Centurion University

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.

*As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.

* 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.

*As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.

ASSESMENT

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:

**As applicable according to the experiment.*
Two sheets per experiment (10-20) to be used.