PUNJAB COLLEGE
LAHORE (MAIN)

Final Project Proposal

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TABLE OF CONTENTS

1. INTRODUCTION:

Blood donation is a crucial aspect of the healthcare system, as it helps save lives. However, there is still a significant shortage of blood in many areas, which puts lives at risk. To address this issue, a mobile application can be developed that gathers volunteers on one platform and alerts them whenever the hospital of their nearest wants blood.

Additionally, the application can send messages to motivate people to install it and donate blood.

1.1. TITLE:

BLOOD DONATION SYSTEM (BLOOD UNITY)

1.2. PROJECT OVERVIEW STATEMENT:

The aim of this project is to develop a mobile application that gathers volunteers who want to donate blood on one platform and alerts them whenever a hospital near them needs blood. The application will also have a feature that sends messages to people who do not know about the application to encourage them to install it and donate blood.

The application will have a user-friendly interface that will enable users to register as donors and specify their blood type and location. Hospitals, blood banks, and the people in need will also be able to register on the application and update their blood inventory levels in real-time. Whenever a hospital, blood bank and the people in need requires blood, They login in this app as a needy person and fill the form then the application will send an alert to all registered donors with the required blood type who are located within a certain distance from the hospital. Donors can choose to accept or decline the request based on their availability and willingness to donate.

Another key feature of the application will be the ability to track blood donation history. Users will be able to see their previous blood donation records and the impact of their donations on the community.

1.3. PROJECT OVERVIEW STATEMENT TEMPLATE:

Project Title: Blood Donation System

Group Leader: Hajra Khan Lodhi

Project Members:

Name	Registration #	Email Address	Signature
Hajra Khan Lodhi	LEF19EBSIT083	hajrakhanlodhi24@gmail.com	
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Project Goal: Provide a convenient and user-friendly blood donation system for volunteers and the people in need. Raise awareness about the importance of blood donation and encourage more people to donate blood regularly.

Objectives:

Sr.#	
1	Develop a user-friendly mobile application that enables donors to register their blood type, location, and availability to donate blood.
2	Improve access to blood for patients in need and reduce the risk of blood shortages.
3	Promote a culture of blood donation and save lives through this life-saving act

Project Success criteria: User Satisfaction, Performance, Functionality and User Engagement.

Assumptions, Risks and Obstacles: No

Organization Address (if any): Punjab College Lahore Campus 9

Type of project: ☐ Research ☒ Development

Target End users: Donors, Blood Donation Centers, Hospitals and Medical Facilities, Blood Recipients.

Development Technology: ☐ Object Oriented ☒ Structured

Platform: ☐ Web based ☐ Distributed
☐ Desktop based ☐ Setup Configurations
☒ Other Mobile Based

Suggested Project Supervisor: M.Shoaib

Approved By: M. Shoaib
Date: 16/03/2023

1.4. PROJECT GOALS AND OBJECTIVE:

The project goals and objectives of a blood donation system mobile-based can be:

1.4.1. Goals:

- Develop a user-friendly mobile application that enables donors to register their blood type, location, and availability to donate blood.
- Provide volunteers with a platform for donating blood
- Alert registered donors who are located within a certain distance from a hospital whenever blood is required.
- Raise awareness about the importance of blood donation through targeted messaging to people who have not yet installed the application.
- Facilitate the organization of blood donation campaigns and encourage users to participate in them.
- Create a system for tracking blood donation history to encourage repeat donations.
- Improve access to blood for patients in need and reduce the risk of blood shortages.
- Increase the number of people who donate blood regularly.
- Promote a culture of blood donation and save lives through this life-saving act.

1.4.2. Objectives:

- Develop a user-friendly mobile application that enables donors to easily register their blood type, location, and availability to donate blood.
- Test and optimize the application for different devices and screen sizes to ensure a seamless user experience.
- Gather customer feedback and incorporate it into the system to continuously improve the user experience.

1.5. HIGH LEVEL SYSTEM COMPONENTS:

A high-level system design for a blood donation system would typically include the following components:

1.5.1. User Interface:

This component will be responsible for providing a user-friendly interface for the customers to interact with the application. It includes the mobile application interface for donors to register, search for nearby blood donation centers and receive alerts.

1.5.2. Donor Management System:

This component manages the donor database and includes features such as donor registration and donor profiles that store information such as blood type, location, and availability to donate blood.

1.5.3. Analytics and Reporting System:

This component provides data analytics and reporting functionality to monitor blood inventory levels, donor registration and donor satisfaction. It includes features such as dashboard and reporting tools.

1.5.4 Notification Module:

This module sends notifications to registered donors and volunteers when their blood type or availability is required by hospitals or blood banks. The system can also send reminders to donors and volunteers.

1.6. LIST OF OPTIONAL FUNCTIONAL UNIT:

The following optional functional units can be included in a blood donation system to enhance its capabilities:

1.6.1. Search Filters:

A search filter is an functional unit that helps users find specific blood donation centers or events based on their preferences. These filters can include search parameters such as location, blood type, donation event date, and availability.

1.6.2 Donor Recognition:

This functional unit recognizes donors for their contributions, including providing certificates, awards, or other forms of recognition.

1.6.3 Social Media Integration:

Social media integration enables users to share their donation experiences on social media, promoting blood donation campaigns and raising awareness about the importance of blood donation.

1.6.4 Ratings and Reviews:

Providing valuable feedback to the organizers and helping other users make informed decisions about where to donate.

1.6.5 User Authentication:

A secure authentication system can be implemented to ensure that user information is protected and prevent unauthorized access to donor data.

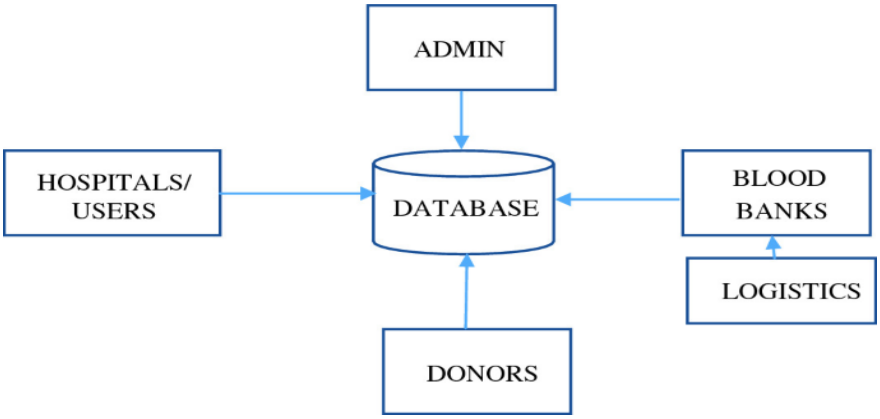
1.7. EXCLUSION:

Some features and functionalities may not be necessary or feasible for a blood donation system, depending on the scope and requirements of the project. Here are some of what could be excluded.

- **Payment Processing:** If the blood donation management system is being developed for a non-profit organization, payment processing may not be necessary as donations are usually made in the form of blood rather than money.
- **Donor Rewards Program:** While a donor rewards program can be an effective way to incentivize repeat donations, it may not be feasible for smaller organizations with limited resources.
- **Donor Recognition:** While recognizing donors for their contributions is important, providing physical certificates or awards may not be feasible for organizations with limited resources.
- **Donor Education:** While providing educational resources on blood donation is important, it may not be necessary for donors who are already well-informed about the process.

1.8. APPLICATION ARCHITECTURE:

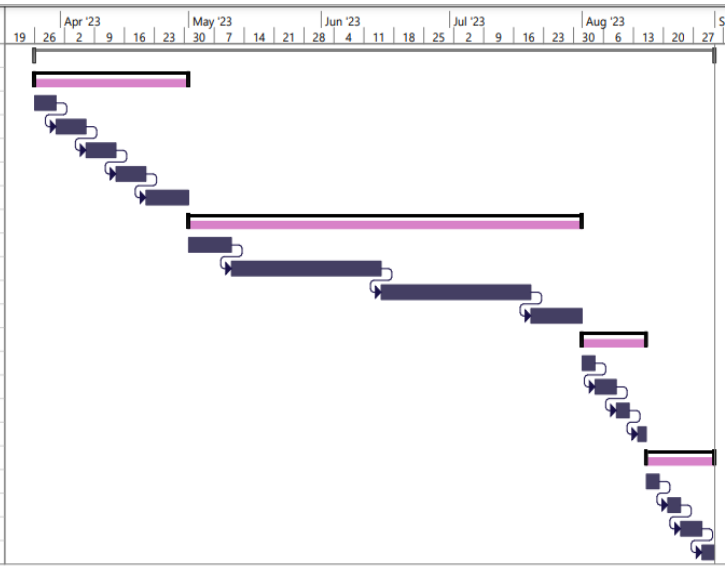
The application architecture for a Blood Donation Management system mobile app would typically follow a client-server architecture.



