Centurion UNIVERSITY *Shaping Lives... Empowering Communities...*	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 Experiement : Build a Use Case – Tokenized Supply Chain Prototype

Objective/Aim:

Design and demonstrate a prototype that tokenizes physical goods (NFTs or batch tokens) to enable provenance, custody tracking, and automated payments across a supply chain.

Apparatus/Software Used:

- VS code
- Brave for searching
- MetaMask wallet

Theory concept:

In a traditional supply chain, data about the movement of goods — such as manufacturing, shipping, and delivery — is often stored in multiple centralized databases. This can lead to **data tampering, loss of trust, and inefficiency** among suppliers, distributors, and retailers.

Blockchain technology solves these issues by providing a **transparent, immutable, and decentralized ledger** that records every event in real time. By using **tokenization**, each physical product or batch is represented as a **digital token** (such as an NFT or ERC-20 token) on the blockchain.

These **tokenized assets** can track:

- **Ownership transfers** as goods move through the supply chain,
- **Provenance and authenticity** using verifiable records,
- **Payments and settlements** via **smart contracts** that automatically release funds upon delivery confirmation, and
- **Audit trails** accessible to regulators and customers.

Thus, **Tokenized Supply Chains** improve **transparency, traceability, and trust**, while reducing paperwork and manual verification.

Procedure:

- **Select a Product:**
  Choose a real-world item (like food, medicine, or electronics) to track using blockchain.
- **Identify Stakeholders:**
  List all parties involved — manufacturer, transporter, distributor, retailer, and customer.
- **Tokenize the Product:**
  Represent each product or batch as a **digital token** on the blockchain. This token acts as proof of ownership.
- **Record Product Information:**
  Store key details such as batch ID, date, and quality certificate on the blockchain or IPFS for transparency.
- **Simulate Product Movement:**
  As the product moves through the supply chain, transfer the token from one participant to the next.
- **Automate Payment with Smart Contracts:**
  Use smart contracts to release payment only after delivery is confirmed, ensuring trust between parties.
- **Verify and Observe:**
  Check the blockchain ledger to confirm that all ownership transfers and transactions are recorded correctly.

Observation:

- During the simulation, each stage of the supply chain (manufacturer → transporter → retailer → customer) was recorded on the blockchain.
- The product token changed ownership at every step, and all transactions were visible and verified on the ledger.
- Smart contracts automatically released payments after delivery confirmation, ensuring transparency and trust.

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 :

Signature of the Faculty:

Regn. No. :

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