

**Assignment – 1**  
CSCI 6830.81 / 4030.51 Blockchain Technology  
Due on July 6, 2020 at 11:59 PM  
**Total Points: 100**

**Purpose:** This assignment provides you a deeper understanding and practical experience on concepts of blockchain technology, setup Ethereum framework, and creation of public and private node on test chain of Ethereum framework.

**Requirements & Submission:**

1. The answers of this assignment must be submitted electronically on blackboard.
2. Don't forget to write *question number* corresponding to your answer.
3. If there is needed to submit more than one file, make a **single ZIP file** and submit your answers **on blackboard** prior to the due date.
4. The file names must be your first name followed by "." and assignment-1. For example, if your first name is "avi", then rename your files as "**avi.Assignment-1.pdf**".
5. Must read **Textbooks and online resources related to the contains of Blockchain, Ethereum, and class notes**. Some answers require more details than just what we had discussed in lecture slides or available in textbook.

**Question (1) (10 points)** Join some LinkedIn Blockchain Technology Groups such as Blockchain Professionals, Cryptocurrency, etc. Which group did you join and why? **Software & Technology Professionals: Managers | HR | Recruiters | Blockchain | Investors. The group consists of various kinds of professionals in Blockchain Technology, such as managers, recruiters, and investors. Also, compared to similar groups, it has one of the largest member bases on LinkedIn.**

**Question (2) (10 points)** Join some LinkedIn Ethereum framework and Solidity developer groups such as Ethereum computing, solidity developer, and smart contracts. Which group did you join and why? **Solidity Programming Language Ethereum. The group is one of the largest LinkedIn Ethereum framework and Solidity developer groups for developers interested in both Blockchain and Ethereum.**

**Question (3) (Total: 10+10 = 20 points)**

- (a) (10 points)** Get together (**Virtually**) with your members of group, discuss and research topics of group project ideas, be creative, anything related to Blockchain, Blockchain Oriented Software in Ethereum, Solidity, and Smart Contract. Any ideas come out of your discussions, write in brief? Don't forget to write name of group members in your answer.  
**Some of the Ethereum project ideas and topics suggested by Peter Lee include creating a crowdfunding platform, a credit access application, and a money transfer service. Kamrul Hasan recommended using the**

technology to develop a pay per use digital content system where users could, for instance, watch and pay for a single movie instead of a subscription. Also, Michael Spencer suggested a social network as a possible project idea. Overall, the group had ideas and topics from a wide range of industries.

**(b) (10 points)** A page of summary of what you have learned and discovered, what groups did you discover on LinkedIn? Anything interesting or worth sharing? any semester potential project ideas discussed among your group members.

On LinkedIn, there are thousands of groups related to Blockchain technology and, in particular, Ethereum and Solidity. The Software & Technology Professionals: Managers | HR | Recruiters | Blockchain | Investors and Solidity Programming Language Ethereum are some of the most popular groups on the platform. The first group has close to two million members or professionals in the Blockchain industry and includes managers, HR, recruiters, and investors. Its followers are privy to discussions, news, and events associated with Blockchain technology. The second one has about two hundred thousand members and is tailored more to developers interested in the Ethereum framework and Solidity.

After considerable time in both groups, it is clear that Blockchain expands to the finance, social, entertainment, business, and education industries. In finance, some of the Ethereum project ideas and topics discussed include creating a crowdfunding platform with better security and accountability features like releasing money upon completion of a milestone. Similarly, we can use its enhanced security to create money transfer applications that can be used worldwide. In entertainment, possible projects include an online casino and pay per use digital content instead of subscriptions. In the social sector, developers can create a social network application that focuses on visuals, interactive images, and videos. As for business, we can use Ethereum to create credit access for small firms. Unlike borrowing from a bank, P2P lending applications are faster and more efficient and offer loans at a low-interest.

