

**KHAN INSTITUTE OF COMPUTER
SCIENCE AND INFORMATION
TECHNOLOGY, IST CAMPUS KAHUTA**

COMPUTER SCIENCE DEPARTMENT

PROJECT PROPOSAL

HealHive Mobile Application

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Contents

1	Introduction	2
1.1	Project Overview	2
1.2	Motivation	2
1.3	Objectives	2
2	Features	3
3	System Architecture	4
3.1	Tech Stack	4
3.2	Project Structure	4
4	Installation and Setup	5
4.1	Prerequisites	5
4.2	Firebase Setup	5
4.3	Configure News API	5
4.4	Gemini API Setup	6
4.5	Build and Run	6
5	Screenshots	7
6	Conclusion	10
7	References	11

Chapter 1

Introduction

1.1 Project Overview

HealthHive is a modern Android application that centralizes personal health data, including vitals, medical history, and AI-assisted health insights. It provides users with real-time monitoring, health tracking, and personalized suggestions, while maintaining secure data storage in the cloud using Firebase services. The application employs Jetpack Compose for modern, reactive UI design.

1.2 Motivation

The need for personal health tracking has increased with modern lifestyles. HealthHive addresses this need by providing a unified platform to track health metrics, monitor progress, and receive AI-guided recommendations.

1.3 Objectives

- Track health vitals including heart rate, blood pressure, steps, and sleep patterns.
- Provide AI-driven health suggestions via Lumi AI assistant.
- Display global health news and articles for awareness.
- Ensure secure authentication and cloud synchronization.
- Improve user engagement through interactive charts and health scores.

Chapter 2

Features

Feature	Description
Smart Profile Management	Store and sync personal information, medical history, allergies, and preferences.
Vitals Tracking	Monitor heart rate, blood pressure, steps, and sleep with graphs and Health Score.
AI Assistant (Lumi AI)	Provides personalized recommendations based on vitals and symptoms.
Health Calendar	Schedule and track appointments, medications, and daily health routines.
Global Health Insights	Access curated health news and research articles.
Secure Authentication	Firebase Authentication ensures secure login and data privacy.
Gemini API Integration	AI-enhanced analysis using Gemini API for smarter suggestions.

Chapter 3

System Architecture

3.1 Tech Stack

- Language: Kotlin
- UI: Jetpack Compose
- Architecture: MVVM (Model-View-ViewModel)
- State Management: StateFlow / Flow
- Networking: Retrofit & OkHttp
- Backend: Firebase Firestore, Firebase Auth, Firebase Storage
- Local Storage: DataStore / SharedPreferences
- Image Loading: Coil
- AI Integration: Gemini API

3.2 Project Structure

```
com.example.healthhive
data/                # Repositories, API Services, Firebase logic
  model/             # Data Classes (User, Vitals, HealthArticle)
ui/                  # Composable Screens and Themes
  screens/           # Home, Profile, Auth, AI Assistant, Settings
  theme/             # Colors, Typography, Shapes
viewmodel/           # ViewModels and UI state management
utils/               # Helper classes, constants
network/             # Retrofit API Services
```

Chapter 4

Installation and Setup

4.1 Prerequisites

- Android Studio Iguana or newer
- Android Emulator or Physical Device
- Firebase Project (google-services.json required)
- Internet connection for API calls

4.2 Firebase Setup

1. Create a project in the Firebase Console.
2. Add an Android App with the package name: `com.example.healthhive`.
3. Download the `google-services.json` file.
4. Place it inside the `app/` directory.
5. Enable the following Firebase services:
 - Email/Password Authentication
 - Cloud Firestore
 - Firebase Storage

4.3 Configure News API

1. Obtain an API key from [NewsAPI.org](https://newsapi.org/).
2. Add the key to `local.properties`:

```
1 NEWS_API_KEY=your_actual_api_key_here
```

