Documentation
CSS 432 Computer Networking
Term Project: Tic Tac Toe
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<Overall Description>
This is multiplayer 'Tic Tac Toe' game utilizing client and server network architecture. The codes were written in Java under oracle JDK version 1.8.0 191. The repository is available on git hub: https://github.com/kharam1436/tictaktoe.git.

<Protocols>
The application protocols defined in the Message Control Interface; Following lists are the defined protocols for the administrative and the game protocols. Transmission Control Protocol (TCP) is used for the transport layer. This is implemented in Java's object and the data socket stream. Finally, for the sign up and sign in process, password is encrypted in the process of the data transfer. This is implemented as one of the symmetric key data encryption algorithms AES.

- Sign Up
  - Sign up request = 2;
  - sign up success = 103;
  - Sign up fail = 104;
- Sign In
  - Sign in request = 1;
  - Sign in success = 101;
  - Sign in fail = 102;
- Room List
  - Room List Request = 5;
  - Room List Response = Room List Object;
- Create Game
  - Create Room Request = 3;
  - Create Room Success = 105;
  - Create Room Fail = 106;
- Join Game
  - Join Room Request = 4;
  - Join Room Success = 107;
  - Join Room Fail = 108;
- Exit Game
  - close = 0;
- Deregister
  - Deregister Request = 7;
  - Deregister Success = 109;
  - Deregister Fail = 110;
- Tic Tac Toe Protocol
  - Player 1 = 10;
  - Player 2 = 20;
  - Player1_won = 30;

- - - Player2_won = 40;
    - Draw = 50;
    - continue = 60;
  - Error = -1;

\<Compilation\>
- javac gameserver.java
- javac client_main.java

\<Overall Demo\>
*Demo is running server and client both on the local host. If client need to access separate or remote server, change destination IP address from 'local host' to '125.125.125.125' (in the Helper/SocketManager.java). Then, the program needs to be recompiled.
- Turn on the Server (run Server.jar)
- Turn on the Client (run Client.jar)
- Client Sign up
- Client Sign in
- Check out the Room List (choose between)
  - Create Room (then wait)
  - Join Room
- Game start (See the Game Demo)
- Game over back to Number 5

\<Game Demo\>
- When two users enter the game, the room is closed, so no other user can enter the room
- Player_1 will be assigned as 'x', and player_2 will be assigned as 'o', and the palyer_1 who is the creator of the room will play the game first
- When Player_1 makes an action, the server gets the row and column information of Player_1, and the server gives the next turn to player_2. And then, player_2 now makes an action, and server gives the next turn to Player_1 again
- When one of the players wins, the server notifies the winner to both player_1, and player_2