Vincenzo Vitiello
COMP-112
Prof. Couch

Assignment 3

1 (pg 589 #4):

Two examples come readily to mind. First (if the codes aren't all unique) two senders with the same code for example sender one has (1,1,1,-1,1,-1,-1,-1) and sender two has the same (1,1,1,-1,1,-1,-1,-1). Second is if the two codes are inverse of each other for example sender one has (1,1,1,1,-1,-1,-1,-1) and sender two has (-1,-1,-1,-1,1,1,1,1). In each case there is a pair of messages (sent by sender one and by sender two) which will not be decipherable by the receiver.

2 (pg 590 #7):

802.11b data rate = 11 Mbps
Frame length without payload (data to be sent for a control frame) = 32 bytes
payload size = 1000 bytes

Time to send a control frame (RTS, CTS or ACK):
(32bytes * (8bits / byte) ) / 11 Mbps = 23 micro seconds
Time to send the data:
(1000bytes * (8bits / byte) ) / 11Mbps = 750.55 micro seconds

The sequence of the message is as follows (and can be seen in figure 6.12 in K&R):

Total time = DIFS + T(RTS) + SIFS + T(CTS) + SIFS + T(DATA) + SIFS + T(ACK)
Thus,
Total time = DIFS + 23 + SIFS + 23 + SIFS + 750.55 + SIFS + 23
Total time = DIFS + 3*SIFS + 819.55 micro seconds

3 (pg 592 #11):

A. No, because the system uses distance vector routing, the foreign network containing the mobile node will broadcast a highly specific path to the mobile node to it's neighbors and then it will take some time for the new routing information to propagate throughout the network.
B. No, because only the one network currently containing the node will broadcast a highly specific route to the mobile node while all prior networks will cease broadcasting a route. Also, in the distance-vector model, the old routing information will be overwritten by the new routing information once the information propagates to a given router (the information of the old and new networks will not be contained at the same time within any given router).

C. Since the system uses distance vector routing, the time it takes to update the routing information (propagate the changes) will be roughly equal to the diameter of the routing network.

4 (pg 593 #15):

Yes, when a mobile node enters a foreign network it must select a COA from a list of COAs in the agent advertisement ICMP message. This COA is merely a means of the mobile node's home network of locating the mobile node. As such two mobile nodes may select the same address without a problem since their is other important information in the ICMP message and because the foreign router will then handle routing information to the individual mobile nodes.

EC (pg 590 #5):

A. No the protocol will not break down since the two AP's still have unique identifiers (MAC address) and only the AP associated with the correct station will respond to requests from that station etc. However, there will be a performance loss as there is more traffic on the channel (11).
B. Both performance and reliability will improves since the two APs are no longer monitoring the same channel (less traffic on each AP).