



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 Experiment : Hash Your First Block – Blockchain Basics and Setup

* Coding Phase: Pseudo Code / Flow Chart / Algorithm

ALGORITHM:

1. Start
2. Explore Blockchain Demo site to test how a hash was Generate
3. In this site You can see the Attributes Like->Block number,Nonce,Data and Hash.
4. This Block is called as Genesis Block.
5. Now You can add some data and start Mining .
6. End

*

Software used

1. Blockchain demo

2. website:

<https://andersbrownworth.com/blockchain/blockchain>

* Testing Phase: Compilation of Code (error detection)

This is a example of a Block how we can add data and how the Hash was Changed

Block

Block: # 1

Nonce: 72608

Data:

Hash: 0000f727854b50bb95c054b39c1fe5c92e5ebcfa4bcb5dc279f56aa96a365e5a

Mine

Now we have to Mine by adding some data into our Block

When i add some data to my Block then we see some changes in our block like Change in colour and change in hash .This is because of Avalanche Effect

Block

Block: # 1

Nonce: 72608

Data: Currently my account Balance is \$1000

Hash: 6851cfb75c85429a9b76898625d6b414275b30016d000437cbfe4a8db579d78b

Mine

In blockchain, especially during mining, the hash must start with a certain number of zeros, like: 4 zeroes

00000a8b54e...

But here, the 000 is in middle of the hash, not the start. So, it's not a valid mined block.

and in Blockchain mining we have to find Out the perfect Nonce for the perfect Hash By solving high computational Mathematical puzzles ,but in this this is a demo site so we have to mine directly it will find the perfect nonce and Hash for this particular data

In Blockchain Mining There was a concept Of Deterministic if we entered same data in another block there was same hash for the same data

FINAL STEP:

If we Click On Mine Button then we will show the change in Nonce and Hash and also in colour ,After Mining there was a perfect hash for our Data.

Block

The screenshot shows a web interface for a blockchain mining demo. It has a light green background. At the top, there's a label 'Block:' followed by a text input field containing '# 1'. Below that is a label 'Nonce:' followed by a text input field containing '109674'. Underneath is a label 'Data:' followed by a large text area containing 'Currently my account Balance is \$1000'. At the bottom, there's a label 'Hash:' followed by a text input field containing '0000fd48fbf25939036a49a9e7cc8caa748b88d30878a01da159a518e5d6dc0a'. Below the hash field is a blue button labeled 'Mine'.



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Name of the Experiment :

* Coding Phase: Pseudo Code / Flow Chart / Algorithm

ALGORITHM:

1. Start
2. Explore Blockchain Demo site to test how a chain of Block Was Working Together. Visit the site: <https://andersbrownworth.com/blockchain/blockchain>
3. In this site You can see the Attributes Like->Block number,Nonce,Data ,Previous Hash and Hash.
4. In the chain of Blocks The first Block is called Genesis Block
5. In the chain of Block we can see that the Block are Interconnected with each other and one block is holding the hash of previous block
6. The genesis block has no previous hash so it is showing totally zeros
7. Now we can explore how changes occurred in the blocks by adding data
8. End

* Testing Phase: Compilation of Code (error detection)

In the blocks when we can add some data and start mining the hash was changed and Nonce was also changed .

And there was a problem ,when we add data in any block there was a impact on there next blocks known as chain reactions

If we see ther are 4 blocks available and in this blocks there was no data added we have to add data to the block to see the changes

* Testing Phase: Compilation of Code (error detection)

Blockchain

Block: # 1

Nonce: 11316

Data:

Prev: 00

Hash: 000015783b764259d382017d91a36d206d0600e2cbb3567748f46a33fe9297cf

Mine

Block: # 2

Nonce: 35230

Data:

Prev: 000015783b764259d382017d91a36d206d0600e2cbb3567748f46a33fe9297cf

Hash: 000012fa9b916eb9078f8d98a7864e697ae83ed54f5146bd84452cdfd043c19

Mine

Block: # 3

Nonce: 12937

Data:

Prev: 000012fa9b916eb9078f8d98a7864e697ae83ed54f5146bd84452cdfd043c19

Hash: 0000b9015ce2a08b61216ba5a0778545bf4ddd7ceb7bbd85dd8062b29a9140bf

Mine

Block: # 4

Nonce: 35990

Data:

Prev: 0000b9015ce2a08b61216ba5a0778545bf4ddd7ceb7bbd85dd8062b29a9140bf

Hash: 0000ae8bbc96cf89c68be6e10a865cc47c6c48a9ebec3c6cad729646cefaef83

Mine

In above there are normal blocks without data in next step we have to add data to a particular block to chek the chaining effects.

Blockchain

Block: # 1

Nonce: 11316

Data:

Prev: 00

Hash: 000015783b764259d382017d91a36d206d0600e2cbb3567748f46a33fe9297cf

Mine

Block: # 2

Nonce: 35230

Data: My wallet address is 23e45et5647te46trq

Prev: 000015783b764259d382017d91a36d206d0600e2cbb3567748f46a33fe9297cf

Hash: 9db55ef21e232824668b2454512fffc7ee9a769463012232afe40b6dbe58a0b5b

Mine

Block: # 3

Nonce: 12937

Data:

Prev: d56cc7f8ca65e557356a6ce47c158f4d659cd17c69a84e8ba29dced8f90de97

Hash: 6c92783d7accd839607934e2dcd3f6af917e64cc3cbbb670824f41e2cd82b766

Mine

Block: # 4

Nonce: 35990

Data:

Prev: 6c92783d7accd839607934e2dcd3f6af917e64cc3cbbb670824f41e2cd82b766

Hash: 1ba16a4f2501e48c9de014b73e45ffcfca06329521bb808070ad93b5d18171f

Mine

In this i add a data to the block 2 then we see the colour and hash are changes for the next blocks

After add the data of block 2 the next blocks are wrong because of the wrong hash and once in block 2 ,to fix this we have start mine for each block ,and after mining there was a perfect has and nonce for each block

Blockchain

Observation:

- 1.Each block contains important attributes like Block Number, Nonce, Data, Previous Hash, and Hash.
- 2.The Genesis Block has no Previous Hash, so it is initialized with all zeros.
- 3.When data in any block is changed, its hash and the hashes of all following blocks also change, showing how blocks are linked and ensure data integrity.

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:

Page No.....

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