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Mobile Application Development – Project Report
"LifeFlow: A Blood Donation App"

Bachelor of Science in Computer Science – 6(B)
Submitted to: Mr. Qazi Mohsin Ijaz

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1. Project Title

1.1 LifeFlow: A Blood Donation App

LifeFlow is a cross-platform mobile application designed to simplify and improve the blood donation process in Pakistan. The app connects donors, recipients, and blood donation centers in real time, facilitating timely blood availability, especially during emergencies.

2. Project Scope

2.1 Objective

The core objective of LifeFlow is to create a user-friendly mobile platform where individuals can:

- Donate blood

- Request blood in emergencies(Urgent, Medium, Low urgency levels)

- Locate nearby blood banks

- Track donation history

- Stay updated with donation alerts

2.2 Functionality Completed

- **Authentication Module:**
  Implemented secure login and signup using Firebase Authentication (email/password-based). Ensures user data privacy and access control.

- **User Profile Management:**
  Users can create, update, and maintain profiles with essential details such as blood type, contact information, personal information, and medical history.

- **Application System:**
  Donors can respond to blood donation requests.

- **Emergency Blood Request System:**
  Users can submit emergency requests by specifying blood type and urgency. Other users are notified based on compatibility.

- **Nearby Blood Banks Locator:**
  Integrated Geolocator to display nearby blood banks (simulated data).

- **Donation History Tracking:**
  Users can view past donations with dates, status, and reports. Data is stored and fetched from Firebase.

3. Learning Outcomes

3.1 Technical Skills Gained

- **Flutter Framework:**
  Learned Dart programming and Flutter widgets for building responsive UI for Android

- **Firebase Services:**
  Gained experience with Firebase Authentication, Firestore Cloud Functions, Firebase authentication, and Firebase Storage.

- **GeoLocator Integration:**
  Used Geolocator to show locations and route estimations.

- **Asynchronous Programming:**
  Managed API calls and database operations using async/await, FutureBuilder, and StreamBuilder.

- **State Management:**
  Used Provider for app-wide state control, particularly for user data and real-time updates.

3.2 Challenges and Resolutions

- **Firebase Setup Issues:**
  Encountered SHA key mismatches; resolved by updating project settings and reinitializing Firebase CLI.

- **Responsiveness Across Devices:**
  Handled UI inconsistencies using MediaQuery and LayoutBuilder.

- **Realtime Updates:**
  Difficulty in syncing donation requests and notifications. Implemented Firestore listeners to ensure updates reflect instantly.

- **Deployment Preparation:**
  Faced APK build errors due to SDK misconfigurations. Solved by updating Gradle files and local dependencies.
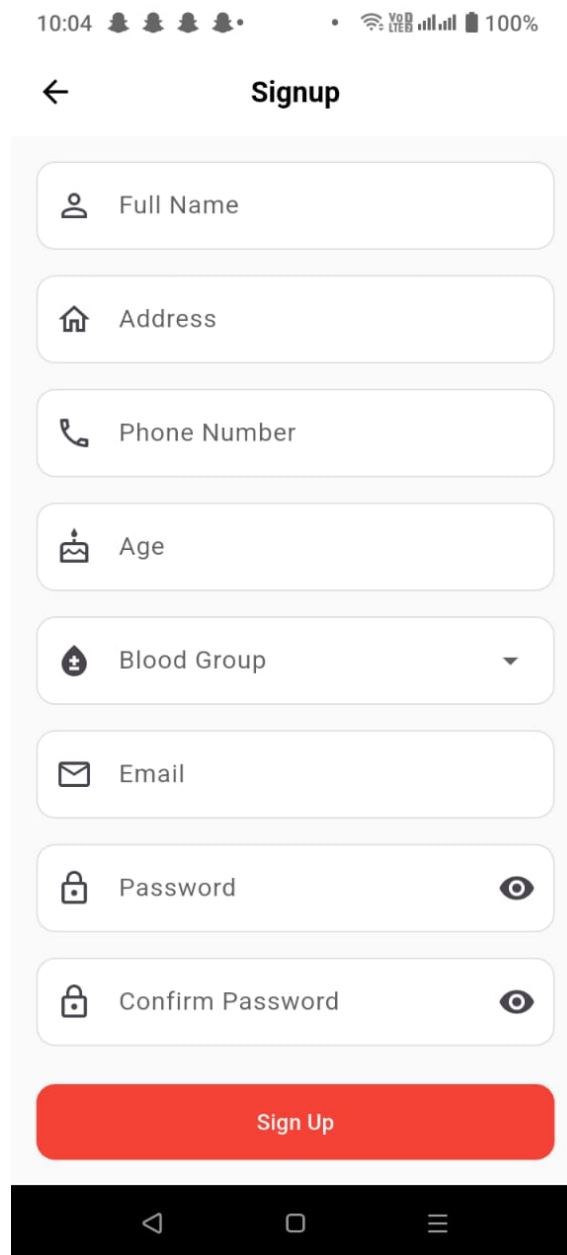
4. Front-End

This chapter presents the front-end design documentation of **LifeFlow**, a mobile application developed to facilitate blood donation. The following section includes visual snapshots of the user interface to illustrate the design and functionality of the app from the user's perspective.

While the application has been fully developed — encompassing front-end, back-end, and Firebase integration — all source code, assets, and configuration files are available in the GitHub repository. You can view the complete project here: https://github.com/alirnaqvi/LifeFlow

4.1 Sign-Up Screen

Fig 4.1 represents Sign-Up Page of *LifeFlow*.