**Question (4) (20 + 10 (screen shots) = 30 points)**

Follow instructions (uploaded on Blackboard in a separate files) in order to setup Ethereum development environment (either on MAC OS or Windows). You need to submit screen shot of command prompt of setup process. If you got any error during setup process, please include errors and corresponding actions in your answers.

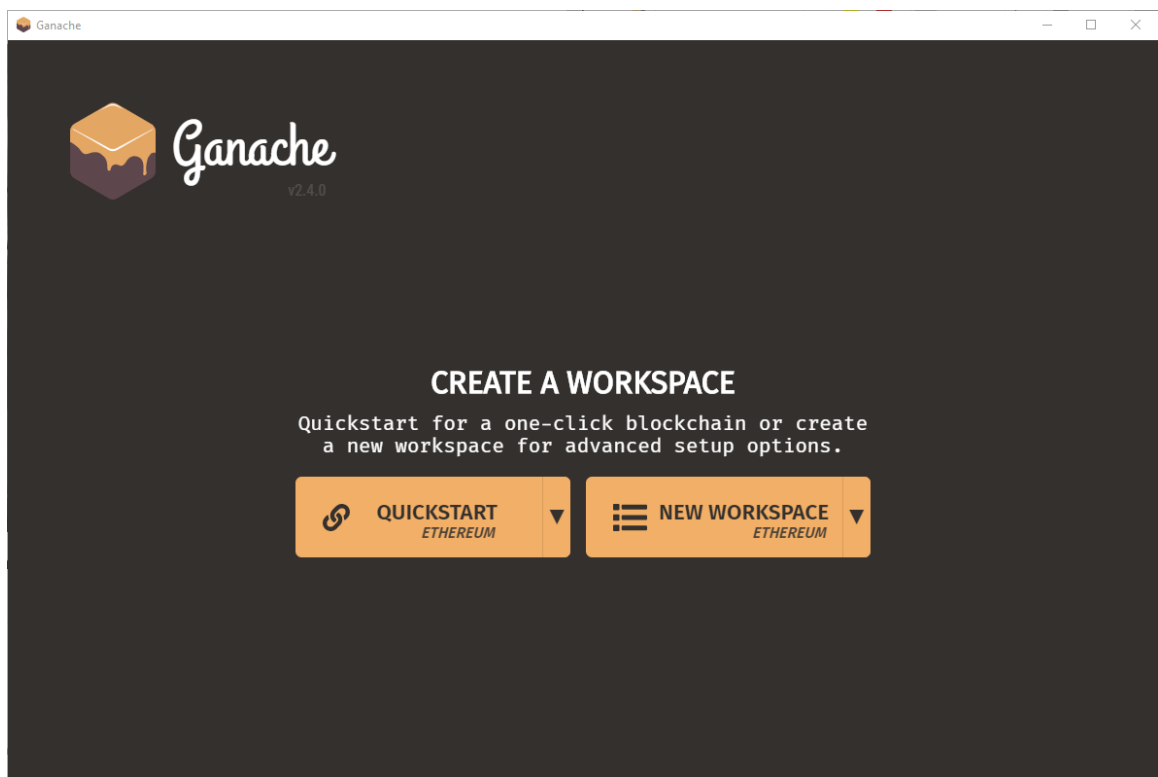
**1. Install Geth (Go Ethereum)**

```
Command Prompt
Microsoft Windows [Version 10.0.18363.900]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\hwait>geth version
Geth
Version: 1.9.15-stable
Git Commit: 0f77f34bb67b640bd8af22b215f3d279a1e21170
Git Commit Date: 20200608
Architecture: amd64
Protocol Versions: [65 64 63]
Go Version: go1.14.2
Operating System: windows
GOPATH=
GOROOT=C:\go

C:\Users\hwait>
```

