

RFID based street crossing assistance for elderly

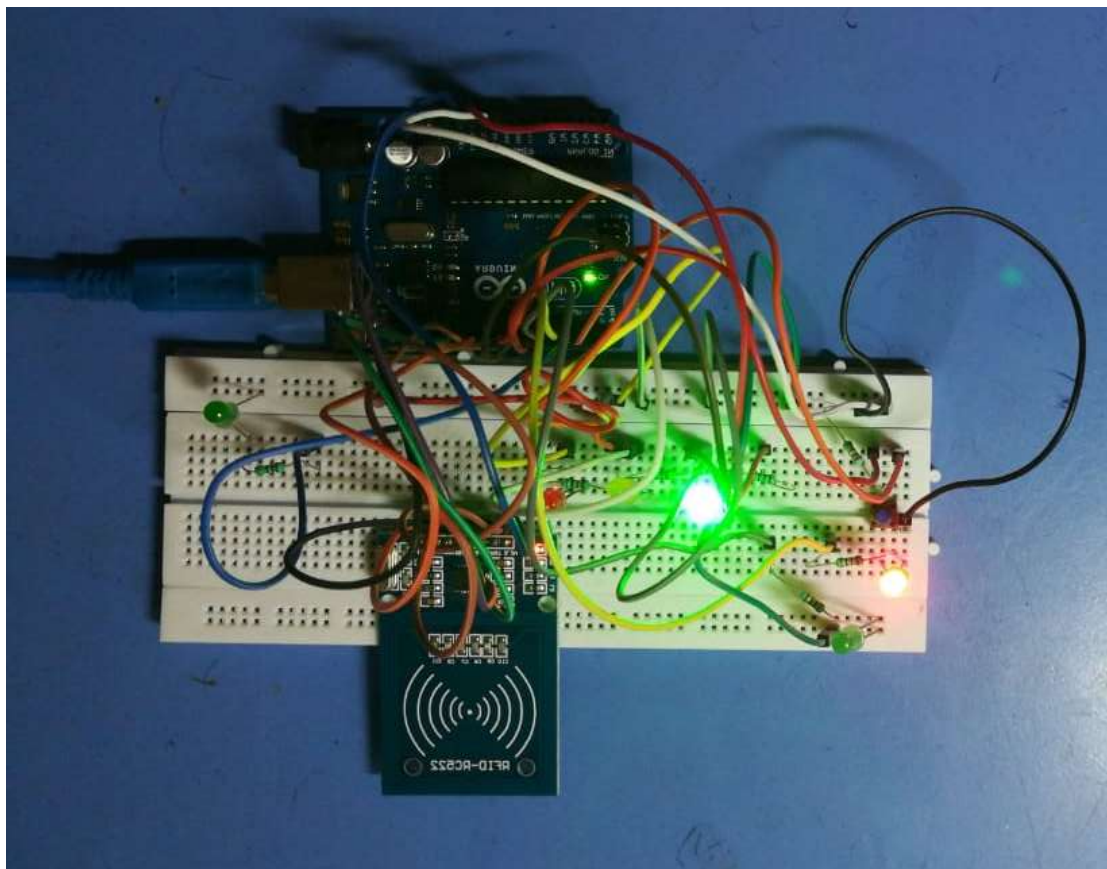
Submitted by: Jose Joseph

Kishan Agrawal

AIM: To design an RFID based street crossing with assistance for elderly as an Arduino project.

METHODOLOGY: In the proposed project, we have a pedestrian light and traffic light at a crossing. As a usual case, we provide a 15 seconds crossing time for a normal pedestrian once the street crossing request button is pressed. Here, in addition, a senior citizen can swipe an issued RFID tag to get an additional 5 second crossing time which gives a total crossing time of 20 seconds.