Fig 4-1 Sign-Up Page of LifeFlow

4.2 Login Screen

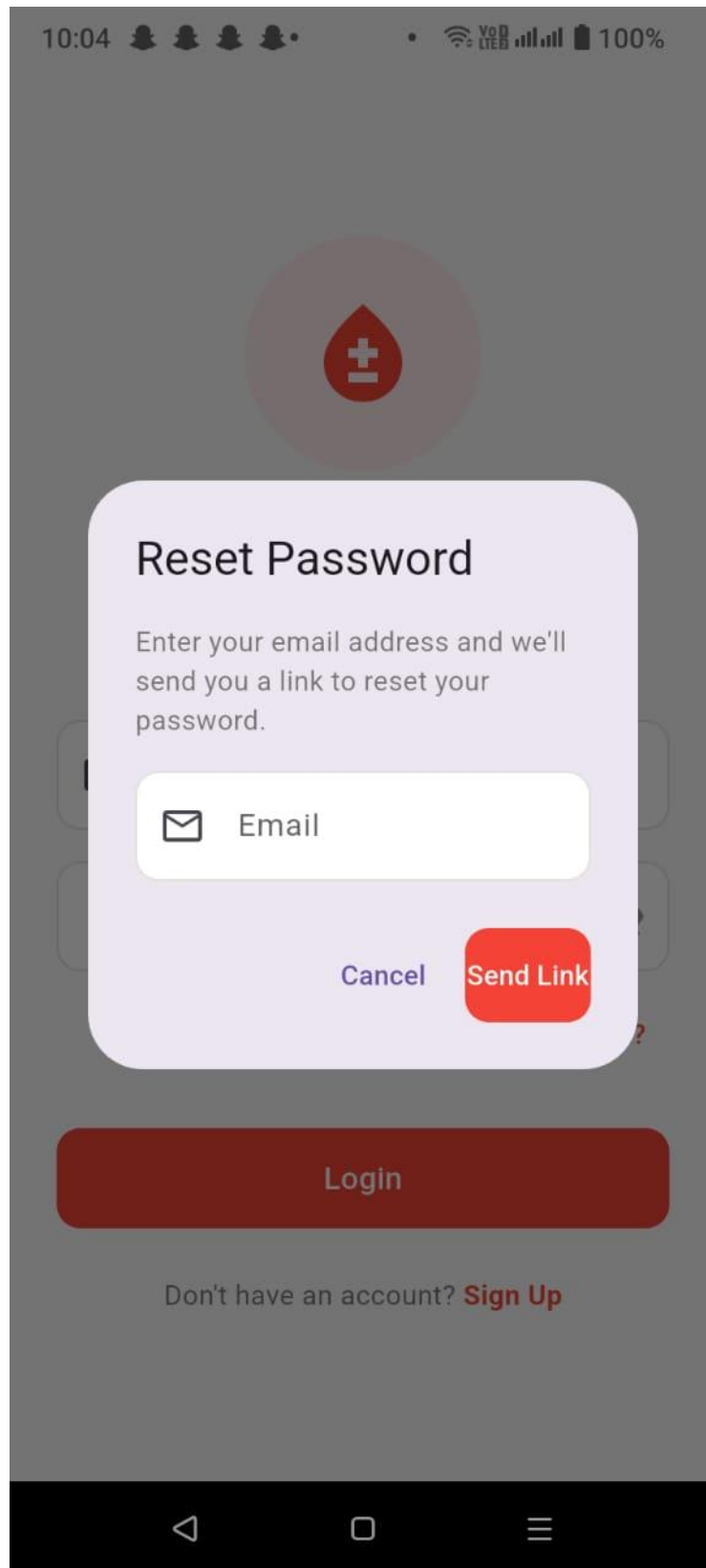Fig 4.2 represents Login Page of *LifeFlow*.
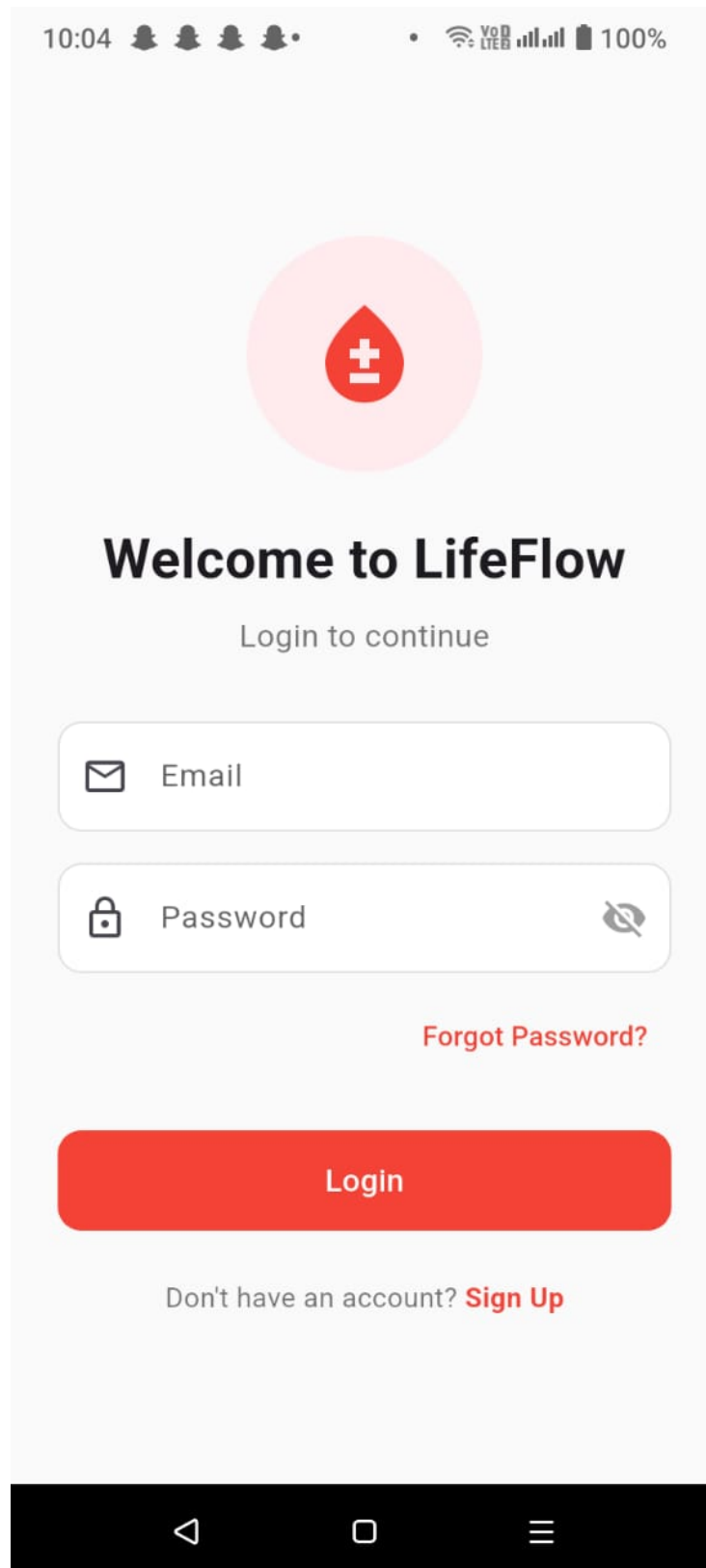
Fig 4-2 Login Page of LifeFlow

4.3 Forgot Password Screen

Fig 4.3 represents Forgot Password of *LifeFlow*.

