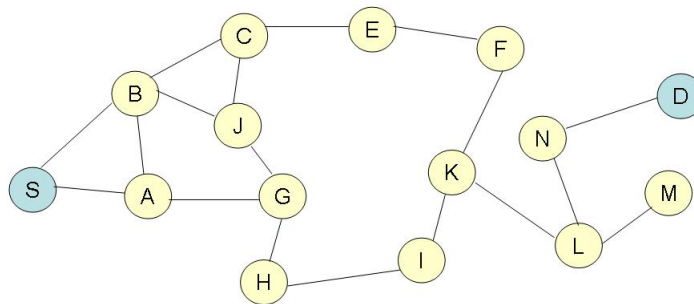Exercises of lecture
Wireless Sensor Networks
Winter 2006/2007
Sheet 13

SECTION 1:
Ad Hoc Routing Protocol

1. One of the popular geographic routing in ad hoc network is called Greedy Perimeter Stateless Routing (GPSR) protocol. It assumes that the location of the destination node is known by the source node, and each node knows the location of its neighbors.

   (a) Consider the sensor network in the following diagram, describe the routing based on GPSR when node S wants to transmit a packet to the destination D.

   (b) What is the drawback of *greedy forwarding* in GPSR?

2. Distance vector routing protocol has the drawback of count-to-infinity. AODV is a well-known ad hoc routing protocol that is based on distance vector. How does it ensure loop-freedom?

3. Consider a small-scale sensor network that consists of six sensors. The following depict the route tables maintained by each node.

Route Table of Node 1:

Destination	Next Hop	Hop Count
3	3	1
5	3	2
4	3	2
2	2	1
6	2	3

Route Table of Node 2:

Destination	Next Hop	Hop Count
1	1	1
5	4	2
4	4	1
3	4	2
6	4	2

Route Table of Node 3:

Destination	Next Hop	Hop Count
1	1	1
5	5	1
4	4	1
2	4	2
6	4	2

Route Table of Node 4:

Destination	Next Hop	Hop Count
1	2	2
3	3	1
5	5	1
2	2	1
6	6	1

Route Table of Node 5:

Destination	Next Hop	Hop Count
1	3	2
3	3	1
2	4	2
4	4	1
6	4	2

Route Table of Node 6:

Destination	Next Hop	Hop Count
1	4	3
3	4	2
5	4	2
4	4	1
2	4	2

(a) Draw the topology of the network.

(b) What is the route followed by the packet if node 6 generates a packet to the destination node 1?