BloodInsight Documentation

Project Description

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

Key Features

- Secure authentication system
- Dashboard with recent results overview
- Comprehensive bloodwork history
- AI-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
- **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
    - Implementation in welcome screens
    - Loading state animations

Authentication System

- Firebase Authentication:
    - Email/password authentication
    - Google Sign-in integration

Multi-step Registration Form

- User credentials validation:
    - Personal information collection
    - Health data initialization

Data Persistence

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

Platform Integration

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

Continuous Integration

GitHub Actions Workflows

CI Workflow
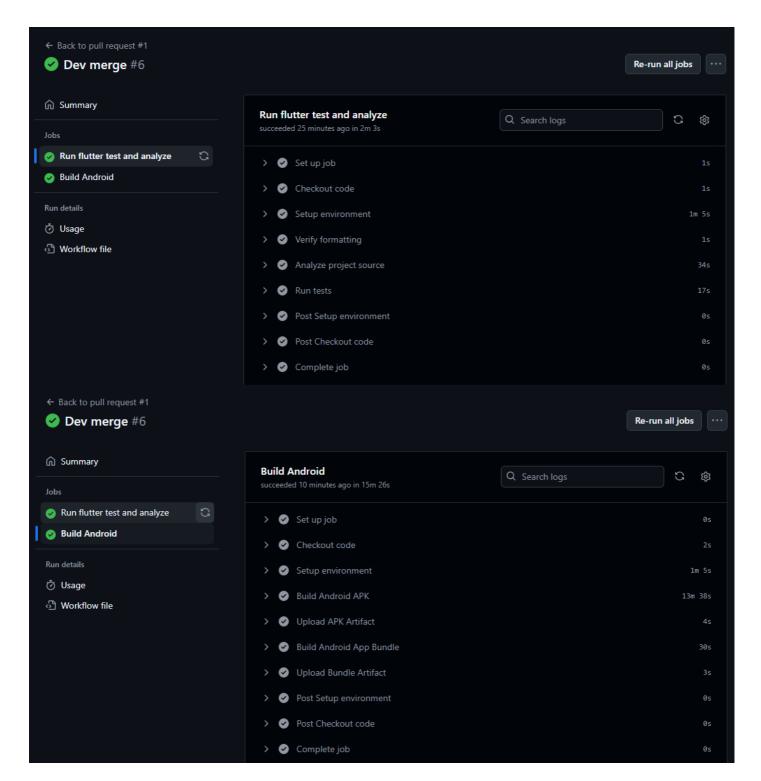
```yaml
name: CI
on:
  pull_request:
    branches:
      - master
      - dev

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

  flutter_build_android:
    name: Build Android
    needs: flutter_test
    runs-on: ubuntu-latest

    steps:
      - 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
        with:
          name: BloodInsight-AppBundle
          path: build/app/outputs/bundle/release/app-release.aab
          if-no-files-found: error
```

Setup environment composite action

```yaml
 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

← Back to pull request #1

✅ Dev merge #6

Re-run all jobs ···

🏠 Summary

Jobs

- ✅ Run flutter test and analyze ⟳
- ✅ Build Android

Run details

- ⏱ Usage
- 🗐 Workflow file

Run flutter test and analyze
succeeded 25 minutes ago in 2m 3s

🔍 Search logs ⟳ ⚙

› ✅ Set up job		1s
› ✅ Checkout code		1s
› ✅ Setup environment		1m 5s
› ✅ Verify formatting		1s
› ✅ Analyze project source		34s
› ✅ Run tests		17s
› ✅ Post Setup environment		0s
› ✅ Post Checkout code		0s
› ✅ Complete job		0s

← Back to pull request #1

✅ Dev merge #6

Re-run all jobs ···

🏠 Summary

Jobs

- ✅ Run flutter test and analyze ⟳
- ✅ Build Android

Run details

- ⏱ Usage
- 🗐 Workflow file

Build Android
succeeded 10 minutes ago in 15m 26s

🔍 Search logs ⟳ ⚙

› ✅ Set up job		0s
› ✅ Checkout code		2s
› ✅ Setup environment		1m 5s
› ✅ Build Android APK		13m 38s
› ✅ Upload APK Artifact		4s
› ✅ Build Android App Bundle		30s
› ✅ Upload Bundle Artifact		3s
› ✅ Post Setup environment		0s
› ✅ Post Checkout code		0s
› ✅ Complete job		0s

Permission Requirements

- Internet access
- Location access
- Notification access

Test Account

```
Email: test@bloodinsight.dev
Password: Test@123
```