



Centurion
UNIVERSITY
Gwalior, Madhya Pradesh

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: Security First – Understanding Blockchain

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

Introduction:

- **Initialize Blockchain Network:**

Set up nodes, miners/validators, and communication channels within a decentralized network.

- **Monitor Network Activity:**

Observe how transactions are broadcast, verified, and added to blocks.

- **Introduce Vulnerability Scenario:**

Simulate conditions such as high control power, fake node creation, or delayed transaction validation.

- **Trigger Attack Simulation:**

Attempt an attack (e.g., 51% or double-spend) by exploiting the introduced vulnerability.

- **Record System Response:**

Analyze how the network handles the malicious activity — detection, delay, or consensus reformation.

- **Apply Security Measures:**

Use defense mechanisms like stronger consensus rules, node verification, and enhanced encryption.

- **Validate Network Recovery:**

Ensure that after countermeasures, the blockchain resumes normal, secure operations.

* **Softwares used**

1.Chrome Web Browser

2.Blockchain Explorer Website

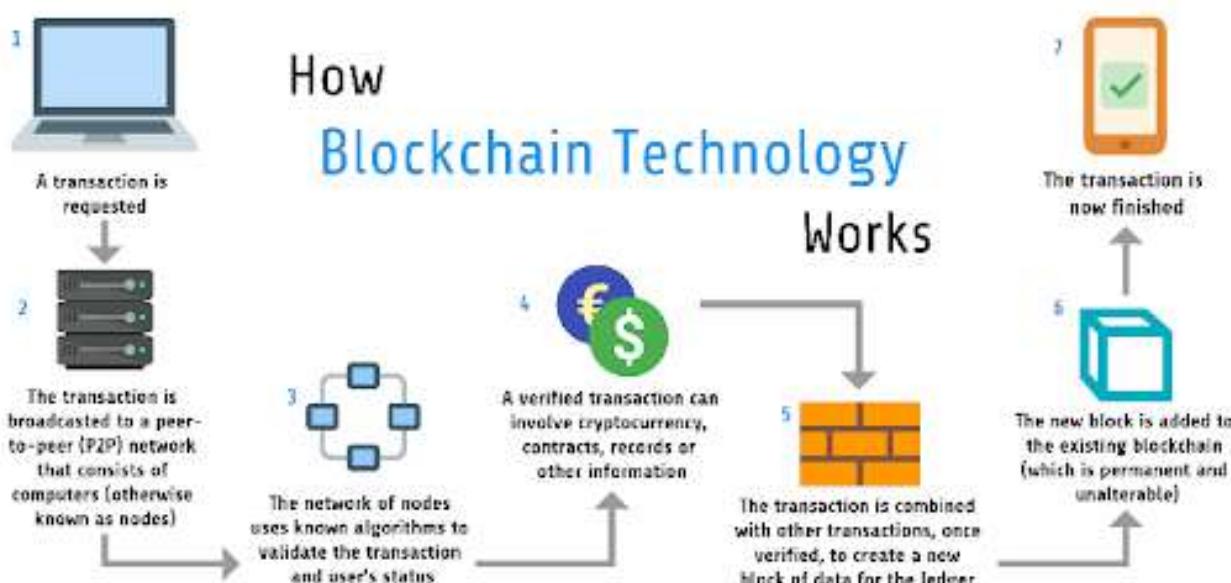
<https://www.investopedia.com/terms/b/blockchain.asp>

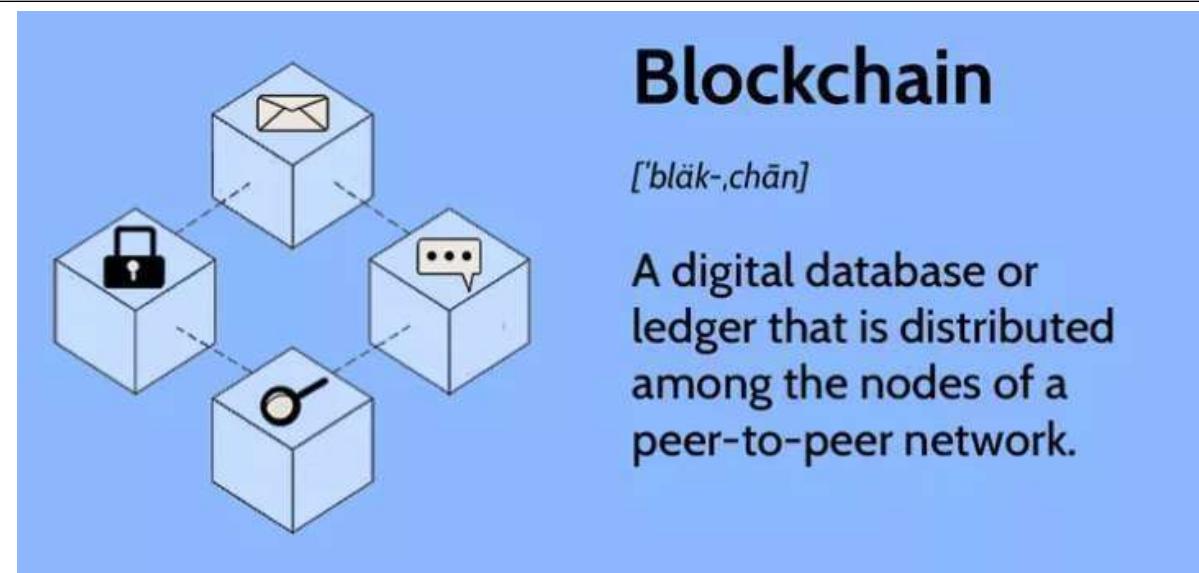
* Implementation Phase: Final Output (no error)

Transaction Process

Transactions follow a specific process, depending on the blockchain. For example, on Bitcoin's blockchain, if you initiate a transaction using your [cryptocurrency wallet](#)—the application that provides an interface for the blockchain—it starts a sequence of events.

In Bitcoin, your transaction is sent to a memory pool, where it is stored and queued until a miner picks it up. Once it is entered into a block and the block fills up with transactions, it is closed, and the mining begins.





Now you can see all the details of the transactions on a blockchain explorer

* Observations

1. The blockchain explorer provided complete transparency of the transaction details, ensuring data authenticity.
2. The confirmation and block information verified that the transaction was securely recorded and immutable.
3. The clear input–output structure demonstrated how blockchain prevents double-spending and enhances 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 :

Regn. No. :

Page No.....
* As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.

Signature of the Faculty: