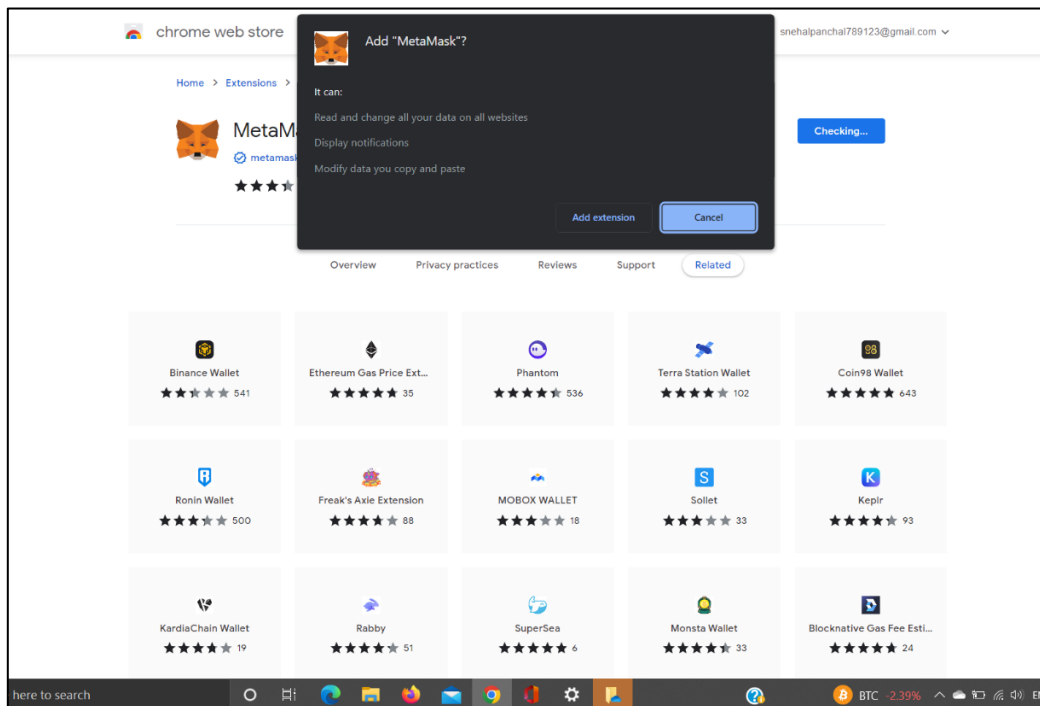
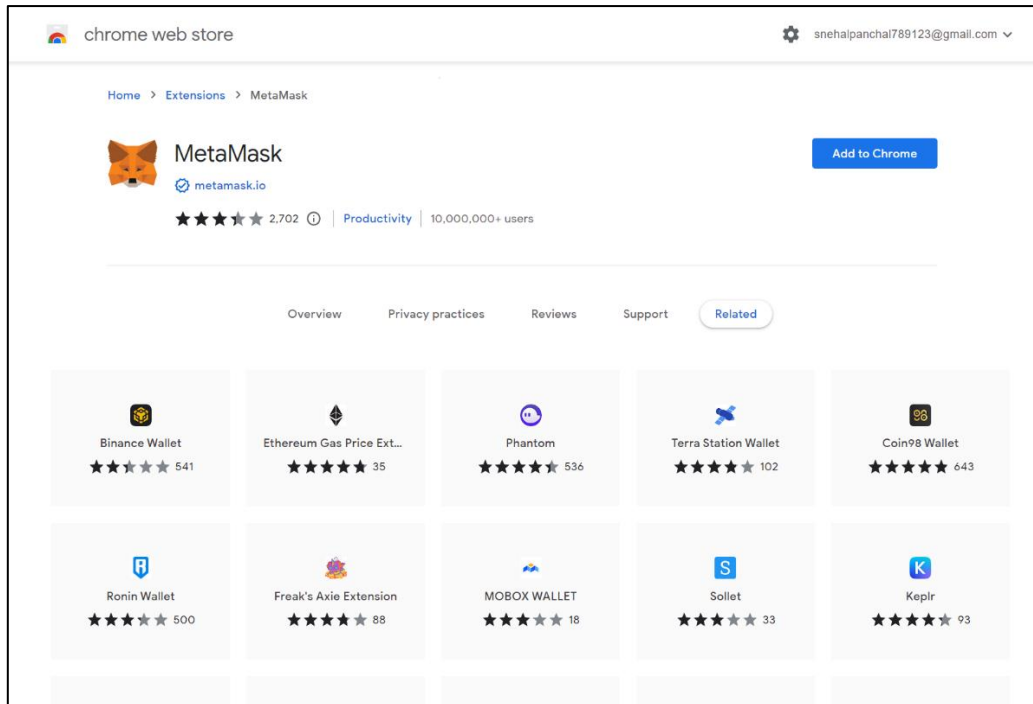


# BLOCKCHAIN TECHNOLOGY

## PRACTICAL 1





## Welcome to MetaMask

Connecting you to Ethereum and the Decentralized Web.

We're happy to see you.

Get Started



METAMASK



## Help us improve MetaMask

MetaMask would like to gather usage data to better understand how our users interact with the extension. This data will be used to continually improve the usability and user experience of our product and the Ethereum ecosystem.

MetaMask will..

- ✓ Always allow you to opt-out via Settings
- ✓ Send anonymized click & pageview events
- ✗ **Never** collect keys, addresses, transactions, balances, hashes, or any personal information
- ✗ **Never** collect your full IP address
- ✗ **Never** sell data for profit. Ever!

No Thanks

I Agree

This data is aggregated and is therefore anonymous for the purposes



## Congratulations

You passed the test - keep your Secret Recovery Phrase safe, it's your responsibility!

