COMP3008J Distributed Systems Tutorial #3.

1. What is routing? What criteria are considered during a 'routing decision'?

2. What is an overlay? Briefly describe what a routing overlay is.

3. Below is the Leaf Set, Routing Table and Neighbourhood Set for a Pastry Node with a Globally Unique Identifier (GUID) of 10233102.

   For each of the following network addresses, identify the next node Node 10233102 would forward the message to.

   - 10233001
   - 10211122
   - 10233102
   - 30233123
   - 10233333
   - 01233333

4. X, Y and Z are processes that use Reliable Multicast for communication between them. The following is a summary of a sequence of messages that are sent by these processes. Sometimes these are not received by one or both of the other processes. We assume that the sequence number for all processes begins at 0.

   1. Y sends message. X and Z both receive.
   2. X sends message. Only Y receives.
   3. Y sends message. X and Z both receive.
   4. Z sends message. Only Y receives.
   5. Z sends message. X and Y both receive.

   - For each message, what is the sequence number and the acknowledgement?
   - What other messages will be sent to make this multicast reliable (you should include these messages in the correct position in the sequence)?

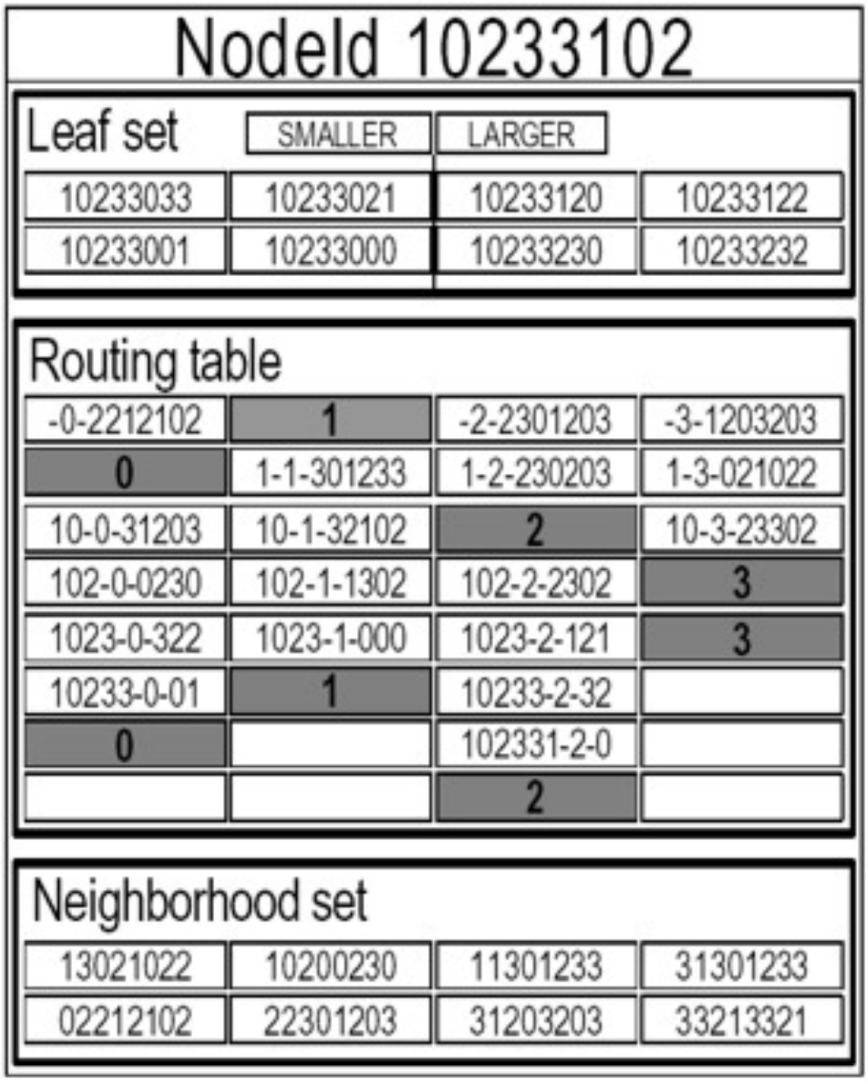

Figure 1: Routing table for Question 5.

5. Briefly explain the gossip architecture. Give an example of when it may be necessary to sacrifice consistency for high availability.

6. What are Symmetric and Asymmetric Encryption algorithms?

7. What are the main differences between capability lists and access lists?

8. What do we mean by public key cryptography algorithms? Why are they generally used?

9. Define the Bell-LaPadula security model.

10. Explain grid computing.

11. What are the primary requirements of a computing grid?