
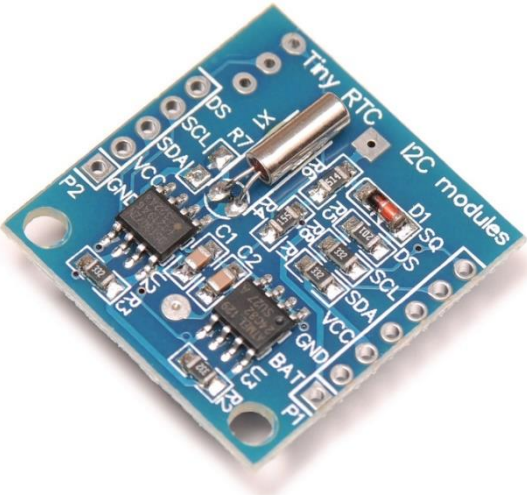








Đề tài: BÃI XE THÔNG MINH

Thành phần.

Tên linh kiện	Chức năng	Hình ảnh
Arduino Nano	Bộ vi điều khiển trung tâm để nhận, thu tín hiệu và điều khiển hệ thống	
Module DS1307	Cập nhật thời gian, ngày tháng để hiển thị lên LCD	

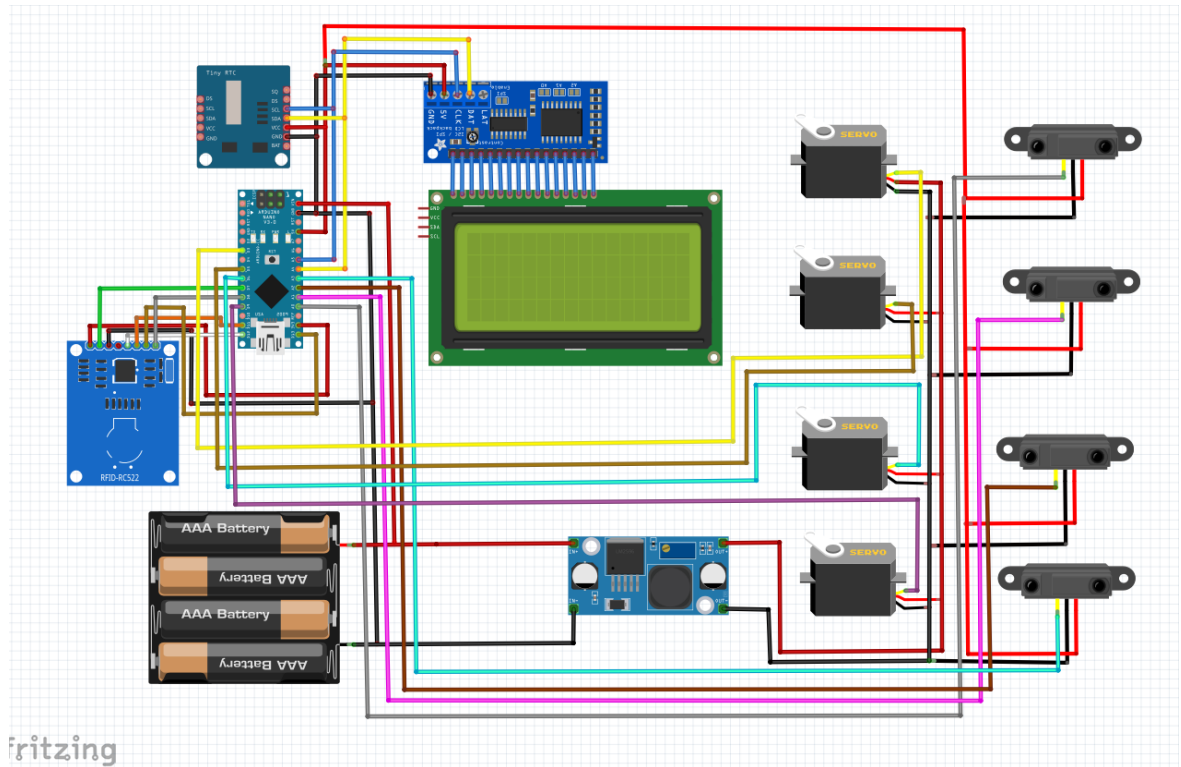
LCD 20x4	Hiển thị dữ liệu 20 cột, 4 hàng	
Module I2C LCD	Giúp LCD giao tiếp I2C với Arduino	
Module RFID	Đọc/ ghi dữ liệu lên thẻ từ	

Servo SG90		 A blue SG90 micro servo motor with an orange and black cable. It is accompanied by four white plastic horns of different sizes and three screws.
Cảm biến hồng ngoại		 Two blue printed circuit boards (PCBs) for infrared non-contact distance measurement. Each board has a black sensor component and a potentiometer. One board has a red, yellow, and green LED indicator.
Apdater 12V		 A black AC/DC power adapter with a standard two-prong electrical plug and a DC output cable with a barrel jack connector.