## 2. Install Ganache



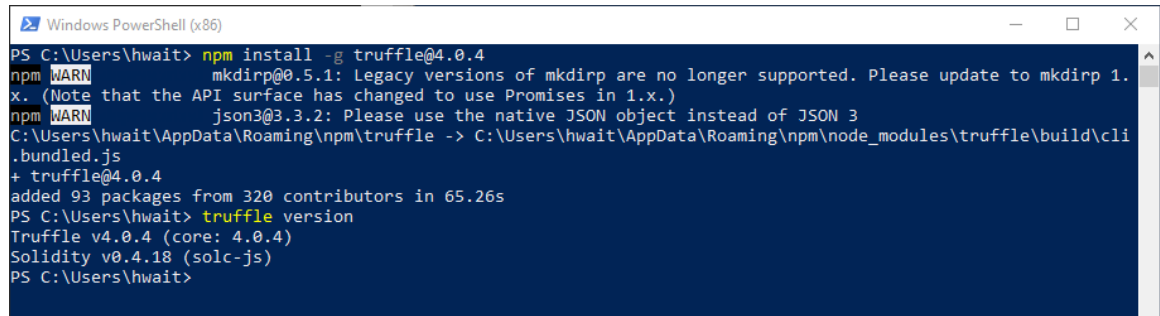
## 3. Install Node JS and NPM

```
Windows PowerShell (x86)
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

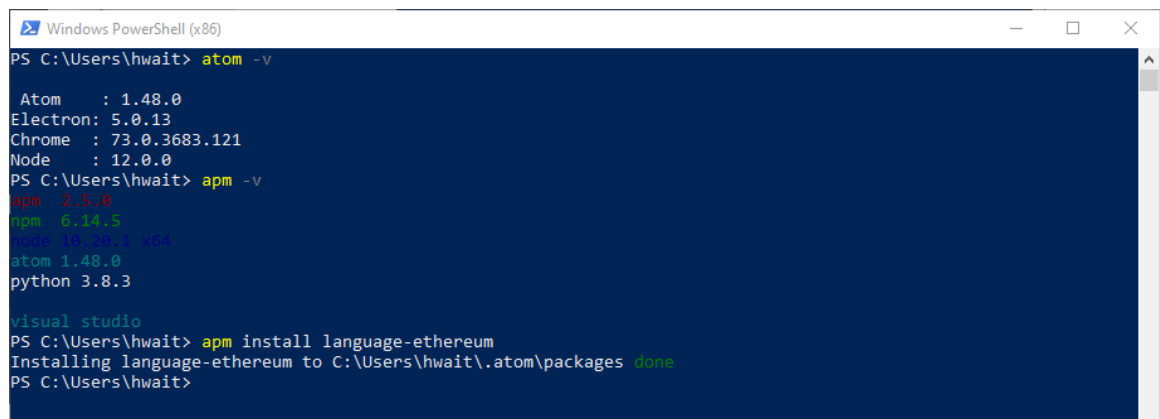
PS C:\Users\hwait> node -v
v12.18.2
PS C:\Users\hwait> npm -v
6.14.5
PS C:\Users\hwait>
```

## 4. Install Truffle 4



```
Windows PowerShell (x86)
PS C:\Users\hwait> npm install -g truffle@4.0.4
npm WARN mkdirp@0.5.1: Legacy versions of mkdirp are no longer supported. Please update to mkdirp 1.x. (Note that the API surface has changed to use Promises in 1.x.)
npm WARN json3@3.3.2: Please use the native JSON object instead of JSON 3
C:\Users\hwait\AppData\Roaming\npm\truffle -> C:\Users\hwait\AppData\Roaming\npm\node_modules\truffle\build\cli-bundled.js
+ truffle@4.0.4
added 93 packages from 320 contributors in 65.26s
PS C:\Users\hwait> truffle version
Truffle v4.0.4 (core: 4.0.4)
Solidity v0.4.18 (solc-js)
PS C:\Users\hwait>
```

## 5. Install ATOM



```
Windows PowerShell (x86)
PS C:\Users\hwait> atom -v
Atom : 1.48.0
Electron: 5.0.13
Chrome : 73.0.3683.121
Node : 12.0.0
PS C:\Users\hwait> apm -v
apm 2.5.0
npm 6.14.5
atom 1.48.0
python 3.8.3
visual studio
PS C:\Users\hwait> apm install language-ethereum
Installing language-ethereum to C:\Users\hwait\.atom\packages done
PS C:\Users\hwait>
```

## 6. Install Git



```
Windows PowerShell (x86)
PS C:\Users\hwait> git --version
git version 2.27.0.windows.1
PS C:\Users\hwait>
```

### Question (5) (Total: 20 + 10 (screen shots) = 30 points)

Setup three private node or instance of Ethereum on your machine (Detail instructions will be posted on blackboard). Thereafter, execute at least 5 command at command prompt (a few examples are mentioned in instructions). You need to submit screen shot of command prompt of this process. If you got any error during setup process, please include errors and corresponding actions in your answers.

#### 1. Create a folder to store the database and accounts for private node.

```
Windows PowerShell (x86)
PS C:\Users\hwait> mkdir -p ChainAvi/private

Directory: C:\Users\hwait\ChainAvi

Mode                LastWriteTime         Length Name
----                -
d-----            7/10/2020   3:10 PM         private

PS C:\Users\hwait> cd ChainAvi
PS C:\Users\hwait\ChainAvi> cd private
PS C:\Users\hwait\ChainAvi\private>
```

## 2. Creating a genesis block using puppeth

```
Windows PowerShell (x86)
PS C:\Users\hwait\ChainAvi\private> puppeth
+-----+
| Welcome to puppeth, your Ethereum private network manager |
|                                                             |
| This tool lets you create a new Ethereum network down to  |
| the genesis block, bootnodes, miners and ethstats servers |
| without the hassle that it would normally entail.          |
|                                                             |
| Puppeth uses SSH to dial in to remote servers, and builds |
| its network components out of Docker containers using the  |
| docker-compose toolset.                                    |
+-----+

Please specify a network name to administer (no spaces, hyphens or capital letters please)
> chainavi

Sweet, you can set this via --network=chainavi next time!

[32mINFO [0m[07-10|15:35:44.120] Administering Ethereum network           [32mname[0m=chainavi
[33mWARN [0m[07-10|15:35:44.122] No previous configurations found        [33mpath[0m=.puppeth\chainavi

What would you like to do? (default = stats)
 1. Show network stats
 2. Configure new genesis
 3. Track new remote server
 4. Deploy network components
> 2

What would you like to do? (default = create)
```

```
Windows PowerShell (x86)
1. Show network stats
2. Configure new genesis
3. Track new remote server
4. Deploy network components
> 2

What would you like to do? (default = create)
1. Create new genesis from scratch
2. Import already existing genesis
> 1

Which consensus engine to use? (default = clique)
1. Ethash - proof-of-work
2. Clique - proof-of-authority
> 1

Which accounts should be pre-funded? (advisable at least one)
> 0x

Should the precompile-addresses (0x1 .. 0xff) be pre-funded with 1 wei? (advisable yes)
>

Specify your chain/network ID if you want an explicit one (default = random)
>
[32mINFO [0m[07-10|15:37:16.143] Configured new genesis block

What would you like to do? (default = stats)
1. Show network stats
2. Manage existing genesis
```

```
Windows PowerShell (x86)
3. Track new remote server
4. Deploy network components
> 2

1. Modify existing configurations
2. Export genesis configurations
3. Remove genesis configuration
> 2

Which folder to save the genesis specs into? (default = current)
Will create chainavi.json, chainavi-aleth.json, chainavi-harmony.json, chainavi-parity.json
>
[32mINFO [0m[07-10|15:38:53.302] Saved native genesis chain spec [32mpath[0m=chainavi.json
[32mINFO [0m[07-10|15:38:53.310] Saved genesis chain spec [32mclient[0m=aleth [32mpath[0m=
chainavi-aleth.json
[32mINFO [0m[07-10|15:38:53.322] Saved genesis chain spec [32mclient[0m=parity [32mpath[0m
=chainavi-parity.json
[32mINFO [0m[07-10|15:38:53.331] Saved genesis chain spec [32mclient[0m=harmony [32mpath[0
m=chainavi-harmony.json

What would you like to do? (default = stats)
1. Show network stats
2. Manage existing genesis
3. Track new remote server
4. Deploy network components
> [35mCRIT [0m[07-10|15:46:42.011] Failed to read user input [35merr[0m=EOF
PS C:\Users\hwait\ChainAvi\private> ls
```

```

Windows PowerShell (x86)

Directory: C:\Users\hwait\ChainAvi\private

Mode                LastWriteTime         Length Name
----                -
d-----          7/10/2020   3:37 PM             .puppeth
-a----          7/10/2020   3:38 PM         22738 chainavi-aleth.json
-a----          7/10/2020   3:38 PM         21294 chainavi-harmony.json
-a----          7/10/2020   3:38 PM         24793 chainavi-parity.json
-a----          7/10/2020   3:38 PM         21294 chainavi.json

PS C:\Users\hwait\ChainAvi\private>

