# Project Documentation

## Title:

Blood Donation and Transfusion Management Platform

# 1. Introduction

## 1.1 Overview

The project is a centralized platform linked with an Oracle SQL database that connects blood donors and recipients. It facilitates blood donation and transfusion processes by maintaining data on different blood groups, donor and recipient medical histories, and location-based services.

## 1.2 Objectives

- Establish a seamless connection between blood donors and recipients.

- Maintain an organized database of blood group records and medical histories.

- Suggest the nearest blood transfusion center based on user location.

- Provide a user-friendly platform to enhance the efficiency of blood donation and transfusion.

# 2. System Design

## 2.1 System Architecture

The platform follows a three-tier architecture:  
1. Frontend: User Interface (UI) for donors and recipients to register, search, and communicate.  
2. Backend: Middleware to handle data retrieval and business logic.  
3. Database: Oracle SQL database to store and manage user data, blood group data, and medical histories.

## 2.2 Features

- Donor Registration: Allows users to register as donors with their medical history and blood group.

- Recipient Requests: Enables recipients to search for donors based on blood group and location.

- Location-Based Suggestions: Provides nearby blood transfusion centers using GPS integration.

- Medical History Tracking: Stores and retrieves donor/recipient medical records securely.

# 3. Functional Requirements

## 3.1 User Roles

1. Donor:

* - Register with personal and medical details.
* - Update availability status for blood donation.

2. Recipient:

* - Search for compatible blood donors.
* - Request blood and track the request status.

3. Administrator:

* - Manage user accounts and data.
* - Monitor system performance and resolve issues.

## 3.2 Key Functions

- Data insertion, update, and retrieval for blood groups and medical records.

- Matching donors and recipients based on blood group compatibility.

- Geolocation integration for center suggestions.

- Secure login and data encryption.

# 4. Database Design

## 4.1 Tables

- Users Table: Stores user information (Donor/Recipient).

- BloodGroups Table: Maintains blood group details.

- MedicalHistory Table: Tracks medical conditions and eligibility.

- Requests Table: Logs blood requests and matches.

## 4.2 Relationships

- One-to-Many: Users ↔ Requests

- One-to-One: Users ↔ MedicalHistory

# 5. Implementation

## 5.1 Technologies Used

- Frontend: HTML, CSS, JavaScript

- Backend: Java, Python, or PHP

- Database: Oracle SQL

- Other Tools: Google Maps API for location services

## 5.2 Deployment

- Hosted on a cloud-based server.

- Integrated with a mobile app for enhanced accessibility.

# 6. Testing and Maintenance

## 6.1 Testing

- Functional Testing: Verifies system functions (donor search, registration).

- Security Testing: Ensures data protection and user privacy.

## 6.2 Maintenance

- Regular updates for database optimization.

- Bug fixing and performance improvements.