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// Pin Definitions
const int fsrPin = A0;      // FSR402 connected to A0
const int reedSwitchPin = 2; // Reed switch connected to D2
const int buzzerPin = 3;    // Buzzer connected to D3
const int ledPin = 4;       // LED connected to D4 (optional)

// Variables
bool isPersonSeated = false; // Flag to check if someone is seated
bool isSeatBeltFastened = false; // Flag to check if seat belt is fastened
unsigned long startTime = 0; // Timer to track 10 seconds

void setup() {
  // Initialize pins
  pinMode(fsrPin, INPUT);
  pinMode(reedSwitchPin, INPUT_PULLUP); // Use internal pull-up resistor for reed switch
  pinMode(buzzerPin, OUTPUT);
  pinMode(ledPin, OUTPUT);

  // Initialize Serial Monitor for debugging
  Serial.begin(9600);
}

void loop() {
  // Read FSR402 sensor value
  int fsrValue = analogRead(fsrPin);
  Serial.print("FSR Value: ");
  Serial.println(fsrValue);

  // Check if someone is seated (FSR value > threshold)
  if (fsrValue > 100) {
    isPersonSeated = true;
    digitalWrite(ledPin, HIGH); // Turn on LED
    Serial.println("Person seated on the seat.");

    // Read seat belt status (reed switch)
    isSeatBeltFastened = digitalRead(reedSwitchPin) == LOW; // Magnet near = LOW
    (fastened), Magnet away = HIGH (not fastened)

    if (isSeatBeltFastened) {
      Serial.println("Seat belt fastened. No alarm.");
      digitalWrite(buzzerPin, LOW); // Turn off buzzer
      startTime = 0; // Reset timer
    } else {
      // Start the timer only if it's not already running

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    if (startTime == 0) {  
        startTime = millis();  
    }  
  
    // Check if 10 seconds have passed  
    if (millis() - startTime >= 10000) {  
        Serial.println("Seat belt not fastened for 10 seconds. Alarm triggered!");  
        digitalWrite(buzzerPin, HIGH); // Turn on buzzer  
    }  
}  
} else {  
    // Reset everything if no one is seated  
    isPersonSeated = false;  
    isSeatBeltFastened = false;  
    startTime = 0;  
    digitalWrite(ledPin, LOW); // Turn off LED  
    digitalWrite(buzzerPin, LOW); // Turn off buzzer  
    Serial.println("No one seated on the seat.");  
}  
  
delay(500); // Reduce delay to improve response time  
}
```