

CS550 PA1 Design Document

1. Introduction

Purpose of this document is to give outline how this Peer to Peer file sharing system has been designed and implemented.

2. Architecture Design

System has been implemented in JAVA using Sockets and Threads thus, Architecture design is aligned to them.

Indexing server: - Indexing server has one main class which creates server socket to listen peers' requests on particular port. Indexing server serves requests by creating a thread so it can serve multiple peers simultaneously in individual threads. Indexing server keeps track of all registering peers' information in a HashTable. Information which server gets from peers are their IP address, file list and port on which they listen to other peers. When a peer searches for file, server checks into HashTable and gives list of other peers which have the file.

Peer:- Each peer has one main class from which it registers to server, searches for file, downloads file by connecting to particular sockets and listens to other peers to serve their file download requests. A peer acts as server and client at the same time. This has been achieved by creating two threads. One thread enables peer to register, search and download whereas another thread creates a server socket to listen other peers on particular port. To register and search file, peer connects to socket of indexing server. To download file, peer connects to other peer-server's socket. To serve multiple peer clients' download requests, Socket connection to each peer client is made in individual thread.

3. Trade offs

- When peers gives its file list to indexing server, the root directory of file list is current working directory of peer program. This means peer gives list of all files which are residing under its current directory.
- File is downloaded into current working directory only.
- If there are duplicate files on one peer then only one file is displayed for further download.

4. Improvements and Extensions

Apart from notable improvements such as sophisticated file search and GUI, Some other possible improvements are as follows.

1. Feature to allow peer to hide its specific files from registration and downloading.

Example:-

Peer may be given list of files and asked to select files which it wants to registers.

Select files which you want to register.	
<input type="checkbox"/>	File1.txt
<input type="checkbox"/>	File2.txt
<input type="checkbox"/>	File3.txt

2. Feature to allow peer server to block particular peers from downloading files from it.

Example:-

Peer may be given list of peers to select peer which it wants to block.

Select peers which you want to block.	
<input type="checkbox"/>	Peer3
<input type="checkbox"/>	Peer4
<input type="checkbox"/>	Peer5

3. Feature to receive notification when source file is updated, feature to auto update file from source file, feature to schedule download or auto download file whenever file becomes available.

5. References

- Oracle Java docs

Reference link: -

<http://www.oracle.com/technetwork/java/socket-140484.html>

- Stackoverflow.com

