

Batch: A2 Roll No.:

Experiment No. 6

Grade: AA / AB / BB / BC / CC / CD / DD

Signature of the Staff In-charge with date

Title: Implementation of Blockchain platform Ethereum using Geth.

Implementation Details:

K. J. Somaiya College of Engineering, Mumbai-77

Department of Computer Engineering

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> geth init --datadir data genesis.json

INFO [10-25|12:15:38.716] Maximum peer count          ETH=50 LES=0 total=50
INFO [10-25|12:15:38.719] Set global gas cap          cap=50,000,000
INFO [10-25|12:15:38.719] Initializing the KZG library backend=gokzg
INFO [10-25|12:15:38.743] Defaulting to pebble as the backing database
INFO [10-25|12:15:38.743] Allocated cache and file handles database=Users/pargatsinghdhanjal/Projects/geth/data/geth/chaindata/cache=16.00MiB handles=16
INFO [10-25|12:15:38.793] Opened ancient database     database=Users/pargatsinghdhanjal/Projects/geth/data/geth/chaindata/ancient/chain readonly=false
INFO [10-25|12:15:38.795] State schema set to default scheme=hash
INFO [10-25|12:15:38.795] Writing custom genesis block
INFO [10-25|12:15:38.798] Persisted trie from memory database nodes=3 size=399.00B time=3.11925ms gcnodes=0 gcsz=0.00B gctime=0s livenodes=0 livesize=0.00B
INFO [10-25|12:15:38.822] Successfully wrote genesis state database=chaindata hash=8e1f4a..11c5a5
INFO [10-25|12:15:38.822] Defaulting to pebble as the backing database
INFO [10-25|12:15:38.822] Allocated cache and file handles database=Users/pargatsinghdhanjal/Projects/geth/data/geth/lightchaindata/cache=16.00MiB handles=16
INFO [10-25|12:15:38.864] Opened ancient database     database=Users/pargatsinghdhanjal/Projects/geth/data/geth/lightchaindata/ancient/chain readonly=false
INFO [10-25|12:15:38.864] State schema set to default scheme=hash
INFO [10-25|12:15:38.864] Writing custom genesis block
INFO [10-25|12:15:38.867] Persisted trie from memory database nodes=3 size=399.00B time=3.343884ms gcnodes=0 gcsz=0.00B gctime=0s livenodes=0 livesize=0.00B
INFO [10-25|12:15:38.886] Successfully wrote genesis state database=lightchaindata hash=8e1f4a..11c5a5
> geth --datadir data --networkid 12345

INFO [10-25|12:15:47.176] Maximum peer count          ETH=50 LES=0 total=50
INFO [10-25|12:15:47.178] Set global gas cap          cap=50,000,000
INFO [10-25|12:15:47.178] Initializing the KZG library backend=gokzg
INFO [10-25|12:15:47.283] Allocated trie memory caches clean=154.00MiB dirty=256.00MiB
INFO [10-25|12:15:47.283] Using pebble as the backing database
INFO [10-25|12:15:47.283] Allocated cache and file handles database=Users/pargatsinghdhanjal/Projects/geth/data/geth/chaindata/cache=512.00MiB handles=5120
INFO [10-25|12:15:47.232] Opened ancient database     database=Users/pargatsinghdhanjal/Projects/geth/data/geth/chaindata/ancient/chain readonly=false
INFO [10-25|12:15:47.232] State scheme set to already existing scheme=hash
INFO [10-25|12:15:47.232] Initialising Ethereum protocol network=12345 dbversion=<nil>