Fig 4-3 Forgot Password Page of LifeFlow

4.4 Home Screen/Dashboard

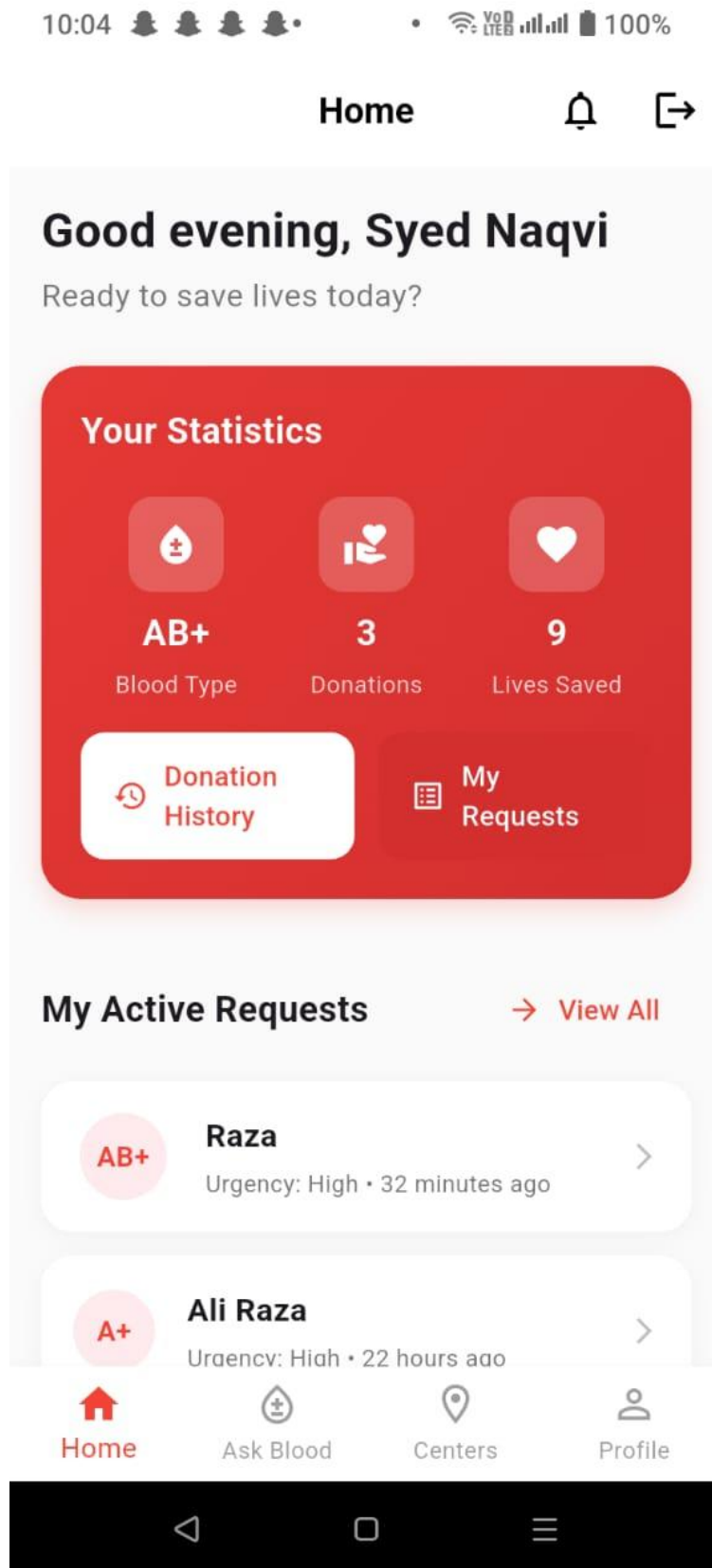Fig 4.4 represents Home Screen/Dashboard of *LifeFlow*.

Fig 4-4 Home Screen/Dashboard of LifeFlow

4.4.1 My Blood Requests Section

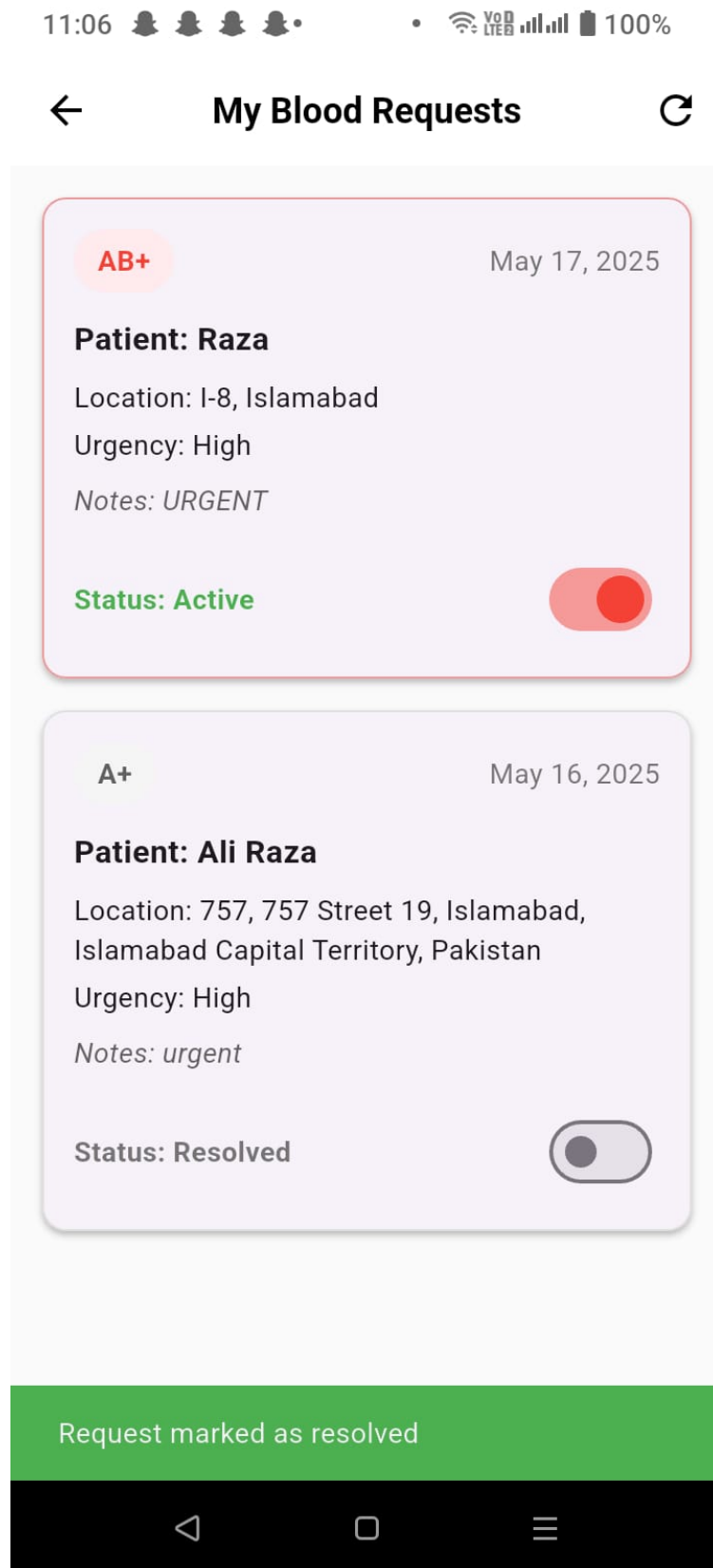Fig 4.4.1 represents My Blood Requests Section of Home Screen/Dashboard.

