Bharati Vidyapeeth's

Institute of Management & Information Technology

C.B.D. Belapur, Navi Mumbai 400614

Vision:
Providing high quality, innovative and value-based education in information technology to build competent professionals.

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M1. Technical Skills: To provide solid technical foundation theoretically as well as practically capable of providing quality services to industry.
M2. Development: Department caters to the needs of students through comprehensive educational programs and promotes lifelong learning in the field of computer Applications.
M3. Ethical leadership: Department develops ethical leadership insight in the students to succeed in industry, government and academia

CERTIFICATE

This is to certify that the journal is the work of

Mr. Fardin Raje Roll No. **43** of MCA

(Sem: - _3_ Div: -_B_) For the Academic Year 2021-2023

Subject Code: - MCALE331

Subject Name: Blockchain Lab

_____ _____

Subject-in-charge Principal

Date: _____ _____

External Examiner

Date: _____

Bharati Vidyapeeth's Institute of Management & Information Technology

Academic Year – 2021-23
MCA Sem III Division B
PRACTICAL INDEX
MCALE331 Blockchain LAB

Name: Fardin Raje **Roll No.: 43** **Div: B**

Practical No	Problem Statement	Sign
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2	Implementation of RSA Algorithm (Asymmetric Encryption) Encrypt and decrypt a string.	
3	Implementation of SHA-256 (Use any programming Language)	
4	Implementation of Binary Tree and to show all operations (Insert, Delete, Traversals, Display)	
5	Blockchain creation program using Java	
6	Install Ganache and metamask. Compile and deploy an election smart contract in the personal blockchain using injected web 3 environments. Use Remix online IDE to compile and deploy the smart contract. Execute the smart contract and show the output.	
7	Program using Solidity to check Balance	
8	The use of GANACHE Truffle Suite to Deploy a Smart Contract in Solidity (Blockchain)	
9	Write a program in solidity to create a structured student with Roll no, Name,Class, Department,Course enrolled as variables. Add information of 5 students. Search for a student using Roll no Display all information	
10	Create Daps Voting Process using Solidity smart contract and web3 (available on Classroom)	
11	Mini Project	

Practical No.: 01

Aim: Implementation of Caesar Cipher and show the encryption as well as decryption process using JAVA or Python. (Symmetric Encryption)

Program:

```
def encrypt(text,s):
result = ""
# traverse text
for i in range(len(text)):
      char = text[i]
      # Encrypt uppercase characters
      if (char.isupper()):
            result += chr((ord(char) + s-65) % 26 + 65)
      # Encrypt lowercase characters
      else:
            result += chr((ord(char) + s - 97) % 26 + 97)
return result
#check the above function
text = "ATTACKATONCE"
s = 4
print ("Text : " + text)
print ("Shift : " + str(s))
print ("Cipher: " + encrypt(text,s))
```

Output:

```
on311/python.exe "c:/Users/CAPTAIN/OneDrive/Desktop/New folder/rsa.py"
Text : ATTACKATONCE
Shift : 4
Cipher: EXXEGOEXSRGI
PS C:\Users\CAPTAIN\OneDrive\Desktop\New folder>
```

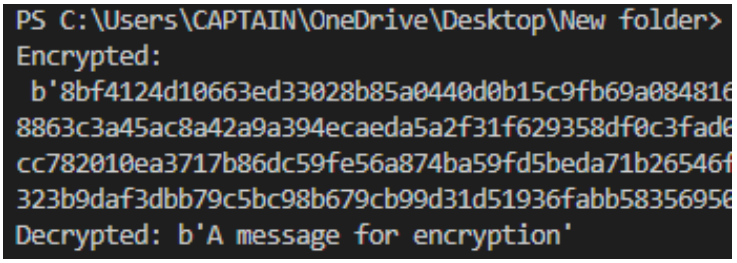
Practical No.: 02

Aim: Implementation of RSA Algorithm (Asymmetric Encryption) Encrypt and decrypt a string.

Program:

```
Pip install rsa
import rsa
public_key, private_key=rsa.newkeys (512)
def encrypt_text (plain_text):
    plain_text=plain_text.encode('utf8')
    encrypted_text=rsa.encrypt (plain_text, public_key)
    return encrypted_text
def decrypt_text (encrypted_text) :
     decrypted_text=rsa.decrypt(encrypted_text, private_key)
     return decrypted_text.decode('utf-8')

# testing
plain_text="Tayor Swift is the Music Industry"
encrypted_text=encrypt_text (plain_text)
print("Encrypted text is = %s" %(encrypted_text))
decrypted_text= decrypt_text (encrypted_text)
print ("Decrypted text is = %s" %(decrypted_text))
```

Output:



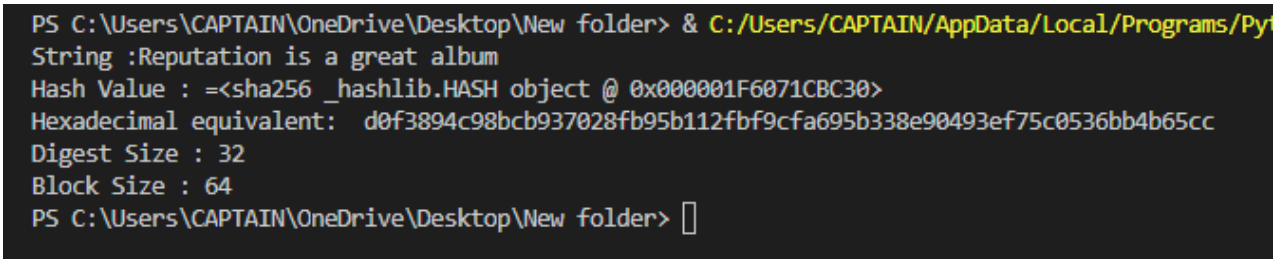
Practical No.: 03

Aim: Implementation of SHA-256 (Use any programming Language)

Program:

```
import hashlib
string="Reputation is a great album"
encoded=string.encode()
result = hashlib.sha256(encoded)
print ("String :",end ="")
print (string)
print ("Hash Value : =",end="")
print (result)
print("Hexadecimal equivalent: ",result.hexdigest())
print ("Digest Size : ", end ="")
print (result.digest_size)
print ("Block Size : ", end ="")
print (result.block_size)
```

Output:



Practical No.: 04

Aim: Implementation of Binary Tree and to show all operations (Insert, Delete, Traversals, Display)

Program:

```
class Node:
   def __init__(self, data):
      self.left = None
      self.right = None
      self.data = data

# Insert Node
   def insert(self, data):
      if self.data:
         if data < self.data:
            if self.left is None:
               self.left = Node(data)
            else:
               self.left.insert(data)
         elif data > self.data:
            if self.right is None:
               self.right = Node(data)
            else:
               self.right.insert(data)
      else:
         self.data = data

# Print the Tree
   def PrintTree(self):
      if self.left:
         self.left.PrintTree()
      print( self.data),
      if self.right:
         self.right.PrintTree()

# Preorder traversal
# Root -> Left ->Right
   def PreorderTraversal(self, root):
      res = []
      if root:
         res.append(root.data)
         res = res + self.PreorderTraversal(root.left)
         res = res + self.PreorderTraversal(root.right)
      return res
```

 # function to delete the given deepest node (d_node) in binary tree

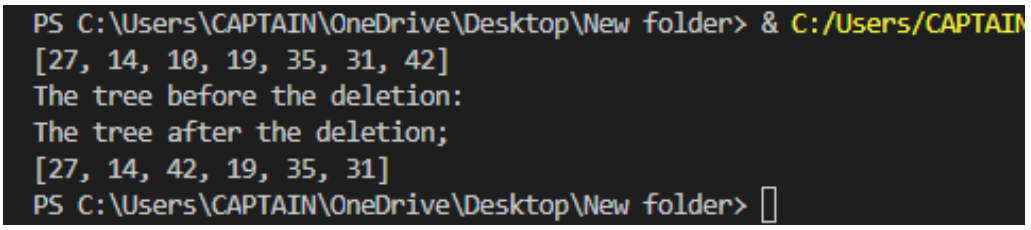
```
def deleteDeepest(root, d_node):
    q = []
    q.append(root)
    while(len(q)):
        temp = q.pop(0)
        if temp is d_node:
            temp = None
            return
        if temp.right:
            if temp.right is d_node:
                temp.right = None
                return
            else:
                q.append(temp.right)
        if temp.left:
            if temp.left is d_node:
                temp.left = None
                return
            else:
                q.append(temp.left)
```

 # function to delete element in binary tree

```
def deletion(root, key):
    if root == None:
        return None
    if root.left == None and root.right == None:
        if root.key == key:
            return None
        else:
            return root
    key_node = None
    q = []
    q.append(root)
    temp = None
    while(len(q)):
        temp = q.pop(0)
        if temp.data == key:
            key_node = temp
        if temp.left:
            q.append(temp.left)
        if temp.right:
            q.append(temp.right)
    if key_node:
        x = temp.data
        deleteDeepest(root, temp)
        key_node.data = x
    return root

root = Node(27)
root.insert(14)
root.insert(35)
root.insert(10)
```

```
root.insert(19)
root.insert(31)
root.insert(42)
print(root.PreorderTraversal(root))
print("The tree before the deletion:")
key = 10
root = deletion(root, key)
print("The tree after the deletion;")
print(root.PreorderTraversal(root))
```

Output:



Practical No.: 05

Aim: Blockchain creation program using Java

Program:

```
const SHA256=require("crypto-js/sha256");
class block
{
constructor(index,timestamp,data,previoushash="")
{
this.index=index;
this.timestamp=timestamp;
this.data=data;
this.previoushash=previoushash;
this.hash=this.calculateHash();
}
calculateHash()
{
return SHA256(this.index
+this.timestamp+this.previoushash+JSON.stringify(this.data)).toString(
);

}
}
class Blockchain
{
constructor(index,timestamp,data,previoushash="")
{
this.index=index;
this.timestamp=timestamp;
this.data=data;
this.previoushash=previoushash;
this.chain=[this.createGenesisBlock()];
}
createGenesisBlock()
{
return new block(0,"23/11/2021","this is first program of blockchain
creation","0");

}
addBlock(newBlock)
{
newBlock.previoushash=this.getLatestBlock().hash;
newBlock.hash=newBlock.calculateHash();
this.chain.push(newBlock);

}
getLatestBlock()
{
return this.chain[this.chain.length-1];
```

```
}
}
let block1 =new block(1,"22/11/2021","data1","o");
let block2 =new block(2,"21/11/2021","second block","");
let block3 =new block(2,"14/11/2021","third block","");

let myBlockchain =new Blockchain();
myBlockchain.addBlock(block1);
myBlockchain.addBlock(block2);
myBlockchain.addBlock(block3);
console.log(JSON.stringify(myBlockchain,null,4));
```

