Final Project Final Video

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Automatic Water Dispenser

- Show here the picture, video of product in action
- Software code has comment with the full functionality so you can reference that…

The Technical Side

- Maybe explain here what is going on hardware and software

```
10  #include <Wire.h>
11  #include <LiquidCrystal_I2C.h>
12
```

```
void loop() {
  // Trigger the ultrasonic sensor
  digitalWrite(TRIG_PIN, LOW);
  delayMicroseconds(2);
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);

  // Measure the pulse duration
  long duration = pulseIn(ECHO_PIN, HIGH);

  // Calculate distance in cm
  float distance = duration * 0.034 / 2;

  // Print distance to Serial Monitor
  Serial.print("Distance: ");
  Serial.print(distance);
  Serial.println(" cm");
```

```
80    // Logic for LED and Water Pump control
81    if (distance > 0 && distance < DISTANCE_THRESHOLD) {
82      // Object detected
83      digitalWrite(GREEN_LED, HIGH);
84      digitalWrite(RED_LED, LOW);
85
86      // Turn on water pump
87      digitalWrite(MOTOR1A, HIGH);
88      digitalWrite(MOTOR2A, LOW);
89
90      // Update LCD with "filling up"
91      lcd.clear();
92      lcd.setCursor(0, 0); // Top row
93      lcd.print("   Filling Up   ");
94      Serial.println("Object detected - Water Pump ON");
95    } else {
96      // No object detected
97      digitalWrite(GREEN_LED, LOW);
98      digitalWrite(RED_LED, HIGH);
99
00      // Turn off water pump
01      digitalWrite(MOTOR1A, LOW);
02      digitalWrite(MOTOR2A, LOW);
03
04      // Update LCD with "not filling"
05      lcd.clear();
06      lcd.setCursor(0, 0); // Top row
07      lcd.print("  Not Filling ");
08      Serial.println("No object detected - Water Pump OFF");
09    }
10
11    // Small delay for stability
12    delay(500);
13  }
```

Further Applications

- Add a thermistor to measure water
- MQTT idea using ESP32 board

Sources/Inspiration

- Insta Reel Video (maazin)
- 2.1 Hello, LED! — SunFounder ESP32 Starter Kit documentation
- 2.6 Display Characters — SunFounder ESP32 Starter Kit documentation
- 4.2 Pumping — SunFounder ESP32 Starter Kit documentation
- 5.12 Measuring Distance — SunFounder ESP32 Starter Kit documentation