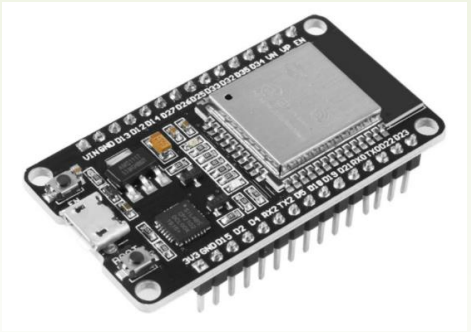
Automatic Pet Feeder

อุปกรณ์ที่ใช้

Matrix Keypad 4x4 Arduino คีย์แพด ปุ่มกด



ESP32s

Micro servo

Loadcell x3

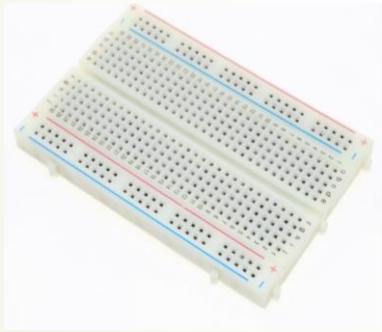
RGB module 10mm.

LCD 16x2

อุปกรณ์ที่ใช้(ต่อ)

Water pump 12v

Jumper wire

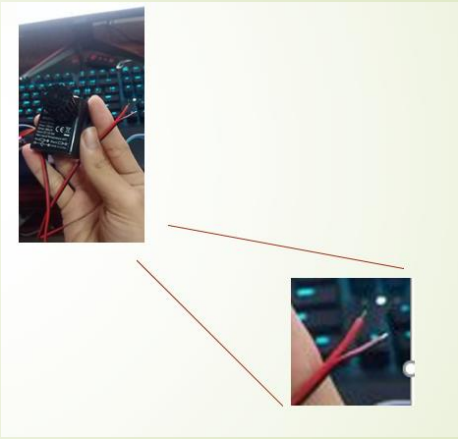


Bread Board

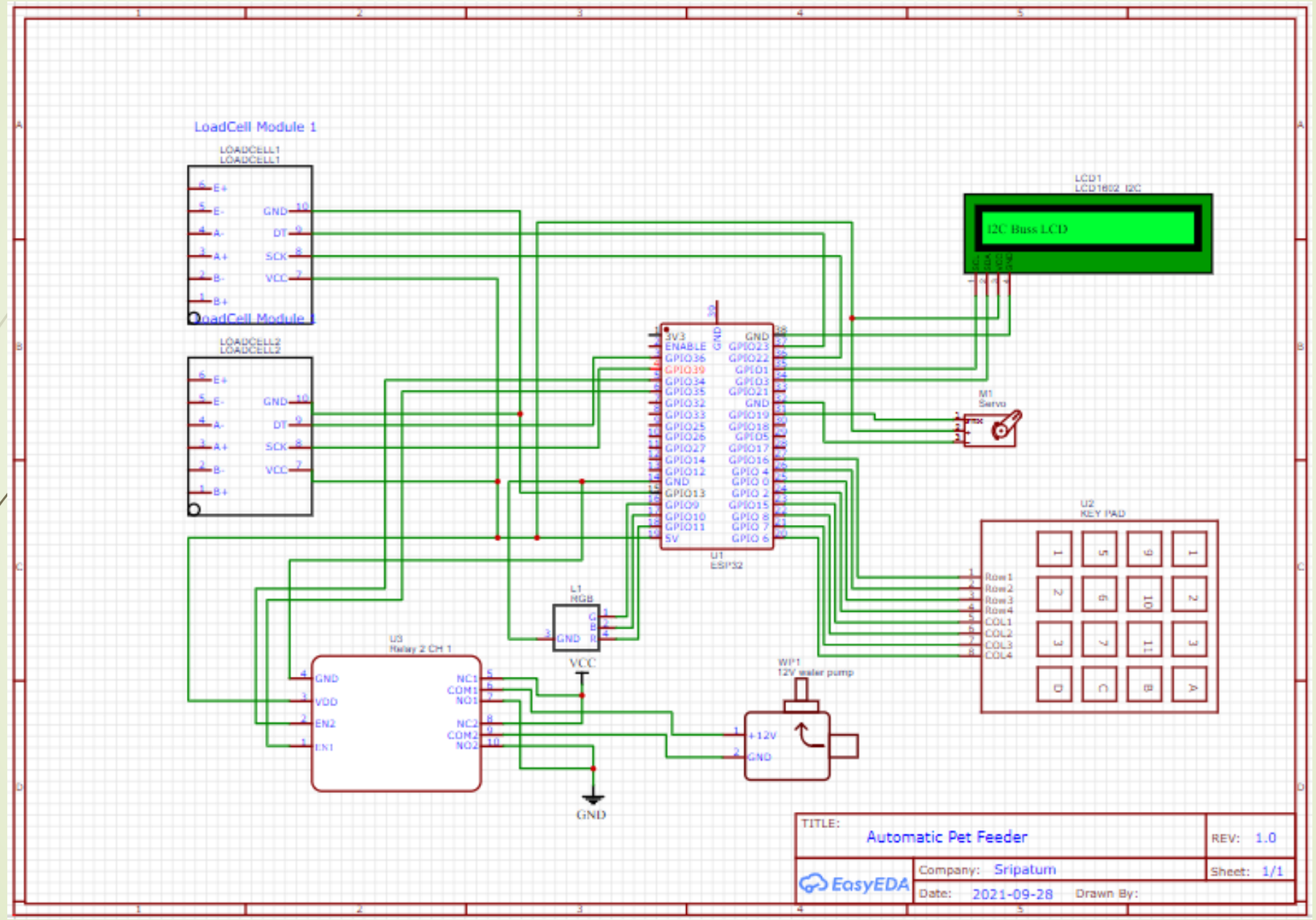
Delay 2 channel

Block Diagram

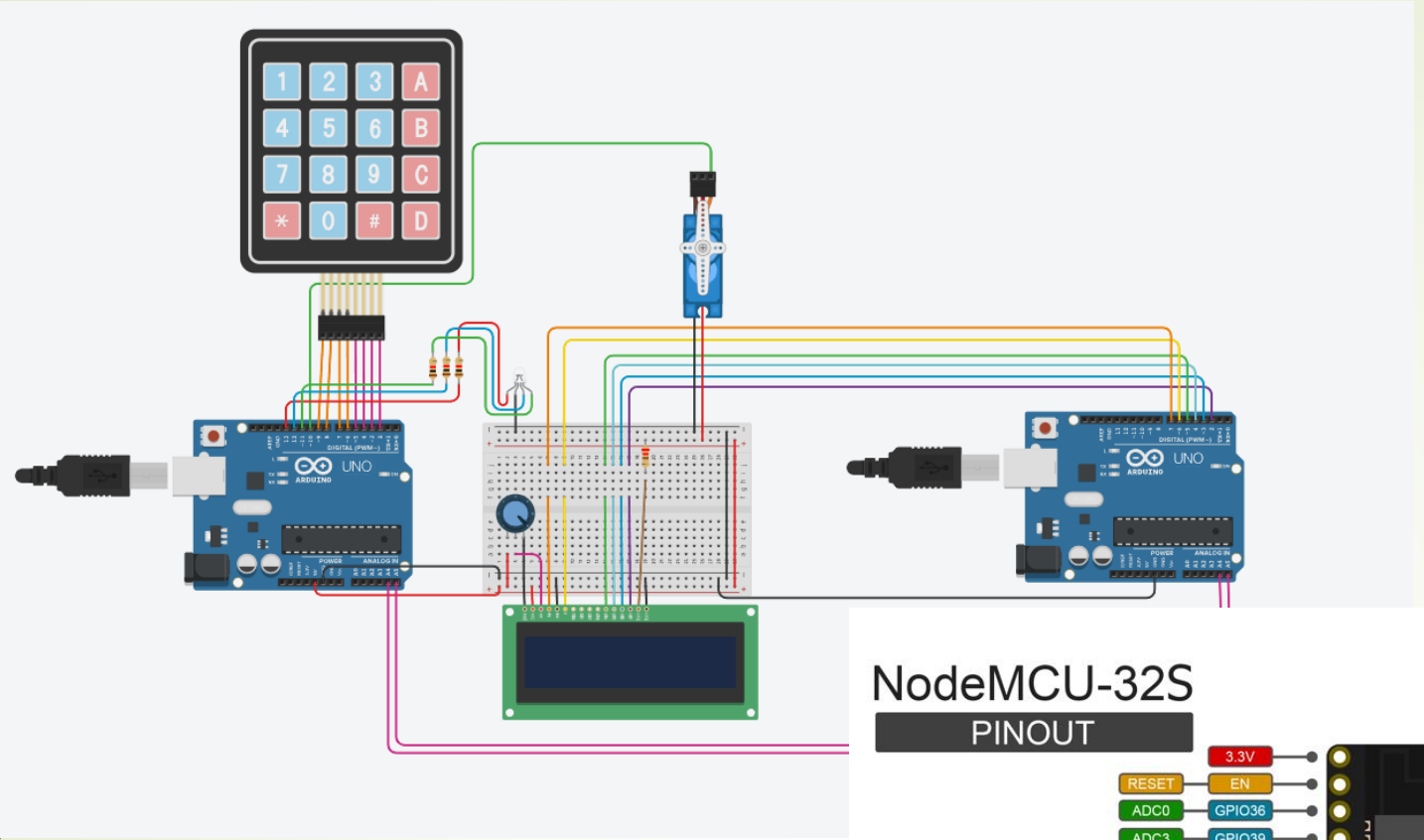
APPICATION

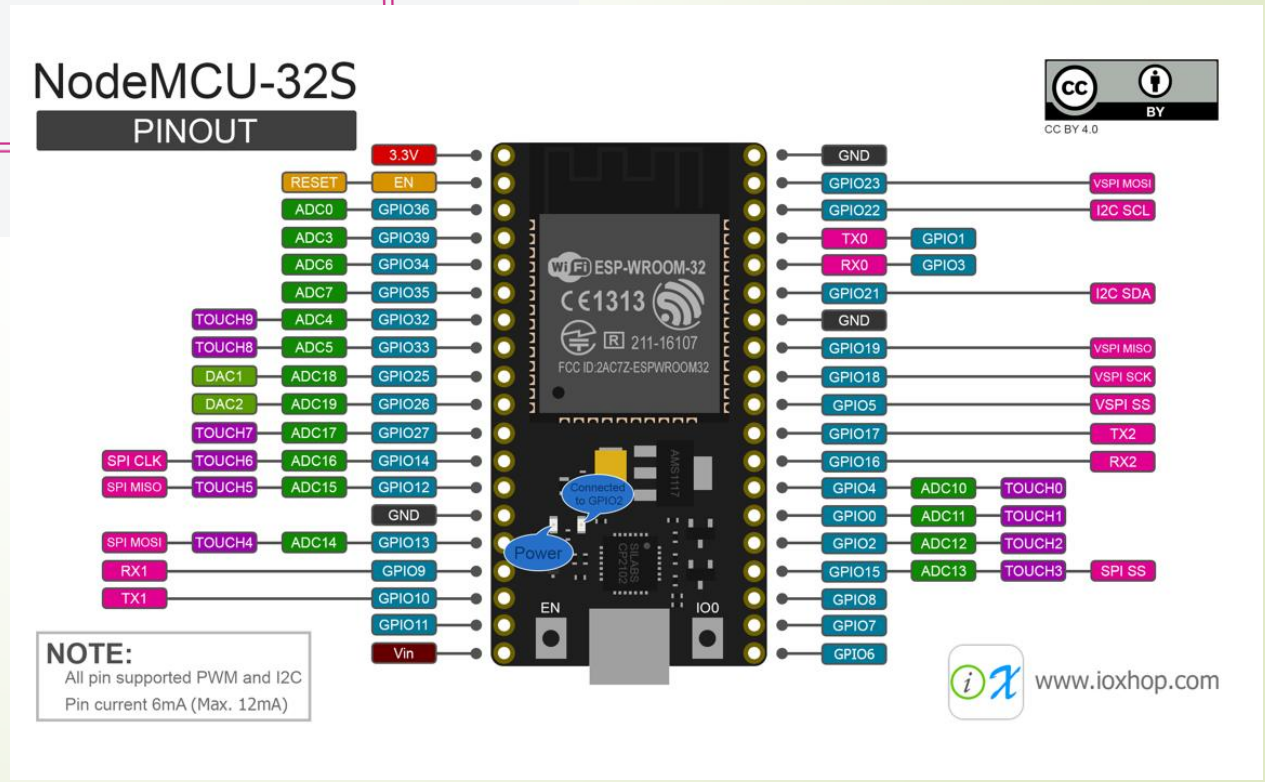


Schematic Diagam



Design Circuit





Coding for arduino

```
#include <LiquidCrystal_I2C.h>
#include "time.h"
LiquidCrystal_I2C lcd(0x27, 16, 2);
Servo myservo;
const char* ssid       = "SPU_2G";
const char* password   = "25402541";
const char* ntpServer = "1.th.pool.ntp.org";
const long  gmtOffset_sec = 7 * 3600;
const int   daylightOffset_sec = 0;
const int ROW_NUM = 4; //four rows
const int COLUMN_NUM = 4; //four columns
const int PIN_RED   = 33;
const int PIN_GREEN = 32;
const int PIN_BLUE  = 23;
char keys[ROW_NUM][COLUMN_NUM] = {
  {'1', '2', '3', 'A'},
  {'4', '5', '6', 'B'},
  {'7', '8', '9', 'C'},
  {'*', '0', '#', 'D'}
};

byte pin_rows[ROW_NUM] = {19, 18, 5, 17};    // GIOP19, GIOP18, GIOP5, GIOP17 connect to the row pins
byte pin_column[COLUMN_NUM] = {16, 4, 0, 2}; // GIOP16, GIOP4, GIOP0, GIOP2 connect to the column pins

Keypad keypad = Keypad( makeKeymap(keys), pin_rows, pin_column, ROW_NUM, COLUMN_NUM );

```

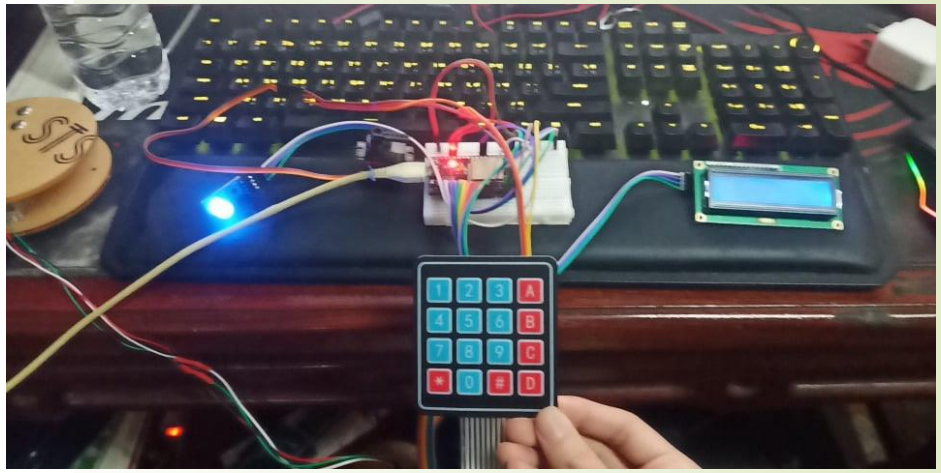
```
void setup() {
  Serial.begin(115200);
  //connect to WiFi
  Serial.printf("Connecting to %s ", ssid);
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.println(" CONNECTED");
  //init and get the time
  configTime(gmtOffset_sec, daylightOffset_sec, ntpServer);
  printLocalTime();
  //disconnect WiFi as it's no longer needed
  WiFi.disconnect(true);
  WiFi.mode(WIFI_OFF);
  myservo.attach(13); // กำหนดขา 13 ควบคุม Servo
  lcd.begin();
  lcd.backlight();
  //lcd.setCursor(0, 0); // กำหนดตำแหน่งเคอร์เซอร์ที่ แถวที่ 0 บรรทัดที่ 0
  //lcd.print(&timeinfo, "%H:%M:%S");
  //lcd.setCursor(0, 1); // กำหนดตำแหน่งเคอร์เซอร์ที่ แถวที่ 2 บรรทัดที่ 1
  //lcd.print("Test num = "); //พิมพ์ข้อความ "arduinoall.com"
  //lcd.setCursor(10, 1);
  //lcd.blink();
  Serial.begin(115200);
  pinMode(PIN_RED,   OUTPUT);
  pinMode(PIN_GREEN, OUTPUT);
  pinMode(PIN_BLUE,  OUTPUT);
}
```

```
void loop() {
  char key;
  while (key == NO_KEY) {
    printLocalTime();
    key = keypad.getKey();
  }
  if (key == '*') {
    lcd.clear();
    analogWrite(PIN_RED,   255);
    analogWrite(PIN_GREEN, 0);
    analogWrite(PIN_BLUE,  0);
    delay(2000);

    lcd.setCursor(0, 0);
    lcd.print("--:--:--");
    lcd.setCursor(0, 0);
    lcd.blink();
```

Coding

```
void printLocalTime()
{
  struct tm timeinfo;
  if (!getLocalTime(&timeinfo)) {
    Serial.println("Failed to obtain time");
    return;
  }
  analogWrite(PIN_RED,   0);
  analogWrite(PIN_GREEN, 0);
  analogWrite(PIN_BLUE,  255);
  lcd.setCursor(0, 0); // กำหนดตำแหน่งเคอร์เซอร์ที่ แถวที่ 0 บรรทัดที่ 0
  lcd.print(&timeinfo, "%H:%M:%S");
  Serial.println(&timeinfo, "%A, %B %d %Y %H:%M:%S");
}
```