Output:

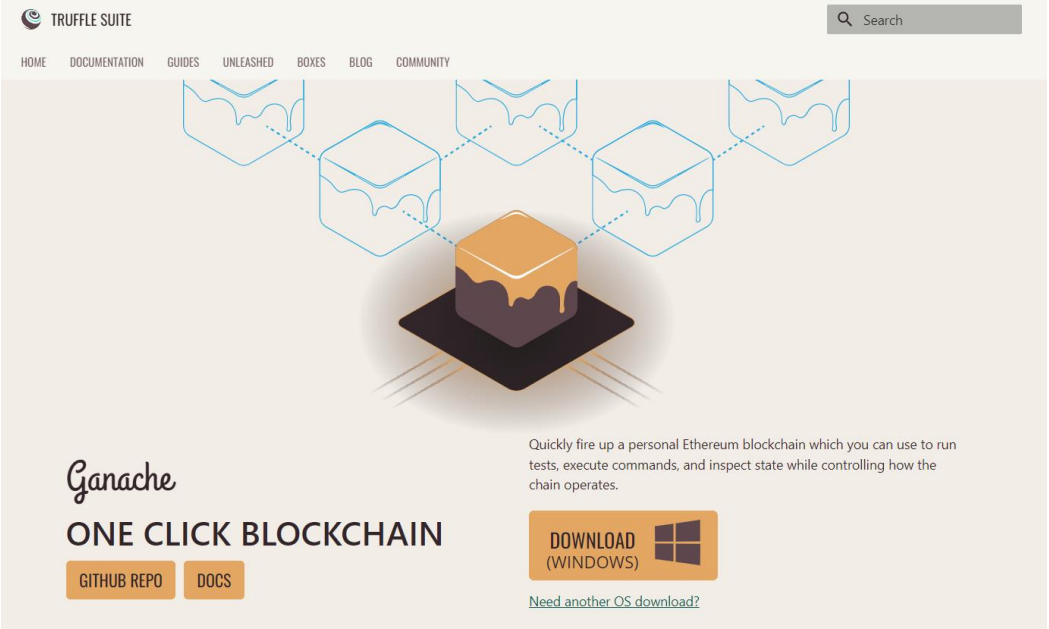
open terminal=
Go in the folder where you have saved folder(path)
->npm install crypto-js
->node creationblockinchainsha256.js

Practical No.: 06

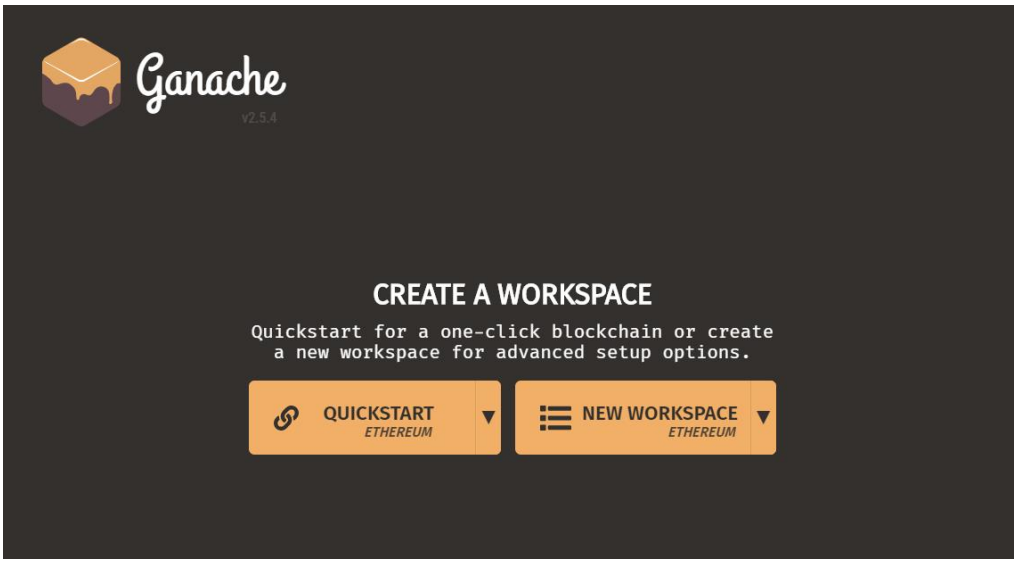
Aim: To implement the installation of Ganache, Metamask and Remix IDE and deploy smart contract using injected web 3 environment.

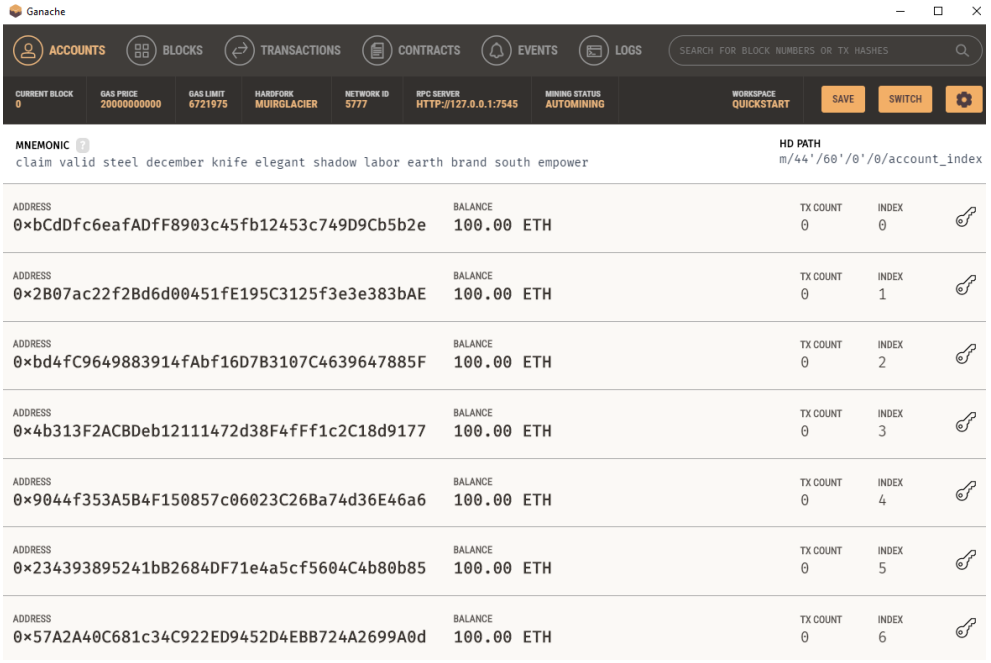
Ganache:

1) Download Ganache from https://www.trufflesuite.com/ganache



2) Install Ganache


Ganache
v2.5.4
CREATE A WORKSPACE
Quickstart for a one-click blockchain or create
a new workspace for advanced setup options.
QUICKSTART
ETHEREUM
NEW WORKSPACE
ETHEREUM

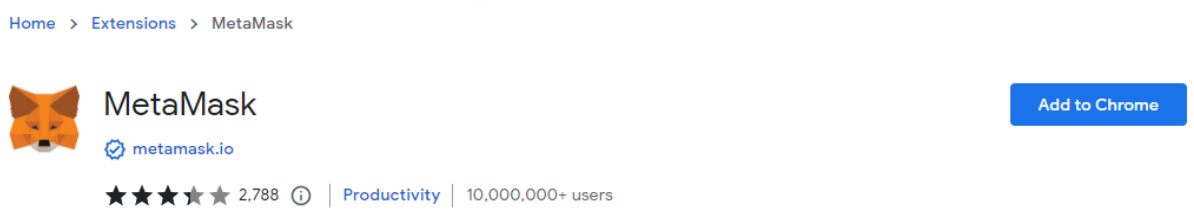


The console in the above screenshot shows user accounts with balanceof 100 ETH (Ether - a currency for transaction on Ethereum platform).It shows a transaction count of zero for each account. As the user has not performed any transactions so far, this count is obviously zero.

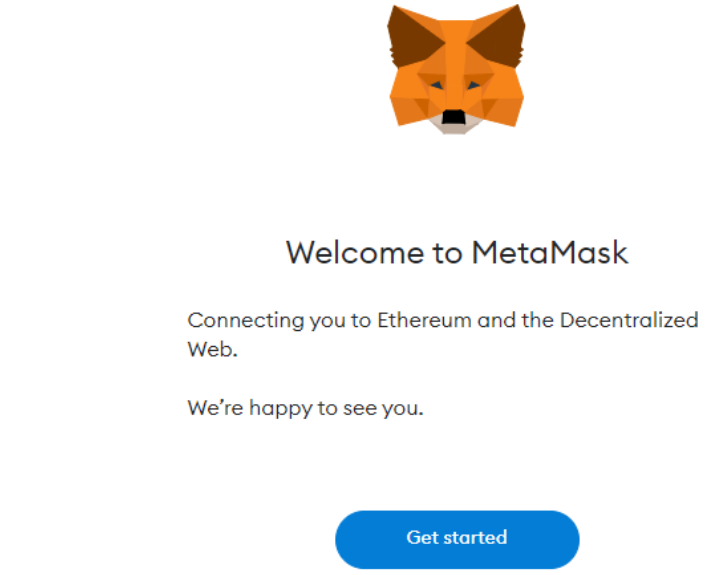
Metamask: Installation

1) Go to Chrome Web Store Extensions Section.

