Classes and Functions:

AccelerometerManager Class : Manages the accelerometer and reads data from it.

- Functions:
    - initialize(): Initialize and configure the accelerometer.
        - Inputs: none
        - Outputs: none
    - readData(): Read the current accelerometer data.
        - Inputs: none
        - Outputs: accelerometer data (x,y,z)

RepAnalyzer Class: Analyzes accelerometer data to detect repetitions.

- Functions:
    - feedData(accelData): Feed accelerometer data for analysis.
        - Inputs: accelerometer data
        - Outputs: none
    - detectRep(): Analyze data and determine if a repetition movement is detected.
        - Inputs: none
        - Outputs: rep count

DisplayManager Class: Manages the 16x2 character display module.

- Functions:
    - showRepCount(count): Display the current number of reps.
        - Inputs: rep count
        - Outputs: none
    - showStatusMessage(message): Display status messages, e.g., "Analyzing" or "Exercise Complete".
        - Inputs: status message
        - None

LEDManager Class: Manages the LED outputs for feedback.

- Functions:
    - signalRepDetected(): Flash or change the LED color when a rep is detected.
        - Inputs: none
        - Outputs: none

ExerciseManager Class: Manages the overall exercise session, utilizing other classes.

- Functions:
    - startSession(): Begin the exercise tracking session on switch.
        - Inputs: none
        - Outputs: none
    - endSession(): End the current session on switch and display results
        - Inputs: none
        - Outputs: rep count.
    - update(): Continuously read accelerometer data and update rep counts.

- Inputs: None
- Outputs: None

Flow:

1. ExerciseManager initiates the exercise session via startSession() when switch is flicked by user.
2. AccelerometerManager is initialized.
3. DisplayManager is initialized.
4. In the session loop:
    a. AccelerometerManager provides accelerometer data via readData().
    b. This data is fed into RepAnalyzer through feedData().
    c. RepAnalyzer continuously checks for reps using detectRep().
    d. If a rep is detected, update the count and provide feedback.
        i. DisplayManager updates rep count using showRepCount().
        ii. LEDManager signals a detected rep via signalRepDetected().
    e. ExerciseManager continues this loop until the session ends (when user flips switch back).
5. When the session ends (when user flips switch back):
    a. endSession() displays total reps on the 16x2 display.

States:

Idle State: The system is waiting for the user to start a session.

- Transition: Moves to the Active State when the user initiates a session by flicking the switch.

Active State: The system is actively tracking exercise repetitions.

- Transition: Moves to the Idle State when the user ends the session by flicking the switch back.