

Geth Installation

CB.EN.P2CYS20033

- The genesis block is the first block of the blockchain, and the genesis.json is the file that defines it.
 - Parameters in genesis.json file
1. Config - The blockchain configuration.
 2. chainId - protection against replay attacks
 3. homesteadBlock - Homestead is the second major release of Ethereum(the first release is Frontier). The value 0 means that you are using this release.
 4. epi155Block - epi stands for Ethereum Improvement Proposal, where developers propose ideas on how to improve Ethereum and contribute to this project.
 5. Difficulty - mining difficulty // set this value low so you don't have to wait too long for mining blocks
 6. gasLimit - the limit of gas cost per block
 7. alloc - allows to define a list of pre-filled wallets.
- **geth --datadir data init genesis.json** - Init our blockchain with the settings in the genesis file and define a folder named "data" for storing chain data.
 - **geth --datadir data account new** - create a new wallet
 - **geth --identity "ABC" --networkid "5777" --datadir "data" --http --http.port "8545" --unlock "0" --http.corsdomain "*" --http.api "miner,eth,net,web3,personal" --allow-insecure-unlock --nodiscover -miner.etherbase "0"**
1. **geth --identity "ABC"** - we are opening a geth node with its name as ABC
 2. **--networkid "5777"** - setting network id as 5777,
 3. **--datadir "data"** - using the data from data folder
 4. **--http.port "8545"** – set listening port to 8545 which is default port number
 5. **--http.corsdomain** - List of domains from which to accept cross origin requests
 6. **--http.api** - API's offered over the HTTP-RPC interface
 7. **--nodiscover** - Disables the peer discovery mechanism
 8. **--miner.etherbase** - Public address for block mining rewards (default value is the first account denoted by 0)

- **geth attach ipc:\\.\\pipe\geth.ipc** – Giving the IPC path
- **miner.start()** – to start mining
- **miner.stop()** – to stop mining