```

### 3. Specify data directory

```

Windows PowerShell (x86)

PS C:\Users\hwait\ChainAvi\private> geth -datadir . init .\chainavi.json
INFO [07-10|16:00:02.125] Maximum peer count          ETH=50 LEt=0 total=50
INFO [07-10|16:00:02.278] Allocated cache and file handles database=C:\Users\hwait\ChainAvi\private\geth
\chaindata cache=16.00MiB handles=16
INFO [07-10|16:00:02.318] Writing custom genesis block
INFO [07-10|16:00:02.339] Persisted trie from memory database nodes=354 size=50.23KiB time=5.9857ms gcnodes
=0 gsize=0.00B gctime=0s livenodes=1 liveness=0.00B
INFO [07-10|16:00:02.363] Successfully wrote genesis state database=chaindata hash="c0680b...7c68ba"
INFO [07-10|16:00:02.369] Allocated cache and file handles database=C:\Users\hwait\ChainAvi\private\geth
\lightchaindata cache=16.00MiB handles=16
INFO [07-10|16:00:02.393] Writing custom genesis block
INFO [07-10|16:00:02.402] Persisted trie from memory database nodes=354 size=50.23KiB time=2.0067ms gcnodes
=0 gsize=0.00B gctime=0s livenodes=1 liveness=0.00B
INFO [07-10|16:00:02.422] Successfully wrote genesis state database=lightchaindata hash="c0680b...7c68ba"
PS C:\Users\hwait\ChainAvi\private> ls

Directory: C:\Users\hwait\ChainAvi\private

Mode                LastWriteTime         Length Name
----                -
d-----          7/10/2020   3:37 PM             .puppeth
d-----          7/10/2020   4:00 PM             geth
d-----          7/10/2020   4:00 PM             keystore
-a----          7/10/2020   3:38 PM         22738 chainavi-aleth.json
-a----          7/10/2020   3:38 PM         21294 chainavi-harmony.json
-a----          7/10/2020   3:38 PM         24793 chainavi-parity.json
-a----          7/10/2020   3:38 PM         21294 chainavi.json

