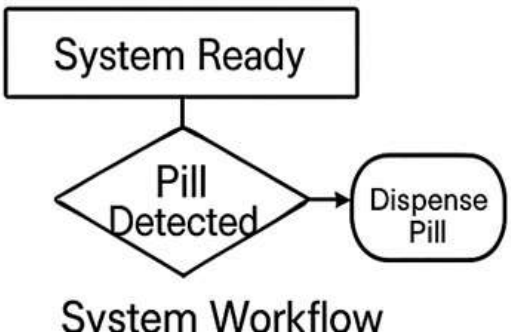
```
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <Servo.h>

Servo dispenser;
LiquidCrystal_I2C lcd(0x27, 16, 2);

Int irSensor = 2;
Int buzzer = 8;

Int count = 0;
Bool done = false;

// Time label function
String getTimeLabel(int num) {
  Int mod = num % 3;
  If (mod == 1) return “Morning”;
  If (mod == 2) return “Afternoon”;
  Return “Evening”;
}

Void setup() {
  Dispenser.attach(9);    // Servo signal pin
  Delay(500);           // Important for servo to start

  pinMode(irSensor, INPUT);
```

```
  pinMode(buzzer, OUTPUT);

  lcd.init();
  lcd.backlight();
  lcd.print("Smart Pill Box");
  lcd.setCursor(0, 1);
  lcd.print("Initializing...");
  delay(2000);

  lcd.clear();
  lcd.print("System Ready");

  dispenser.write(0);     // Reset servo position
}

Void loop() {

  Int irState = digitalRead(irSensor);

  // Stop at 10 pills
  If (done) {
    Lcd.clear();
    Lcd.print("10 Pills Done");
    Lcd.setCursor(0, 1);
    Lcd.print("Waiting...");
    Dispenser.write(0);
```

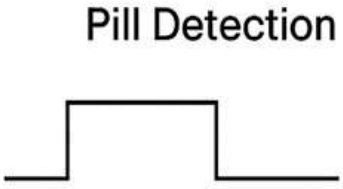
```
  noTone(buzzer);
  delay(500);
  return;
}

If (irState == LOW) {  // Pill detected

  Count++;

  Lcd.clear();
  Lcd.print(“Pill “);
  Lcd.print(count);
  Lcd.setCursor(0, 1);
  Lcd.print(getTimeLabel(count)); // Morning/ Afternoon/ Evening
  Delay(1200);

  // 1. Buzzer alert
  Tone(buzzer, 1000);
  Delay(800);
  noTone(buzzer);

  // 2. Ready message
  Lcd.clear();
  Lcd.print(“Ready to Take”);
  Lcd.setCursor(0, 1);
  Lcd.print(“Your Medicine”);
```

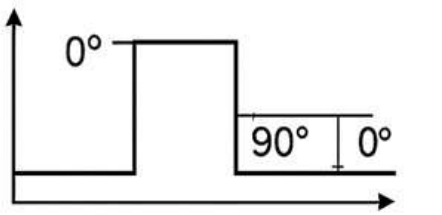
```
Delay(5000);  // 5 seconds wait

// 3. Strong Servo Rotation (Guaranteed movement)
Dispenser.write(0);
Delay(300);
Dispenser.write(90);
Delay(1200);
Dispenser.write(0);
Delay(300);

// 4. Dispensed message
Lcd.clear();
Lcd.print(“Medicine”);
Lcd.setCursor(0, 1);
Lcd.print(“Dispensed”);
Delay(1500);

// Stop at 10 pills
If (count >= 10) {
  Lcd.clear();
  Lcd.print(“10 Pills Done”);
  Done = true;
  Delay(2000);
}
```

```
  } else {
    Lcd.setCursor(0, 0);
    Lcd.print("Waiting...");
  }

  Delay(200);
}
```

