



Experiment No. 6

Aim:

To execute a solidity contract on Ganache

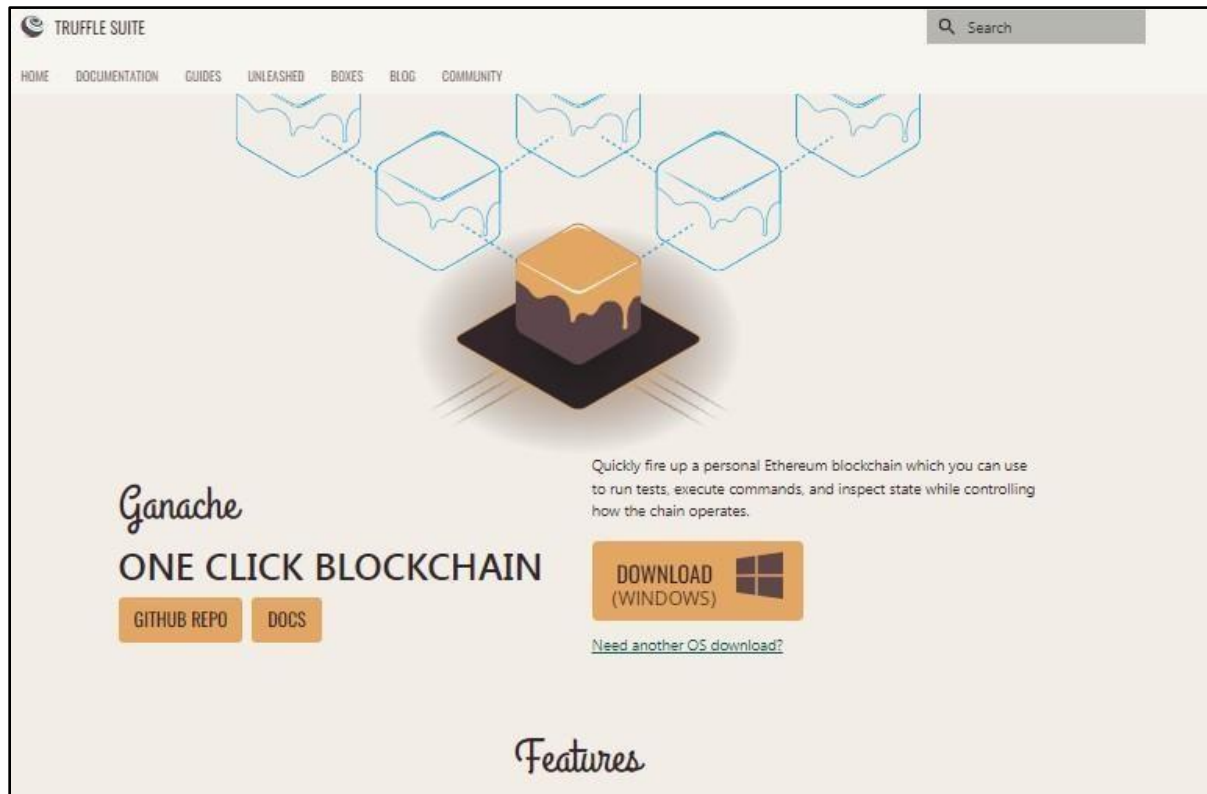
Theory:

Ganache is used for setting up a personal Ethereum Blockchain for testing your Solidity contracts. It provides more features when compared to Remix. Before you begin using Ganache, you must first download and install the Blockchain on your local machine.

Installing and setup Ganache

You may download Ganache from the following URL –

<https://truffleframework.com/ganache>



Locate the “Ganache-2.0.0.dmg” in your Downloads folder and double-click on it to install Ganache. Now locate **Ganache** in your Application folder and double-click on its icon to start Ganache.



Account and Keys

When you click on the **Accounts & Keys** menu option, you will see the following screen and make the following changes the total accounts to generate to 2 and clicks save and restart button on top right.

⚠ Restarting the Quickstart workspace resets the blockchain. All transactions and contract states will be reset.

