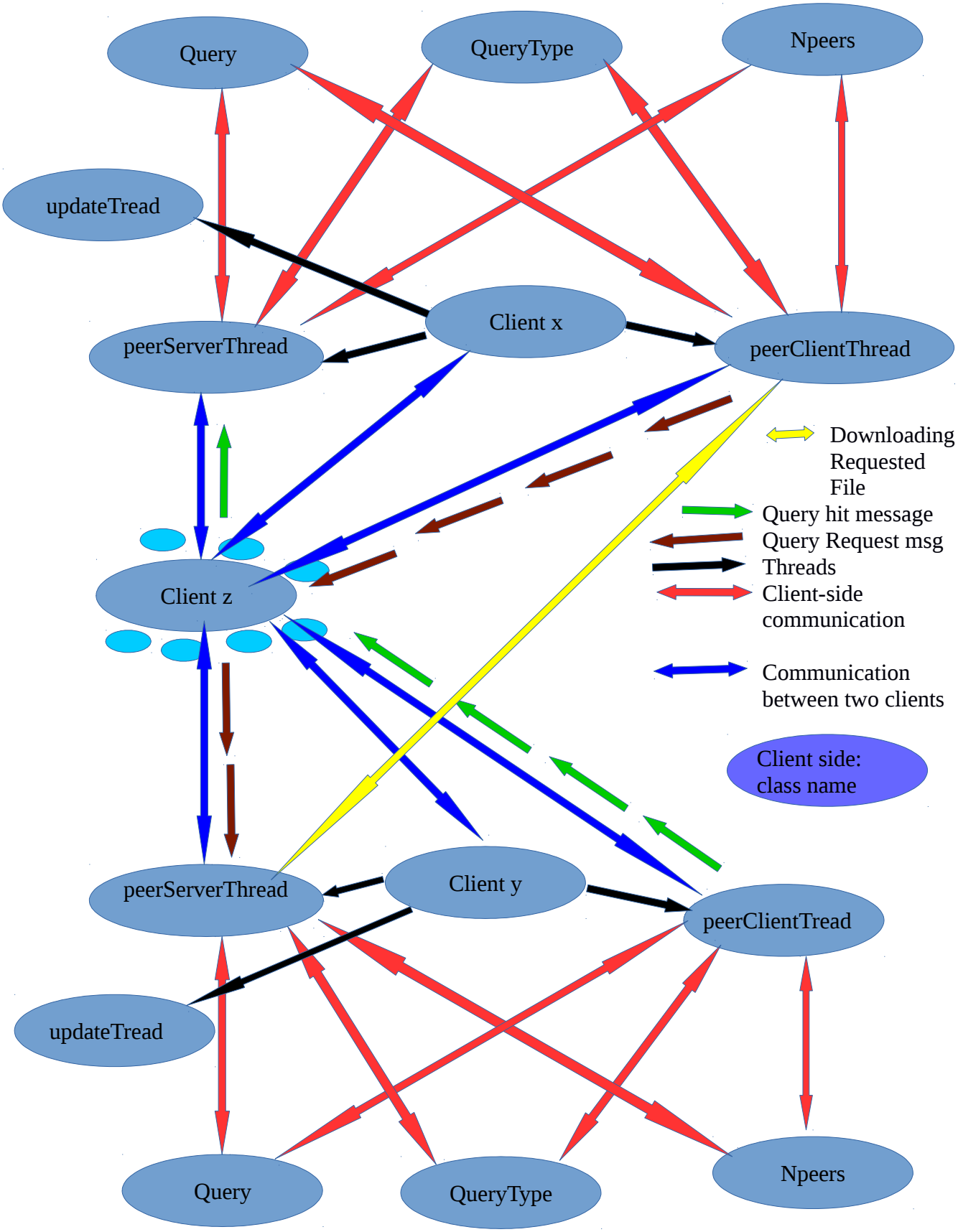
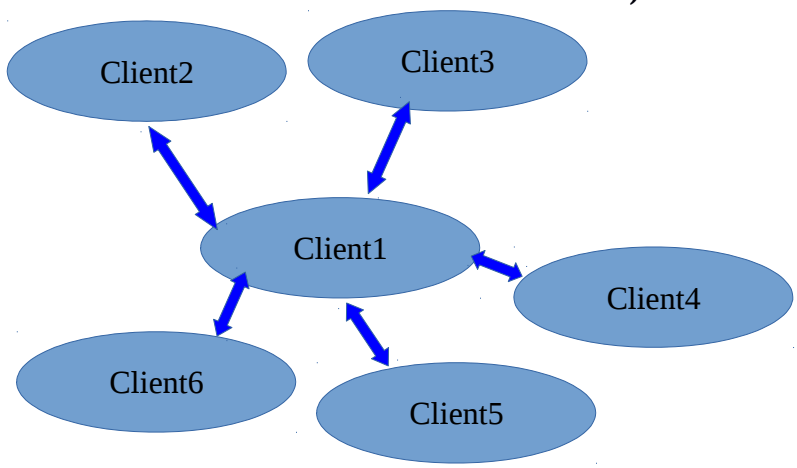
Our Peer to Peer File Sharing System Design.