COM3

```
Thursday, October 07 2021 12:37:02
Thursday, October 07 2021 12:37:02
Thursday, October 07 2021 12:37:02
Thursday, October 07 2021 12:37:02
Thursday, October 07 2021 12:37:02
Thursday, October 07 2021 12:37:03
Thursday, October 07 2021 12:37:03
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Thursday, October 07 2021 12:37:03
Thursday, October 07 2021 12:37:03
```
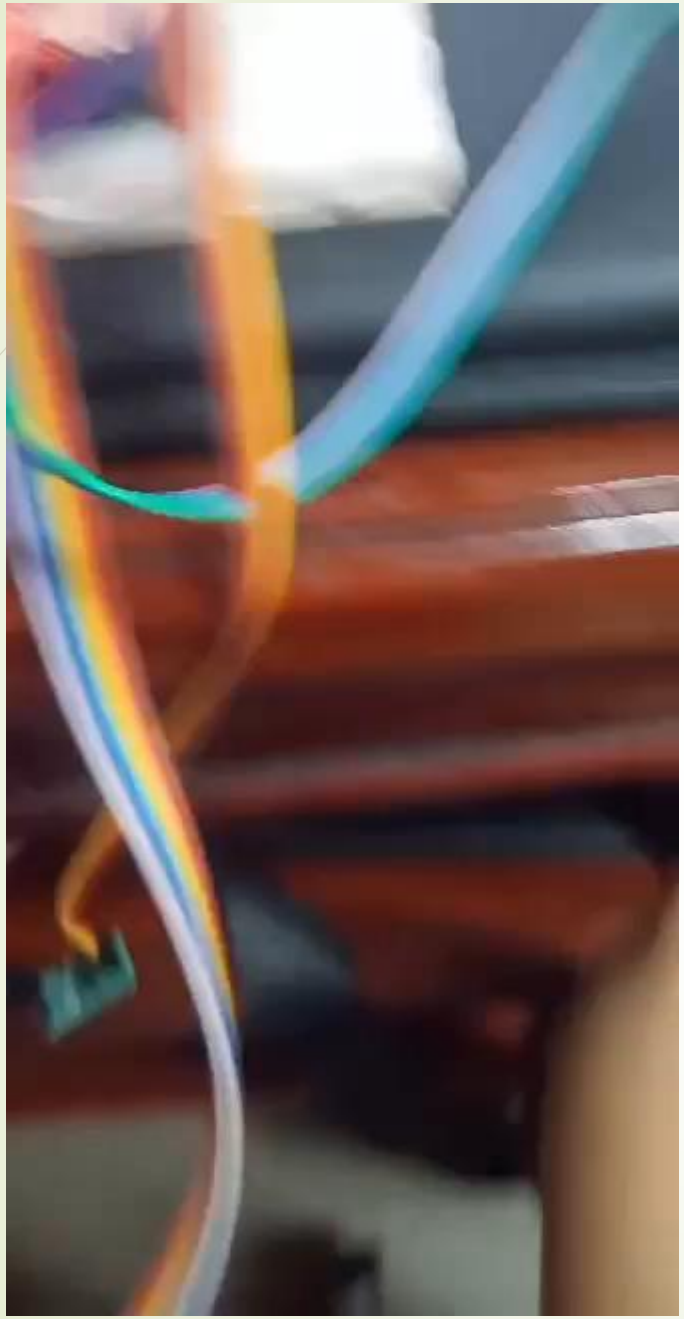
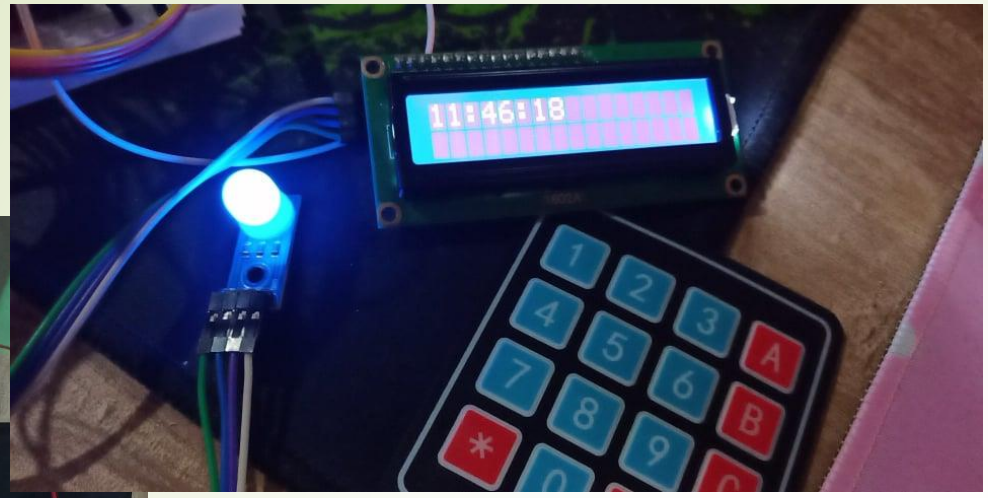
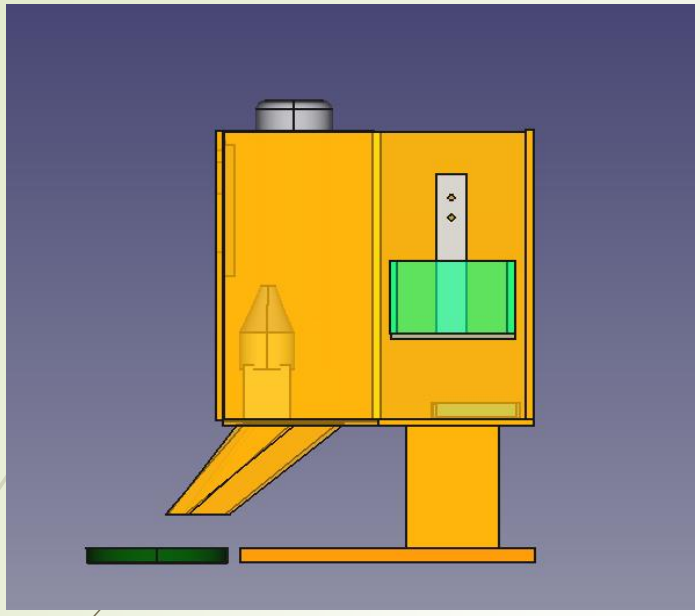

