

## DOSP Project 3

Swarnabha Roy, UFID: 3353-8585

### Run Command:

```
dotnet fsi chord.fsx <numberOfNodes> <numberOfRequests>
```

where numberOfNodes is an integer  $> 1$ , and numberOfRequests is an integer which gives the number of requests made by each peer in the p2p system.

### What is working?

All the requirements stated in the project description have been fulfilled and the chord algorithm has been implemented according to the original Chord paper.

An actor is assigned to each peer, ie. nodes in the p2p system. We can store keys on each node, and then perform a lookup to access them.

### What is the largest network you managed to deal with?

The largest network I managed to deal with was 1000 nodes with 10 requests. The average hop count came out to be around 5.83.

The chord implementation has the potential to support significantly more nodes, however, those could not be tested.

### Analysis

\*number of requests = 10 in each case

Number of Nodes	Average Hop Count
10	3.85
100	4.14
500	5.32
1000	5.83

Here we can see a logarithmic trend in the Average Hop Count

For 10 nodes

```
TERMINAL  PROBLEMS  2  OUTPUT  DEBUG CONSOLE

has been constrained to be type 'MessagesMaster'.

0 908021
1 306120
2 1036088
3 115075
4 60902
5 407079
6 308335
7 484430
8 752592
9 193141
Average number of hops = 3.850000
PS C:\Users\hp\Chord>
```

For 100 nodes

```
TERMINAL  PROBLEMS  3  OUTPUT  DEBUG CONSOLE

88 455662
89 472392
90 486473
91 180641
92 891249
93 83739
94 130448
95 939693
96 96953
97 615959
98 991806
99 338265
Total hops = 4136; Average number of hops = 4.136000
PS C:\Users\hp\Chord>
```

For 500 nodes

```
TERMINAL  PROBLEMS  2  OUTPUT  DEBUG CONSOLE

488 177268
489 244232
490 744939
491 338630
492 698434
493 478737
494 667549
495 985120
496 623462
497 439755
498 608332
499 730457
Total hops = 26601; Average number of hops = 5.320200
PS C:\Users\hp\Chord> 
```

For 1000 nodes

```
TERMINAL  PROBLEMS  2  OUTPUT  DEBUG CONSOLE

989 321915
990 465406
991 473153
992 979970
993 82150
994 70971
995 360571
996 940570
997 240088
998 718258
999 17925
Total hops = 5834; Average number of hops = 5.834000
PS C:\Users\hp\Chord> dotnet fsi chord.fsx 2500 100

```