LLCONNECT GAMES (Phase 2)

The Game of Connect Four: In the game of Connect Four two players compete to make a consecutive series of four of the same color. The board is a vertical 6x7(6 rows and 7 columns) board. The players alternate turns and anyone who makes the first sequence of four wins.

The Game of AllConnect(n,m,k): We will instead play a generalization of the game. In AllConnect(n,m,k) our board is a vertical board of dimensions nxm. The players alternate as usual. However, the goal is to make a consecutive sequence of k of the same color. A final modification is that the game does *not* finish after the first k-sequence. Instead the game is carried till the end and finally all sequences of length k are counted for both players.

We count the sequences using a gamma-weighting based on the turn number in which the sequence got completed. In a game of AllConnect(6,7,4) the turn numbers will be 1 to 42. If a sequence got made in turn *i* it will be added to the score as γ^i.

What is being provided:

Your new assignment packet contains modified codes for the game server and client. The code-bases make two modifications from the previous packet from Phase 1. First, the scoring is changed by incorporating the gamma-weighting. Second, after each turn the server sends the client with time remaining. That way, each player can do their time management better.

Evaluation Scheme

1. We will run three tournaments of this game. First tournament will be on AllConnect(8,9,5). Second on AllConnect(10,11,6). Third on AllConnect(13,14,7). The allocated time for these games will be 1 minute, 2 minute and 3 minutes per player.

2. We will randomly create a league fixture per game. In each league there will be many small groups of size about 5-6 teams. Each group will play a round robin and the top team will move to pre-quarter finals. After that it will be a standard tournament with pre-quarter final, quarter final, semi-final and final. In each game there will be two scores depending upon who plays first.

3. A team A will win a game against another team B if both games are won by A. If one game is won and other is lost then the total score difference will determine who won. Each win will get 2 points. In the rare event of a draw there will be 1 point.

4. The top team in a group will be decided as the team which has the maximum points. If multiple teams has maximum points the team that has the highest score (total score of team – total score of opponents) will move to the next level. If in a rare event two teams had the same score then the team that performed better playing first will be preferred. If that also can't decide we will toss.

5. Each league performance is worth 5 points. All teams which do not timeout and don't send invalid moves will get a score of 1.5 per game. Their performance in their group will determine the next bin score which can be a maximum of 2. All teams losing in pre-quarter final will get a total score of 3.5. All teams losing in quarter

final will get 4. All teams losing in semi-final will get 4.5. The runners up team will get a 5. The winner will get a 15 and won't participate in the next league (giving a chance to two other teams to get a 15).

Code: Your code must compile and run on **machine named 'todi' or any machine with similar configuration present in GCL.** Please supply a compile.sh script for compilation. Also supply a shell script run.sh. Executing the command ./run.sh server port gameno should start your player and start interacting with game server. The values of gameno are 1, 2 and 3 depending upon which game is being played.

What to submit?

1. Submit your code for your game player. **The code should be contained in zip file named in the format <EntryNo>.zip.** If there are two members in your team it should be called <EntryNo1>_<EntryNo2>.zip
2. Submit at-most 1 page writeup (10 pt font) describing your choices and rationale for your player. This is not graded but failure to submit a satisfactory writeup will incur negative penalty of 20% of total score.

What is allowed? What is not?

1. **THE LATE SUBMISSION OF THIS ASSIGNMENT IS NOT ALLOWED.**
2. You must use either the same partner as in Phase 1. Or you may work alone.
3. You are required to work in C++ for fair comparison amongst all teams. You may choose to not use the sample code.
4. Your code must be your own. You are not to take guidance from any general purpose AI code or problem specific code meant to solve this or related problem.
5. It is preferable to develop your algorithm using your own efforts. However, we will not stop you from google searching.
6. You must not discuss this assignment with anyone outside the class. **Make sure you mention the names in your write-up in case you discuss with anyone from within the class outside your team.** Please read academic integrity guidelines on the course home page and follow them carefully.
7. You get a zero if your player does not match with the interaction guidelines in this document.
8. We will run plagiarism detection software. Any team found guilty will be awarded a suitable penalty as per IIT rules.