1. The presentation layer provides a user interface for people to interact with the system. It includes web pages and mobile applications that allow users to request blood donations, search for nearby donation centers, and view their own donation history.
2. The application layer is responsible for managing the system's business logic. It includes the modules and services that support the core functionality of the system, such as donor registration and donation event management.
3. The data layer manages the system's data storage and retrieval. It includes the database management system (DBMS) and other data storage and retrieval mechanisms such as file systems or cloud storage.

1.9. GANTT CHART:

ID	Task Name	Duration	Start	Finish
0	**Parking Reservations Mobile App**	**114 days**	**Sun 3/26/23**	**Thu 8/31/23**
1	**Project planning and research**	**27 days**	**Sun 3/26/23**	**Sun 4/30/23**
2	Define project scope	5 days	Sun 3/26/23	Thu 3/30/23
3	Identify project requirements	5 days	Fri 3/31/23	Thu 4/6/23
4	Develop project plan	5 days	Fri 4/7/23	Thu 4/13/23
5	Gather requirements	5 days	Fri 4/14/23	Thu 4/20/23
6	Develop requirements doc	7 days	Fri 4/21/23	Sun 4/30/23
7	**System Design and development**	**66 days**	**Mon 5/1/23**	**Mon 7/31/23**
8	Create UI design	8 days	Mon 5/1/23	Wed 5/10/23
9	Write code	25 days	Thu 5/11/23	Wed 6/14/23
10	Create and Link backend	25 days	Thu 6/15/23	Wed 7/19/23
11	Conduct unit testing	8 days	Thu 7/20/23	Mon 7/31/23
12	**Testing and debugging**	**11 days**	**Tue 8/1/23**	**Tue 8/15/23**
13	Conduct functional testing	3 days	Tue 8/1/23	Thu 8/3/23
14	Conduct non-functional testing	3 days	Fri 8/4/23	Tue 8/8/23
15	Test databae & payment gateway	3 days	Wed 8/9/23	Fri 8/11/23
16	Identify and track defects	2 days	Mon 8/14/23	Tue 8/15/23
17	**Development and Launch**	**12 days**	**Wed 8/16/23**	**Thu 8/31/23**
18	Release Planning	3 days	Wed 8/16/23	Fri 8/18/23
19	Building and package	3 days	Mon 8/21/23	Wed 8/23/23
20	Testing and validation	3 days	Thu 8/24/23	Mon 8/28/23
21	Launch and ensure Operational	3 days	Tue 8/29/23	Thu 8/31/23



1.10. SOFTWARE AND HARDWARE SPECIFICATION:

These are the software and hardware specification for a blood donation system mobile app:

1.10.1. Software specification:

i. **Mobile Application Platform:** The mobile app will be developed for both Android and iOS platforms, using native technologies or cross-platform frameworks and we will be using React Native.

ii. **User Authentication:** The app will have a user authentication system to register and login using email or phone number.

iii. **User Interface (UI) Design:** The mobile app's UI should be designed with a user-friendly interface, easy navigation, and appealing graphics. React Native Paper Design for cross platform are commonly used as design guidelines for Android and iOS apps, respectively.

iv. **Database Management System:** The app should use a reliable and scalable database management system like MySQL or MongoDB to store and retrieve data.

v. **API Integration:** The app should integrate with APIs from external systems like electronic health records, payment gateways, and geolocation services.

vi. **Notifications:** The app will send alert notifications to volunteers.

vii. **Testing Tools:** Testing is an essential part of mobile app development. For Android-based development, Android Studio and Expo to provides built-in tools for unit testing and UI testing.

viii. **Security:** Mobile apps should be developed with robust security measures in place to protect user data and prevent unauthorized access. Common security measures include SSL encryption, and secure data storage techniques which will be provided by Firebase (SaaS).