```

### 4. Create accounts

```

Windows PowerShell (x86)
PS C:\Users\hwait\ChainAvi\private> geth --datadir . account new
INFO [07-10|16:04:39.893] Maximum peer count ETH=50 LE=0 total=50
Your new account is locked with a password. Please give a password. Do not forget this password.
Password:
Repeat password:

Your new key was generated

Public address of the key: 0xB1a3e633A880cE5Ef560a9daECD5fA6Cd4700C47
Path of the secret key file: keystore\UTC--2020-07-10T13-04-52.004728700Z--b1a3e633a880ce5ef560a9daecd5fa6cd4700c47

- You can share your public address with anyone. Others need it to interact with you.
- You must NEVER share the secret key with anyone! The key controls access to your funds!
- You must BACKUP your key file! Without the key, it's impossible to access account funds!
- You must REMEMBER your password! Without the password, it's impossible to decrypt the key!

PS C:\Users\hwait\ChainAvi\private> geth --datadir . account new
INFO [07-10|16:05:14.675] Maximum peer count ETH=50 LE=0 total=50
Your new account is locked with a password. Please give a password. Do not forget this password.
Password:
Repeat password:

Your new key was generated

Public address of the key: 0x17C78a166fEbBBEfd5E4e8A2Bca27F919288f777
Path of the secret key file: keystore\UTC--2020-07-10T13-05-21.340357400Z--17c78a166febbbefd5e4e8a2bca27f919288f777

- You can share your public address with anyone. Others need it to interact with you.

```

```

Windows PowerShell (x86)
PS C:\Users\hwait\ChainAvi\private> geth --datadir . account list
INFO [07-10|16:07:12.287] Maximum peer count ETH=50 LE=0 total=50
Account #0: {b1a3e633a880ce5ef560a9daecd5fa6cd4700c47} keystore://C:\Users\hwait\ChainAvi\private\keystore\UTC--2020-07-10T13-04-52.004728700Z--b1a3e633a880ce5ef560a9daecd5fa6cd4700c47
Account #1: {17c78a166febbbefd5e4e8a2bca27f919288f777} keystore://C:\Users\hwait\ChainAvi\private\keystore\UTC--2020-07-10T13-05-21.340357400Z--17c78a166febbbefd5e4e8a2bca27f919288f777
Account #2: {cab993450bed1430280f9b50df1afacfd289c58c} keystore://C:\Users\hwait\ChainAvi\private\keystore\UTC--2020-07-10T13-06-15.356343900Z--cab993450bed1430280f9b50df1afacfd289c58c
PS C:\Users\hwait\ChainAvi\private>

```

## 5. Create “startnode” and “password.sec”

```

Windows PowerShell (x86)
PS C:\Users\hwait\ChainAvi\private> atom startnode.cmd
PS C:\Users\hwait\ChainAvi\private>

```

```

startnode.cmd — C:\Users\hwait\ChainAvi\private — Atom
File Edit View Selection Find Packages Help
Welcome Guide startnode.cmd
1 geth --networkid 4224 --mine --minerthreads 2 --datadir "." --nodiscover --rpc --rpcport "8545" --port
  "30303" --rpccorsdomain "*" --nat "any" --rpcapi eth,web3,personal,net --unlock 0 --password ./password.sec
  --ipcpath "~/Library/Ethereum/geth.ipc"
2

```

```

Windows PowerShell (x86)
PS C:\Users\hwait\ChainAvi\private> atom password.sec
PS C:\Users\hwait\ChainAvi\private>

```



```
password.sec — C:\Users\hwait\ChainAvi\private — Atom
File Edit View Selection Find Packages Help
password.sec
1 pass1234
2
```