4.4 Gemini API Setup

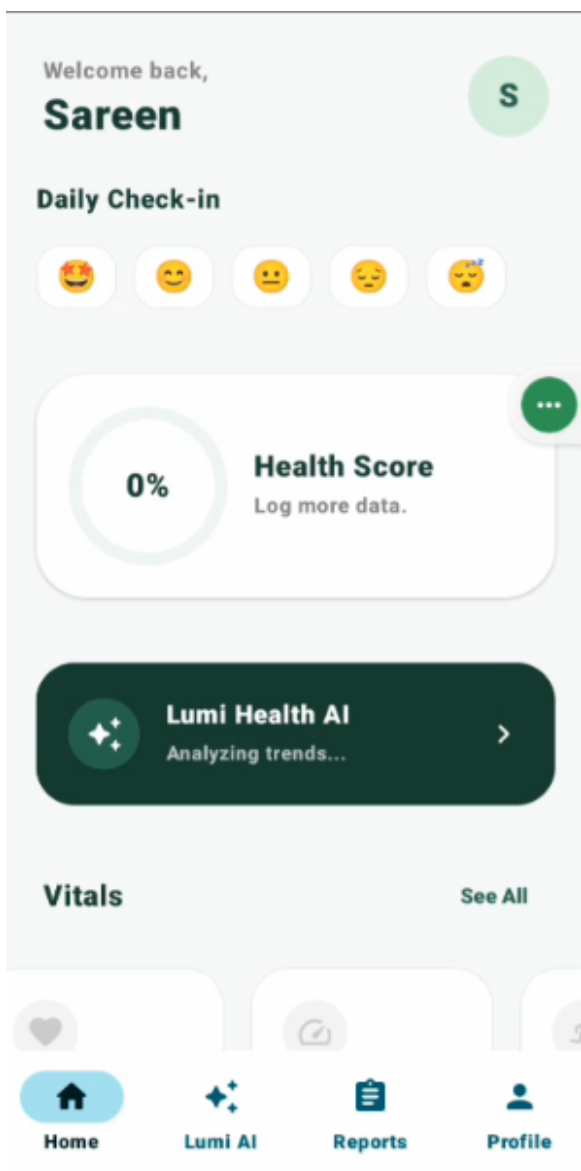
1. Sign up for Gemini API access.
2. Add your API key to the configuration file or secure environment variables.
3. Ensure the AI assistant uses Gemini API endpoints for analysis and recommendation.

4.5 Build and Run

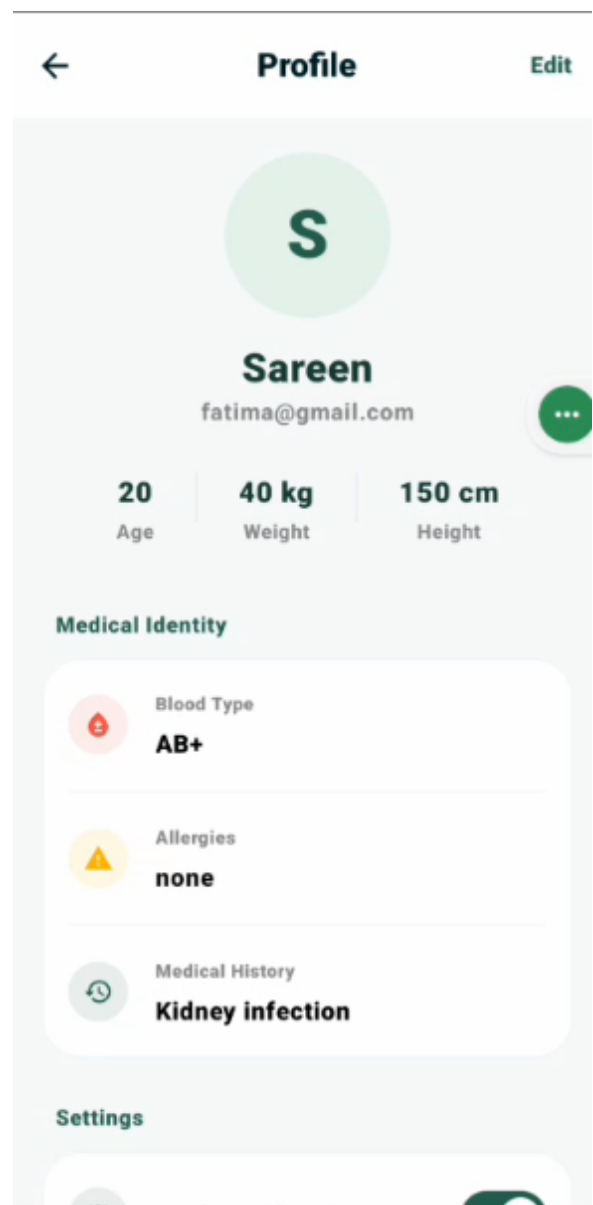
1. Sync the project with Gradle files.
2. Run the app on an Emulator or Physical Device.
3. Verify all Firebase features, News API, and Gemini API connectivity.

