Centurion University
Shaping Lives... Empowering Communities...

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 :

* Coding Phase: Pseudo Code / Flow Chart / Algorithm

ALGORITHM:

1. Open this link: Proof of Work Simulator.
2. You will see multiple blocks (Block #1, Block #2, etc.).
3. Click "Mine" on Block #1.
4. Wait for the block to turn green (valid hash with leading zeros).
5. Now click "Mine" on Block #2.
6. Repeat mining for other blocks one by one.
7. Try changing the Data in any block.
8. Observe that all next blocks turn red (chain broken).
9. Click "Clear" to reset and try again.
10. Understand how mining keeps the chain valid.

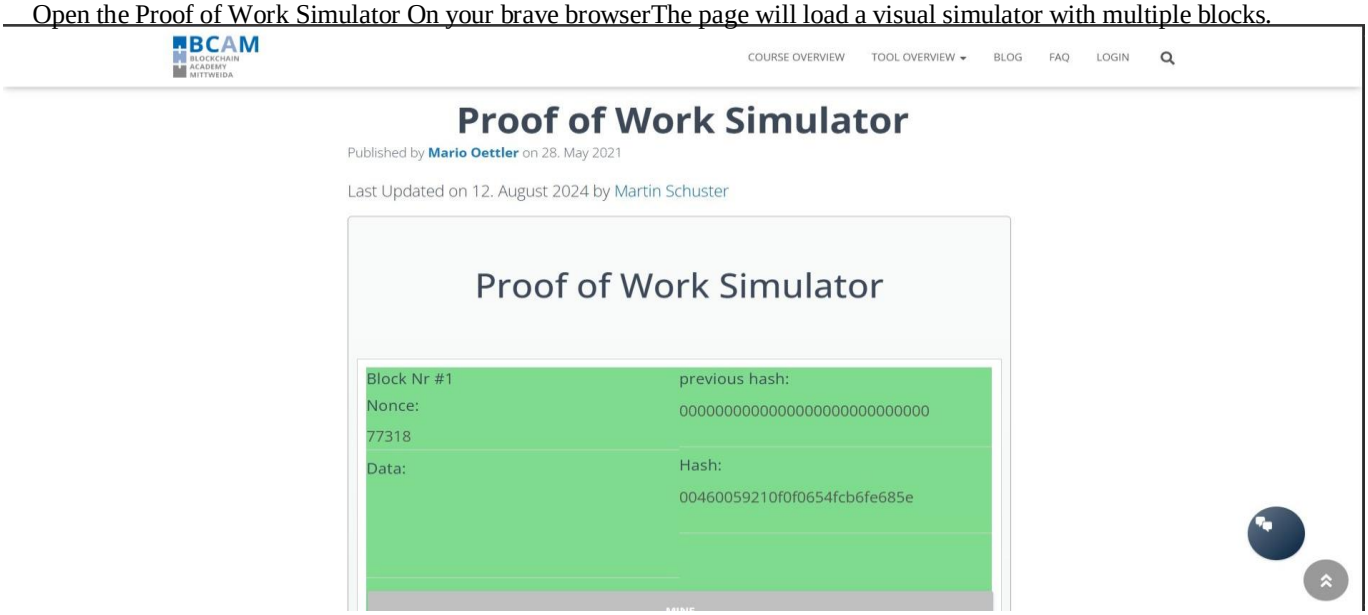
* Softwares used

1. Brave Web Browser
2. Proof of Work Simulator – Online tool from Blockchain Academy (Mittweida).

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

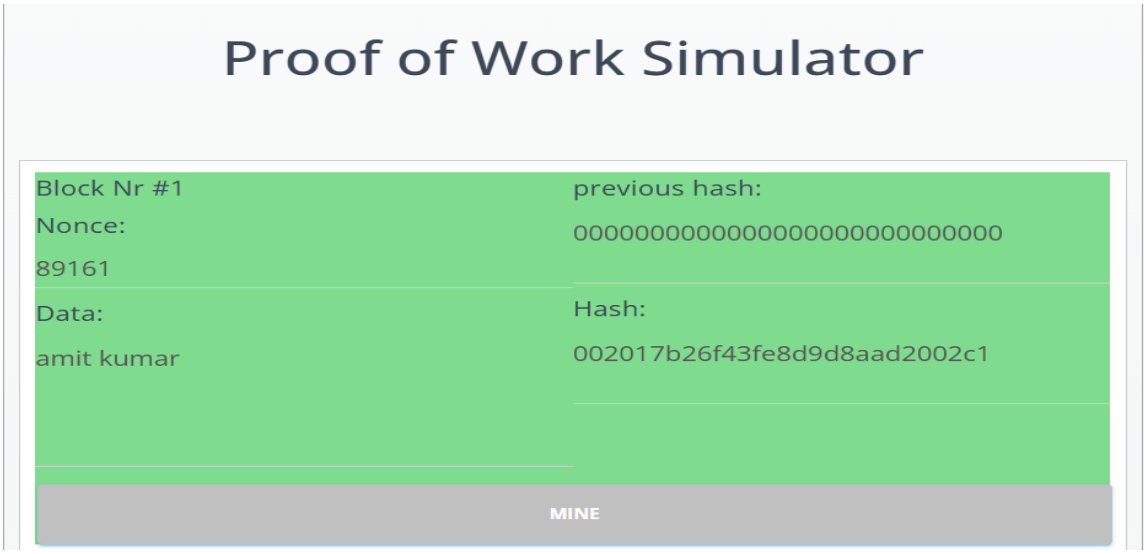
