

# Assignment 5

## 1) Why do we need a Personal Blockchain even though we have Testnet OR Private Network?

**Ans:** Personal blockchain is used for practising before testing contracts. So that it will be time reducing when actual network deployment.

## 2) Read about Ethereum Opcodes.

**Ans:** The instructions of the hexadecimal bytecode representation are often mapped into a human-readable form which is referred to as opcode(operation code).

## 3) How to form mainnet or testnet using Ganache?

**Ans:** Test your smart contracts is running them on mainnet, but that can't always be the case because of high gas fees. To tackle the problem, ganache comes with a tool for forking the mainnet to your local machine. The forking mechanism is quite sophisticated and only downloads the data which it need to process your local transactions. This way, you can take benefit of mainnet without paying high fees.

## 4) What is snapshot in ganache?

**Ans:** This plugin provides an easy and robut way to make and revert ganache snapshots for smart contract development. Generally speaking, this is a development tool for testing long sequences of transactions.

A snapshot is a file that contains the state of a blockchain at any given point in time. Snapshots allow new nodes to catch-up with the network by downloading only the most recent states from the blockchain, and they are commonly used to bootstrap blockchains, sidechains, and new nodes. A snapshot file format and bootstrap procedure for Bitcoin altcoins is presented in Bitcoin Forum.

### **5) How to fast forward time in ganache?**

**Ans:** Manipulate your blockchain time with Ganache. Use the ``evm_increaseTime`` and ``evm_setTime`` RPC methods to increase the current timestamp by the specified amount of time in seconds and to set it to a specific timestamp, respectively.

### **6) How to impersonate an account using ganache?**

**Ans:** Ganache allows unlocking accounts for sending transactions impersonating other Ethereum accounts.

You can impersonate another account during development. This is more interesting when used with the fork feature; you can fork Mainnet and impersonate any account, even the zero address.