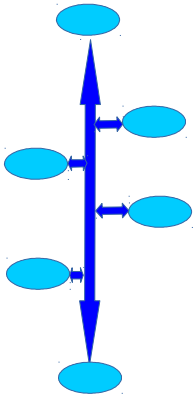


TOPOLOGIES:

1)STAR :



2) BUS :



Flow logic: The above diagram demostrate the flow logic

- First we create number of clients/peers and assign them some port numbers, then we invoke peerClientThread thread which act as a client which initiate a query request, for searching for a particular file, from client x using Query.java class object and send to all client x neighbors.
- Query request message is propagated from peer to peer until is finds the peer containing the requested file.
- All peers containing the file requested by peer client x respond with Query hit message, in the above diagram client y has the requested file, it generate the Query object and response with back tracking using query hit message.
- When the requesting client receives the query hit message from a peer or set of peers(in this case it select the peer from the list of peer containing the same file) then it establish a connection with the particular peer which has the file and download the file.
- We manage size of this associative array our peer needs to maintain, and flush out old entries at appropriate times(user defined) using the updateThread thread.

Client side :

QueryType.java : enum QueryType having some values related to the type of query(Request, Response, or Download) each Peer initiates.

Client.java : This class has the Client side main() function, which intern class updateThread Class object to keep checking the status of the files present at the Client associated and update automatically when there is a change in the file system. It also create peerClientThread and peerServerThread class object to take and process the client request.

Query.java : This class have all information for a query request, response and download. This class implements JAVA serializable and it has following functions :-

- public final String getIpAddr() : Returns IP-Address InetAddress object which is set by void setIpAddr(InetAddress ipAddr) function.
- public final void setIpAddr(String ipAddr) : Set InetAddress object IP-Address using the passed parameter ipAddr.
- public final int getPort() : Returns the port number.

- public final void setPort(int port) : Sets the port number to the port value passed to the function.
- public final int getMessageID() : Returns the MessageID.
- public final void setMessageID(int messageID) : Sets the MessageID.
- public final String getFileName() : Return the name of the filename set by void setFileName(String fileName) function.
- public final void setFileName(String fileName) : Set fileName
- public final QueryType getQueryType() : Return RequestType enum value identifying the type of request made by peers.
- public final void setQueryType(QueryType queryType) : Set the RequestType enum value identifying the type of request made by peers.
- public Query(Query query) : Constructor to initialize local variable

PeerClientThread.java : This class take the client requestType and calls related functions :-

- run() : This function accept the client request and call the respective functions.
- void RequestPeerList() : This function send request to all peers asking for a peer list which contain a particular file send with the request.
- void DownloadFile():This function download a particular requested file from other peers.
- void sendObject2AllPeer(Query query): This function send Query object to all the peers.
- void sendObject2Peer(Query query): This function send Query object to a particular peers.
- int receiveFile(Query query): This function receive the file and its content from the client which has the requested file.

PeerServerThread.java : This class is used to make client act as a server by communicating with other client member in the connected cluster. It has following functions :-

- run() : This function accept the filename requested from requesting client and then process on the file depending upon the requestType parameter.
- sendRequestFile(Query query): This function return the file to the requesting client. It takes Query object to find the QueryType and related information
- sendResponse(Query query) : This function return Query object with QueryType Response if the requested file is present in a particular client handling request.
- void sendFile(File file): This function reads the file locality and send the file after converting it in to bytes to the requesting client-side.
- void readRequestObject() : This function read the object related to the communication between the requesting client and processing client.
- sendObject2Peer(Query query) : This function sends the response with the Query object to the requesting Peer

Npeers.java : This class have all information for Request. It has following functions :-

- String getIpAddr(): This function returns IP-Address InetAddress object which is set by void setIpAddr(InetAddress ipAddr) function.
- void setIpAddr(String ipAddr): This function set InetAddress object IP-Address using the passed parameter ipAddr.
- int getPort(): Returns the port number.
- void setPort(int port) : Sets the port number to the port value passed to the function.

UpdateThread.java : This class is used to flush out old entries at appropriate times from a associated array.

Files :

- **Input_files :** This folder contains all the documented files at the client side and this folder is accessible by the Java classes at the client side
- **Output_files :** This folder contains the requested file after receiving it from other peers.