

1. Ultrasonic sensor

```
const int trigPin = 9;
const int echoPin = 10;

float duration, distance;

void setup() {
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  Serial.begin(9600);
}

void loop() {
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);

  duration = pulseIn(echoPin, HIGH);

  distance = (duration*.0343)/2;

  Serial.print("Distance: ");
  Serial.println(distance);
  delay(100);
}
```

2. Weight sensor
3. 16x2 LCD display
4. ESP32 wifi module with blynk

```

//Include the library files
#define BLYNK_PRINT Serial
#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>

//Enter your Auth token
char auth[] = "Vjp9l79vn3IOhJ4g2QtWknde2RcTUGo2"

//Enter your WIFI SSID and password
char ssid[] = "IDP project";
char pass[] = "IDP2023g7"

void setup() {
    // debug console
    Serial.begin(9600);
    Blynk.begin(auth, ssid, pass, "blynk.cloud", 80);
}

void loop() {
    Blynk.run();
}

```

ESP32 with arduino

```

void setup() {
    pinMode(13, OUTPUT);
}

void loop() {
    digitalWrite(13, HIGH);
    delay(1000);

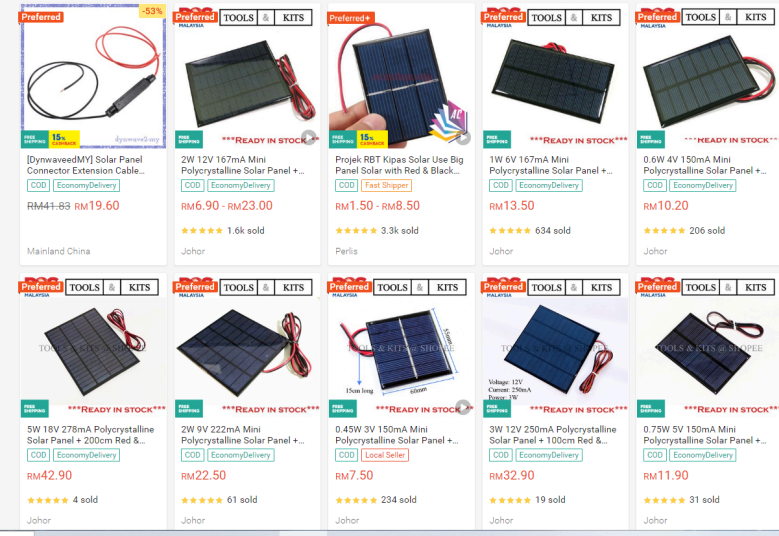

    digitalWrite(13, LOW);
    delay(1000);
}

```



5. Solar system

<https://www.sensingthecity.com/using-solar-energy-to-recharge-batteries-and-power-arduino-uno/>

Figure	Component	Estimated Price
	Solar Panel https://shopee.com.my/search?keyword=mini%20polycrystalline%20solar%20panel	RM 8-20
	Solar Power Management Module https://shopee.com.my/Waveshare-Solar-Power-Management-Module-for-6V-24V-Solar-Panel-Supports-MPPT-Function-USB-Connection-Battery-Charging-i.170109341.23952389092?sp_atk=0cdc58ba-ea01-42f0-bf41-471614830622&xptdk=0cdc58ba-ea01-42f0-bf41-471614830622	RM 43

	<p>lithium polymer ion battery with ph2.0 connector</p> <p>https://shopee.com.my/search?keyword=3.7v%206500%20mah%20lithium%20polymer%20ion%20battery%20with%20ph2.0%20connector</p>	<p>RM 10-20</p>

6. Servo motor

1. Connect the Servo to the ESP32: Typically, the servo motor has three wires: power (red), ground (brown or black), and signal (orange or yellow). Connect the power to 5V, ground to GND, and the signal wire to a digital pin on the ESP32.

2. Set Up the Blynk App:

- Create a new project in the Blynk app.
- Choose the ESP32 as the device.
- Add a "Button" widget in the Blynk app.
- Set the button to "Switch" mode.
- Assign the button to a virtual pin

3. Write the Arduino Code:

- Include the necessary libraries and define your Wi-Fi and Blynk credentials.
- Set up the servo motor and Blynk connection.
- Use a Blynk virtual pin to control the servo motor position.

```
#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>
#include <Servo.h>

// Your WiFi credentials
char ssid[] = "Your_WiFi_SSID";
char pass[] = "Your_WiFi_Password";
```

```

// Your Blynk Auth Token
char auth[] = "Your_Blynk_Auth-Token";

// Servo motor setup
Servo myServo;
int servoPin = 23; // Connect the servo signal wire to GPIO 23

// This function will be called every time the Widget in the Blynk
app writes data to the Virtual Pin V1
BLYNK_WRITE(V1) {
    int pinValue = param.asInt(); // Assigning incoming value from
pin V1 to a variable
    if (pinValue == 1) {
        myServo.write(90); // Unlock position (modify as per your
servo's requirement)
    } else {
        myServo.write(0); // Lock position (modify as per your servo's
requirement)
    }
}

void setup() {
    // Debug console
    Serial.begin(9600);

    // Connect to Wi-Fi
    WiFi.begin(ssid, pass);
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }

    // Connect to Blynk
    Blynk.begin(auth, ssid, pass);

    // Servo motor setup
    myServo.attach(servoPin);
}

void loop() {
    Blynk.run();
}

```

Instructions:

1. Replace Your_WiFi_SSID, Your_WiFi_Password, and Your_Blynk_Auth-Token with your actual Wi-Fi credentials and Blynk Auth Token.

2. Adjust the servo motor's lock and unlock positions (`myServo.write(0)` and `myServo.write(90)`) based on your specific servo motor's requirements.
3. Upload this code to ESP32.
4. In the Blynk app, use the button widget tied to virtual pin V1 to control the servo motor.