COL819: Assignment1

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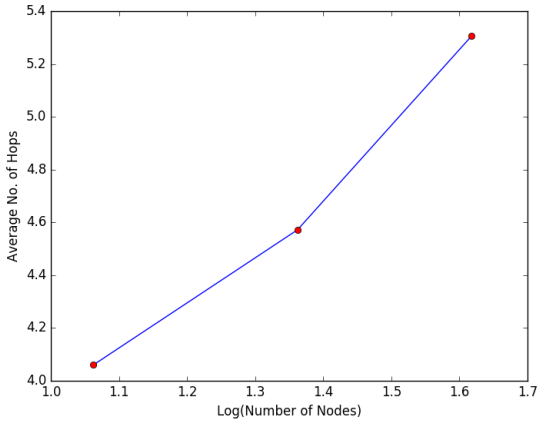
1 Chord

In this assignment we have simulated a Chord network. We have added functions for addition of nodes and search query over a node. Each node has its own message queue and is running on separate threads. 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. Initial chord network starts with 5 pre-defined nodes. Later, more nodes join through request. Search is performed over random nodes.

2 Results

The network is simulated for 20, 40 and 80 nodes. A total of 10K 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



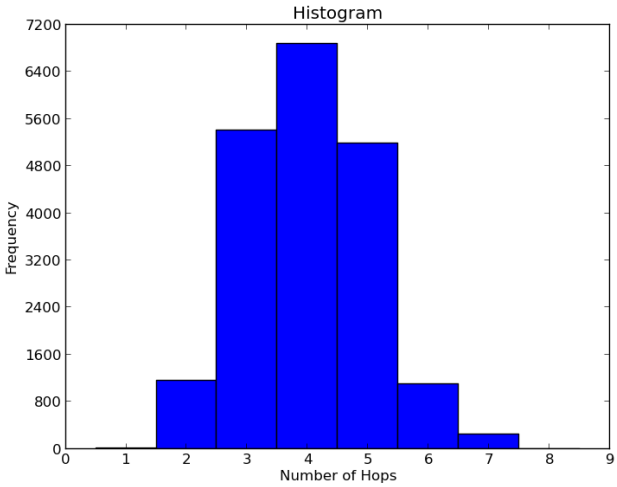


Figure 1: Number of nodes = 20

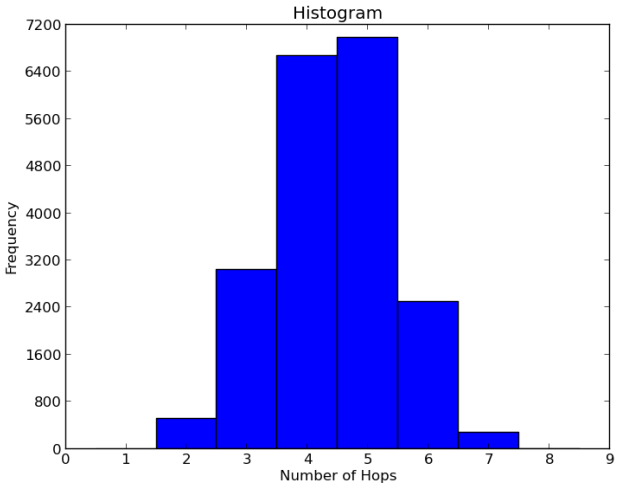


Figure 2: Number of nodes = 40

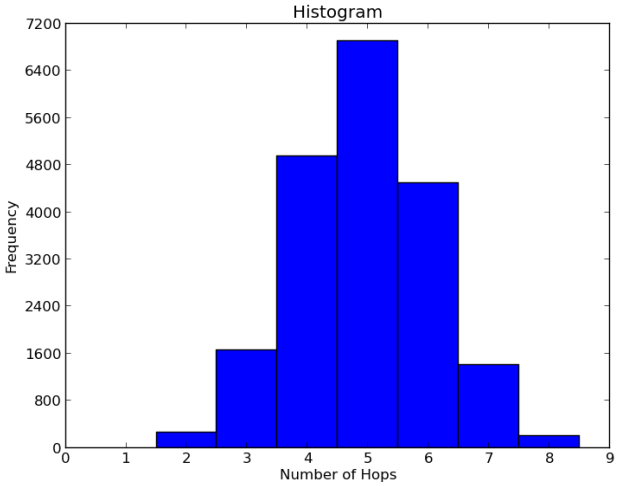


Figure 3: Number of nodes = 80

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.

4 Comparision

- The number of hops for a search is more in chord compared to pastry.
- The code size is smaller in chord.
- Pastry takes more time during joining of nodes.
- Simulation is faster for pastry.