



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 :

* 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).

* 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.



COURSE OVERVIEW TOOL OVERVIEW BLOG FAQ LOGIN

Proof of Work Simulator

Published by [Mario Oettler](#) on 28. May 2021

Last Updated on 12. August 2024 by [Martin Schuster](#)

Proof of Work Simulator

Block Nr #1	previous hash:
Nonce: 77318	00000000000000000000000000000000
Data:	Hash: 00460059210f0f0654fcb6fe685e

MINE

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.

Proof of Work Simulator

Block Nr #1	previous hash:
Nonce: 89161	00000000000000000000000000000000
Data: amit kumar	Hash: 002017b26f43fe8d9d8aad2002c1

MINE

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.

* Testing Phase: Compilation of Code (error detection)

MINE	
Block Nr #2	previous hash:
Nonce:	
Data:	Hash:
MINE	
Block Nr #3	previous hash:
Nonce:	
Data:	Hash:

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.

Block Nr #1	previous hash:
Nonce:	00000000000000000000000000000000
89161	
Data:	Hash:
amit kumar	002017b26f43fe8d9d8aad2002c1
MINE	

Block Nr #1	previous hash:
Nonce:	00000000000000000000000000000000
68688	
Data:	Hash:
newr	0017632569e4d71612ca3c8bb44f
MINE	
Block Nr #2	previous hash:
Nonce:	00fc944070f442361db90260990c
20357	
Data:	Hash:
newlndndnd	00015f2ddf861daec1037a2560f0
MINE	

* Implementation Phase: Final Output (no error)

Applied and Action Learning

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

Proof of Work Simulator

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Proof of Work Simulator

Block Nr #1

previous hash:

Nonce:

00000000000000000000000000000000

89161

Data:

Hash:

amit kumar

002017b26f43fe8d9d8aad2002c1

MINE

Block Nr #2

previous hash:

Nonce:

002017b26f43fe8d9d8aad2002c1

34660

Data:

Hash:

quick mine

004e50f496349614c28cba8fa992

MINE

Block Nr #3

previous hash:

Nonce:

004e50f496349614c28cba8fa992

88449

Data:

Hash:

not available

00f919f7bde3e47689f6e9a2a50b

MINE

Block Nr #4

previous hash:

Nonce:

00f919f7bde3e47689f6e9a2a50b

29338

Data:

Hash:

mining

0078ccfac17ed22d37c408352cd7

MINE

CLEAR

* 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.

Page No.

Signature of the Faculty: