How to get started with our P & G application?

Prerequisites:

The following prerequisites are given for Windows OS (Mac OS may vary with few commands).

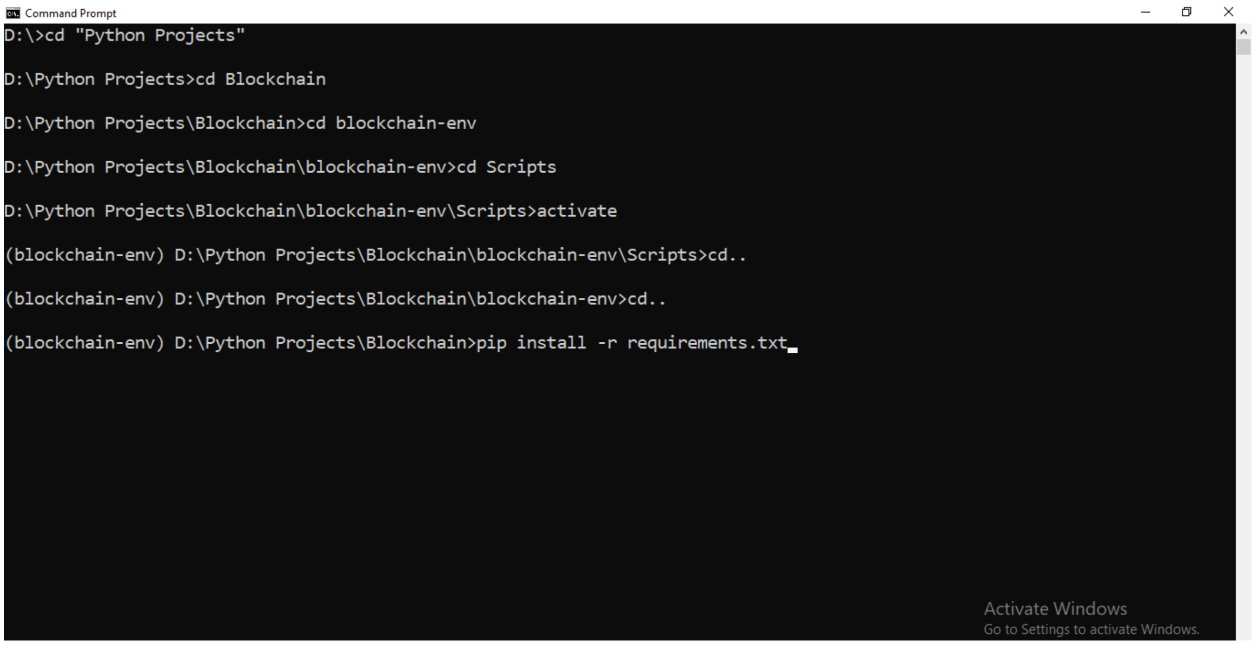
1) Before End User wants to run our application, the user must have the python 3.7 or higher setup.

2) User then has to extract our application folders through zip file at the location where he/she stores all his python projects.

3) User must also make sure to install Node.js with version 10.0.0 or higher.

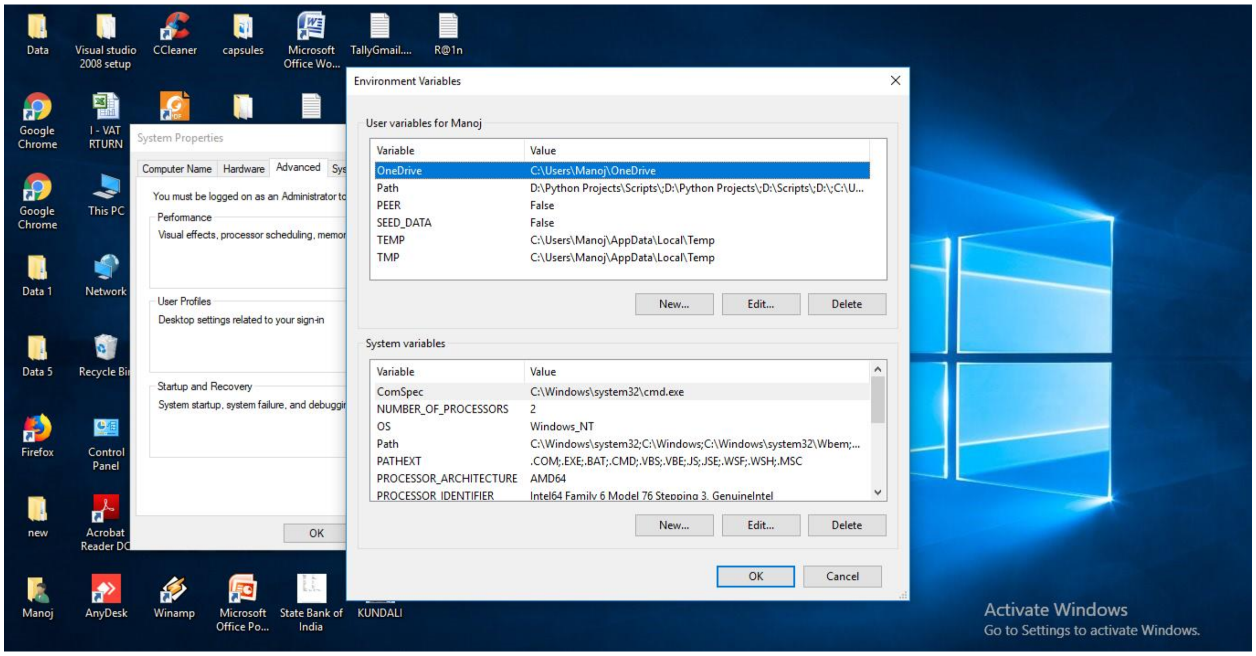
4) Now to activate virtual environment for this prototype, move to the "D:/Python Projects/Blockchain/blockchain-env/Scripts" (considering the zip has been extracted in "D:/Python Projects") and type "activate" on the command line.

5) After activating virtual environment, in "D:/Python Projects/Blockchain" type the command "pip install -r requirements.txt" to install all required python packages (if that doesn't work you can install each package in requirements.text by "pip install package-name")



```
D:\>cd "Python Projects"

D:\Python Projects>cd Blockchain

D:\Python Projects\Blockchain>cd blockchain-env

D:\Python Projects\Blockchain\blockchain-env>cd Scripts

D:\Python Projects\Blockchain\blockchain-env\Scripts>activate

(blockchain-env) D:\Python Projects\Blockchain\blockchain-env\Scripts>cd..

(blockchain-env) D:\Python Projects\Blockchain\blockchain-env>cd..

(blockchain-env) D:\Python Projects\Blockchain>pip install -r requirements.txt
```

6) User can go through README file to run from PEER instance or SEED_DATA instance.(running the backend with SEED_DATA=True will serve with ready made blockchain and some random transactions. PEER=True instance will be used to open backend at some other port number rather than localhost:5000)



You must be logged on as an Administrator to

Visual effects, processor scheduling, memor

Desktop settings related to your sign-in

System startup, system failure, and debuggi

User variables for Manoj

Variable	Value
OneDrive	C:\Users\Manoj\OneDrive
Path	D:\Python Projects\Scripts\;D:\Python Projects\;D:\Scripts\;D:\;C:\U...
PEER	False
SEED_DATA	False
TEMP	C:\Users\Manoj\AppData\Local\Temp
TMP	C:\Users\Manoj\AppData\Local\Temp