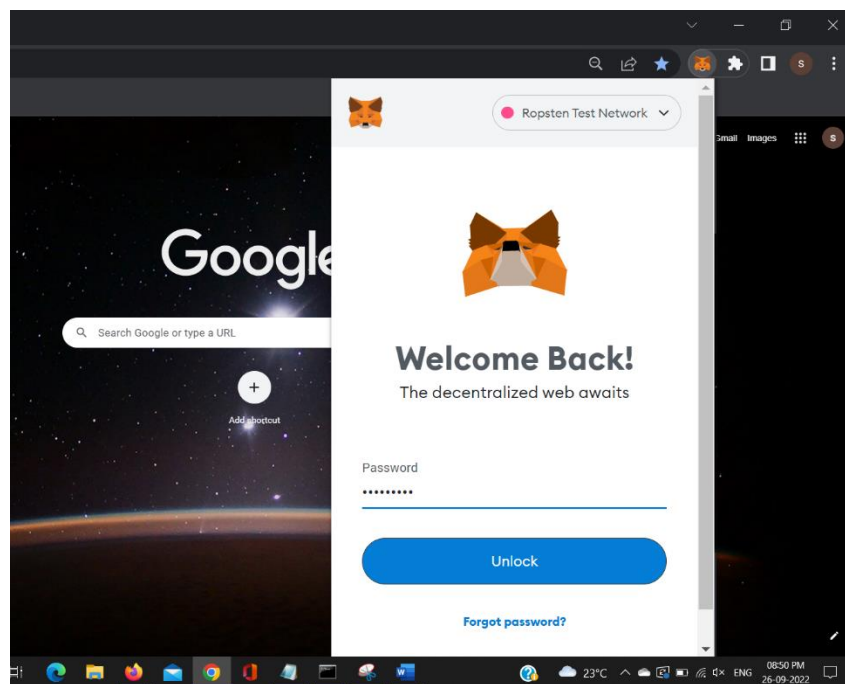
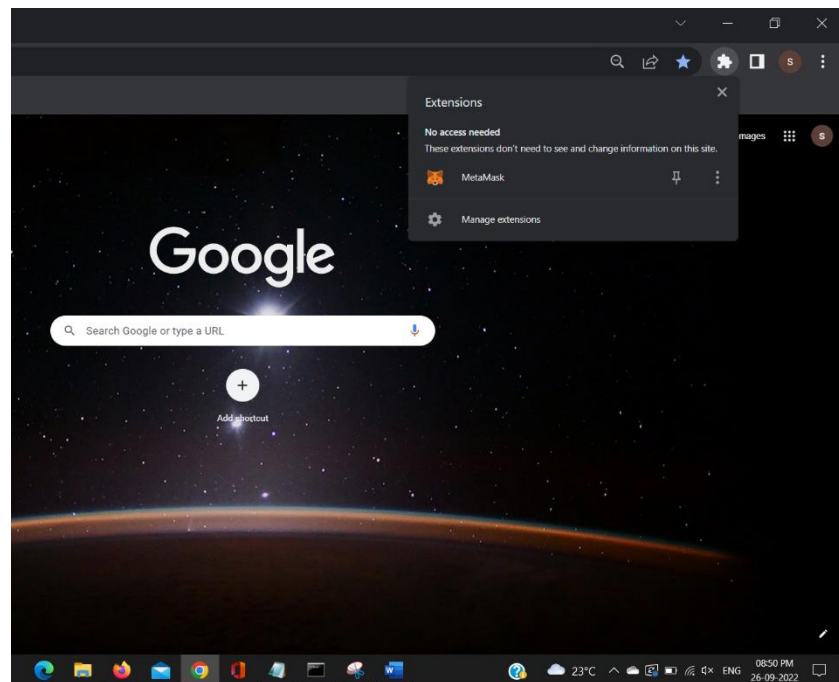
### Tips on storing it safely

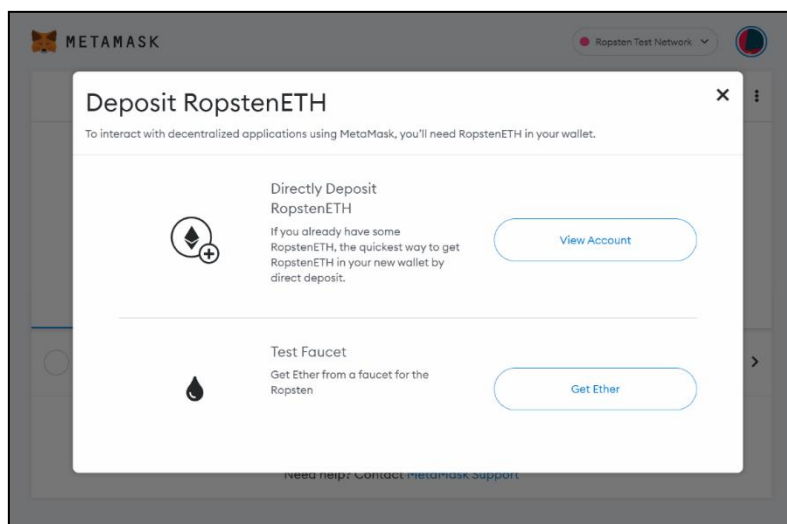
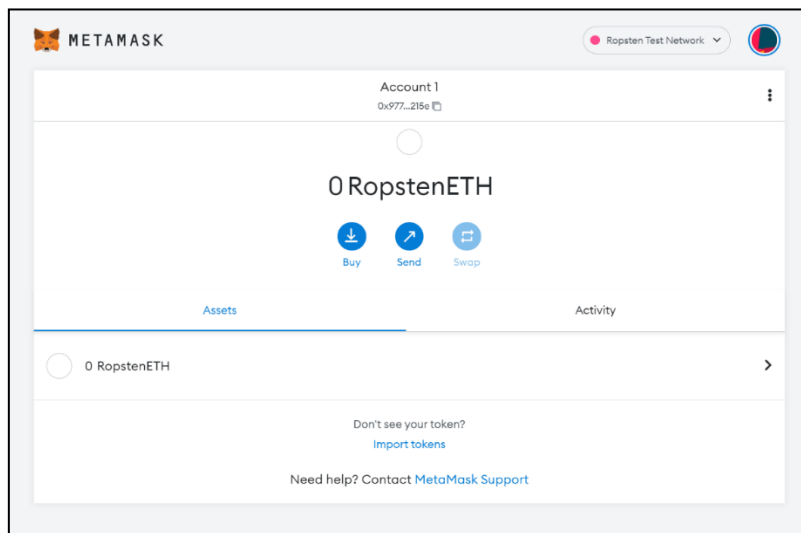
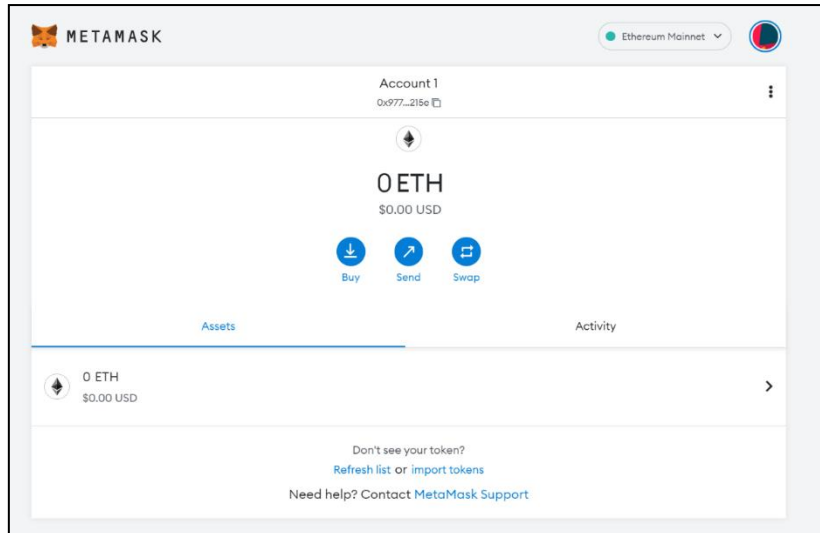
- Save a backup in multiple places.
- Never share the phrase with anyone.
- Be careful of phishing! MetaMask will never spontaneously ask for your Secret Recovery Phrase.
- If you need to back up your Secret Recovery Phrase again, you can find it in Settings -> Security.
- If you ever have questions or see something fishy, contact our support [here](#).

\*MetaMask cannot recover your Secret Recovery Phrase. [Learn more](#).

All Done

## PRACTICAL 2





MetaMask Ether Faucet

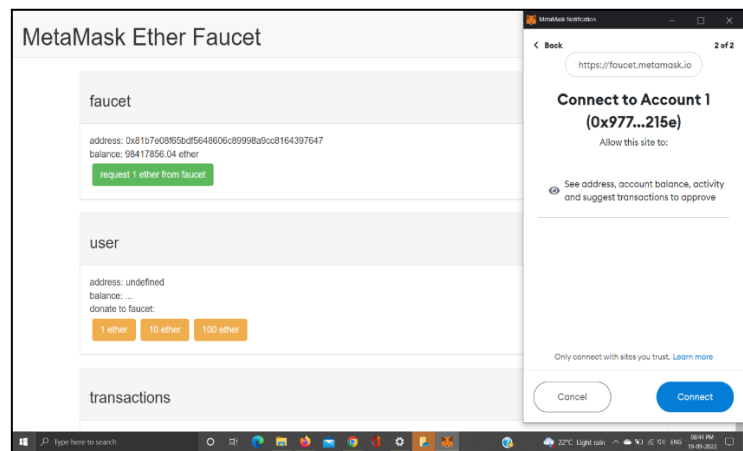
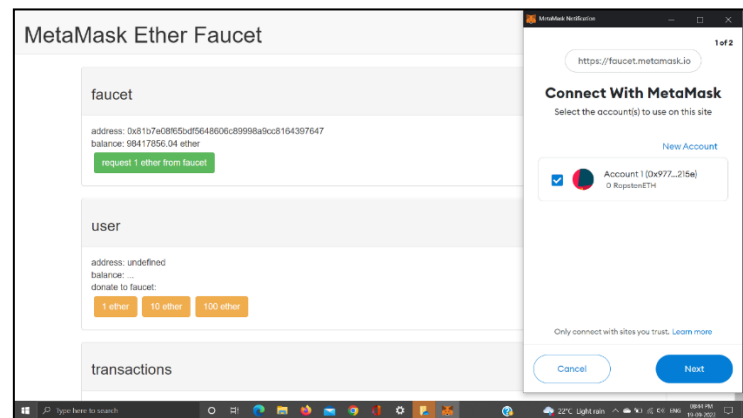
faucet

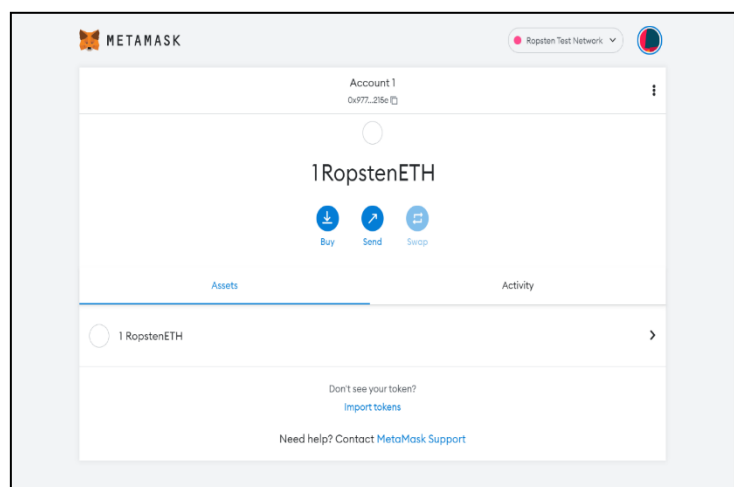
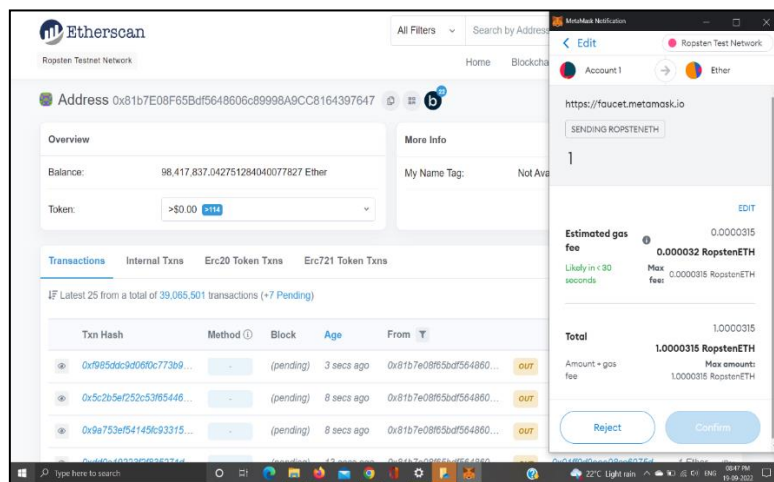
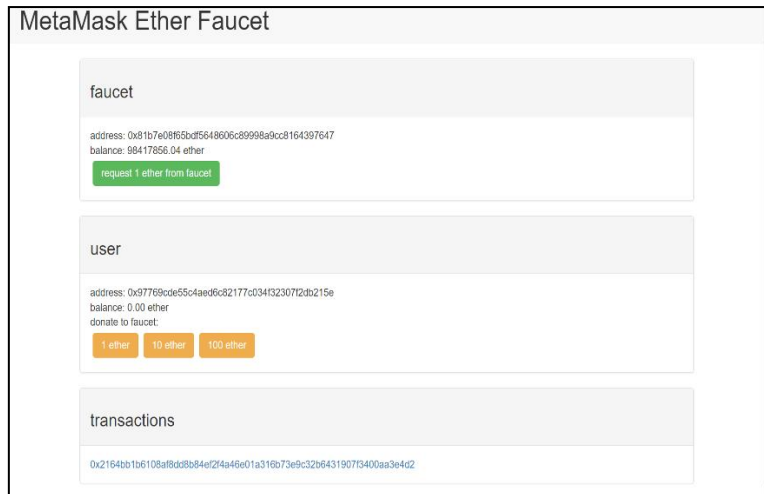
address: 0x81b7e08f5d5df5648606c89998a8cc8164397647  
balance: 98417856.04 ether  
request 1 ether from faucet

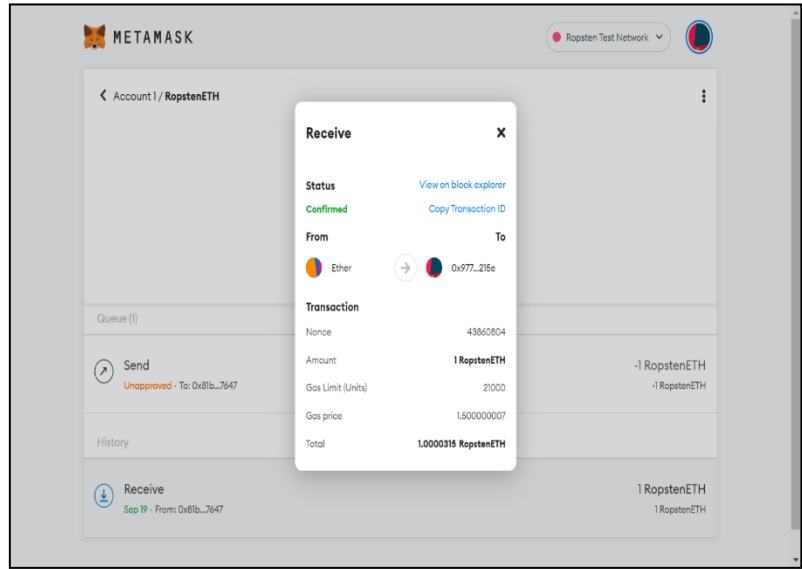
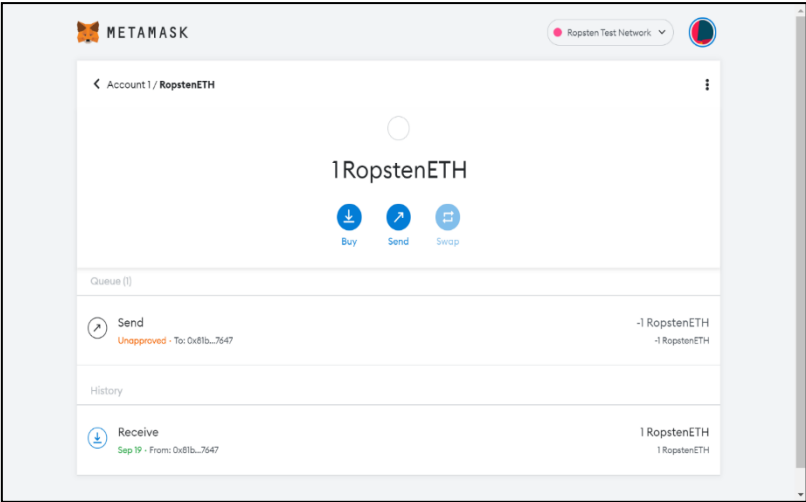
user

address: undefined  
balance: ...  
donate to faucet:  
1 ether 10 ether 100 ether

transactions

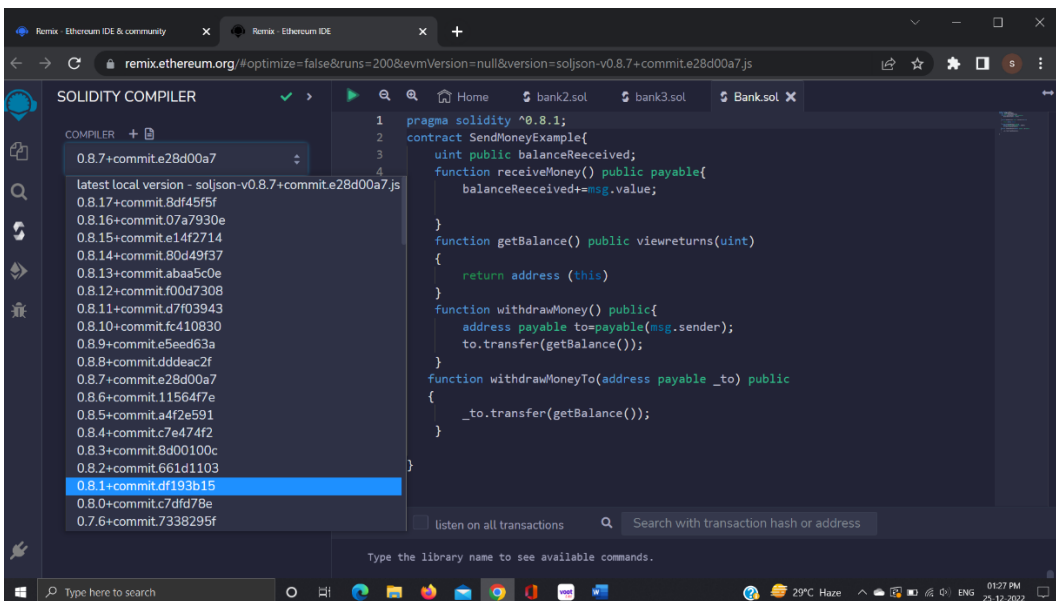
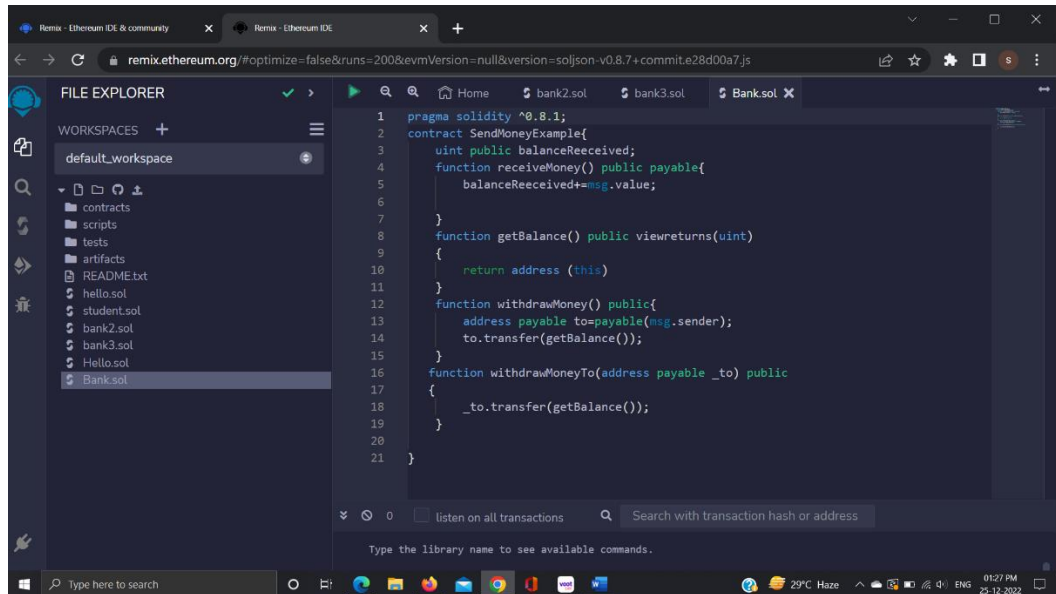


