#include <SoftwareSerial.h>

// Hardware Setup

const int ldrPin = 7;            // LDR sensor pin

const int buzzerPin = 11;         // Buzzer pin

SoftwareSerial SIM900A(9, 10);    // GSM module (RX=9, TX=10)

// Alert Control

const String phoneNumber = "+916263456676";  // Replace with your number

bool alertTriggered = false;

unsigned long lastAlertTime = 0;

const int alertCooldown = 30000;  // 30 seconds between full alert cycles

void setup() {

  // Initialize hardware

  pinMode(buzzerPin, OUTPUT);

  pinMode(ldrPin, INPUT);

  // Start serial communications

  Serial.begin(9600);

  SIM900A.begin(9600);

  // GSM Module Initialization

  delay(1500);  // Boot time

  Serial.println("Initializing GSM...");

  sendATCommand("AT", 500);        // Check GSM ready

  sendATCommand("AT+CMGF=1", 500); // Set SMS text mode

  sendATCommand("AT+CNMI=1,2,0,0,0", 500); // SMS notifications

  Serial.println("System Ready");

}

void loop() {

  int ldrValue = digitalRead(ldrPin);

  // Intruder detected

  if (ldrValue == HIGH) {

    tone(buzzerPin, 1000);  // Sound alarm

    if (!alertTriggered || (millis() - lastAlertTime > alertCooldown)) {

      triggerAlerts();

      alertTriggered = true;

      lastAlertTime = millis();

    }

  }

  // Normal state

  else {

    noTone(buzzerPin);

    // Reset alert if beam is stable for 5 seconds

    static unsigned long lastNormalTime = 0;

    if (millis() - lastNormalTime > 5000) {

      alertTriggered = false;

    }

  }

  delay(100);  // Main loop delay

}

// Send both call and SMS immediately

void triggerAlerts() {

  Serial.println("INTRUDER! Triggering alerts...");

  // 1. Make phone call

  Serial.println("Dialing...");

  sendATCommand("ATD" + phoneNumber + ";", 1000);

  // 2. Send SMS (runs simultaneously with call)

  Serial.println("Sending SMS...");

  sendATCommand("AT+CMGS=\"" + phoneNumber + "\"", 500);

  SIM900A.print("ALERT: Intruder detected at your property!"); // Customize message

  SIM900A.write(26);  // Ctrl+Z to send

  delay(1000);

}

// Handles all GSM communication

String sendATCommand(String cmd, int delayTime) {

  SIM900A.println(cmd);

  delay(delayTime);

  String response = "";

  while (SIM900A.available()) {

    response += SIM900A.readString();

  }

  // Debug output

  Serial.print("GSM: ");

  Serial.println(cmd);

  Serial.print("Response: ");

  Serial.println(response);

  return response;

}