System variables

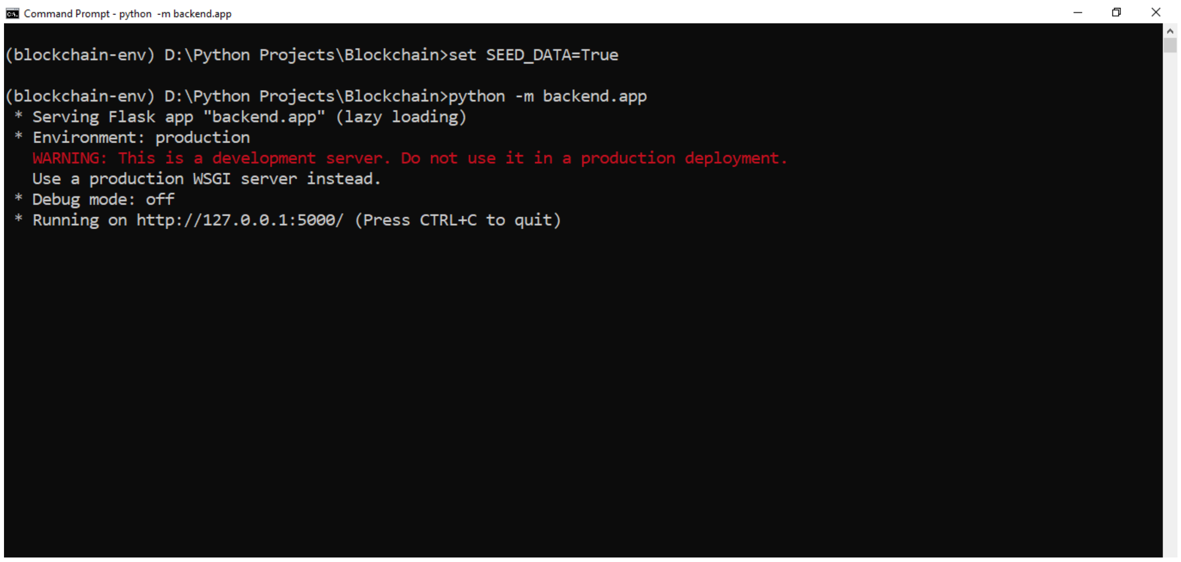
Variable	Value
ComSpec	C:\Windows\system32\cmd.exe
NUMBER_OF_PROCESSORS	2
OS	Windows_NT
Path	C:\Windows\system32;C:\Windows;C:\Windows\system32\Wbem;...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTURE	AMD64
PROCESSOR_IDENTIFIER	Intel64 Family 6 Model 76 Stepping 3, GenuineIntel

Running the application at Backend:

1) Make sure to activate virtual environment.

2) In "D:/Python Projects/Blockchain" run the command "set SEED_DATA=True" or "set PEER=True" or directly go to step 3).

3) Then run the command "python -m backend.app".



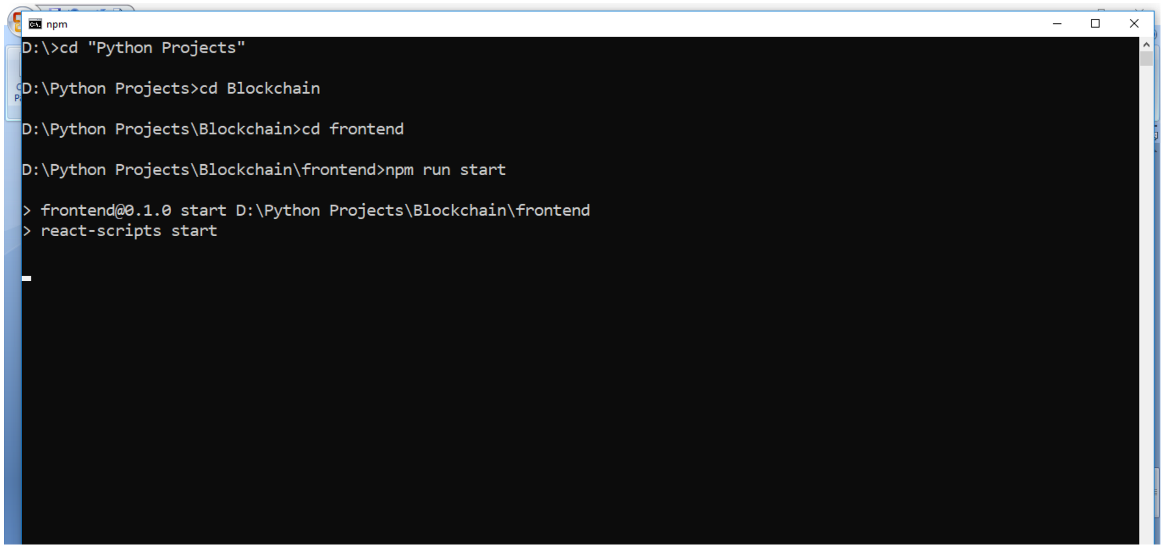
Command Prompt - python -m backend.app

```
(blockchain-env) D:\Python Projects\Blockchain>set SEED_DATA=True

(blockchain-env) D:\Python Projects\Blockchain>python -m backend.app
 * Serving Flask app "backend.app" (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployment.
   Use a production WSGI server instead.
 * Debug mode: off
 * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
```

Running the application at Frontend:

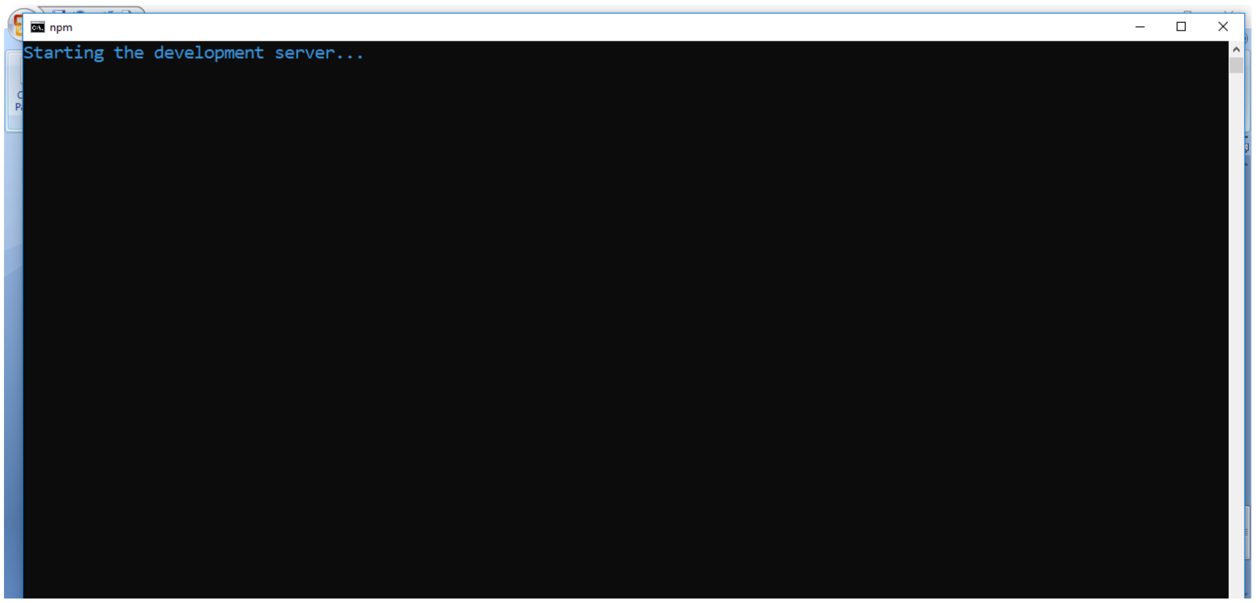
1) Open another command line and head to "D:/Python Projects/Blockchain/frontend".