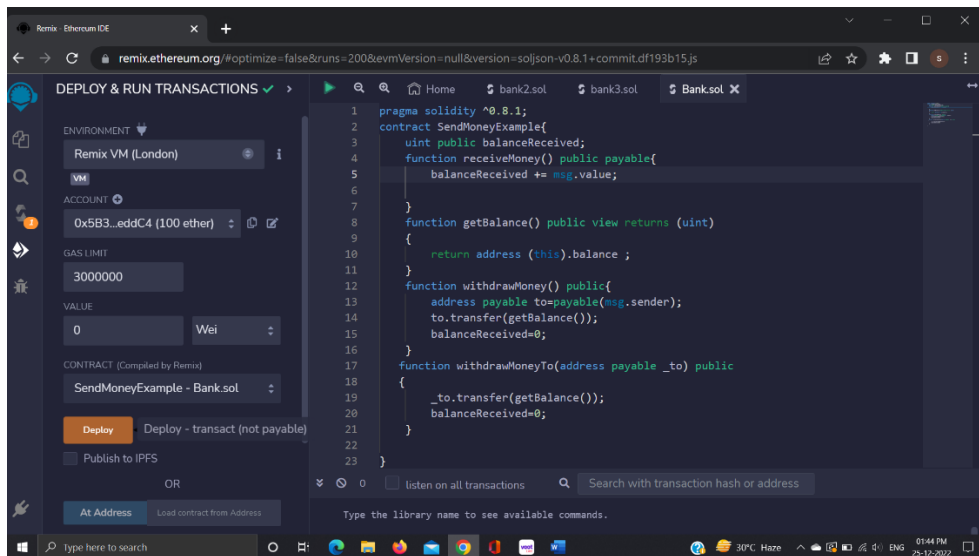
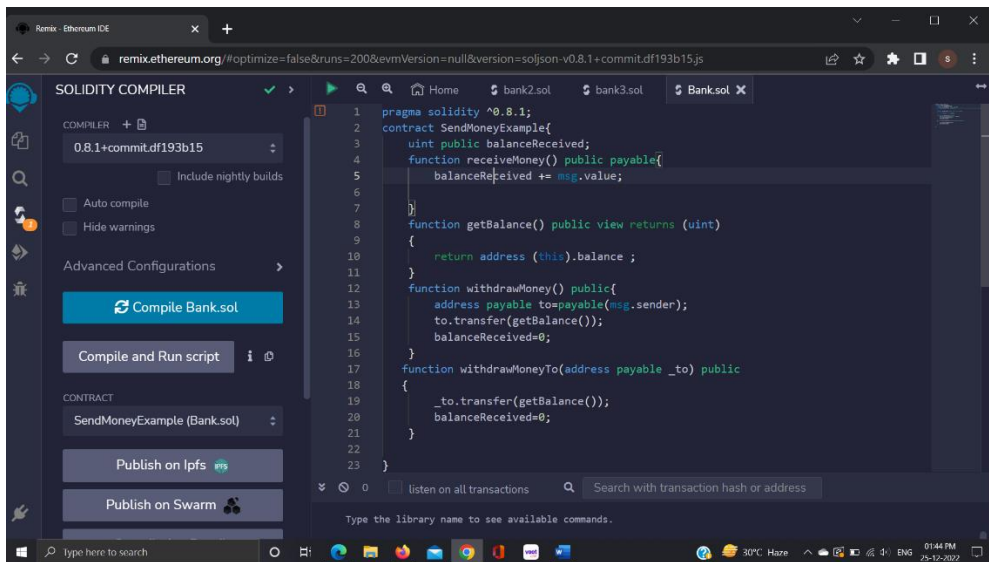
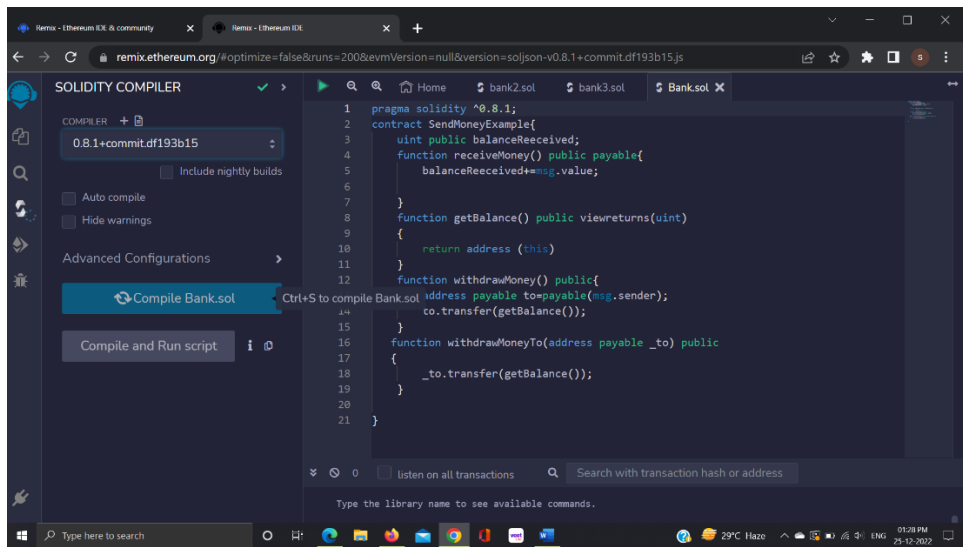


