Software Requirements Specifications

Blood Donation Management App

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Definition of Terms, Acronyms and Abbreviations

Term	Description
BDMS	Blood Donation Management System
WHO	World Health Organizations
CPP	C Plus Plus
OOP	Object Oriented Programming
PCs	Personal Computers
OTP	One Time Password
CAPTCHA	Completely Automated Public Turing test to tell Computers and Humans Apart
OS	Operating System

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Section 1

1. Introduction

1.1 Purpose of Document

The purpose of this document is to describe the functional and non-functional requirements of BDMS. This document will explain the responsibilities of donors, recipients and admins.

1.2 Project Overview

The BDMS is designed to efficiently manage the entire process of blood donation from registration to blood distribution. This system is designed to reduce manual errors and for making timely availability of blood.

Software Usage:

- *This software will be used by donors, recipients, admins, hospitals and blood banks.*

Goals and Benefits:

- *The system aims to provide the efficient delivery of blood in normal and critical cases. It reduces manual errors, saves time and ensures timely availability of blood.*

1.3 Scope

The system aims to organize the process of blood donation by

- *Registering donors and creating their profiles*
- *Ensuring timely availability of blood*
- *Creating blood requests*
- *Tracking donation progress*

2. Overall System Description

System Environment

Development Environment:

- *This system will be developed using OOP in CPP.*

Operating Environment:

- ***Smartphones:*** *Android, iOS*
- ***Internet Environment:*** *Requires stable internet connection for login, notifications, searching donors and updating data.*

Anticipated users of the system:

Donors

- *Individuals who want to donate blood*
- *Age 18+*
- *Must meet health and eligibility criteria*
- *Will use the app to receive requests and update donation status*

Recipients

- *Patients or their family searching for blood*
- *Hospitals or clinics requesting blood for emergencies*
- *Will use the app to request blood, to search for donors and to track request status*

Admins

- *System administration and hospital staff*

Responsible for

- *Verifying donors and recipients accounts*
- *Managing emergencies*
- *Removing fake accounts*
- *Monitoring overall activities of the system*

Constraints

- *Requires stable internet connection*
- *GPS must be enabled for accurate donor search*
- *Limited battery usage on mobile devices*
- *Must follow WHO blood Safety guidelines, local health rules for donor eligibility and data protection laws*
- *Personal information must be encrypted*
- *Limited admin staff for verification*

Assumptions

The system assumes that

- *Users will provide accurate personal information*
- *Donors are honest about their health condition*
- *Users have access to smart phones and stable internet*
- *Admins will regularly monitor the system*
- *Hospitals or recipients will update their status after receiving the blood*
- *GPS and location services will function properly*

Dependencies

The system depends on

- *Google Maps for location-based search*
- *SMS/Email/OTP Service for user verification*
- *Mobile OS permissions (Location, Internet, Notifications)*

2.1 User characteristics

BDMS will have several types of users with different roles and priorities.

Critical User Classes

I. Donors

- *Donors are the most important users of the BDMS. They are individuals who donate blood to help the needy people. Donors register in the system by providing their personal details such as name, age, blood group, contact information and health status. Once registered, they can update their status for donation, receive notifications for blood request or emergencies and track their donation history. The active participation of donors is crucial for the system as the whole system depends upon the blood donated by donors and their immediate response to requests.*

II. Recipients

- *Recipients are individuals who request blood. Recipients register in the system by providing their personal details like name, age, blood group to submit blood requests and search for donors. They can track the request status and can cancel the request anytime. They can search for blood by providing blood group they need. They are important for system as core functionality of system depends upon their requests for blood, triggering notifications to donors.*

Non-Critical Users

I. Administration

- *Admins are the system administrators or authorized hospital staff responsible for managing the BDMS. Their responsibilities include verifying users, generating notifications and reports, monitoring emergency blood requests and removing fake accounts. Admins are not actively involved in donor-recipient conversations, but they play a significant role in ensuring the smooth operation, reliability and security of the system. Their involvement is important for maintaining trust.*

2.2 Operating environment

This system can run on any digital device e.g. smart phones, laptops etc.

2.3 System constraints

Constraints may include the following:

- ***Software constraints***

  Users will need to install the BDMS app because it's not a web-based application.

- ***Hardware constraints***

  BDMS will be available on any smartphone (android, iOS), laptops and other compatible devices.

- ***Cultural constraints***

  BDMS is a small level project limited only to Sargodha. No cultural constraints as all languages which are spoken in Pakistan will be available in the system. Users can tailor the language according to their own needs.

- ***Legal constraints***

  BDMS must follow the ethical rules of WHO and local government.