2) Type "npm run start".(This command may take some time.)



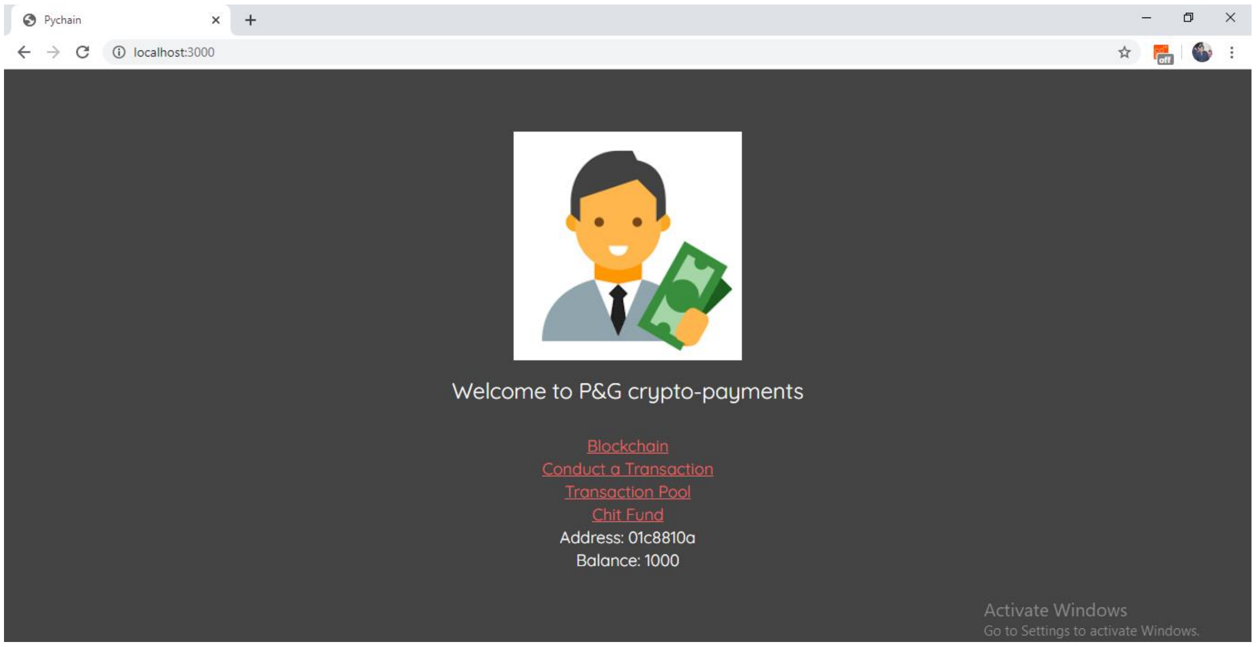
npm

```
D:\>cd "Python Projects"

D:\Python Projects>cd Blockchain

D:\Python Projects\Blockchain>cd frontend

D:\Python Projects\Blockchain\frontend>npm run start

> frontend@0.1.0 start D:\Python Projects\Blockchain\frontend
> react-scripts start

_
```



```
npm
Starting the development server...
```

3) User will be directed to default browser or User can open Browser of his choice.



Welcome to P&G crypto-payments

Address: 01c8810a
Balance: 1000

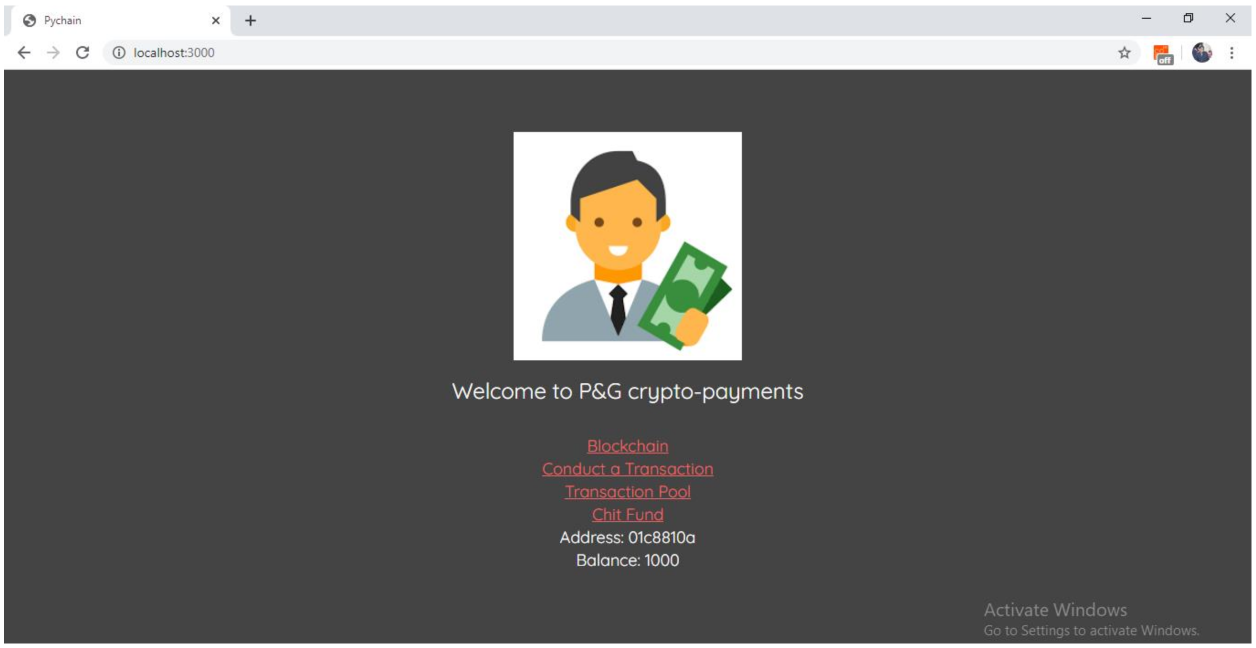
Work Flow of the Application:

To know Wallet's Information:

1) Consider the End User wants to be the part of P&G crypto payment system.

2) He/She needs to run the application at both backend and frontend.

3) The Home Screen of the web application appears on your default browser. The User will be served with address and wallet balance of 1000 P&G coins.