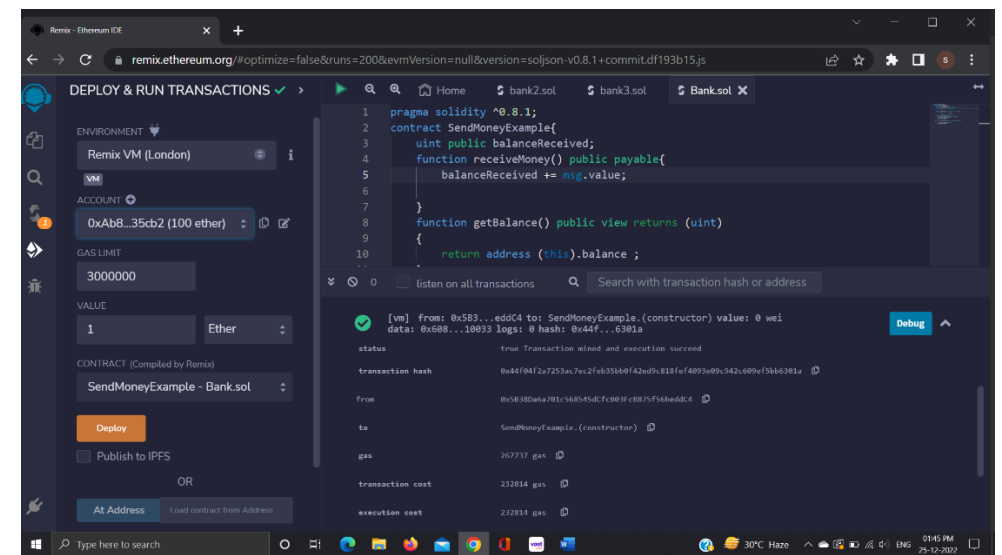
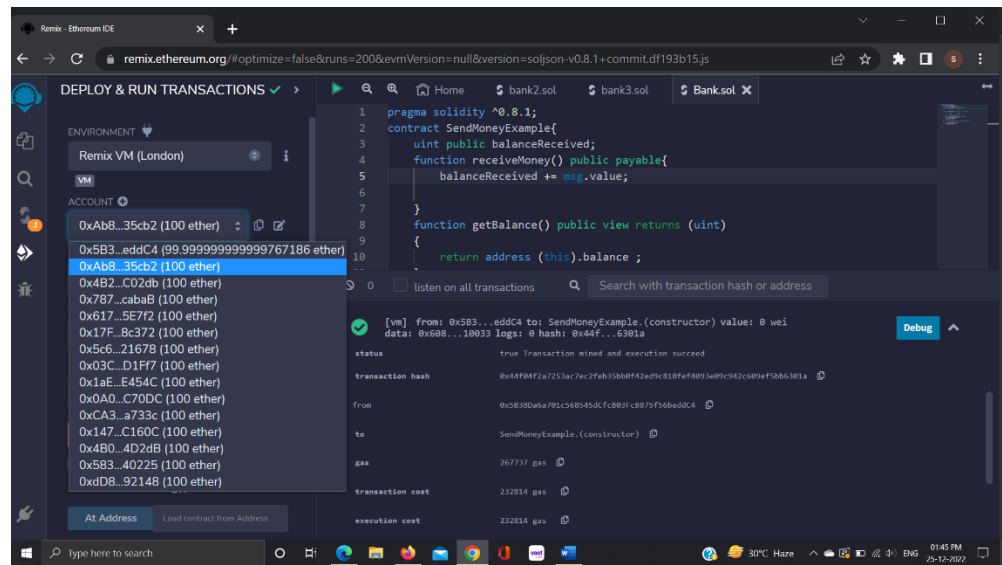
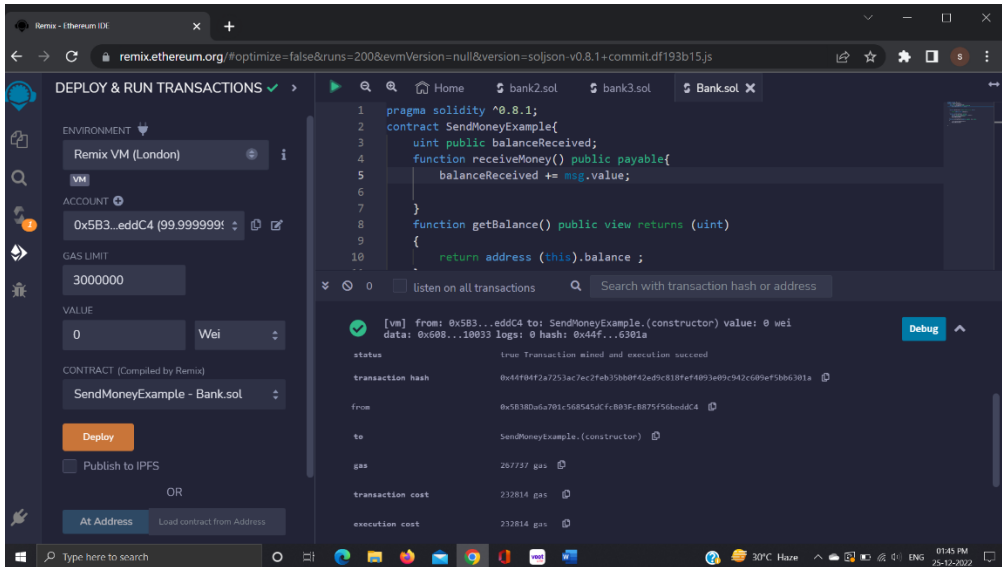