ACCOUNTS & KEYS

ACCOUNT DEFAULT BALANCE	<input type="text" value="150"/>	The starting balance for accounts, in Ether.
TOTAL ACCOUNTS TO GENERATE	<input type="text" value="4"/>	Total number of Accounts to create and pre-fund.
AUTOGENERATE HD MNEMONIC	<input type="checkbox"/>	Turn on to automatically generate a new mnemonic and account addresses on each run.
Enter Mnemonic to use	<input type="text"/>	Enter the Mnemonic you wish to use.
<small>note: this mnemonic is not secure; don't use it on a public blockchain.</small>		
LOCK ACCOUNTS	<input type="checkbox"/>	If enabled, accounts will be locked on startup.

For **client** applications, you will use **MyEtherWallet**. Download **MyEtherWallet** software from the following URL - <https://github.com/kvhnuke/etherwallet/releases/tag/v3.21.06>

Create New Wallet

Enter a password

Create New Wallet

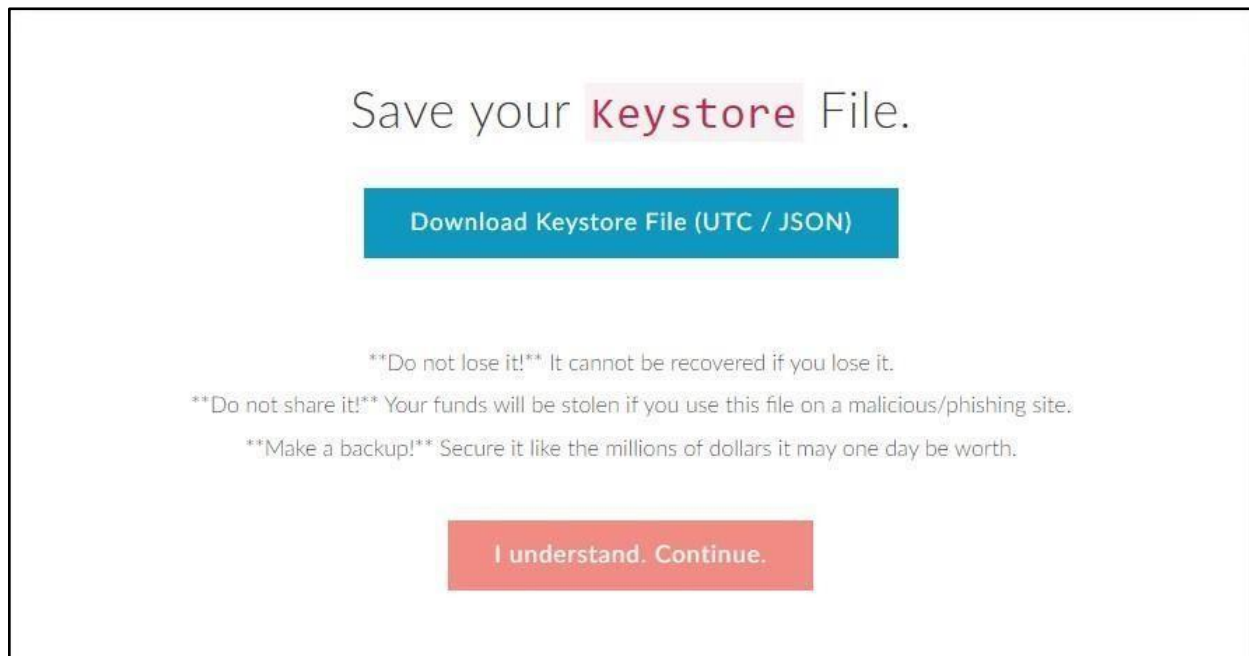
This password *encrypts* your private key. This does not act as a seed to generate your keys. You will need this password + your private key to unlock your wallet.

[How to Create a Wallet](#) • [Getting Started](#)



If required, unzip the downloaded file and open index.html. You will see the above interface for creating a new wallet.

To create a new wallet, enter a password of your choice and then click on the “**Create New Wallet**” button. When you do so, a Wallet would be created. A digital wallet is essentially the generation of a public/private key pair that you need to store in a safe place. The wallet creation results in the following screen



Click on the “Download Keystore File (UTC / JSON)” button to save the generated keys. Now, click on the “I understand. Continue” button. Your private key will appear on the screen as seen in the screenshot below –



Save Your Private Key.

7580c2b0824020ebf639fa597d74e2d1fdbcf17c96b07b5f67482ce9622879e9

Print Paper Wallet

****Do not lose it!**** It cannot be recovered if you lose it.
****Do not share it!**** Your funds will be stolen if you use this file on a malicious/phishing site.
****Make a backup!**** Secure it like the millions of dollars it may one day be worth.

