	School: .... Campus: ....
Centurion UNIVERSITY	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 its previous hash to all zeroes.

☐ **Mine Block #1** – Click *Mine* until a nonce generates a hash meeting the difficulty criteria; block turns green upon success.

☐ **Mine Block #2** – Previous hash auto-fills from Block #1; click *Mine* to find a valid nonce and turn the block green.

☐ **Mine Block #3 and #4** – Each uses the previous block's hash; mine until each turns green.

☐ **Tampering Test** – Modify any block's data or nonce; observe that the block and all subsequent blocks turn red, indicating invalidity.

☐ **Clear Blockchain** – Click *Clear* to reset; Block #1 auto-mines and turns green.

☐ **Test Integrity** – Modify earlier blocks again and observe changes in hash, nonce, and validity.

Software used

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 If I do some changes in any block or tamper any data in any block then this shows the chain is **no longer valid** due to tampering.

Block Nr #2

previous hash:
00e36107172a866610e90bf67f49

Nonce:
14156

Data:

Hash:
005f28d1f2dfa0421ee5beb7dc8f

MINE

Block Nr #1

previous hash:
0000000000000000000000000000

Nonce:
27648

Data:

Hash:
00e36107172a866610e90bf67f49

MINE

Block Nr #4

previous hash:
00ba3bb80209a45a9130cd5e0f98

Nonce:
94186

Data:

Hash:
00d300982cafca595a8493de5512

MINE

* Implementation Phase: Final Output (no error)

Proof of Work Simulator

Block Nr #1
Nonce:
15654
Data:
22222

previous hash:
0000000000000000000000000000000
Hash:
003e912e8fccd82136d26b7e3a97

MINE

Block Nr #2
Nonce:
14156
Data:

previous hash:
00e36107172a866610e90bf67f49
Hash:
005f28d1f2dfa0421ee5beb7dc8f

MINE

Block Nr #3
Nonce:
51932
Data:

previous hash:
005f28d1f2dfa0421ee5beb7dc8f
Hash:
00ba3bb80209a45a9130cd5e0f98

MINE

5. **Reset All Blocks**

    Click the **Clear** button.

    Block #1 auto-mines again and turns green.

Block Nr #1
Nonce:
48711
Data:

previous hash:
0000000000000000000000000000000
Hash:
0034795cabc6e74a6e0cd2e79ee6

MINE

* Implementation Phase: Final Output (no error)

Applied and Action Learning

*Observations:

Mining each block required finding a nonce that produced a valid hash. Any tampering with block data broke the chain, making affected blocks invalid. Resetting re-mined Block #1 automatically, restoring chain 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 :

Signature of the Faculty:

Regn. No. :

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