Project Design Phase-II

Solution Requirements (Functional & Non-functional)

Date	29 Oct 2023
Project Name	Blockchain-Powered Library Management

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Interface	• Create a user-friendly dashboard for patrons to search and borrow books. • Develop a separate interface for librarians to manage cataloging, loans, and returns.
FR-2	User Registration and Access Control	• Allow users to register with the system using their personal information. • Define different user roles (librarian, administrator, patron) with specific permissions. • Implement role-based access control to protect sensitive data and system functionality.
FR-3	Blockchain Integration	• Set up the blockchain infrastructure (e.g., Ethereum). • Develop and deploy smart contracts for library operations like lending and returns.
FR-4	Cataloging and Resource Management	• Implement decentralized cataloging and indexing for library resources. • Allow librarians to add detailed metadata for each resource (title, author, ISBN, etc.). • Enable real-time tracking of resource availability and due dates.
FR-5	Lending and Returns	• Allow patrons to request and borrow books through the system. • Implement a process for patrons to return books and update availability status. • Automatically calculate and charge overdue fines using smart contracts.

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Resource Optimization**	The system should use system resources efficiently, ensuring that hardware and software resources are used optimally to minimize operational costs.
NFR-2	**Security**	The system should be designed to accommodate an increasing number of users and library resources without significant performance degradation. It should be easily scalable to handle future growth.
NFR-3	**Reliability**	The system should be highly reliable, with minimal downtime or disruptions. It must provide consistent access to library resources and data.
NFR-4	**Performance**	The system must be responsive and capable of handling a large number of simultaneous users, ensuring quick response times for searches, resource requests, and other operations.
NFR-5	**Availability**	The system should be available 24/7, ensuring that users can access library resources at any time. Scheduled maintenance or downtime should be kept to a minimum.
NFR-6	**Data Backup and Recovery**	The system should regularly back up data to prevent data loss. It must also have mechanisms in place for disaster recovery and data restoration.