

# Dat220 - Problem Analysis

March 28, 2025

## 1 Introduction

The project involves developing a gaming website with database integration to manage user data, game scores, live chat, and other features. The goal is to create a functional application that supports user interaction.

## 2 Problem Understanding

A key challenge in the project is designing a database that efficiently handles different data types and their relationships. The main challenges include:

- Securing user data and access rights
- Efficient storage and retrieval of game scores
- Implementation of a dynamic live chat
- Managing user clans and their interactions
- Storing and handling files, comments, and notes
- Maintaining performance and scalability

## 3 Identification of Entities and Relationships

To meet the requirements, the database must include the following entities:

### 3.1 Main Entities

- **User:** Stores private information such as username, email, and password.
- **Game Hi-Scores:** Stores scores and game history.
- **User Notes:** Personal notes for users.
- **Live Chat:** Allows users to communicate in real-time.

- **Public Information:** User profiles, general announcements.
- **Files:** Upload and sharing of game-related files.
- **Comments:** Comments on profiles, game results, or posts.
- **Clans/Groups:** Communities with their own members and roles.

### 3.2 Relationships

- A **user** can have multiple **game scores**, **notes**, **comments**, and **files**.
- A **user** can be part of one or more **groups/clans**.
- **Comments** and **files** can be linked to specific **users** or **groups**.
- **Live chat** must support communication between multiple **users** in real-time.

## 4 Potential Issues and Solutions

### 4.1 Security

**Problem:** User data must be secured to protect privacy.

**Solution:** Implement password hashing and access control.

### 4.2 Data Integrity

**Problem:** Ensure that data such as game scores and comments remain consistent.

**Solution:** Use database constraints like primary and foreign keys.

### 4.3 Performance and Scalability

**Problem:** Live chat and large amounts of data can impact performance.

**Solution:** Use indexing and optimized SQL queries.

## 5 Conclusion

To develop a successful web application, the database must be designed with a clear structure that efficiently manages relationships between entities. By addressing potential problems early, the system can be both functional and scalable.