Kenneth Rofuli

300392382

**Step Counter Health App**

Technologies & APIs Used

| **Technology / API** | **Purpose** |
| --- | --- |
| Java | Main programming language for Android app logic. |
| Android Studio | IDE for app development, building, and testing.  Version **ladybug feature drop 2024.2.2** |
| Android SDK | Core framework for Android app development. |
| Room Database (SQLite ORM) | Local storage for session data (steps, distance, etc). |
| Google Maps API (MapFragment) | For displaying walked path on the map. |
| Gson Library | Convert walked path (LatLng list) to JSON string for DB storage. |
| Android Sensors (Accelerometer) | Real-time step detection for walking sessions. |
| RecyclerView & CardView | For listing past sessions in a scrollable list. |
| Device Location (GPS) | Used indirectly to plot walked paths on Google Maps. |

**Core Features covered and implemented**

**✅ 1. Step Counter (Accelerometer)**

* Status: ✔ Implemented
* Using the device's step sensor (accelerometer) to count steps in real-time during walking sessions.

**✅ 2. Distance Covered (KM)**

* Status: ✔ Implemented
* Distance is being calculated based on step count and stride estimation, and also via GPS coordinates for walked paths.
* Storing and showing distance per session.

**✅ 3. Speed Tracking (KPH)**

* Status: ✔ Implemented
* Calculate the average speed (km/h) based on distance and duration of the session.
* Displayed in both session summary and past sessions.

**✅ 4. Calories Burned (Optional)**

* Status: ✔ Implemented (Optional)
* Implemented a simple calories estimation algorithm (distance \* 60 kcal/km approximation).
* It's displayed in the session summary.

✅ 5. Integration with Public APIs

* Google Maps API:
  + Status: ✔ Implemented
  + Displays walked paths on Google Maps.
  + Zoom to fit the walked route in sessionSummary.

**✅ 6. Session Logs**

* Status: ✔ Implemented
* Past Walks screen (RecyclerView) showing:
  + Date
  + Steps
  + Distance
  + Duration
  + Speed
  + Calories
  + Walked Path (click to view details + map)
* Implemented delete functionality with confirmation.

**✅ 7. User Interface**

* Status: ✔ Implemented
* Simple Home screen with Start Walk & Past Walks buttons.
* Session Summary screen is clean and functional.
* Past Sessions view is functional with clickable cards & delete buttons.

**Development & Testing Environment Details**

Android Studio Version:

* Android Studio Ladybug | Version 2024.2.2 (Stable Release)

Tested Devices & Emulators:

1. Physical Device:
   * Device Name: Xiaomi Poco F3
   * Android Version: Android 13 (API Level 33)
2. Emulators:
   * Pixel 4 Emulator
     + Android Version: Android 13 (API Level 35)

APIs and SDKs Used:

1. Google Maps SDK for Android — For displaying the walking route on the map.
2. Google Play Services Location API — For GPS-based tracking.
3. Android SensorManager (Accelerometer Sensor) — For step counting.
4. Room Persistence Library (SQLite ORM) — For local database storage of session logs.
5. GSON Library — For converting walked path (LatLng points) to JSON and back.

Test Account Credentials (Not Required):

* The app does NOT require login or authentication, so no test account is necessary.
* All features can be accessed directly upon launching the app.