**Lab 5 Smart Contract #1**

* ***School of IT is developing its own cryptocurrency Soitcoins via ICO (initial coin offering).***
* ***School will issue one million Soitcoins to investors who can buy them with NZD***
* ***School will offer a buy back option so that investors can covert Soitcoins back to NZD***
* ***Implement smart contract through Solidity.***
* ***Same way we used Postman and React in earlier labs to interact with our blockchain.***
* ***We will use Ganache to interact with the transactions and blocks on our personal Ethereum blockchain.***
* ***We will use the Myetherwallet to buy and sell Soitcoins***
* //Soitcoins ICO
* // SPDX-Licence-Identifier: GPL-3.0
* // Version of compiler
* pragam solidity ^0.5.0;
* contract Soitcoins\_ico {
* //defining the public variables that can be accessed by anyone even outside contract
* //one public variable will define max number of Soitcoins to be issued with 1 million coins
* //one public variable will specify $1 = SOIT100
* //one public variable will specify number of SOIT bought by investors
* //Specify the maximum number of Soitcoins available for sale
* uint public max\_soitcoins - 1000000;
* //Specify the NZD to Soitcoin conversion rate
* uint public nzd\_to\_soitcoin = 100;
* //Specify the total number of Soitcoins that have been bought by investors
* uint public total\_soitcoins\_bought = 0;
* //Mapping from the investor address to its equity in Soitcoins and to NZD
* //create a mapping between investor ethereum address (public key) and their equity in SOIT and in NZD
* //mapping like a function which the data of mapping stored in array
* //one mapping will return the equity in soitcoints
* //other mapping will return the equity in NZD
* mapping(address => uint) equity\_soitcoins;
* mapping(address => uint) equity\_nzd;
* // Check if there sre still Soitcoins available for purchase by investors
* //modifier to check if investor can buy or sell soitcoins
* //modifier can check if any remaining soitcoins
* modifier can\_buy\_soitcoins(uint nzd\_invested) {
* require (nzd\_invested \* nzd\_to\_soitcoin + total\_soitcoins\_bought <= max\_soitcoins);
* \_;
* }
* // Get an investor's equity in Soitcoins
* function equity\_in\_soitcoins(address investor) external view returns (uint) {
* return equity\_soitcoins[investor];
* }
* // Get an investor's equity in Soitcoins
* function equity\_in\_nzd(address investor) external view returns (uint) {
* return equity\_nzd[investor];
* // Investor buying Soitcoins
* //if investor wants to invest money, his equity will be checked and the number of soitcoins available for sale.
* //investor has positive equity and soits available for sale, condition verified
* //then sale goes ahead
* function buy\_soitcoins(address investor, uint nzd\_invested) external
* can\_buy\_soitcoins(nzd\_invested) {
* uint soitcoins\_bought = nzd\_invested \* nzd\_to\_soitcoin;
* equity\_soitcoins[investor] += soitcoins\_bought;
* equity\_nzd[investor] = equity\_soitcoins[investor] / 100;
* total\_soitcoins\_bought += soitcoins\_bought;
* ｝
* // Investor selling Soitcoins\_bought
* function sell\_soitcoins (address investor, uint soitcoins\_sold) external {
* equity\_soitcoins[investor] -= soitcoins\_sold;
* equity\_nzd[investor] = equity\_soitcoins[investor] / 100;
* total\_soitcoins\_bought -= soitcoins\_sold;
* }
* }

**We have created a MyEtherWallet and successfully accessed wallet from Metamask**

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**We receive an error message**

**“e.startsWith is not a function { "originalError": {} }”**

**It is advised to create a new wallet in Mew and then send Sepolia test ethers to address**

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**A screenshot of a computer

Description automatically generatedThis works**

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Description automatically generatedA screenshot of a phone

Description automatically generated**Now we interact with the contract after being successfully deployed**

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Description automatically generated**So we have invested 100nzd in the buy\_soitcoins function**

**Below is confirmation of the transactions**

**https://sepolia.ethvm.com/tx/0x8557837363f4b368b424babe480fea18b301359b9e6d87be72cceae4d4780c46?t=actions**

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