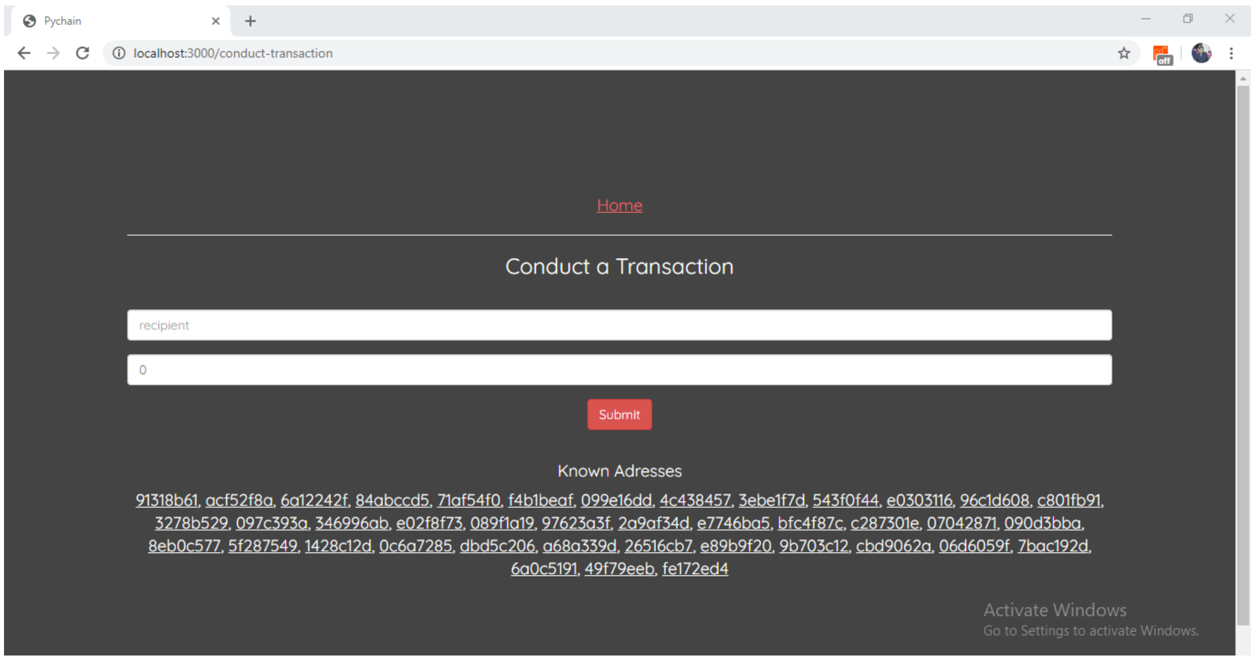
Welcome to P&G crypto-payments

Blockchain
Conduct a Transaction
Transaction Pool
Chit Fund
Address: 01c8810a
Balance: 1000

To do a Transaction:

1) If the User wants to do transaction with other user in the chain, Firstly he has to verify whether that user is in the chain after clicking on ”Conduct a Transaction” link. The list of available users in the chain will be present just below submit button in the form of their addresses.

2) The User must enter the address of that user in "recipient" field and amount to be send in "amount" field.

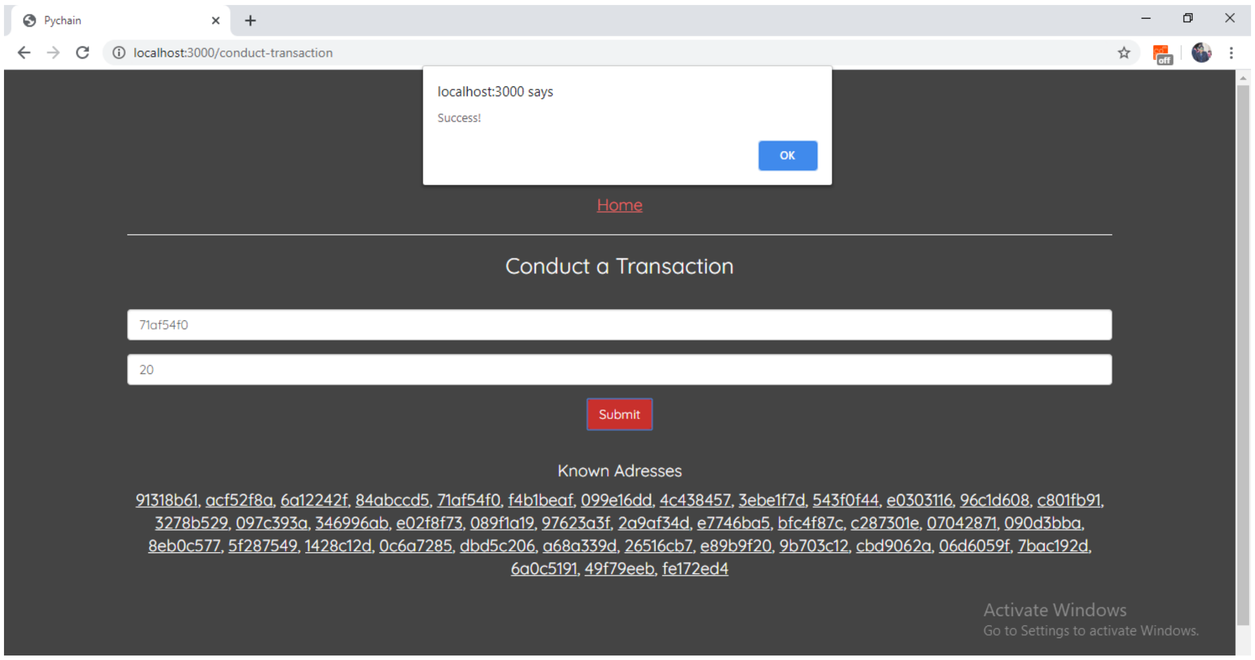


Conduct a Transaction

Known Adresses

91318b61, acf52f8a, 6a12242f, 84abccd5, 71af54f0, f4b1beaf, 099e16dd, 4c438457, 3ebe1f7d, 543f0f44, e0303116, 96c1d608, c801fb91, 3278b529, 097c393a, 346996ab, e02f8f73, 089f1a19, 97623a3f, 2a9af34d, e7746ba5, bfc4f87c, c287301e, 07042871, 090d3bba, 8eb0c577, 5f287549, 1428c12d, 0c6a7285, dbd5c206, a68a339d, 26516cb7, e89b9f20, 9b703c12, cbd9062a, 06d6059f, 7bac192d, 6a0c5191, 49f79eeb, fe172ed4

3) Click the "Submit" Button. If all goes well a success prompt would appear.



localhost:3000 says

Success!

