

Dosp-Project 3

Chord Protocol The objective of this project is to implement Chord protocol in F# using actor model provided by Akka.NET framework.

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Instructions for running the code

- Unzip the zipped folder project3.zip
- Run the command `dotnet fsi Main.fsx <numberOfNodes> <numberOfRequests>`
- Both `numberOfNodes` and `numberOfRequests` should be integers else the program will exit with invalid input.

What is working

- Implemented the Chord API which works for routing messages over peer to peer network according to the chord paper.
- The program takes the number of nodes and number of requests and gives the output - average number of hops.
- A key is routed to the closest node by using chord protocol. SHA1 hash function is used for hashing key and node values.
- Each node has a finger table through which the keys are routed. The nodes are placed in a circular ring.
- Stabilize function updates the finger tables of nodes whenever new nodes are added or removed.
- The basic model is working
- The average number of hops is printed at the end.

Largest network

The largest network that we managed to run is **100000** nodes and the average number of hops for it is

1.199. (Refer to the snap below).



DospProject — -zsh — 80x24

: This rule will never be matched

Average number of hops = Average number of hops = 1.194515

1.194743

srisharanyainjarapu@Srisharanyas-MacBook-Air DospProject % dotnet fsi test2.fsx
1000 10

/Users/srisharanyainjarapu/Desktop/DospProject/test2.fsx(167,11): warning FS0026

: This rule will never be matched

Average number of hops = Average number of hops = Average number of hops = 2.563
595

2.563595

2.563595

[srisharanyainjarapu@Srisharanyas-MacBook-Air DospProject % dotnet fsi test2.fsx]
100000 10

/Users/srisharanyainjarapu/Desktop/DospProject/test2.fsx(167,11): warning FS0026

: This rule will never be matched

Average number of hops = 1.199604

srisharanyainjarapu@Srisharanyas-MacBook-Air DospProject % █