- Setup and configuration Geth-

Step 1: Install

- Node js
- Git
- geth-windows

Step 2: Make C:\Users\folder\bclab (mkdir bclab)

Step 3: create genesis.json (using text editors such as notepad, notepad++ or copy from software.zip)

```
{
    "config": {
        "chainId": 10,
        "homesteadBlock": 0,
        "eip155Block": 0,
        "eip158Block": 0
    },
    "coinbase" : "0x0000000000000000000000000000000000000000",
    "difficulty" : "0x400",
    "extraData" : "0x00",
    "gasLimit" : "0x8000000",
    "nonce" : "0x0000000000000042",
    "mixhash" :
"0x0000000000000000000000000000000000000000000000000000000000000000",
    "parentHash" :
"0x0000000000000000000000000000000000000000000000000000000000000000",
    "timestamp" : "0x00",
    "alloc" : {
    }
}
```

- Local blockchain network-

Step 1: Create C:\Users\folder\bclab file (three node setup)

Open cmd and run

geth --datadir "C:\USERS\FOLDER\BCLAB\local1" init "C:\USERS\FOLDER\BCLAB\genesis.json"

geth --datadir "C:\USERS\FOLDER\BCLAB\local2" init "C:\USERS\FOLDER\BCLAB\genesis.json"

geth --datadir "C:\USERS\FOLDER\BCLAB\local3" init "C:\USERS\FOLDER\BCLAB\genesis.json"

Step 2: open console

geth --datadir "C:\USERS\FOLDER\BCLAB\local1" –ipcdisable console 2>console1.log

geth --datadir "C:\USERS\FOLDER\BCLAB\local2" --ipcdisable --port 30304 console 2>console2.log

geth --datadir "C:\USERS\FOLDER\BCLAB\local3" --ipcdisable --port 30305 console 2>console3.log

-Basic command, account, mining, join local nodes-

1.1 Basic command, account, mining

personal.newAccount() – to create a new account

miner.start(1) – start mining

eth.blockNumber – current block height

eth.getBlock(number).miner – miner of block at that number

1.2 join local nodes

Step 1: get enode

1.1 admin.nodeInfo

1.2 copy enode

Step 2: add Peer

2.1 admin.addPeer("enode:<string>:<port>")

2.2 admin.peers – peers info

-Exchange block, join public nodes-

Exchange block -> run eth.blockNumber

join public nodes

Step 1: get enode from your friends

Step 2: admin.addPeer("your_friends'_enode")

-Transaction for transferring ETH using console-

Step 1: get account address

1.1 eth.accounts[0] – return address of account 0

Step 2: get the balance

2.1 eth.getBalance(eth.accounts[0]) OR eth.getBalance(address)

Step 3: unlock Account

3.1 personal.unlockAccount(senderAddress)

Step 4: begin a Transaction

4.1 eth.sendTransaction({from:senderAddress, to:receiverAddress, value: amount})

Step 5: check your new balance

5.1 eth.getBalance(address)

-Transaction for transferring ETH using wallet-

Step 1: Download metamask

1.1 go to https://metamask.io/

Step 2: นำเข้าบัญชี

2.1 เลือกประเภท ไฟล์ JSON

2.2 เลือกไฟล์ UTC ใน \bclab\local1\keystore

2.3 ใส่รหัสผ่าน และกดนำเข้า

Step 3: run command

geth --datadir "C:/EthereumTest/local2" --networkid 10 --port 30303 --rpc --rpcport 8545 --rpcaddr "0.0.0.0" console 2>console2.log

Step 4: metamask เลือกเครื่อข่าย localhost 8545

Step 5: metamask กด’ส่ง’

- Transaction history using Ethereum block explorer-

Step 1: ethereum block explorer

1.1 Download from https://github.com/etherparty/explorer

1.2 Click Download Zip

1.3 Extract file

1.4 Rename folder "explorer-master" to "explorer"

1.5 Copy folder to C:\USERS\FOLDER\BCLAB

Step 2: NPM Start

2.1 Run Command Prompt

2.2 cd C:\USERS\FOLDER\BCLAB\explorer (ex: C:\EthereumTest\explorer)

2.3 run npm start

Step 3: Start RPC Port 8000

3.1 Run Command Prompt

3.2 geth --datadir "C:\EthereumTest\local1" --rpc --rpccorsdomain "http://localhost:8000"

Step 4: explorering ethereum block

4.1 Open your Brower

4.2 http://localhost:8000