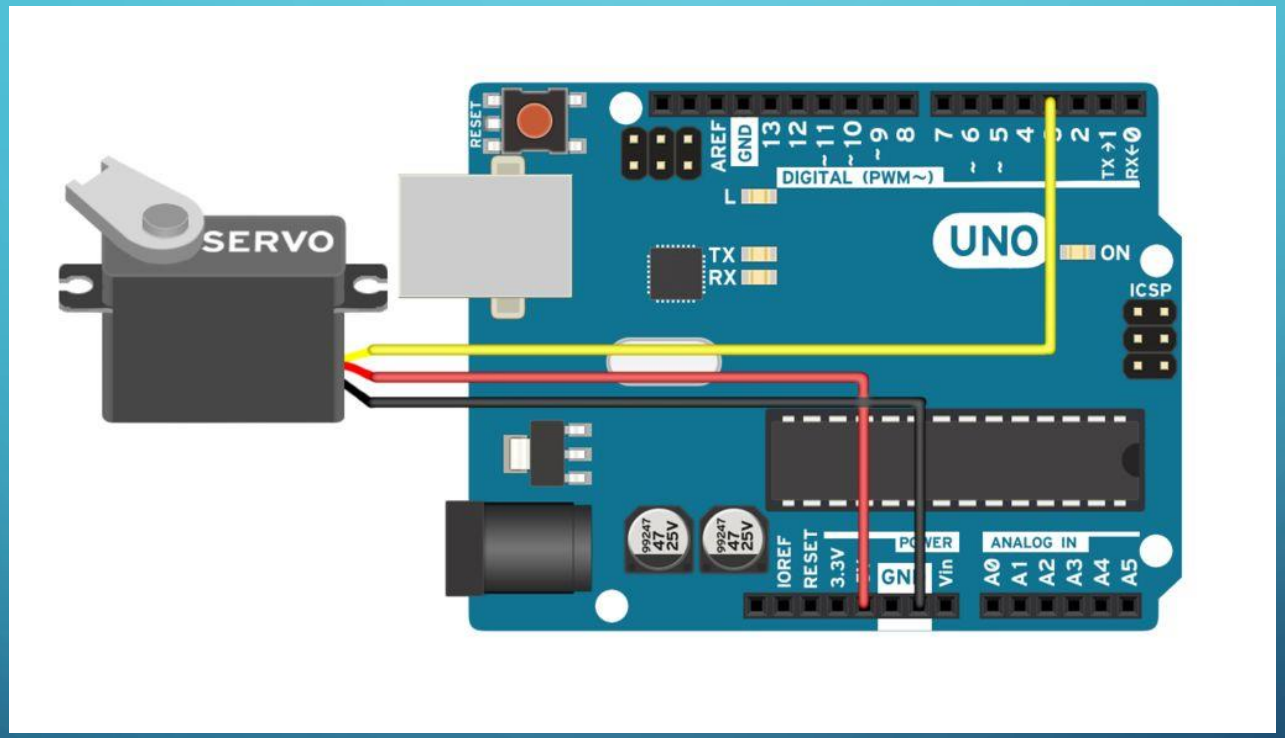
- Load Cell



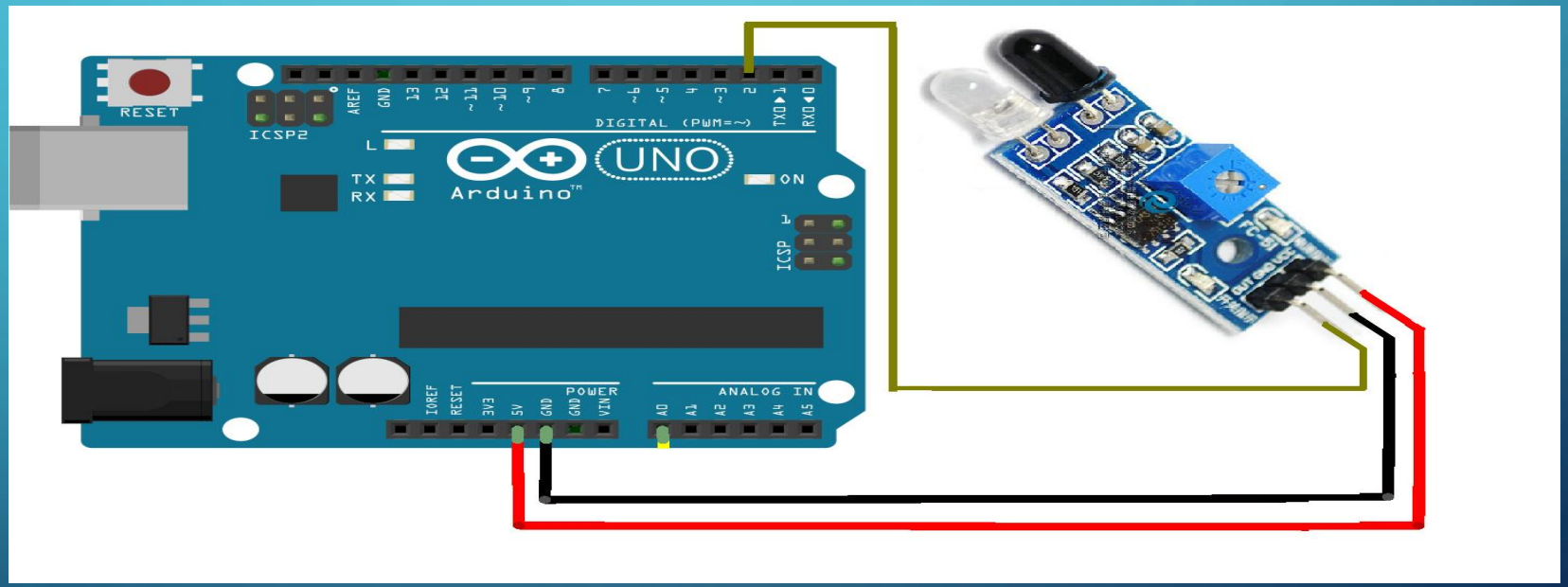
- RF Tag


MADE IN
ITALY
PWM
COMMUNICATION
POWER
ANALOG IN
DIGITAL
MEGA
Arduino
RFID-RC522

- Servo Motor


SERVO
UNO
DIGITAL (PWM~)
ANALOG IN
POWER
ICSP
ON
TX
RX
RESET
AREF
GND
IOREF
3.3V
Vin
A0
A1
A2
A3
A4
A5

- IR Sensor


RESET
ICSP2
AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL (PWM=~)
L
TX
RX
Arduino
UNO
ON
ICSP
POWER
ANALOG IN
IOREF
RESET
3V3
5V
GND
GND
VIN
A0
A1
A2
A3
A4
A5

CODE(INSIDE)

project_ready2 §

```
int ir1 = 5;
int g1 = 6;
int b1 = 7;
int ir2 =4;
int g2 = 8;
int b2 = 9;
int ir3 = 2;
int g3 = 10;
int b3 = 11;
void setup() {
 Serial.begin(9600);
 pinMode(5, INPUT);
 pinMode(6, OUTPUT);
 pinMode(7, OUTPUT);
 pinMode(4, INPUT);
 pinMode(8, OUTPUT);
 pinMode(9, OUTPUT);
 pinMode(3, INPUT);
 pinMode(10, OUTPUT);
 pinMode(11, OUTPUT);
}

void loop() {
int detect1 = digitalRead(5);
int detect2 = digitalRead(4);
