**Lab 6**

1. Two types of NetworkVariable in unity each with a use case:

* NetworkVariable<T> is a basic type to hold values such as int’s or string’s its used for simple data synchronization.

An example would be to use it to sync a players health or score across all clients and the server.

* NetworkVariavle<Vector3> is used to synchronize a more complex data type Vector3’s.

This can be used to synchronize players positions, rotations and scaling in a 3D environment.

1. Five networking attributes in Unity net code for game objects:

* 1 - ServerRpc:

Allows the clients to send requests or commands to the server for execution. EG: A client could request to open a door, and the server will check if that’s allowed and proceed accordingly.

* 2 - ClientRpc:

Allows the server to send commands or data to all connected clients.

EG: The server could call to update the Ui across all client’s games such as displaying leaderboard information.

* 3 - NetworkVariable:

These variables are automatically synchronized. Any changes in their values are reflected across all clients. EG. Player positions should be synced for all other players.

* 4 - RequiredOwnership:

This attribute ensures an object can only be interacted with by the client that ‘owns’ it and prevents other clients from using it. EG. The driver of a vehicle should be able to control it while the passengers should not.

* 5 - NetworkStart:

Applies initial network configurations to the object at start insuring its set up. EG. Applying the players starting position once they join the game.

1. Roles of ServerRpc and ClientRpc in an online game:

* ServerRpc: Allows the clients to send requests or commands to the server for execution. EG: A client could request to open a door, and the server will check if that’s allowed and proceed accordingly.
* ClientRpc: Allows the server to send commands or data to all connected clients. EG: The server could call to update the Ui across all client’s games such as displaying leaderboard information.

1. Roles of the NetowrkManager component in Unity:

* Creates and manages server and client instances.
* Facilitates hosting and joining of online games.
* Management of network objects, spawns tracks and synchronizing objects across clients.