**Bulls and Cows Game Competition**

**First Sukkot project has been about “training” mode of the game “Bulls and Cows”. The current project implies additional functionality for the competition mode. It comprises of two parts. The first part covers the existing client and server updates for the competition mode implementation. The second part is about the development of a standalone application for the competition data processing and displaying out the results table. New informational entities : “competition” and “participant”**

1. Updates in the existing code. (Updates in client application, server application, protocol, TcpClientServer (Our common TCP code implementing client-server protocol with graceful shutdown)
   1. Registration of the competition participants
      1. Assumption: A participant is aware of the competition start date & time (No application has functionality to notify about it)
      2. Each participant should register into the application.
         1. The client should allow a participant to send registration request
            1. A registration request should contain username and the competition date & time
         2. The server should accept a registration request and store the username in the competition profile
            1. Exception should be thrown in the case if the username has been already registered
   2. Competition start
      1. At the given competition date & time the server should automatically move to the “competition” mode
      2. The server should allow the administrator enter the following competition data defining the competition profile
         1. Start date & time
         2. Competition period
         3. Timeout limit for each game
         4. Folder for the result files of all registered participants
      3. Competition mode
         1. All currently running games should be stopped (no notification is sent)
         2. New games will be allowed only for registered users
         3. Each game in the competition can’t be ran more than timeout limit (#2.2.3)
            1. If a game has been stopped by timeout exceeding and the number has not been guessed the results file shouldn’t be created
         4. In competition period of time all currently running games should be stopped (no notification is sent) and server will move to the training mode. Since that all result files should be placed in a folder different from the one intended for the competition
2. New Standalone Application for results processing
   1. The application should output results table based on the following criteria
      1. Number of the games (The more games the higher place. Winner has played the most number of the games)
      2. Number of the moves (The less moves the better only in the case of the number of the games equality )

**Good Luck**