Conduct a Transaction

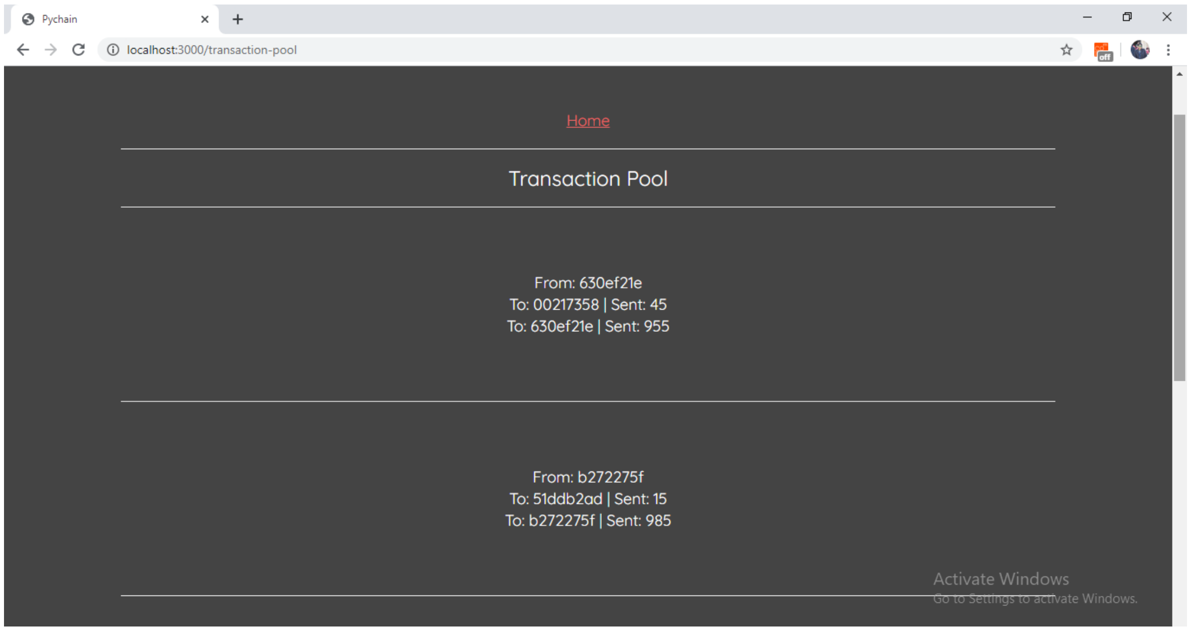
Known Adresses

91318b61, acf52f8a, 6a12242f, 84abccd5, 71af54f0, f4b1beaf, 099e16dd, 4c438457, 3ebe1f7d, 543f0f44, e0303116, 96c1d608, c801fb91, 3278b529, 097c393a, 346996ab, e02f8f73, 089f1a19, 97623a3f, 2a9af34d, e7746ba5, bfc4f87c, c287301e, 07042871, 090d3bba, 8eb0c577, 5f287549, 1428c12d, 0c6a7285, dbd5c206, a68a339d, 26516cb7, e89b9f20, 9b703c12, cbd9062a, 06d6059f, 7bac192d, 6a0c5191, 49f79eeb, fe172ed4

To Mine the Transactions:

1) The miner who mines all the recent transactions to a block will receive mining reward as 50 P&G coins. Note that once the mining is completed and mined block is added to chain, no other miner or user would be able to mine those transactions again. So the user or miner who mines first will only receive reward.

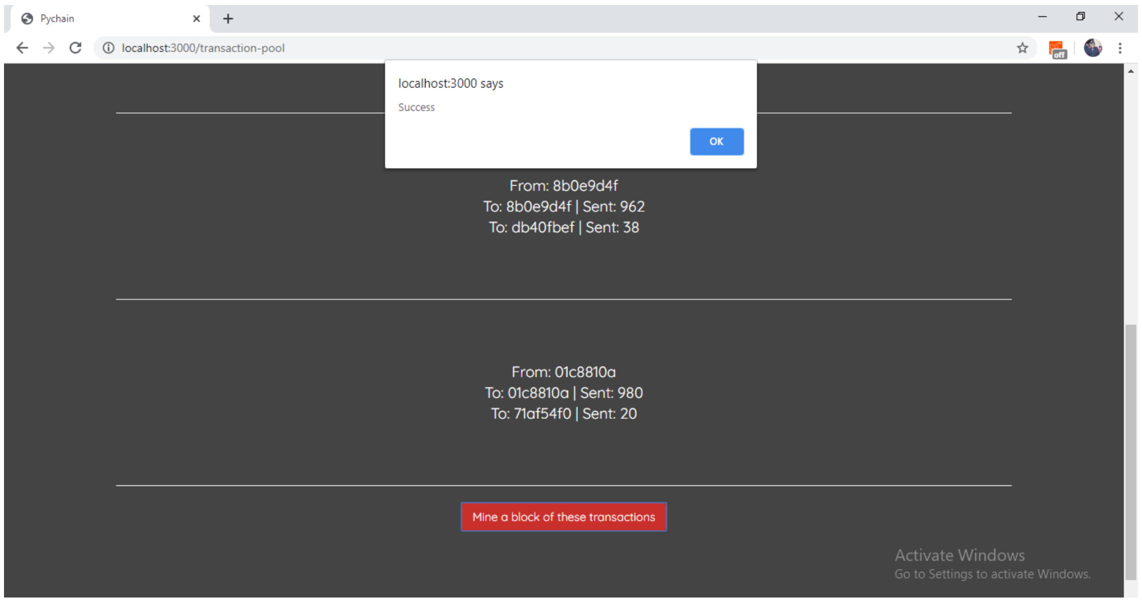
2) To mine the transaction, click on the "Transaction Pool" on the home page. If the recent transactions are available, click on "Mine a Block of these transactions".


Pychain
localhost:3000/transaction-pool
Home
Transaction Pool
Activate Windows
Go to Settings to activate Windows.

From: 630ef21e
To: 00217358 | Sent: 45
To: 630ef21e | Sent: 955

From: b272275f
To: 51ddb2ad | Sent: 15
To: b272275f | Sent: 985

3) If the mining goes successful, a success prompt will appear and display shifts to "Blockchain" page, where the recently mined block is visible at the top with its hash value and time of mining.

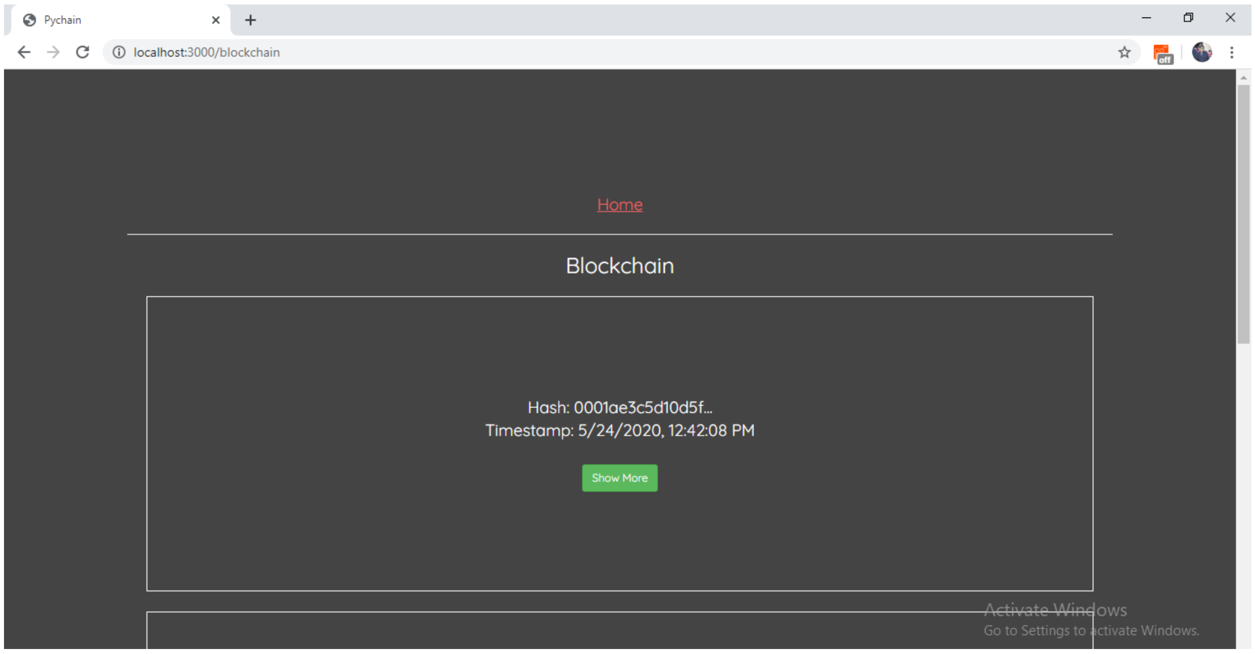

Pychain
localhost:3000/transaction-pool
OK
Mine a block of these transactions
Activate Windows
Go to Settings to activate Windows.