Autoscroll Show timestamp Newline 115200 baud Clear output

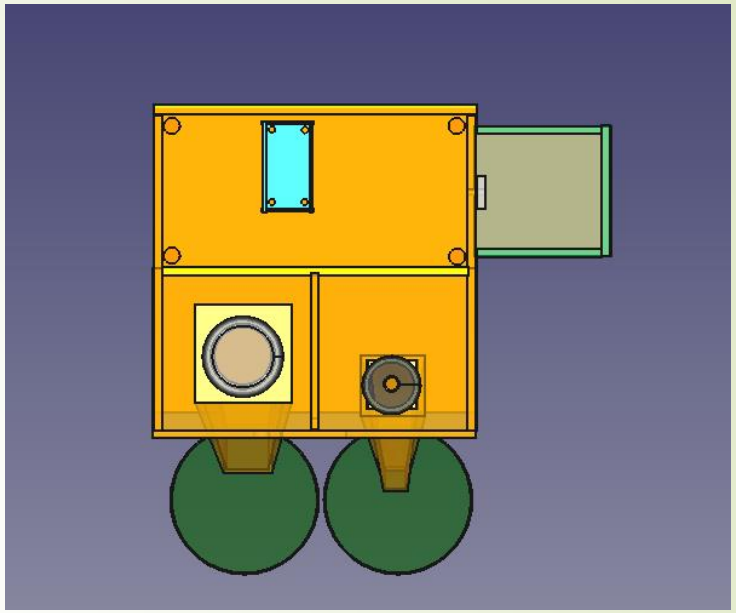
Hardware code design

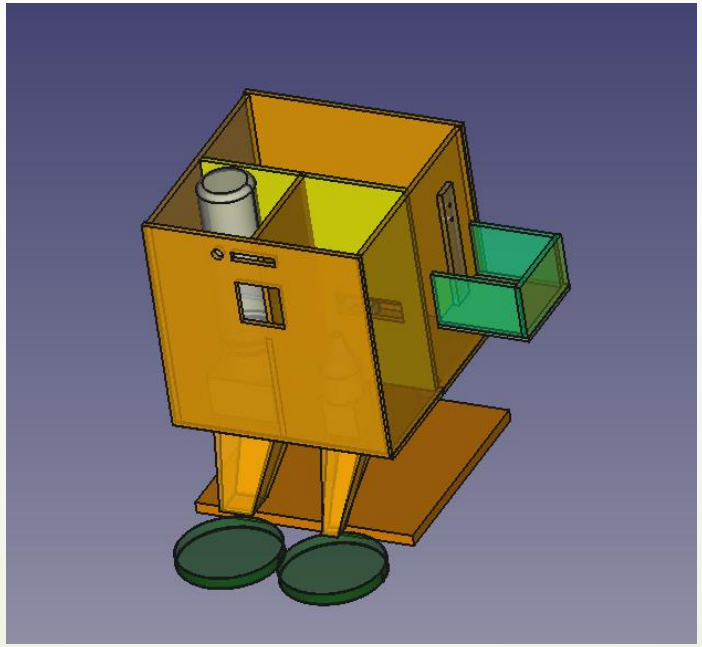


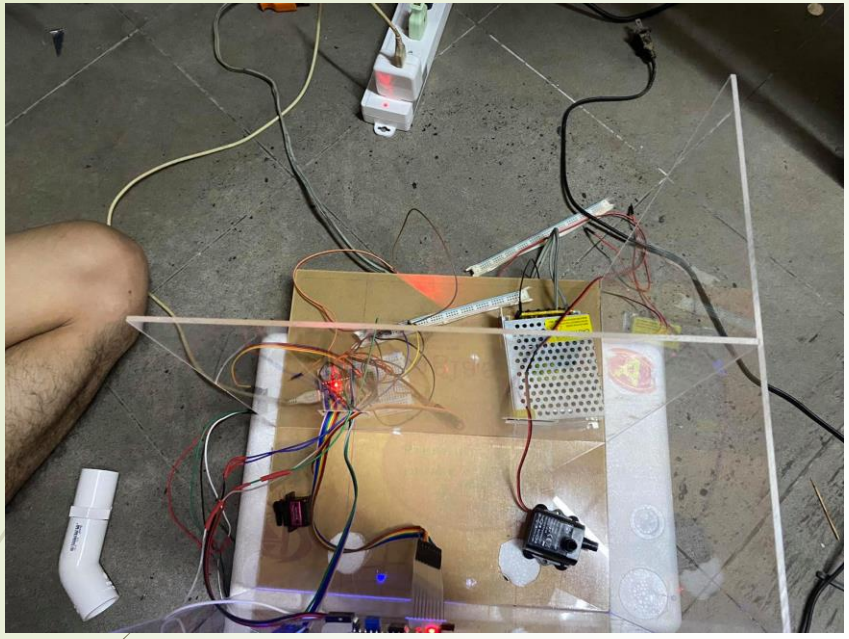
Hardware code design

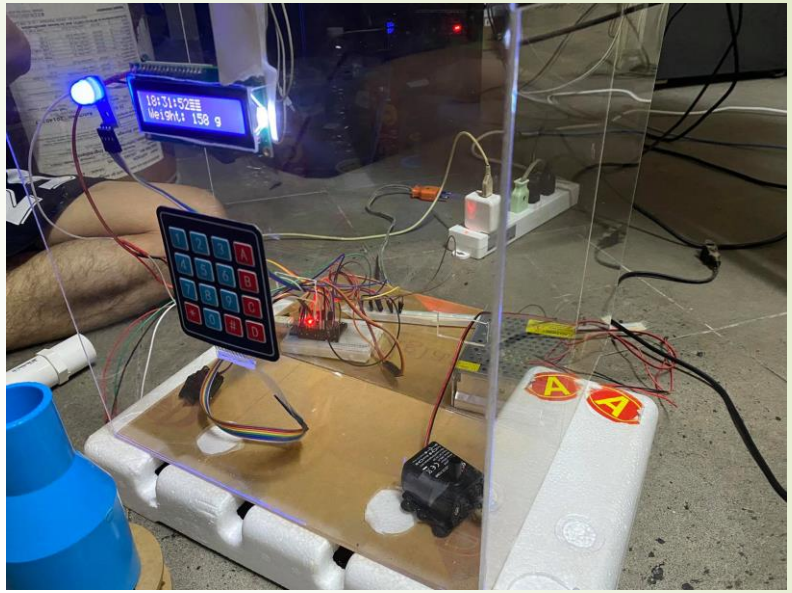


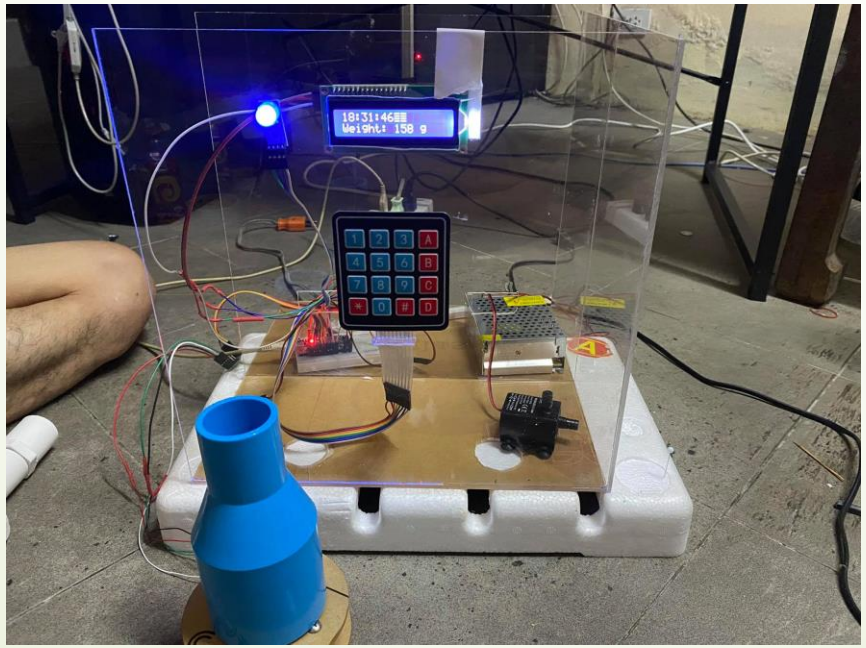






