**Lab 7**

1. Can latency be eliminated completely? Explain why.

* No, latency cannot be eliminated completely, latency delay is the time it takes information to be transferred over a distance either through wireless signals or physical cables such as copper or fiber optic, the fundamental laws of physics restricts this information transfer to a set speed.

1. Use an example (shooting round corners/fire-proof problem, etc.) to illustrate how latency is related to consistency? Use diagrams if appropriate.

* Due to the delay in data transfers between multiple clients and the server the current game state for each player is likely not the exact same. What they see locally is ahead of the information on the server and even further ahead again of what other players on their own clients are seeing.
* For example, Player A sees Player B around a corner exposed. Player A shoots and on their client sees the bullet hit Player B, by the time the server receives the input, Player B has taken cover, therefor the server determines Player B had taken cover before receiving the shot input from Player A and no damage is dealt.
* This may lead to a frustrating experience for players as they will be led to believe the game is unfair or buggy.

1. There are two categories of techniques for consistency management: optimistic and conservative. Which category do the following techniques belong to: dumb client and client-side prediction. Describe the dumb client and client-side prediction.

* Dumb Client = Conservative.

The client relies on the server for processing game logic and updates, this allows for across the board consistency with all clients but will increase the latency as clients will have to wait for the server’s response to update the game state.

* Client-side prediction = Optimistic.

The client predicts the outcome of user’s actions and will update the game locally immediately, the server then later confirms or corrects the prediction. Improved responsiveness but can cause temporary inconsistencies across clients.