Save Your Address. →

To unlock your wallet, click on the “Save Your Address” button. You will see the following screen. The wallet can be unlocked using the Private Key option as highlighted in the above screen. Cut-n-paste the private key from the previous screenshot and click the Unlock button. Your wallet will be unlocked and you will see a message appear at the bottom of the screen. As the wallet does not contain anything as of now, unlocking the wallet is not really useful to us at this point.

Unlock your wallet to see your address

Your Address can also be known as your **Account #** or your **Public Key**. It is what you share with people so they can send you Ether or Tokens. Find the colorful address icon. Make sure it matches your paper wallet & whenever you enter your address somewhere.

How would you like to access your wallet?

- ☐ MetaMask / Mist
- ☐ Ledger Wallet
- ☐ TREZOR
- ☐ Digital Bitbox
- ☐ Secalot
- ☐ Keystore / JSON File ?
- ☐ Mnemonic Phrase ?
- ☒ Private Key ?
- ☐ Parity Phrase ?

Paste Your Private Key

⚠ This is not a recommended way to access your wallet.
Entering your private key on a website is dangerous. If our website is compromised or you accidentally visit a different website, your funds will be stolen. Please consider:

- [MetaMask or A Hardware Wallet or Running MEW Offline & Locally](#)
- [Learning How to Protect Yourself and Your Funds](#)

If you must, please double-check the URL & SSL cert. It should say <https://www.myetherwallet.com> & MYETHERWALLET INC in your URL bar.

7580c2b0824020ebf639fa597d74e2d1fdbcf17c96b07b5f67482ce9622879e9

Unlock

You have now created a wallet; this wallet is a client interface to the Blockchain. We will attach the wallet to the Ganache Blockchain that you have started in the earlier lesson. To do so, click on the Network dropdown box as shown in the screenshot below



Vidyavardhini's College of Engineering and Technology, Vasai
Department of Computer Science & Engineering (Data Science)

How would you like to access your wallet?

- ☐ MetaMask / Mist
- ☐ Ledger Wallet
- ☐ TREZOR
- ☐ Digital Bitbox
- ☐ Secalot
- ☐ Keystore / JSON File ?
- ☐ Mnemonic Phrase ?
- ☒ Private Key ?

Paste Your Private Key

⚠ This is not a recommended way to access your wallet.
Entering your private key on a website is dangerous. If our website is compromised, your funds will be stolen. Please consider:

- MetaMask or A Hardware Wallet or Running MEW Offline & Locally
- Learning How to Protect Yourself and Your Funds

If you must, please double-check the URL & SSL cert. It should say **https://www.myetherwallet.com** in your URL bar.

7580c2b0824020ebf639fa597d74e2d1fdbcf17c96b07b5f67482ce9622879e9

Networks: Rinkeby (infura.io), EXP (expense.tech), UBQ (ubiqscan.io), POA (core.poa.network), TOMO (core.tomocoin.io), ELLA (ellaism.org), ETSC (gazua.tv), Add Custom Network / Node

Go to the bottom of the list. You will see an option for “Add Custom Network / Node”. Select this item. Now, a screen will appear asking for the Ganache server address and the port to which it is listening.

Set Up Your Custom Node

[Instructions can be found here](#)

