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 : Mine It –Basic Proof-of-Work Simulation

Coding Phase : Pseudo Code/Flow Chart/Algorithm

1. **Start**
2. Open **Proof-of-Work Simulator** in browser.
3. Observe the first block is already mined and valid.
4. Change data or nonce in any block → block becomes invalid.
5. Click **"Mine"** → simulator searches nonce until hash meets difficulty condition.
6. Block becomes valid when correct nonce is found.
7. If any earlier block changes, all later blocks become invalid.
8. Re-mine invalid blocks sequentially to restore the chain.
9. **End**

Apparatus/Software Used:

- Computer or Laptop
- Web Browser (Chrome / Firefox)
- Internet Connection
- Proof-of-Work Simulator Website

Testing Phase:

- **Test 1:** Modify block data → Hash changes → Block turns red.
- **Test 2:** Mine block → Valid nonce found → Block turns green.
- **Test 3:** Change earlier block → All later blocks turn red.
- **Test 4:** Re-mine all invalid blocks → All blocks turn green again.

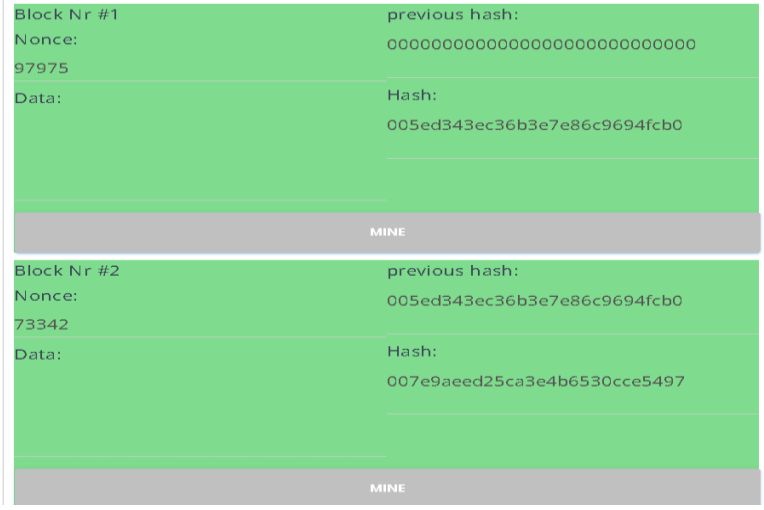
Implementation Phase: Final Output (no error)

Before mining:

- Some blocks turned red because data was changed.
- Hashes did not meet the difficulty requirement.

After mining:

- Clicked **Mine** on each invalid block.
- Found correct nonce for each block.
- All blocks turned **green** (valid) and the chain had no errors.



Observations

- Proof-of-Work requires iterative hash calculation until difficulty is met.
- Changing data invalidates current and all dependent blocks.
- Re-mining restores validity but is computationally intensive.
- Blockchain integrity relies on cryptographic linkage between blocks.

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. :

Signature of the Faculty:

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