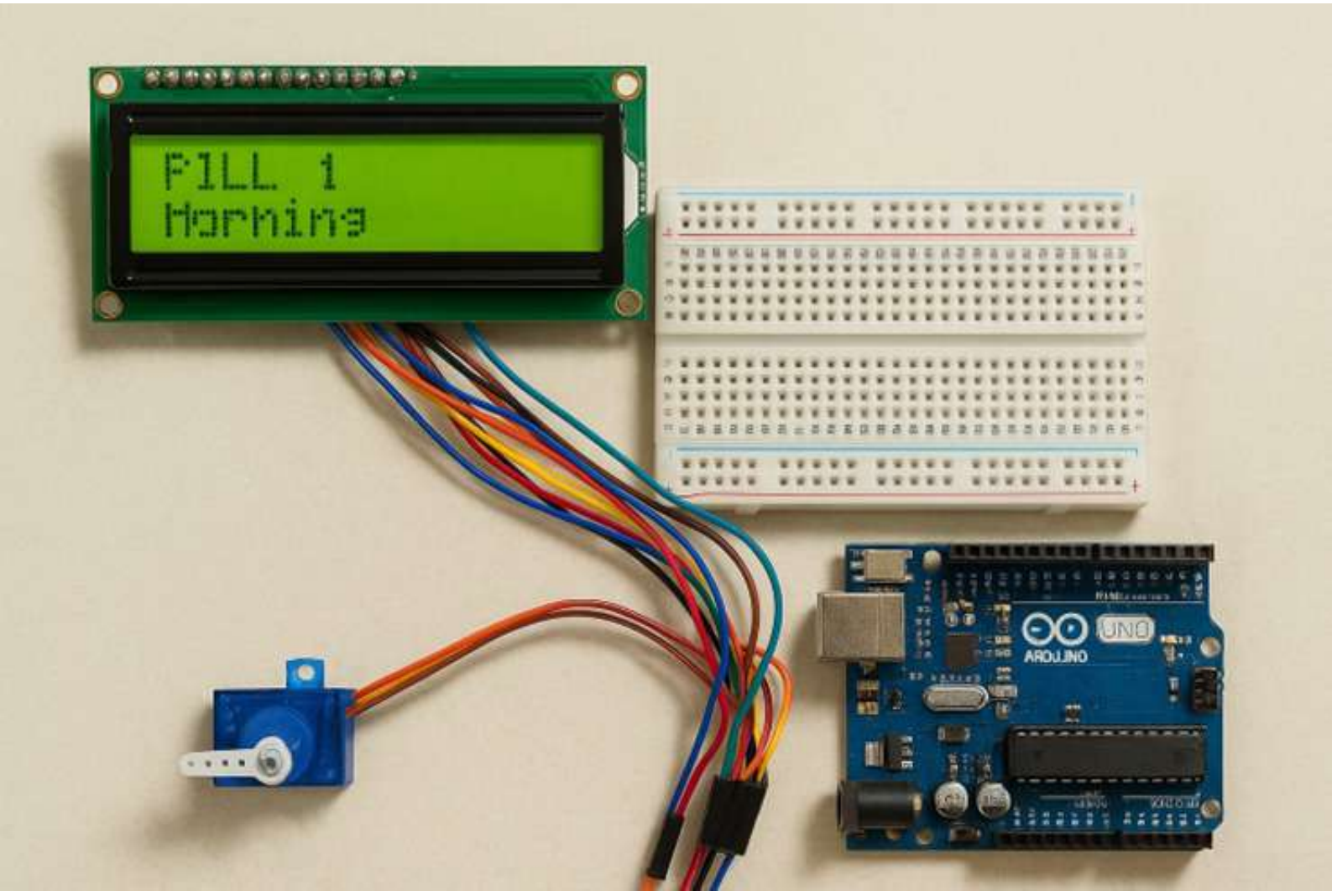


System Workflow





Servo Rotation Response


FILL 1
Hornina
UNO
ARDUINO