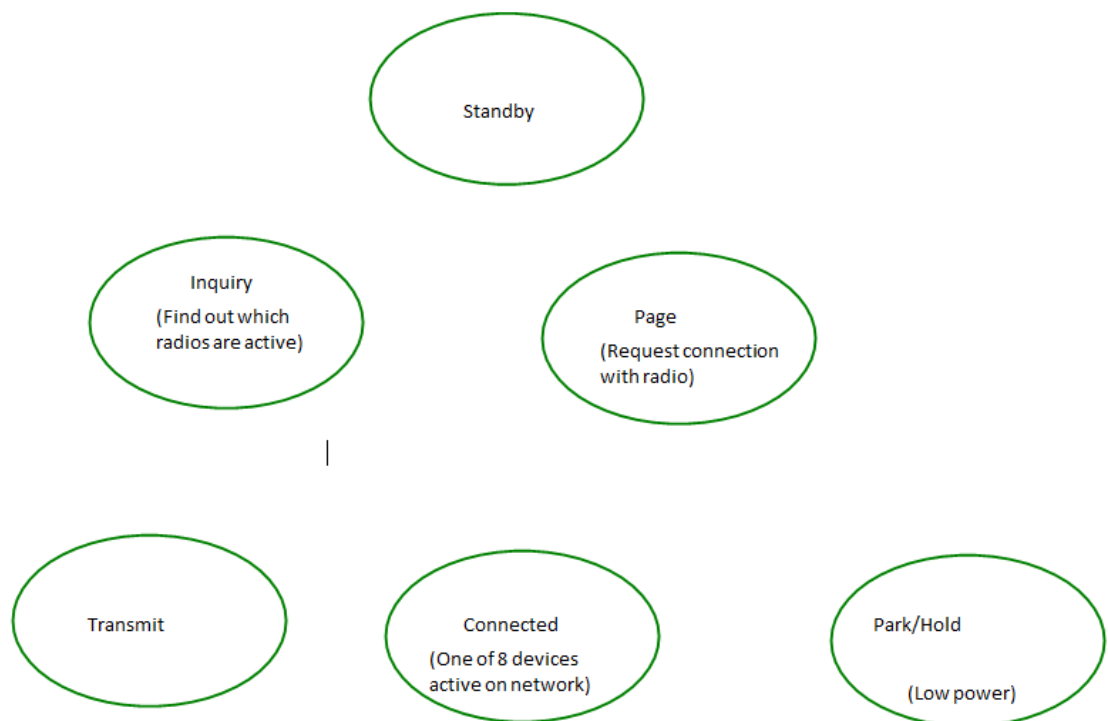
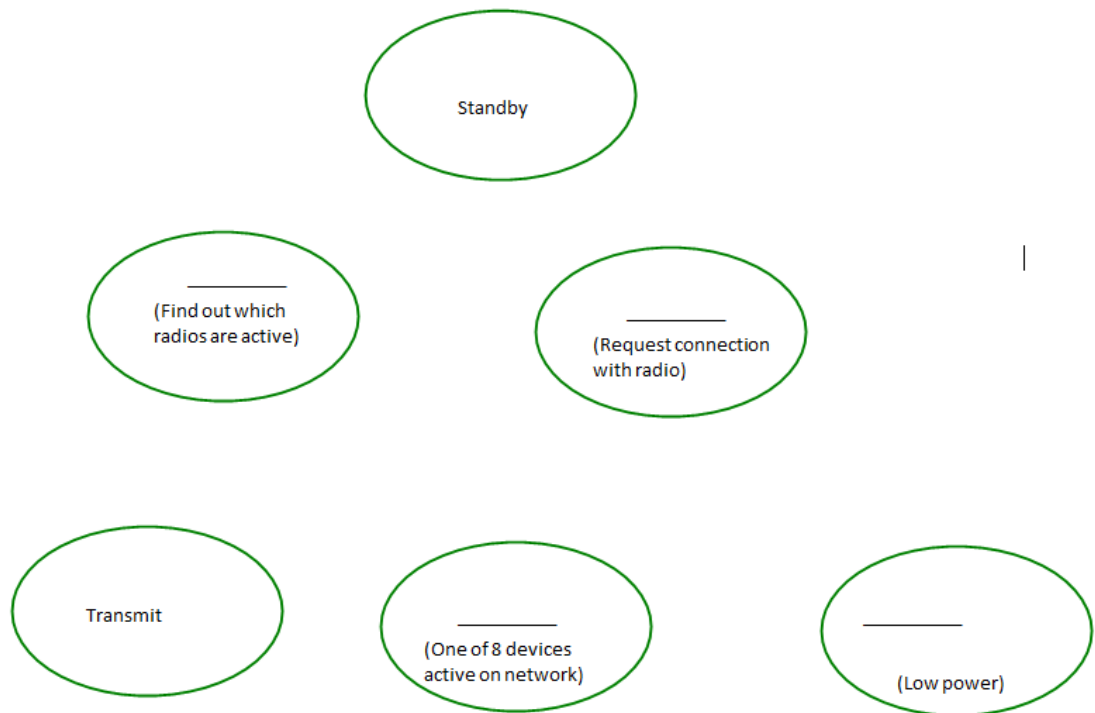


