Programming Assignment 3

CS550 - Advanced OS

Fall 2020

Amit Nikam

A20470263

anikam@hawk.iit.edu

EVALUATION REPORT

Establishing a successful leader and a connection by defining communication protocol was the first challenge in implementing multithreaded this P2P architecture.

For this test, Node 9001 was able to connect to the leader node server (9000) and get the file list, then corresponding sources and then connect to Node 9002 download a .jpg format file. A total 23840 Bytes i.e. 23KB were transferred in just 0.001 seconds. That makes a total of 23MB per second transfer speeds. Node 9000 remained the leader throughout the lifetime of this test.

The next step was to implement a multiple nodes simulation which can handle multiple clients at the same time. Each node was started in a test state, then was triggered through a message to the node. Connection to them is handled through a client handler which is threaded. This way multiple connections are handled at the same time.

It was observed that the transfer times were way too less than those in Programming Assignment 1 for this same test which is a good thing. This could be because the server itself was not at load, rather the load was spread across the nodes. Nodes were able to download 23840 Bytes that is 23.8KB in an average of 0.0004937 seconds.

Although for a very short time node 9003 became the leader, the node 9005 remained the leader throughout the process and overtook the role from 9003 after becoming free from 4 nodes. This could be because there is a 3 seconds timeout on connections, which is why node 9003 tried to trigger new election as it was denied service after 3 seconds, but by the time it check the network for leader node 9005 was back up and so 9003 did not take the role.

As evaluation beyond 16 nodes could not be conducted as it crashed the system. Although the observations for 12/16 nodes were similar. In conclusion, implementation was successful,

although the third evaluation could not be fully implemented.