Fig 4-4-1 My Blood Requests Section of Home Screen/Dashboard

4.4.2 Blood Requests Nearby Section

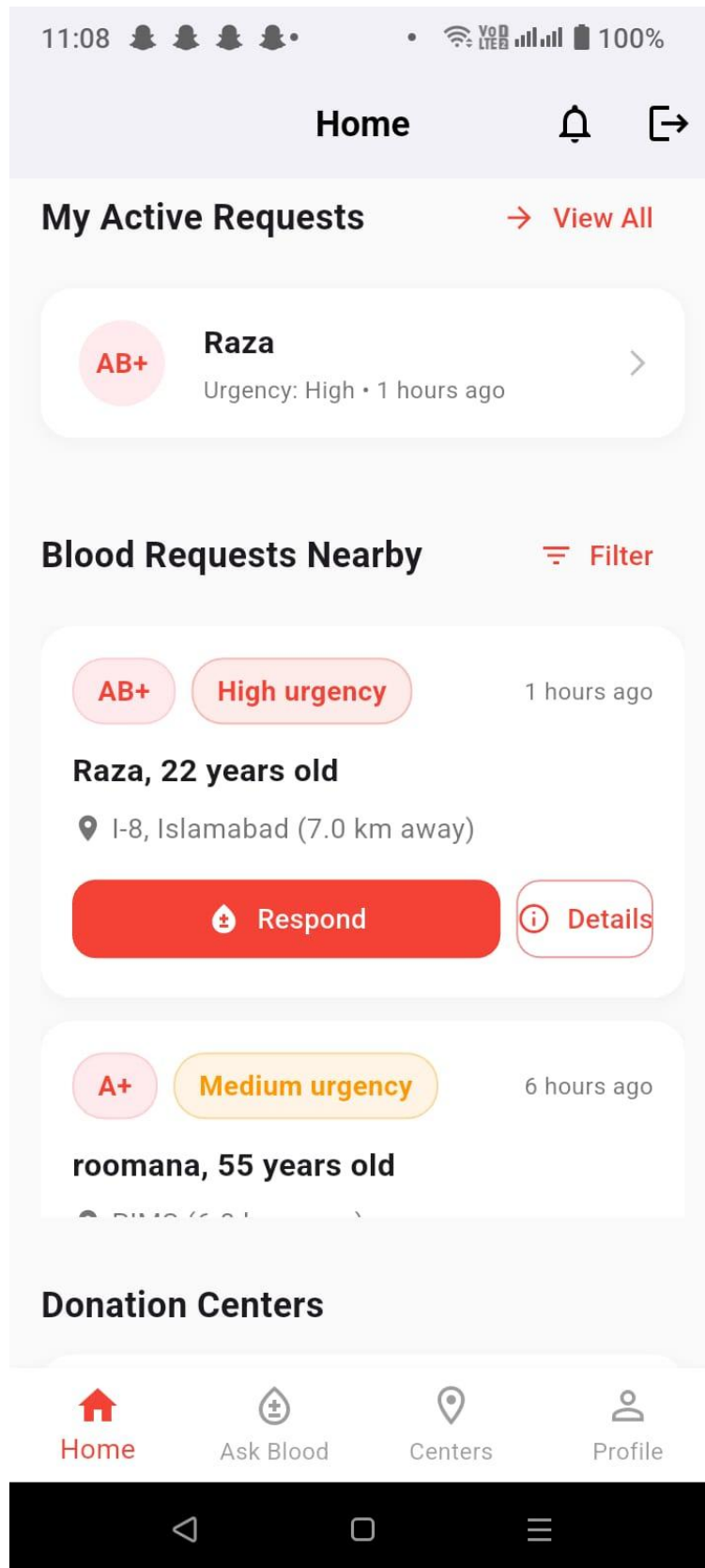Fig 4.4.2 represents Blood Requests Nearby Section of Home Screen/Dashboard.

Fig 4-4-2 Blood Requests Nearby Section of Home Screen/Dashboard

4.4.3 Donation Centers Section

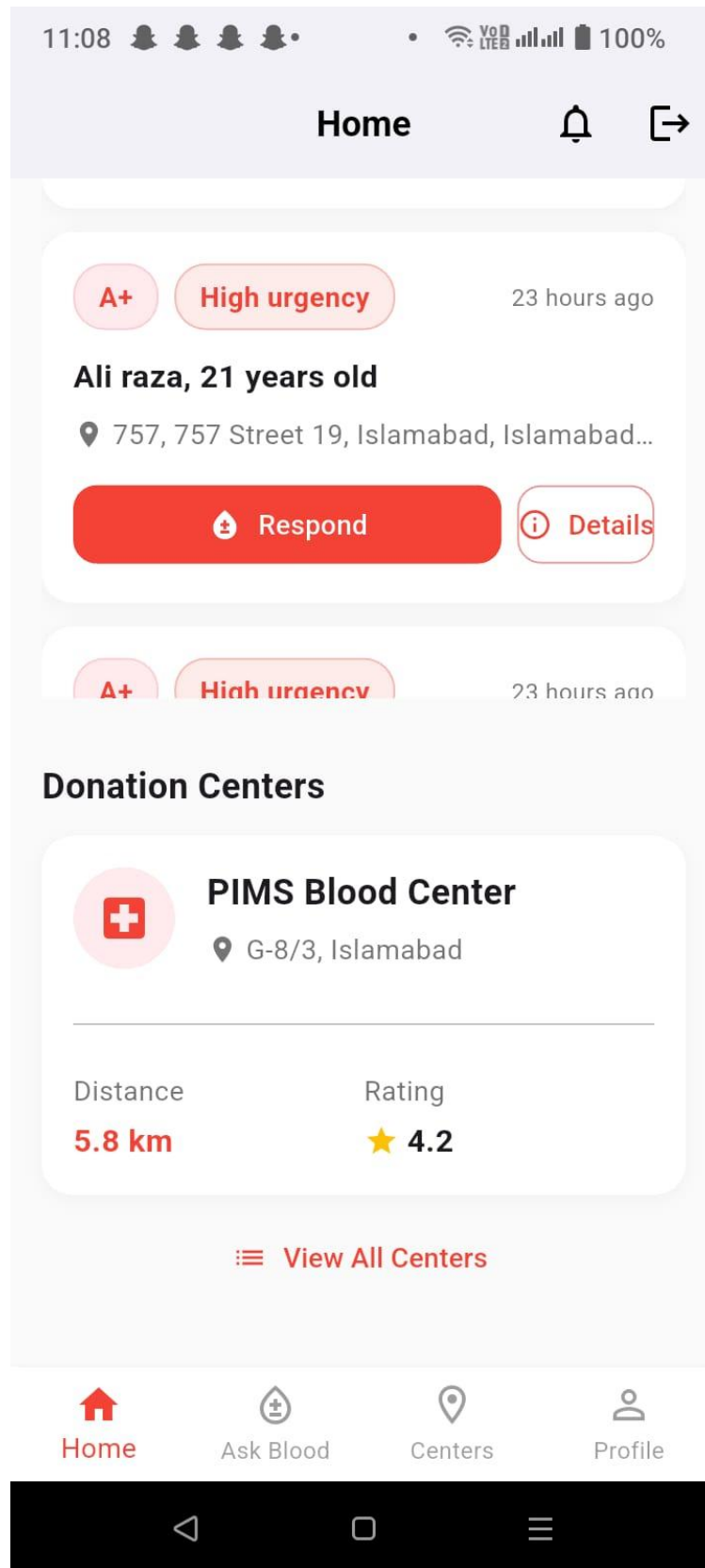Fig 4.4.3 represents Donation Centers Section of Home Screen/Dashboard.

Fig 4-4-3 Donation Centers Section of Home Screen/Dashboard

4.5 Ask/Request Blood Screen

Fig 4.5 represents Ask/Request Blood Screen of *LifeFlow*.