### **7) What is the difference between quick start workspace and already saved workspace in Ganache?**

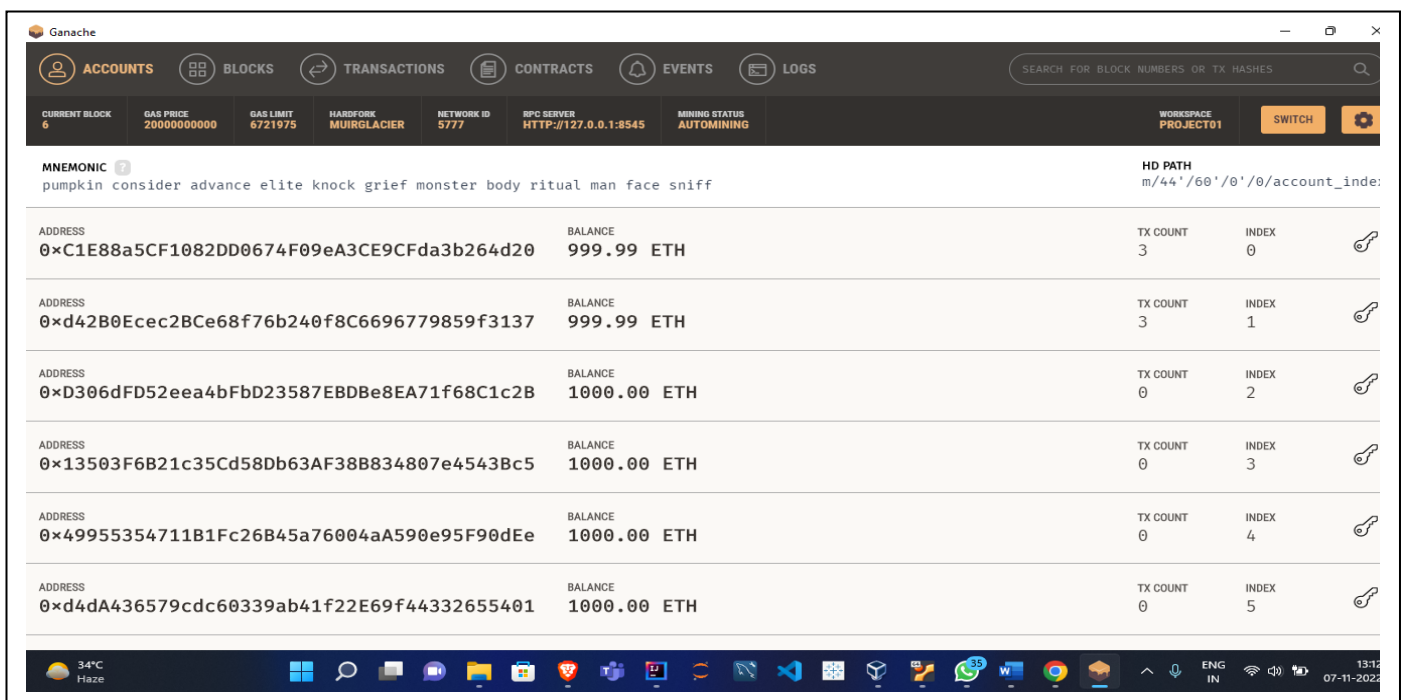
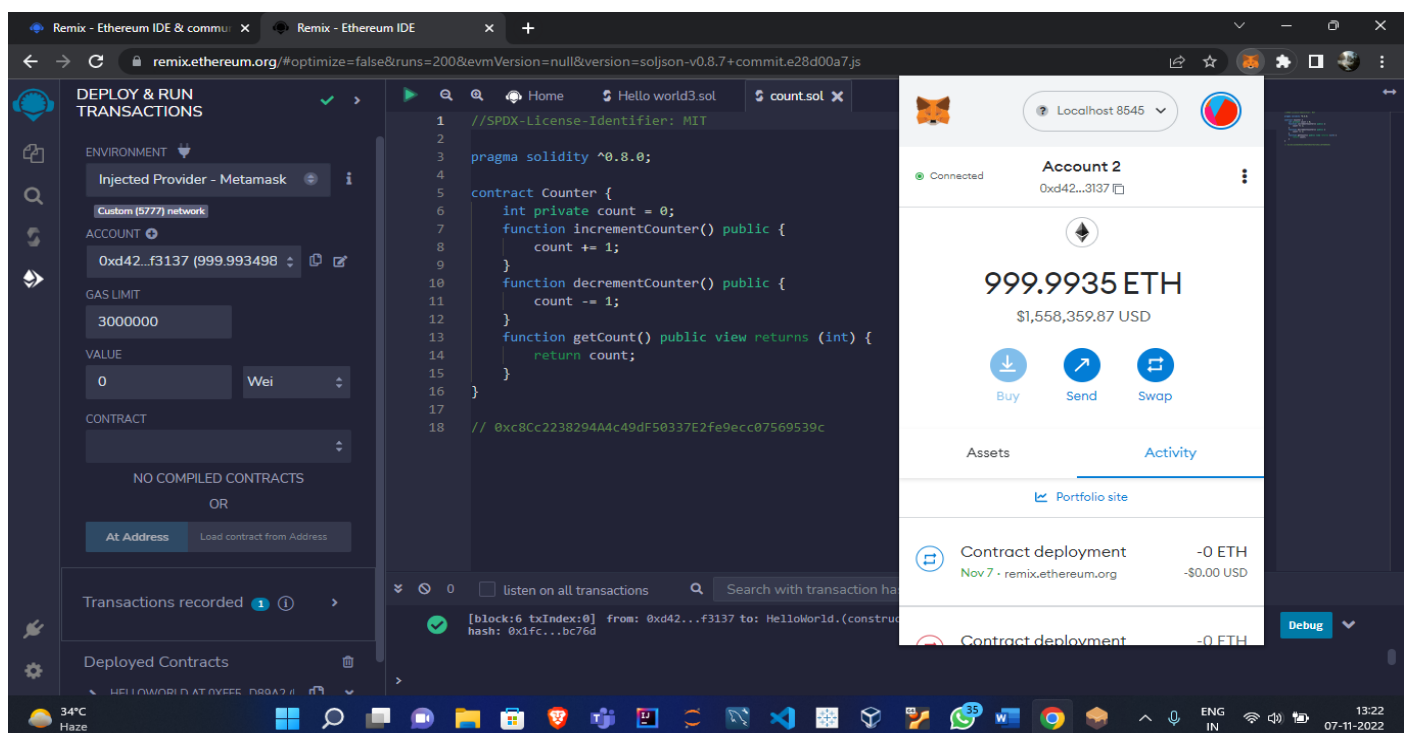
**Ans:**