* Testing Phase: Compilation of Code (error detection)

Open the Proof of Work Simulator On your brave browserThe page will load a visual simulator with multiple blocks.



Understand the Layout You'll see blocks labeled Block #1, Block #2, etc.
Each block has:Data (text field),Nonce (number),Previous Hash (link to previous block),Hash (current block hash),Mine button.

Mine the First Block Click the "Mine" button on Block #1.The simulator will start calculating a valid nonce.Once the hash of the block starts with required zeroes (like 00...), the block turns green (valid).Now Block #1 is mined successfully.



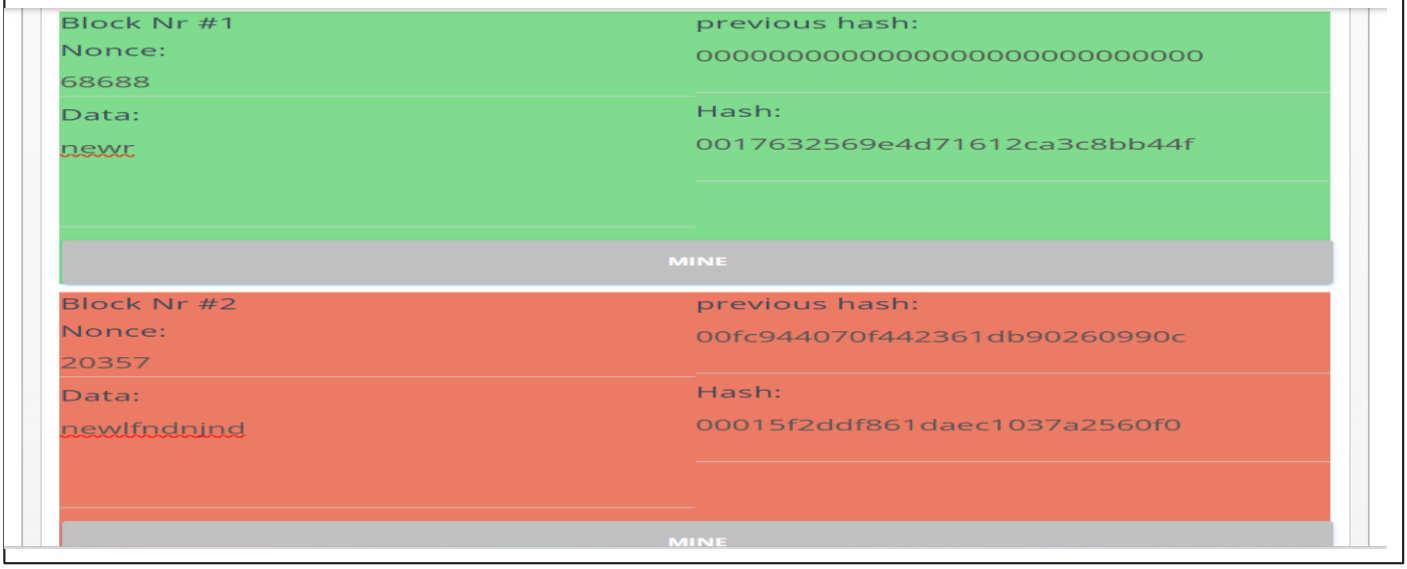
Mine the Next Block (Block #2),Block #2 takes the hash of Block #1 as its "Previous Hash".
Click the "Mine" button on Block #2.Again, the simulator finds a valid nonce and turns the block green once it's valid.

