Advanced OS Project 2 report

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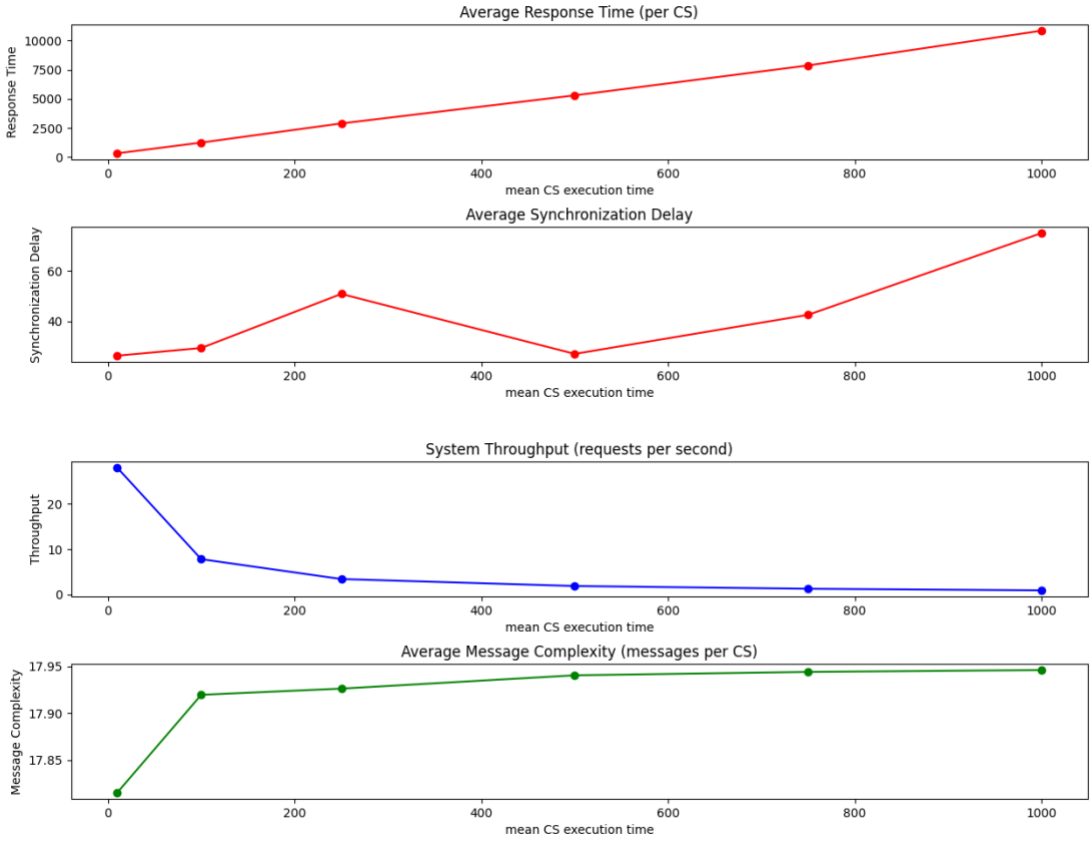
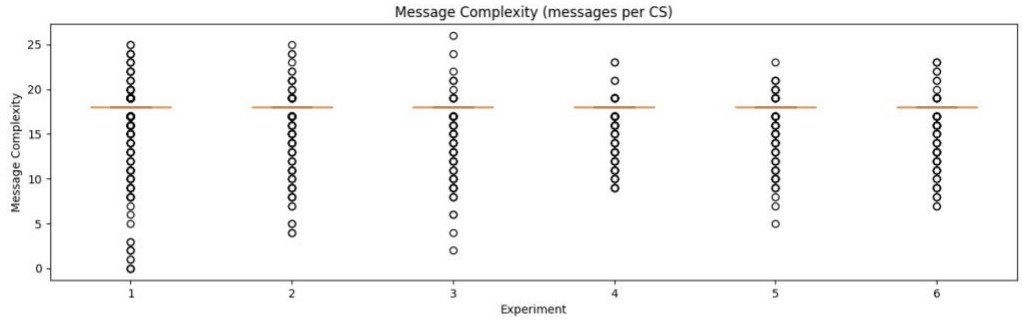
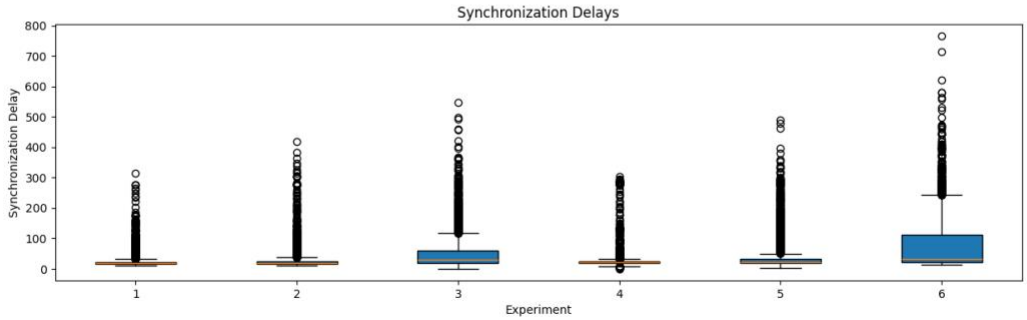
Varying mean CS execution delay:

The first set of line charts shows a linear increase in the average response time as the mean CS (Critical Section) execution time increases, and a similar upward trend in synchronization delay. The second set indicates a sharp decrease in system throughput as mean CS execution time increases, stabilizing after a certain point, while the average message complexity shows a slight initial increase followed by a plateau.

The box plots provide a distribution view of message complexity and synchronization delays across different experiments. Message complexity remains relatively consistent at 17 across the experiments, as indicated by the median line within the boxes.



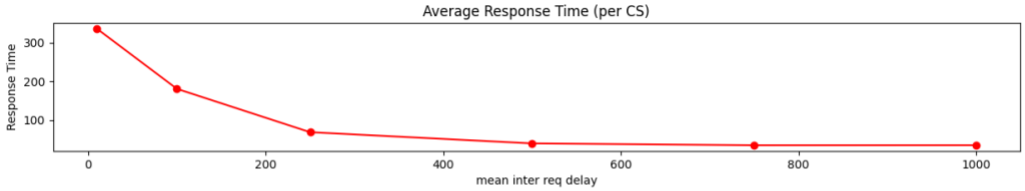


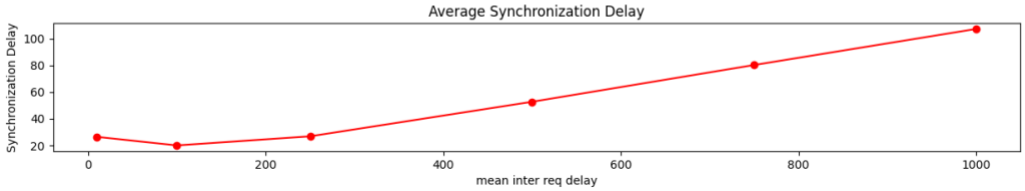


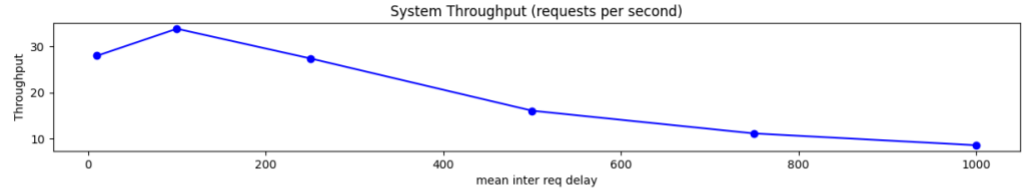
Varying mean inter request delay:

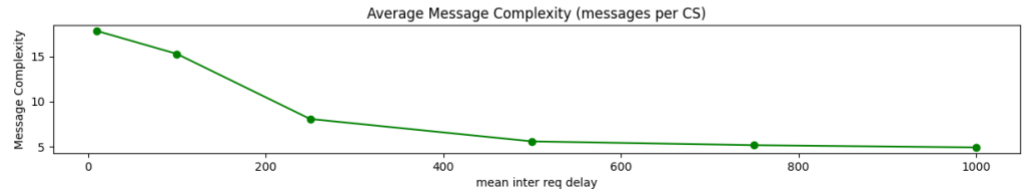
The average message complexity decreases as mean inter-request delay increases, indicating a reduction in complexity with longer delays. Meanwhile, the average response time per CS significantly decreases as the mean inter-request delay increases, suggesting improvements in response times with increasing CS requesting delays. The average synchronization delay exhibits an overall increasing trend with longer inter-request delays, indicating that synchronization becomes more challenging as delays increase.

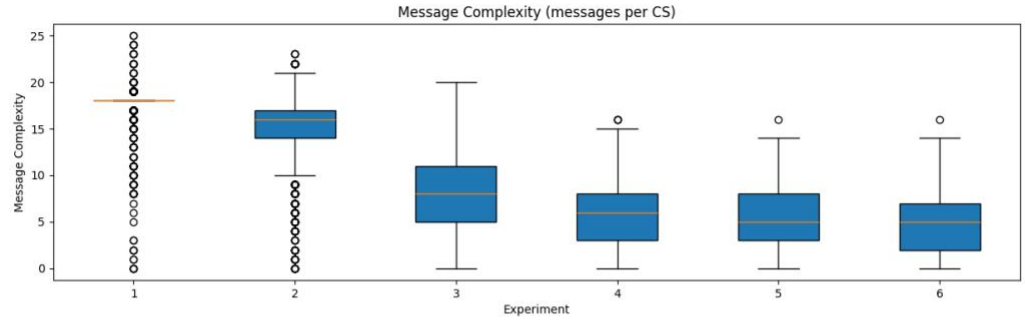
The box plots reveal that message complexity varies modestly across six experiments, with a general trend of increasing median values and interquartile ranges, indicating a slight increase in message complexity as the experiments progress. The synchronization delays show a wide range of values, with several outliers suggesting occasional significant delays.

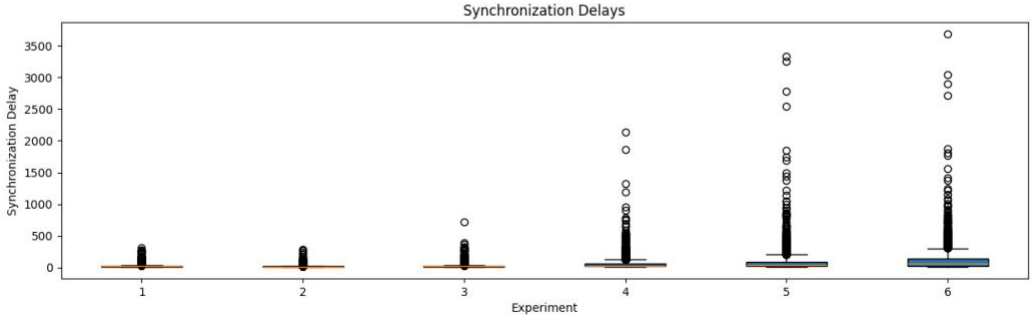

Average Response Time (per CS)
Response Time
300
200
100
0
200
400
600
800
1000
mean inter req delay


Average Synchronization Delay
Synchronization Delay
100
80
60
40
20
0
200
400
600
800
1000
mean inter req delay


System Throughput (requests per second)
Throughput
30
20
10
0
200
400
600
800
1000
mean inter req delay


Average Message Complexity (messages per CS)
Message Complexity
15
10
5
0
200
400
600
800
1000
mean inter req delay


Message Complexity (messages per CS)
Message Complexity
25
20
15
10
5
0
1
2
3
4
5
6
Experiment


Synchronization Delays
Synchronization Delay
3500
3000
2500
2000
1500
1000
500
0
1
2
3
4
5
6
Experiment