QuickStart workspace resets the blockchain on every restart. The QUICKSTART button on the home screen opens an Ethereum or Corda quickstart workspace, depending on which technology is selected. This workspace is meant to provide a clean slate for prototype development.

New Workspace if you've already created a workspace and are ready to add projects or make customizations. If you're starting fresh check out Creating a Workspace from Scratch.

## 8) Activity: Done

- ❖ Launch Ganache Done
- ❖ Connect Metamask to localhost 8545 Done
- ❖ Open Remix IDE
  - Environment - Injected Provider
  - Create HelloWorld contract
  - Deploy the contract
  - Create Counter contract
  - Deploy the counter contract
  - Perform Increment & Decrement Transactions



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DEPLOY & RUN TRANSACTIONS

ENVIRONMENT

Injected Provider - Metamask

Custom (5777) network

ACCOUNT

0xd42...f3137 (999.993498)

GAS LIMIT

3000000

VALUE

0 Wei

CONTRACT

NO COMPILED CONTRACTS

OR

At Address Load contract from Address

Transactions recorded 1 1

Deployed Contracts

HELLO WORLD AT 0x5E... 0x5E... f3137

```
1 //SPDX-License-Identifier: MIT
2
3 pragma solidity ^0.8.0;
4
5 contract Counter {
6     int private count = 0;
7     function incrementCounter() public {
8         count += 1;
9     }
10    function decrementCounter() public {
11        count -= 1;
12    }
13    function getCount() public view returns (int) {
14        return count;
15    }
16 }
17
18 // 0xc8Cc2238294A4c49dF50337E2fe9ecc07569539c
```

[block:6 txIndex:0] from: 0xd42...f3137 to: HelloWorld.(constructor) value: 0 wei data: 0x608...70833 logs: 0 hash: 0x1fc...bc76d

listen on all transactions Search with transaction hash or address

34°C Haze

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remix.ethereum.org/#optimize=false&runs=200&evmVersion=null&version=soljson-v0.8.7+commit.e28d00a7.js

DEPLOY & RUN TRANSACTIONS

ENVIRONMENT

Injected Provider - Metamask

Goerli (5) network

ACCOUNT

0xbb4...800b3 (0.1989485)

GAS LIMIT

3000000

VALUE

0 Wei

CONTRACT (Compiled By Remix)

Counter - contracts/count.sol

Deploy

Publish to IPFS

OR

At Address Load contract from Address

Transactions recorded 1 1

```
1 //SPDX-License-Identifier: MIT
2
3 pragma solidity ^0.8.0;
4
5 contract Counter {
6     int private count = 0;
7     function incrementCounter() public {
8         count += 1;
9     }
10    function decrementCounter() public {
11        count -= 1;
12    }
13    function getCount() public view returns (int) {
14        return count;
15    }
16 }
17
18 // 0xc8Cc2238294A4c49dF50337E2fe9ecc07569539c
```

[block:7909073 txIndex:33] from: 0xbb4...800b3 to: Counter.(constructor) value: 0 wei data: 0x305...f34de

listen on all transactions Search with transaction hash or address

Goerli test network

Account 1

Connected

0xbb4...00b3

0.1989 GoerliETH

\$314.39 USD

Buy Send Swap

Assets Activity

Portfolio site

Contract deployment -0 GoerliETH

Nov7 - remix.ethereum.org -0.00 USD

Contract deployment -0 GoerliETH

29°C Sunny Haze