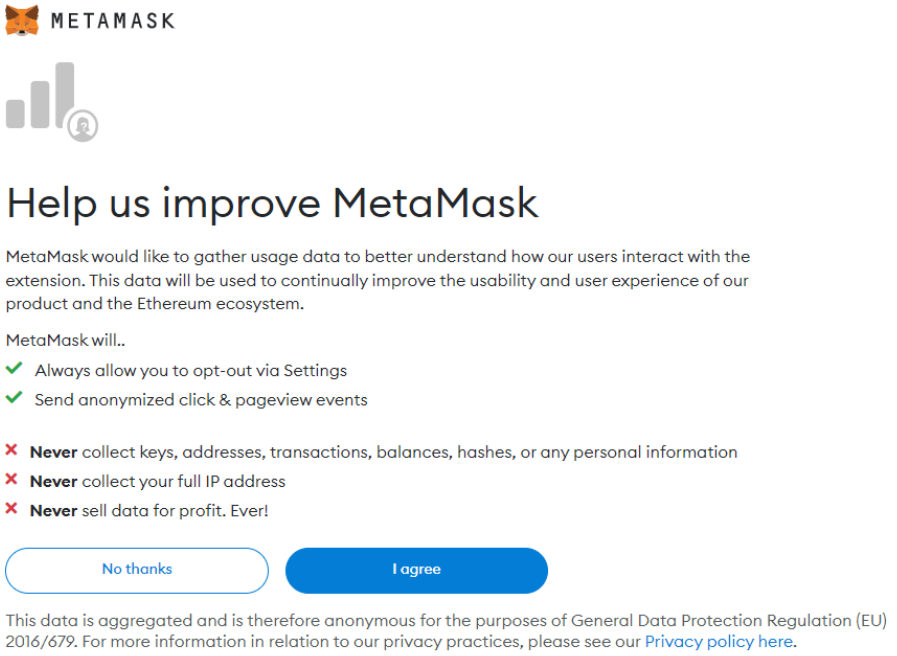
2) Search MetaMask and click add to chrome



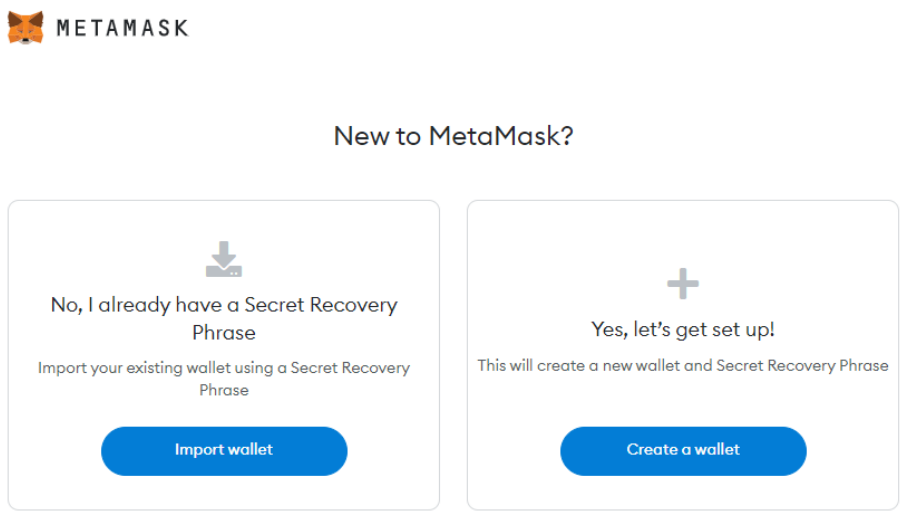
3)Once installation is complete this page will be displayed. Click on the Get Started button



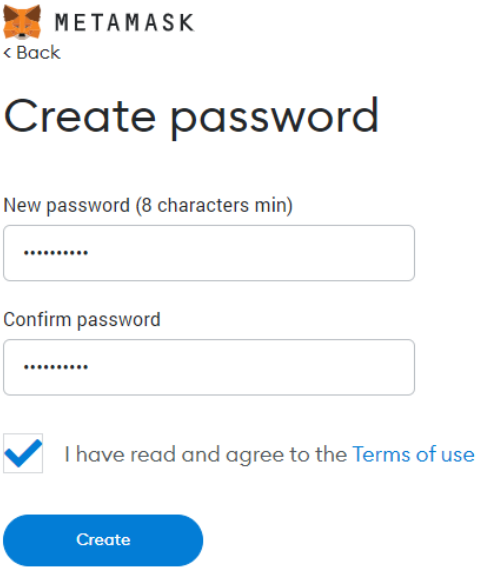
5)Click I Agree button to allow data to be collected to help improve MetaMask or else click the No Thanks button. The wallet canstill be created even if the user will click on the No Thanks button



5) This is the first time creating a wallet, so click the Create aWallet button. If there is already a wallet then import the already created using the Import Wallet button

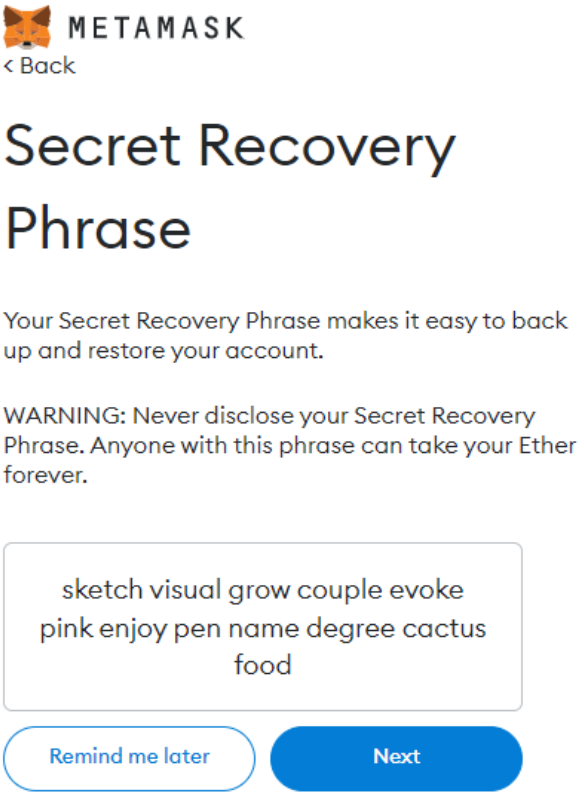


6) Create a password for your wallet. This password is to be entered every time the browser is launched and wants to use MetaMask. A new password needs to be created if chrome is uninstalled or if there is a switching of browsers. In that case, go through the Import Wallet button. This is because MetaMask stores the keys in the browser. Agree to Terms of Use



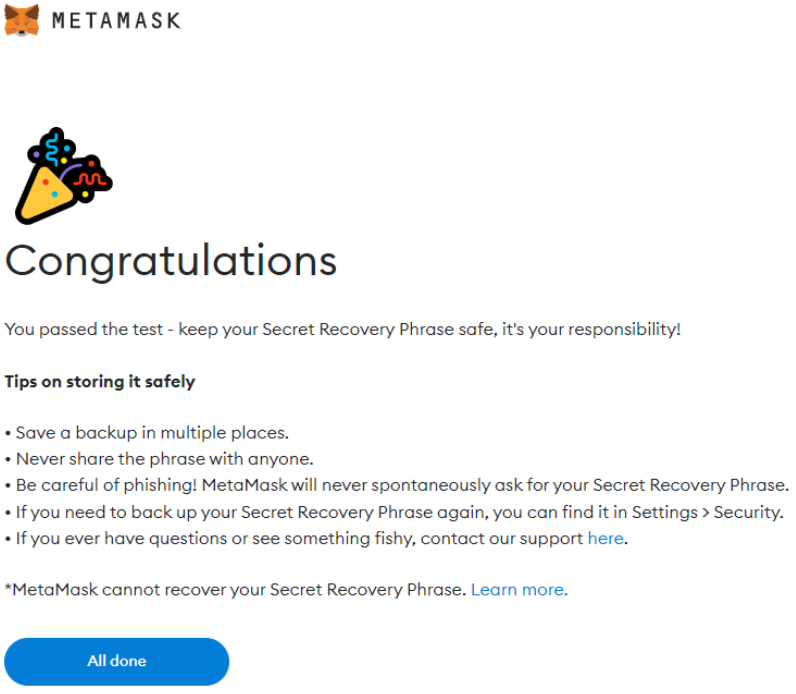
8) Click on the dark area which says Click here to reveal secretwords to get your secret phrase.

9) This is the most important step. Back up your secret phrase properly. Do not store your secret phrase on your computer. Please readeverything on this screen until you understand it completely before proceeding. The secret phrase is the only way to access your wallet if youforget your password.
Once done click the Next button.

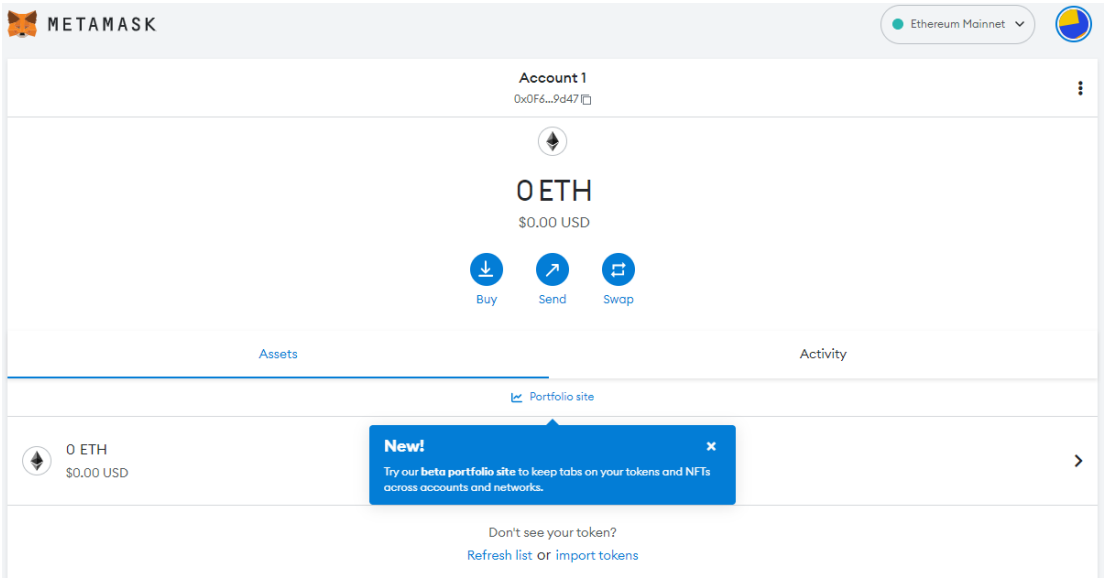


10) Click the buttons respective to the order of the words in your seed phrase. In other words, type the seed phrase using the button onthe screen. If done correctly the Confirm button should turn blue.

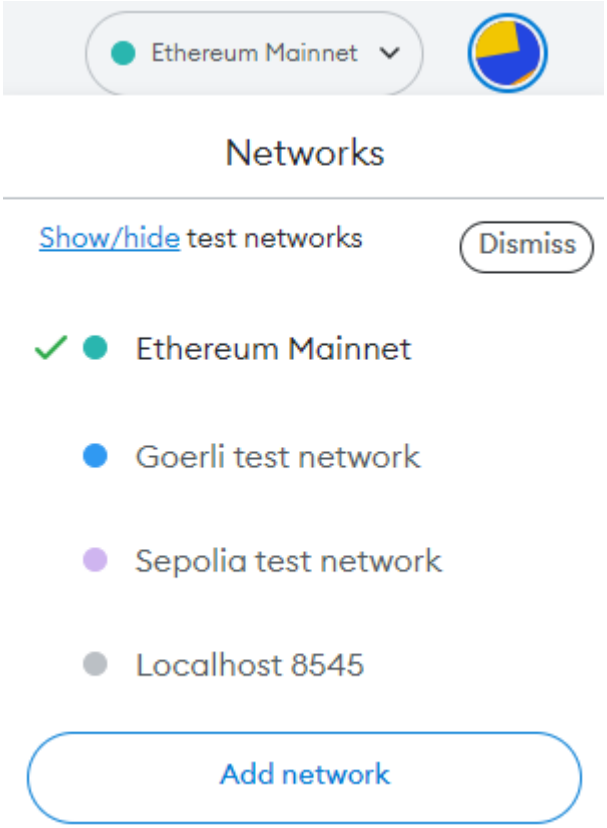
11) Click the All Done button. Please follow the tips mentioned.