WORKING MODEL:



ARDUINO CODE:

```
#include "SPI.h"
```

```
#include "MFRC522.h"
```

```
#define SS_PIN 10
```

```
#define RST_PIN 9
```

```
#define SP_PIN 8
```

```
int RedCar=8;
```

```
int OrangeCar=7;
```

```
int GreenCar=6;
```

```
int button=2;
```

```
int Pred=4;
```

```
int Pgreen=5;
```

```
int crosstime = 5000;
```

```
int accessred=1;
```

```
int accessgreen=3;
```

```
unsigned long changeTime;
```

```
byte readCard[4];
```

```
String tagID = "";
```

```
MFRC522 rfid (SS_PIN, RST_PIN);
```

```
MFRC522 :: MIFARE_Key key;
```

```
uint8_t getID() {  
    // Getting ready for Reading PICCs  
    if ( ! rfid.PICC_IsNewCardPresent()) { //If a new PICC placed to RFID reader  
continue  
        return 0;  
    }  
    if ( ! rfid.PICC_ReadCardSerial()) { //Since a PICC placed get Serial and continue  
        return 0;  
    }  
    tagID = "";  
    for ( uint8_t i = 0; i < 4; i++) { // The MIFARE PICCs that we use have 4 byte UID  
        readCard[i] = rfid.uid.uidByte[i];  
        tagID.concat(String(rfid.uid.uidByte[i], HEX)); // Adds the 4 bytes in a single  
String variable  
    }  
    tagID.toUpperCase();  
    rfid.PICC_HaltA(); // Stop reading  
    return 1;  
}
```

```
void setup() {  
    Serial.begin (9600);  
    SPI.begin ();
```

```
rfid.PCD_Init ();  
pinMode(RedCar, OUTPUT);  
pinMode(OrangeCar, OUTPUT);  
pinMode(GreenCar, OUTPUT);  
pinMode(button, INPUT);  
pinMode(Pred, OUTPUT);  
pinMode(Pgreen, OUTPUT);  
pinMode(accessred, OUTPUT);  
pinMode(accessgreen, OUTPUT);
```

```
digitalWrite(GreenCar, HIGH);  
digitalWrite(Pred, HIGH);  
}
```

```
void loop()  
{  
  digitalWrite(accessred,LOW);  
  digitalWrite(accessgreen,LOW);  
  int state = digitalRead(button);  
  if(state == HIGH && (millis() - changeTime)>5000)  
  {  
    changeLights();  
  }  
  digitalWrite(accessred,LOW);
```

```
digitalWrite(accessgreen,LOW);  
}
```

```
void changeLights()
```

```
{  
  digitalWrite(GreenCar, LOW);  
  digitalWrite(OrangeCar, HIGH);  
  delay(2000);
```

```
  digitalWrite(OrangeCar, LOW);  
  digitalWrite(RedCar, HIGH);  
  delay(1000);
```

```
  digitalWrite(Pred, HIGH);  
  digitalWrite(RedCar, HIGH);  
  digitalWrite(Pred, LOW);  
  digitalWrite(Pgreen, HIGH);  
  Serial.println("\nPlace your ID on scanner");  
  delay(5000);
```

```
  if(rfid.PICC_IsNewCardPresent () && rfid.PICC_ReadCardSerial ())  
  {  
    String strID = "" ;  
    for (byte i = 0; i <4; i ++)  
    {
```

```

    strID +=((rfid.uid.uidByte [i] <0x10) ? "0" : "" ) + String (rfid.uid.uidByte [i], HEX)
+ (!3 ? ":" : "" );
}
strID.toUpperCase ();
if(strID=="8F053029")
{
    digitalWrite(accessgreen,HIGH);
    Serial.println("\nID name:Mr.Justin Thomas    Age:70");
    Serial.println("\nSenior citizen=> 15 seconds extra time for crossing");
    delay(crosstime+15000);
}
else
{
    digitalWrite(accessred,HIGH);
    delay(crosstime);
}
}

for(int x=0; x<10; x++)
{
    digitalWrite(Pgreen, HIGH);
    delay(250);
    digitalWrite(Pgreen, LOW);
    delay(250);
}