localhost:3000 says

Success

From: 8b0e9d4f
To: 8b0e9d4f | Sent: 962
To: db40fbef | Sent: 38

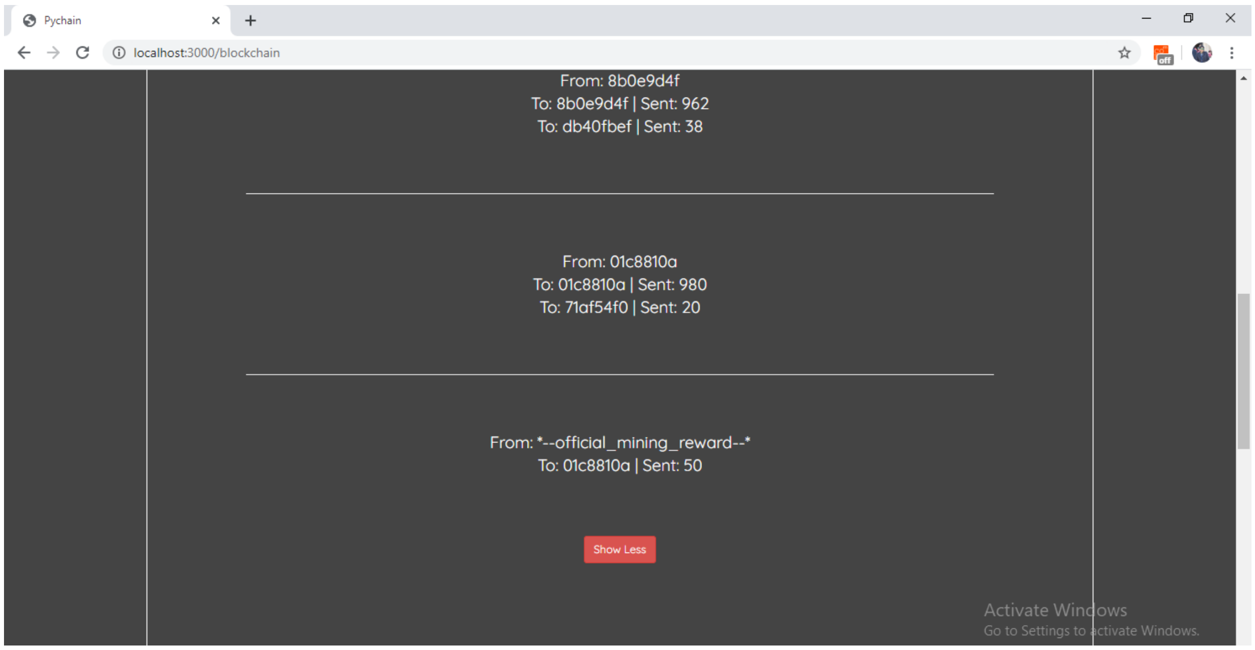
From: 01c8810a
To: 01c8810a | Sent: 980
To: 71af54f0 | Sent: 20


Pychain
localhost:3000/blockchain
Home

Blockchain

Hash: 0001ae3c5d10d5f...
Timestamp: 5/24/2020, 12:42:08 PM

Show More
Activate Windows
Go to Settings to activate Windows.


Pychain
localhost:3000/blockchain

From: 8b0e9d4f
To: 8b0e9d4f | Sent: 962
To: db40fbef | Sent: 38

From: 01c8810a
To: 01c8810a | Sent: 980
To: 71af54f0 | Sent: 20

From: *--official_mining_reward--*
To: 01c8810a | Sent: 50

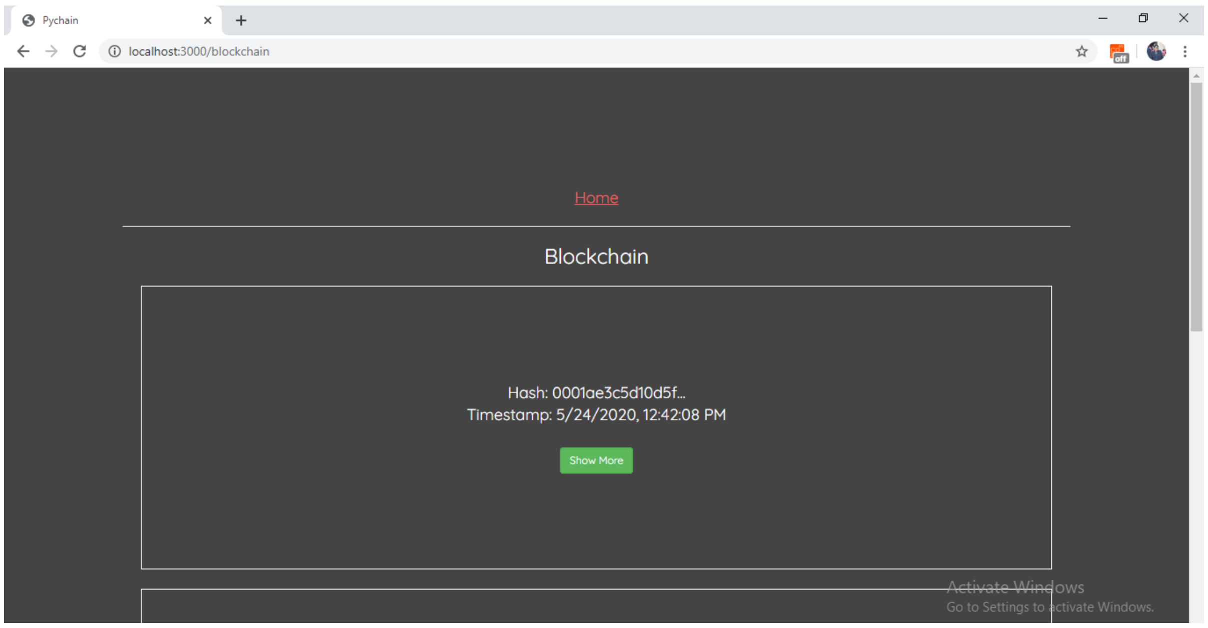
Show Less
Activate Windows
Go to Settings to activate Windows.

To view Blockchain:

1) If User wants to see the blocks and transactions in blockchain, He/She should click on "Blockchain" Link in Home Page.

2) The most recent Block is at the top with hash value and time of mining.