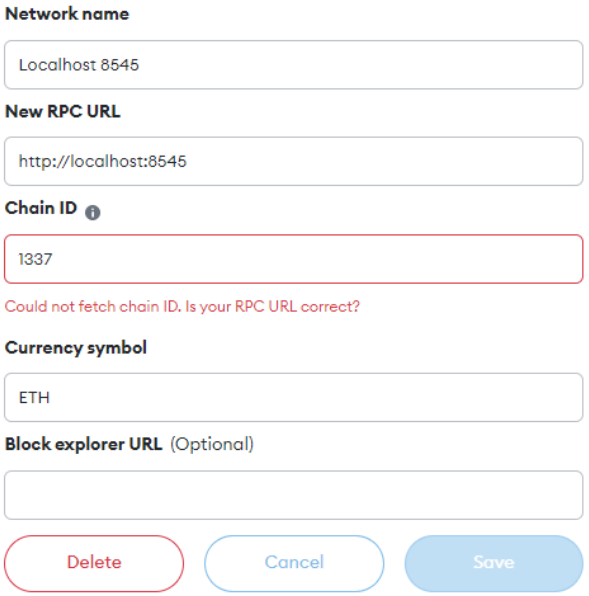
12) One can see the balance and copy the address of the account by clicking on the Account 1 area.



13) One can access MetaMask in the browser by clicking the MetaMask extension icon on the top right.

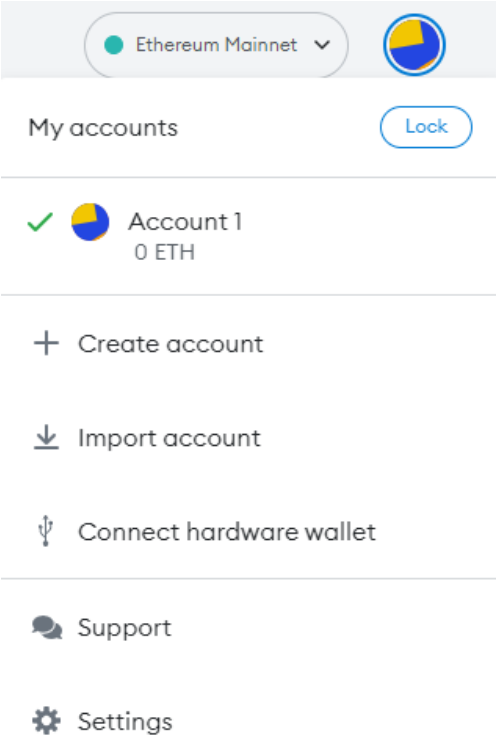


14) Adding Ganache Network to MetaMask.

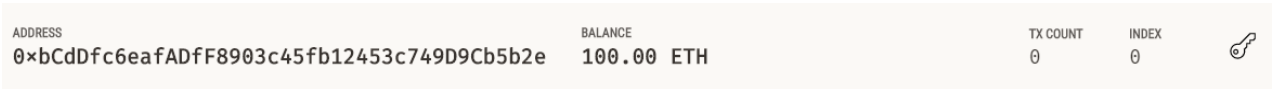


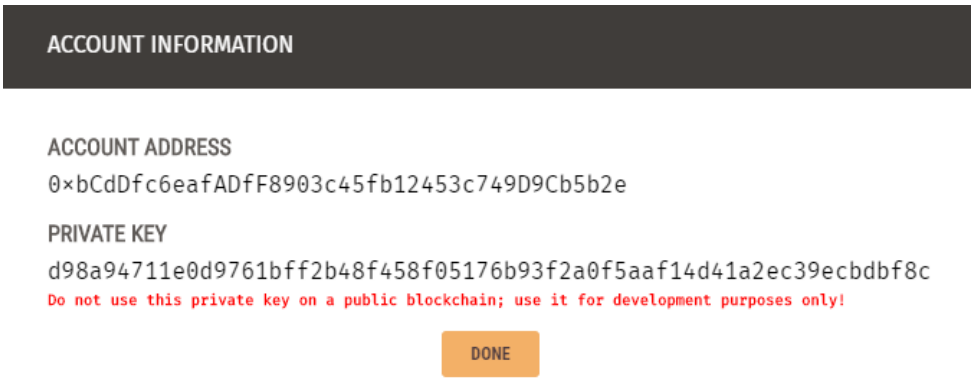
15: Importing Accounts.

- To Import an account, click on the circular icon at the top – right of your MetaMask Extension and select Import accounts. Copy the private key of your ganache account by clicking on key icon of particular account.

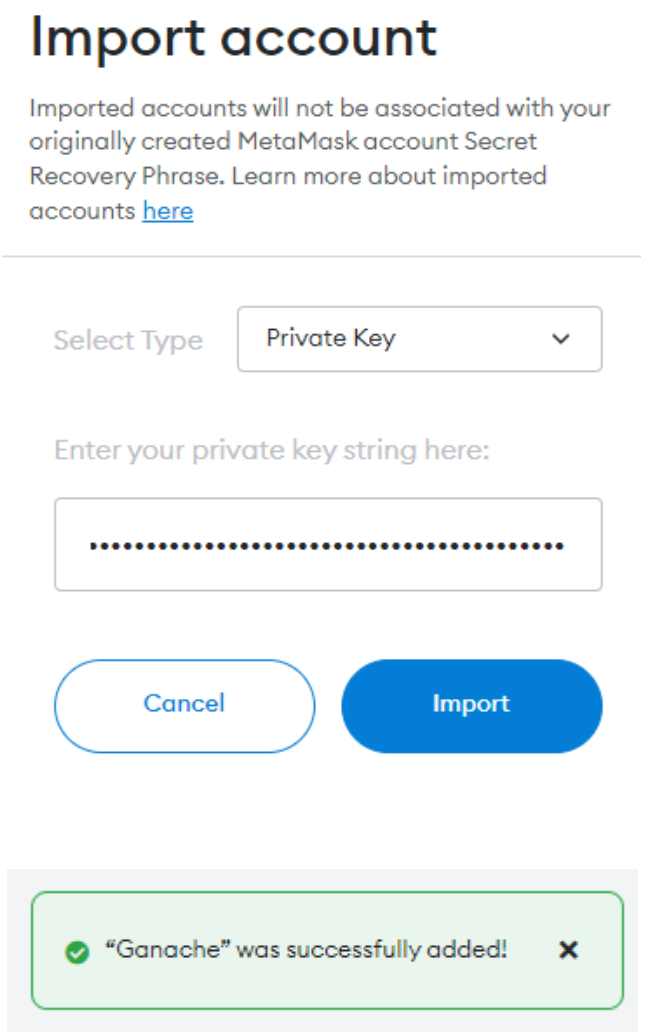


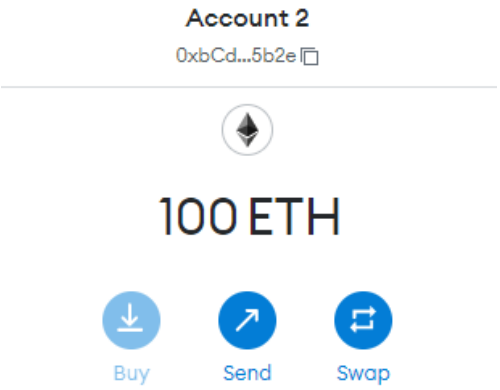
- You will need to copy the private key of your ganache account by clicking on key icon of particular account.





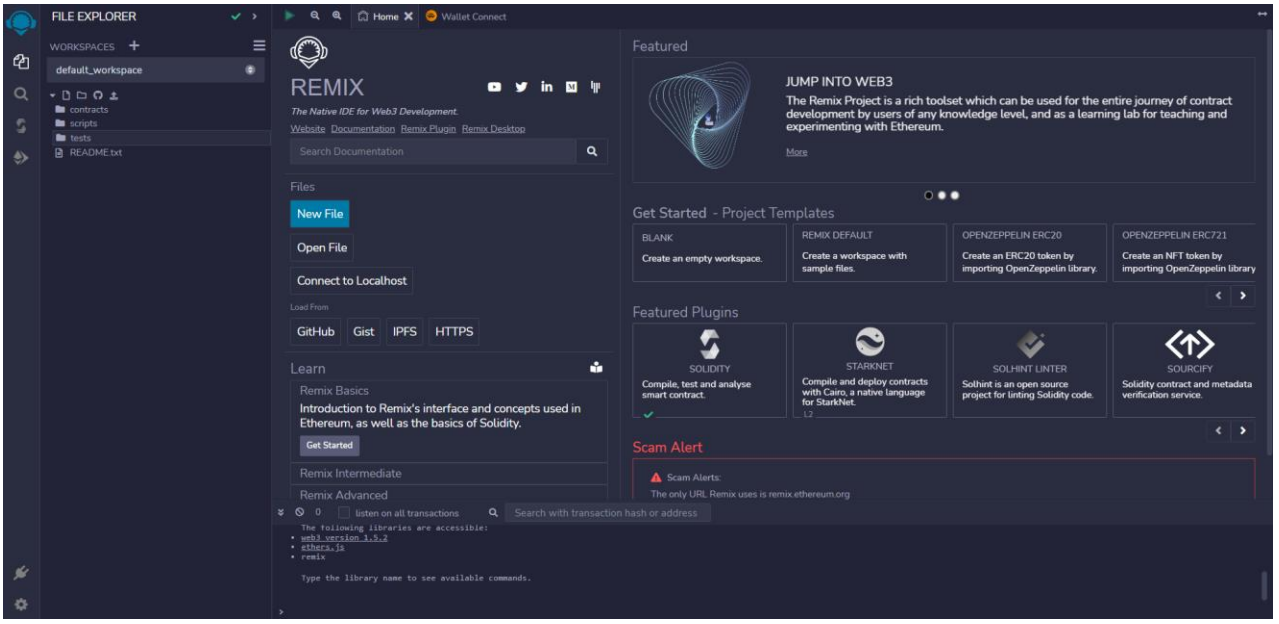
- Click on import button once private key string is pasted.





