COL819: Assignment1

Shubhankar Suman Singh, Venkata Ramana Sreevathsa Meesala

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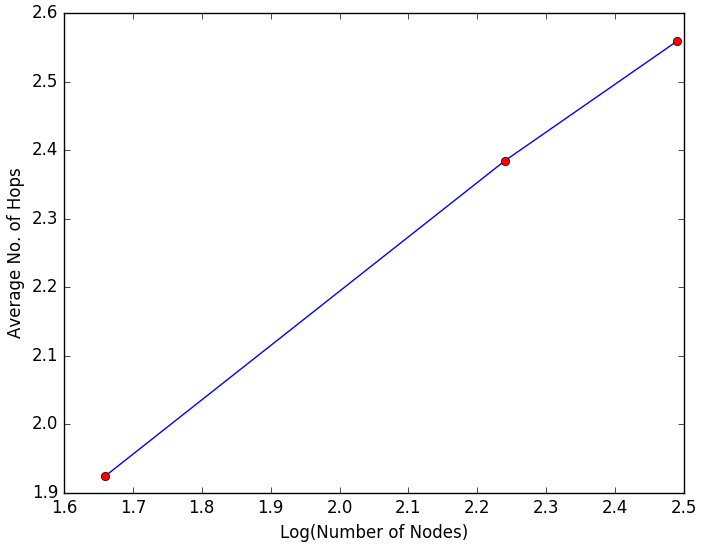
1 Pastry

In this assignment we have simulated a Pastry network. We have added functions for addition, deletion of nodes and search query over a node. Each node has its own message queue and is running on separate threads. For better performance we yield the thread when the queue is empty. We have written a python script (createins.py) to generate instruction for adding, deleting and search query. These instructions are emulated and log files are maintained. Finally, a python script (analysis.py) generates the statistics by reading the logs.

2 Results

The network is simulated for 100, 500 and 1000 nodes. A total of 1 million random searches are simulated. The number of hops for each search is recorded. A graph of average number of hops and log number of nodes is plotted.



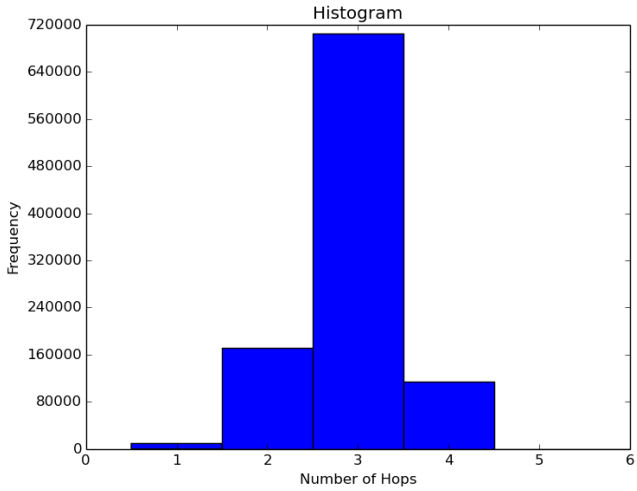


Figure 1: Number of nodes = 100

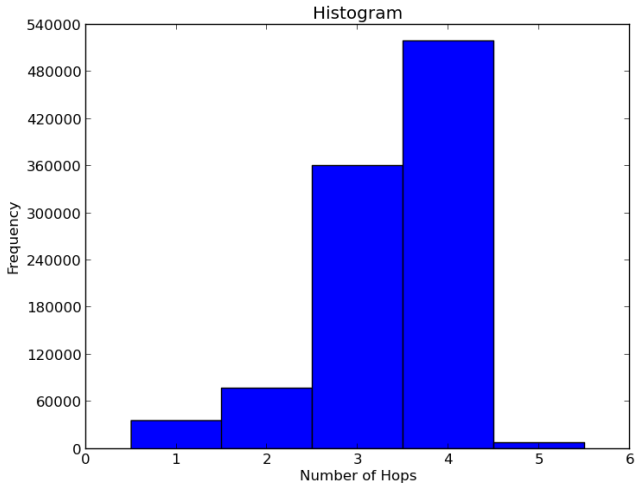


Figure 2: Number of nodes = 500

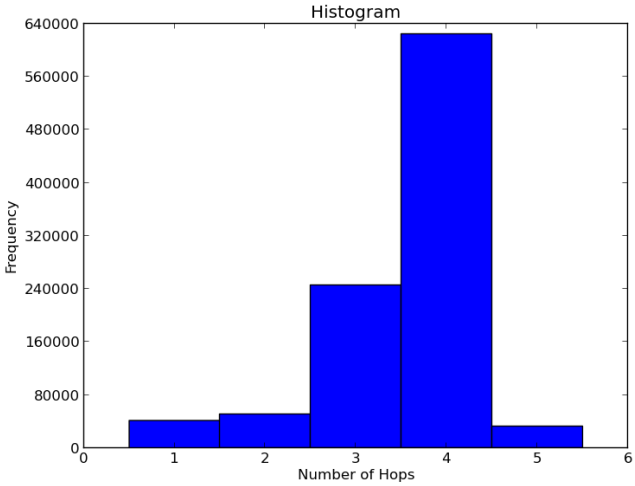


Figure 3: Number of nodes = 1000

100 - 1.25630456313

3 Conclusion

We get a straight line graph of average number of hops vs log(number of nodes). The result matches with the results in the paper provided. From the histogram we can also conclude that maximum number of queries take only 4 hops.