Node Name

Exp 6

URL

http://127.0.0.1

Port

7545

☐ HTTP Basic access authentication

☒ ETH ☐ ETC ☐ Ropsten ☐ Kovan ☐ Rinkeby ☐ Custom ☐ Supports EIP-155

Cancel Save & Use Custom Node

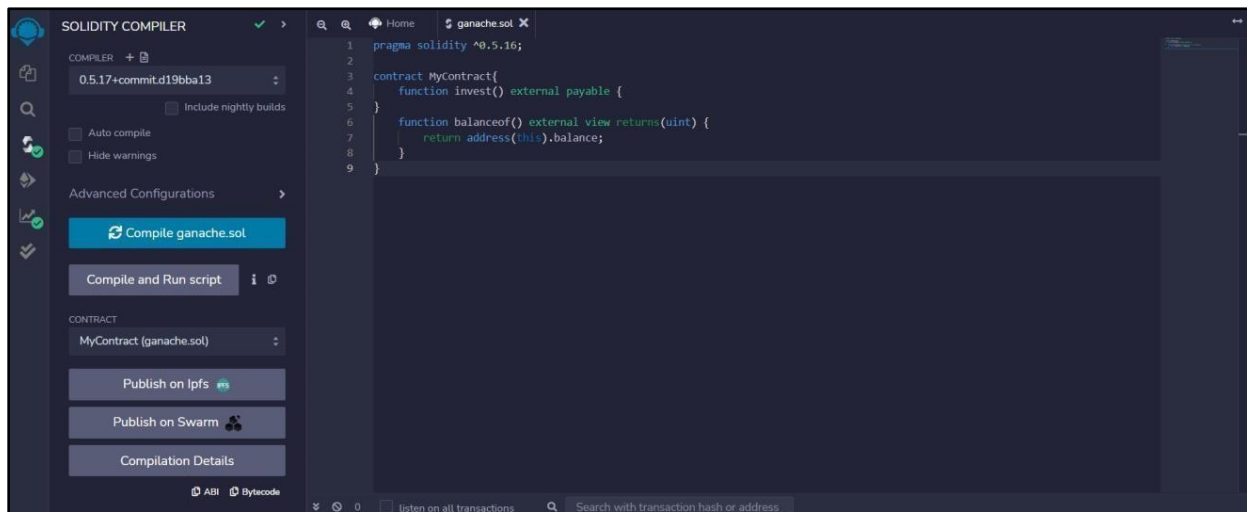
Type your Ganache server details – `http://127.0.0.1` and Port: 7545. These would be the values set by you in the Ganache server setup. Give a name of your choiceto this node. Click on the “Save & Use Custom Node” button. You will see the connected message at the bottom of the screen. At this point, your wallet is successfully connected to the Ganache Blockchain.You are now ready to deploy the contract on this connected Blockchain.

Execute the below code on remix ide.

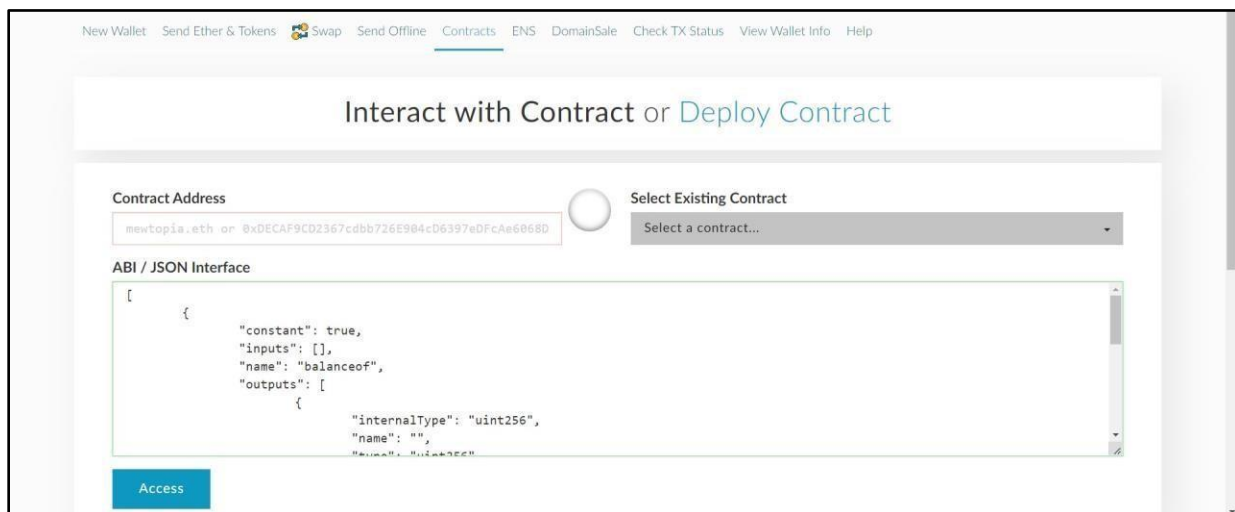
```
https://remix-project.org/  
pragma solidity ^0.5.16;  
contract MyContract{
```



```
}  
function invest() external payable {  
}  
function balanceof() external view returns(uint) {return  
    address(this).balance;  
}  
}
```

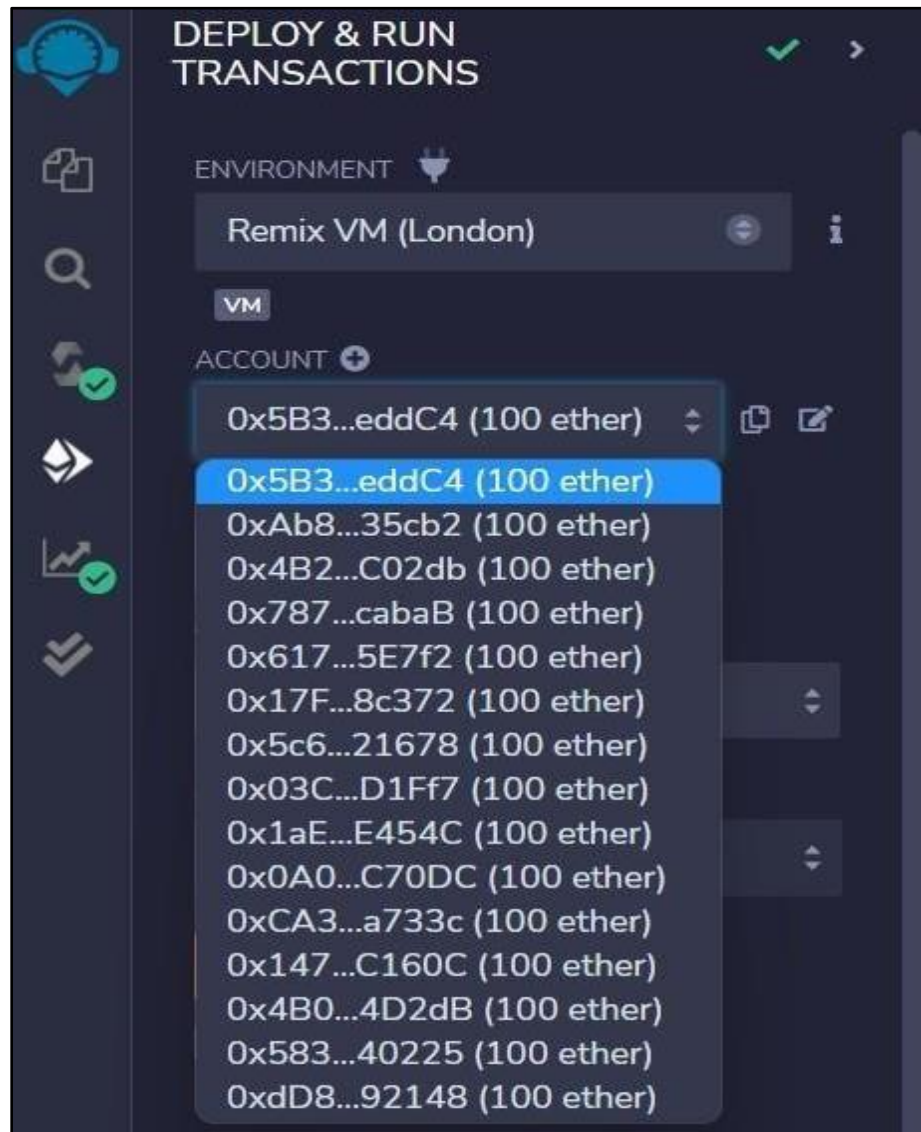


And click on the ABI button and paste the copied text into the contract section of Myether wallet





For Contract Address copy it from the remix ide





Vidyavardhini's College of Engineering and Technology, Vasai

Department of Computer Science & Engineering (Data Science)

Click on access button and select function “invest” and click on Private key

Access

Read / Write Contract
0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

invest ▾

How would you like to access your wallet?

- ☐ MetaMask / Mist
- ☐ Ledger Wallet
- ☐ TREZOR
- ☐ Digital Bitbox
- ☐ Secalot
- ☐ Keystore / JSON File
- ☐ Mnemonic Phrase
- ☒ Private Key
- ☐ Parity Phrase

Paste Your Private Key

⚠ This is not a recommended way to access your wallet.
Entering your private key on a website is dangerous. If our website is compromised or you accidentally visit a different website, your funds will be stolen. Please consider:

- MetaMask or A Hardware Wallet or Running MEW Offline & Locally
- Learning How to Protect Yourself and Your Funds.

If you must, please double-check the URL & SSL cert. It should say <https://www.myetherwallet.com> & MYETHERWALLET INC in your URL bar.

