



School: Campus:

Academic Year: Subject Name: Subject Code:

Semester: Program: Branch: Specialization:

Date:

Applied and Action Learning

(Learning by Doing and Discovery)

Name of the experiment: Blockchain in Supply Chains – Use Case Analysis

***Coding Phase: Pseudo Code / Flow Chart / Algorithm**

1. Participant Identification:

Identify the key parties in the supply chain: Manufacturer, Supplier, Transporter, Distributor, Retailer, and Customer.

2. Product Tokenization:

Every product is assigned a unique identifier or token on the blockchain (e.g., Product ID #B456 created by the manufacturer).

3. Transaction Recording:

Each movement (manufacturing, shipping, sale) is logged as a separate block on the blockchain. The block includes:

- Product ID
- Sender & Receiver details
- Timestamp
- Transaction data
- Digital signature for verification

4. Validation & Verification:

Transactions are validated by nodes on the blockchain network, ensuring only legitimate data is added.

5. Linking & Hashing:

Each block is cryptographically linked to the previous one, ensuring the data remains secure and immutable.

6. Consensus Protocol:

A consensus mechanism, like Proof of Stake, is used to confirm transactions, ensuring data consistency across all nodes.

7. Traceability:

All stakeholders can access the complete product journey, from production to final sale.

8. Auditing & Transparency:

The blockchain serves as an immutable ledger for proof of authenticity, offering transparency for regulators, businesses, and customers.

*** Softwares use**

1. VS Code.

2. MS Word.

3. Brave for researching.

* **Implementation Phase: Final Output (no error)**

- The system is fully integrated with existing supply chain operations across all stakeholders, ensuring seamless communication and interaction with the blockchain network.
- Blockchain nodes are deployed across all participants, enabling them to maintain a local copy of the ledger and validate transactions efficiently.
- Smart contracts are deployed and automated to handle actions like shipment notifications, delivery confirmations, and payment processing without manual intervention.
- Data synchronization is done automatically across all nodes, ensuring that all participants have the same up-to-date, accurate information without discrepancies.
- Every transaction in the supply chain is validated by the network participants to ensure legitimacy, with encryption securing the data from unauthorized access or tampering.
- Real-time tracking is implemented, allowing stakeholders to access the product's status and location at any given time, eliminating delays and improving decision-making.
- The system operates without errors, with all processes, including product registration, movement tracking, and transaction validation, automated and fully integrated into the supply chain.
- The blockchain provides a complete, transparent, and immutable record of each product's journey, offering full traceability from origin to final delivery.
- Final output is thoroughly tested and verified by all stakeholders to ensure that the system meets expectations, provides accurate data, and complies with regulations.
- Continuous monitoring is in place to identify and resolve any potential issues, ensuring that the system remains error-free and performs optimally over time.

* **Observations**

- Each transaction is recorded permanently — ensuring data integrity.
- Blockchain creates transparency among all parties, reducing disputes.
- Counterfeit detection becomes easier since each product has a unique digital record.
- Smart contracts automate payment and delivery confirmations.
- Real-time tracking helps identify bottlenecks and delays.
- Improves trust between suppliers and customers by providing verifiable proof of product origin.

ASSESSMENT

Rubrics	Full Mark	Marks Obtained	Remarks
Concept	10		
Planning and Execution/ Practical Simulation/ Programming	10		
Result and Interpretation	10		
Record of Applied and Action Learning	10		
Viva	10		
Total	50		

Signature of the Student:

Name :

Regn. No. :

Signature of the Faculty:

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