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

Steps (Implementation):

1.Wrote and deployed smart contract using Remix
2.users staked different amounts of ETH
3.Used getChance to view % chances for each validator
4.Simulated validator selection using JavaScript script

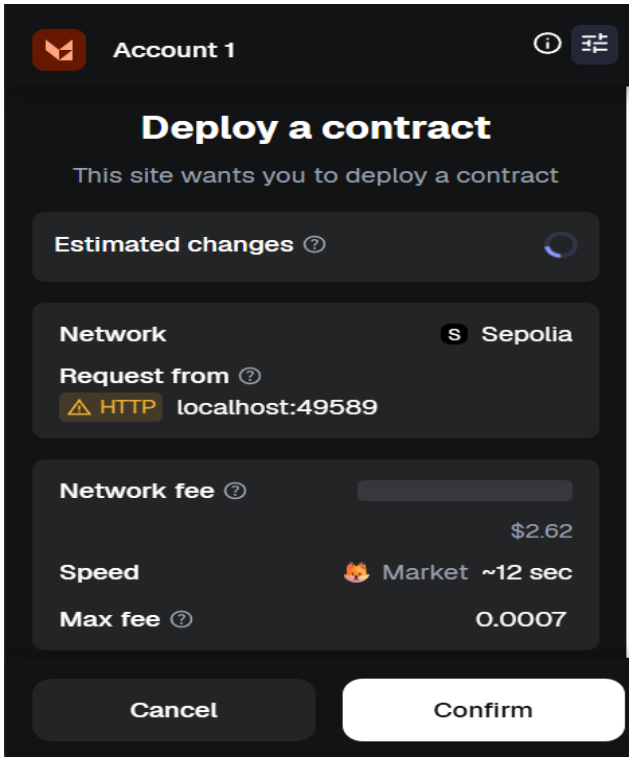
* Softwares used

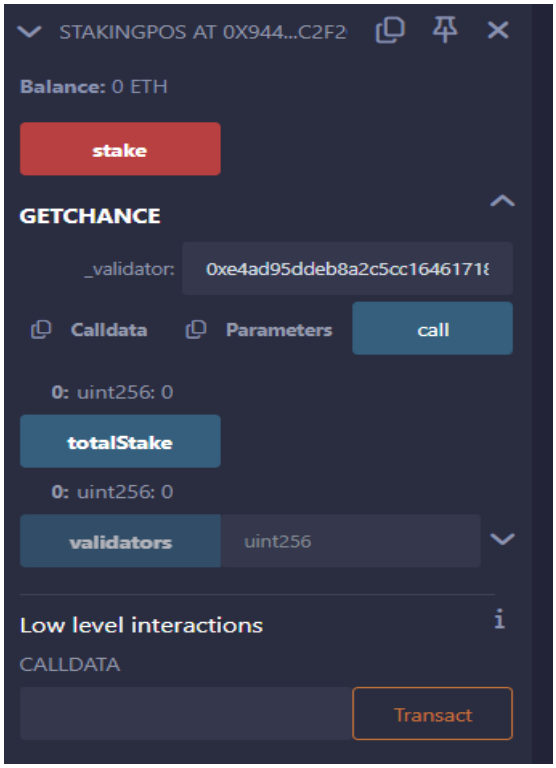
1.Remix IDE
2.Solidity ^0.8.x
3.MetaMask
4. Remix VM

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

* Implementation Phase: Final Output (no error)

```solidity
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;
contract StakingPoS {
    struct Validator {
        address account;
        uint256 stake;
    }
    Validator[] public validators;
    uint256 public totalStake;
    function stake() public payable {    infinite gas
        require(msg.value > 0, "Stake must be greater than 0");
        for (uint256 i = 0; i < validators.length; i++) {
            if (validators[i].account == msg.sender) {
                validators[i].stake += msg.value;
                totalStake += msg.value;
                return;
            }
        }
        validators.push(Validator(msg.sender, msg.value));
        totalStake += msg.value;
    }
    function getChance(address _validator) public view returns(uint256) {    infinite gas
        for (uint256 i = 0; i < validators.length; i++) {
            if (validators[i].account == _validator) {
                return (validators[i].stake * 100) / totalStake;
            }
        }
        return 0;
    }
}
```





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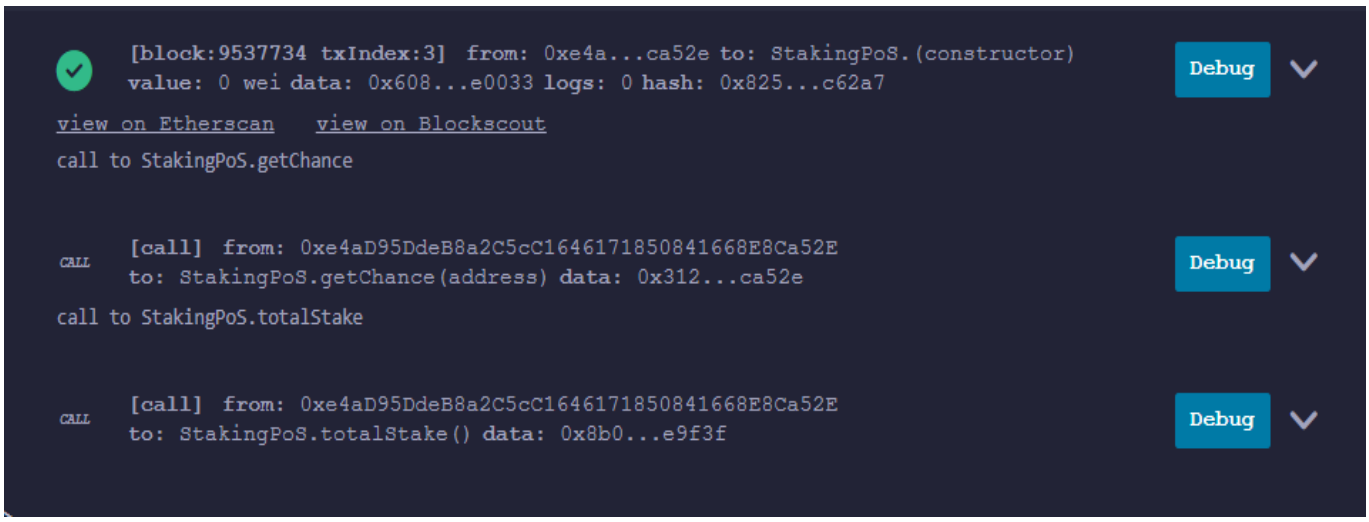

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* Observations

1.Validators with a higher stake had a greater chance of being selected for block validation.
2.The total stake percentage directly influenced the probability of validator selection.
3.Even validators with low stake had a chance of being selected, but it was significantly reduced.
4.The simulation successfully showed how PoS promotes fairness and energy efficiency 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 :

Regn. No. :

Signature of the Faculty:

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