```

```
digitalWrite(Pred, HIGH);
```

```
delay(500);
```

```
digitalWrite(OrangeCar, HIGH);
```

```
digitalWrite(RedCar, LOW);
```

```
delay(1000);
```

```
digitalWrite(GreenCar, HIGH);
```

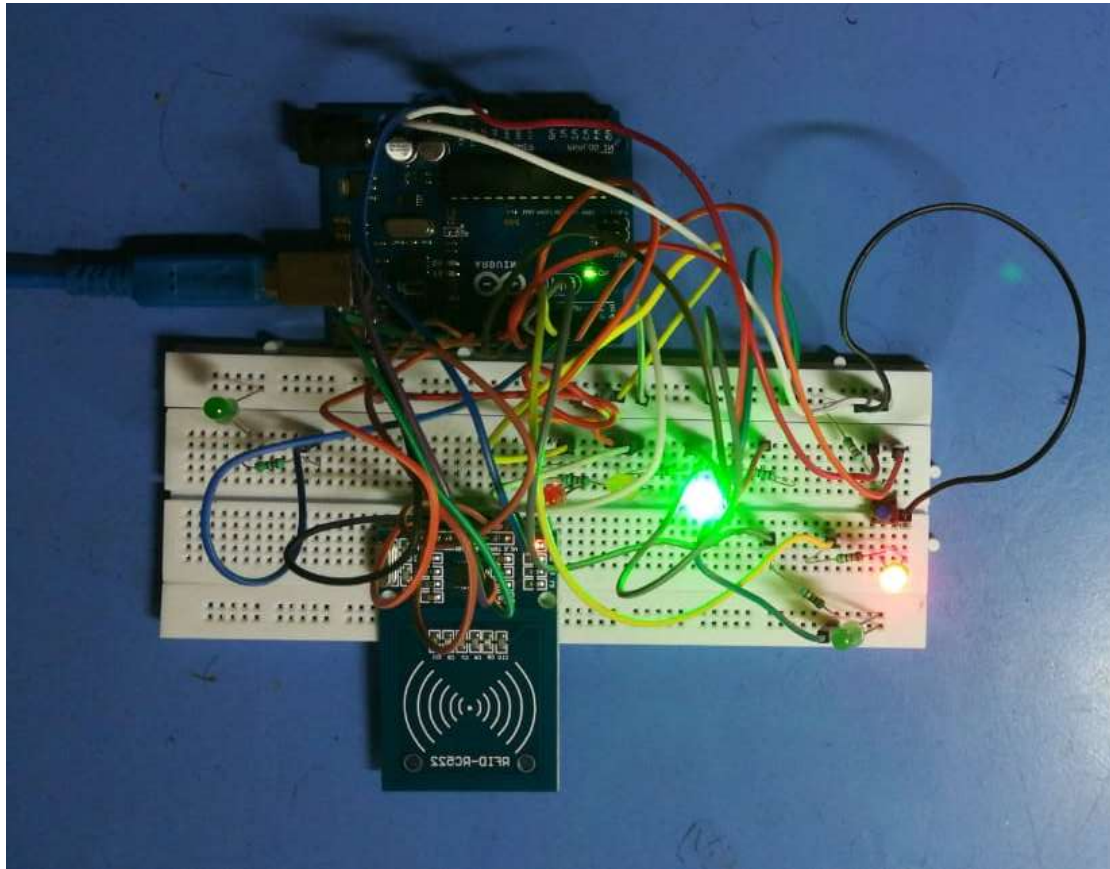
```
digitalWrite(OrangeCar, LOW);
```

```
changeTime= millis();
```