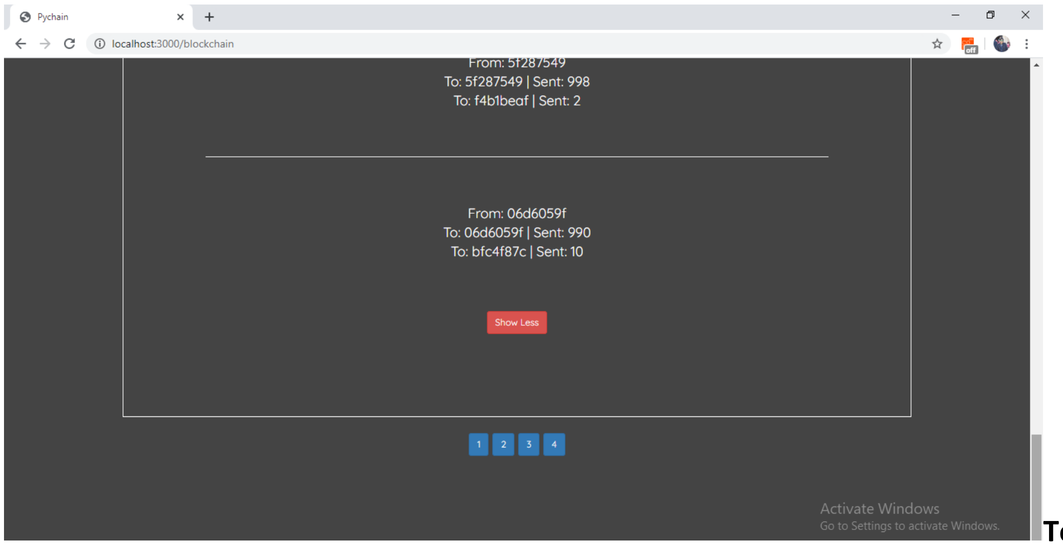
3) To know the details of the block, click on "Show More" button.


Pychain
localhost:3000/blockchain
Home
Show More
Activate Windows
Go to Settings to activate Windows.

Blockchain

Hash: 0001ae3c5d10d5f...
Timestamp: 5/24/2020, 12:42:08 PM

4) The List may have many blocks, so others blocks can be by clicking the numbered buttons at the bottom of "Blockchain" page.


Pychain
localhost:3000/blockchain
Show Less
1
2
3
4
Activate Windows
Go to Settings to activate Windows.

From: 5f287549
To: 5f287549 | Sent: 998
To: f4b1beaf | Sent: 2

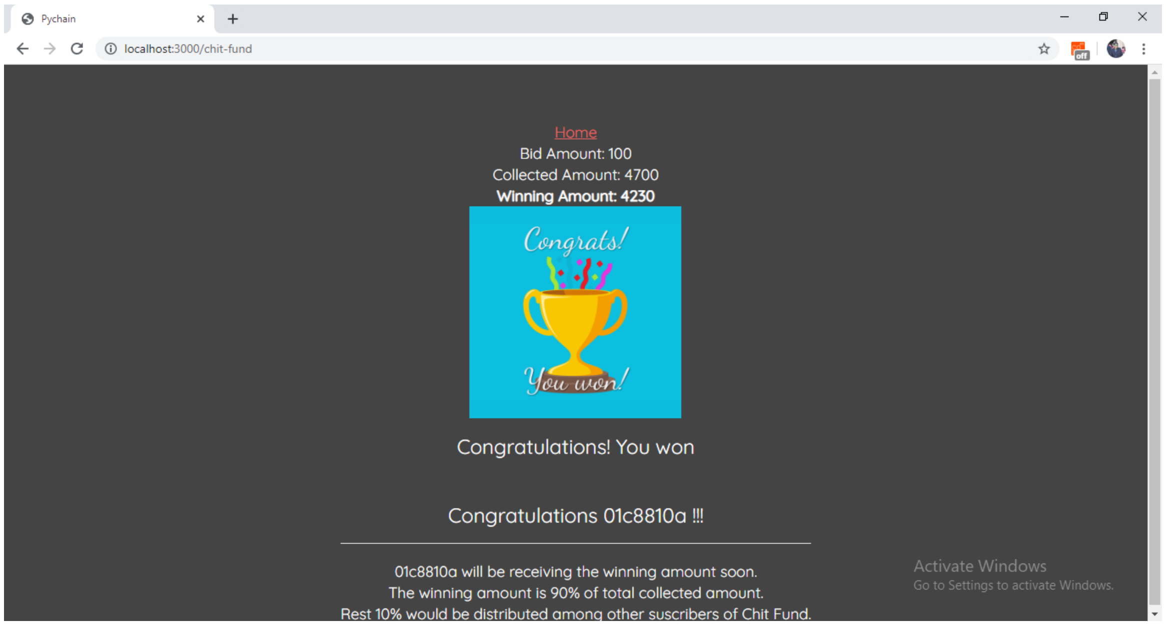
From: 06d6059f
To: 06d6059f | Sent: 990
To: bfc4f87c | Sent: 10

To know the Winner of Chit Fund System:

1) To know the winner, click on "Chit Fund" link. (Note that this link can be activated on first day of week or month, as per the company rules. In the prototype this functionality was not included but can be done furthur.)

2) User will find the bid amount, total amount collected from all subscribers, and winning amount.

3) If the user wins, he/she would receive winning amount in his balance (90 % of total collected amount).



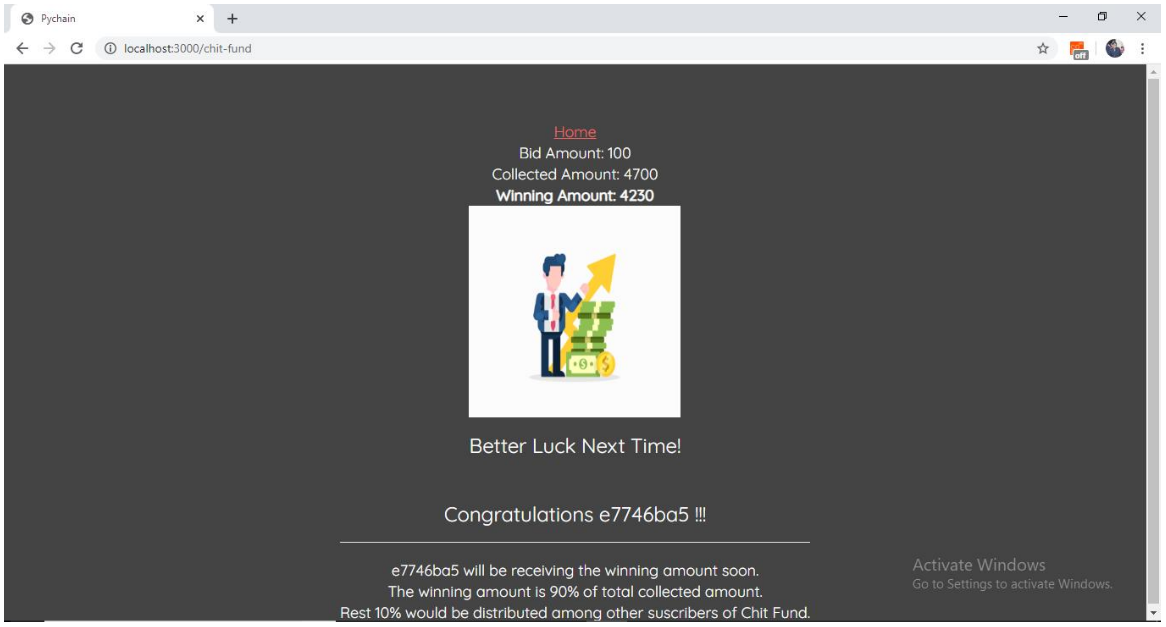
Bid Amount: 100
Collected Amount: 4700
Winning Amount: 4230

Congratulations! You won

Congratulations 01c8810a !!!

01c8810a will be receiving the winning amount soon.
The winning amount is 90% of total collected amount.
Rest 10% would be distributed among other suscribers of Chit Fund.

4) If loses, then bid amount will be automatically deducted from wallet and transferred to winner's wallet.