Chapter 5

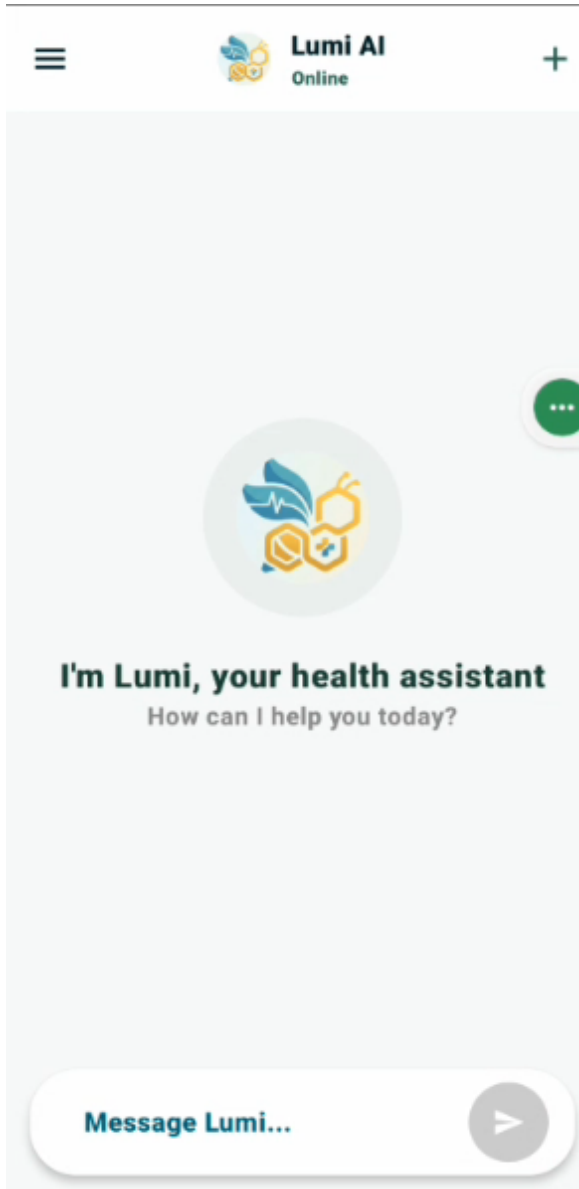
Screenshots



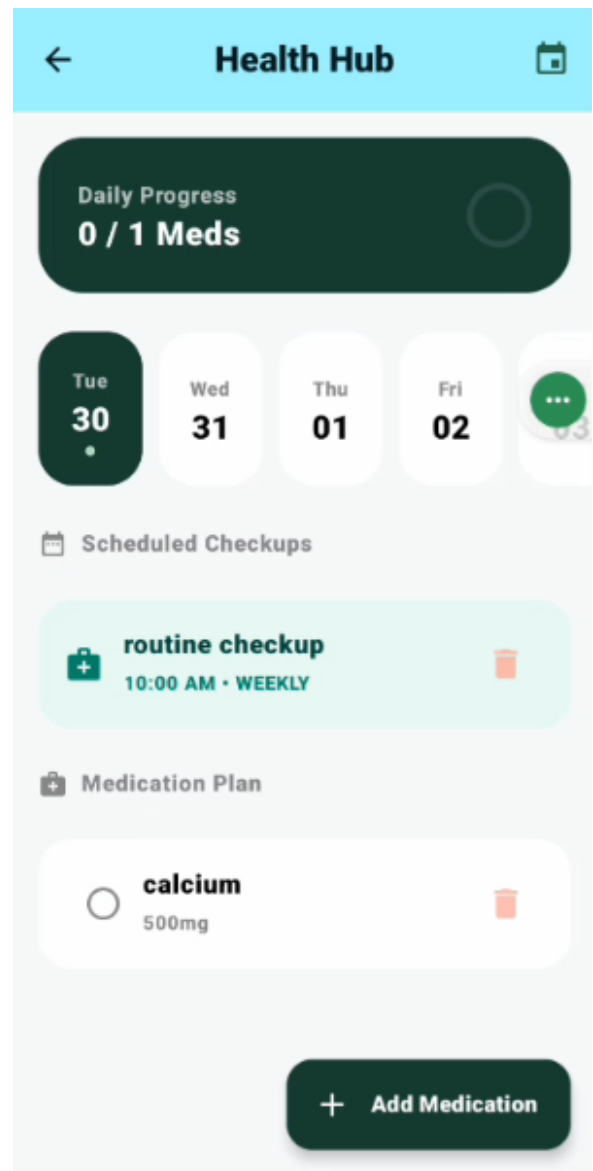
(a) Home Screen



(b) Profile Screen



(a) AI Assistant



(b) Health Calendar

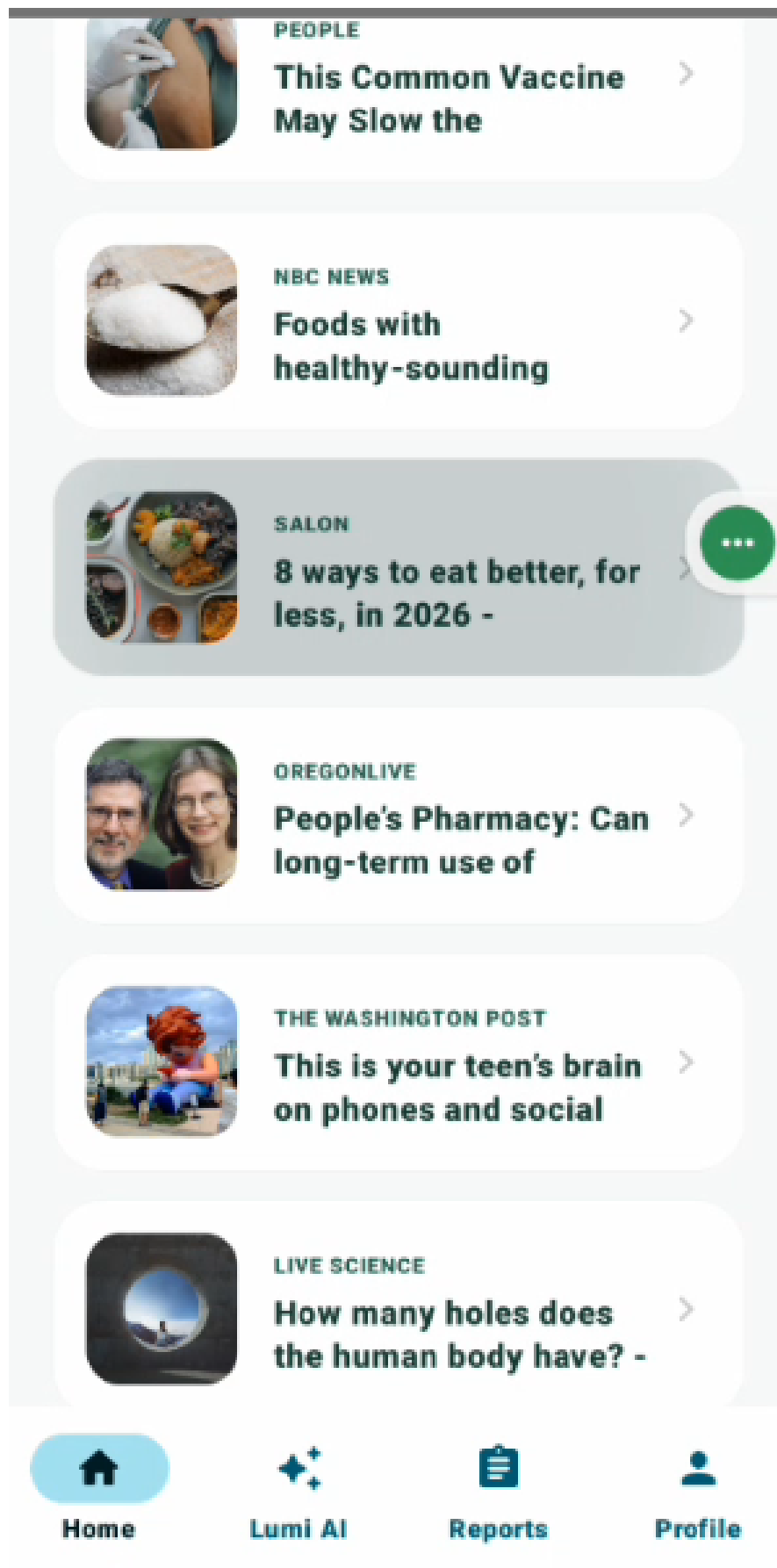


Figure 5.3: Global Health Insights

Chapter 6

Conclusion

HealthHive provides a comprehensive platform for personal health tracking, AI-assisted suggestions, and global health updates. Future improvements may include:

- Wearable device integration
- Advanced analytics and predictions
- Multi-language support
- Enhanced AI recommendations using Gemini API

Chapter 7

References

- Firebase Documentation: <https://firebase.google.com/docs>
- Jetpack Compose Documentation: <https://developer.android.com/jetpack/compose>
- NewsAPI Documentation: <https://newsapi.org>
- Gemini API Documentation: <https://www.gemini.com/api>