Remix IDE:

1) Go to https://remix.ethereum.org/
As we use Solidity to write our smart contracts, .sol extension is used.
Let's now create a new contract. For that, right-click on the workspaceand select New File. Name our file.



2) Select your newly created file and type the following code.

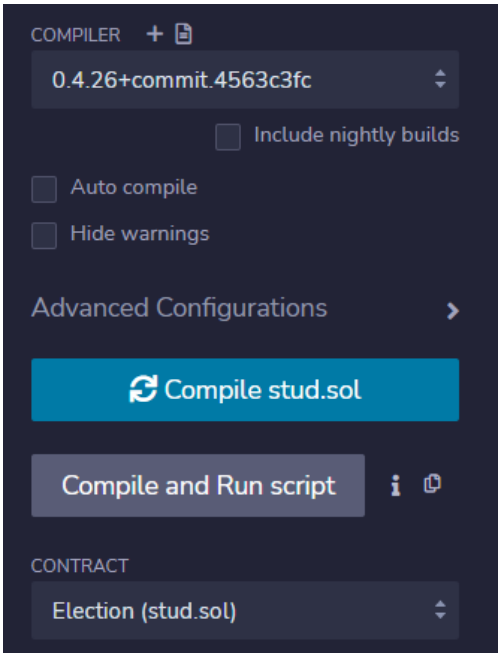
Program:

```
pragma solidity
^0.4.2;
 contract Election {
// Model a Candidate
structCandidate {
uint id;
string  name;
uint voteCount;
}
// Store accounts that have voted
mapping(address => bool) public
voters;
// Store Candidates
// Fetch Candidate
mapping(uint => Candidate) public candidates;
// Store Candidates
Count uint public
candidatesCount;
// voted event
eventvotedEvent (
uint indexed _candidateId
);
function Election() public {
addCandidate("N MODI, BJP");
addCandidate("A kejriwal,
AAP"); addCandidate("Rahul G,
Congress");
addCandidate("Nikhil, JDS");
}
function addCandidate (string _name)
private
{ candidatesCount ++;
candidates[candidatesCount] = Candidate(candidatesCount, _name, 0);
}
function vote (uint _candidateId) public {
// require that they haven't voted before
require(!voters[msg.sender]);
// require a valid candidate
```

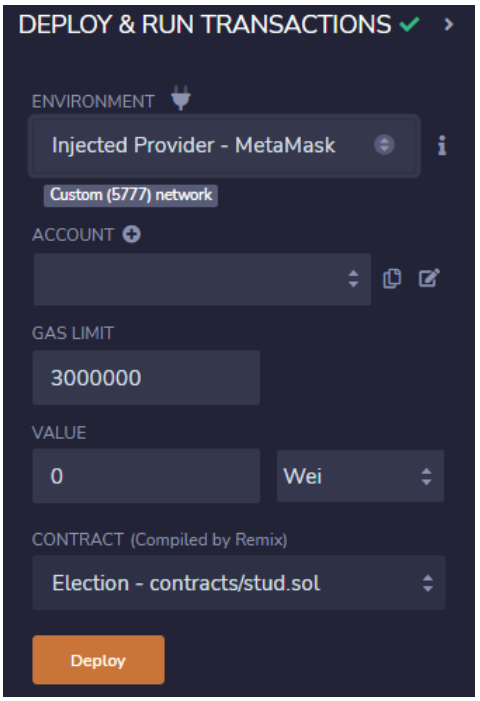
```
require(_candidateId > 0 && _candidateId <= candidatesCount);
// record that voter has voted
voters[msg.sender] = true;
// update candidate vote Count
candidates[_candidateId].voteCount ++;
// trigger voted event
votedEvent(_candidateId
);
}
}
```

3) Click on the solidity compiler present on the left.

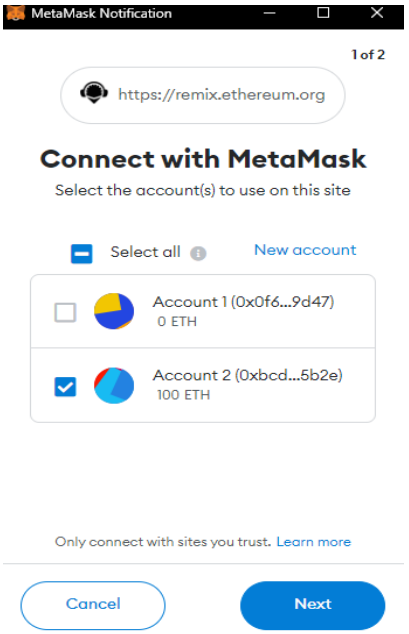
Select Auto-compile so our contract automatically compiles when we do some changes.



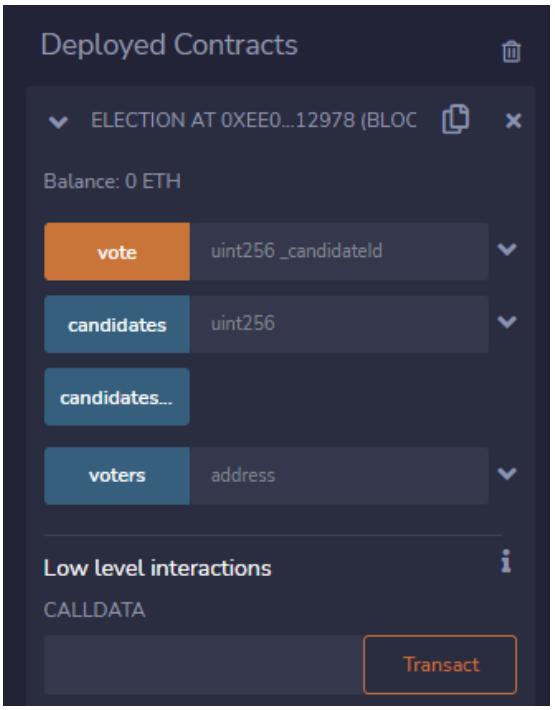
4) Click on Deploy and Run Transactions Button.
Set Environment to “Injected Web3”. (Make sure you areconnected to website with Metamask).



Click on Deploy Button and you will see a pop up for confirmation. Once confirm your contract is deployed

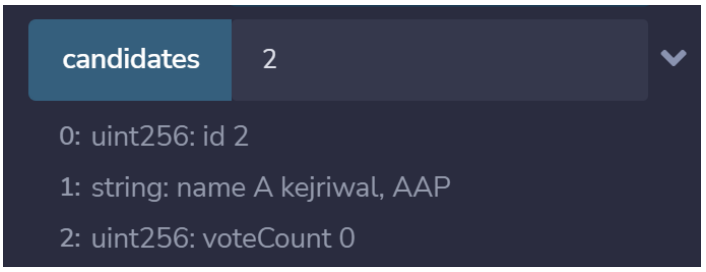


After your contract is successfully deployed, you will able to see your contract under the deployed contracts.



If you give the input as 1 in Candidate's column, you will be to see the details of our first candidate. In our case, the first candidate is Modi.

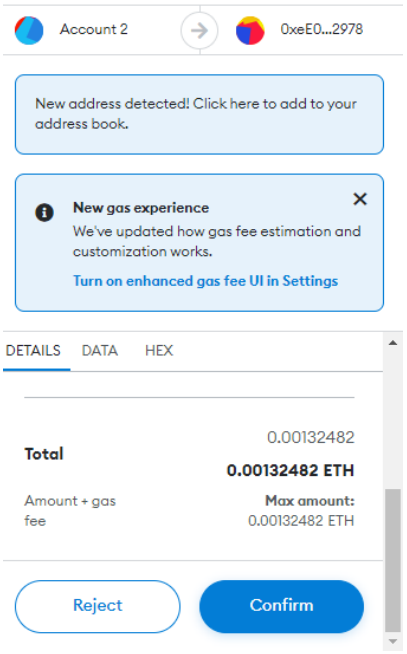
If you give the input as 1 in Candidate's column, you will be to see the details of our first candidate. In our case, the first candidate is Modi.



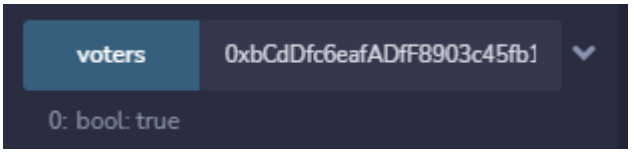
If you click on votes button with any account address as input you cansee whether the person has voted or not.

If you click on vote button with input as your candidate's id for e.g., 1, a pop up will appear to confirm the transaction.

Once confirmed the voted will be registered



It gives the Boolean result meaning false as not voted and true asvoted



If you click on candidatesCount Button you will get the count of total candidates standing for election

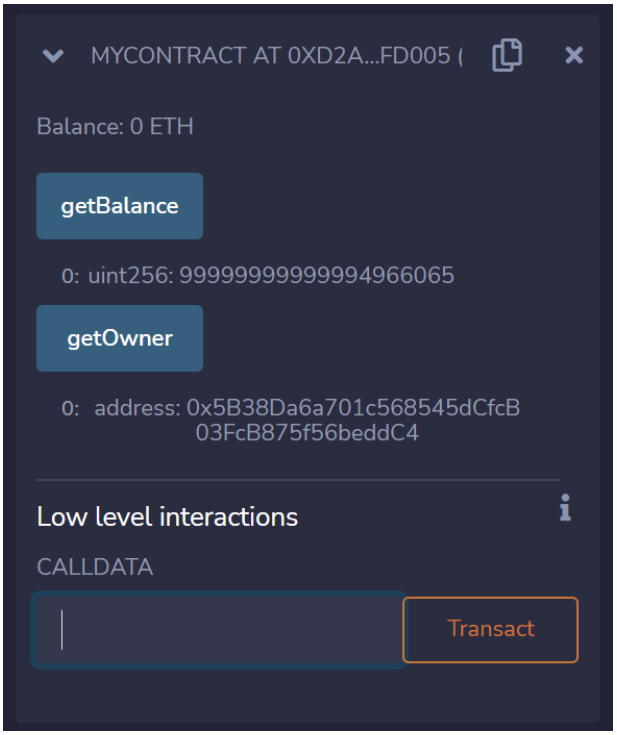
Practical No.: 07

Aim: Program using Solidity to check Balance

Program:

```
pragma solidity >=0.7.0 <0.9.0;

// Creating a contract
contract MyContract
{
// Private state variable
address private owner;

// Defining a constructor
constructor() public{
owner=msg.sender;
}

// Function to get
// address of owner
function getOwner(
) public view returns (address) {
return owner;
}

// Function to return
// current balance of owner
function getBalance(
) public view returns(uint256){
return owner.balance;
}
}
```

Output:


MYCONTRACT AT 0XD2A...FD005 (
Balance: 0 ETH
getBalance
0: uint256: 99999999999994966065
getOwner
0: address: 0x5B38Da6a701c568545dCfcB
03FcB875f56beddC4
Low level interactions
CALLDATA
Transact