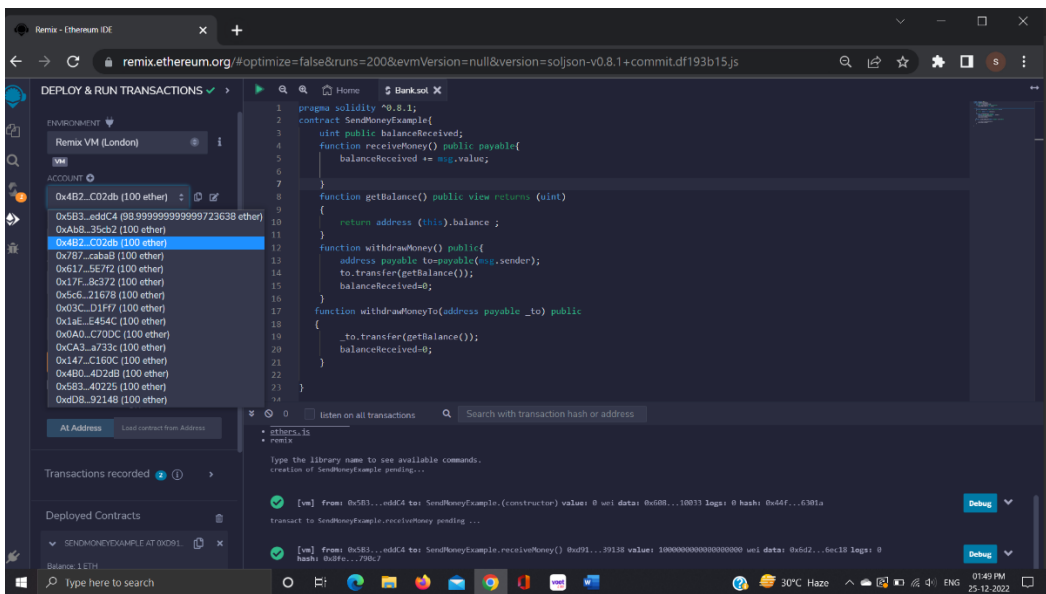
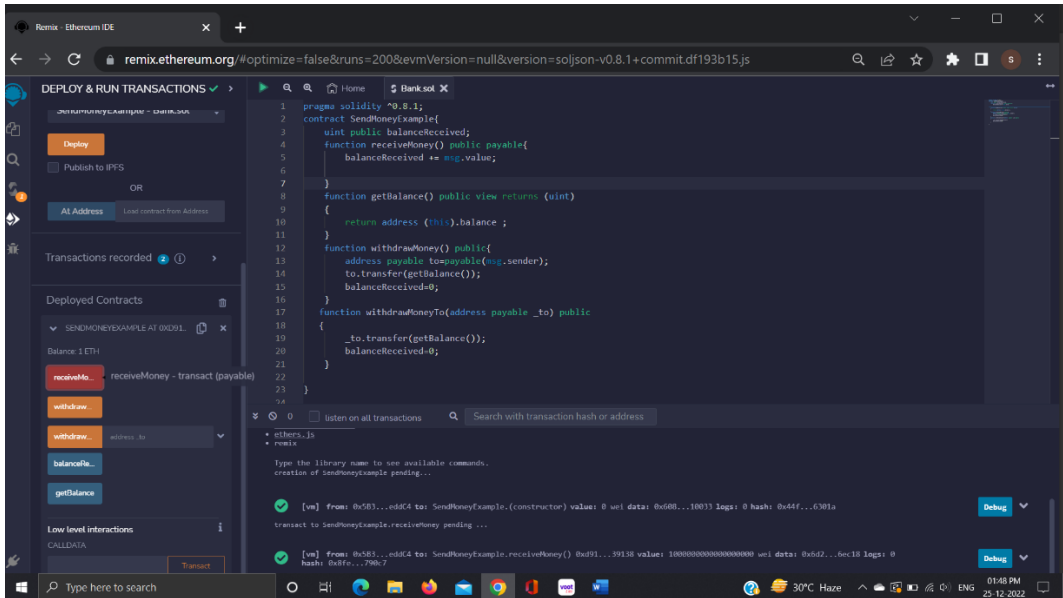
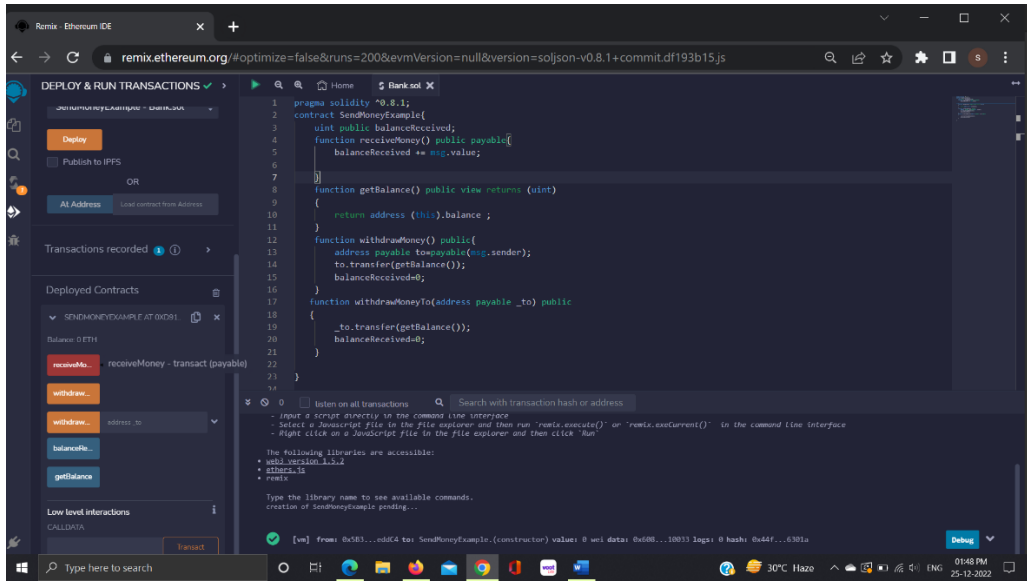


