

```
#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);  
}
```