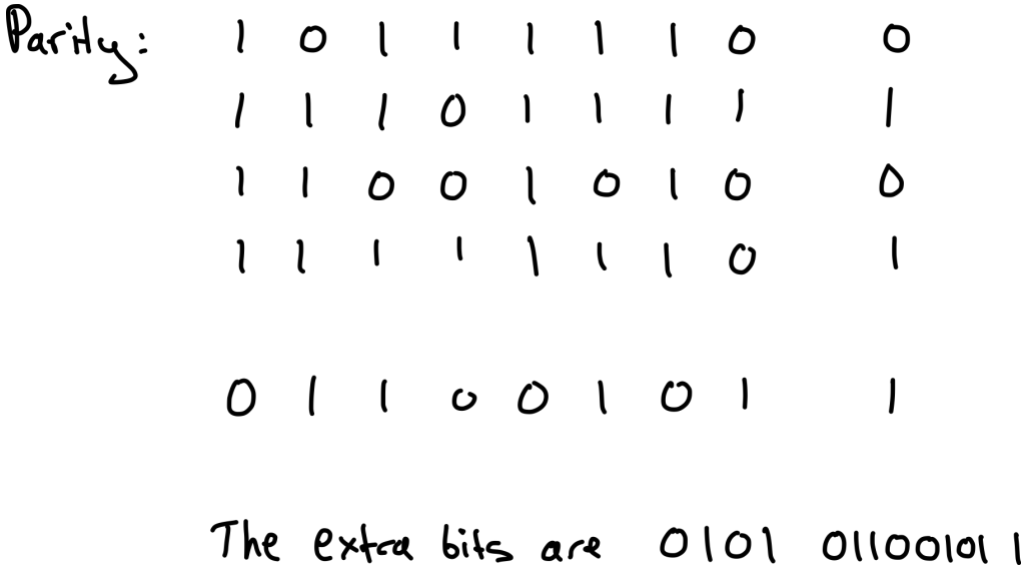
1)



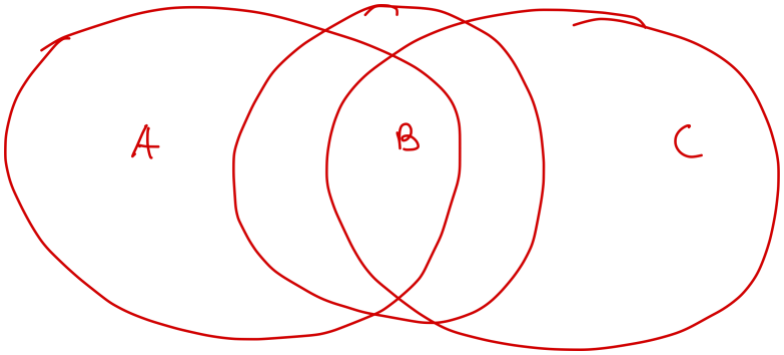
2) Link Layer Protocols pt. 1:

The Ethernet manages link access through CSMA/CD (which stands for carrier sense, multiple access, and collision detection). The Ethernet protocol does not have methods in place to stop a collision, but it can detect them. When a collision is detected, the transmission is stopped and then a 32-bit "jamming" sequence is sent. The host then has to wait and then retry. The waiting time increases after each retry ("exponential backoff"). A host can retry up to 16 times.

3) Link Layer Protocols pt. 2:

1. Hosts are not attached to a wire, so they are not able to listen to transmissions sent by other hosts.

2. "The hidden node problem." Hosts A and C can collide at B without sensing each other.



802.11 is a CSMA/CA protocol where CA means “collision avoidance.” To avoid collisions, 802.11 uses RTS-CTS where senders transmit a “ready-to-send” packet. The receiver will respond, and other hosts will know to wait briefly. The host can send if the receiver responds with a “clear-to-send.” RTS-CTS also includes acknowledgements, timeouts, and exponential backoff.

4) MAC addresses:

MAC addresses provide each host with a unique identifier. This allows hosts to send information to one another. Otherwise, a host would not know where to send a specific packet because there would be no way to identify the recipient.

MAC addresses are burned into ROM and each manufacture is given a specific subsequence of bits to implement in all of their unique 48-bit MAC addresses.