Applied and Action Learning
(Learning by Doing and Discovery)

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

* Coding Phase: Pseudo Code / Flow Chart / Algorithm

☐ Start the process of recording supply chain transactions.

☐ Initialize an empty blockchain for the supply chain.

☐ Create the *Genesis Block* containing product origin details.

☐ For **each supply stage** (manufacturer, transporter, warehouse, retailer):

- Record product details (ID, location, time, handler).
- Generate a hash for the current block.
- Link it with the previous block's hash.
- Add the new block to the blockchain.

☐ Display all supply chain stages stored in the blockchain.

☐ Verify the chain integrity — if all hashes match, the data is valid.

☐ Stop the process.

* Implementation Phase: Final Output (no error)

- The supply chain network is created, connecting all stakeholders such as the manufacturer, supplier, transporter, distributor, retailer, and customer.

- The manufacturer registers a new product on the blockchain by creating its **unique digital record** with all essential details (product ID, date, batch number, and origin).

- As the product moves through the supply chain, each stage (manufacturing, packaging, shipment, delivery, and sale) is recorded as a **new block** on the blockchain.

- Every transaction is **validated by the network participants**, ensuring data accuracy and preventing unauthorized changes.

- Each verified transaction is **linked to the previous block** using a **cryptographic hash**, maintaining data integrity and forming an unbreakable chain.

- The blockchain ledger is **automatically updated across all nodes**, ensuring that every participant has access to the latest and most accurate data.

- The system provides **real-time tracking** of the product's status and location throughout the supply chain.

- The final blockchain ledger displays a **complete and transparent history** of the product from its origin to its final delivery to the customer.

- The output demonstrates **secure, tamper-proof, and trust-based record-keeping**, eliminating fraud, improving accountability, and enhancing supply chain visibility.

* 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 :

Signature of the Faculty:

Regn. No. :

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

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