BloodInsight Final Documentation

Project Description

BloodInsight is a Flutter-based mobile application that helps users track and analyze their bloodwork results. Based on bloodwork data and user profiles, the app provides personalized health insights, trends analysis, and recommendations.

Key Features

- Secure authentication system
- · Dashboard with recent results overview
- · Comprehensive bloodwork history
- Al-powered health insights using Gemini API
- · Test reminder system
- Laboratory location mapping

Integrations

Firebase Services

- Authentication: Email/password, Google Sign-In
- · Firestore: Main database

External APIs

- Firebase/Firestore API Authentication and storage
- Google Maps API: Healthcare locations and maps
- Gemini API: Health insights generation

Database Schema

Firestore Collections

```
users/
 └─ {userId}/
     — name: string
     ├─ dateOfBirth: timestamp
     ├─ gender: string
     - height: number
     - weight: number
     ├─ bloodType: string
     - bloodwork/
        └─ {bloodworkId}/
             - labName: string
             ├─ dateCollected: timestamp
             └─ markers/
                └─ {markerId}/
                    — name: string
                    - value: number
                    - unit: string
                    ├─ minRange: number
                    — maxRange: number
                    └─ category: string
       – reminders/
         └─ {reminderId}/
             ├─ labName: string
             ├─ notes: string
             ├── scheduledDate: timestamp
             └─ isFasting: boolean
```

Optional requirements

Multi-Platform Support

• Mobile (Android)

Animations

- Animations using Lottie:
 - Animation controller with segment looping support
 - o Implementation in welcome screens
 - Loading state animations

Authentication System

- Firebase Authentication:
 - Email/password authenticationGoogle Sign-in integration

Multi-step Registration Form

- User input validation:
 - o Personal information collection
 - o Health data initialization

Data Persistence

- Offline Storage Implementation via:
 - Firestore offline persistence
 - SharedPreferences

Platform Integration

- Platform Feature Packages:
 - Local notifications
 - Geolocation services
 - o Native splash screen

Continuous Integration

GitHub Actions Workflows

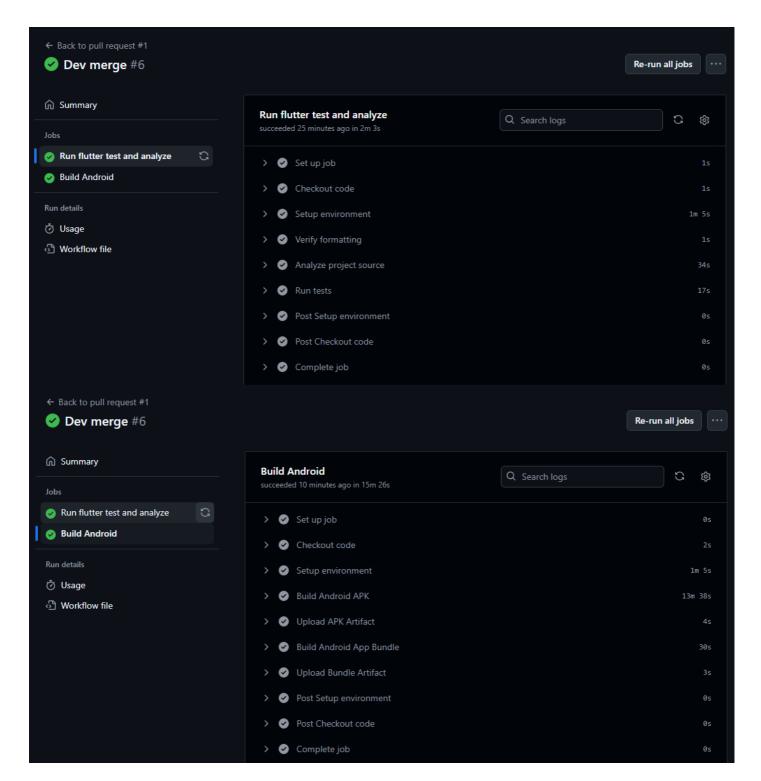
CI Workflow

```
name: CI
on:
 pull_request:
   branches:
     - master
      - dev
jobs:
 flutter_test:
   name: Run flutter test and analyze
   runs-on: ubuntu-latest
   steps:
     - name: Checkout code
       uses: actions/checkout@v4
     - name: Setup environment
       uses: ./.github/actions/env_setup
     - name: Verify formatting
       run: dart format --output=none --set-exit-if-changed .
      - name: Analyze project source
       run: flutter analyze --fatal-warnings
      - name: Run tests
       run: flutter test
 {\tt flutter\_build\_android:}
    name: Build Android
   needs: flutter_test
   runs-on: ubuntu-latest
     - name: Checkout code
       uses: actions/checkout@v4
     - name: Setup environment
       uses: ./.github/actions/env_setup
     - name: Build Android APK
       run: flutter build apk
      - name: Upload APK Artifact
       uses: actions/upload-artifact@v4
       with:
         name: BloodInsight-Apk
         path: build/app/outputs/flutter-apk/app-release.apk
         if-no-files-found: error
      - name: Build Android App Bundle
       run: flutter build appbundle
      - name: Upload Bundle Artifact
       uses: actions/upload-artifact@v4
         name: BloodInsight-AppBundle
         path: build/app/outputs/bundle/release/app-release.aab
         if-no-files-found: error
```

```
name: Setup Environment
description: Setup environment for Flutter project
runs:
 using: composite
 steps:
   - name: Set up Java
     uses: actions/setup-java@v4
     with:
      distribution: "zulu"
       java-version: "21.x"
   - name: Set up Flutter
     uses: subosito/flutter-action@v2
     with:
       channel: "stable"
       flutter-version: 3.27.4
   - name: Install dependencies
     run: flutter pub get
     shell: bash
```

CI Pipeline Features

- Automated testing on pull requests
- Static code analysis with Flutter Analyze
- APK build generation
- Artifact upload



Permission Requirements

- Internet access
- Location access
- Notification access

Test Account

Email: test@bloodinsight.dev

Password: Test@123