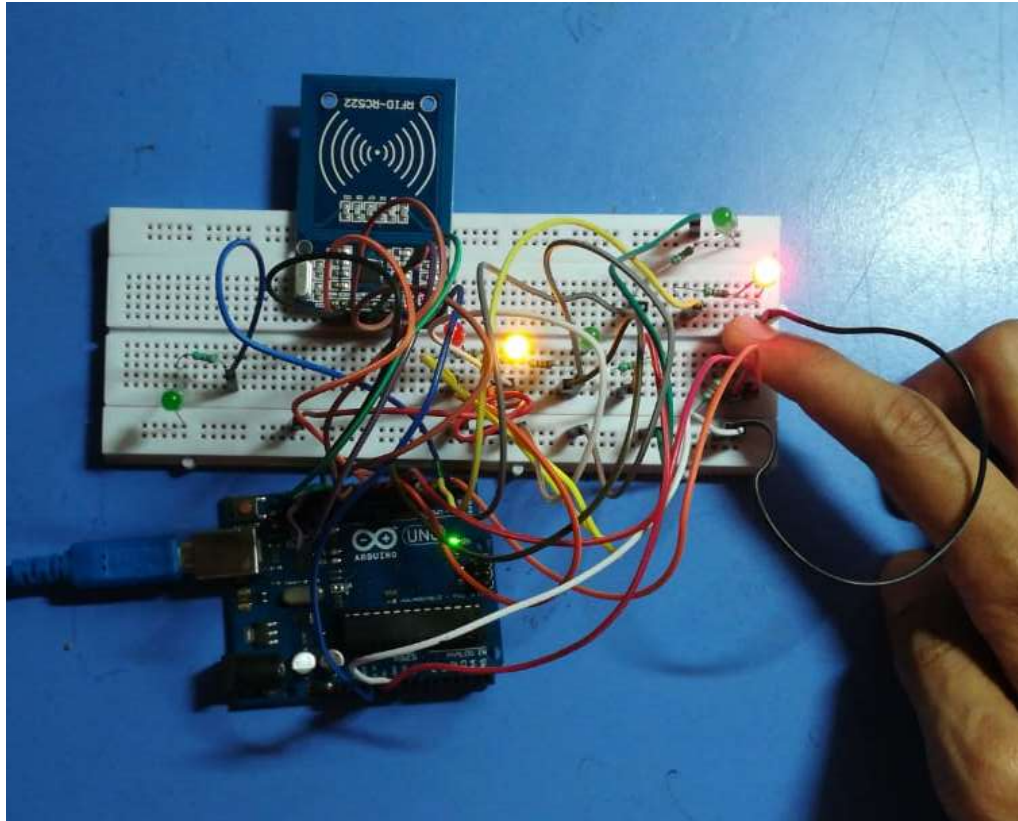
```
}
```

WORKING:

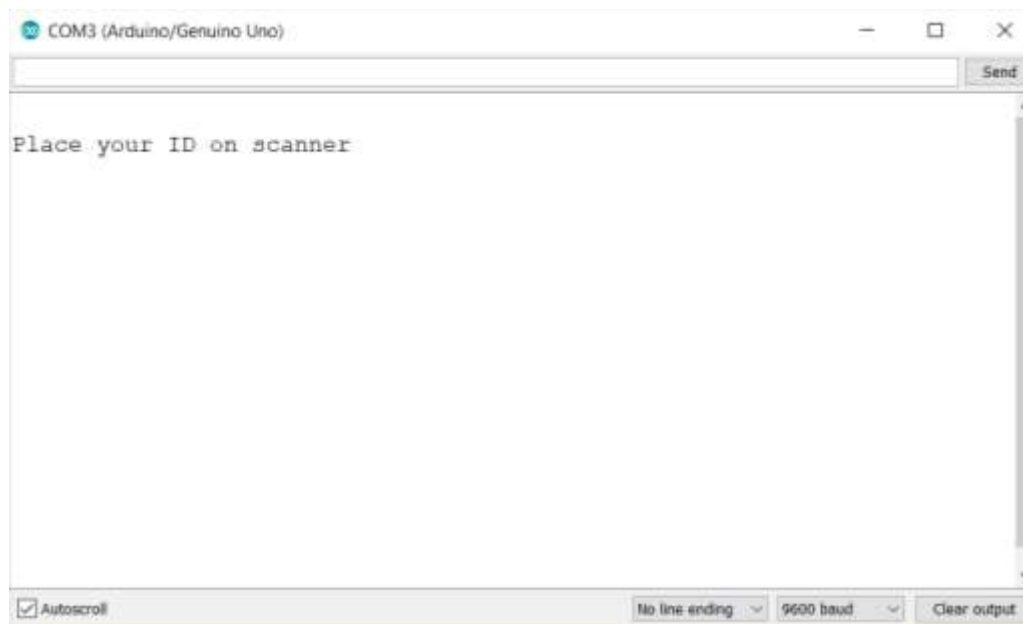
Initial state (Cars moving and pedestrian light is red) :