## PRACTICAL 3



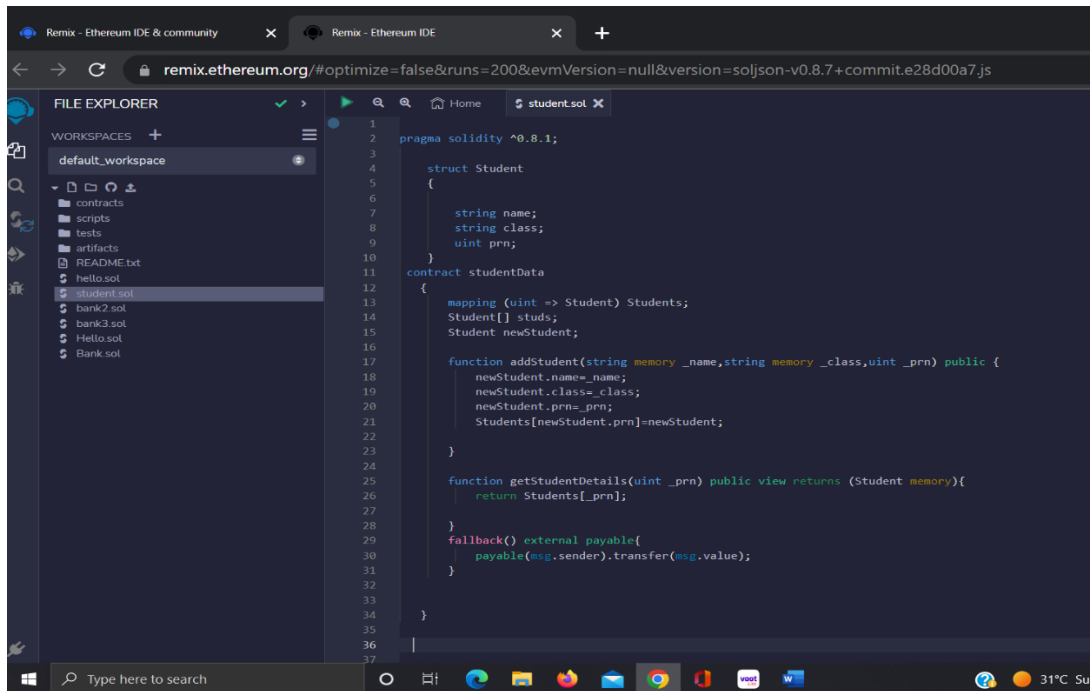




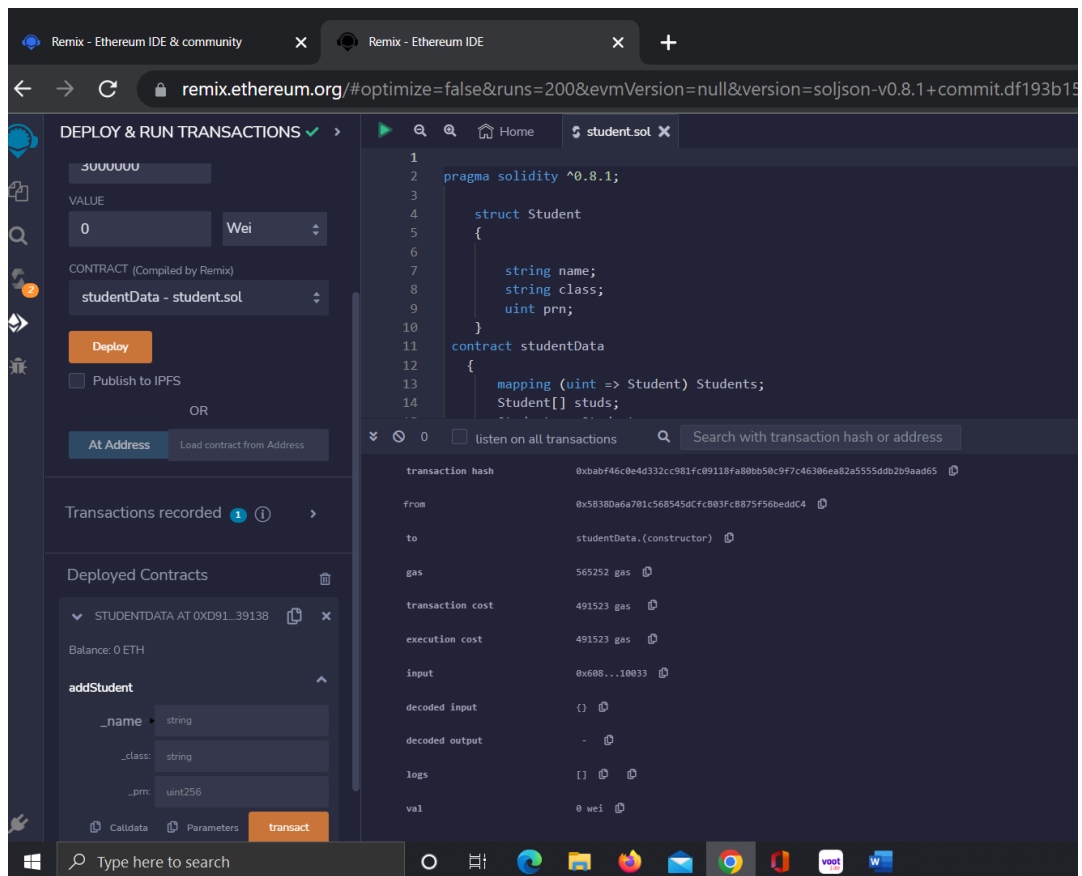




## PRACTICAL 4



```
1 pragma solidity ^0.8.1;
2
3
4 struct Student
5 {
6     string name;
7     string class;
8     uint prn;
9 }
10
11 contract studentData
12 {
13     mapping (uint => Student) Students;
14     Student[] studs;
15     Student newStudent;
16
17     function addStudent(string memory _name,string memory _class,uint _prn) public {
18         newStudent.name=_name;
19         newStudent.class=_class;
20         newStudent.prn=_prn;
21         Students[newStudent.prn]=newStudent;
22     }
23
24     function getStudentDetails(uint _prn) public view returns (Student memory){
25         return Students[_prn];
26     }
27
28     fallback() external payable{
29         payable(msg.sender).transfer(msg.value);
30     }
31 }
32
33
34
35
36
37
```



Deploy & Run Transactions

VALUE: 0 Wei

CONTRACT (Compiled by Remix): studentData - student.sol

Deploy

☐ Publish to IPFS

OR

At Address: Load contract from Address

Transactions recorded: 1

Deployed Contracts

STUDENTDATA AT 0xD91...39138

Balance: 0 ETH

addStudent

\_name: string

\_class: string

\_prn: uint256

Calldata Parameters transact

transaction hash: 0xbabf46c0e4d332c981fc09118fa80bb50c9f7c46306ea82a5555ddb2b9aad65

from: 0x58380a6a701c568545dcfc803fc8875f56beddc4

to: studentData.(constructor)

gas: 565252 gas

transaction cost: 491523 gas

execution cost: 491523 gas

input: 0x608...10033

decoded input: ()

decoded output: -

logs: []

val: 0 wei

Remix - Ethereum IDE & community x Remix - Ethereum IDE x +

remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.8.1+commit.df193b15.js

DEPLOY & RUN TRANSACTIONS ✓ >

VALUE: 0 Wei

CONTRACT (Compiled by Remix): studentData - student.sol

Deploy

Publish to IPFS

OR

At Address Load contract from Address

Transactions recorded 2 ① >

Deployed Contracts

STUDENTDATA AT 0XD91...39138

Balance: 0 ETH

addStudent

name: Snehal

class: BE

prn: 1

Calldata Parameters transact

```
1
2 pragma solidity ^0.8.1;
3
4 struct Student
5 {
6     string name;
7     string class;
8     uint prn;
9 }
10
11 contract studentData
12 {
13     mapping (uint => Student) Students;
14     Student[] studs;
```

listen on all transactions Search with transaction hash or address

to studentData.addStudent(string,string,uint256) 0xd9145cCE52D386f254917e481e844e9943f39138

gas 183890 gas

transaction cost 159208 gas

execution cost 159208 gas

input 0xccc...00000

decoded input { "string\_name": "Snehal", "string\_class": "BE", "uint256\_prn": "1" }

decoded output ()

logs ()

val 0 wei

Remix - Ethereum IDE & community x Remix - Ethereum IDE x +

remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.8.1+commit.df193b15.js

DEPLOY & RUN TRANSACTIONS ✓ >

CONTRACT (Compiled by Remix): studentData - student.sol

Deploy

Publish to IPFS

OR

At Address Load contract from Address

Transactions recorded 2 ① >

Deployed Contracts

STUDENTDATA AT 0XD91...39138

Balance: 0 ETH

addStudent string\_name, string\_class, uint

getStudentDetails

prn: 1

Calldata Parameters call

0: tuple(string,string,uint256): Snehal,BE,1

Low level interactions

CALLDATA

```
1
2 pragma solidity ^0.8.1;
3
4 struct Student
5 {
6     string name;
7     string class;
8     uint prn;
9 }
10
11 contract studentData
12 {
13     mapping (uint => Student) Students;
14     Student[] studs;
```

call to studentData.getStudentDetails

OK! [call] from: 0x58380a6a701c568545dCfc803fc8875f56beddC4 to: studentData.getStudentDetails(uint256) data: 0x86a...00001

from 0x58380a6a701c568545dCfc803fc8875f56beddC4

to studentData.getStudentDetails(uint256) 0xd9145cCE52D386f254917e481e844e9943f39138

execution cost 38738 gas (Cost only applies when called by a contract)

input 0x86a...00001

decoded input { "uint256\_prn": "1" }

decoded output { "0": "tuple(string,string,uint256): Snehal,BE,1" }

logs ()