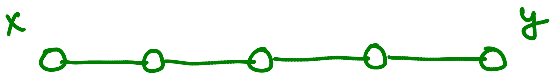
Monday, October 05, 2009
10:18 AM

Consider a simple linear array network



Diameter of the above network is 4
≡ length of the shortest path interconnecting two nodes that are furthest apart in the network.

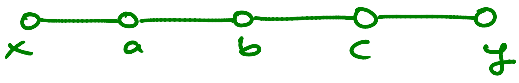
In the network shown above, (x) and (y) are the two nodes that are furthest apart.

It is important to observe that for 5 nodes the above topology gives the connected graph with the largest diameter.

From this example, we can observe that an n node linear array, the diameter is $O(n)$.

After a linear array network boots up, each node knows about its neighbors,

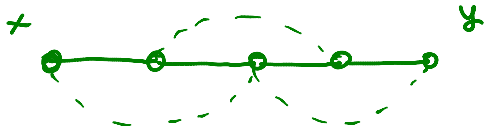
Let there be a flooding, neighbors exchange their tables,



x ⟷ a a ⟷ b b ⟷ c c ⟷ y

x gets to know about b; a gets to know about c, etc

After flooding new (virtual) links can be created.



x can reach any node in at most 2 hops.

Some of these hops are virtual links.

The diameter of the network is ... 2

It has halfed from 4 to 2 in one round.

In the next round of flooding with new link making (we are using swamping) the diameter goes to 1 (a node knows about all other nodes).