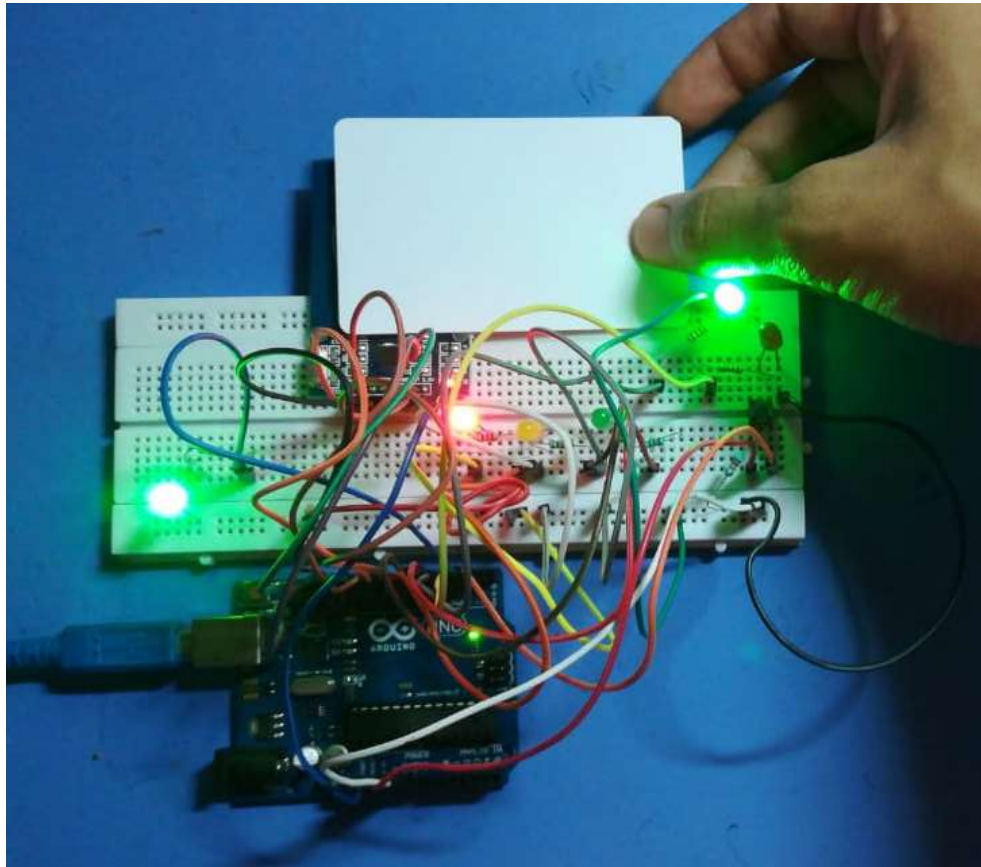
When pedestrian crossing request switch is pressed:



On serial monitor:



When RFID tag is scanned:



On serial monitor:

