PROJECT 08 - SLEEP TRACKER (ANDROID)

GITHUB

https://github.com/EsmailElhanash/SleepTracker

TYPE

Android app (public code)

DATE

2022-05-13 to 2022-12-25

WHAT IT IS

A sleep tracking Android app that runs background tracking, collects movement signals from phone sensors plus device state (e.g., screen on/off), and syncs user data to the cloud for later review.

MY ROLE

Android developer (main contributor)

Work included

- Implemented and maintained core app features and bug fixes
- Integrated cloud sync (AWS Amplify)
- Implemented background tracking reliability (foreground service + alarms)
- Built key UI screens (settings, sleep schedule updates, and related flows)

KEY FEATURES

1) User accounts and authentication
2) Consent screen flow
3) Sleep schedule update flow (bed time / wake time)
4) Background tracking using a foreground service
4b) Device state tracking (screen on/off) to help infer sleep/wake events
5) Survey flow and retake logic
6) Statistics screens and history views

TECHNICAL HIGHLIGHTS

1) Reliable background behavior
- Foreground service to keep tracking stable
- Alarm-based scheduling with doze/battery restrictions in mind
- WakeLock usage when needed for continuity

2) Sensor-based tracking
- Uses accelerometer signals to capture movement patterns related to sleep
- Tracks device state (e.g., screen on/off) as an additional signal to improve sleep/wake calculations

3) Cloud sync
- AWS Amplify integration for auth and data sync (DataStore + API)
- Offline-first behavior where data can be stored locally then synced

TECH STACK

- Kotlin
- AndroidX / Jetpack basics
- Coroutines
- AWS Amplify (plugins found in code: AWSApiPlugin(, AWSCognitoAuthPlugin(, datastorePlugin)
- Firebase Analytics and Crashlytics
- MPAndroidChart (charts)

PERMISSIONS (HIGH-LEVEL)

android.permission.FOREGROUND_SERVICE, android.permission.INTERNET, android.permission.POST_NOTIFICATIONS, android.permission.REQUEST_IGNORE_BATTERY_OPTIMIZATIONS, android.permission.SCHEDULE_EXACT_ALARM, android.permission.WAKE_LOCK

PROOF ASSETS INCLUDED

- sleeptracker_screen_01_update_sleeping_hours_timepicker.png
- sleeptracker_screen_02_settings_change_password_logout.png
- sleeptracker_design_01_create_account.jpg (extracted from Adobe XD)
- sleeptracker_design_02_update_sleep_time.jpg (extracted from Adobe XD)
- sleeptracker_design_03_sleep_questionnaire.jpg (extracted from Adobe XD)
- sleeptracker_design_04_survey_may_2020.jpg (extracted from Adobe XD)
- sleeptracker_design_05_survey_submit_form.jpg (extracted from Adobe XD)
- sleeptracker_design_06_settings_change_password_modal.jpg (extracted from Adobe XD)
- sleeptracker_logo_color.png (plus black/white variants)
- UI design source (Adobe XD): sleeptracker_ui_design_source.xd

NOTES

- Demo video not included (APK build issues on current machine).
- Added extra UI screenshots extracted from the Adobe XD design file for stronger portfolio proof.