1. A group of Bluetooth devices (a master and slaves) is referred to as what?
2. All devices in a piconet are synchronized to what?
3. At least how many satellites must be used for GPS to work? (Why)
4. At what rate does a GPS satellite continuously broadcasts a navigation message and what is each complete message composed of?
5. Bluetooth operates at what frequency?
6. Bluetooth operates in the ___ band
7. What was the original use for Bluetooth?
8. Compare and contrast the operation of a servo to the operation of a DC motor.
9. Convert the following Degrees, Minutes GPS message to Decimal format:
4302.35 N 8755.65 W
10. Describe the inherent physical difficulties with using sound waves (ultrasonic sensors) to detect the environment.
11. Disregarding propagation delays, one GPS satellite would allow you to find (a/more than one) ___ on which you can be located (why)
12. Disregarding propagation delays, three GPS satellites would allow you to find (a/more than one) ___ on which you can be located (why)
13. Disregarding propagation delays, two GPS satellites would allow you to find (a/more than one) ___ on which you can be located (why)
14. Draw arrows pointing from each state to all possible subsequent states.



15. Draw out the Bluetooth connectivity process. (Hint: 5 Phases plus Transmittal)
16. Draw out the encapsulation of application data descending through the protocol stack and label the layers.
17. Draw the state diagram for a Bluetooth network, including the following states: Standby, Inquire, Page, Transmit Data, Connected, Park/Hold. Explain what each state means.
18. Explain the central issues with determining position from GPS that lead to multi-second acquisition time.
19. Fill in the blank state names with accompanying descriptions.



20. How can multiple Bluetooth devices not interfere with one another?
21. How do Bluetooth devices on the same piconet stay together as they jump between the various frequencies?
22. How do the ultrasonic range sensors work? Include how they work in relation to OpenVex.
23. How does JNI work?
24. How is the hopping pattern determined in a Bluetooth network?
25. How many devices can Bluetooth connect up to?
26. How many devices can one Bluetooth network contain?
27. How many frequencies are possible in the Bluetooth band?
28. How many GPS satellites are currently in orbit and healthy?
29. How many planes are in GPS? and how many satellites are in each plane?
30. How many satellites does it take to get a GPS location?

31. How do the shaft encoders work? Include how they work in relation to OpenVex.
32. Identify the major advantages that Bluetooth has over Wi-Fi.
33. Identify the major advantages that Wi-Fi has over Bluetooth.
34. In OpenVex, what does it mean when the robot is in autonomous mode?
35. In the knock knock code, what class implements the protocol that the client and server use to communicate?
36. True or False. The baud rate of the VEX robot is 19,200. If false, explain.
37. Up to how many devices can there be in a Bluetooth ad hoc network?
38. What advantages does putting optical encoders on the axels of the Vex provide?
39. What are the three messages that satellites continually transmit to a GPS device?
40. What are the three steps you must take to pipe two processes
41. What are the three things that GPS is made up of?
42. What band does Bluetooth operate in?
43. What band does Bluetooth operate on?
44. What class implements the client program that speaks to the KnockKnockServer?
45. What concept (developed by Einstein) must GPS satellites use to keep correct time?
46. What do DHCP and DNS stand for and what do they do?
47. What does FHSS stand for and how does it work. What is accomplished with this?
48. What does GPS stand for?
49. What does TCP/IP stand for and what is it?
50. What does the term asynchronous mean, as it relates to receiving signals from the ultrasonic sensor?
51. What four aspects of the receiver are tracked by the GPS satellites?
52. What is a socket and how was it used in the project?
53. What is bluejacking?
54. What is spread-spectrum frequency hopping and how is it useful?
55. What is the ISM Band that Bluetooth uses?
56. What is the JNI and what steps must you go through to use this capability
57. What is the minimum number of GPS satellites with line of sight needed to provide information?
58. What is the program memory capacity and clock speed of the Vex processor?
59. What is the role of the Master in a piconet?
60. What is the transfer rate of Bluetooth 2.0?
61. What three major segments make up the current GPS system segmentation?
62. When programming an Android application to work with Wi-Fi and or GPS, what must you do to the AndroidManifest.xml file?
63. When writing code for a client socket, what are the 5 basic steps to follow?
64. Who created the first GPS and how many satellites did it have?