Fig 4-5 Ask/Request Blood Screen of LifeFlow

4.6 Blood Donation Centers Screen

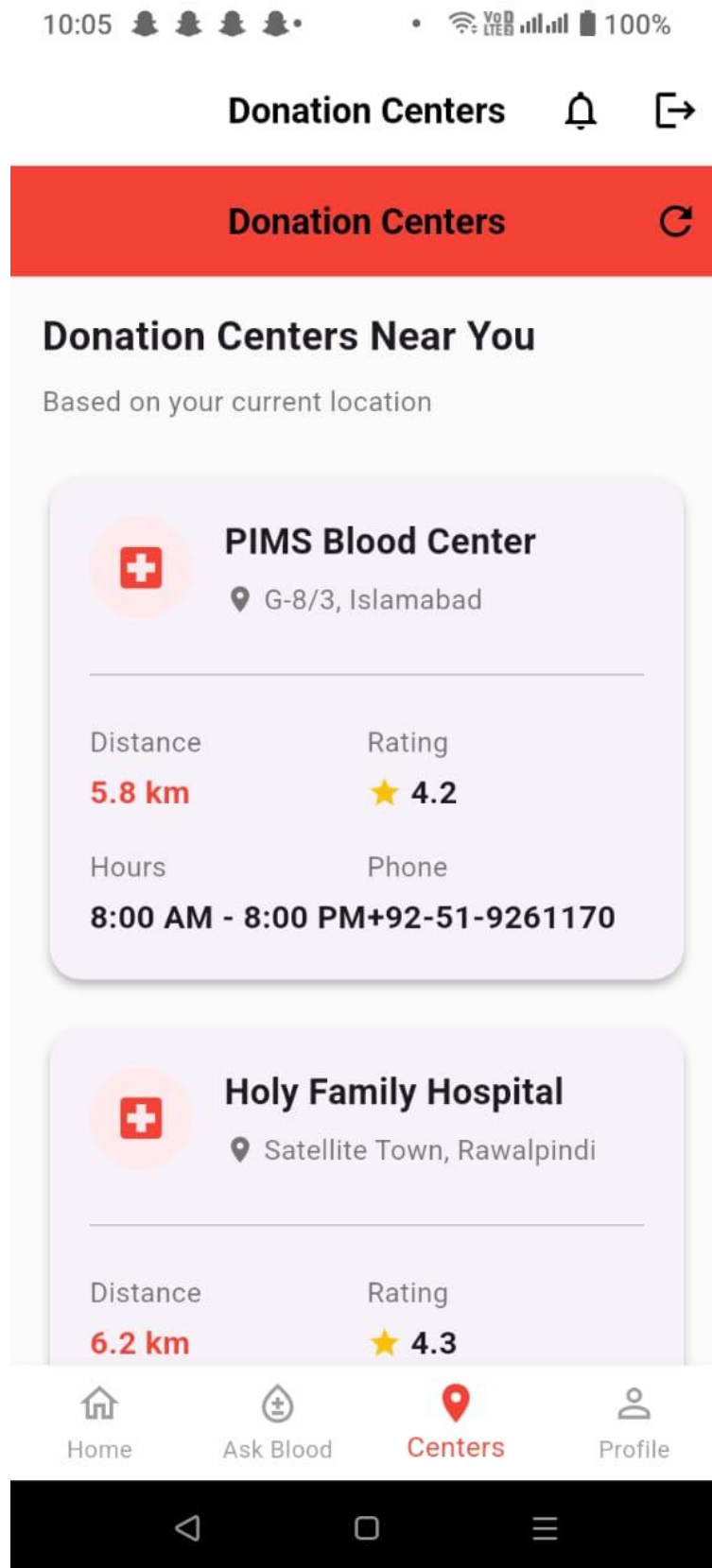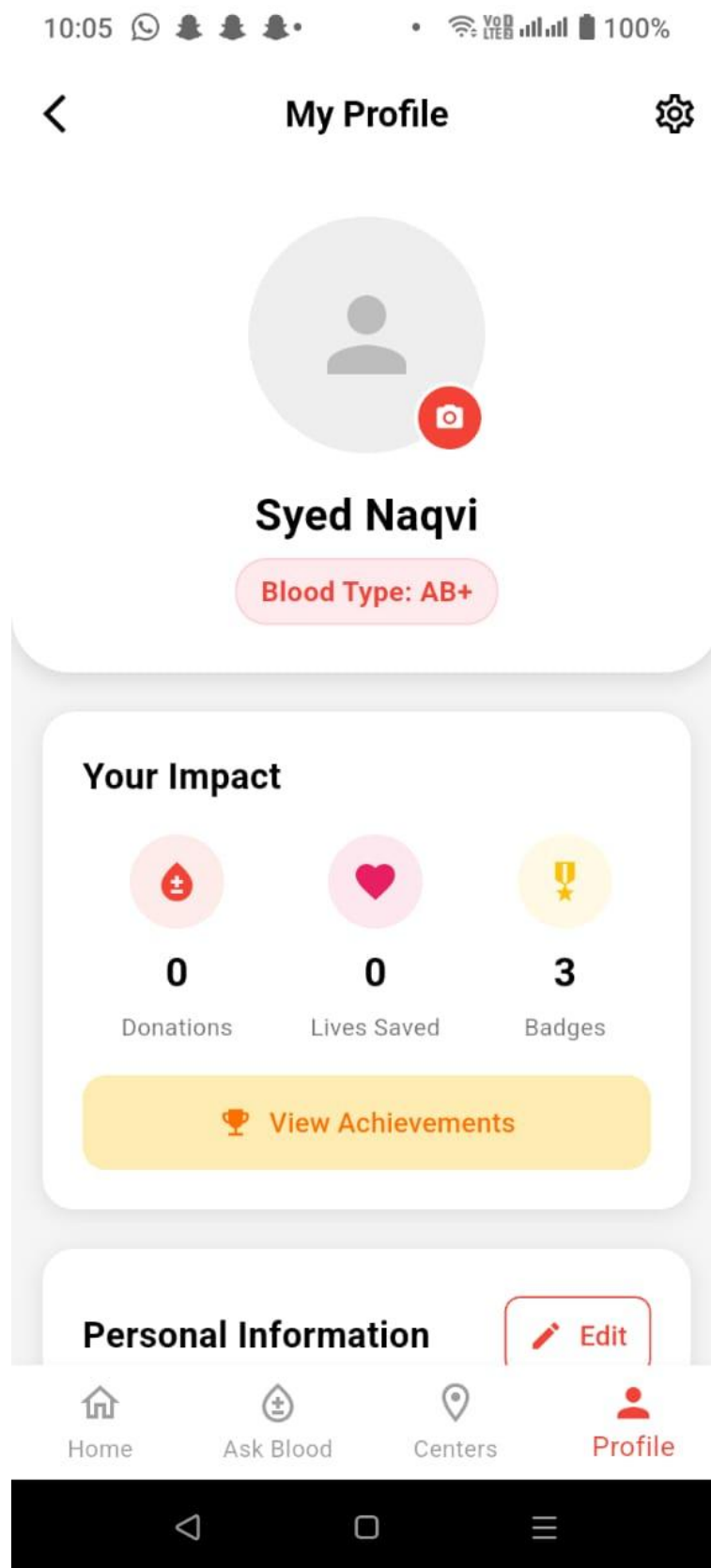Fig 4.6 represents the Nearest Blood Donation Centers Screen of *LifeFlow*.

