NETWORK
2nd Term AY 2016-2017

Game Network Programming

Machine Problem

Your task is to create a local area network game using UDP. You can use any game you have used in other classes. The machine exercise must be done in groups no greater than three members.

Protocol (30%)

In computer networking, a protocol determines the rules on the format and semantics of the messages sent between two entities. The protocol also explains the request/response interaction of the messages between peers. For this machine exercise, you will be designing your own protocol and document in as a Request-For-Comment (RFC). The designed RFC must be completely adhered to. You will have to demo all the messages in your protocol to show that they are working.

Game Requirements (35%)

The game that you'll be making should be able to connect to at least 4 clients simultaneously (10%). Each player must have a profile (10%), including a profile picture, that the client will send to the server and can be retrieved by any client (for peer to peer application this should be sent directly to other peers) (15%).

Client-Server or Peer to Peer Application (5%)

You must decide whether you will use a client server model or a peer-to-peer model. The decision should be justified. For the client-server model, two separate programs should be used, a server and a client. The client must connect to the server to join the game. The server should be able to handle at least four players. In the peer to peer model, peer churn must be anticipated and dealt with accordingly and must be able to handle four peers simultaneously.

Reliable Data Transfer (40%)

UDP is unreliable by itself. One of your task is to provide reliability to your application by following the Reliable Data Transfer Concepts, like **Stop-And-Wait** (10%), **with pipelining** (10%), **cumulative acknowledgement** (10%) and **flow control** (10%)

Bonus points will be given for game creativity and complexity and for graphical user interface. The top 3 games will be awarded with additional 15%, 10%, and 5% respectively.