1.10.2. Hardware Specification:

i. **Mobile Devices:** The system will require mobile devices such as smartphones or tablets to run the mobile app. The devices should have a minimum screen size of 4.7 inches and a resolution of at least 720 x 1280 pixels.

ii. **Operating System:** The mobile devices should run on Android 7.0 and iOS 12 operating system.

iii. **Processor:** The mobile devices should have a minimum processor of quad-core and clock speed of 1.0 GHz.

iv. **RAM:** The mobile devices should have a minimum of 2GB RAM to ensure smooth operation of the mobile app.

v. **Storage:** The mobile devices should have 300MB storage capacity to store the mobile app, user data, and cached data.

vi. **Internet Connectivity**: The mobile devices should have access to high-speed internet connectivity, either through Wi-Fi or cellular data, to enable the app to communicate with the back-end server and other components of the blood donation system.

vii. **Development Environment:** The development environment for Cross Platform based mobile app development should have a minimum of 8 GB RAM, a quad-core processor, and at least 10GB of free storage space.

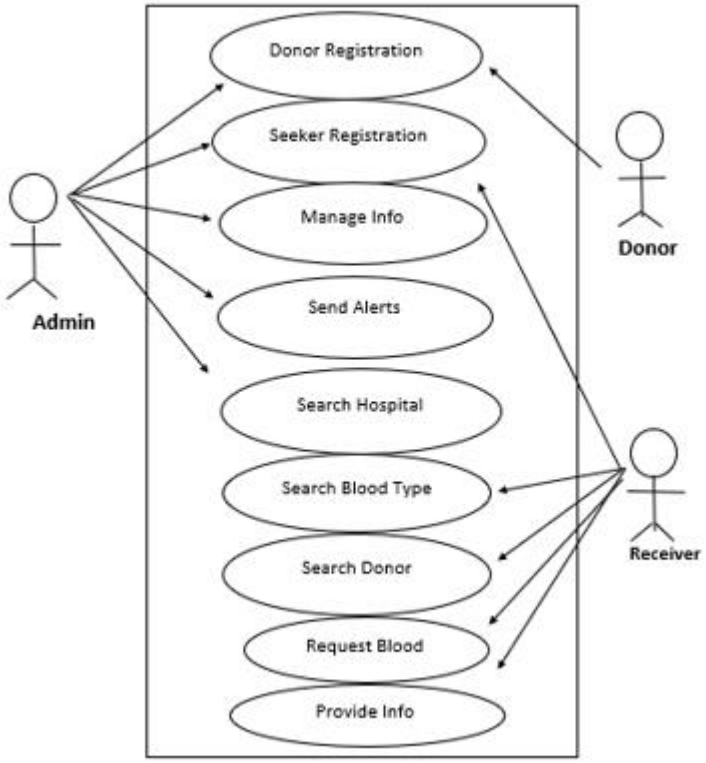
1.11. TOOLS AND TECHNOLOGIES USED WITH REASONING:

These tools and technologies that will be used in developing a blood donation system:

1.11.1. Designing Tool:

- **UML diagrams:** USE Case Diagram, Sequence Diagram, Activity Diagram and Class Diagram.

USE Case Diagram level 0:



- **The development process:** The tool support required for effectively working on the development process of a Blood Donation Management System mobile-based can include tools like Expo for React native app development.
- **Host (or development) platform(s):** The host platform for the development of a Blood Donation Management System mobile-based will be the development environment or Integrated Development Environment (IDE) used for coding the app, which will be Android Studio and VS code for developing Cross platform apps respectively. The host platform will be the Windows operating system used by the development team.

- **Target platform(s):** The target platform for Blood Donation Management System mobile-based will be Android and iOS operating systems since these are the most popular platforms for mobile devices.
- **The programming language(s) to be used:** React Native will be used for cross-platform development of the app.

1.11.2. Development Tool:

- **Mobile App Development Frameworks**: React Native: React Native is great for Cross platform development. It provides a slick, smooth and responsive user interface, while significantly reducing load time
- **Database Management Systems:** Firebase Real-time database will be used to store and manage user data. This database is using a JSON object No-SQL which will be used to store and sync data in real time.
- **Cloud Computing Services:** Firebase is a mobile development platform that provides a wide range of cloud computing services.
- **Push Notification Services:** Firebase Cloud Messaging (FCM) can be used for sending real-time updates to users about their alerts messages.