

Private Ethereum Blockchain - 1

1. Create the directory for the private Blockchain

`mkdir /path/privatechain`

2. Create an initial Ethereum Account

3. Create genesis block

- We create a json file with the following structure
- chainId: 13 -> this is the private chain id (1 for main, 4 for Rinkeby)
- The indicated address we get 10000000000 wei (the account must already exist)

genesis.json

```
{  
  "nonce": "0x000000000000000042",  
  "difficulty": "0x40",  
  "mixhash": "0x0000000000000000000000000000000000000000000000000000000000000000",  
  "coinbase": "0x000000000000000000000000000000000000000000000000",  
  "timestamp": "0x00",  
  "parentHash": "0x0000000000000000000000000000000000000000000000000000000000000000",  
  "gasLimit": "0xffffffffffffffff",  
  "alloc": {  
    "0xbf7035e59ea426def40dd153656b25e3485626ba": {  
      "balance": "1000000000000000000"  
    }  
  },  
  "config": {  
    "chainId": 13  
  }  
}
```

Private Ethereum Blockchain - 2

4. Initialize the Blockchain using the genesis block

```
geth --datadir /path/privatechain init genesis.json
```

5. Start the private Blockchain

```
geth --datadir /path/privatechain --networkid 13 --rpc --rpccorsdomain "*" --rpcaddr IP_ADDR [console]  
[mine]
```

Notes:

--networkid 13 -> private blockchain id

--rpc -> activates rpc-http server

--rpccorsdomain value Comma separated list of domains from which to accept cross origin requests
(browser enforced)

--rpcaddr IP_ADDRESS -> it address it listens on (by default 127.0.0.1)

Contract Deployment on Private Blockchain

1. Start Remix Solidity IDE, develop the contract

2. Start private node

```
geth --datadir /path/privatechain --networkid 13 --rpc --rpccorsdomain "*" --rpcport "8545"  
--rpcaddr ip_address console
```

* you should replace ip_address with your actual IP

3. The ethereum account that deploys the contract must be unlocked

```
>personal.unlockAccount(eth.accounts[0], "<password>", 15000)
```

4. **In Remix** change the environment to web3 provider and connect to http://ip_address:8545

* you should replace with ip_address with the ip address geth is listens on (from step 2)

5. To deploy the contract or to confirm transactions (call functions) you must mine them [in
geth console: miner.start()]