COL334 Assignment 2

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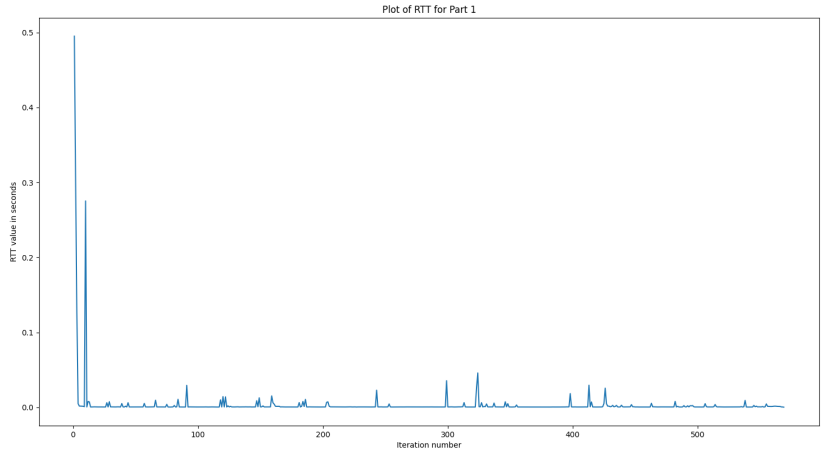
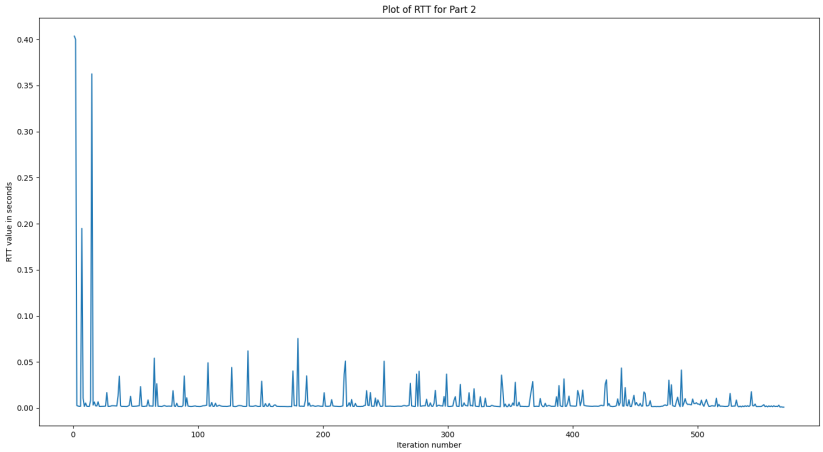
In this assignment we created our own PSP file distribution network in which we share a common file initially at server among n clients using peer to peer sharing handled via a common server.

Analysis :

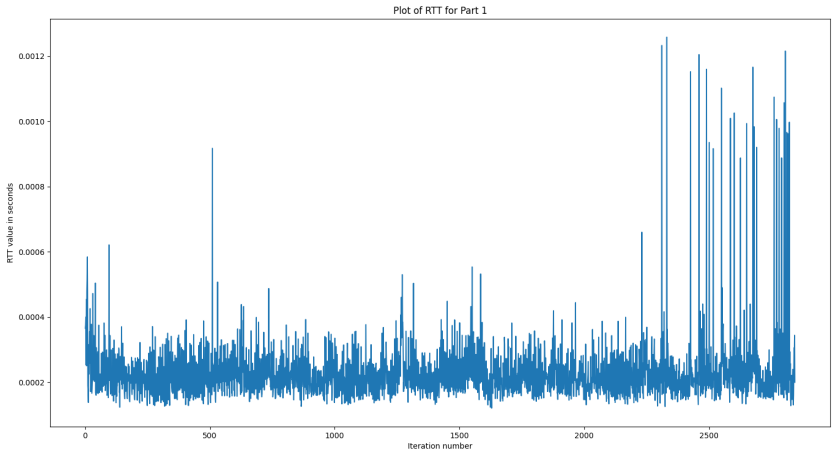
1. The average RTT for a client chunk request in part 1 of the assignment is around 0.00377452939172620 seconds whereas it is equal to 0.007590718344770542 seconds in part 2 of the assignment and as we can see that the RTT of part 2 is more because here the broadcasting is happening through TCP which takes some extra time for handshake with every client by the server. The diagram variation of RTT over the request number is shown in the below image for both parts.