INFO [10-25|12:15:47.236] Chain ID: 12345 (unknown)
INFO [10-25|12:15:47.236] Consensus: Clique (proof-of-authority)
INFO [10-25|12:15:47.236] Pre-Merge hard forks (block based):
INFO [10-25|12:15:47.236] - Homestead: #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/homestead.md)
INFO [10-25|12:15:47.236] - Tangerine Whistle (EIP 150): #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/tangerine-whistle.md)
INFO [10-25|12:15:47.236] - Spurious Dragon/1 (EIP 155): #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/spurious-dragon.md)
INFO [10-25|12:15:47.236] - Spurious Dragon/2 (EIP 158): #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/spurious-dragon.md)
INFO [10-25|12:15:47.236] - Byzantium: #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/byzantium.md)
INFO [10-25|12:15:47.236] - Constantinople: #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/constantinople.md)
INFO [10-25|12:15:47.236] - Petersburg: #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/petersburg.md)
INFO [10-25|12:15:47.236] - Istanbul: #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/istanbul.md)
INFO [10-25|12:15:47.236] - Berlin: #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/berlin.md)
INFO [10-25|12:15:47.236] - London: #<nil> (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/london.md)
INFO [10-25|12:15:47.236] The Merge is not yet available for this network!
INFO [10-25|12:15:47.236] - Hard-fork specification: https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/paris.md
INFO [10-25|12:15:47.236]
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INFO [10-25|12:15:47.236] - Constantinople: #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/constantinople.md)
INFO [10-25|12:15:47.236] - Petersburg: #0 (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/petersburg.md)
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INFO [10-25|12:15:47.236] - London: #<nil> (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/london.md)
INFO [10-25|12:15:47.236] The Merge is not yet available for this network!
INFO [10-25|12:15:47.236] - Hard-fork specification: https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/paris.md
INFO [10-25|12:15:47.236] Post-Merge hard forks (timestamp based):
INFO [10-25|12:15:47.236]
INFO [10-25|12:15:47.236] Loaded most recent local block number=0 hash=8e1f4a..11c5a5 td=1 age=54y7mo5d
WARN [10-25|12:15:47.236] Failed to load snapshot err="missing or corrupted snapshot"
INFO [10-25|12:15:47.241] Rebuilding state snapshot
INFO [10-25|12:15:47.243] Initialized transaction indexer limit=2,350,000
INFO [10-25|12:15:47.243] Resuming state snapshot generation root=2cffac..e32dfc accounts=0 slots=0 storage=0.00B dangling=0 elapsed=1.406ms
INFO [10-25|12:15:47.243] Regenerated local transaction journal transactions=0 accounts=0
INFO [10-25|12:15:47.245] Generated state snapshot accounts=2 slots=0 storage=82.00B dangling=0 elapsed=3.273ms
INFO [10-25|12:15:47.249] Enabled snap sync head=0 hash=8e1f4a..11c5a5
INFO [10-25|12:15:47.249] Gasprice oracle is ignoring threshold set threshold=2
WARN [10-25|12:15:47.251] Engine API enabled protocol=eth
WARN [10-25|12:15:47.251] Engine API started but chain not configured for merge yet
INFO [10-25|12:15:47.251] Starting peer-to-peer node instance=Geth/v1.13.4-stable/darwin-arm64/go1.21.3
INFO [10-25|12:15:47.253] Stored checkpoint snapshot to disk number=0 hash=8e1f4a..11c5a5
Fatal: Error starting protocol stack: listen tcp :30303: bind: address already in use
> geth --state.scheme=hash init --datadir data genesis.json

INFO [10-25|12:15:52.515] Maximum peer count          ETH=50 LES=0 total=50
INFO [10-25|12:15:52.518] Set global gas cap          cap=50,000,000
INFO [10-25|12:15:52.518] Initializing the KZG library backend=gokzg
INFO [10-25|12:15:52.543] Using pebble as the backing database
INFO [10-25|12:15:52.543] Allocated cache and file handles database=Users/pargatsinghdhanjal/Projects/geth/data/geth/chaindata/cache=16.00MiB handles=16
INFO [10-25|12:15:52.583] Opened ancient database     database=Users/pargatsinghdhanjal/Projects/geth/data/geth/chaindata/ancient/chain readonly=false
Fatal: incompatible state scheme, stored: hash, provided: path
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```
{  
    "config": {  
        "chainId": 12345,  
        "homesteadBlock": 0,  
        "eip150Block": 0,  
        "eip155Block": 0,  
        "eip158Block": 0,  
        "byzantiumBlock": 0,  
        "constantinopleBlock": 0,  
        "petersburgBlock": 0,  
        "istanbulBlock": 0,  
        "berlinBlock": 0,  
        "clique": {  
            "period": 5,  
            "epoch": 30000  
        }  
    },  
    "difficulty": "1",  
    "gasLimit": "8000000",  
    "extradata":  
    "0x0000000000000000000000000000000000000000000000000000000000000000"  
    "7df9a875a174b3bc565e6424a0050ebc1b2d1d82000000000000000000000000"  
    "0000000000000000000000000000000000000000000000000000000000000000"  
    "0000000000000000000000000000000000000000000000000000000000000000",  
  
    "alloc": {  
        "7df9a875a174b3bc565e6424a0050ebc1b2d1d82": { "balance": "300000" },  
        "f41c74c9ae680c1aa78f42e5647a62f353b7bdde": { "balance": "400000" }
```



Conclusion:-

In this experiment, we learnt about how to use Geth to create a private blockchain on our local machine, and created 2 nodes on this blockchain.