

Blood Bank

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Github Link:

<https://github.com/nidhikumar/blood-bank/tree/branch-nidhi>

The above link contains our final code the readme file has all the screenshots of the UI

1) Does it accomplish the stated objective?

The main objective of the project is to create a community based blood bank application that connects donors and hospitals seamlessly. This objective is met through the implementation of several key functionalities as listed below.

- 1. Blood Donation Requests:** Hospitals could fill out forms specifying the required blood group, quantity, and description. This information is sent to users, notifying potential donors about the need. This comes in handy during emergency situations.
- 2. Event Creation:** Hospitals can create events which will then be displayed to donors thus engaging the community and organizing blood donation drives.
- 3. Nearby Hospitals:** Users can find hospitals within a 5-mile radius using latitude longitude calculations. It's a simple algorithm that we developed, ensuring that users can locate nearby hospitals quickly.
- 4. Google Maps Integration:** Users can open Google Maps with a hospital's address, which helps in easy navigation. This happens through the click of a button.
- 5. Donor List:** Hospitals have access to a list of donors, which is updated automatically as new donors sign up.
- 6. Role-based UI and Functions:** Different user interfaces and functionalities are provided for donors and hospitals, thus differentiating based on access controls.
- 7. Secure Authentication:** Passwords are encrypted using Firebase's standard encryption method, ensuring user security.

These features collectively contribute to achieving the goal of facilitating quick and efficient communication between donors and hospitals, particularly in emergency situations.

Please note that we were not able to implement email notifications as all the providers are paid, thus we added a live feed in the app which will have all new blood request notifications. If this product were to be launched, we could add a paid email service or also push notifications in the app.

2) Does it deliver on the “value proposition”?

The value proposition of the application lies in addressing the decline in blood donations by enhancing local community engagement and enabling real-time communication between hospitals and potential donors. The implemented features deliver on this proposition:

1. Real-time Notifications: When a blood donation request is made, notifications are sent to users, ensuring timely awareness and response. In our current implementation it all be shown in the live feed in the home page.

2. Local Engagement: By displaying nearby hospitals and creating community events, the app fosters local involvement and encourages people to participate in blood donation drives.

3. Efficient Communication: Hospitals can reach out to a broad audience quickly through the app, ensuring that emergency blood needs are communicated effectively.

4. Accessibility: The user-friendly design and the integration with Google Maps make it easy for users to navigate and respond to requests.

The combination of these functionalities ensures that the app is not only useful for hospitals but also beneficial for the general public, thus delivering on its value proposition of enhancing blood donation rates and improving emergency response.

3) Does it respect user privacy/is it secure?

User privacy and security are critical aspects of this application, and the project addresses these effectively:

1. Password Encryption: Passwords are encrypted using Firebase's standard encryption methods, which ensures that user credentials are stored securely.

2. Authentication: The app uses Firebase Authentication for secure login and session management, protecting user data and preventing unauthorized access.

3. Data Handling: User data, including personal information and location data, is handled securely, adhering to best practices in data privacy.

4. Role-based Access Control: Different functionalities are provided based on user roles (donor or hospital), ensuring that sensitive operations are restricted to authorized users.

These measures collectively ensure that the application respects user privacy and maintains high security standards.

4) Does it have proper app lifecycle/state management?

The app demonstrates proper lifecycle and state management through several key practices:

1. Stateful Widgets: The use of stateful widgets ensures that the UI can respond dynamically to changes in the application state.

2. Lifecycle Methods: Methods like `'onCreate()'`, `'onStart()'`, `'onResume()'`, and `'onPause()'` are used effectively to manage the app's lifecycle, ensuring that the app behaves correctly in response to different states and user interactions.

3. State Mutation and `setState()`: The `'setState()'` method is used to handle state changes and update the UI. For example, when a user interacts with a text field or makes a donation, `'setState()'` ensures that the UI reflects the new state.

4. `TextEditingController`: This handles the state of text input fields, ensuring that the app can manage user input and validation effectively.

These practices ensure that the app provides a smooth and responsive user experience, handling state changes and lifecycle events efficiently.

5) Does it address at least three additional challenges (other than privacy and state management) unique to mobile app development?

The project addresses several additional challenges unique to mobile app development:

1. Scalability and Performance:

- **Database Optimization:** Efficient database queries and the use of caching mechanisms ensure that the app performs well, even under high load. We have done these in our database setup in firebase.

2. Geolocation and Mapping::

- **Google Maps Integration:** The app uses Google Maps to provide location-based services, helping users find nearby hospitals and navigate to them easily.
- **Lat-Long Calculation:** An algorithm calculates the distance between the user and hospitals, ensuring accurate results within a 5-mile radius.

3. User Adoption and Engagement:

- **Notifications:** Push notifications and emails keep users engaged and informed about urgent blood donation needs and upcoming events. In our current implementation it all be shown in the live feed in the home page.
- **User-Friendly Design:** The intuitive design and clear navigation enhance the user experience, encouraging regular use and engagement.

4. Input Validation:

- **Regex Validation:** Input validations using regex ensure that user inputs are correct and prevent errors.
- **Age Validation:** Specific validations for donor eligibility (example: minimum age of 18) ensure compliance with donation guidelines.

By addressing these challenges, the app ensures reliability, ease of use, and robust performance, making it a comprehensive solution for the intended purpose.

6) Does it have a good user experience?

The project provides a good user experience through several design and functionality choices:

1. Intuitive Interface: The app's interface is designed to be user-friendly, with clear navigation and well-organized information. Users can easily sign up, log in, find nearby hospitals, and respond to blood donation requests.

2. Role-Based Views: Different views and functionalities for donors and hospitals ensure that users see only relevant information and options, making the app easier to use.

3. Visual Feedback: Screenshots in our github readme demonstrate that the app provides visual feedback to users, such as showing formatted time and date for events, lists of donors, and details of events.

4. Accessibility: The integration with Google Maps and clear navigation options enhance the accessibility of the app, making it easy for users to find and reach hospitals.

Based on the above features and with feedback from our testers as listed in checkpoint 4, we believe our applications provide a good user experience.