**DATA MODELING FOR INFORMATION PROFESSIONALS**

**INFO 5707**

# TITLE: GAMING LEADERBOARD DATABASE

**GROUP MEMBERS: GROUP 12**

**GAYATHRI KATUKOJWALA-11550315**

**UMA ABHISHEK POLAKONDA-11704249**

**MADDINENI SASHI KIRAN-11647598**

**VIJAY RAJ PATHANI-11609155**

# **Scope:**

The scope of the project includes creating a thorough database system for a leaderboard in gaming through design and development. This involves naming the games that are supported, describing player metrics, allowing real-time updates, adding multiplayer features, putting in place user profiles and achievements, making sure that privacy settings and security precautions are followed, organizing for scalability, incorporating a notification system, and offering analytics for insights. A dynamic and interesting leaderboard system that highlights player achievements, encourages community engagement, and guarantees a safe and fair gaming experience is the aim.

And also include**s:**

**Participants:**

Details about registration.

Details of authentication.

Info on past performance

**Games:**

Information about every game that is accessible on the platform.

Dates of release.

Other details about the game.

**Scores:**

Specific player and game-related individual score entries.

Dates on which the scores were attained.

**Leaderboards**

Player ranks in each game as well as all games combined.

leaderboards depending on various time periods displayed.

**Protection**

Access control using user authentication.

ensuring the security and privacy of data

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**Scalability**

Capacity to manage an expanding user base and growing volumes of data linked to games.

# **OBJECTIVES OF GAMING LEADERBOARD DATABASE**

1. **Store Player Information:**  
   Count the number of users who have logged onto the gaming platform.

Save any important player data, including login, email, registration date, and any additional essential information.

1. **Track Game Information:**  
   Maintain data on the games that are played on the platform.

Add information such as the title of the game, the date of release, and maybe additional facts.

1. **Record Player Scores:**

Monitor the points that players have earned in various games.

Connect every score entry to a particular player and match.

Keep track of when points were earned by storing timestamps for score entries.

1. **Calculate Rankings:**

Determine and uphold ranks by using player scores.

Establish a method for identifying each game's best performers.

Permit ranking algorithms to be customized taking into account variables such as game complexity, time, or score.

1. **Dislay Leaderboards:**  
   Display leaderboards for each game or for all games.

Permit users to browse leaderboards according to various criteria (daily, weekly, monthly, etc.).Show scores, player usernames, and maybe other pertinent data.

1. **User Authentication and Security:**  
   Enable user authentication to provide safe database access.

To manage who may alter player information, game details, and scores, enforce the appropriate authorization levels.

1. **Scalability:**  
   Design the database system to handle a growing number of players, games, and scores.

Optimize queries and database structure to maintain performance as the dataset expands.

1. **Data Integrity:**  
   To provide safe database access, use user authentication.

Maintain appropriate authorization levels to manage who has access to player, game, and score information.

1. **Logging and Auditing:**  
   Keep a log of database activities for auditing and debugging purposes.

Monitor changes to player information, game details, and scores.

1. **Data Retrieval for Analytics:**

Enable data retrieval for analytics so that administrators and creators of games may better understand player behaviour and trends.

# **USER REQUIREMENTS**

1. **User Registration:**

The system should allow players to register accounts, providing essential information like username and email.

1. **Score Submission:**

Players should be able to submit their scores for various games, with the system recording the score, the associated player, and the game

1. **Leaderboard Access:**

Users, both players, and potentially spectators, should have easy access to leaderboards for individual games and overall rankings.

1. **Score History:**

Players should be able to view their historical scores and performance over time.

1. **Game Information**:

Users should have access to information about available games, including game names, release.

1. **Ranking Calculation Transparency**:

The system should transparently communicate how player rankings are calculated, ensuring fairness and understanding among users.

1. **Leaderboard Customization:**

Users may want to customize leaderboard views based on time intervals (daily, weekly, monthly) or other criteria.

1. **Security and Privacy:**

Ensure that user data is secure, and privacy is maintained. This includes secure authentication and protection against unauthorized access

1. **Notification System:**

Implement a notification system to alert players about significant events, such as achieving a high rank or receiving in-game rewards.

**BUSINESS RULES**

Below is a list of the rules that the system follows:

1. In order to guarantee correct identification and avoid misunderstanding, every participant has to have an own username.
2. Player-submitted scores must be accurate and adhere to the guidelines and gameplay mechanics of the games in question.
3. Users who wish to access and use the gaming leaderboard system must first authenticate themselves.
4. To guarantee fairness and transparency, the ranking mechanism that determines player rankings must continue to be consistent.
5. To preserve the integrity of leaderboards, scores must be submitted with a timestamp. Late entries may not be allowed.
6. To maintain the player database current, inactive user accounts may be subject to deactivation after a certain amount of time.
7. Release dates and other pertinent information about games must be maintained current and accurate.
8. Only authorized staff members should have access to some system features, such as administrative tools.
9. To preserve trust and safeguard user information, the system needs to abide by data privacy laws.
10. Anti-cheating mechanisms should be put in place to ensure that players compete fairly by identifying and stopping system abuse.
11. Establish a frequency for leaderboard refreshes so that they appropriately display the most recent ranks and scores.
12. Establish guidelines for informing users of important occurrences so that there is uniformity and no chance of spamming.

# **ENTITY-RELATIONSHIP DIAGRAM (ERD):**

A diagram of a game

Description automatically generated

**Entity relationship diagram (ERD) of Gaming Leaderboard Database**

# **DATA DICTIONARY FOR GAMING LEADERBOARD DATABASE**

A screenshot of a computer

Description automatically generated

**CHOICE OF DBMS**

For this Project we use MySQL as the DBMS.