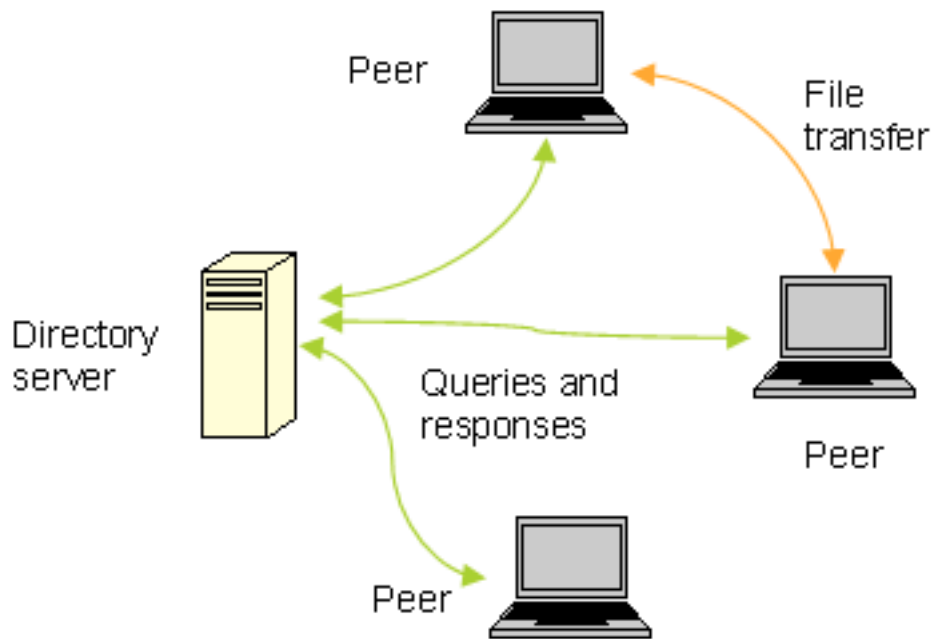


Design Document  
CS-550 Advance Operation System  
Fall-2015  
Programming Assignmane-1  
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This project has 2 java class packages p2pserver and p2pclient. As follow they have classes IndexServer.java(Server class) and Peer1.java(Client Class).



### Class: IndexServer(Directory Server)

It is simple socket server class with multithreading using Runnable. IndexServer class has a HashMap named Registry which maintain list of all files as key and ipaddress+port(peer id) of peers as values. Those files are all shared files by connected peers.

When any peer appears into network , first it will connect to IndexServer and registered it's all files in shared directory into Registry HashMap.

Main features of IndexServer :

- Store Filenames with PeerID of all connected peer into HashMap
- Provide whole list of files in shared directories to peer whenever requested
- Provide PeerID from filename as a search result requested by peer.

### Class: Peer1

It is multithread class which can appears as a server and client in network on specified port. Peer has a shared directory in which it has a list of files to share on network.

This class has two threads one is Main thread which works as client in network and another is Server thread for peer to peer connection.

Main features of IndexServer:

- Register shared files to IndexServer
- Search request to IndexServer for files to download to which peer has that file
- From Peer ID connect to another peer and request for file to download
- As a server accept request of peers and send them requested file.

Possible Improvements can be made in above Peer-to-Peer System

- Implement Decentralized P2P network system to eliminate expensive Directory server.
  - In this system peer keeps index of it's local files and files shared by it's connected neighbors.
  - So when request for file come it will search for file in it's index and if not found then it will pass that request to it's neighbor.
  - This system may have better performance and scalability then our system.
  - It will eliminate single point failure because there is no centralize server.