Bid Amount: 100
Collected Amount: 4700
Winning Amount: 4230

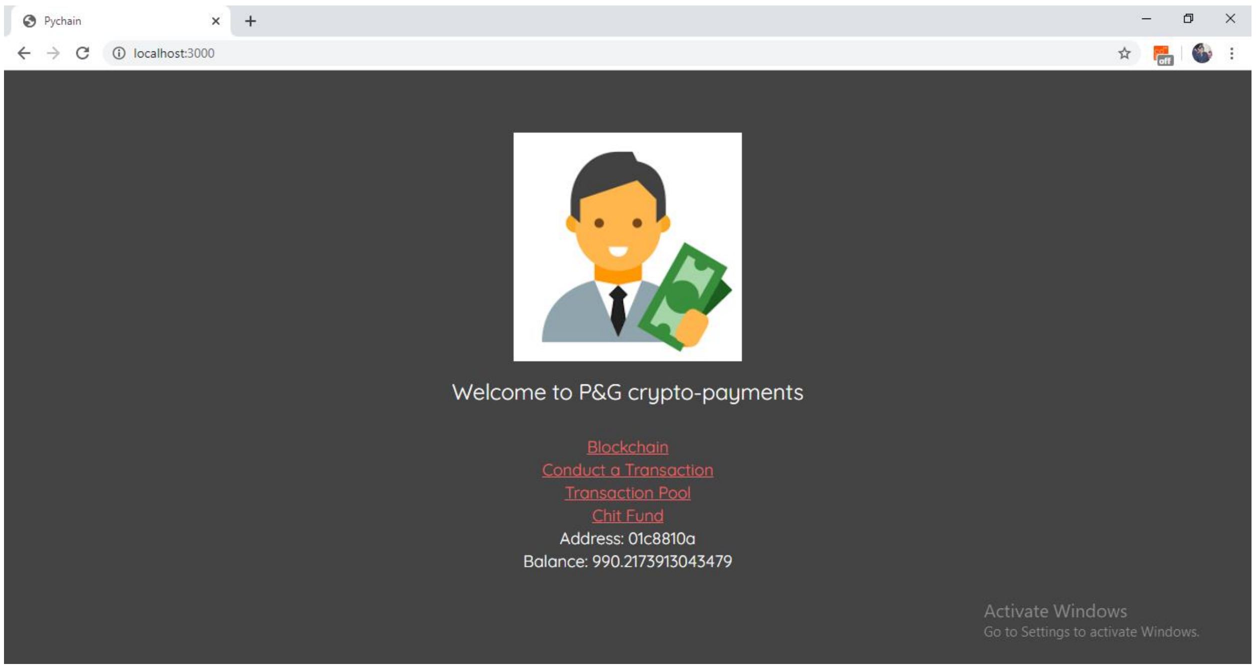
Better Luck Next Time!

Congratulations e7746ba5 !!!

e7746ba5 will be receiving the winning amount soon.
The winning amount is 90% of total collected amount.
Rest 10% would be distributed among other suscribers of Chit Fund.

5) The winner of this draw will be removed from the list of next draw so that every subscriber may get chance to win at least once.(This draws can be picked out for n times, where n is number of subscribers.)

Wallet Balance automatically gets updated after all the transactions.



Welcome to P&G crypto-payments

Blockchain
Conduct a Transaction
Transaction Pool
Chit Fund
Address: 01c8810a
Balance: 990.2173913043479

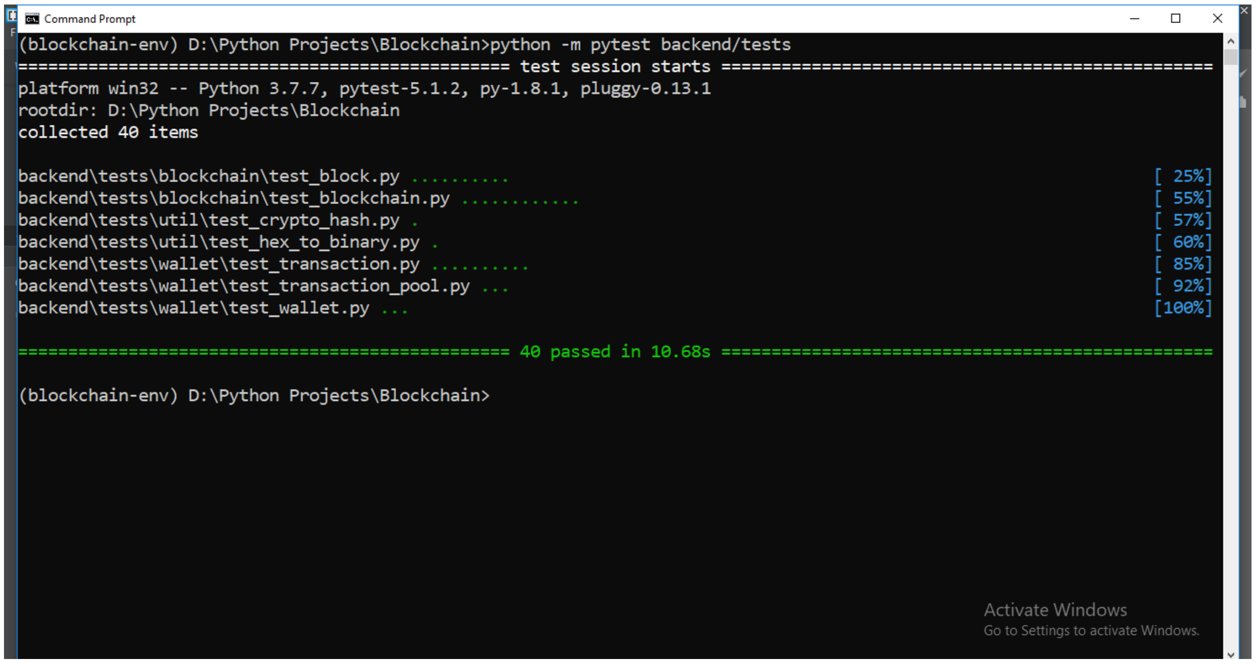
Testing all the modules in the code:

Pytest was used for validating all the blocks and testing the modules. To run all the tested modules follow the steps below:

1) Open new Command line and activate the virtual environment.

2) Head to "D:/Python Projects/Blockchain" run the command "python -m pytest backend/tests"

3) If all goes well, a green coloured line appears saying all tests passed.



```
(blockchain-env) D:\Python Projects\Blockchain>python -m pytest backend/tests
================================================= test session starts =================================================
platform win32 -- Python 3.7.7, pytest-5.1.2, py-1.8.1, pluggy-0.13.1
rootdir: D:\Python Projects\Blockchain
collected 40 items

backend\tests\blockchain\test_block.py ..........                                                               [ 25%]
backend\tests\blockchain\test_blockchain.py ............                                                        [ 55%]
backend\tests\util\test_crypto_hash.py .                                                                        [ 57%]
backend\tests\util\test_hex_to_binary.py .                                                                      [ 60%]
backend\tests\wallet\test_transaction.py ..........                                                             [ 85%]
backend\tests\wallet\test_transaction_pool.py ...                                                               [ 92%]
backend\tests\wallet\test_wallet.py ...                                                                         [100%]

================================================= 40 passed in 10.68s =================================================

(blockchain-env) D:\Python Projects\Blockchain>
```

For more details about the application working you can go through README file.