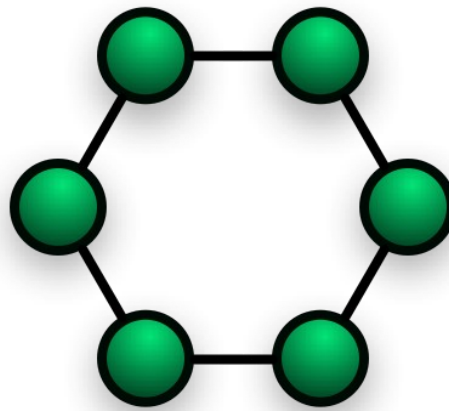**University of Dhaka**
Ring Network Problem

Objectives:

Review of fork(),exec(),signal and TCP socket handling.

Problem specification:

A **ring network** is a network topology in which each node connects to exactly two other nodes, forming a circular pathway for signals - a ring.Here,a sample ring network with 6 nodes is shown below :

In this assignment, you are asked to create such a ring network. At first, a master node is required which creates the other nodes (here, each node is a process running on same machine). Master process listens to a fixed port number, you can choose any port number. Master node creates N node processes. Each of the processes sends it's process id and the TCP port number (in which it is listening) to the master process as a data packet. Master process stores all process ids and port numbers and sorts them in ascending order according to their process ids. In this sorted order, each process gets it's previous process id as predecessor and the next process id as successor. For the last process id, first process id in the sorted list becomes the successor and in the same way, last process id in the list is the predecessor of the first process id. Now, master process sends the predecessor and successor process id of each node process as a data packet to their port number, respectively. Thus, each node process knows it's successor and predecessor and forms a ring network. Then master process creates an empty control packet and injects it in the ring by handing it over to any node process in the ring and after that the master process terminates. Whenever a node process gets the control packet, it appends it's process id to the control packet and passes it to it's successor node process and thus the control packet travels in the ring network. This event continues for T minutes and after that all node

process terminate. Only the process, which has the control packet at termination time, prints the appended process ids in the control packet.

To do:

Maximum control message size in bytes: 64*KB*

Master process name: master.*c*

Node process name: ringnode.*c*

Submission:

Should be completed and demonstrated in the viva.