Lab 12

Question 1

Client server architecture

Positives

1. All of the data is centralised within the company which can make it easier to track as well as give back to the players as you know the correct version of the game should be the one that is on your server.
2. It is more secure as you are able to manage all of the servers yourself instead of having players connect directly to each other which could allow hackers to get into people's data directly.
3. if you set up the servers correctly, it can be more accountable as well as more stable as it is less coupled with the internet connectinos of all the players in the game, i.e. a players' bad connection won't affect anyone else in the game.
4. Well known port numbers
5. Can work with a more wide range of internet capabilities as players don't have to act as a host/server.

Negatives

1. Centralised and less robust. Efficiency and reliability dejpends on the quality of the servers and if there are any backup servers.
2. A popular game will have more congestion which can lead to slower games or games that have to send more data.

Peer to Peer

Positives

1. Decentralised and more robust. No single point of failure so if the host disconnects you can just pick back up by picking someone else to be the new host.

2. It is more easily able to deal with more data in more data intense games which means that it can be faster.

Negatives

1. Decentralised data. Requires more redundancy and harder to maintain and sync between all players as you continually have to send data between all of the players to make sure that it plays well. This can mean less accountability and less stability.
2. Transactions are not recorded so it is harder to trace.
3. Peers need to be fairly compatible.
4. Peers need to find eachm no well-known ports.

Question 2

Host A is the authorative host. Host B connects to host A. Host C connects to host A too. Host A knows the data (ip address, port numbers) of the hosts that are connected to host A (host B and C). Host A gives the data of host B to host C and vice versa so that the two hosts can connect to each other.

Question 3

UDP hole-punching is a technique that allows a packet to be sent from an outside system by punching a hole in the firewall of the network.