CS358 Computer Networks
Lab Excercises 4
Indian Institute of Technology, Patna
February 8, 2018

Instructions: You have to show the demo to the TA and submit the codes in a tgz file with name assign4.tgz. The submission date is 15.02.2018. Reuse your previous codes to save coding efforts.

1. You have to implement the Chord protocol in the following way. Consider an ID space of 5 bits, so at most 32 computers can be accommodated in the ring. You can consider these devices as different virtual instances created using the virtual box. First write a script to generate around 100 blank files with random names. The objective would be to distribute these files in the instances using the Chord protocol so that searching is efficient. Follow the following steps:

   (a) For every instance, use its IP or MAC address and port number to map the same to a 5-bit ID space using SHA1 or SHA2 algorithm. Applying the same technique, map the files also in the same ID space using the file names.

   (b) You have to arrange the nodes in the form of logical Chord ring and also distribute the files to the appropriate nodes whenever they get booted up.

   (c) Stop an arbitrary instance. The system should automatically reorganize itself after some time.

   (d) In your code, there must be separate options to print the following for any node:
      - Its own IP address and ID
      - The IP address and ID of the successor and predecessor.
      - The file key IDs it contains
      - Its own finger table