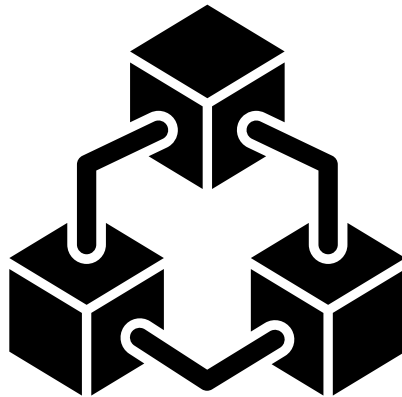

Geth (Go Ethereum) 시연



로컬 테스트넷에서의 Geth 시연

- ❑ 게스(Geth: Go Ethereum): 이더리움재단이 제공하는 공식 클라이언트 S/W로 Go언어로 개발
- ❑ Geth 설치(<https://geth.ethereum.org/downloads/>)

Download Geth - Attican Beta (v1.10.9) - [Release Notes](#)

🐧 Geth 1.10.9 for Linux

🍏 Geth 1.10.9 for macOS

🪟 Geth 1.10.9 for Windows

📄 Geth 1.10.9 sources

- ❑ Node.js 설치(<https://nodejs.org/ko/download/>)
- ❑ 로컬 테스트넷에서의 Geth 시연 시나리오
 - ① genesis.json 파일 생성 및 초기화
 - ② Geth 계정 생성 및 조회
 - ③ Geth 채굴 및 Geth 코인과 블록 개수 확인
 - ④ Geth 계정 간 토큰 교환

Geth 설치

❑ Geth 설치(<https://geth.ethereum.org/downloads/>)

Download Geth – Attican Beta (v1.10.9) – [Release Notes](#)

You can download the latest 64-bit stable release of Geth for our primary platforms below. Packages for all supported platforms, as well as develop builds, can be found further down the page. If you're looking to install Geth and/or associated tools via your favorite package manager, please check our [installation](#) guide.

 [Geth 1.10.9 for Linux](#)

 [Geth 1.10.9 for macOS](#)

 [Geth 1.10.9 for Windows](#)

 [Geth 1.10.9 sources](#)

Geth 설치 확인

❑ Geth 초기 화면

cmd >> aeth

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19042.1237]
(c) Microsoft Corporation. All rights reserved.

C:\Program Files\Geth>geth version
Geth
Version: 1.10.8-stable
git Commit: 26675454bf93bf904be7a43cce6b3f550115ff90
Git Commit Date: 20210824
Architecture: amd64
Go Version: go1.16.4
Operating System: windows
GOPATH=
GOROOT=go
```

❑ Node.js 버전 확인

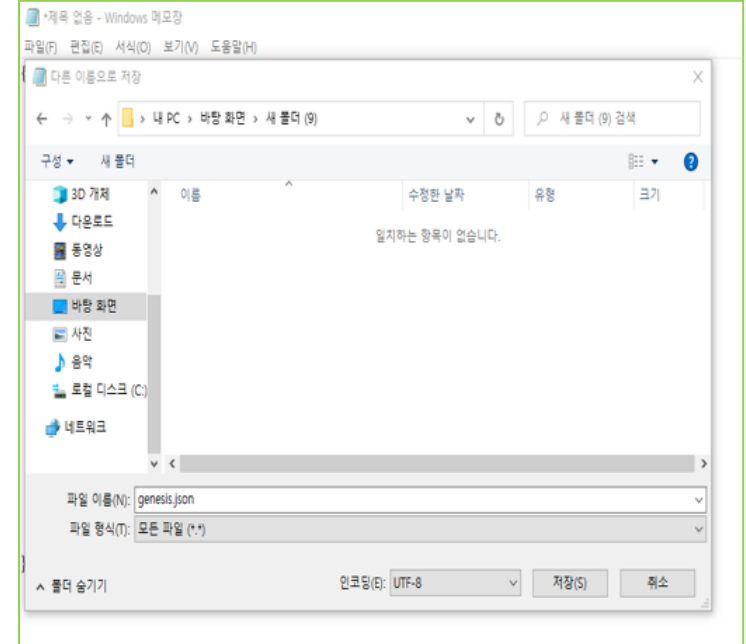
```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.19042.1237]
(c) Microsoft Corporation. All rights reserved.