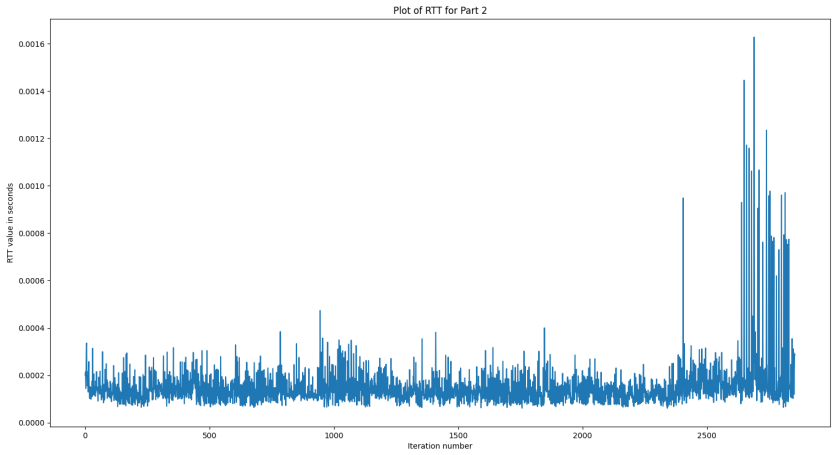




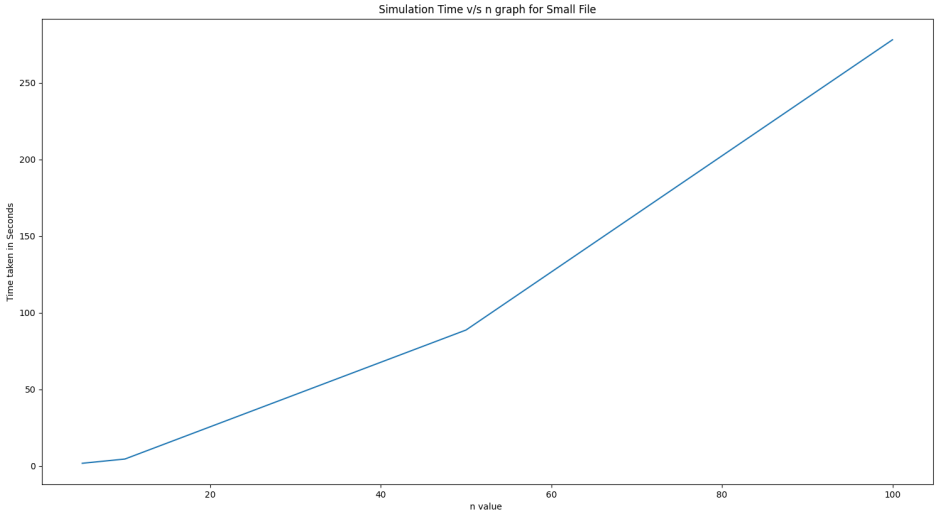
2. The average RTT for chunk transfer in case of broadcasting by the server is equal to 0.0004269107748855183 in part 1 and 0.0002951976923099124 in part 2. Yes there are chunks whose RTT is significantly greater then the average and these are the initial transfer chunks. The diagram variation of RTT over the request number is shown in the below image for both parts (note that the first point was removed because it was making the graph

flat).

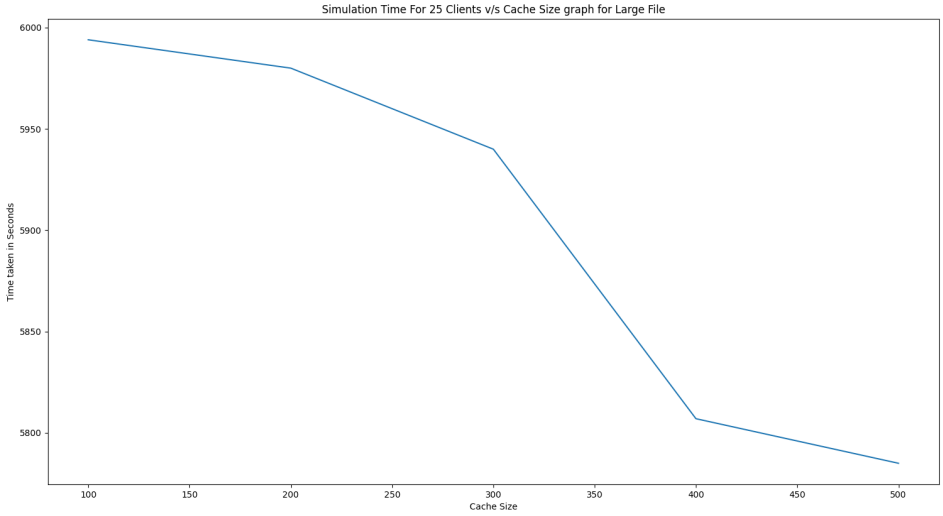




3. The following plot shows the variation of simulation time with changing n values and as we can see that it is an increasing graph and this was expected trend since the more the number of clients, the more chunk transfer takes place hence resulting in increasing time.



4. The following plot shows the variation of simulation time with changing cache size for 25 client transfer of A2_large_file.txt.



5. After trying the request variation between random and sequential we can say that when the client requests randomly from the server then the simulation time is decreased and this happens because of the decrease in traffic at a particular port as it gets distributed randomly across all the different ports. The time value to run the simulation for sequential requests is 1.56 seconds(n = 5), 45 seconds (n = 25) whereas for the random requests it is around 0.76 seconds (n = 5), 38 seconds (n = 25) and this is what we expected.

Food for Thought :

1. P2P networks have quite an advantage over traditional file distribution systems and one of the main reasons is that the transfer of file chunks keep on happening in parallel among different peers pairs thus reducing the transfer time and this is not the case with traditional file distribution systems.
2. 1 Advantage of PSP network over P2P network is that here the number of connections are significantly decreased which is quite large in a normal P2P network mainly because of the presence of a central server(in PSP) and also still maintaining the peer to peer transfer model.
3. In case of transferring multiple files we can prepare a chunk by concatenating the file name it is associated with at the start of the chunk(along with its id) and then when the client wants to request the chunk then it will also mention the file associated to that chunk.

Information about the Ports in Server and Client

In the both the parts of assignment I have used a total of 3n ports in the server side and 3 ports per client in client side program. Out of the server 3n ports, n ports are for handling UDP packet request(in part 1)/ transfer (in part 2) and n ports for TCP packet (server side) for handling chunk transfer (in part 1)/ control of chunk id (in part 2) and similarly n ports for TCP packet (client side) in server where the server asks for chunk with corresponding id to client(in part 2) or sends data to client (in part 1). Similarly for client side there is 1 UDP ports and 2 TCP ports for the similar purposes as above.