Private Key

WRITE

Copy the private key of the first address from ganache and paste it into Myetherwallet

ACCOUNTS BLOCKS TRANSACTIONS CONTRACTS EVENTS LOGS

ACCOUNT 0/0 BALANCE 0.000000000000 GAS LIMIT 121875 CONTRACTS 0/0 ADDRESS 0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

HD PATH 0/44/780/28/28/account_index

ACCOUNT INFORMATION

ACCOUNT ADDRESS
0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

PRIVATE KEY
89c8e063bd0ceab1b456a174e372c981fc66a917e6a981fbca1e885ad88d89d4
Do not use this private key on a public blockchain! use it for development purposes only!

DONE



Contract Address

0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

ABI / JSON Interface

```
{
  "constant": false,
  "inputs": [],
  "name": "invest",
  "outputs": [],
  "payable": true,
  "stateMutability": "payable",
  "type": "function"
}
```

Access

Select Existing Contract

Warning!

You are about to execute a function on contract.
It will be deployed on the following network: ETH (Custom).

Amount to Send *In most cases you should leave this as 0.*

40

Gas Limit

21064

Generate Transaction

Read / Write Contract

0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

invest

WRITE

CURRENT BLOCK 1	GAS PRICE 20000000000	GAS LIMIT 6721375	HARDWARE MURGLACIER	NETWORK ID 5777	RPC SERVER HTTP://127.0.0.1:7545	Mining Status AUTOMINING	WORKSPACE QUICKSTART	SAVE	SWITCH					
MNEMONIC stumble decrease lake favorite kingdom avoid maze edit crumble during then bicycle							HD PATH m/44'/60'/0'/0/account_index							
ADDRESS 0x5809F26cbA625F4D66CF69fc8Ee8B194501b2B20	BALANCE 110.00	ETH	TX COUNT 1	INDEX 0										
ADDRESS 0x9DB2b29d9b0f658409a56510537227129208e6E8	BALANCE 150.00	ETH	TX COUNT 0	INDEX 1										
ADDRESS 0xa0F56515F4AB2e2406718a3d6D7aeAf9c2691C13	BALANCE 150.00	ETH	TX COUNT 0	INDEX 2										
ADDRESS 0xE658c6E3EB710EAFcB58B603CeF0c2e6a3669273	BALANCE 150.00	ETH	TX COUNT 0	INDEX 3										

CURRENT BLOCK
1

GAS PRICE
20000000000

GAS LIMIT
6721975

HARDFORK
MUIRGLACIER

NETWORK ID
5777

RPC SERVER
HTTP://127.0.0.1:7545

MINING STATUS
AUTOMINING

WORKSPACE
QUICKSTART

SAVE

SWITCH

← BACK

BLOCK 1

GAS USED 21064	GAS LIMIT 6721975	MINED ON 2022-09-30 15:05:12	BLOCK HASH 0x05001cd6bd21742f805c8a821231e0c778f6e5af7ff79d5785e940ce50132419
-------------------	----------------------	---------------------------------	----------------------------------------------------------------------------------

TX HASH

0xb6ceb2315b7c13bd0e35c62aaf2ee3dba6a857b9d52c197965869673000ac328

FROM ADDRESS

0x5899F26cbA625f4D66CF69fc8Ee8B194501b2B20

TO CONTRACT ADDRESS

0x5B38Da6a701c56854dCfcB03FcB875f56beddC4

GAS USED

21064

VALUE

4000000000000000000

CONTRACT CALL

CURRENT BLOCK
1

GAS PRICE
20000000000

GAS LIMIT
6721975

HARDFORK
MUIRGLACIER

NETWORK ID
5777

RPC SERVER
HTTP://127.0.0.1:7545

MINING STATUS
AUTOMINING

WORKSPACE
QUICKSTART

SAVE

SWITCH

TX 0xb6ceb2315b7c13bd0e35c62aaf2ee3dba6a857b9d52c197965869673000ac328

SENDER ADDRESS
0x5809F26cbA625F4D66CF69fc8Ee8B194501b2B20

TO CONTRACT ADDRESS
0x5B38Da6a701c568545dCfcB03FcB875f56beddC4

CONTRACT CALL

VALUE
40.00 ETH

GAS USED
21064

GAS PRICE
41000000000

GAS LIMIT
21064

MINED IN BLOCK
1

TX DATA
0xe8b5e51f

EVENTS



Initially balance for first address was 150.00 ETH after the transaction it is reduced to 110.00 ETH.

Conclusion:

Q. How do you execute a Solidity contract on Ganache, and what are the key steps involved in deploying and interacting with the contract?