Nirbhay Sharma (B19CSE114)

Blockchain Assignment - 1

How To Run

optional

First create the conda env

```
conda env create -n <env_name> -f env.yml
```

Then activate the env

```
conda activate <env_name>
```

Then run the file

```
python b19cse114.py
```

OR Install dependencies using requirements.txt file

```
pip install -r requirements.txt
```

Then run the file

```
python b19cse114.py
```

How to Interpret

The program offers the following choices

- 0 for doing transaction
- 1 for printing blockchain
- 2 for printing utxo for specific user
- 3 for printing utxo for specific miner
- 4 for exiting

First Choice (0)

Input

- After Entering 0, please enter number of transactions you want to perform
- then enter the transaction in the format
- `from_idx to_idx btc fees`
    - from_idx is the index of user from which the transaction is conducted
    - to_idx is the index of the user to which the btc is transferred
    - btc is the number of bitcoins transferred
    - fees is the transaction fees paid by the user to the miner

Output

- It prints the miner selected for creating the block along with the hash of the block

Second Choice (1)

Input

- No Input is required

Output

- It prints the entire blockchain
    - It prints header and body of the blockchain, header contains block_no, merkle_root_hash, timestamp, nonce etc and tail contains hash of transactions

Third Choice (2)

Input

- enter the user index for which you want to see utxo

Output

- It prints the utxo for that particular user

Fourth Choice (3)

Input

- enter the miner index for which you want to see utxo

Output

- It prints the utxo for that particular miner

Fifth choice (4)

- It breaks the loop and program is exited

Sample Test Cases to Try for choice 1

```
# transactions

0 1 4 2
1 4 3 1
1 2 3 1
2 1 2 3

3 4 3 1
4 6 4 2

1 4 1 1
6 1 3 2
1 7 6 1

0 1 4 2
0 2 5 1
0 3 1 1

0 5 2 2
0 6 2 1
0 2 0.5 0.5

1 2 3 1
1 3 2 1
1 4 1 2
```