**PROJECT PROPOSAL**

**PROJECT**: BLOOD DONATION MANAGEMENT SYSTEM

PROJECT 1

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**LEVEL**: DEGREE IN Bsc SOFTWARE DEVELOPMENT

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**PROJECT OVERVIEW**

The project is to develop a comprehensive blood donation management system that streamlines the entire process, from donor registration and screening to blood collection, storage, and distribution.

PROJECT AIMS

* To streamline the process of blood donation collection, storage, and distribution.
* To ensure a reliable and efficient supply of blood for medical procedures.
* To enhance the overall experience for blood donors and recipients by creating a comprehensive and user-friendly blood donation management system.

PROJECT OBJECTIVES

* Develop a user-friendly system for donors to register, schedule appointments, and track their donation history.
* Implement a robust system for managing blood inventories, including collection, storage, and distribution.
* Establish a notification system to alert recipients and healthcare providers about available blood types.
* Ensure data security and privacy for all participants involved.

INTENDED USERS

* Donors
* Blood bank staff
* Healthcare providers
* Hospital administrators

UNIQUE VALUE PROPOSITION

1. Real-time Inventory Management:

* Accurate Blood Type Tracking- the system can provide real-time information on blood type availability, ensuring that hospitals and clinics have the right blood types on hand when needed.
* Expiration Date Monitoring- Automated alerts can prevent blood from expiring, reducing waste and ensuring a consistent supply.

2. Efficient Donor Management:

* Personalized Reminders- Automated reminders can encourage regular blood donation, improving donor retention and increasing the overall blood supply.
* Donor Eligibility Tracking- The system can track donor eligibility criteria, ensuring that only qualified individuals donate blood and preventing the use of unsuitable blood.

3. Streamlined Donation Process:

* Online Scheduling: Donors can schedule appointments online, reducing wait times and improving the overall donor experience.
* Mobile Check-In: Donors can check in using a mobile app, further streamlining the donation process and reducing administrative overhead.

4. Enhanced Safety and Security:

* Data Privacy- Robust security measures can protect donor data, ensuring confidentiality and compliance with data privacy regulations.
* The system can also track the entire journey of a blood unit, from donation to transfusion, improving safety and accountability.

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OVERARCHING DESIGN OF THE PROJECT

The system will encompass the following key functionalities and database mode of use:

1. Donor Management:

* Donor registration and profile creation
* Health screening and eligibility verification
* Appointment scheduling
* Donation history tracking

1. Blood Collection:

* Blood donation tracking and labeling
* Quality control measures
* Blood type and component separation

1. Inventory Management:

* Blood unit tracking and storage
* Expiration date management
* Inventory alerts and notifications

1. Distribution:

* Request processing and fulfillment
* Transportation logistics
* Recipient tracking

1. Reporting and Analytics:

* Donor statistics and trends
* Blood inventory reports
* Distribution analysis

System Requirements

Functional Requirements

* User-friendly interface for donors, administrators, and healthcare providers
* Integration with existing healthcare systems
* Real-time data updates and notifications
* Robust security measures to protect sensitive patient data
* Scalability to accommodate increasing demand

Non-Functional Requirements

* Reliability and performance
* Data accuracy and integrity
* Compliance with relevant health regulations and standards

DEVELOPMENT METHODOLOGY

Agile Scrum

Justification

Agile Scrum is a suitable methodology for this blood donation management system project due to several reasons:

* Flexibility and Adaptability: Agile Scrum allows for changes in requirements throughout the development process, ensuring that the system meets evolving needs and addresses unforeseen challenges.
* Iterative Development: The project is divided into smaller, manageable sprints, enabling teams to deliver working increments of the system regularly. This approach facilitates early feedback and reduces the risk of building the wrong product.
* Collaboration and Transparency: Scrum emphasizes collaboration among team members and stakeholders, fostering a shared understanding of the project goals and promoting transparency in the development process.
* Continuous Improvement: Scrum encourages continuous improvement through retrospectives, where teams reflect on their performance and identify areas for enhancement.
* Risk Management: By breaking the project into smaller sprints, risks are identified and mitigated earlier in the development process, reducing the overall project risk.

Scrum Framework

* Product Backlog: A prioritized list of all the features and functionalities required in the blood donation management system.
* Sprint Planning: The team determines which items from the product backlog to include in the upcoming sprint, sets sprint goals, and creates a sprint backlog.
* Daily Scrum: A daily stand-up meeting where team members discuss their progress, identify any impediments, and coordinate their work.
* Sprint Review: At the end of the sprint, the team demonstrates the completed work to stakeholders and gathers feedback.
* Sprint Retrospective: The team reflects on the sprint, identifies what went well and what could be improved, and implements changes for future sprints.

Tools and Techniques

* Kanban Board: A visual tool to track the progress of work items.
* Burndown Charts: Graphs that show the progress towards the sprint goal.
* User Stories: Descriptions of desired features from the perspective of the user.
* Acceptance Criteria: Clearly defined conditions that must be met for a feature to be considered complete.

Implementation

Best Suitable Type of Implementation: Phased Rollout

Justification:

A phased rollout is the most suitable type of implementation for a blood donation management system due to several reasons:

* Risk Mitigation: By implementing the system in phases, organizations can gradually introduce new features and functionalities, reducing the risk of major disruptions or failures.
* Scalability: A phased rollout allows the system to be scaled up or down as needed, accommodating changes in demand or resource availability.
* User Acceptance: Implementing the system in phases provides opportunities for user feedback and testing, ensuring that the system meets the needs of stakeholders and is well-received.
* Resource Optimization: A phased rollout can help optimize the allocation of resources, ensuring that the system is implemented efficiently and cost-effectively.
* Flexibility: A phased rollout allows for adjustments to the implementation plan based on feedback and changing circumstances.

Phased Rollout Approach

* Pilot Phase: Implement the system in a limited geographical area or with a subset of users to test its functionality and identify potential issues.
* Expansion Phase: Gradually expand the system to additional areas or user groups, monitoring performance and making necessary adjustments.
* Full Rollout: Once the system has been successfully implemented and tested in multiple phases, it can be rolled out to the entire organization.

Tools

* Language

Python-it is suitable for both backend and frontend development.

* Database

MongoDB- it is a NoSQL database suitable for handling unstructured or semi-structured data.

* Environment

Pycharm**- it is a** Python-specific IDE with excellent features for development and debugging.

WORK SCHEDULE

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| PHASE | DURATION |
| Requirements Gathering and Analysis | 1 week |
| System Design | 1week |
| Development and Testing | 2 weeks |
| Implementation and Deployment | 2 weeks |
| Maintenance and Support |  |

BUDGET

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| --- | --- |
| **Item** | **Estimate cost in ksh** |
| Equipment |  |
| software |  |
| infrastructure |  |
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