Lab 14

a) Latency cannot be fully eliminated. One of the reasons is due to the transmission delay. What I mean is that there will always be a transmission delay when someone is sending packets to a server for a game. This delay can be mitigated through a faster network but cannot be fully eliminated. Another reason is because of propagation delays due to communications connections and speed of light delays. My last reason is because of data manipulation algorithms such as compression algorithms.

b) One problem in games in relation to consistency is players picking up items, such as in halo multiplayer, where players need to pick up weapons to fight players. For example, let's say player A has a latency of 100m/s and player B has a latency of 50m/s. If both players rush to pick up the same item at the same speed. Player A will pick up the item faster than player B because of the better latency. Which results in consistency problems in games.

c) dumb client is a conservative technique for consistency management. client-side prediction is an optimistic technique for consistency management. The idea of the dumb client approach is where a client sends input to server, the server then re-calculates states and sends it to other clients. Then the clients just render's the state as is from the data received from the server. The client-side prediction is an approach where clients will send data to the server but will immediately apply them locally to update their own state. The server, because of this, can overwrite player input if a simulation on the server side has a constraint that the client does not know about yet. So, when the clients receive an update of data from the server. The clients will check if it differs from their own local state, if it is then correct that state.