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 : Proof of Work Simulator – Mining Algorithm

* Coding Phase: Pseudo Code / Flow Chart / Algorithm

- **Initialize Block #1**
  - Set the previous hash of Block #1 to all zeroes.
- **Mine Block #1**
  - Click **Mine** to find a nonce that produces a valid hash.
  - Block turns green once valid.
- **Mine Block #2**
  - Previous hash auto-fills from Block #1.
  - Click **Mine** to find a valid nonce.
  - Block turns green on success.
- **Mine Blocks #3 and #4**
  - Each block uses the hash of the previous block.
  - Click **Mine** to validate.
  - Green indicates successful mining.
- **Check Tampering**
  - Change any block's data or nonce.
  - Affected block and all following blocks turn red.
- **Clear Blockchain**
  - Click **Clear** to reset all blocks.
  - Block #1 is auto-mined again.
- **Test Integrity**
  - Modify earlier blocks and observe chain breakage.
  - Record updated nonces, hashes, color changes, and validity.

Software used

1. Blockchain-academy (https://blockchain-academy.hs-mittweida.de/2021/05/proof-of-work-simulator/)
2. MS Word.
3. Brave for researching.

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

* Implementation Phase: Final Output (no error)

1. First block mine.

2. Mine the second block with previous hash - 00e36107172a866610e90bf67f49 and Hash- 005f28d1f2dfa0421ee5beb7dc8f

3. Accordingly mine the 4th block

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

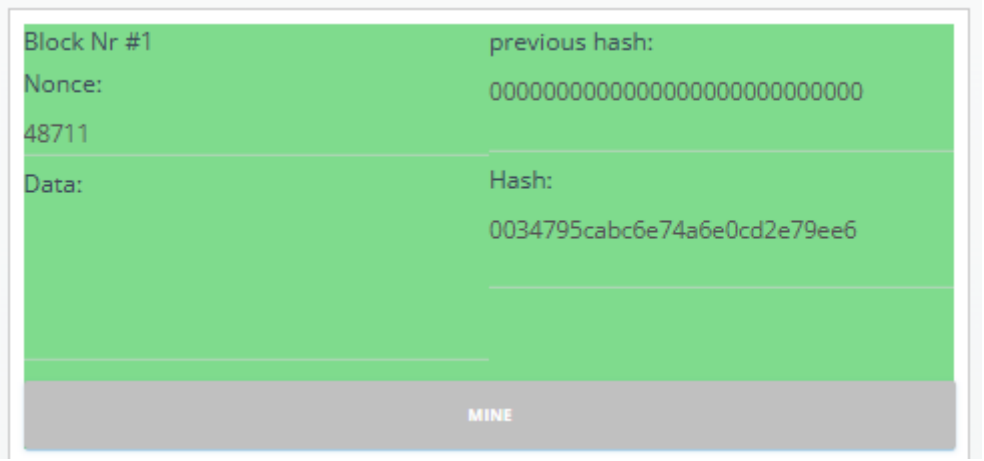
* Implementation Phase: Final Output (no error)

4. If I do some changes in any block or tamper any data in any block then this shows the chain is **no longer valid** due to tampering.

5. **Reset All Blocks**

   Click the **Clear** button.

   Block #1 auto-mines again and turns green.



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

* Implementation Phase: Final Output (no error)

- We can re-mine by giving different data or value from starting.

***Observations:**

1. The validity of each block relies on the precise hash of its preceding block.
2. Mining involves iterating the nonce until the resulting hash satisfies the set difficulty level.
3. Modifying any block disrupts the chain by rendering that block and all subsequent ones invalid.

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.