

```
#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);  
}
```