We can see in the images provided that the images that blocks are getting mined

```
E:\Amrita\Blockchain\genesis>geth --datadir data init genesis.json
INFO [09-23|19:47:18.968] Maximum peer count           ETH=50 LES=0 total=50
INFO [09-23|19:47:19.031] Set global gas cap           cap=50,000,000
INFO [09-23|19:47:19.043] Allocated cache and file handles database=E:\Amrita\Blockchain\genesis\data\geth\chaindata cache=16.00MiB handles=16
INFO [09-23|19:47:19.133] Writing custom genesis block
INFO [09-23|19:47:19.138] Persisted trie from memory database nodes=0 size=0.00B time=0s gcnodes=0 gcsz=0.00B gctime=0s livenodes=1 livesize=0.00B
INFO [09-23|19:47:19.153] Successfully wrote genesis state database=chaindata hash=a52950..55bbb6
INFO [09-23|19:47:19.161] Allocated cache and file handles database=E:\Amrita\Blockchain\genesis\data\geth\lightchaindata cache=16.00MiB handles=16
INFO [09-23|19:47:19.266] Writing custom genesis block
INFO [09-23|19:47:19.275] Persisted trie from memory database nodes=0 size=0.00B time=0s gcnodes=0 gcsz=0.00B gctime=0s livenodes=1 livesize=0.00B
INFO [09-23|19:47:19.293] Successfully wrote genesis state database=lightchaindata hash=a52950..55bbb6

E:\Amrita\Blockchain\genesis>geth --datadir data account new
INFO [09-23|19:47:32.031] Maximum peer count           ETH=50 LES=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: 0xF9C5f6FD02e2f385D9Fd2610FeAA224cc9A9bA0C
Path of the secret key file: data\keystore\UTC--2021-09-23T14-17-40.508007300Z--f9c5f6fd02e2f385d9fd2610feaa224cc9a9ba0c

- 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!
```

```
E:\Amrita\Blockchain\genesis>geth --identity "ABC" --networkid "5777" --datadir "data" --http --http.port "8545" --unlock "0" --http.corsdomain "*" --http.api "miner,eth,net,web3,personal" --allow-insecure-unlock --nodiscover --miner.etherbase "0"
INFO [09-23|19:50:43.707] Maximum peer count           ETH=50 LES=0 total=50
WARN [09-23|19:50:43.712] -----
WARN [09-23|19:50:43.712] Referring to accounts by order in the keystore folder is dangerous!
WARN [09-23|19:50:43.715] This functionality is deprecated and will be removed in the future!
WARN [09-23|19:50:43.721] Please use explicit addresses! (can search via 'geth account list')
WARN [09-23|19:50:43.724] -----
INFO [09-23|19:50:43.726] Set global gas cap           cap=50,000,000
INFO [09-23|19:50:43.729] Allocated trie memory caches clean=154.00MiB dirty=256.00MiB
INFO [09-23|19:50:43.732] Allocated cache and file handles database=E:\Amrita\Blockchain\genesis\data\geth\chaindata cache=512.00MiB handles=8192
INFO [09-23|19:50:44.039] Opened ancient database database=E:\Amrita\Blockchain\genesis\data\geth\chaindata\ancient readonly=false
INFO [09-23|19:50:44.063] Initialised chain configuration config="{ChainID: 5777 Homestead: 0 DAO: <nil> DAOsupport: false EIP150: 0 EIP155: 0 EIP158: 0 Byzantium: 0 Constantinople: 0 Petersburg: 0 Istanbul: <nil>, Muir Glacier: <nil>, Berlin: <nil>, London: <nil>, Engine: ethash}"
INFO [09-23|19:50:44.088] Disk storage enabled for ethash caches dir=E:\Amrita\Blockchain\genesis\data\geth\ethash count=3
INFO [09-23|19:50:44.096] Disk storage enabled for ethash DAGs dir=C:\Users\dell\AppData\Local\Ethash count=2
INFO [09-23|19:50:44.105] Initialising Ethereum protocol network=5777 dbversion=<nil>
INFO [09-23|19:50:44.110] Loaded most recent local header number=0 hash=a52950..55bbb6 td=68 age=52y5mo3w
INFO [09-23|19:50:44.114] Loaded most recent local full block number=0 hash=a52950..55bbb6 td=68 age=52y5mo3w
INFO [09-23|19:50:44.118] Loaded most recent local fast block number=0 hash=a52950..55bbb6 td=68 age=52y5mo3w
WARN [09-23|19:50:44.123] Failed to load snapshot, regenerating err="missing or corrupted snapshot"
INFO [09-23|19:50:44.126] Rebuilding state snapshot
INFO [09-23|19:50:44.127] Resuming state snapshot generation root=56e81f..63b421 accounts=0 slots=0 storage=0.00B elapsed=0s
INFO [09-23|19:50:44.127] Regenerated local transaction journal transactions=0 accounts=0
INFO [09-23|19:50:44.130] Generated state snapshot accounts=0 slots=0 storage=0.00B elapsed=3.034ms
INFO [09-23|19:50:44.136] Gasprice oracle is ignoring threshold set threshold=2
WARN [09-23|19:50:44.146] Error reading unclean shutdown markers error="leveldb: not found"
INFO [09-23|19:50:44.146] Starting peer-to-peer node instance=Geth/ABC/v1.10.8-stable-26675454/windows-amd64/go1.16.4
INFO [09-23|19:50:44.252] IPC endpoint opened url=\\.\\pipe\geth.ipc
INFO [09-23|19:50:44.258] HTTP server started endpoint=127.0.0.1:8545 prefix= cors=* vhosts=localhost
INFO [09-23|19:50:44.252] New local node record seq=1 id=0366dd35394c21df ip=127.0.0.1 udp=0 tcp=30303
INFO [09-23|19:50:44.275] Started P2P networking self="enode://f71937ea552bd02c79daa0821197131b7281acfae79f83e98f50e7e1bd26f5976b8354f91b77aee663e060429aa8b1b4a4c1c21d97c016c2559750363098582@127.0.0.1:30303?discport=0"
WARN [09-23|19:50:44.266] -----
WARN [09-23|19:50:44.293] Referring to accounts by order in the keystore folder is dangerous!
WARN [09-23|19:50:44.299] This functionality is deprecated and will be removed in the future!
WARN [09-23|19:50:44.304] Please use explicit addresses! (can search via 'geth account list')
WARN [09-23|19:50:44.308] -----
Unlocking account 0 | Attempt 1/3
Password:
INFO [09-23|19:50:49.363] Unlocked account address=0xF9C5f6FD02e2f385D9Fd2610FeAA224cc9A9bA0C
```