

FIT1005

Networks and Data Communications

Tutorial – Week 12

Objective of this tutorial:

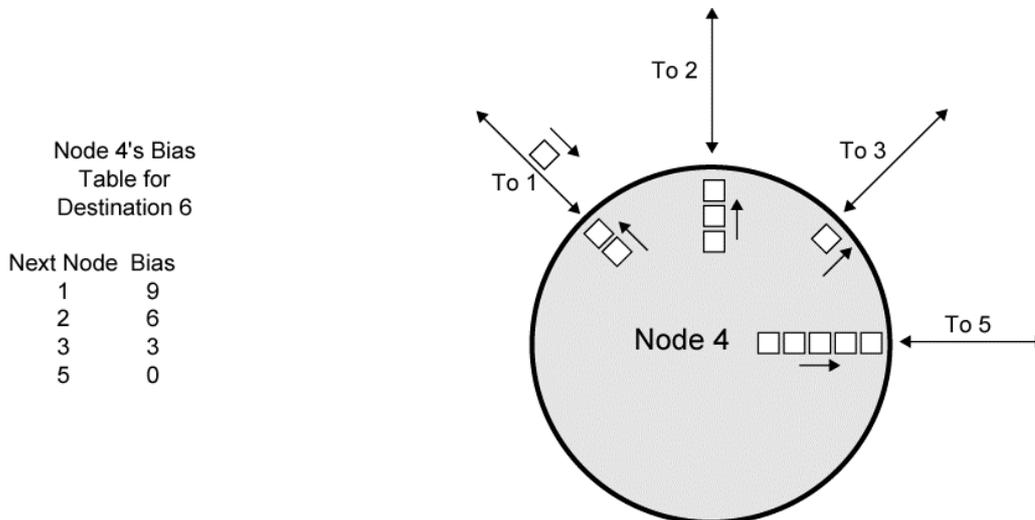
The purpose of this tutorial is to make student revise and reflect on some important concepts related to common routing strategies used.

How to participate in the tutorial:

Form groups of four students in each and discuss the answers for the following revision and reflective questions with the group members. After spending about 20 minutes for each question, discussing with group members, discuss your solutions with the tutor and other groups. The tutor will provide feedback on your solutions.

Revision questions:

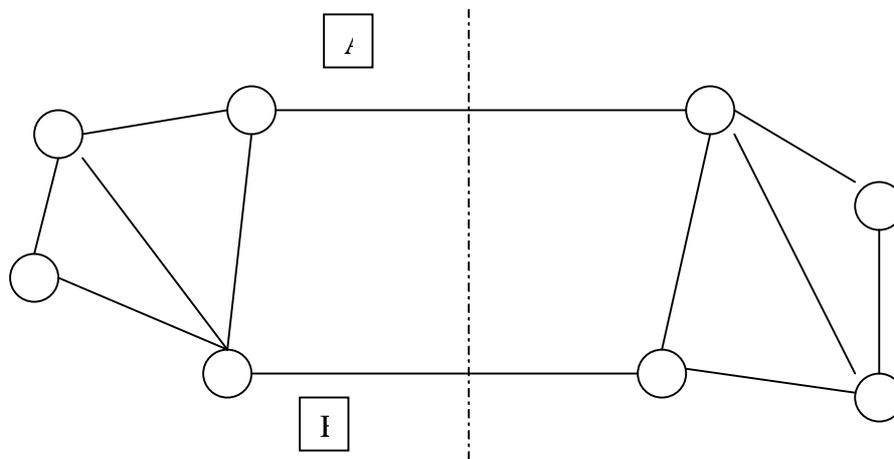
- The following figure shows an example of isolated adaptive routing, in which routing decision is based on the information available at the node in which routing takes place. For a packet headed for node i , the outgoing link is chosen such that $Q + B_i$ is minimised. Q represents the queue size of an outgoing link while B_i is the bias for destination node i . (Note that each square at the node shows a single packet in the respective queues)



- As shown in the above figure, what will be the chosen outgoing link for a packet leaving node 4 to destination 6?
- After a while, the queue size of link 4-5 is reduced to 3. What will be the chosen outgoing link for a packet leaving node 4 to destination 6 now?

2. Consider a network, as shown below, consisting of two regions with only 2 links, A and B, to connect the 2 regions. Assume that a situation develops in which most of the traffic is on link A. This will cause the link delay on A to be significant, and at the next opportunity, this delay value will be reported to all other nodes. Assume that the nodes use a distributive adaptive routing scheme as used in 2nd generation of routing.

- a. What will be the traffic pattern of this network within next several minutes, or possible hours?
- b. The situation that is developed in the situation described in question “a” is undesirable. Elaborate on this.



Reflective questions:

1. Adaptive routing schemes based only on local information, as discussed in revision question 1 of this tutorial, are rarely used because they do not exploit easily available information. Reflect on this.
2. Reflect on the measures that can be taken to avoid situations described in revision question 2 from occurring.