## 6. Start the Private nodes

```
Windows PowerShell (x86)
PS C:\Users\hwait\ChainAvi\private> chmod +x startnode.cmd
PS C:\Users\hwait\ChainAvi\private> .\startnode.cmd

C:\Users\hwait\ChainAvi\private>geth --networkid 4224 --mine --minerthreads 2 --datadir "." --nodiscover --rpc -
-rpcport "8545" --port "30303" --rpccorsdomain "*" --nat "any" --rpcapi eth,web3,personal,net --unlock 0 --passw
ord ./password.sec --ipcpath "~\Library\Ethereum\geth.ipc"
INFO [07-10|16:17:15.430] Maximum peer count                               ETH=50 LES=0 total=50
WARN [07-10|16:17:15.437] The flag --rpc is deprecated and will be removed in the future, please use --http
WARN [07-10|16:17:15.442] The flag --rpcport is deprecated and will be removed in the future, please use --http.
port
WARN [07-10|16:17:15.447] The flag --rpccorsdomain is deprecated and will be removed in the future, please use -
-http.corsdomain
WARN [07-10|16:17:15.455] The flag --rpcapi is deprecated and will be removed in the future, please use --http.a
pi
INFO [07-10|16:17:15.597] Starting peer-to-peer node                      instance=Geth/v1.9.15-stable-0f77f34b/windows
-amd64/go1.14.2
INFO [07-10|16:17:15.606] Allocated trie memory caches              clear=256.00MiB dirty=256.00MiB
INFO [07-10|16:17:15.614] Allocated cache and file handles             database=C:\Users\hwait\ChainAvi\private\geth
\chaindata cache=512.00MiB handles=8192
INFO [07-10|16:17:15.664] Opened ancient database                    database=C:\Users\hwait\ChainAvi\private\geth
\chaindata\ancient
INFO [07-10|16:17:15.674] Initialised chain configuration          config="{ChainID: 22730 Homestead: 0 DAO: <nil>
l> DAOsupport: false EIP150: 0 EIP155: 0 EIP158: 0 Byzantium: 0 Constantinople: 0 Petersburg: 0 Istanbul: 0, Muir
Glacier: <nil>, YOLO v1: <nil>, Engine: ethash}"
INFO [07-10|16:17:15.688] Disk storage enabled for ethash caches    dir=C:\Users\hwait\ChainAvi\private\geth\etha
sh count=3
INFO [07-10|16:17:15.695] Disk storage enabled for ethash DAGs    dir=C:\Users\hwait\AppData\Local\Ethash count
=2
INFO [07-10|16:17:15.702] Initialising Ethereum protocol          versions="[65 64 63]" network=4224 dbversion=
<nil>
WARN [07-10|16:17:15.711] Upgrade blockchain database version    from=<nil> to=7
INFO [07-10|16:17:15.718] Loaded most recent local header         number=0 hash="c0680b...7c68ba" td=524288 age=4
0m59s
INFO [07-10|16:17:15.727] Loaded most recent local full block    number=0 hash="c0680b...7c68ba" td=524288 age=4
0m59s
INFO [07-10|16:17:15.734] Loaded most recent local fast block   number=0 hash="c0680b...7c68ba" td=524288 age=4
0m59s
INFO [07-10|16:17:15.748] Regenerated local transaction journal   transactions=0 accounts=0
INFO [07-10|16:17:15.765] Allocated fast sync bloom             size=512.00MiB
INFO [07-10|16:17:15.773] Initialized fast sync bloom           items=354 errorrate=0.000 elapsed=3.007ms
INFO [07-10|16:17:15.794] New local node record                 seq=1 id=1bb6a0d9e2d4aa98 ip=127.0.0.1 udp=0
tcp=30303
INFO [07-10|16:17:15.803] Started P2P networking                 self="enode://60debcb9a99ce17428cfd82a17e26
cf6ae047112ab91d09f1893ffddd70f2bcb89ee51afd2ce64c79d6c33f3eb423df5c8ba0a29b5b42ef81ca4c01e51e08a@127.0.0.1:3030
3?discport=0"
INFO [07-10|16:17:15.803] IPC endpoint opened                   url=\\.pipe\C:\Users\hwait\Library\Ethereum/
geth.ipc
INFO [07-10|16:17:15.825] HTTP endpoint opened                  url=http://127.0.0.1:8545/ cors=* vhost=loca
lhost
Fatal: Account unlock with HTTP access is forbidden!
```

At this point, we encounter a fatal error while starting up the private node. The solution was to add the “—allow-insecure-unlock” option in the “startnode.cmd” script.

```
startnode.cmd — C:\Users\hwait\ChainAvi\private — Atom
File Edit View Selection Find Packages Help

startnode.cmd
1 geth --networkid 4224 --mine --allow-insecure-unlock --minerthreads 2 --datadir "." --nodiscover --rpc --
  * rpcport "8545" --port "30303" --rpccorsdomain "*" --nat "any" --rpcapi eth,web3,personal,net --unlock 0 --
  * password ./password.sec --ipcpath geth.ipc
2
```