Practical No.: 08

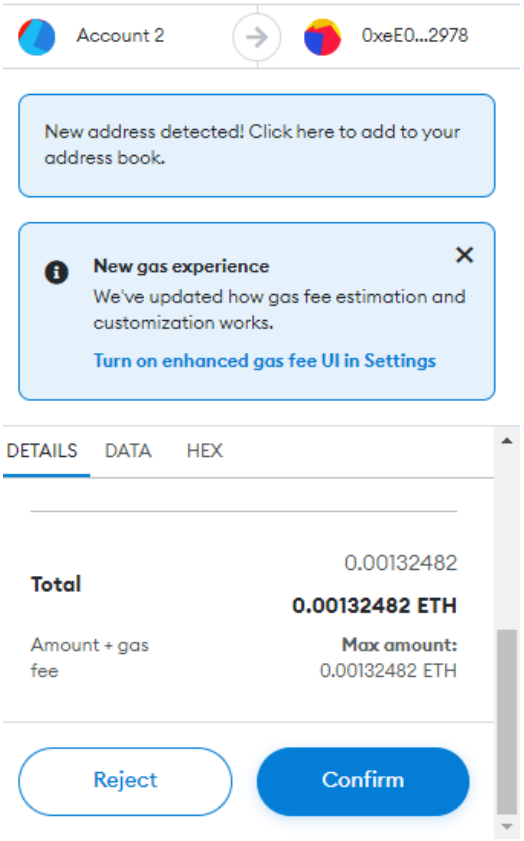
Aim: The use of GANACHE Truffle Suite to Deploy a Smart Contract in Solidity (Blockchain)

Program:

```
// SPDX-License-Identifier: MIT
pragma solidity >=0.4.0 <0.7.0;
contract SimpleStorage {
    uint storedData;
    function set(uint x) public {
        storedData = x;
    }
    function get() public view returns (uint) {
        return storedData;
    }
}
```

Output:


Deployed Contracts
SIMPLESTORAGE AT 0XC3B...C9EF5 (BLOC
Balance: 0 ETH
set
123
get
get - call
0: uint256: 123


Account 2
0xeE0...2978
New address detected! Click here to add to your address book.
New gas experience
We've updated how gas fee estimation and customization works.
Turn on enhanced gas fee UI in Settings
DETAILS
DATA
HEX
Total
0.00132482
0.00132482 ETH
Amount + gas fee
Max amount:
0.00132482 ETH
Reject
Confirm

Practical No.: 09

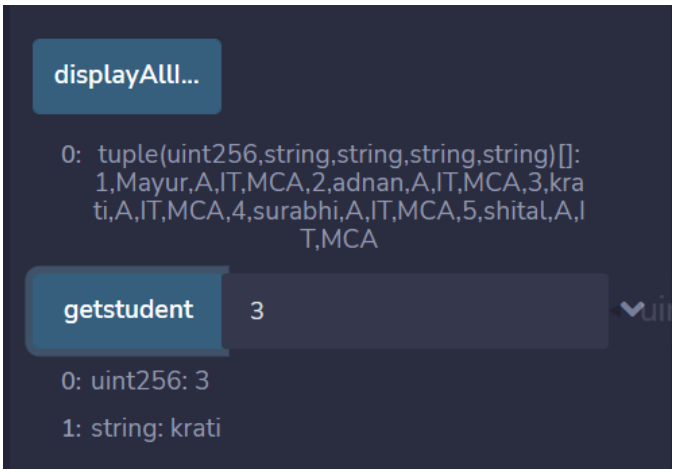
Aim: Write a program in solidity to create a structured student with Roll no, Name, Class, Department, Course enrolled as variables.

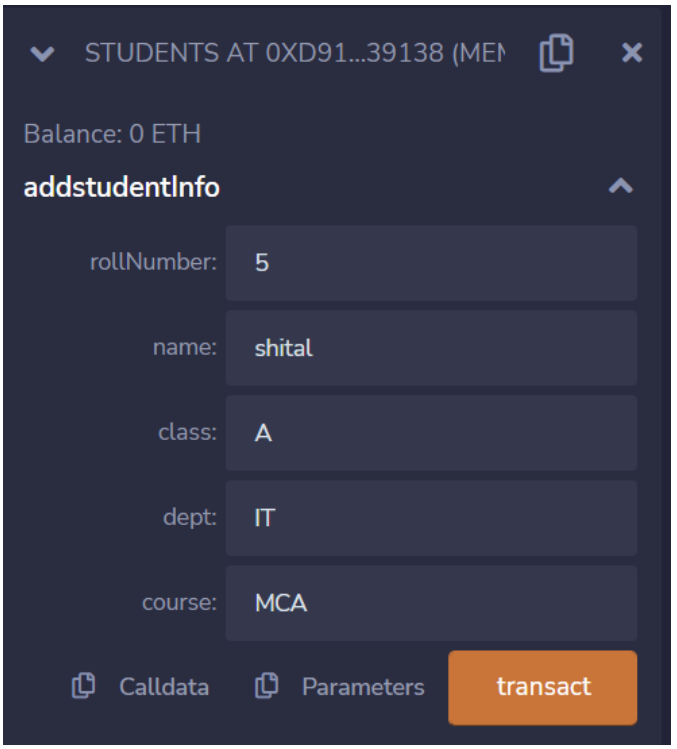
1. **Add information of 5 students.**
2. **Search for a student using Roll no**
3. **Display all information**

Program:

```
pragma solidity >=0.7.0 <0.9.0;
pragma experimental ABIEncoderV2;
contract students
{
struct Student
{
uint rn;
string name;
string class;
string department;
string course;
}
Student[] student;

uint count;
constructor()
{
count=0;
}
function addstudentInfo(uint rollNumber, string memory name, string
memory class, string memory dept, string memory course )public
{
student.push(Student(rollNumber,name,class,dept, course));
}

function getstudent(uint rollNumber ) public view returns (uint,
string memory)
{
uint i =0;
for (i=0;i<student.length;i++)
{
if (student[i].rn == rollNumber)
{
return(student[i].rn, student[i].name);
}
}
return(student[0].rn, student[0].name);
}
function displayAllInfo() public view returns (Student[]memory)
{
return student;
}
}
```

Output:


displayAlll...
0: tuple(uint256,string,string,string,string)[]: 1,Mayur,A,IT,MCA,2,adnan,A,IT,MCA,3,krati,A,IT,MCA,4,surabhi,A,IT,MCA,5,shital,A,IT,MCA
getstudent
3
0: uint256: 3
1: string: krati


STUDENTS AT 0XD91...39138 (MEI
Balance: 0 ETH
addstudentInfo
rollNumber:
5
name:
shital
class:
A
dept:
IT
course:
MCA
Calldata
Parameters
transact

Practical No.: 10

Aim: Create Daps Voting Process using Solidity smart contract and web3

Program:

- Election.sol

```
pragma solidity 0.4.25;
contract Election {
  // Model a Candidate
  struct Candidate {
    uint id;
    string name;
    uint voteCount;
  }
  // Store accounts that have voted
  mapping(address => bool) public voters;
  // Store Candidates // Fetch Candidate
  mapping(uint => Candidate) public candidates;
  // Store Candidates Count
  uint public candidatesCount;
  // voted event
  event votedEvent (uint indexed
  _candidateId); constructor () public {
    addCandidate("Candidate 1");
    addCandidate("Candidate 2");
  }
  function addCandidate (string _name)
    private { candidatesCount ++;
   candidates[candidatesCount] = Candidate(candidatesCount, _name,
   0);
  }
  function vote (uint _candidateId) public {
    // require that they haven't voted
    before require(!voters[msg.sender]);
    // require a valid candidate
    require(_candidateId > 0 && _candidateId <= candidatesCount);
    // record that voter has voted
    voters[msg.sender] = true;
    // update candidate vote Count
    candidates[_candidateId].voteCount
    ++;
    // trigger voted event
    emit votedEvent(_candidateId);
  }}
```

index.html

```
<!DOCTYPE html>
<html lang="en">
 <head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-
  scale=1">
  <title>Election Results</title>

  <!-- Bootstrap -->
  <link href="css/bootstrap.min.css" rel="stylesheet">
 </head>
 <body>
  <div class="container" style="width: 650px;">
   <div class="row">
    <div class="col-lg-12">
     <h1 class="text-center">Election Results</h1>
     <hr/>
     <br/>
     <div id="loader">
      <p class="text-center">Loading...</p>
     </div>
     <div id="content" style="display: none;">
      <table class="table">
       <thead>
        <tr>
         <th scope="col">#</th>
         <th scope="col">Name</th>
         <th scope="col">Votes</th>
        </tr>
       </thead>
       <tbody id="candidatesResults">
       </tbody>
      </table>
      <hr/>
      <form onSubmit="App.castVote(); return false;">
       <div class="form-group">
        <label for="candidatesSelect">Select Candidate</label>
        <select class="form-control" id="candidatesSelect">
        </select>
       </div>
       <button type="submit" class="btn btn-primary">Vote</button>
       <hr />
      </form>
```

```
        <p id="accountAddress" class="text-center"></p>
      </div>
     </div>
    </div>
   </div>

   <!-- jQuery (necessary for Bootstrap's JavaScript plugins) -->
   <script
   src="https://ajax.googleapis.com/ajax/libs/jquery/1.12.4/jquery.min
   .js"><
/script>
   <!-- Include all compiled plugins (below), or include individual
   files as needed
-->
   <script src="js/bootstrap.min.js"></script>
   <script src="js/web3.min.js"></script>
   <script src="js/truffle-contract.js"></script>
   <script src="js/app.js"></script>
 </body>
</html>
```

