

BUSINESS REQUIREMENTS

Date	26 october 2023
Team ID	NM2023TMID01000
Project name	Blockchain powered library management

TSK-45974 BUSINESS REQUIREMENTS

FUNCTIONAL REQUIREMENTS

Fr No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Decentralized Database	Utilize blockchain for a secure, transparent, and tamperresistant database of library records. Explore blockchain platforms like Ethereum, Hyperledger, or others for their capabilities in handling decentralized databases. Consider data partitioning and distribution strategies for efficient storage and retrieval.
FR-2	Smart Contracts	Implement smart contracts for automated processes like lending, returns, and overdue fines. Define the logic for smart contracts, specifying conditions for book borrowing, return deadlines, and penalty calculations. Ensure smart contracts are audited for security and efficiency.
FR-3	User Identity Management	Ensure a robust system for managing user identities, borrowing history, and preferences securely on the blockchain.
FR-4	Immutable Record Keeping	Leverage blockchain's immutability to maintain an unalterable history of transactions and library assets. Implement a robust user authentication system with cryptographic keys or biometrics. Research decentralized identity solutions for managing user credentials securely.
FR-5	Data encryption	Implement robust encryption mechanisms to protect sensitive user data and maintain privacy.

BR-6	Privacy and Permissions	Implement granular access controls to ensure data privacy and limit access based on user roles within the library ecosystem. Implement encryption techniques to protect sensitive user data. Define roles and permissions for different user types (librarians, administrators, users) to control access.
BR-7	Tokenization	Design a tokenomics model, specifying how tokens are earned, spent, and exchanged within the library ecosystem. Consider integrating a wallet system for users to manage their tokens.
BR-8	Integration with External Systems:	Research API compatibility with existing library management systems. Ensure seamless data flow between your blockchain system and external databases.
BR-9	Audit Trails	Implement a transparent and accessible audit trail accessible to authorized parties. Consider visualizations or reporting tools for better interpretability of audit data.
BR-10	Decentralized Consensus Mechanism	Choose an appropriate consensus mechanism (e.g., Proof of Work or Proof of Stake) to secure and validate transactions within the library network

NON FUNCTIONAL REQUIREMENTS

NFR no.	Non functional requirements	Sub Requirement (Story / Sub-Task)
NFR-1	Performance	The system should handle a large number of simultaneous transactions efficiently. Response time for user interactions (e.g., search, checkout) should be within acceptable limits.
NFR-2	Reliability	The system should have high availability to ensure access to library services at all times. Mean Time Between Failures (MTBF) should meet or exceed specified standards.
NFR-3	Security	Implement robust encryption algorithms to secure data

		<p>transmission and storage.</p> <p>Regular security audits and updates to address vulnerabilities.</p>
NFR-4	Usability	<p>The user interface should be intuitive and user-friendly to accommodate users of varying technical expertise.</p> <p>Accessibility standards should be followed to ensure inclusivity.</p>
NFR-5	Interoperability	<p>The system should be able to integrate seamlessly with other library systems or external databases.</p> <p>Support standard data exchange formats.</p>
NFR-6	Auditability	<p>Maintain detailed logs of transactions and system activities for auditing purposes.</p> <p>Ensure transparency in system operations.</p>
NRF-7	Regulatory Compliance	<p>Adhere to relevant data protection regulations and standards.</p> <p>Ensure compliance with library and educational institution policies.</p>