C:\Users\>node -v
v14.16.0
```

genesis.json 파일 생성

genesis.json 파일

```
{
  "config": {
    "chainId": 4693,
    "homesteadBlock": 0,
    "eip155Block": 0,
    "eip158Block": 0,
    "eip150Block": 0,
    "byzantiumBlock": 0,
    "constantinopleBlock": 0,
    "petersburgBlock": 0
  },
  "alloc": {},
  "coinbase": "0x0000000000000000000000000000000000000000",
  "difficulty": "0x20000",
  "extraData": "",
  "gasLimit": "0x2fef8",
  "nonce": "0x00000000000000042",
  "mixhash": "0x0000000000000000000000000000000000000000000000000000000000000000",
  "parentHash": "0x0000000000000000000000000000000000000000000000000000000000000000",
  "timestamp": "0x00"
}
```

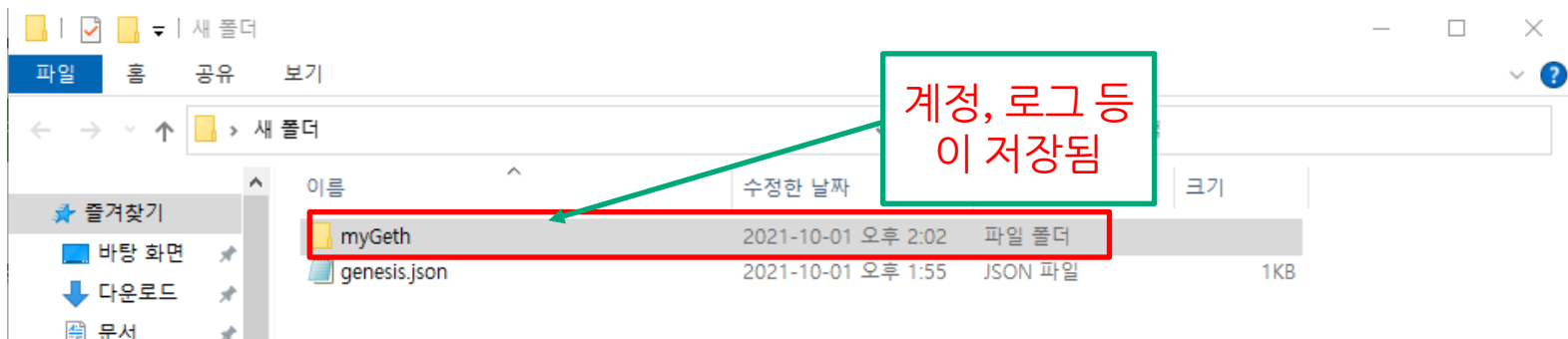


genesis.json 초기화

genesis.json 초기화

cmd >> geth --datadir myGeth init genesis.json