int detect3 = digitalRead(2);
if(detect1 == HIGH){
    digitalWrite(g1, HIGH);
    digitalWrite(b1, LOW);
    Serial.println("1 Empty");
   }
if(detect1 == LOW){
   digitalWrite(b1, HIGH);
   digitalWrite(g1, LOW);
    Serial.println("1   FULL.....");
    digitalWrite(b1, LOW);
    Serial.println("1 Empty");
   }
if(detect1 == LOW){
   digitalWrite(b1, HIGH);
   digitalWrite(g1, LOW);
    Serial.println("1   FULL.....");
   }
   delay(300);

 if(detect2 == HIGH){
    digitalWrite(g2, HIGH);
    digitalWrite(b2, LOW);
    Serial.println("2 Empty");
   }
if(detect2 == LOW){
   digitalWrite(b2, HIGH);
   digitalWrite(g2, LOW);
    Serial.println("2   FULL.....");
   }
   delay(300);

 if(detect3 == HIGH){
    digitalWrite(g3, HIGH);
    digitalWrite(b3, LOW);
    Serial.println("3 Empty");
   }
if(detect3 == LOW){
   digitalWrite(b3, HIGH);
   digitalWrite(g3, LOW);
    Serial.println("3   FULL.....");
   }
   delay(300);
}
```

