

07. Technical Guide - Bitcoin node setup and usage

- Download and install bitcoin core
 - Download bitcoin node tar zip file from <https://bitcoin.org/en/download> for your operating system.
 - mv tar file into cd ~
 - run command `tar -zxvf bitcoin-0.21.1-x86_64-linux-gnu.tar.gz` to extract zip file over there
 - Install Python if you don't have it `sudo apt install python3.8`
 - Setup bitcoin core for REGTEST
 - Download bitcoin.conf file from <https://github.com/bitcoin/bitcoin/blob/master/share/examples/bitcoin.conf>
 - Uncomment following lines
 - `regtest=1`
 - `server=1`

- `rpcuser=harshad`

- `rpcpassword=4sBvw6Hogwgpa7YnjOj2yWxdyffWr5RVEc6MA5IHC1Q=`

 - `rpcauth=harshad:`
`357fd49f006385d2d62c6a78b6759691$07aab2dc6ac2e3bf95fb48a5e391d7416a81a2c4b7a78e5f1bcb4d3dbb2c0e23`
- `[regtest]`
`rpcport=18018`
`rpccallowip=0.0.0.0/0`
`#wallet=testwallet`
- Copy bitcoin.conf file into this path `~/.bitcoin/bitcoin.conf`
- Start Bitcoin node create wallet and work with bitcoin CLI
 - `cd ~/bitcoin-0.21.0/`
 - run `./bin/bitcoind` to start bitcoin server
 - This server will run under regtest mode
 - Refer this link for all supported RPC and bitcoin-cli command: <https://developer.bitcoin.org/reference/rpc/>
 - run following command to create wallet

```
./bin/bitcoin-cli createwallet "testwallet"
```

- uncomment wallet section and stop and start bitcoin server
`[regtest]`
`wallet=testwallet`
Commands:
`./bin/bitcoin-cli stop`
`./bin/bitcoind`
- test RPC call
`./bin/bitcoin-cli getbalance`
`./bin/bitcoin-cli getblockcount`
- Download Nodejs project to communicate with BTC node client
 - download or clone my project sample code from here: <https://github.com/harshadgoswami/btcnode>
 - run `npm i` in project root install all dependency
- Create wallets

- run this command on the project root
`ts-node --require dotenv/config ./src/01.create-wallet.ts`
- note down generated address and edit `./scripts/generate_blocks.sh` line no 7 to pass address for receiving mining credits.
- create at least 2 wallets
- Mining script and block generation
 - In the Btcnode project (node.js typescript based project) under the scripts folder, you will found one bash file `generate_blocks.sh`.
 sh give executable permission to that file with command `chmod +x generate_blocks.sh`
 - run that bash file with command `./generate_blocks.sh`
- create transaction
 - run this command on the project root
`ts-node --require dotenv/config ./src/02.make-transaction.ts`
 - note down transaction block hash
- get transaction confirmation details
 - run this command on the project root
`ts-node --require dotenv/config ./src/04.get-transaction-confirmations.ts`
- get wallet balance
 - edit file `./src/03.get-wallet-balance.ts` and change line no 25 and 26 to give right wallet file to check the balance
 - run
`ts-node --require dotenv/config ./src/03.get-wallet-balance.ts`
- retrieve deposit transactions
 - edit file `./src/05.retrieve-deposit-transaction.ts` and update line no 32 and replace noted blockhash
 - run
`ts-node --require dotenv/config ./src/05.retrieve-deposit-transaction.ts`