```
C:\Windows\system32\cmd.exe
C:\Users\NGN\Desktop\새 폴더>geth --datadir myGeth init genesis.json
INFO [10-01|13:56:42.369] Maximum peer count                  ETH=50 LES=0 total=50
INFO [10-01|13:56:42.385] Set global gas cap                  cap=50,000,000
INFO [10-01|13:56:42.387] Allocated cache and file handles    database="C:\Users\NGN\Desktop\새 폴더\myGeth\g
eth\chaindata" cache=16.00MiB handles=16
INFO [10-01|13:56:42.396] Writing custom genesis block
INFO [10-01|13:56:42.397] Persisted trie from memory database  nodes=0 size=0.00B time=0s gcnodes=0 gcsiz=0.00B gct
ime=0s livenodes=1 livesize=0.00B
INFO [10-01|13:56:42.401] Successfully wrote genesis state     database=chaindata hash=5e1fc7..d790e0
INFO [10-01|13:56:42.403] Allocated cache and file handles    database="C:\Users\NGN\Desktop\새 폴더\myGeth\g
eth\lightchaindata" cache=16.00MiB handles=16
INFO [10-01|13:56:42.411] Writing custom genesis block
INFO [10-01|13:56:42.411] Persisted trie from memory database  nodes=0 size=0.00B time=0s gcnodes=0 gcsiz=0.00B gct
ime=0s livenodes=1 livesize=0.00B
INFO [10-01|13:56:42.415] Successfully wrote genesis state     database=lightchaindata hash=5e1fc7..d790e0
```



Geth 구동

❑ Geth 구동

cmd >> geth --datadir myGeth console

```
C:\Windows\system32\cmd.exe - geth --datadir myGeth console
[INFO] [10-01|14:04:38.532] Starting Geth on Ethereum mainnet...
[INFO] [10-01|14:04:38.543] Bumping default cache on mainnet
[INFO] [10-01|14:04:38.546] Maximum peer count
[INFO] [10-01|14:04:38.548] Set global gas cap
[INFO] [10-01|14:04:38.549] Allocated trie memory caches
[INFO] [10-01|14:04:38.551] Allocated cache and file handles
eth\chaindata" cache=2.00GiB handles=8192
[INFO] [10-01|14:04:38.577] Opened ancient database
eth\chaindata\ancient" readonly=false
[INFO] [10-01|14:04:38.581] Initialised chain configuration
port: false EIP150: 0 EIP155: 0 EIP158: 0 Byzantium: 0 Constantinople: 0 Petersburg: 0 Istanbul: <nil>, Muir Glacier: <nil>, Berlin: <nil>, London: <nil>, Engine: unknown}"
[INFO] [10-01|14:04:38.586] Disk storage enabled for ethash caches
ethash" count=3
[INFO] [10-01|14:04:38.587] Disk storage enabled for ethash DAGs
[INFO] [10-01|14:04:38.590] Initialising Ethereum protocol
[INFO] [10-01|14:04:38.592] Loaded most recent local header
[INFO] [10-01|14:04:38.594] Loaded most recent local full block
[INFO] [10-01|14:04:38.596] Loaded most recent local fast block
[INFO] [10-01|14:04:38.599] Loaded local transaction journal
[INFO] [10-01|14:04:38.601] Regenerated local transaction journal
[INFO] [10-01|14:04:38.603] Gasprice oracle is ignoring threshold set
[INFO] [10-01|14:04:38.605] Starting peer-to-peer node
ol.17
[INFO] [10-01|14:04:38.620] New local node record
1 udp=30303 tcp=30303
[INFO] [10-01|14:04:38.624] Started P2P networking
a837d504219fe580a09290aad76eb641ea5dd851760f3c7ddd58fc7cf239cb95af5a3d9368521c01200e7987@127.0.0.1:30303
[INFO] [10-01|14:04:38.625] IPC endpoint opened
WARN [10-01|14:04:38.659] Served eth_coinbase
specified"
Welcome to the Geth JavaScript console!

instance: Geth/v1.10.9-stable-eae3b194/windows-amd64/go1.17
at block: 0 (Thu Jan 01 1970 09:00:00 GMT+0900 (KST))
datadir: C:\Users\WNGN\Desktop\새 폴더\myGeth
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

To exit, press ctrl-d or type exit
>
```

Geth 계정 생성 및 조회

❑ Geth 계정 생성

```
geth >> personal.newAccount("pass00")
```

※pass00은 비밀번호로 사용자에게 따라 변경 가능하다.

