



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 Initialization:

All key parties — Manufacturer, Supplier, Transporter, Distributor, Retailer, and Customer — are registered on the blockchain network.

2. Product Registration:

Each product is assigned a unique digital ID or token (e.g., *Product ID #A123*) by the manufacturer to represent it on the blockchain.

3. Transaction Recording:

Every stage of the product's journey — from manufacturing to sale — is recorded as a new block.

Each block includes:

- Product ID
- Sender and Receiver details
- Timestamp
- Transaction summary
- Digital signature for verification

4. Verification and Validation:

All transactions are confirmed by network nodes before being added to the blockchain, ensuring accuracy and preventing fake data.

5. Linking and Hashing:

Each block is securely connected to the previous one using cryptographic hashing, creating a tamper-proof chain of records.

6. Consensus Mechanism:

The network uses protocols like ****Proof of Stake (PoS)**** or ****Proof of Authority (PoA)**** to validate and approve each transaction across all participants.

7. Traceability and Tracking:

Every stakeholder can view and trace the complete movement of a product — from raw material to final delivery.

8. Audit and Transparency:

The immutable blockchain ledger provides a transparent, verifiable record for businesses, regulators, and customers, ensuring trust and accountability.

* Software used:

- Vs code
- Ms word
- Microsoft edge web browser(for research)

* Implementation Phase: Final Output (no error)

- The supply chain network connects all stakeholders — manufacturer, supplier, transporter, distributor, retailer, and customer.
- The manufacturer adds a new product to the blockchain by creating a unique digital record with details like product ID, batch number, date, and origin.
- As the product moves through each stage — manufacturing, packaging, shipping, delivery, and sale — every update is recorded as a new block.
- All transactions are verified by the network to ensure accuracy and prevent unauthorized edits.
- Each verified block is linked to the previous one using cryptographic hashing, keeping the data secure and tamper-proof.
- The blockchain ledger updates automatically across all network nodes, so everyone has the same accurate information.
- The system allows real-time tracking of the product's movement and status.
- The final ledger shows a complete, transparent record of the product's journey from creation to customer delivery.
- The result is a secure, trustworthy, and transparent supply chain that prevents fraud and improves accountability.

* Observation:

- 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 :