app.js

```
App = {
 web3Provider:
 null, contracts:
 {}, account:
 '0x0',
 hasVoted:
 false, init:
 function() {
  return App.initWeb3();
 },
 initWeb3: function() {
  // TODO: refactor conditional
  if (typeof web3 !== 'undefined')
  {
   // If a web3 instance is already provided by Meta Mask.
   App.web3Provider = web3.currentProvider;
   web3 = new Web3(web3.currentProvider);
  } else {
   // Specify default instance if no web3 instance provided
   App.web3Provider = new
Web3.providers.HttpProvider('http://localhost:7545'); web3
   = new Web3(App.web3Provider);
  }
  return App.initContract();
 },
 initContract: function() {
  $.getJSON("Election.json", function(election) {
   // Instantiate a new truffle contract from the artifact
   App.contracts.Election = TruffleContract(election);
   // Connect provider to interact with contract
   App.contracts.Election.setProvider(App.web3Provider);
   App.listenForEvents(); return App.render();
  });
 },
 // Listen for events emitted from the
 contract listenForEvents: function() {
App.contracts.Election.deployed().then(function(instanc
e) {
// Restart Chrome if you are unable to receive this
event
    // This is a known issue with Metamask
    // https://github.com/MetaMask/metamask-extension/issues/2393
    instance.votedEvent(
     {}, { fromBlock: 0,
     toBlock: 'latest'
```

```
    }).watch(function(error, event) {
      console.log("event triggered", event)
      // Reload when a new vote is recorded App.render();
    });
   });
  },
  render: function() {
   var electionInstance;
   var loader =
   $("#loader"); var
   content =
   $("#content");
   loader.show();
   content.hide();
   // Load account data web3.eth.getCoinbase(function(err,
   account) {
    if (err === null) {
     App.account =
     account;
     $("#accountAddress").html("Your Account: " + account);
}
});
   // Load contract data
   App.contracts.Election.deployed().then(function(instance)
   {
    electionInstance = instance;
    return electionInstance.candidatesCount();
   }).then(function(candidatesCount) {
    var candidatesResults = $("#candidatesResults");
    candidatesResults.empty();
    var candidatesSelect =
    $('#candidatesSelect');
    candidatesSelect.empty();
    for (var i = 1; i <= candidatesCount; i++) {
     electionInstance.candidates(i).then(function(candidate) {
      var id = candidate[0];
      var name = candidate[1];
      var voteCount = candidate[2];
      // Render candidate Result
      var candidateTemplate = "<tr><th>" + id + "</th><td>" + name +
 "</td><td>" + voteCount + "</td></tr>"
      candidatesResults.append(candidateTemplate);
      // Render candidate ballot option
      var candidateOption = "<option value='" + id + "' >" + name
 + "</ option>"
```

```
        candidatesSelect.append(candidateOption);
       });
      }
      return electionInstance.voters(App.account);
    }).then(function(hasVoted) {
      // Do not allow a user to vote if(hasVoted)
      {
       $('form').hide();
      }
      loader.hide();
      content.show();
    }).catch(function(error) {
      console.warn(error);
    });
  },
  castVote: function() {
    var candidateId = $('#candidatesSelect').val();
    App.contracts.Election.deployed().then(function(in
    stance)

    {
      return  instance.vote(candidateId,  {  from:  App.account });
    }).then(function(result) {
      // Wait for votes to update
      $("#content").hide();
      $("#loader").show();
    }).catch(function(err) {
      console.error(err);
    });
}
};
 $(function() {
  $(window).load(function() {
    App.init();
  });
 });
```

truffle-config.js

```
 module.exports = {
  // See <http://truffleframework.com/docs/advanced/configuration>
  // for more about customizing your Truffle configuration!
   networks: { development: {
    host: "127.0.0.1",
    port: 7545,
    network_id: "*" // Match any network id
}
},
  compilers
   : {
   solc: {
    version:
    '0.4.25',
    optimizer: {
     enabled:
     true, runs:
     200
    }
   }
}
};
```

bs-config.js

```
 {
  "server": {
   "baseDir": ["./src", "./build/contracts"]
  }
 }
```

package.json

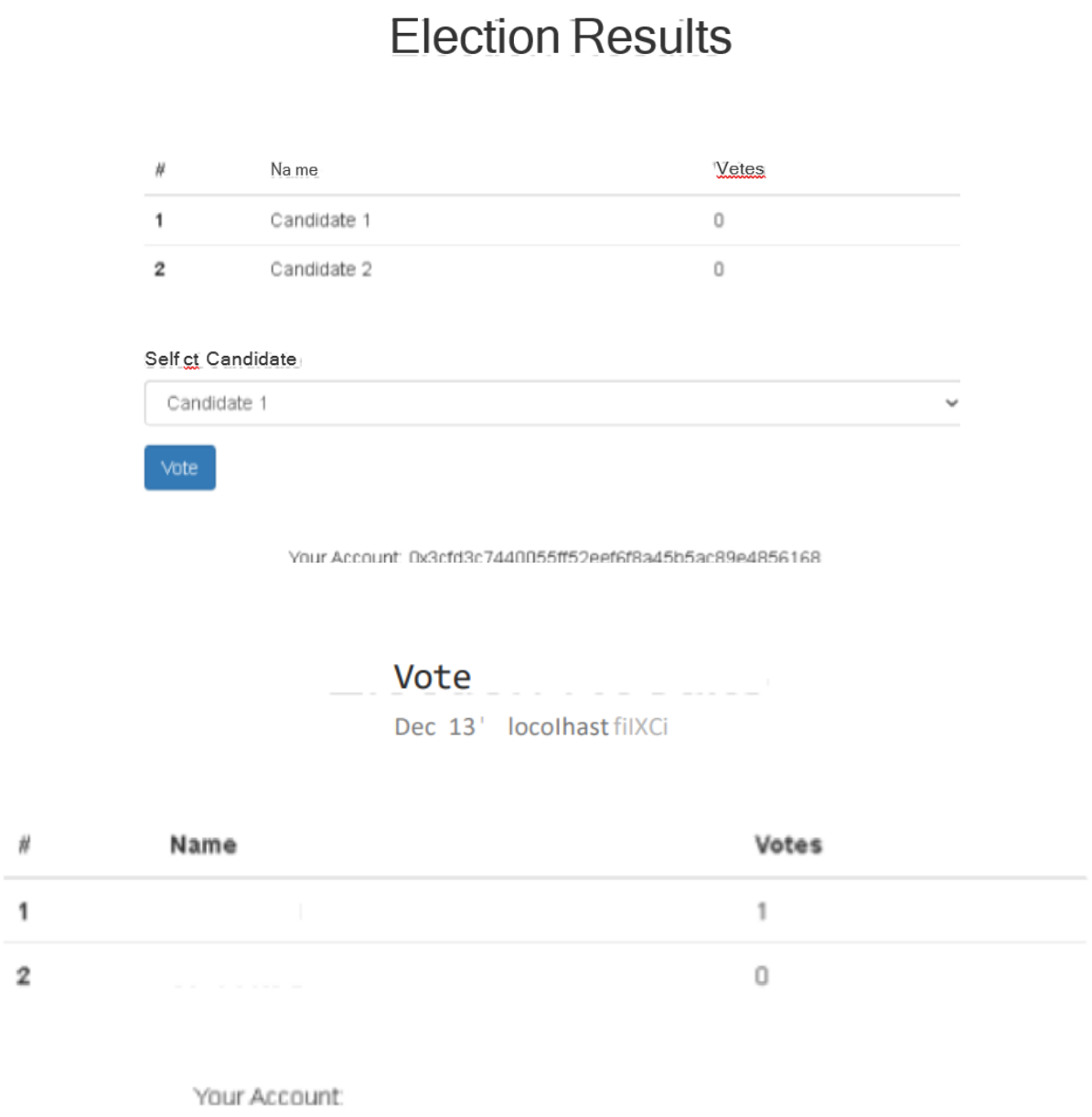
```
 {
  "name": "election",
  "version": "1.0.0",
  "description": "",
  "main": "truffle.js",
  "directories": {
   "test": "test"
  },
  "scripts": {

   "dev": "lite-server",
   "test": "echo \"Error: no test specified\" && exit 1"
```

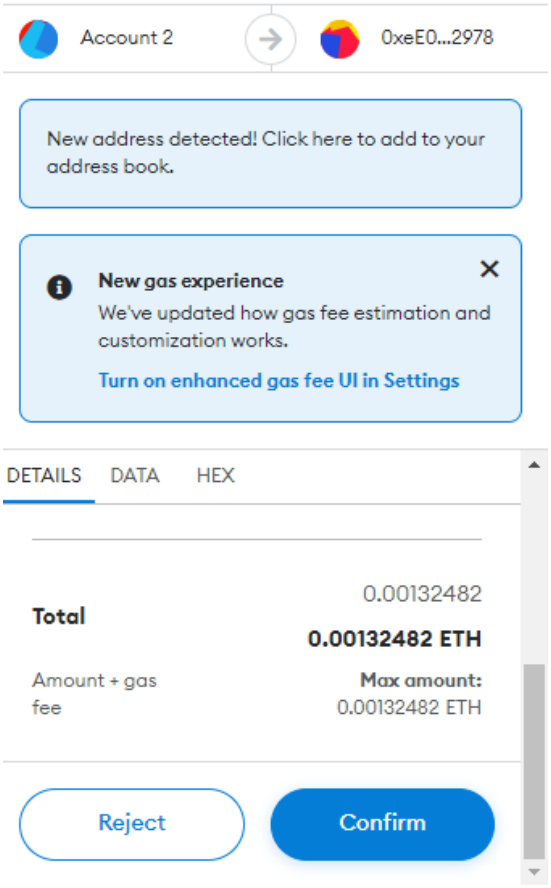
```
  },
  "author": "",
  "license": "ISC",
  "devDependencies": {
    "lite-server": "^2.3.0",
    "truffle": "5.0.0-beta.0"
  }
}
```

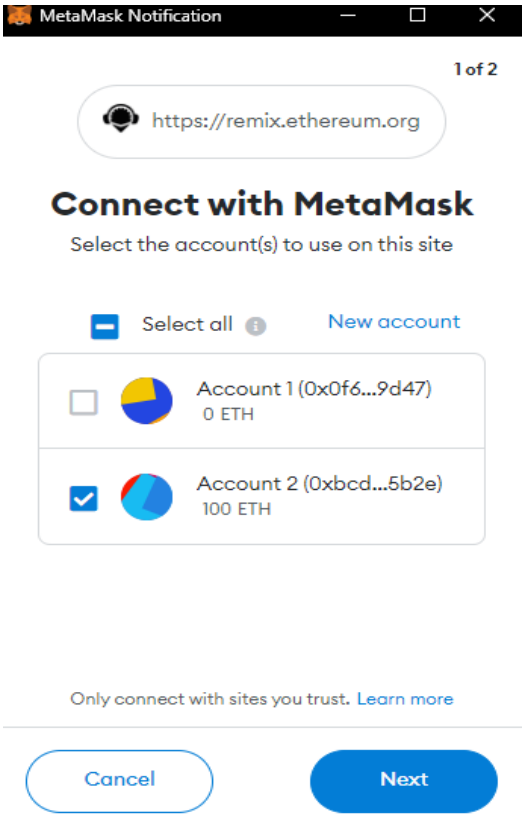
2_deploy_contracts.js

```
var Election = artifacts.require("./Election.sol");

module.exports = function(deployer) {
  deployer.deploy(Election);
  };
```

Output:




Account 2
0xeE0...2978
New address detected! Click here to add to your address book.
New gas experience
We've updated how gas fee estimation and customization works.
Turn on enhanced gas fee UI in Settings
DETAILS
DATA
HEX
Total
0.00132482
0.00132482 ETH
Amount + gas fee
Max amount:
0.00132482 ETH
Reject
Confirm


