COL334: Assignment 3
Reliable File Download

slowbrains
Sharad Kumar 2021CS10099
Rishabh Verma 2021CS10581

15 October 2023

1 Approach

We've implemented the file download using an algorithm similar to the one mentioned in the assignment document.

- Initialize a hashmap with all the offsets on which a request needs to be made (considering the max number of bytes of content in a single request = 1448 in this case).
- Send a request sequentially to all the offsets in the hashmap. In each iteration, expect a response from the server.
- If the response is received, parse it to store its content and remove offset in the response from the hashmap, decrease timeout of the socket by multiplying it with a factor (less than 1). Put the program in sleep for a very short time (few ms) before sending the next request.
- If the response is not received, increase timeout of the socket by multiplying it with a factor (greater than 1).
- Now at the end of each iteration, all those offsets whose responses were successfully received and verified through parser are removed from the hash map. The remaining element in the hash map again go in the next iteration to request for the responses from the server and this keeps repeating until the hash map is empty.

2 Analysis

2.1 Server far away from Client

Figure 1: When server (at KUMAON hostel) and client(at Ex-Hall, main building) are far away

2.2 Server on Local Machine

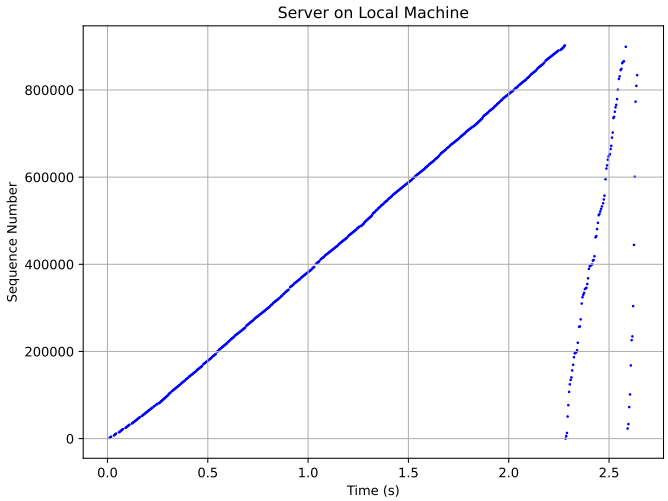

Figure 2: When server and client are on the same local machine.

2.3 Comparison of Request & Response Time

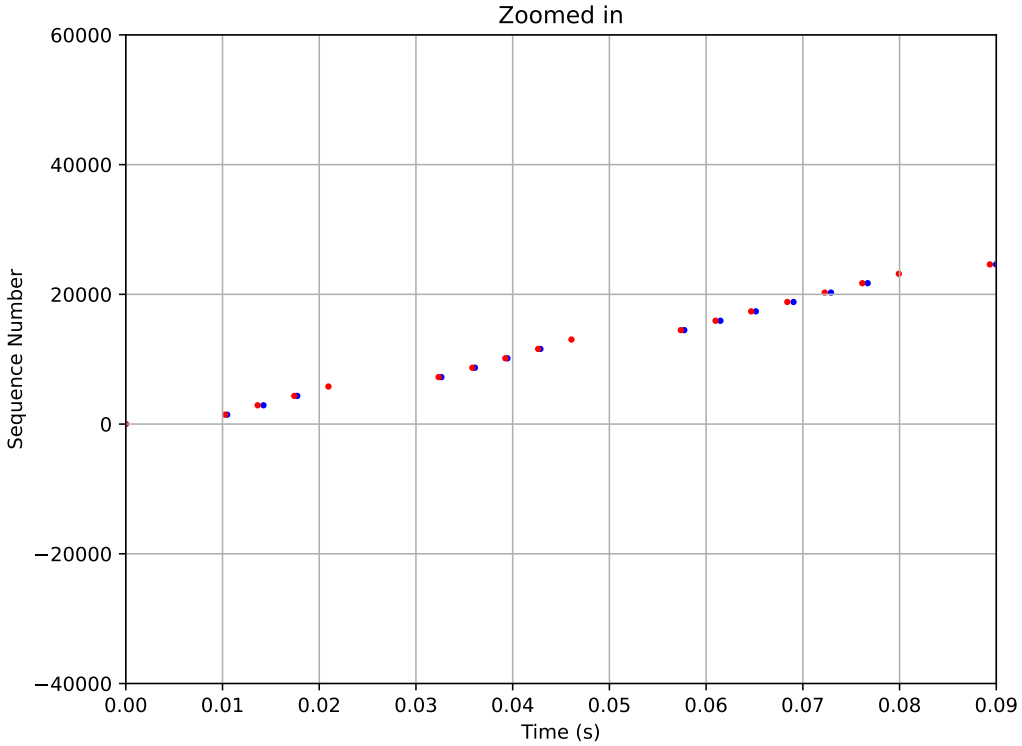

Figure 3: Zoomed-in

In this graph the red points denote the 'request' coordinate (the data request sent to server) and the blue points denote the 'response' coordinates. As can be seen in the graph that there are some red points without any responses from the server, this is the scenario when the server did not reply or the receiving socket timed out.