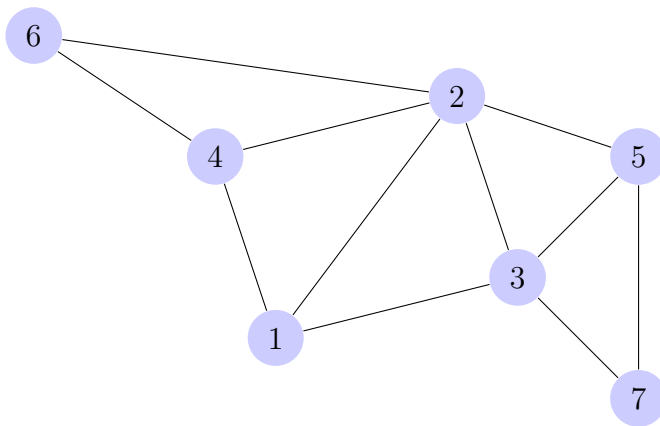
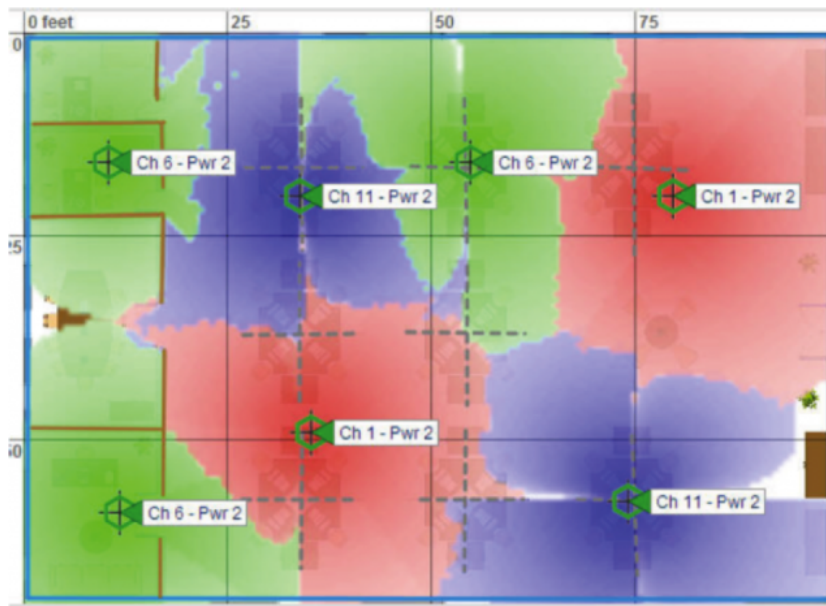


1. Course Handout: Topic 4, Question 11, 12
2. A standard Ethernet frame consists of a number of fields.
 - (a) Explain why the source address field is important.
 - (b) If a user only knows the IP address of a host on the network and not its MAC address, how does the computer know what to put in the destination address field?
 - (c) Give a reason why it makes sense for error detection to be implemented in the Ethernet link layer rather than in the network layers above.
3. Consider the following topology of devices within a LAN.



- (a) If the circles represent Ethernet hubs, what problem will arise?
 - (b) If the circles represent Ethernet switches that implement the spanning tree protocol (the switch IDs are the numbers within the circles, assume all links have a distance of 1), what is the resulting spanning tree that is formed?
 - (c) How does the tree change if switches 1 and 3 are removed?
4. A common recommendation for setting up Wi-Fi access points in a building is to give adjacent APs different channels as in the figure below. Another recommendation, which seems counter-intuitive at first, is to *reduce* the transmission power of each AP for better performance. Explain why these recommendations make sense within the context of a building.



5. Layer 2 switches and Layer 3 routers have similar functionality in that they take a packet of data coming in on one port and send it out on a different one. Where there is a switch in a network, it is usually possible to replace it with a router and vice-versa.
- What are the pros and cons of switches vs. routers when considering management and set-up?
 - What are the pros and cons of switches vs. routers when considering network size?
 - What are the pros and cons of switches vs. routers when considering the path a packet takes when traversing the network?