CODE(ENTRY)

project_ready

```
#include <SPI.h>
#include <MFRC522.h>
#include <Servo.h>

#define DT A0
#define SCK A1


#define SS_PIN 53
#define RST_PIN 5
#define LED_G 8
#define LED_R 9
#define BUZZER 10
MFRC522 mfrc522(SS_PIN, RST_PIN);
Servo myServo;

long sample=0;
float val=0;
long count=0;

unsigned long readCount(void)
{
  unsigned long Count;
  unsigned char i;
  pinMode(DT, OUTPUT);
  digitalWrite(DT,HIGH);
  digitalWrite(SCK,LOW);
  Count=0;
  pinMode(DT, INPUT);
  while(digitalRead(DT));
  for (i=0;i<24;i++)
  {
    digitalWrite(SCK,HIGH);
    Count=Count<<1;
    digitalWrite(SCK,LOW);
    if(digitalRead(DT))
    Count++;
  }
  digitalWrite(SCK,HIGH);
  Count=Count^0x800000;
  digitalWrite(SCK,LOW);
  digitalWrite(SCK,LOW);
  return(Count);
}

void setup()
{
  Serial.begin(9600);
  SPI.begin();
  mfrc522.PCD_Init();
  myServo.attach(11);
  myServo.write(0);
  pinMode(LED_G, OUTPUT);
  pinMode(LED_R, OUTPUT);
  pinMode(BUZZER, OUTPUT);
  noTone(BUZZER);
  pinMode(SCK, OUTPUT);
  delay(1000);
  calibrate();

}
void loop()
{
  Serial.print("Come to Weigth Machine  & ");
  Serial.print("Put your card to the reader...");
  Serial.println();
  // Look for new cards
  if ( ! mfrc522.PICC_IsNewCardPresent())
  {
    return;
  }
  // Select one of the cards
  if ( ! mfrc522.PICC_ReadCardSerial())
  {
    return;
  }
  //Show UID on serial monitor
  Serial.print("UID tag :");
  String content= "";
  byte letter;
  for (byte i = 0; i < mfrc522.uid.size; i++)
```

```
for (byte i = 0; i < mfrc522.uid.size; i++)

{
   Serial.print(mfrc522.uid.uidByte[i] < 0x10 ? " 0" : " ");
   Serial.print(mfrc522.uid.uidByte[i], HEX);
   content.concat(String(mfrc522.uid.uidByte[i] < 0x10 ? " 0" : " "));
   content.concat(String(mfrc522.uid.uidByte[i], HEX));
}
Serial.println();
content.toUpperCase();

delay(1000);

count= readCount();
int w=(((count-sample)/val)-2^((count-sample)/val));
Serial.print("Measured Weight:  ");
Serial.print(w);
Serial.print("   g");

if (content.substring(1) == "47 50 EB A9" && w < 50) //change here the U
{
  Serial.println(); Serial.println();
  Serial.println("Authorised access");
  Serial.println();  Serial.println(); Serial.println();
  delay(500);
  digitalWrite(LED_G, HIGH);
  tone(BUZZER, 500);
  delay(300);
  noTone(BUZZER);
  myServo.write(180);
  delay(5000);
  myServo.write(0);
  digitalWrite(LED_G, LOW);
}

else   {
   Serial.println(); Serial.println(); Serial.println();
   Serial.println(" Access denied");
   digitalWrite(LED_R, HIGH);
   tone(BUZZER, 300);
   delay(1000);
   digitalWrite(LED_R, LOW);
   noTone(BUZZER);
  }

}

void calibrate()
{
  Serial.println("Calibrating...");
  Serial.println("Please Wait...");
  for(int i=0;i<100;i++)
  {
    count=readCount();
    sample+=count;
  }
  sample/=100;
  Serial.println("Put 100g & wait");
  count=0;
  while(count<1000)
  {
    count=readCount();
    count=sample-count;
  }

  Serial.println("Please Wait....");
  delay(2000);
  for(int i=0;i<100;i++)
  {
    count=readCount();
    val+=sample-count;
  }
  val=val/100.0;
  val=val/100.0;        // put here your calibrat
}
```

FUTURE WORK

- Digital Payment System
- Recharge Card
- Recharge Point
- Bank Account
- Database
- Application

CONCLUSION

- Finally we can solve the traditional car parking problem by installing this proto type system.

THANK YOU EVERYONE