

Napster Peer to Peer File Sharing System

This is hybrid P2P model and involves a central indexing server to obtain information such as Peer ID and the Peer on which the information is stored, such as the file names and the location. In this model, the Peers contact the Central Index Server to Register the Files for Sharing, searching for other files and to obtain the information on the files present on other Peers which are available for Download. All file transfers made between peers are always done directly through a data connection over the Socket that is made between the peer sharing the file and the peer requesting for it.

I used Java programming language for this project and the Ant Script for Build Automation. The Implementation is done using Socket Libraries for communication between the Central Index Server and the Peers as well as between the Peer Servers. The CIS and the Peer-Servers are Multi-Threaded.

Registration-

- CIS runs a RegisterRequestThread() and listens for registration requests from any peers.
- Peer then inputs a Peer ID and the file name it wants to register
- Register with server
- Request for socket
- Peer sends Peer ID and filename over the socket through the Output stream
- Server stores the Peer ID and the Filename received over the Input Stream into the ArrayList maintained by it
- Registered

Searching for file-

- Peer invokes a Search method to search for files with other peers on the CIS
- Server has a SearchRequestThread() running and listening on a port to serve the search request.
- Peer then enters a file name to search
- SearchWithIServer() method is invoked by peer
- Socked connection is established with the CIS
- Server maintains an ArrayList to hold all the values of the Peer ID's and the Filenames with the corresponding Peers.
- Server receives the Filename over the Input Stream and then traverses the Index array.
- If the match is found, it returns the Peer ID and the IP Address of the Peer which contains the searched File.
- If no match is found, then it returns "File not found"

Downloading file-

- Peer-Server runs an AttendFileDownloadRequest () and listens for download requests
- Another peer requests for download
- Peer enters the Peer ID, IP Address of the Peer holding the file and the Filename it wants to download
- Download from the PeerServer ()

- Request for Socket
- Peer sends the filename over the socket through the output stream
- Peer-Server receives the Filename over the Input Stream and then readObject to read the contents of the file and sends it over the Output Stream.
- The WriteToFile Object then writes the contents to the file, on the requestor Peer
- Download complete