COL334 Assignment 3

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1 Our Implementation

We have a specific offset of a fixed-size data packet that we request, and we don't move forward until we receive the requested data packet. We keep sending requests for the same offset until we receive it. We do this at regular intervals known as timeouts.

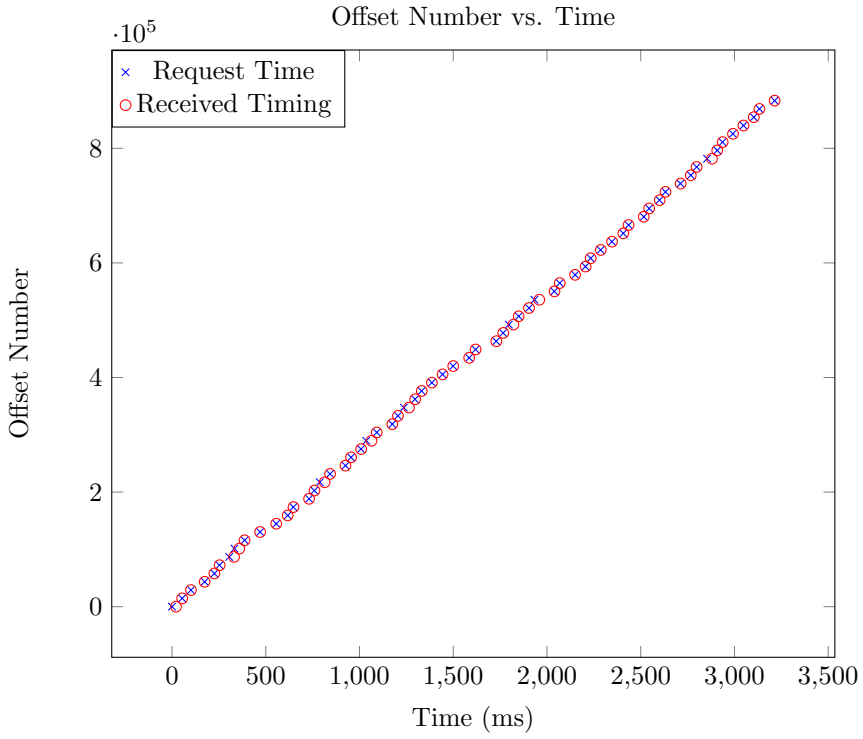
Through a series of extensive trial runs and thorough analysis, we were able to make an approximate determination of the token generation rate. It was found to fall within the range of 10 to 20 milliseconds. This critical insight enabled us to fine-tune and adapt our timeout durations to align with the observed token generation rate effectively.

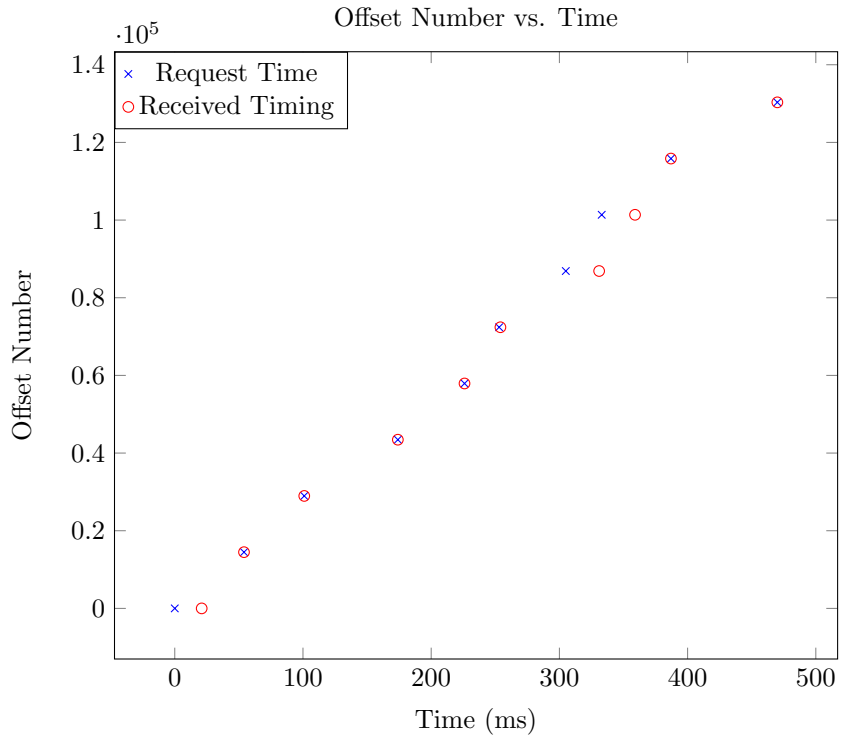
Additionally, we dynamically adjust the timeout based on past events. If we've previously skipped many requests, it indicates that the server's "bucket" has few or no tokens available. In response, we increase the timeout duration to better align with the server's token availability. This dynamic adjustment helps ensure more efficient data retrieval.

