**BloodLink Project Proposal**

**Project Name:** BloodLink **Project Duration:** 10 Weeks **Team Members:**

* **Souvik:** Backend Development & DevOps
* **Biki:** Delivery Personnel's App & Patients' App Frontend Development
* **Sugata:** Patients' Web & Blood Bank Dashboard Frontend Development, Map Integration
* **Spandan:** Admin Dashboard Frontend Development & Support for Blood Bank Dashboard

**Week 1: Project Kick-off & Planning**

**Tasks:**

* **Project Kick-off Meeting:** Discuss project scope, objectives, and deliverables.
* **Define User Stories:** Break down features into user stories**.**
* **Technology Stack Finalization:** Confirm the tech stack for all components.
* **Architecture Design:** Souvik to design system architecture (Microservices, databases, APIs).
* **UI/UX Design Initiation:**
  + **Biki, Sugata, Spandan:** Start wireframing and designing the UI for respective components.

**Deliverables:**

* **Finalized user stories and architecture diagram.**
* **Initial wireframes for the Patients' Web, Blood Bank Dashboard, Admin Dashboard, and Delivery Personnel's App.**

**Week 2: Backend Setup & UI/UX Finalization**

**Tasks:**

* **Backend Development:**
  + **Souvik:** Set up Node.js server, create API endpoints for authentication, and design the database schema (MongoDB).
* **UI/UX Finalization:**
  + **Biki:** Finalize UI/UX for Delivery Personnel's App and Patients' App.
  + **Sugata:** Finalize UI/UX for Patients' Web and Blood Bank Dashboard.
  + **Spandan:** Finalize UI/UX for Admin Dashboard.

**Deliverables:**

* **Basic backend server setup with initial API endpoints.**
* **Finalized UI/UX designs for all frontend components.**

**Week 3: Frontend Development Kick-off & API Development**

**Tasks:**

* **Frontend Development:**
  + **Biki:** Start building the Delivery Personnel's App and Patients' App using Java, XML and Kotlin.
  + **Sugata:** Start building the Patients' Web frontend using React/Next.
  + **Spandan:** Start building the Admin Dashboard using React/Next and support Sugata with the Blood Bank Dashboard.
* **Backend API Development:**
  + **Souvik:** Develop APIs for user authentication, blood inventory management, and order processing.

**Deliverables:**

* **Initial development of the Delivery Personnel's App, Patients' App, Patients' Web, and Admin Dashboard.**
* **Developed APIs for authentication and blood inventory management.**

**Week 4: Continued Frontend Development & Real-time Communication**

**Tasks:**

* **Frontend Development:**
  + **Biki:** Continue developing the Delivery Personnel's App (map integration, task management, search, and filtering, ordering blood) and Patients' App.
  + **Sugata:** Continue developing the Patients' Web (map integration, task management, search, filtering, ordering blood).
  + **Spandan:** Continue developing the Admin Dashboard (user management, reporting).
* **Real-time Communication Setup:**
  + **Souvik:** Implement WebSockets/Socket.io for real-time updates between blood banks, admin, and delivery personnel.

**Deliverables:**

* **Progress on frontend components with basic functionalities implemented.**
* **Real-time communication system setup.**

**Week 5: Integration of APIs with Frontend & Blood Bank Dashboard Development**

**Tasks:**

* **API Integration:**
  + **Biki:** Integrate APIs with the Delivery Personnel's App and Patients' App (order updates, delivery tracking).
  + **Sugata:** Integrate APIs with the Patients' Web (order placement, status tracking).
  + **Spandan:** Integrate APIs with the Admin Dashboard.
* **Blood Bank Dashboard:**
  + **Sugata & Spandan:** Begin development of the Blood Bank Dashboard.

**Deliverables:**

* **API integration with Delivery Personnel's App, Patients' App, Patients' Web, and Admin Dashboard.**
* **Initial development of the Blood Bank Dashboard.**

**Week 6: Advanced Features & Push Notifications**

**Tasks:**

* **Advanced Features:**
  + **Biki:** Implement advanced features in the Delivery Personnel's App (push notifications, task updates) and Patients' App.
  + **Sugata:** Implement advanced search and filtering features in the Patients' Web.
  + **Spandan:** Implement advanced reporting and analytics features in the Admin Dashboard.
* **Push Notifications:**
  + **Souvik:** Integrate Firebase Cloud Messaging (FCM) for sending notifications to the Delivery Personnel's App and Patients' App.

