1.

```
#include <DHT.h>
#define DHTPIN 2
#define DHTTYPE DHT22

DHT dht(DHTPIN, DHTTYPE);

const int ledPin = 13;

void setup() {
  Serial.begin(9600);
  Serial.println("DHT 22");
  dht.begin();
}

void loop() {
  delay(5000);
  float h = dht.readHumidity();
  float t = dht.readTemperature();
  Serial.print("Humidity = ");
  Serial.print(h);
  Serial.print("  Temperature = ");
  Serial.print(t);

  delay(1000);
  if (t < 30 || h < 60) {
    digitalWrite(ledPin, HIGH);
```

```
    delay(200);
    Serial.println("It is a Wet Waste");
  } else {
    digitalWrite(ledPin, LOW);
    delay(100);
    Serial.println("It is a Dry Waste");
  }
}
```

2.

```
#define MQ2A A1
#define MQ2D 2
#define ledPin =13;

void setup() {
  Serial.begin(9600);
  pinMode(MQ2D, INPUT);
  pinMode(MQ2D, INPUT); // NOTE: This is a duplicate line
  pinMode(ledPin, OUTPUT);
}

void loop() {
  Serial.print("Analog: ");
  Serial.print(analogRead(MQ2A));
  Serial.print("  Digital: ");
```

```
  if (analogRead(MQ2A) > 300) {
    digitalWrite(ledPin, HIGH);
  } else {
    digitalWrite(ledPin, LOW);
  }

  delay(1000);
}
```

3.

```
#define echoPin 8
#define trigPin 10
const int buzzer = 9;
long duration;
float distance;

void setup() {
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  pinMode(buzzer, OUTPUT);
  Serial.begin(9600);
  Serial.println("Ultrasonic sensor with buzzer:");
}

void loop() {
  digitalWrite(trigPin, LOW);
```

```
  delay(2);
  digitalWrite(trigPin, HIGH);
  duration = pulseIn(echoPin, HIGH);
  distance = duration / 2 / 0.034; // NOTE: The paper shows 'distance = duration * 0.034 / 2;'

  Serial.print("Distance:");
  Serial.print(distance);
  Serial.println(" cm");

  if (distance < 50) {
    tone(buzzer, 500);
    delay(1000);
  } else {
    noTone(buzzer);
  }
}
```

4.

```
#include "Ultrasonic.h"

Ultrasonic ultrasonic(12, 13);
int distance1;
int distance2;

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

```
}

void loop() {
  distance1 = ultrasonic.read(CM);
  Serial.println("Distance in cm -");
  Serial.println(distance1);

  distance2 = ultrasonic.read(INC);
  Serial.print("Distance in inch -");
  Serial.println(distance2);
  delay(1000);
}
```

5.

```
int ldrPin = A0;
int ldrVal = 0;
int ledPin = 2;

const float GAMMA = 0.7;
const float RL10 = 50;

void setup() {
  Serial.begin(9600);
  pinMode(2, OUTPUT);
}
```

```
void loop() {
  ldrVal = analogRead(ldrPin);

  float voltage = ldrVal / 1024. * 5;

  float resistance = 2000 * voltage / (1- voltage/5);

  float lux = pow(RL10 * 1e3 * pow(10, GAMMA) / resistance(1 / GAMMA));

  if (lux > 200) {
    digitalWrite(ledPin, HIGH);
  } else {
    digitalWrite(ledPin, LOW);
  }

  Serial.println(lux);
  delay(1000);
}
```

6.

```
#define relaypin 2

void setup() {
  pinMode(relaypin, OUTPUT);
  Serial.begin(9600);
}
```

```
void loop() {
  digitalWrite(relaypin, HIGH);
  Serial.println("Relay ON");
  delay(1000);

  digitalWrite(relaypin, LOW);
  Serial.println("Relay OFF");
  delay(1000);
}
```

7.

```
const int ledPin1 = 13;
const int ledPin2 = 12;
const int ledPin3 = 11;
const int ledPin4 = 10;
const int ledPin5 = 9;

void setup() {
  pinMode(ledPin1, OUTPUT);
  pinMode(ledPin2, OUTPUT);
  pinMode(ledPin3, OUTPUT);
  pinMode(ledPin4, OUTPUT);
  pinMode(ledPin5, OUTPUT);
}
```

```
void loop() {
  digitalWrite(ledPin1, HIGH);
  digitalWrite(ledPin2, HIGH);
  digitalWrite(ledPin3, HIGH);
  digitalWrite(ledPin4, HIGH);
  digitalWrite(ledPin5, HIGH);
  delay(1000);

  digitalWrite(ledPin1, LOW);
  digitalWrite(ledPin2, LOW);
  digitalWrite(ledPin3, LOW);
  digitalWrite(ledPin4, LOW);
  digitalWrite(ledPin5, LOW);
  delay(1000);
}
```