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Faculty of Information Technology
Mobile Programming (INSY-429)
MINI PROJECT (Final): Smart Home Monitoring System
Due date: 4th August 2024

The objective of this project is to develop a smart home monitoring application using Flutter or React Native that utilizes three sensors commonly found in mobile devices to monitor environmental conditions within a home.

Features and Components:

1. Light Level Sensing and Automation: **/15pts**
    a. Use the device's ambient light sensor to measure the brightness level in the surroundings.
    b. Implement automation features such as adjusting smart lights or notifying users based on changes in ambient light levels.
2. Motion Detection and Security: **/15pts**
    a. Integrate the device's **accelerometer sensor** to detect motion or vibrations.
    b. Design an intuitive user interface that displays sensor data in real-time using charts or visual indicators.
    c. Implement **push notifications** or alerts to notify users of significant changes (e.g. motion detected).
3. Location Tracking and Geofencing **/10pts**
    a. Implement location tracking to monitor the movement of the device within specified geographical boundaries (geofencing).
    b. Use GPS data to trigger actions or notifications when the device enters or exits predefined areas (e.g., home, work).

Implementation Steps

- Integrate necessary plugins for accessing GPS (Global Positioning System), accelerometer, and ambient light sensors.
- Implement logic to continuously read sensor data and update the user interface with real-time readings.
- Use charts or visual indicators to represent sensor data effectively.
- Develop algorithms to analyze accelerometer data and detect motion events.
- Implement logic to trigger in-app alerts or push notifications when motion is detected.
- Test the application thoroughly to ensure reliable sensor readings and responsive behavior.
- Prepare the application for deployment on Android or iOS platform.

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