Fig 4-6 Nearest Blood Donation Centers Screen of LifeFlow
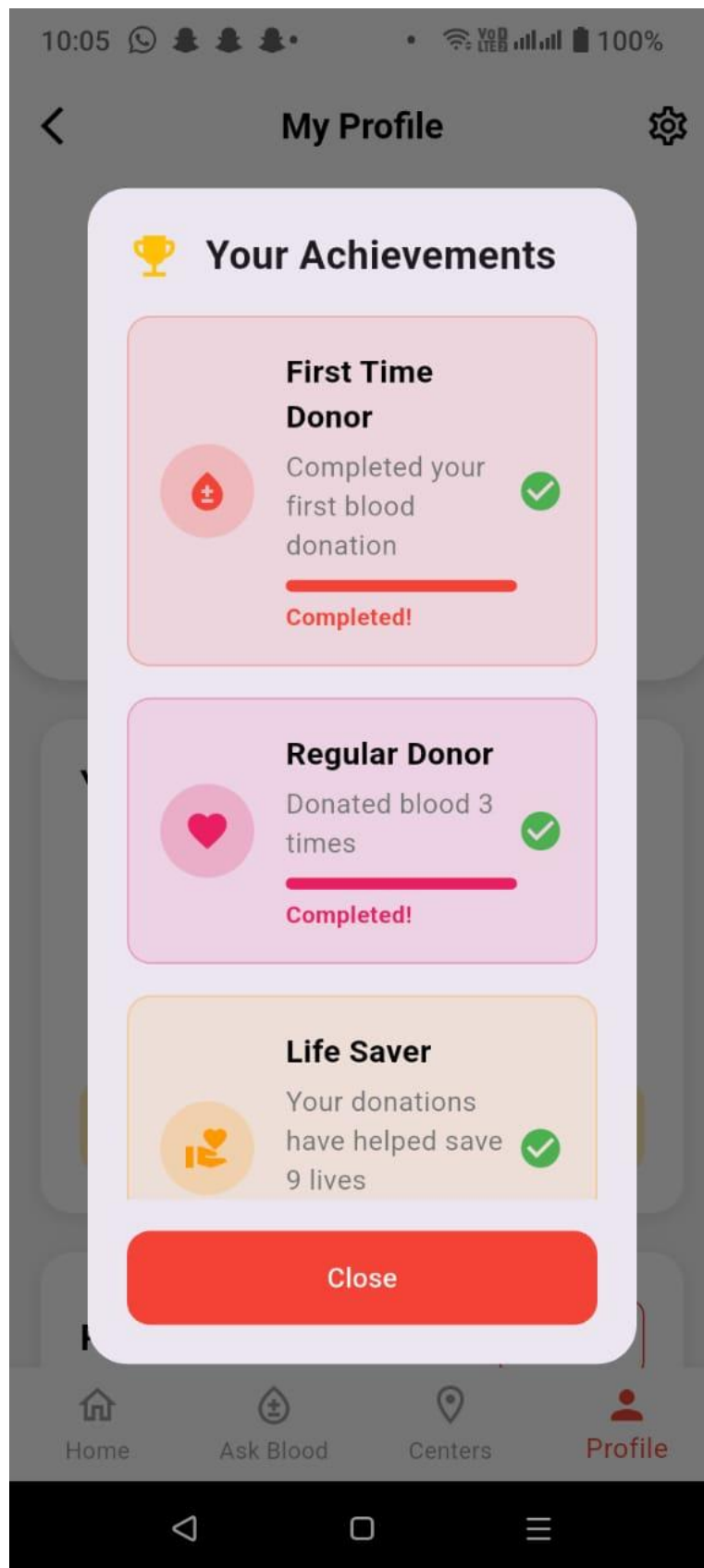
4.7 My Profile Screen

Fig 4.7 represents My Profile Screen of *LifeFlow*.

Fig 4-7 My Profile Screen of LifeFlow

4.7.1 Your Achievements Screen

Fig 4.7.1 represents Your Achievements Section of My Profile Screen.

Fig 4-7-1 Your Achievements Section of My Profile Screen

4.7.2 Personal Information Section

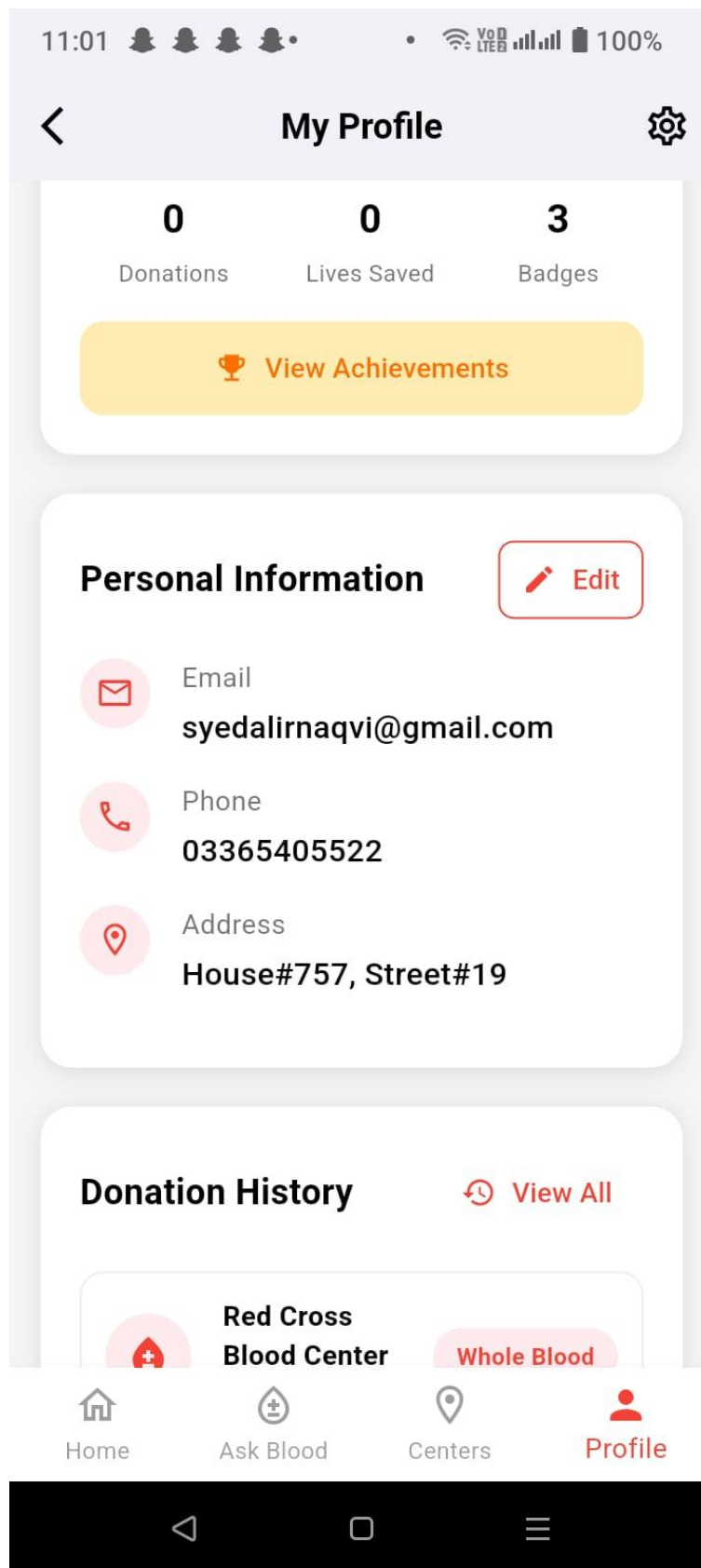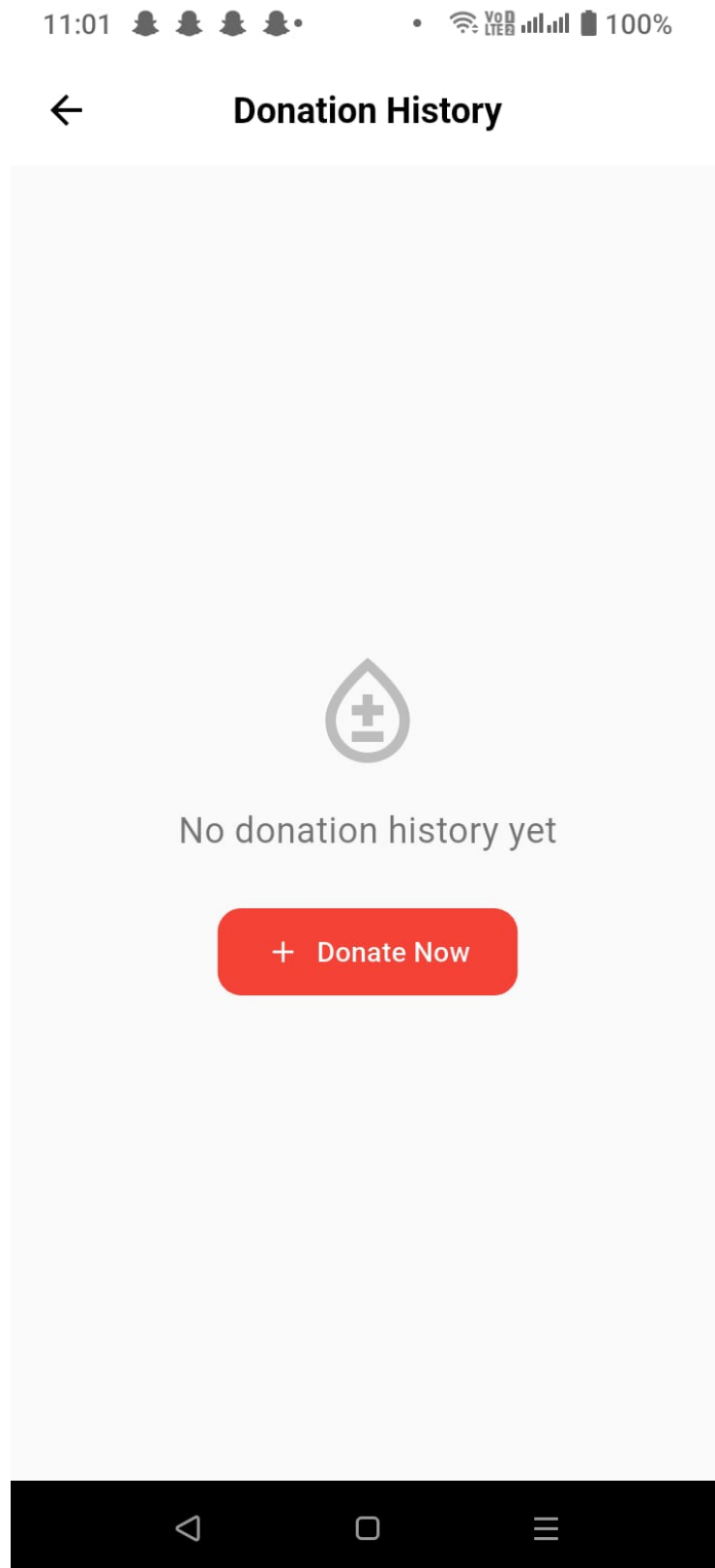Fig 4.7.2 represents Personal Information Section of My Profile Screen.

Fig 4-7-2 Personal Information Section of My Profile Screen
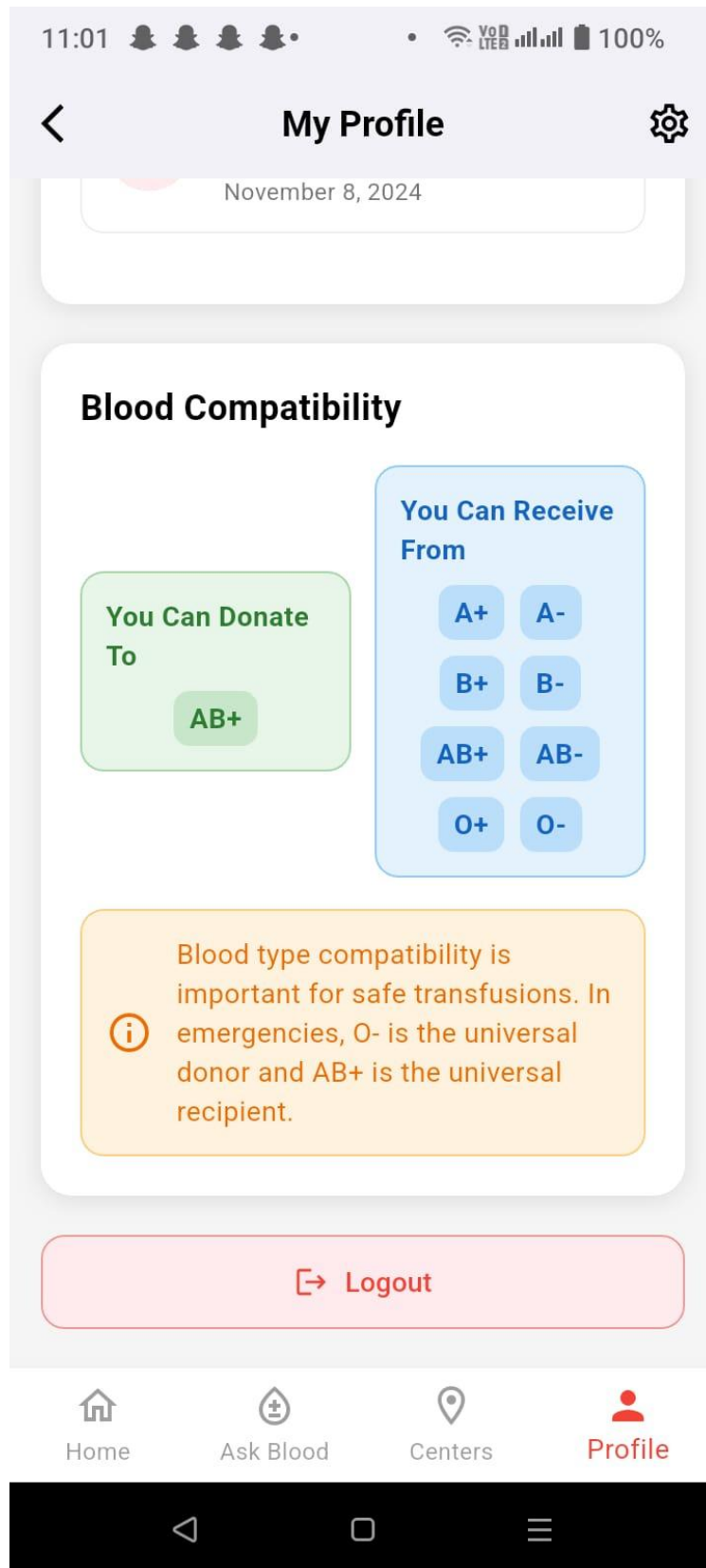
4.7.3 Donation History Section

Fig 4.7.3 represents Donation History Section of My Profile Screen.

