HTTP 1.1 Web Server

Features Implemented:
1. Multi-Threaded Server
2. Persistent Connection
3. Request **Pipelining**
4. Keep-Alive
5. Connection **Queuing Server**
6. Prevention against DoS (**Firewall**)
7. File caching at server (**Web Cache**)

CS 378 Mini Project

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Classes and their functionalities

1. mainServer.java: The class with main function. Sets up the Socket connection on port 8080. Uses a firewall class to prevent DoS attacks.

2. queuingServer.java: This class queues the connection requests and processes only a limited no. of requests at a given time.

3. requestListener.java: A thread of this class is spawned when the queue starts a new connection. Pushes all requests corresponding to a particular connection in a queue. (Doesn't wait for processing)

4. dataResponder.java:

    Shares the request queue with the above class. Write files on the output stream from the starting of the file and ensures **in-order delievery.**In this way, a persistent pipelined connection is achieved. The "keep-alive" values at every request is checked for closing the connection. Proper socket time-outs are enabled for every connection.

    This class also implements **web cache.** The scheme used is Least recently Used. Due to this if requests for the same file is made (even for different connections), then the file is loaded from cache and saves resources.

5. requestQueue.java and passByReference.java : Helper functions to enable shared data structures through various classes.

6. fireWall.java: The firewall filter implementation. If a large no. of requests are made from a certain host within a specific period of time, then that IP is blocked and further requests from that IP is discarded. Uses Hash-Maps to map IP strings to the timeStamps when the requests were made.

Execution Instructions:
Import the project in eclipse (preferably helios) and run it.
Browser request:
http://IP:port/~username/
(Default home is assumed to be /users/ug12/)

Code is written from scratch. For referring various functionalities following have been quite useful:
- **Java tutorials by Oracle -   http://docs.oracle.com/javase/tutorial/**
- **Kurose Book**
- **Stack Overflow**
- **Prevention against Dos -   http://www.esecurityplanet.com/**
- **Google!**