Setup

cp /virtual/csc427/blockchainTutorial.zip ~/
unzip blockchainTutorial.zip
cd python_blockchain_app
Test that front end is working by running
python3 run_app.py 127.0.0.1 5000 8000
If this works then all dependencies are installed.
Note you will not be able to load localhost:5000 because the server is not running yet.
You will see a requests Exception page. That's ok. Shut down the front-end code.
Ctrl-c

Step 1

Open up nodeServer.py

This is a basic blockchain implementation. Notice that there is not a secure signing algorithm using a pki infrastructure.

Complete the TODO functions. You do not need to look at any code below the line containing "app = Flask(_name_)". Only edit the specified sections of code.

Step 2 -- to test if nodeServer.py works AFTER IMPLEMENTATION

#In terminal, do
export FLASK_APP=node_server.py
flask run --port 8000

#Go to localhost:8000/chain
You should see some JSON that looks like this:

{"length": 1, "chain": [{"index": 0, "transactions": [], "timestamp": 0, "previous_hash": "0", "nonce": 0, "hash": "6dbf23122cb5046cc5c0c1b245c75f8e43c59ca8ffeac292715e5078e631d0c9"}], "peers": []}

STEP 3 -- Using your new app to make sure your functions are working!
Now rerun the front end in one terminal and the server in the other
#T1
python3 run_app.py 127.0.0.1 5000 8000

#T2
flask run --port 8000

Make a message and add it to the transactions. Your message will not appear immediately. Why you may ask? BECAUSE YOU HAVE TO MINE IT!!!!! Remember that PoW algorithm? I hope you wrote a good one. Time to mine your block.

Step 3

Successfully mine a block. Take a screenshot as proof.
If this process is taking too long you may not have correctly implemented the functions from step 1.

Hit that Mine button and get to digging!
When it's done mining (if it finishes) come back to your home screen and hit "Resync" and see your message appear! Congrats. You just mined a block.

Re-sync to see if your message was successfully added to the blockchain(this will only happen if a block is mined with your transaction). Take a screenshot as proof (with the URL in the screenshot).

Step 4

In reality, you will not have the luxury of setting the difficulty. Time to see if you can stand up against our blockchain!

Let PORT = one of [5000,5001,5002,5003,5004,5005]
Go to 142.1.200.149:PORT
Attempt mining a block (the difficulty might be high depending on when you join)
Upon success, take a screenshot of your message in the blockchain with the URL in the screenshot.

Submission
blockchain.zip
->NodeServer.py
->Your screenshots