



NAVODAYA INSTITUTE OF TECHNOLOGY, RAICHUR

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

IOT Lab Program - 06

06 Develop a program to classify dry and wet waste with the Moisture sensor (DHT22).

Components Required

- Arduino Uno (or compatible)
 - Soil Moisture Sensor **OR** DHT22 (depending on version)
 - 1 × LED for “Dry Waste” indicator
 - 1 × LED for “Wet Waste” indicator (or buzzer/motor for sorter)
 - Resistors (220Ω)
 - Breadboard + jumper wires
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Working Principle

- **Moisture sensor:**
 - High analog value (more water) → Wet Waste
 - Low value → Dry Waste
 - **DHT22:**
 - High **humidity** > **threshold** → Wet Waste
 - Low humidity → Dry Waste
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Circuit Connections

Using **Soil Moisture Sensor**

- Sensor VCC → 5V
- Sensor GND → GND
- Sensor AO → A0

LEDs

- Green LED (Dry) → D7 (through 220Ω to GND)
 - Blue LED (Wet) → D8 (through 220Ω to GND)
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Steps to Do the Experiment

1. Build the circuit as above.
 2. Upload the sketch (below).
 3. Open Serial Monitor → check moisture values.
 4. Place **dry material (paper, plastic)** → see “Dry Waste” LED ON.
 5. Place **wet material (vegetable peel, food waste)** → see “Wet Waste” LED ON.
 6. Adjust **threshold** based on readings.
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Arduino Program (with Soil Moisture Sensor)

// Dry/Wet Waste Classifier using Soil Moisture Sensor

```
int sensorPin = A0;
int dryLED = 7;
int wetLED = 8;
int sensorValue = 0;
int threshold = 500; // Adjust after testing sensor
```

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

```
void loop() {
  sensorValue = analogRead(sensorPin);
  Serial.print("Moisture Value: ");
  Serial.println(sensorValue);

  if (sensorValue > threshold) {
    // Wet Waste
    digitalWrite(wetLED, HIGH);
    digitalWrite(dryLED, LOW);
    Serial.println("Wet Waste Detected");
  } else {
    // Dry Waste
    digitalWrite(dryLED, HIGH);
    digitalWrite(wetLED, LOW);
    Serial.println("Dry Waste Detected");
  }
  delay(500);
}
```

Arduino Program (with DHT22 Sensor)

```
#include "DHT.h"
```

```
#define DHTPIN 2
#define DHTTYPE DHT22

DHT dht(DHTPIN, DHTTYPE);

int dryLED = 7;
int wetLED = 8;

void setup() {
  Serial.begin(9600);
  dht.begin();
  pinMode(dryLED, OUTPUT);
  pinMode(wetLED, OUTPUT);
}

void loop() {
  float h = dht.readHumidity();

  Serial.print("Humidity: ");
  Serial.println(h);

  if (h > 70.0) { // Threshold, adjust as per experiment
    digitalWrite(wetLED, HIGH);
    digitalWrite(dryLED, LOW);
    Serial.println("Wet Waste Detected");
  } else {
    digitalWrite(dryLED, HIGH);
    digitalWrite(wetLED, LOW);
    Serial.println("Dry Waste Detected");
  }

  delay(2000);
}
```