Final Project Proposal: LockerNinja – Silent Breach Detection System

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We propose LockerNinja, a discreet monitoring device designed for shared storage spaces in dorms or offices. It detects unauthorized access and logs events silently. The device sits hidden among personal items and sends data wirelessly to a base station called The Dojo.

Components Required: Photoresistor, Ultrasonic sensor, Sound sensor, Accelerometer, Temperature and humidity sensor, 2x Servo motors, Stepper motor, RFID scanner, RF module, Real-time clock module (DS3231), 8x8 LED matrix, Arduino board, 9V Battery, Required cables and connectors.

Optional / Additional Components: LCD display, 4x4 keypad.

LockerNinja (Internal Unit)
The unit uses a light sensor to detect door opening, an ultrasonic sensor for intrusion, a sound sensor for bangs, and an accelerometer for motion detection. Temperature and humidity are monitored using a sensor for environmental data. Two servo motors display breach status and breach type. A stepper motor rotates to show breach count. An RFID scanner resets the system with a valid key, while invalid keys trigger an alert. An RF module enables wireless communication with The Dojo. A real-time clock timestamps breaches and triggers an email alert after two minutes of the demo starting. The accelerometer and RTC fulfill the I2C requirement.

The Dojo (Base Station)
The Dojo receives data via RF and provides feedback. An 8x8 LED matrix controlled by two daisy-chained shift registers visualizes breach severity. The Dojo also includes an RFID module to reset the system using the same key.

Optional / Additional Features (The Dojo): Depending on available pins and time, an LCD display and/or a 4x4 keypad may be added to display sensor data and allow interaction.