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

* Testing Phase: Compilation of Code (error detection)

Continue Mining All Blocks Repeat the process for Block #3 and Block #4. Each block is dependent on the hash of the previous block.

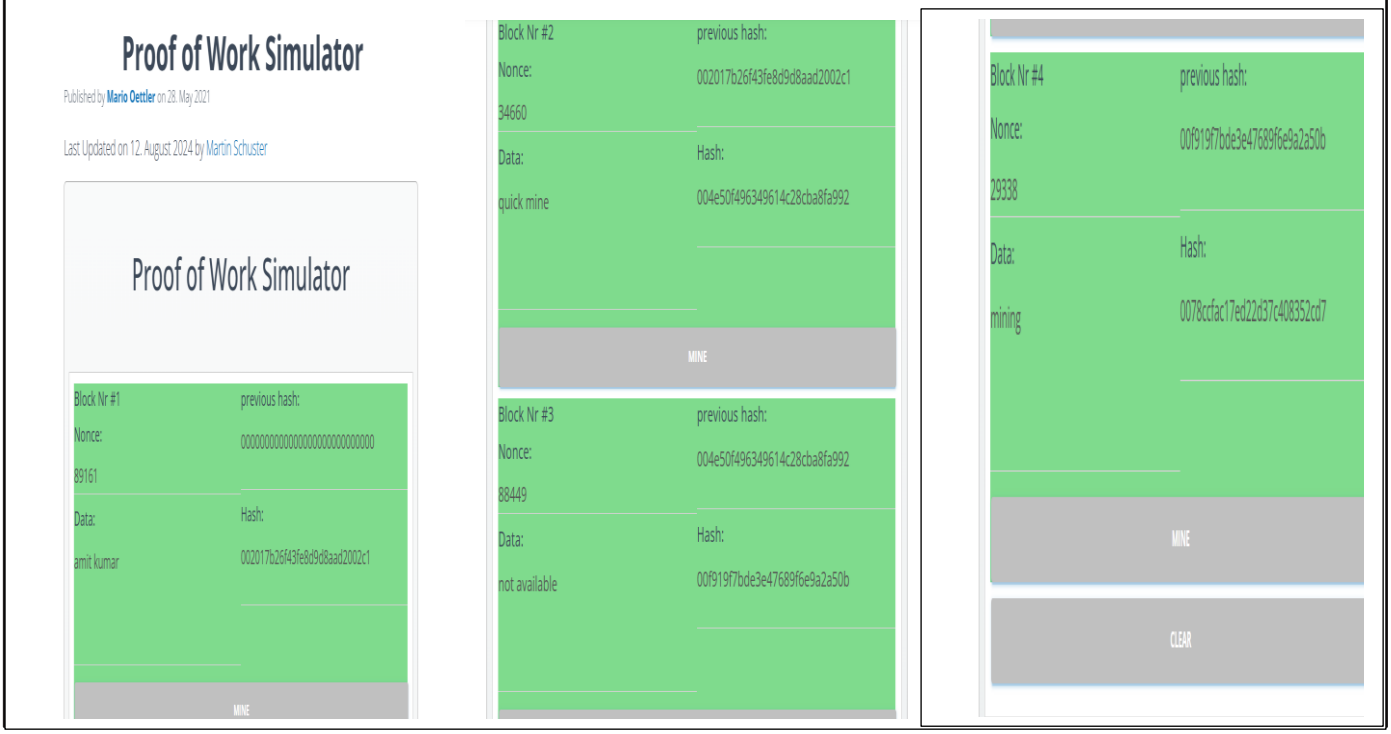
Modify the Block Data Now try changing the Data field in Block #1.You'll see that the hash changes, and Block #1 and all blocks after it turn red.This shows the chain is broken due to tampering—this is how blockchain ensures immutability.



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

* Implementation Phase: Final Output (no error)

Now you see i successfully completed the mining of all the blocks



* Observations

- In this Proof of Work (PoW) mining simulator, you can test the mining of blocks. Click on “mine” to create your first block. Once the hash puzzle is solved, the block turns green.
- Now, you can mine the next block. It takes the hash from the previous block as input and tries to find a nonce that solves the hash puzzle. Again, as soon as the solution is found, the block turns green. You can continue with the other blocks.
- If you make any changes to one the blocks, it is mined again. The result is that the hash changes and the link to all following blocks breaks. You can see this because all following blocks turn red.

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. :

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

Signature of the Faculty:

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