MetaMask Notification
1 of 2
https://remix.ethereum.org
Connect with MetaMask
Select the account(s) to use on this site
Select all
New account
Account 1 (0x0f6...9d47)
0 ETH
Account 2 (0xbcd...5b2e)
100 ETH
Only connect with sites you trust. Learn more
Cancel
Next

Practical No.: 11

Mini Project

App.js

```
import React, {useEffect,useState } from 'react';
import './App.css';
import Axios from 'axios';
import Coin from './components/Coin';

function App() {
  const [listOfCoins,setListOfCoins]=useState([]);
  const [searchWord, setSearchWord] = useState("");

  useEffect(()=>{

Axios.get("https://api.coinstats.app/public/v1/coins?skip=0&limit=10"
).then(
      (Response)=>{
        setListOfCoins(Response.data.coins);
      }
      );

  },[]);
  const filteredCoins = listOfCoins.filter((coin) => {
    return
coin.name.toLowerCase().includes(searchWord.toLowerCase());
  });

  return (
    <div className="App">
      <div className="cryptoHeader">
        <input
          type="text"
          placeholder="Bitcoin..."
          onChange={(event) => {
            setSearchWord(event.target.value);
          }}
        />
```

```
      </div>
      <div className="cryptoDisplay">
        {filteredCoins.map((coin) => {
          return (
            <Coin
              name={coin.name}
              icon={coin.icon}
              price={coin.price}
              symbol={coin.symbol}
            />
          );
        })}
      </div>
    </div>
  );

}

export default App;
```

App.css

```
.App {
  height: auto;
  width: 100vw;
  font-family: Arial, Helvetica, sans-serif;
}

body {
  padding: 0%;
  margin: 0%;
}

.cryptoHeader {
  width: 100%;
  height: 200px;
  background-color: rgb(255, 196, 0);
  display: flex;
  justify-content: center;
  align-items: center;
```

```
}

.cryptoHeader input {
  width: 50%;
  height: 50px;
  border: none;
  border-radius: 5px;
  background-color: rgb(255, 255, 255);
  font-size: 20px;
  font-weight: bold;
  color: rgb(0, 0, 0);
  text-align: center;
  margin-top: 10px;
}

.cryptoDisplay {
  margin-top: 20px;
  display: flex;
  justify-content: center;
  align-items: center;
  flex-direction: column;
}

.coin {
  width: 400px;
  height: 300px;
  background-color: rgb(36, 36, 36);
  color: white;
  box-shadow: rgba(0, 0, 0, 0.24) 0px 3px 8px;
  border-radius: 10px;
  margin: 20px;
  text-align: center;
}

.coin img {
  height: 100px;
}
```

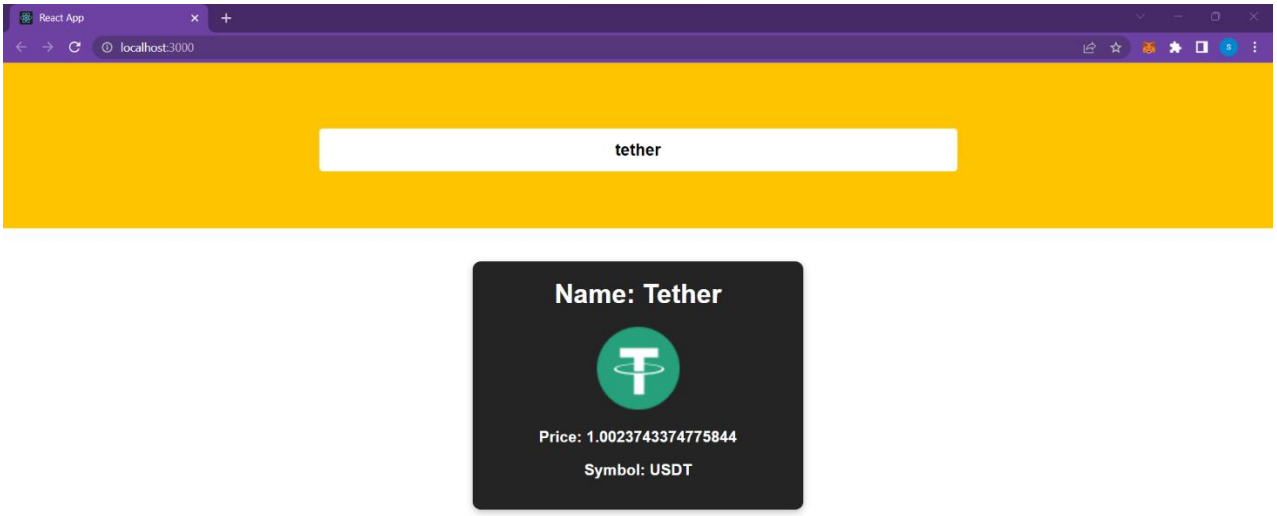
Coin.js

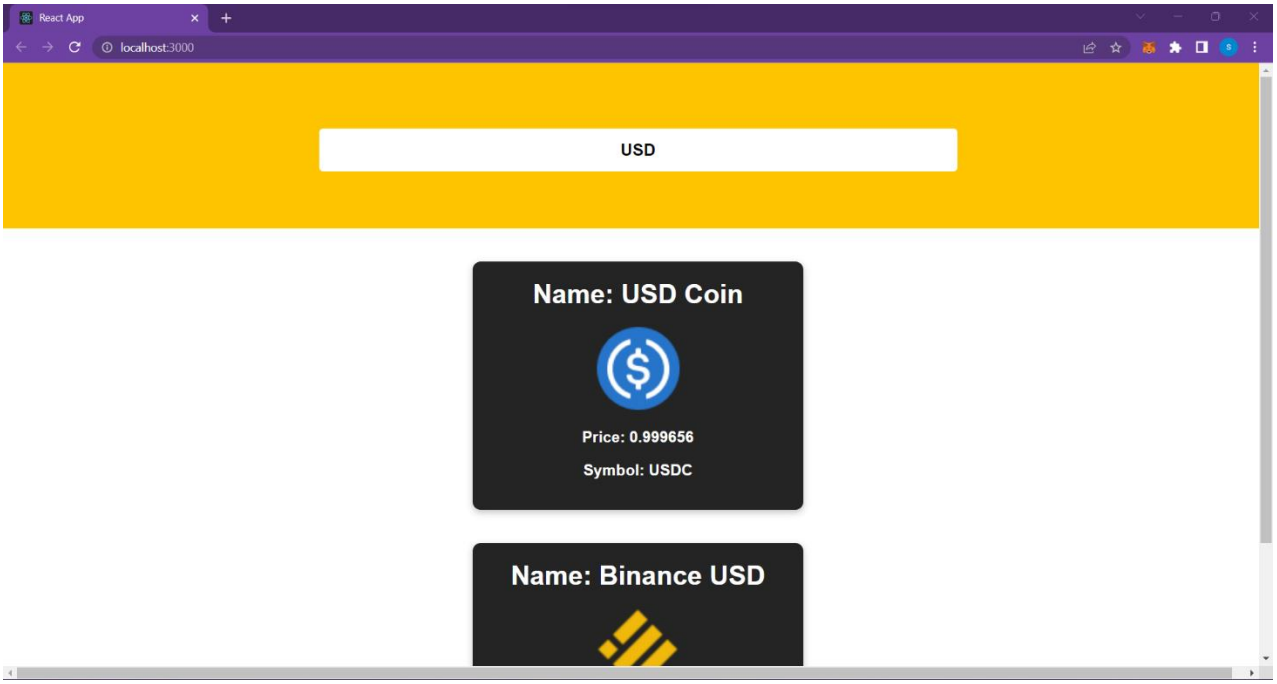
```
import React from 'react'

function Coin({name,icon,price,symbol}) {
  return (
    <div className="coin">
    <h1> Name: {name}</h1>
    <img src={icon}/>
    <h3> Price: {price}</h3>
    <h3> Symbol: {symbol}</h3>
  </div>

  );
}

export default Coin;
```

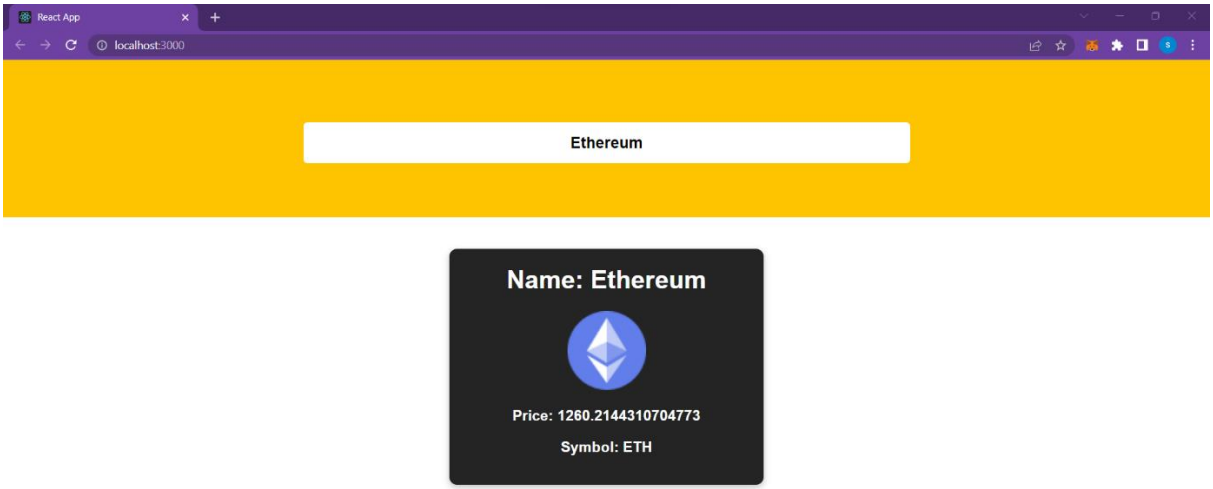
index.js

```
import React from "react";
import  ReactDOM  from "react-dom/client";
import App from "./App";
import reportWebVitals from "./reportWebVitals"

const root = ReactDOM.createRoot(document.getElementById('root'));
root.render(
  <React.StrictMode>
    <App />
  </React.StrictMode>

);

// If you want to start measuring performance in your app, pass a
function
// to log results (for example: reportWebVitals(console.log))
// or send to an analytics endpoint. Learn more: https://bit.ly/CRA-
vitals
reportWebVitals();
```

SCREENSHOTS:






React App
localhost:3000
Ethereum
Name: Ethereum
Price: 1260.2144310704773
Symbol: ETH