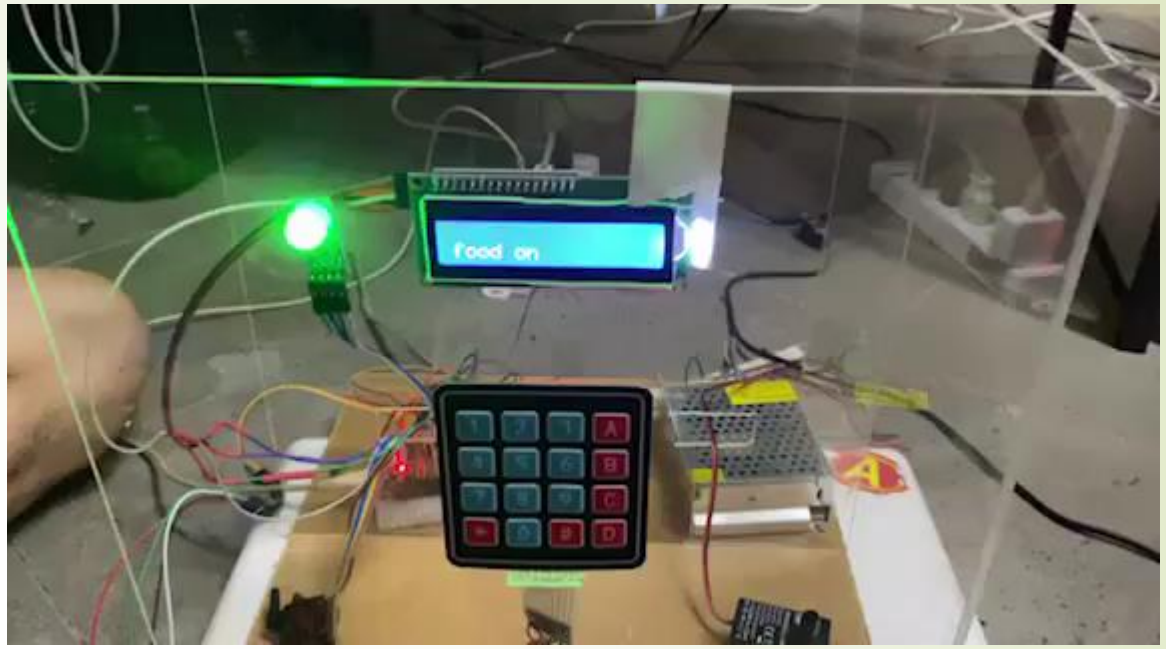


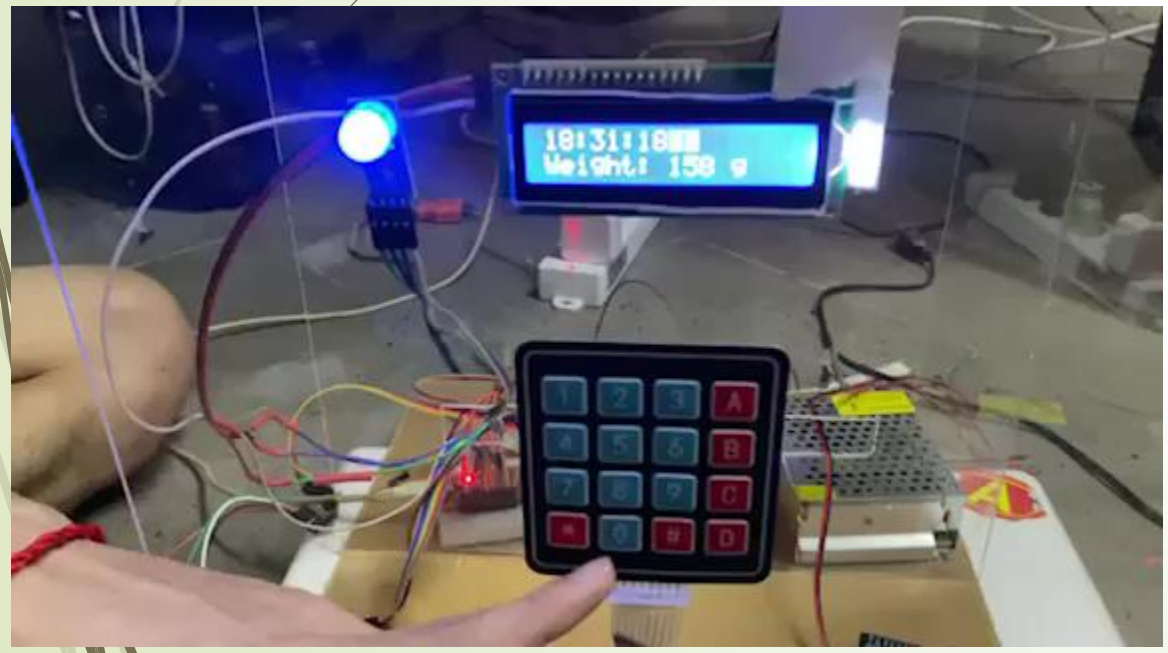

18:31:52
Weight 158 g


18:31:46
Weight 158 g

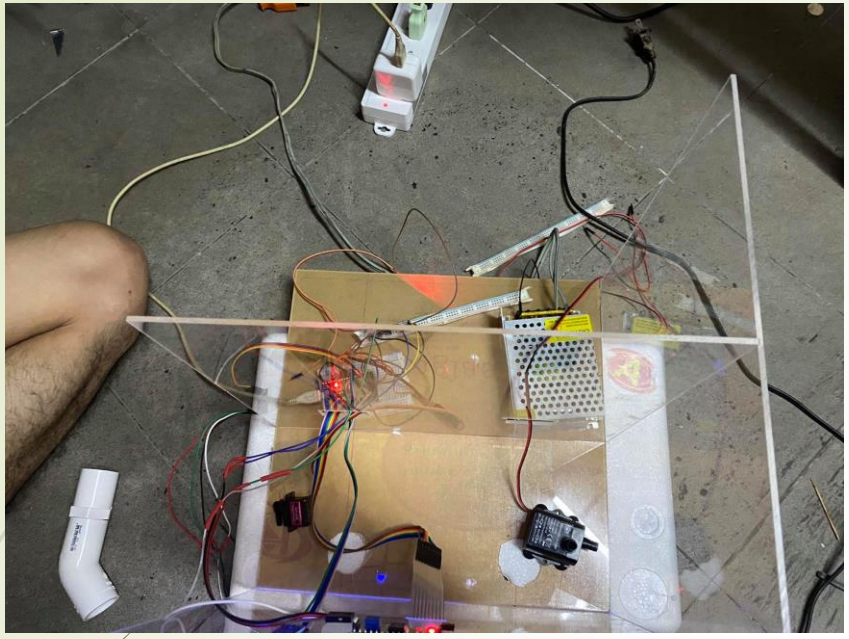
Hardware code design

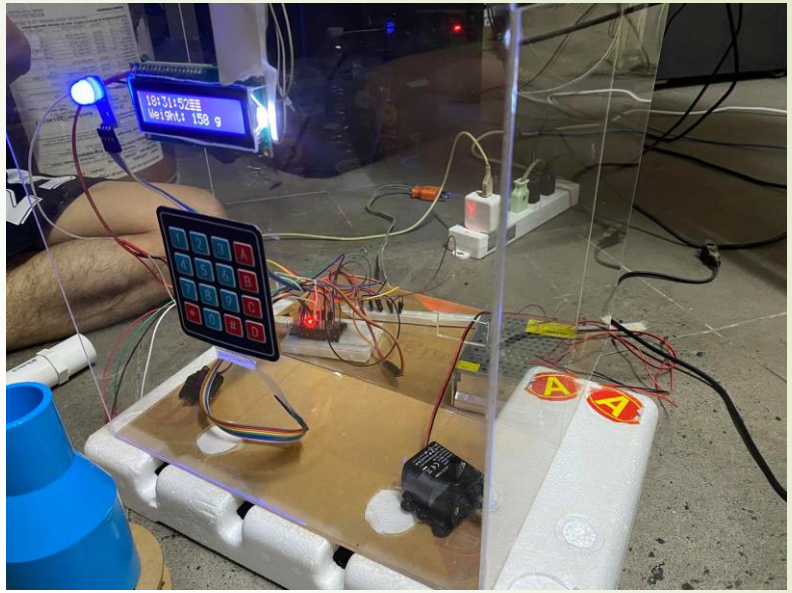
การให้แบบ auto
ให้อาหารได้แบบ auto เมื่อ loadcell มีน้ำหนัก < 2 g
ให้อาหารได้แบบ auto เมื่อถึงเวลาที่ตั้งไว้

