README

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Description of the Project

This project implements Chord Protocol which is a distributed lookup protocol that provides support for the operation: given a key, it maps the key onto a node. It hashes the nodes and the keys using SHA1 and then truncates and converts the string obtained through the hashing into an integer. It implements node join operation to join the nodes to the network.

Largest network for which this project was implemented: 10000

Implementation Details:

1. The project folder contains a chord.scala which contains the main class, master class (ChordProtocolMaster) and the worker class (WorkerNode). Open chord.scala in the terminal.

2. **Input** : The input to the file needs to be given as the command line arguments in the following sequence-

                  NumberOfNodes NumberOfRequests

   For example – run 10 1

   Where number of nodes are the nodes in the network and number of requests can start from 0 where 0 signifies that only one node starts with the lookup.

3. **Output :** The output will show the average number of hops per request. Below is the sample output for number of nodes = 4 and number of requests = 1

   > run 4 1
   Welcome to chord protocol system!!
   You enetered numNodes =4
   You entered numRequests = 1
   Going to lookup the file782 starting at the node : 0
   ** Look up for toBeFoundId782**
   Going to lookup the file667 starting at the node : 1
   ** Look up for toBeFoundId667**
   Going to lookup the file768 starting at the node : 2
   Going to lookup the file863 starting at the node : 3
   ** Look up for toBeFoundId768**
   The fileFoundId 782was found on the node 824With total hops =0
   ** Look up for toBeFoundId863**
   The fileFoundId 782 was found on the node 824

nodeId is : 543
nodeId is : 661
nodeId is : 875
 Look up for toBeFoundId667
The fileFoundId 667was found on the node 824With total hops =1
The fileFoundId 667 was found on the node 824
 Look up for toBeFoundId863
 Look up for toBeFoundId768
nodeId is : 824
nodeId is : 543
 Look up for toBeFoundId863
 Look up for toBeFoundId768
The fileFoundId 863was found on the node 875With total hops =4
The fileFoundId 863 was found on the node 875
The fileFoundId 768was found on the node 824With total hops =0
The fileFoundId 768 was found on the node 824
All files found successfully,system shutdown initiated! Please find summary below:
The total lookups done successfully is : 4
The total number of hops for all of them : 5
Average number of hops per request : 1.25
Awesome!!!!! Total time taken for the all the search is : 31 milliseconds