

P-16:
Code Structure
Leaderboard System Plan

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1. Leaderboard (Main Controller)

Purpose: Central class that coordinates leaderboard operations.

Potential Methods:

- displayLeaderboard()
- updateLeaderboardDisplay()
- GetLeaderboard()
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Data Flow:

1. Calls LeaderboardUpdater when a new game result is available.
2. Retrieves sorted data from LeaderboardSorter.
3. Sends final data to Leaderboard GUI for display.

2. Leaderboard GUI

Purpose: Displays the leaderboard to players.

Potential Methods:

- displayLeaderboard()
- filterLeaderBoard()
- updateLeaderboard()
- Search()

Data Flow:

1. Requests sorted leaderboard from LeaderboardSorter.
2. Displays the results to the player.

3. LeaderboardSorter

Purpose: Sorts players based on chosen criteria.

Potential Methods:

- sortByScore()
- sortByWinsLosses()
- sortByName()

Data Flow:

1. Fetches player data from the Players table in the database.
2. Sorts data based on user-selected criteria.

3. Sends sorted data to Leaderboard GUI.

4. SortingCriteria

Purpose: Defines sorting options.

- Player picks sorting criteria, default is set as ranking by wins

Potential Parameters:

- Order (ascending/descending): whether the ranking is in increasing or decreasing order.
- Score: Sort by the highest to lowest or vice versa.
- Win/Loss: Sort based on the number of wins or losses, either in ascending or descending order.

Potential Methods:

- setSortCriteria(criteria: String), Allows the user to define the sorting criteria
- setDescendingOrder()
- setAscendingOrder()

5. LeaderboardUpdater

Purpose: Updates the database with new match results.

- Ensures that the database reflects real-time changes, such as new game results, player scores, wins, losses, etc.
- The database is updated periodically or as soon as new data comes in.

Potential Methods:

- updateLeaderboard(matchresult) - would take in the match result and update the database
- updatePlayerStats(playerid, score) – Updates Players table with new stats, would use ratios etc to create new data.

Data Flow:

- Receives new game results.
- Updates database
 - Updates Players table with stats.

7. Overall System Flow

1. **Game Ends** → Match results generated.
2. **LeaderboardUpdater** takes in MatchResults.
3. **LeaderboardUpdater** updates the database with new stats.
4. **LeaderboardSorter** fetches the criteria and sorts the leaderboard.
5. **Leaderboard** controls all actions by smaller classes

6. **Leaderboard GUI** displays the sorted rankings.