```
modules--admin--no-debug--no-gcm--no-gcmurl--no-http--no-personal--no-rpc--no-rpcapi--no-rpcws--no
To exit, press ctrl-d or type exit
> personal.newAccount("pass00")
INFO [10-01|14:09:59.875] Your new key was generated address=0xFF36dc47b0A944c679A2b7e1e09D146868C7e05F
WARN [10-01|14:09:59.978] Please backup your key file! path="C:\Users\SWMING\Documents\제 클 디\myGeth\keyst
ore\UTC--2021-10-01T05-09-58.835423300Z--ff36dc47b0a944c679a2b7e1e09d146868c7e05f"
WARN [10-01|14:09:59.981] Please remember your password!
'0xff36dc47b0a944c679a2b7e1e09d146868c7e05f'
> INFO [10-01|14:10:08.458] New local node record seq=1,633,064,498,414 id=c46726c8febcbcd0 ip=220.69
```

❑ Geth 계정 조회

```
geth >> eth.accounts
```

```
> eth.accounts
["0x9654c8c57e4f193ec68b8077e6cc8d620472d32d", "0xff36dc47b0a944c679a2b7e1e09d146868c7e05f"]
```


Geth 채굴

❑ Geth 채굴

geth >> miner.start(1) → 스레드 개수를 인자로 줌

※ miner.stop() 입력시 채굴이 종료된다.

```
C:\Windows\System32\cmd.exe - geth --datadir myGeth console
INFO [10-01|14:16:00.020] block reached canonical chain
INFO [10-01|14:16:00.153] Commit new mining work
0 fees=0 elapsed=134.151ms
INFO [10-01|14:16:00.157] mined potential block
INFO [10-01|14:16:00.129] Generating DAG in progress
INFO [10-01|14:16:00.534] Generating DAG in progress
INFO [10-01|14:16:00.697] Successfully sealed new block
elapsed=676.509ms
INFO [10-01|14:16:00.716] block reached canonical chain
INFO [10-01|14:16:00.886] Commit new mining work
0 fees=0 elapsed=167.684ms
INFO [10-01|14:16:00.917] mined potential block
INFO [10-01|14:16:01.064] Successfully sealed new block
elapsed=346.110ms
INFO [10-01|14:16:01.067] block reached canonical chain
INFO [10-01|14:16:01.069] mined potential block
INFO [10-01|14:16:00.929] Generating DAG in progress
INFO [10-01|14:16:01.082] Commit new mining work
0 fees=0 elapsed=12.467ms
INFO [10-01|14:16:01.304] Generating DAG in progress
INFO [10-01|14:16:01.737] Generating DAG in progress
INFO [10-01|14:16:02.163] Generating DAG in progress
INFO [10-01|14:16:02.576] Generating DAG in progress
INFO [10-01|14:16:03.019] Generating DAG in progress
INFO [10-01|14:16:03.418] Generating DAG in progress
INFO [10-01|14:16:03.852] Generating DAG in progress
INFO [10-01|14:16:04.260] Generating DAG in progress
INFO [10-01|14:16:04.690] Generating DAG in progress
INFO [10-01|14:16:05.112] Generating DAG in progress
INFO [10-01|14:16:05.507] Generating DAG in progress
number=2 hash=86ee22..1bf686
number=10 sealhash=6e1f09..51ebb6 uncles=0 txs=0 gas=
number=9 hash=85eb99..5a78aa
epoch=1 percentage=27 elapsed=11.754s
epoch=1 percentage=28 elapsed=12.159s
number=10 sealhash=6e1f09..51ebb6 hash=8075a1..fec751
number=3 hash=0ed6f0..a05352
number=11 sealhash=7ebd6d..421eb6 uncles=0 txs=0 gas=
number=10 hash=8075a1..fec751
number=11 sealhash=7ebd6d..421eb6 hash=2c22e8..682f98
number=4 hash=43ee5d..1f4ad2
number=11 hash=2c22e8..682f98
epoch=1 percentage=29 elapsed=12.554s
number=12 sealhash=ec694e..892f04 uncles=0 txs=0 gas=
epoch=1 percentage=30 elapsed=12.928s
epoch=1 percentage=31 elapsed=13.362s
epoch=1 percentage=32 elapsed=13.787s
epoch=1 percentage=33 elapsed=14.200s
epoch=1 percentage=34 elapsed=14.643s
epoch=1 percentage=35 elapsed=15.043s
epoch=1 percentage=36 elapsed=15.477s
epoch=1 percentage=37 elapsed=15.885s
epoch=1 percentage=38 elapsed=16.314s
epoch=1 percentage=39 elapsed=16.736s
```

Geth 코인 및 블록 개수 확인

❑ Geth 코인 확인

geth >> web3.fromWei(eth.getBalance(eth.accounts[0]), "ether")

※배열의 숫자나 계정 주소를 입력 시 그 주소에 대한 코인을 확인이 가능하다.