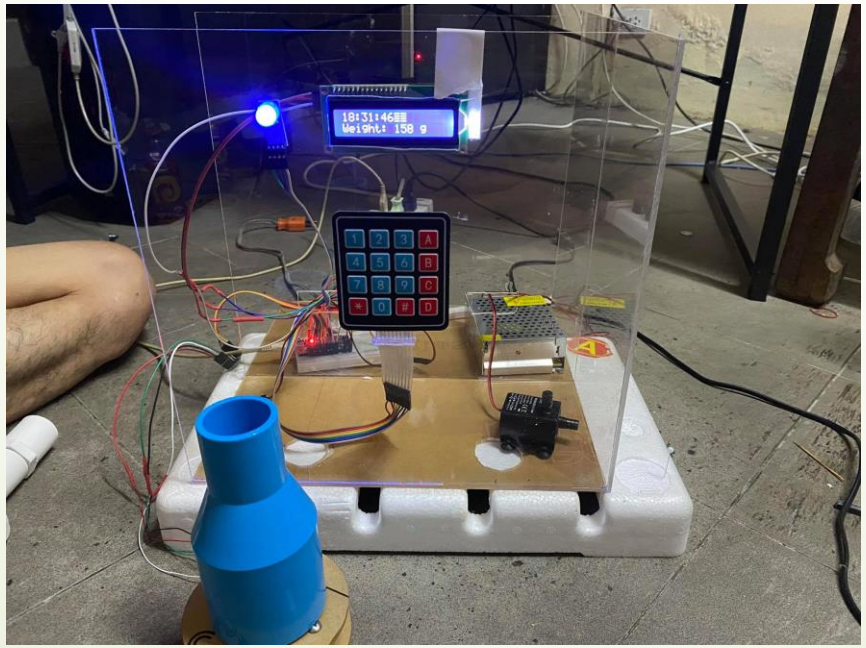


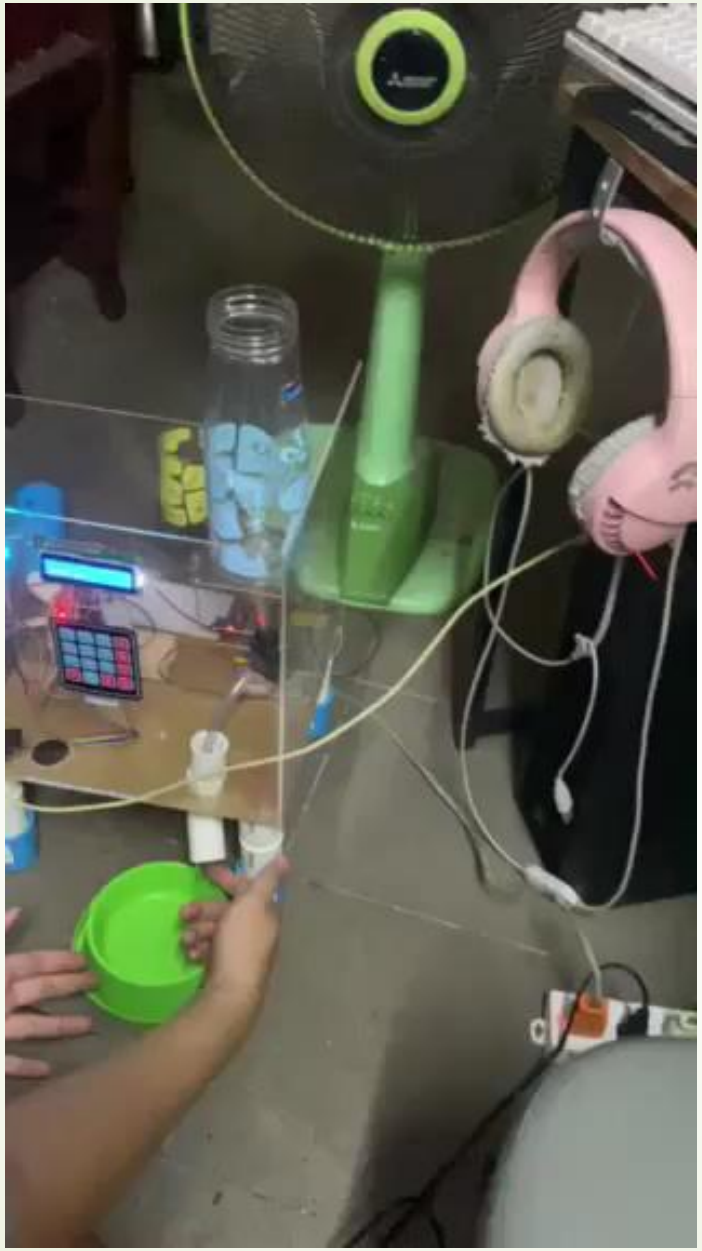


การให้แบบ manual
มีปุ่มกด เพื่อสามารถให้อาหารได้ทันที

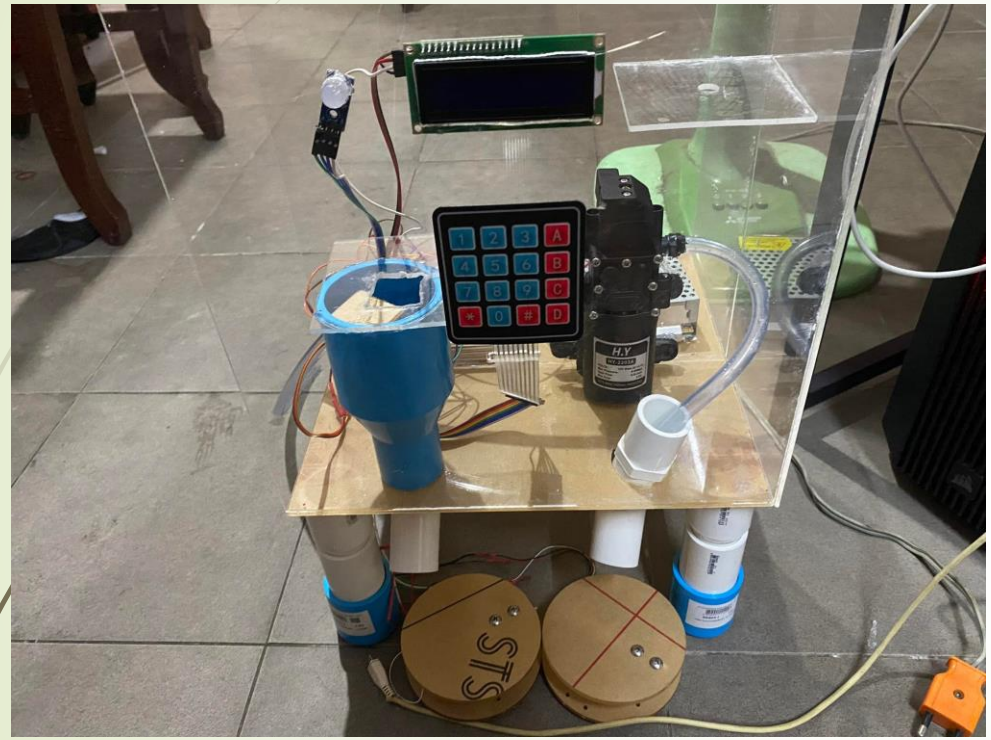


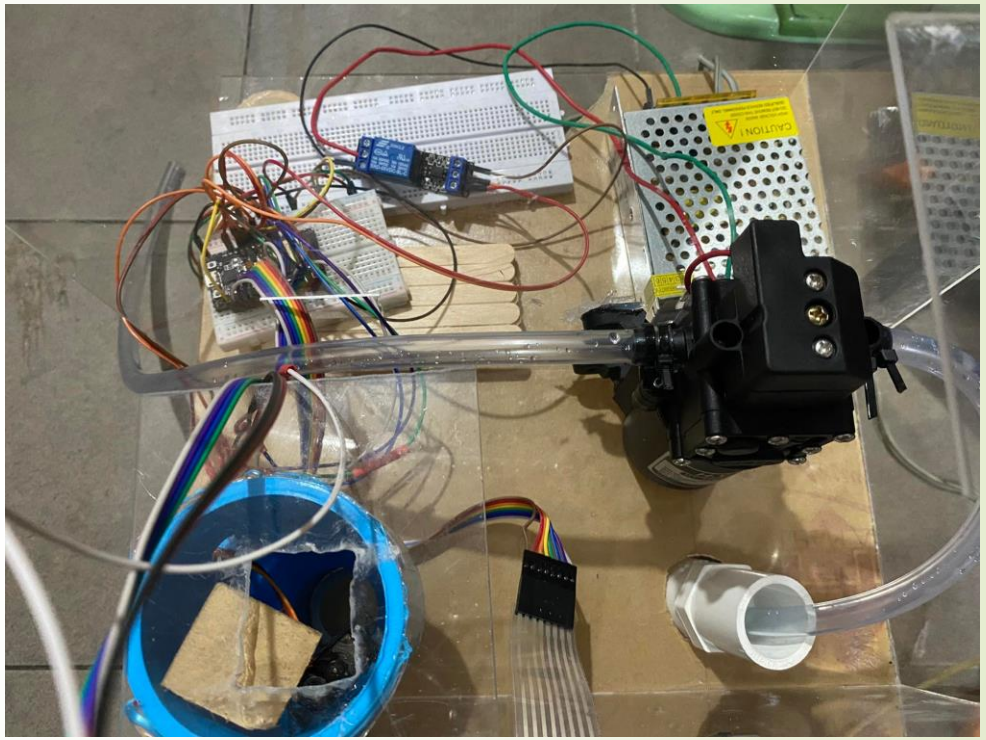

18:31:52
Weight 158 g


18:31:46
Weight 158 g

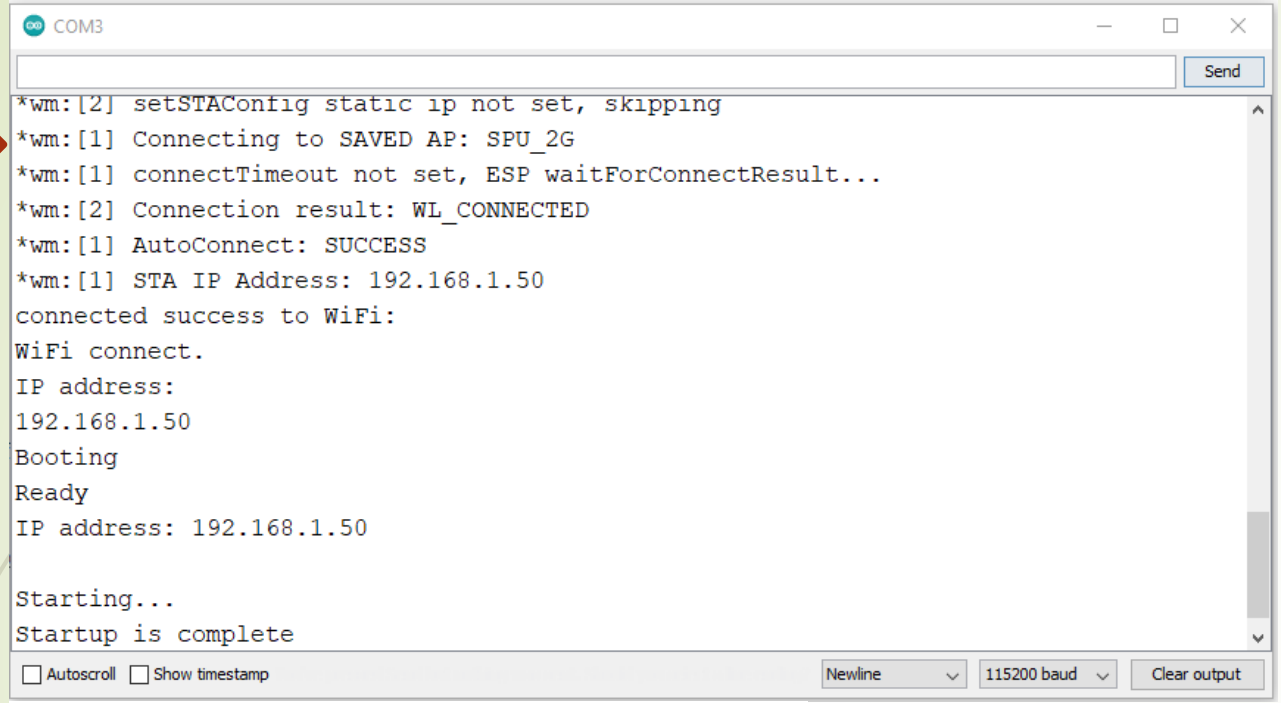


Automatic Petfeeder HW





Automatic Petfeeder Device




```
Starting...
Startup is complete
Attempting MQTT connection...connected
Time: 0:0:0
Weight: 0
Weight: 0
Servo: on
water pump: on
Load_cell output val 1: 0
Load_cell output val 2: 0
Tare load cell 1 complete
Tare load cell 2 complete
```

Weight false

```
Time: 12:9:7
Weight: 0
Weight: 0
Servo: on
water pump: on
Load_cell output val 1: 0
Load_cell output val 2: 0
```

Weight true

```
Load_cell output val 1: 4
Load_cell output val 2: 29
Servo: off
water pump: off
```

ทดลองการให้อาหารจริง


10:22
AutomaticPetfeeder
FOOD
115g
0
1000
WATER
59ml
0
1000
SERVO
OFF
WATERPUMP
OFF
SETTIME FOOD
10:20:17
SETTIME WATER
10:18:01