



HMR INSTITUTE OF TECHNOLOGY & MANAGEMENT

Hamidpur, Delhi-110036

(An ISO 9001: 2008 certified, AICTE approved & GGSIP University affiliated institute)

E-mail: hmritmdirector@gmail.com, Phone: - 8130643674, 8130643690, 8287461931, 8287453693

Department of Information Technology

Synopsis of Major Project

Date: 26 February 2024

Major Project Title: Blockchain Based Document Vault

Name of Supervisor(s): Ms. Monika

Program:- B.Tech(CSE/IT)		Year/Semester:-8 th Semester	
S.No.	EnrolmentNo.	Name	Signature
1	08813302720	Yogesh Gupta	
2	07213302720	Shiv Kumar Rathore	
3	21113302720	Tushar Tomar	

Major Project Summary:

For individuals, accurate and full educational records are a valuable asset. Educational documents have been digitized in recent years. There are still, however, two major problems that have not been overcome. One is to achieve reliable and privacy-preserving storage of educational records, while another is how to understand the sharing of educational records and ensure the protection of the process of sharing. In this paper, we propose a scheme for educational records based on blockchain storage and sharing, which incorporates blockchain, storage database and cryptography techniques to create a reliable and protected setting. The blockchain technology is used in our proposal to ensure the protection and reliability of data storage, while the blockchain's smart contracts are used to manage the storage and sharing method. The off-chain database stores the original educational records in encrypted form more specifically, while the records' hash information is stored on the blockchain. To ensure the protection of data storage, the off-chain records are regularly anchored with the hash data on the blockchain. Cryptography approaches are used to manage the encryption of documents and digital signature of messages. The system incorporates a WebApp based interface for the concerned parties involved in the transaction to communicate in an effective manner thereby providing a base for decentralized approach.

Objectives:

- **Ensure Data Accuracy:** Verify and maintain accurate educational records for individuals.
- **Privacy-Preserving Storage:** Achieve reliable and privacy-preserving storage of educational records using blockchain technology.
- **Secure Sharing Process:** Address the challenges associated with understanding and protecting the sharing of educational records.

- **Utilize Blockchain Technology:** Implement blockchain for ensuring data protection and reliability in storage.
- **Smart Contract Management:** Employ blockchain's smart contracts to efficiently manage the storage and sharing processes.
- **WebApp Interface:** Develop a user-friendly WebApp interface for effective communication among concerned parties involved in transactions.
- **Decentralized Approach:** Provide a foundation for a decentralized educational records system to enhance reliability and protection.

Research Paper Topic: A Blockchain-Based Educational Records Secure Storage and Sharing Scheme

Base Paper Link: <https://ieeexplore.ieee.org/document/8915819>

ResourceRequirement:

1. **Computers/Server Infrastructure:** Adequate hardware resources, such as servers or high-performance computers, to host the blockchain network and support software development and testing.
2. **Blockchain Platform and Development Tools:** Access to a suitable blockchain platform (e.g., Ethereum, Hyperledger Fabric) and the necessary development tools, including IDEs and testing frameworks.

Schedule of Major Project Work Along with Research Paper:

- February: Project Planning and Research
 - Define project requirements and conduct a literature review.
 - Finalize the technology stack and develop a detailed project plan.
- March: Blockchain Setup and Smart Contract Development
 - Set up Ethereum blockchain (Ganache).
 - Develop and test smart contracts using Solidity.
 - Begin integration of Web3.js and IPFS for decentralized storage.
- April: Front End and Back End Development
 - Build WebApp using React JS and Bootstrap.
 - Develop backend logic using NodeJS.
 - Integrate OrbitDB for off-chain database storage.
 - Conduct comprehensive testing of the entire system.
- May: Testing, Optimization, Deployment, and Launch
 - Optimize code for performance and security.
 - Perform user acceptance testing (UAT).
 - Deploy the system on hosting services (Heroku, Infura).
 - Document the development process and create user manuals.

Signature of Student

Signature of Supervisor(s)

Signature of Major Project Coordinator:

Co-ordinator Name: Ms. Monika

Approval by Project Committee

Member	Signature	Remark(Approved/NotApproved)

Member	Signature	Remark(Approved/NotApproved)