Homework 5
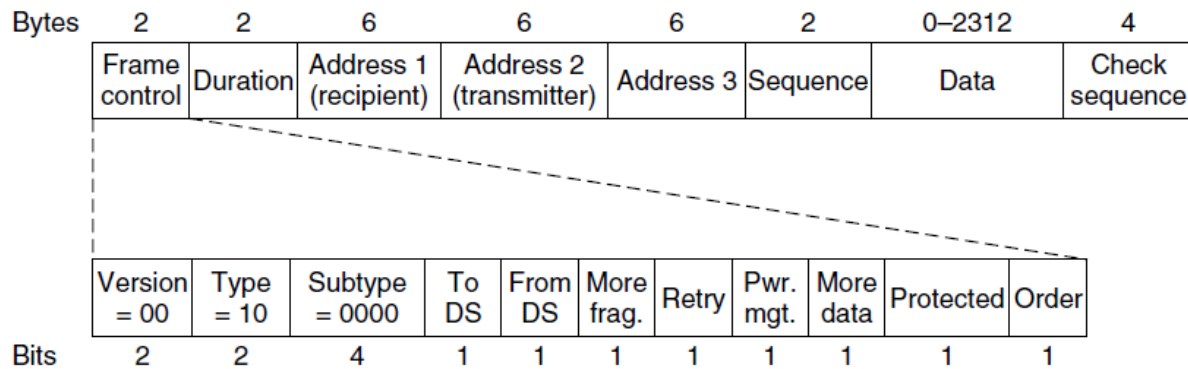
Networking

Problem 1:

A IEEE 802.11 frame has been captured. Its contents are given in hex.

```
88 42 30 00 38 f9 d3 90    56 5a 64 a5 c3 69 52 4d
64 a5 c3 5e ac 95 30 ca    00 00 9b aa 00 20 56 00
00 00 c2 99 19 cd bf 61    68 9f 82 f0 08 f3 66 63
...
```

Notice: Each byte (not hex digit) is captured in reverse order from the bit order given in the

Bytes	2	2	6	6	6	2	0–2312	4
	Frame control	Duration	Address 1 (recipient)	Address 2 (transmitter)	Address 3	Sequence	Data	Check sequence

Version = 00	Type = 10	Subtype = 0000	To DS	From DS	More frag.	Retry	Pwr. mgt.	More data	Protected	Order
Bits 2	2	4	1	1	1	1	1	1	1	1

following diagram.

Determine the type of package (traveling inside a BSS, traveling from DS to station, traveling from station to DS, or going from AP to another AP), destination, source, and AP address.

Problem 2:

Wireless stations A and B can communicate with the access point AP, but not with each other. For example, A cannot overhear any signals from B. Assume that A wants to send a data frame to the AP, starting with a RTS frame. Shortly afterwards, B also wants to send a data frame to the AP, starting with an RTS frame. Give a scenario where B ends up waiting for A and another scenario where B ends up interfering with A's transmission.

Problem 3:

Run the distributed spanning tree protocol for the following network. Nodes (hexagons) are labeled by their ID.

Show the budding spanning tree after each step, explaining what all nodes do.