

Blockchain

Mini Project Instructions

The goal of this mini project is to design and implement a blockchain-based application that demonstrates a practical use case of blockchain technology. Teams will explore concepts such as decentralization, smart contracts, cryptographic security, and consensus mechanisms.

Team Formation

- Each team should consist of **3 to 4 members**.

Each team must choose one of the following domains to implement a blockchain-based solution:

1. Finance & Payments

- **Decentralized Payment System** – Implement a cryptocurrency-based peer-to-peer transaction system.
- **Cross-Border Remittance** – Design a low-cost international remittance solution using blockchain.
- **Tokenized Loyalty & Reward System** – Create a blockchain-based reward points system for businesses.
- **Decentralized Lending & Borrowing** – Build a blockchain-based lending platform using smart contracts.

2. Supply Chain & Logistics

- **Supply Chain Management** – Track product authenticity and movement using blockchain.
- **Food Safety & Traceability** – Ensure food quality by tracking the origin and transportation of food products.
- **Decentralized Inventory Management** – Implement an inventory tracking system using blockchain.

3. Identity & Security

- **Decentralized Identity Management** – Enable self-sovereign identity verification without a central authority.
- **Blockchain for Certificate Verification** – Prevent document forgery by issuing tamper-proof certificates on the blockchain.

4. Real Estate & Land Registry

- **Property Ownership Management** – Build a secure and immutable land registry system.
- **Fractional Real Estate Investment** – Implement tokenized real estate ownership on blockchain.

5. Healthcare & Pharmaceuticals

- **Healthcare Record Management** – Securely store and share patient data using blockchain.
- **Drug Supply Chain Transparency** – Prevent counterfeit drugs by tracking medicines from manufacturer to consumer.

6.NFTs & Digital Assets

- **NFT Marketplace** – Create a platform for minting and trading NFTs.
- **Blockchain-Based Content Ownership** – Develop a platform for artists to tokenize their work and receive royalties.

7. Education & Research

- **Blockchain-Based Student Credentials** – Issue and verify academic certificates using blockchain.
- **Research Data Integrity** – Store and verify research data using blockchain to prevent tampering.

8. Decentralized Applications (DApps)

- **Blockchain-Based Social Media** – Develop a censorship-resistant decentralized social media platform.
- **Decentralized Cloud Storage** – Implement a file storage system using blockchain and IPFS.

Technical Requirements

- Use **Ethereum (Solidity + Smart Contracts) only**.
- Develop and deploy **at least one smart contract** to the testnet.
- Use a **blockchain wallet (e.g., MetaMask)** for transactions if applicable.
- Implement a **basic front-end** (React, Angular, or basic HTML/CSS/JS) for user interaction.

Final Submission Requirements

1. **Project Report** (2-4 pages)
 - Introduction
 - Problem Statement
 - Blockchain Implementation Details
 - Screenshots of the working application
 - Future Enhancements
2. **Source Code**
 - GitHub repository or ZIP file containing the project files.
3. **Demo Video**
 - A **5-10 min video** explaining the project and demonstrating key features.

Evaluation Criteria

Criteria	Weightage (%)
Innovation & Relevance & Originality	20%
Smart Contract Implementation	40%
UI & Functionality	20%
Presentation & Report	20%