<p>Module ổn áp LM2596</p>	<p>Ổn áp 5V cung cấp cho Servo</p>	
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1. Sơ đồ kết nối.

- Download phần mềm Fritzing



2. Code

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

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

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

```
#include <Wire.h>
```

```
#include <LiquidCrystal_I2C.h>
```

```
#include <DS1307.h>

#include <EEPROM.h>

Servo servo;

Servo servo1;

Servo servo2;

Servo servo3;

uint8_t sec, min, hour, day, month;

uint16_t year;

DS1307 rtc;

LiquidCrystal_I2C lcd(0x27,20,4);

#define SS_PIN 8

#define RST_PIN 7

#define sensor A0

#define sensor1 A1

#define sensor2 A2

#define sensor3 A3


MFRC522 rfid(SS_PIN, RST_PIN); // Instance of the class

MFRC522::MIFARE_Key key;


char j;

int val=0,val1=0,val2=0,val3=0;

int dem=0,vong=0;

int error=0;

byte nuidPICC[]={0xE9, 0xBF, 0x7A, 0x3C},
```

```
nuidPICC1[]={0x99, 0x94, 0x7E, 0x3C},  
nuidPICC2[]={0x49, 0x08, 0x7D, 0x3C},  
nuidPICC3[]={0x19, 0x43, 0xC5, 0x3C};
```

```
byte cus[] = {  
  
    B00100,  
  
    B00100,  
  
    B00100,  
  
    B00100,  
  
    B00100,  
  
    B00100,  
  
    B00100  
};
```

```
int i,tang=0, bien;
```

```
void hienthi(){  
  
    rtc.get(&sec, &min, &hour, &day, &month, &year);  
  
    lcd.setCursor(0,2);  
  
    lcd.print(" Vi tri | Trang thai");  
  
    lcd.setCursor(0,3);  
  
    lcd.print("      |      ");  
  
    lcd.setCursor(10,0);  
  
    lcd.print(hour/10, DEC);  
  
    lcd.setCursor(11,0);
```

```
lcd.print(hour%10, DEC);
```

```
lcd.setCursor(13,0);
```

```
lcd.print(min/10, DEC);
```

```
lcd.setCursor(14,0);
```

```
lcd.print(min%10, DEC);
```

```
lcd.setCursor(8,1);
```

```
lcd.print(day/10, DEC);
```

```
lcd.setCursor(9,1);
```

```
lcd.print(day%10, DEC);
```

```
lcd.setCursor(11,1);
```

```
lcd.print(month/10, DEC);
```

```
lcd.setCursor(12,1);
```

```
lcd.print(month%10, DEC);
```

```
lcd.setCursor(14,1);
```

```
lcd.print(year, DEC);
```

```
}
```

```
void setup() {
```

```
  Serial.begin(9600);
```

```
  servo.attach(3);
```

```
  servo1.attach(5);
```



```
servo2.attach(6);

servo3.attach(9);

servo.write(100);

servo1.write(98);

servo2.write(98);

servo3.write(98);

SPI.begin();

rtc.start();

//rtc.set(0, 31, 21, 23, 10, 2019); //08:00:00 24.12.2014 //sec, min, hour, day, month, year

lcd.init();

lcd.backlight();

lcd.createChar(1, cus);

rfid.PCD_Init();

lcd.setCursor(0, 0);

lcd.print("-----");

lcd.setCursor(0, 1);

lcd.print("  Le Vinh Thinh  ");

lcd.setCursor(0, 2);

lcd.print("  MSSV: 2202180032  ");

lcd.setCursor(0, 3);

lcd.print("-----");

delay(3300);

lcd.setCursor(0, 1);

lcd.print("  Do an mon hoc  ");

lcd.setCursor(0, 2);
```

```

lcd.print(" Nha xe thong minh ");
delay(3300);
lcd.setCursor(0,0);
lcd.print("Time :   :   ");
lcd.setCursor(0,1);
lcd.print("Date : / /   ");
lcd.setCursor(0,2);
lcd.print(" Vi tri | Trang thai");
lcd.setCursor(0,3);
lcd.print("   |   ");
}

