Sprint 2 Deliverables Solutions

Parity

1	**0**	**1**	**1**	**1**
1	**1**	**1**	**0**	**1**
1	**1**	**1**	**0**	**1**
1	**1**	**1**	**1**	**0**
1	**1**	**0**	**0**	**0**
1	**0**	**1**	**0**	**0**
1	**1**	**1**	**1**	**0**
1	**1**	**1**	**0**	**1**
0	**0**	**1**	**1**	**0**

In order to use the 2-D Parity Check algorithm for error correction, you would have to include an additional 13 bits of data.

Link-Layer Protocols

Ethernet manages access to the link by using this algorithm for transmitting data from adaptors:

1. If a host detects that the line is idle, it will transmit.
2. If the line is busy, it waits until the line is idle.

In the off chance that two transmissions collide, both adaptors send out a 32-bit jamming sequence to let the other adaptors know that there was a collision. From there, both adaptors wait a certain amount of time then attempt to transmit their data.

Collision avoidance for 802.11 is more challenging than for Ethernet because of the hidden node problem and the exposed node problem. The hidden node problem is when two hosts happen to transmit to a middle host, a collision may occur because they did not detect that the other was transmitting because they are out of range of each other. The exposed node problem is when host A is attempting to transmit to host B, which is out of the range of host C. Host C mistakenly not transmit because it hears that host A is attempting to transmit. 802.11 uses an RTS-CTS in order to confirm that they can successfully transmit without collision and an ACK for confirmation of receiving the packet.

MAC Addresses

MAC address is a unique 48-bit ethernet address that is set by the manufacturer of the computer's ethernet card. It is used to easily identify computers on a network in order to send transmissions from one host to the other without everyone having access to the contents of the transmissions.