# Applied and Action Learning
(Learning by Doing and Discovery)

**Name of the Experiement :** **Stake Your Claim – Proof of Stake Simulation**

## * Coding Phase: Pseudo Code / Flow Chart / Algorithm

☐ **Start**

☐ **Input number of validators and their respective stakes.**

☐ **Calculate the total stake.**

☐ **For each validator, compute**

→ **Probability = stake / total stake.**

☐ **Generate a random number between 0 and 1.**

☐ **Select a validator whose probability range includes the random number.**

☐ **Assign that validator as the block validator.**

☐ **Add a reward (e.g., +10 tokens) to the validator's stake.**

☐ **Display the selected validator and updated stakes.**

☐ **Stop.**

## Software used

1. Language: Python
2. IDE: VS Code
3. Library: Web3.py / Simulated blockchain network
4. OS: Windows

## * Implementation Phase: Final Output (no error)

- **Validators were created with different stakes.**
-
- **Blocks were successfully added to the blockchain without errors.**
-
- **Selected validators reflected stake proportion in block creation.**
-
- **Simulation ran smoothly, showing PoS mechanism working correctly.**

## * Observations:

☐ Validators with **higher stake values** have a **greater chance** of being selected for block validation.

☐ The **random selection** process ensures fairness while maintaining decentralization.

☐ Each simulation run may select a **different validator**, depending on the random number generated.

☐ The **total stake** determines the **selection probability** of each validator.

☐ After each round, the selected validator **receives a reward**, increasing their future chances of selection.

☐ No mining or energy-intensive computation is required — only **stake-based selection**.

☐ The system demonstrates **how PoS achieves consensus** efficiently compared to Proof of Work.

/////////

# 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. :

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