**Deliverables:**

* **Advanced features in the Delivery Personnel's App, Patients' App, Patients' Web, and Admin Dashboard.**
* **Push notification system implemented.**

**Week 7: Testing & QA**

**Tasks:**

* **Unit Testing:**
  + **Souvik:** Write and run unit tests for backend APIs.
  + **Biki, Sugata, Spandan:** Write and run unit tests for their respective frontend components.
* **Integration Testing:**
  + **Entire Team:** Conduct integration testing to ensure all components interact seamlessly.
* **Bug Fixes:** Address any issues found during testing.

**Deliverables:**

* **Completed unit tests for all components.**
* **Completed integration tests and bug fixes.**

**Week 8: Performance Optimization & DevOps Setup**

**Tasks:**

* **Performance Optimization:**
  + **Souvik:** Optimize backend APIs for better performance and scalability.
  + **Biki, Sugata, Spandan:** Optimize frontend components for speed and efficiency.
* **DevOps Setup:**
  + **Souvik:** Set up CI/CD pipelines using Jenkins or GitHub Actions. Implement containerization with Docker and deploy to AWS/GCP using Kubernetes.

**Deliverables:**

* **Optimized codebase for all components.**
* **CI/CD pipelines and containerized deployment setup.**

**Week 9: Final Touches & Documentation**

**Tasks:**

* **Final Touches:**
  + **Entire Team:** Perform final refinements on UI/UX, backend services, and frontend components.
* **Documentation:**
  + **Souvik:** Document API endpoints, deployment procedures, and backend architecture.
  + **Biki, Sugata, Spandan:** Document frontend components, user interfaces, and usage guidelines.

**Deliverables:**

* **Finalized codebase and polished UI/UX.**
* **Comprehensive project documentation.**

**Week 10: Deployment and future planning**

**Tasks:**

* **Deployment:**
  + **Entire Team:** Deploy the final version of the BloodLink platforms.
* **Future Planning:**
  + Plan for future updates and new features based on user feedback.

**Deliverables:**

* **Successful launch of the BloodLink platform.**
* **Ongoing monitoring and support post-launch.**

**Additional Features**

**1. Emergency Alerts**

**Workflow:**

* **Triggering Alerts:**
  + When a patient urgently needs blood and the required blood type is in low supply, an alert is triggered.
* **Identifying Nearby Donors:**
  + Use geolocation data to identify donors within a 7 km radius of the patient.
* **Sending Alerts:**
  + Send real-time push notifications or SMS alerts to eligible donors.
* **Donor Response:**
  + Allow donors to accept or decline the request via the app.

**Responsibilities:**

* **Backend:**
  + Souvik to handle real-time communication and alert triggering.
* **Frontend (Web & App):**
  + Sugata to implement donor location tracking and alert responses on the Patients' Web.
  + Biki to implement donor response functionality on the Patients' App using Java, XML and Kotlin.

**Technologies Needed:**

* **Real-Time Communication:**
  + Firebase Cloud Messaging (FCM) or Twilio for push notifications and SMS.
  + WebSockets/Socket.io for real-time donor-patient communication.
* **Geolocation:**
  + Google Maps API for tracking donor locations.
* **Backend:**
  + Node.js and Express.js for handling alerts and communication.

**3. Donation History**

**Workflow:**

* **Tracking Donations:**
  + Maintain a log of all blood donations by each donor.
* **Display History:**
  + Display the donor’s blood donation history in a user-friendly format on their app and web profile.
* **Data Insights:**
  + Provide insights such as total donations, frequency, and upcoming eligibility.

**Responsibilities:**

* **Backend:**
  + Souvik to manage donation records and data storage.
* **Frontend (Web & App):**
  + Sugata to implement donation history view on the Patients' Web.
  + Biki to implement donation history view on the Patients' App using Java, XML and Kotlin.

**Technologies Needed:**

* **Data Storage:**
  + MongoDB for storing donation records.
* **Frontend Development:**
  + React/Next for Patients' Web.
  + Java, XML and Kotlin for Patients' App.

**4. Payment Gateway Integration**

**Workflow:**

* **Payment Processing:**
  + Integrate a payment gateway to handle donations and payments for blood bank services.
* **Transaction History:**
  + Maintain records of all transactions and donations**.**
* **Receipt Generation:**
  + Generate and send receipts to users upon successful transactions.

**Responsibilities:**

* **Backend:**
  + Souvik will add payment history/details to database.
* **Frontend (Web & App):**
  + Sugata to implement payment functionality on the Patients' Web.
  + Biki to implement payment functionality on the Patients' App using Java, XML and Kotlin.

**Technologies Needed:**

* **Payment Gateway Integration:**
  + Stripe API or PayPal API or RazorPay API for payment processing.
* **Backend Processing:**
  + Node.js and Express.js for saving payment details and handling the transaction records.