Block Chain

Lab Task for P2P system

Dr. Jawwad A Shamsi

Objective

The main objective of this lab is to learn P2P programming. P2P systems forms the foundation of block chain system. In this lab, we will learn how to implement a P2P system.

Preamble

As a sample, we will use the client and server code listed here

https://linuxhint.com/python_socket_file_transfer_send/

This is a sample program to transfer a file from client to server.

Task 1:

Create a sample.txt file.
Execute the client and server programs. They must be executed from different directories (or preferably at different nodes). You should verify the execution.

Task 2:

Convert this code in to modular approach where each task is coded as a separate python function. For instance, you can have a separate function for connection setup. Arrange your code into different functions.

Task 3:

Convert your code into a P2P program and run it on different nodes. Each node should have a list of nodes called neighbors. These are the nodes which can be contacted by the node. A node can contacts it's neighbors to seek a file. If a file is found then it is returned from the neighbor. Otherwise the request for file is forwarded to neighbors (of the neighbors).

Task 4:

Implement this scheme using public private key such that the request (of file) is signed with the private key of the node. The file is sent using public key of the recipient so that it can only be decrypted by the recipient.
Use the following link for Public/Pvt key.

https://gist.github.com/JonCooperWorks/5314103

Submissions
Submit code and snapshots