Assignment 4

D D M M Y Y Y Y

Q1. Smart contracts are revolutionizing the way agreements are enforced in the digital world. Discuss the limitation and challenges of implementing smart contracts in real world application. How do these challenges impact the broader adoption of blockchain technology in various industries

⇒ Limitation and challenges.

Complexity and coding errors: Developing robust smart contracts requires specialized skills and deep understanding of block-chain technology

Oracles problem: Smart contracts rely on external data feeds to interact with the real world. The accuracy and reliability of this data are critical.

Scalability: Many block chain platforms struggle to handle the high transaction volume required for large scale smart contract applications.

Immutability: while immutability is core principle of block chain it can be double edged sort, due to which errors in smart contract cannot be resolved.

User experience.: Interacting with smart contract can be Complex for non-technical users.

Deep Shankhu
21102A0014

D D M M Y Y Y Y

Impact of Blockchain adoption.

Trust and confidence : High-profile failures of smart contracts can erode trust in blockchain technology as whole.

Limited use cases : The current limitation restrict the applicability of blockchain to a subset of use cases.

Development cost : The complexity of developing secure and reliable smart contract increase development cost.

Regulatory Barriers : Lack of clear regulation can create uncertainty and discourage investment in blockchain projects

Deep Sahani
21102A0014.

D D M M Y Y Y Y

Q2] Solidy is a primary programming language for developing smart contracts on Ethereum. Evaluate the importance of visibility and activity qualifiers in solidity. How does these qualifiers influence the security and functionality of smart contract.

⇒ Importance of visibility and activity Qualifiers.

Visibility and activity qualifiers are fundamental to solidity's role in smart contract development. They govern the accessibility and behaviour of contract elements

⇒ Visibility qualifiers

→ Public: Access from any where including other contracts
→ private: Accessible only within the contract.
→ internal: Accessible with in the contract and it's derived contract.
→ external: Accessible only through function calls.

These qualifiers control data exposure, prevents unauthorized access and protects sensitive information

⇒ Activity qualifiers

→ Constant: Does not modify the state, making it pure & predictable
→ view: similar to constant. but can access state variable.

These qualifiers optimize contract performance by indicating which function do not alter the contracts state.

21102A0014
Deep Salunkhe.

D D M M Y Y Y Y

Influence on Security and functionality

Security :

→ limity visibility prevents unauthorised access to critical data and functions
→ Using constant and pure. functions reduces the attack surface by minimizing state-modified operations

Funtionality

→ Visibility qualifiers define the scope of data functions, enabling modular and reusable code
→ Activity qualifiers optimize contract performance by identifying pure and view functions, allowing for efficient execution.