Also, running the “geth attach” command results in another error as shown below.

```
Windows PowerShell (x86)
PS C:\Users\hwait\ChainAvi\private> geth attach
Fatal: Unable to attach to remote geth: no known transport for URL scheme "c"
PS C:\Users\hwait\ChainAvi\private>
```

The solution was to change the “ipcpath” in the “startnode” script and run the following command instead, “geth attach ipc:.\pipe\geth.ipc”. The “ipc:.\pipe\geth.ipc” is the IPC endpoint url shown in the output after starting the node. Once the command is run, the JavaScript console appears.

```
Windows PowerShell (x86)
PS C:\Users\hwait\ChainAvi\private> geth attach ipc:.\pipe\geth.ipc
Welcome to the Geth JavaScript console!

instance: Geth/v1.9.15-stable-0f77f34b/windows-amd64/go1.14.2
coinbase: 0xb1a3e633a880ce5ef560a9daecd5fa6cd4700c47
at block: 301 (Fri Jul 10 2020 17:13:29 GMT+0300 (EAT))
datadir: C:\Users\hwait\ChainAvi\private
modules: admin:1.0 debug:1.0 eth:1.0 ethash:1.0 miner:1.0 net:1.0 personal:1.0 rpc:1.0 txpool:1.0 web3:1.0
>
```

## 7. Run a few useful commands

```
Windows PowerShell (x86)
PS C:\Users\hwait\ChainAvi\private> geth attach ipc:.\pipe\geth.ipc
Welcome to the Geth JavaScript console!

instance: Geth/v1.9.15-stable-0f77f34b/windows-amd64/go1.14.2
coinbase: 0xb1a3e633a880ce5ef560a9daecd5fa6cd4700c47
at block: 301 (Fri Jul 10 2020 17:13:29 GMT+0300 (EAT))
datadir: C:\Users\hwait\ChainAvi\private
modules: admin:1.0 debug:1.0 eth:1.0 ethash:1.0 miner:1.0 net:1.0 personal:1.0 rpc:1.0 txpool:1.0 web3:1.0

> eth.accounts
[ "0xb1a3e633a880ce5ef560a9daecd5fa6cd4700c47", "0x17c78a166fabbef5e4e0a2bca27f919288f777", "0xcab993450bed1430200f9b50df1afacfd289c58e" ]
> eth.coinbase
"0xb1a3e633a880ce5ef560a9daecd5fa6cd4700c47"
> eth.getBalance(eth.coinbase)
000000000000000000000000
> web3.fromWei(eth.getBalance(eth.coinbase), "ether")
000
> miner.stop()
null
> miner.start(2)
null
```

\*\*\*\*\*

**Important!** You need to do your own assignment. Do not copy and make any changes in other's assignment. If you do so, you will not be able to learn the concepts of blockchain, smart contracts, and ethereum. The examples we have discussed in lectures or in discussion file would help you in solving these problems. Be creative! Do something that is uniquely yours. Do something interesting and fun!

### Grading Rubrics

**Q1.** (10 points) for correct answers only.

**Q2.** (10 points) for correct answers only.

**Q3. (Total: 20 points)**

(a) (10 points) for correct answers only.

(b) (10 points) for correct answers only.

**Q4. (30 points)**

Part-1: (20 points) for correctly setup Ethereum environment on laptop.

Part-2: (10 points) for including screen shots in answer.

**Q5. (20 points)**

Part-1: (20 points) for correctly create three private node or instance of Ethereum on your machine.

Part-2: (10 points) for including screen shots in answer.

### Policy on Lateness

- **1 day late:** 10% less of your secured points.
- **2 days late:** 20% less of your secured points.
- **3 days late:** 40% less of your secured points.
- **4 days late:** 60% less of your secured points.
- **5 days late:** 80% less of your secured points.
- **1 week late:** 0 points.