2 Constant Rate Server Plots

Below, we have plotted two types of graphs for the constant rate server:

1. The first plot represents the offset vs. request and received timings for all 10,000 lines.
2. The second plot represents the offset vs. request and received time for a subset of initial offsets for clear distinction between request time and received time.

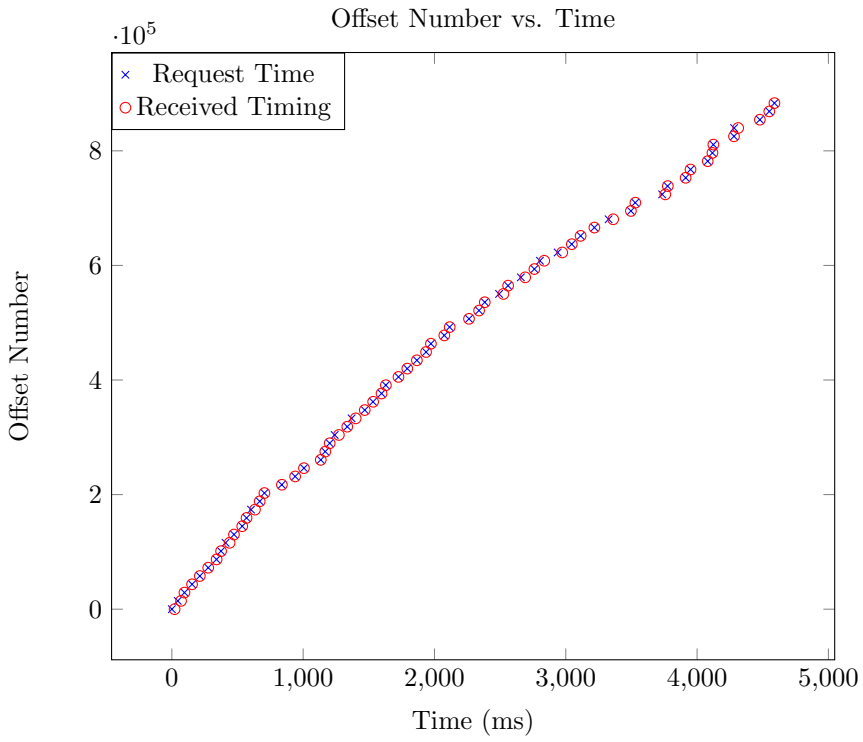


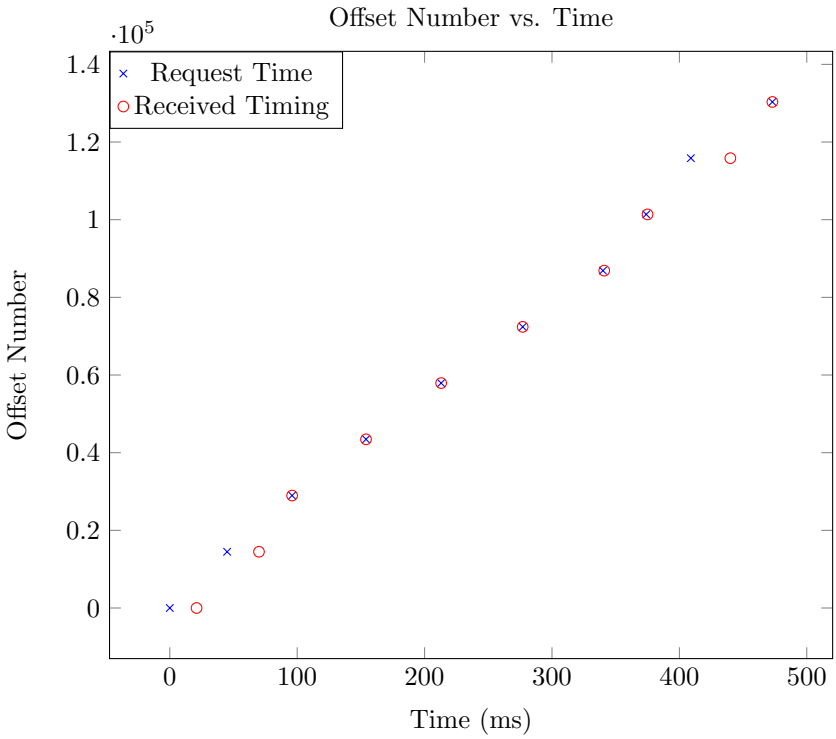


3 Variable Rate Server Plots

Below, we have plotted two types of graphs for the variable rate server:

1. The first plot represents the offset vs. request and received timings for all 10,000 lines.
2. The second plot represents the offset vs. request and received time for a subset of initial offsets for clear distinction between request time and received time.




Offset Number vs. Time
$\cdot 10^5$
Request Time
Received Timing
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Offset Number
0
100
200
300
400
500
Time (ms)