```

```

void door(){
    if ( ! rfid.PICC_IsNewCardPresent())
        return;

    // Verify if the NUID has been readed
    if ( ! rfid.PICC_ReadCardSerial())
        return;

    if (
        rfid.uid.uidByte[0] == nuidPICC[0] &&
        rfid.uid.uidByte[1] == nuidPICC[1] &&
        rfid.uid.uidByte[2] == nuidPICC[2] &&
        rfid.uid.uidByte[3] == nuidPICC[3] ) {

```

```
val++;  
  
lcd.setCursor(1,3);  
  
lcd.print("Cot A");  
  
if(val==1){  
  
    lcd.setCursor(12,3);  
  
    lcd.print("Gui xe");  
  
    while(digitalRead(sensor)==1){servo.write(10);}  
  
    servo.write(100);  
  
    delay(100);  
  
}
```

```
if(val==2){  
  
    lcd.setCursor(12,3);  
  
    lcd.print("Lay xe");  
  
    servo.write(10);  
  
    delay(200);  
  
    while(digitalRead(sensor)==0);  
  
    delay(1000);  
  
    servo.write(100);  
  
    delay(100);  
  
    val=0;  
  
}}
```

```
////-----
```

```
if (  
  
    rfid.uid.uidByte[0] == nuidPICC1[0] &&
```

```
rfid.uid.uidByte[1] == nuidPICC1[1] &&
rfid.uid.uidByte[2] == nuidPICC1[2] &&
rfid.uid.uidByte[3] == nuidPICC1[3] ) {
    val1++;
    lcd.setCursor(1,3);
    lcd.print(" Cot B ");

    if(val1==1){
        lcd.setCursor(12,3);
        lcd.print("Gui xe");
        while(digitalRead(sensor1)==1){servo1.write(5);};
        servo1.write(98);
        delay(100);
    }
    if(val1==2){
        lcd.setCursor(12,3);
        lcd.print("Lay xe");
        servo1.write(5);
        delay(200);
        while(digitalRead(sensor1)==0);
        delay(1000);
        servo1.write(98);
        delay(100);
        val1=0;
    }
}
```

```
// //-----
```

```
if (
rfid.uid.uidByte[0] == nuidPICC2[0] &&
rfid.uid.uidByte[1] == nuidPICC2[1] &&
rfid.uid.uidByte[2] == nuidPICC2[2] &&
rfid.uid.uidByte[3] == nuidPICC2[3] ) {
val2++;
lcd.setCursor(1,3);
lcd.print("Cot C");

if(val2==1){
lcd.setCursor(12,3);
lcd.print("Gui xe");
while(digitalRead(sensor2)==1){servo2.write(5);};
servo2.write(98);
delay(100);
}
if(val2==2){
lcd.setCursor(12,3);
lcd.print("Lay xe");
servo2.write(5);
delay(200);
while(digitalRead(sensor2)==0);
delay(1000);
```

```
servo2.write(98);
```

```
delay(100);
```

```
val2=0;
```

```
}}
```

```
//-----
```

```
if (
```

```
rfid.uid.uidByte[0] == nuidPICC3[0] &&
```

```
rfid.uid.uidByte[1] == nuidPICC3[1] &&
```

```
rfid.uid.uidByte[2] == nuidPICC3[2] &&
```

```
rfid.uid.uidByte[3] == nuidPICC3[3] ) {
```

```
val3++;
```

```
lcd.setCursor(1,3);
```

```
lcd.print("Cot D");
```

```
if(val3==1){
```

```
lcd.setCursor(12,3);
```

```
lcd.print("Gui xe");
```

```
while(digitalRead(sensor3)==1){servo3.write(5);};
```

```
servo3.write(98);
```

```
delay(100);
```

```
}
```

```
if(val3==2){
```

```
lcd.setCursor(12,3);
```

```
lcd.print("Lay xe");
```

```
servo3.write(5);

delay(200);

while(digitalRead(sensor3)==0);

delay(1000);

servo3.write(98);

delay(100);

val3=0;

}}

//-----

if (

rfid.uid.uidByte[0] != nuidPICC[0] &&

rfid.uid.uidByte[0] != nuidPICC1[0] &&

rfid.uid.uidByte[0] != nuidPICC2[0] &&

rfid.uid.uidByte[0] != nuidPICC3[0] ){

lcd.setCursor(0,2);

lcd.print("  Ma the sai!!! ");

lcd.setCursor(0,3);

lcd.print(" Vui long doi:  % ");

for(error=0;error<=100;error++){

lcd.setCursor(15,3);

lcd.print(error);

delay(500); }

lcd.setCursor(0,3);

lcd.print(" Scan card again ");
```

```
delay(3000);  
  
}  
  
  rfid.PCD_StopCrypto1();  
  
}  
  
void loop() {  
  
  door();  
  
  hienthi();  
  
}
```