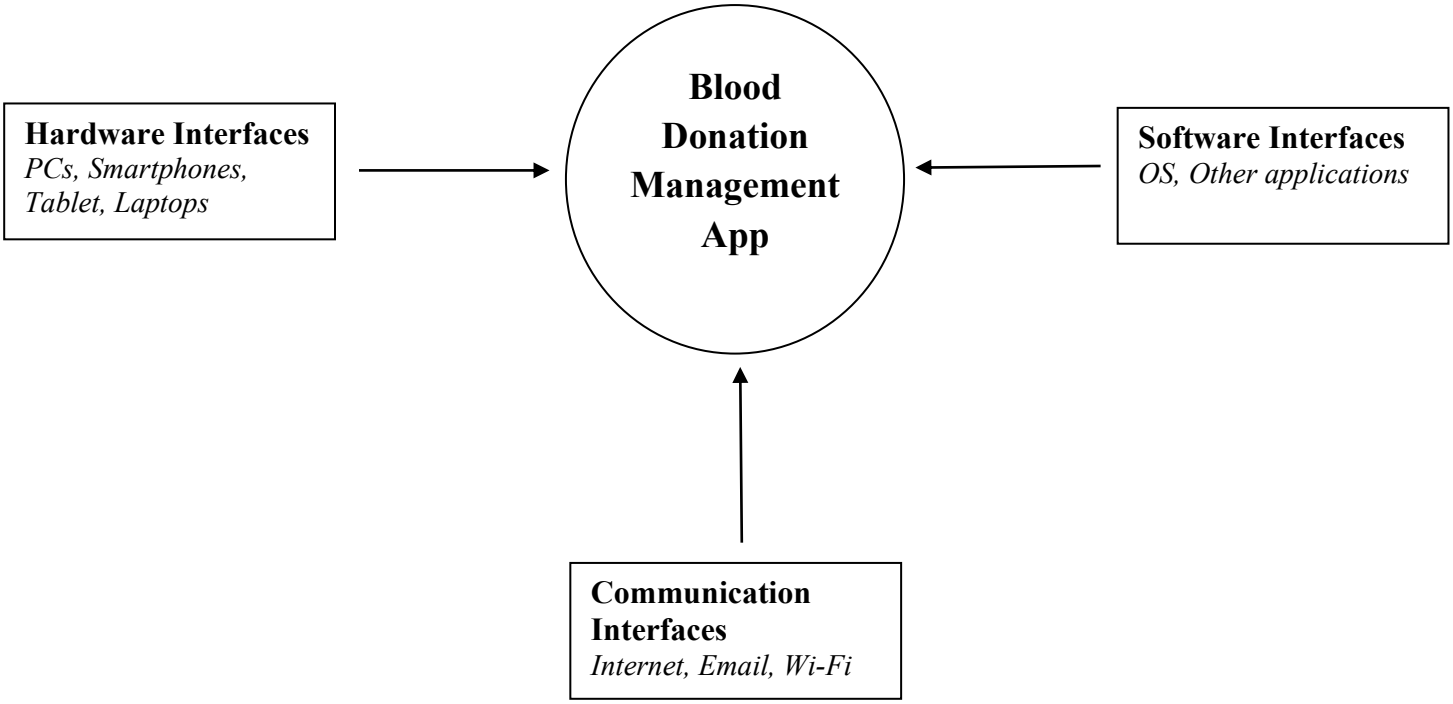
- ***Environmental constraints***

  Stable internet connection is necessary to run the application.

- ***User constraints***

System is developed for youngsters, elders and older people. Textual representation is more than graphical representation.

3. External Interface Requirements



3.1 Hardware Interfaces

- *BDMS is an app, its web version is not supported yet. It will be supported on smartphones, laptops and PCs.*
- *Users will simply install the app from Google Play store, and it will function properly. There will be no need to download any special software to run this app.*

3.2 Software Interfaces

- *BDMS will work on android and iOS. On PCs and laptops, it can be connected to any version of Windows, but for best experience, Windows 10 and other latest versions should be used.*

3.3 Communications Interfaces

For communication purposes,

- *Gmail will be used*
- *Stable internet connection will be required*

4. Functional Requirements

- *After installation of the app, system will ask the user to create their accounts as donor or recipient.*
- *Name, phone number, email ID, user's photo(optional), location and password will be required.*
- *System will get permission for location access. It'll be mandatory for every user to grant permission so that it will become easy for the system to manage blood donation process.*
- *Location includes country, province, city, hospital etc.*
- *Gender, age, blood group and previous donation history will be provided to the system as per requirements.*
- *Requests will be made and their record will be kept in database for future use.*

5. Non-functional Requirements

5.1 Performance Requirements

- ***Speed***
  System will respond within 2 to 3 seconds, but performance depends upon the speed of internet connection.
- ***Precision***
  System will be precise; no unreal and unnecessary information will be asked to frustrate the users as this system is built to facilitate the users.

5.2 Safety Requirements

- *Users should create a strong password. They must keep their personal information private (not necessary to share with other users). Installed BDMS must be updated for new features whenever the users get notification of app update.*

5.3 Security Requirements

- *Administration staff will be responsible for the safety of the system and the users. Inactive and fake users will be removed. If any unethical activity is predicted, the culprit will be sued. While logging in, system will verify the users by entering CAPTCHA and OTP. Two Factor authentication will be enabled by the users to secure their accounts.*

5.4 User Documentation

- *Just like all other apps, there will be a help section in main menu in which the whole method of* ***"how to use this app"*** *will be explained step by step with visual representations (screenshots). For more details, users can contact customer support in which admins will guide them.*

6. Assumptions and Dependencies

The system assumes that

- *Users will provide accurate personal information, if they do not do so, it will cause severe health damage.*
- *Donors are honest about their health condition; they should provide accurate blood group and health history details.*
- *Users have access to smart phones and stable internet.*
- *Admins will regularly monitor the system to track illegal activities and fake accounts because these things can harm sensitive information of all users of BDMS.*
- *Hospitals or recipients will update their status after receiving blood, it will help other users to see the progress and credibility of BDMS.*
- *GPS and location services will function properly for quick delivery of blood and for tracking donors in emergency situations.*

The system depends on

- *Google Maps for location-based search*
- *SMS/Email/OTP Service for user verification*
- *Mobile OS permissions (Location, Internet, Notifications)*

7. References

- *Guidelines provided by the Course Instructor*
- *Class Lecture Notes.*
- *Google (SRS regarding Blood Donation).*
- *Seniors*
- *Civil Hospital Sargodha*