Fig 4-7-3 Donation History Section of My Profile Screen
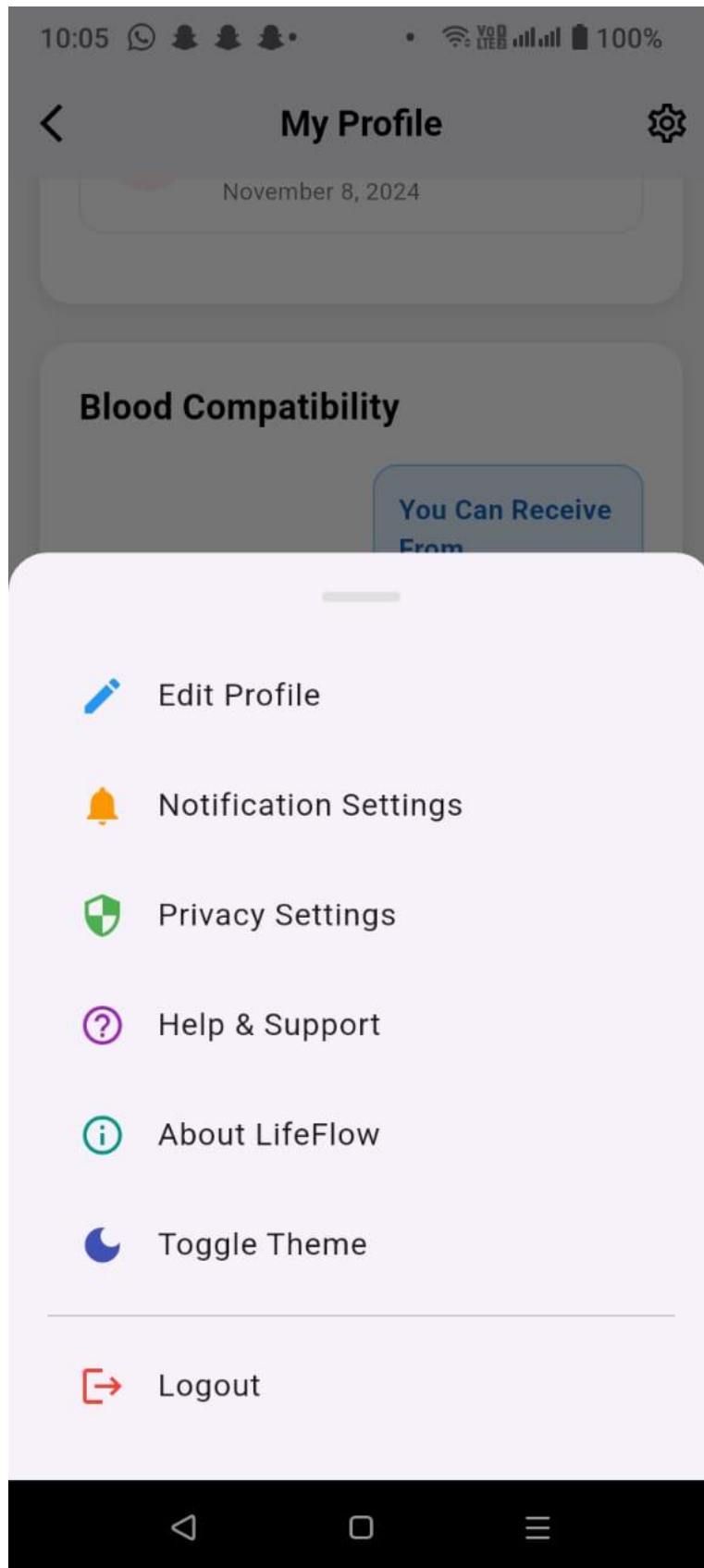
4.7.4 Blood Compatibility Section

Fig 4.7.4 represents Blood Compatibility Section of My Profile Screen.

Fig 4-7-4 Blood Compatibility Section of My Profile Screen
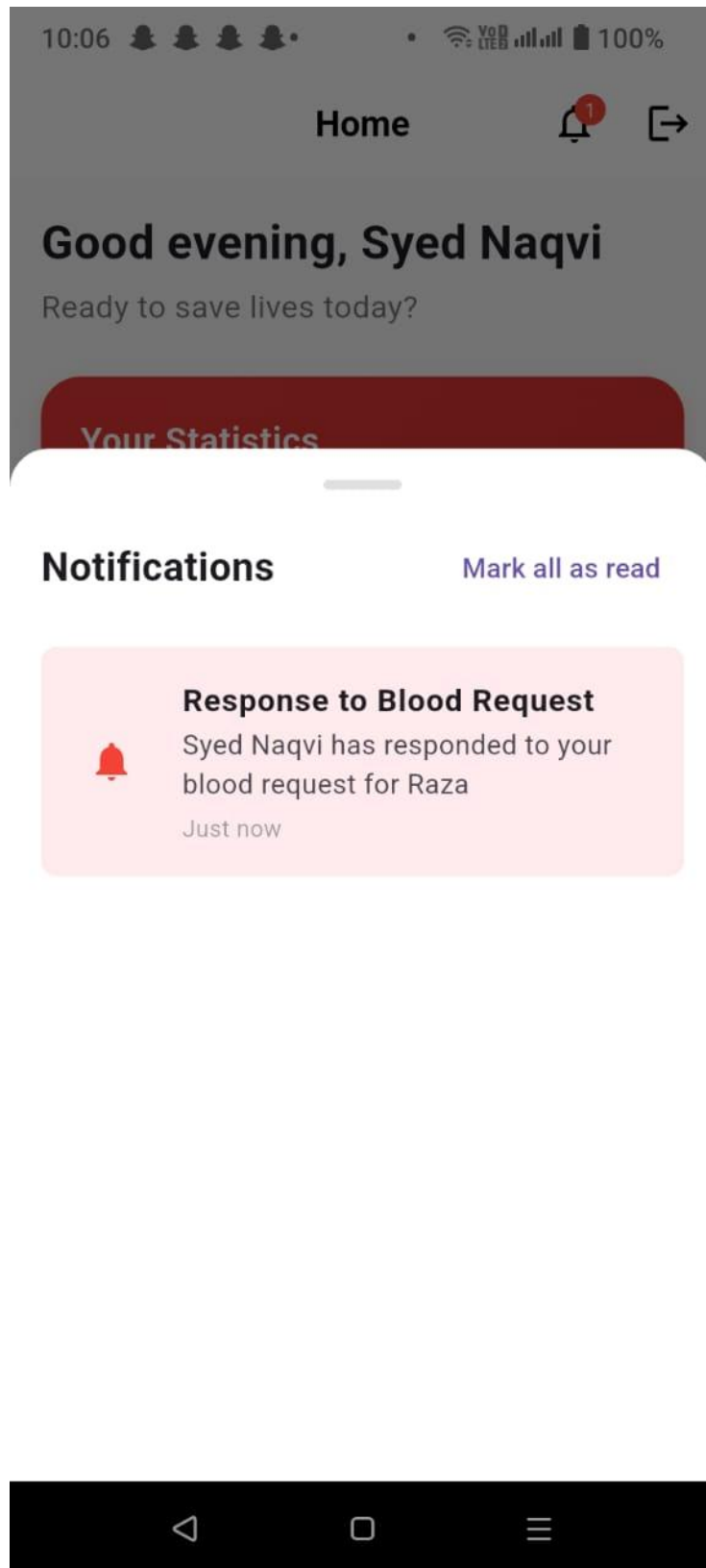
4.8 Settings Screen

Fig 4.8 represents Settings Screen of *LifeFlow*.

Fig 4-8 Settings Screen of LifeFlow

4.9 Notifications Screen

Fig 4.9 represents Notifications Screen of *LifeFlow*.

Fig 4-9 Notifications Screen of LifeFlow