```
INFO [10-01|14:22:42.260] Looking for peers                peercount=0 tried=36 static=0
> web3.fromWei(eth.getBalance(eth.accounts[0]), "ether")
142
>
```

❑ 블록 개수 확인

geth >> eth.blockNumber

```
> eth.blockNumber
71
>
```

Geth 계정 잠금 해제

❑ 다른 계정에 토큰을 보내거나 스마트계약 실행 시 계정 해제가 필요

❑ Geth 계정 잠금 해제

geth >> personal.unlockAccount(eth.accounts[0], "pass00")

※ 시간을 설정하지 않은 경우 5분간 해제한다..

geth >> personal.unlockAccount(eth.accounts[0], "pass00", 0)

※ geth가 종료되기 전까지 잠금을 해제한다.

```
> personal.unlockAccount(eth.accounts[0], "pass00", 0)
true
> INFO [10-01|14:28:17.245] Looking for peers                peercount=0 tried=30 static=0
```

Geth 송금

□ 송금 전 코인 확인

```
> web3.fromWei(eth.getBalance(eth.accounts[0]), "ether")
222
> web3.fromWei(eth.getBalance(eth.accounts[1]), "ether")
0
```

□ Geth 송금

```
geth >> eth.sendTransaction({from:eth.accounts[0], to:eth.accounts[1], value:web3.toWei(10,"ether")})
```

※ 0번째 계정은 1번째 계정에게 10 ether 토큰을 보내준다.

```
> eth.sendTransaction({from:eth.accounts[0], to:eth.accounts[1], value:web3.toWei(10,"ether")})
INFO [10-01|14:50:10.424] Setting new local account      address=0x965408c57e4f193EC68b8077E6cc8d620472d32d
INFO [10-01|14:50:10.427] Submitted transaction          hash=0xa7954660391cc3b4d1d525d08f2addb21f7b222ec9702ef8ccdf608eb9801415
f8ccdf608eb9801415 from=0x965408c57e4f193EC68b8077E6cc8d620472d32d nonce=0 recipient=0xFF36dc47b0A944c679A2b7e1e09D14686
3C7e05F value=10,000,000,000,000,000
'0xa7954660391cc3b4d1d525d08f2addb21f7b222ec9702ef8ccdf608eb9801415'
> INFO [10-01|14:50:13.180] Looking for peers              peer count=0 tried=32 static=0
ERROR[10-01|14:50:14.787] Snapshot extension registration failed peer=b5496381 err="peer connected on snap without compatible eth support"
```

□ 송금 후 코인 확인

※ 미처리된 트랜잭션 처리하기 위해서 채굴을 한 번 하고 나서 계좌 확인

```
> web3.fromWei(eth.getBalance(eth.accounts[0]), "ether")
218
> web3.fromWei(eth.getBalance(eth.accounts[1]), "ether")
10
```