**BLOOD LINK: A MOBILE-BASED HYBRID BLOOD BANK FOR RED CROSS MUNTINLUPA CHAPTER**

A Capstone Project Presented to the Faculty of the

College of Information Technology and Computer Studies

Pamantasan ng Lungsod ng Muntinlupa

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Bachelor of Science in Information Technology

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**CHAPTER 1**

**INTRODUCTION**

**PROJECT CONTEXT**

The Mobile-Based Hybrid Blood Bank for Red Cross Muntinlupa Chapter is a strategic effort to modernize the blood bank system by integrating mobile technology. It aims to transform interactions between donors and recipients with the Red Cross Muntinlupa Chapter, making blood donation more accessible, efficient, and engaging through a hybrid system that combines a mobile app with traditional blood bank operations.

The primary problem addressed by this project is the inefficiency and limited accessibility of traditional blood banking systems. Challenges such as manual appointment scheduling, lack of real-time inventory updates, and difficulty in reaching potential donors highlight the need for a more streamlined and technology-driven approach to blood donation management.

The proposed project will develop a user-friendly mobile application interface specifically designed for blood donors and recipients. This application will enable users to easily register, schedule donation appointments, and receive timely notifications regarding blood donation campaigns and urgent supply needs. By integrating this mobile-based system with the existing blood bank infrastructure, seamless data flow and coordination will be achieved, enhancing overall efficiency and accessibility within the blood donation ecosystem.

The proposed Mobile-Based Hybrid Blood Bank system will benefit both donors and recipients within the Muntinlupa community. Donors will experience greater convenience in scheduling donations and receiving updates on blood supply needs. Recipients will benefit from improved access to blood and enhanced coordination between donors and the blood bank. This innovation aims to bridge the gap between supply and demand, ultimately saving lives and strengthening community healthcare infrastructure.

**PURPOSE AND DESCRIPTION**

The purpose of this capstone project is to design, develop, and implement a Mobile-Based Hybrid Blood Bank system for the Red Cross Muntinlupa Chapter. This system will revolutionize blood banking operations by integrating mobile applications with the existing centralized blood bank infrastructure. The envisioned system will enable users, both donors and recipients, to interact seamlessly with the blood bank, facilitating processes such as registration, appointment scheduling, real-time blood type availability checks, and participation in blood donation campaigns.

The power of mobile technology in this generation was continuo to widespread and aims to address key challenges faced by traditional blood bank systems, including limited accessibility, inefficient coordination, and lack of real-time information dissemination. The Mobile-Based Hybrid Blood Bank will empower users to actively participate in blood donation initiatives and contribute to saving lives within their community.

**OBJECTIVE OF THE STUDY**

**General Objective**

The main objective of this study is to develop and implement a Mobile-Based Hybrid Blood Bank system for the Red Cross Muntinlupa Chapter, integrating mobile technology with traditional blood banking operations to enhance accessibility, efficiency, and engagement in blood donation processes.

**Specific Objectives**

1. To design the system using the following features:
   1. Provides user login/register functionality to create and manage accounts.
   2. Provides form of Pre-screening Health Assessments for potential donors.
   3. Capable to manage scheduling for blood donation appointments.
   4. Capable to provides user notifications about donation opportunities and reminders.
   5. Provides a dashboard for real-time inventory updates that track the available blood units and its details.
   6. Provides user assistant functionality for communication between donors and recipients.
   7. Provides location services details to support users find nearby donation centers and events.
   8. Display educational resources on blood donation process and health tips.
   9. Report generation on donation trends, inventory levels, and user engagement.
2. To develop the system using React Native or JavaScript for mobile development, Tailwind CSS for styling, Node.js for the server, and MySQL for the database.
3. To test and improved the functionality of the system using Alpha and Beta Testing method.
4. To evaluate the performance of the system using ISO/ IEC 25010: 2011 Software Characteristics.
5. To implement the system to the Red Cross Muntinlupa Chapter.

**SCOPE AND LIMITATION**

The scope of this project encompasses the design, development, and deployment of the Mobile-Based Hybrid Blood Bank system specifically tailored for the Red Cross Muntinlupa Chapter. The system will include the following key features:

1. A mobile application interface for blood donors and recipients to interact with the blood bank system.
2. Integration with the existing centralized blood bank infrastructure to facilitate real-time data exchange.
3. Provides location services to assist users in locating donation centers and events.

However, it is important to note the limitations of this study:

1. The project will focus solely on the development and deployment of the mobile-based system and may not encompass broader organizational changes and staff attendance within the Red Cross Muntinlupa Chapter.
2. Integration with external systems beyond the scope of the existing blood bank infrastructure may require additional considerations and resources.
3. The study will not address challenges related to mobile device compatibility or internet connectivity, which may impact user accessibility**.**
4. This project supports only Android 10 and above and does not support iOS devices.