Discussion Section 3

Distributed Systems
Spring 2014

Name, Identifier, Address in a DS

e.g :

Name : Wireless Network

Address : 192.168.2.1

Identifier : SSID - UCSB Wireless Web

Problems Chapter 5

Chord System

Q: ***Consider the following Chord system and assume that node 7 has just joined the network. What would its finger table be and would there be any changes to other finger tables?***

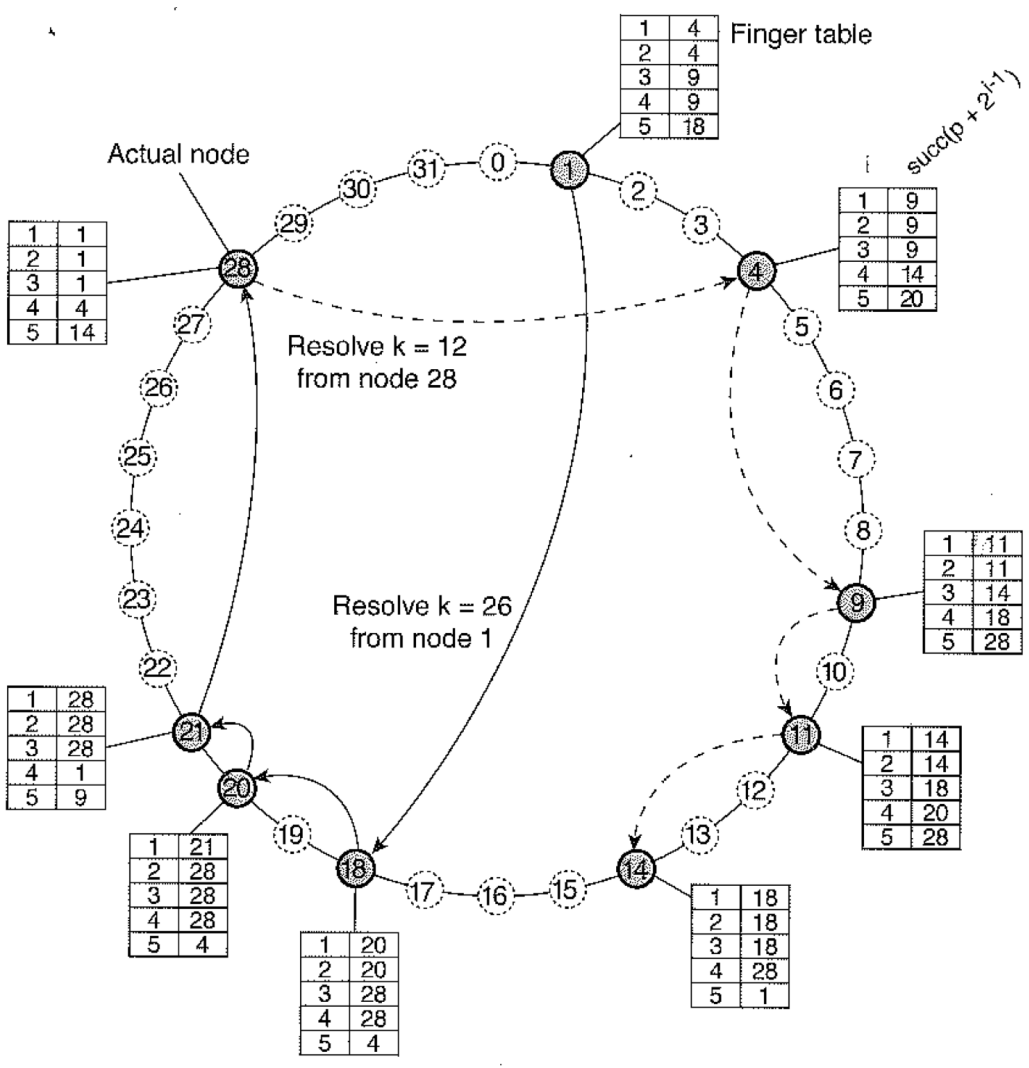
Ans : n<=succ(p + 2^{i-1})

For node 1

1	4
2	4
3	7
4	9
5	18

For node 7

1	9
2	9
3	14
4	18
5	28



Problems Chapter 6

Clock Skew

Q: Consider two machines in a DS. Both have clocks that are supposed to tick 1000 times/ms. One of them does, but the other ticks 990 times/sec. If UTC updates come once in a minute, what is the maximum possible clock skew?

Ans : No. of ticks for clock 1 (in 1 second) = 1000x1000 = 1,000,000

No. of ticks for clock 2 (in 1 second) = 990x1000 = 990,000

So clock skew = 10,000 ticks per second

= 600,000 ticks per minute = 600ms

Problems Chapter 6

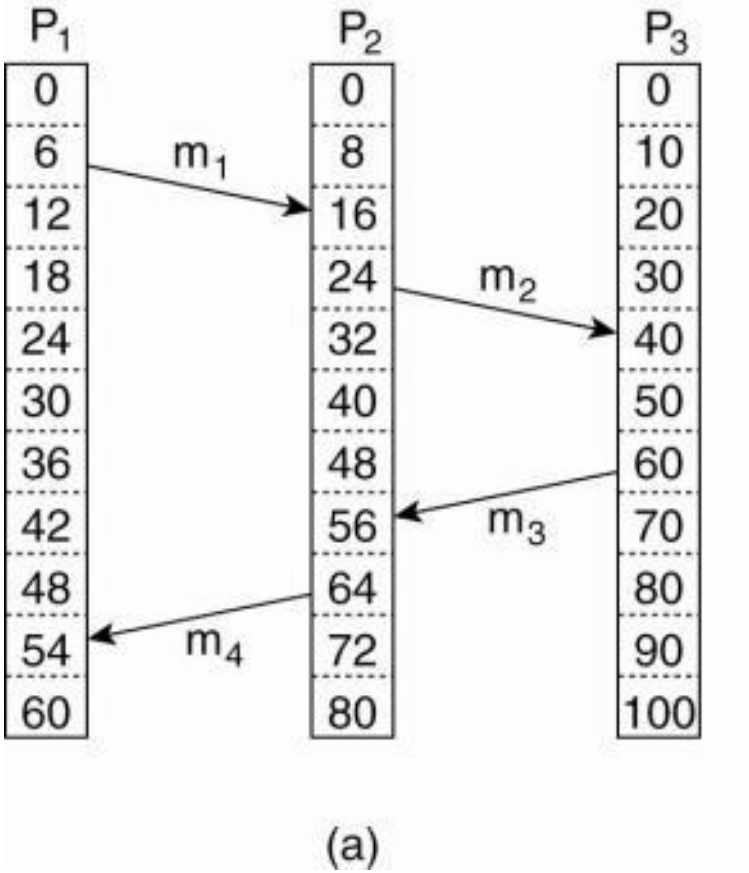
Synchronization

Q : When a node synchronizes its clock to that of another node, why is it a good idea to take previous measurements into account as well. Give an example.

Ans : To avoid any possible errors due to the current reading, we consider previous measurements and average them to minimize errors.

Lamport's Algorithm

Logical Clocks



Problems Chapter 6

Vector Clocks