



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 : Hash Your First Block – Blockchain Basics and Setup

Objective/Aim:

The objective of this exercise is to understand the basics of blockchain technology and set up a simple blockchain system.

Apparatus/Software Used:

- Programming languages
- Blockchain platforms
- Development tools

Theory/Concept:

A blockchain is a decentralized, distributed ledger that records transactions across a network of computers.

- **Blocks:** A block is a collection of transactions, such as data or cryptocurrency transactions.
- **Hashing:** Each block is assigned a unique code, called a hash, that connects it to the previous block, creating a chain.
- **Blockchain network:** A network of computers (nodes) that verify and validate transactions, ensuring the integrity of the blockchain.

Procedure:

1. Choose a programming language and hashing library: Select a language (e.g., Python, JavaScript) and a hashing library (e.g., hashlib, crypto-js).
2. Define block structure: Create a block with attributes like block number, timestamp, data, and previous block hash.
3. Calculate hash: Use a cryptographic hash function (e.g., SHA-256) to calculate the block's hash based on its attributes.

Block

Block:	# 1
Nonce:	72608
Data:	<input type="text"/>
Hash:	0000f727854b50b695c054b39c1ffef5c92e5e0fcfa46fc65dc279f56ea96a3654e5a
<button>Mine</button>	

Block

Block:	# 1
Nonce:	72608
Data:	<input type="text"/> 100
Hash:	0000f727854b50b695c054b39c1ffef5c92e5e0fcfa46fc65dc279f56ea96a3654e5a
<button>Mine</button>	

Blockchain



Observation Table:

1. Each block's hash is unique and depends on its data and previous block's hash.
 2. Changing a block's data will change its hash and break the blockchain.
 3. The blockchain's integrity relies on the hashes linking each block together.

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 Faculty:

Signature of the Student:

Name :

Regn.No.

