

Fantastic Four

CS3743 Database Systems

December 8<sup>th</sup>, 2025

### Final Project – Data and Business Rules

How we generated data:

Our data was generated using AI tools. We provided our schema and table structures to ChatGPT and Claude.ai, which generated realistic sample data. By using real game titles, developers, publishers, and franchises, we created a more engaging and relatable experiences. This approach of using realistic data allowed us to create our own application profiles, personalized to real games that we enjoy, making the application more authentic. The data used in this database is all publicly available information such as game names, publishers, and franchise details. Since we are using factual, publicly accessible information and did not incorporate copyright art and graphics, we do not require licensing agreements or permissions. As we additionally do not plan for this database and application to be released commercially, this further supports not requiring any licenses.

Implemented Business Rules:

1. Usernames and Emails must be unique.
  - a. Enforce with UNIQUE constraints on username and email.
2. User must provide age on account registration.
  - a. `date_of_birth` will be NOT NULL and must be a valid date earlier than the current date.
3. User cannot follow themselves.
  - a. Before user follows another user, validate that the `user_id` are not the same BEFORE INSERT into `user_following`.
4. User cannot follow same user more than once.
  - a. Enforce with composite key of `user_id`, `user_id` in `user_following`.
5. A user can only review games that they have saved onto account.
  - a. Implemented at application level.
6. User may only have one review and rating per game, though they can edit review later.
  - a. Enforced with UNIQUE constraint of `user_games_id` in `user_reviews`.
7. Reviews must be between 20 and 2000 characters.
  - a. Enforced with a CHECK constraint ensuring length of `review_comments` is BETWEEN 20 AND 2000.

8. Ratings must be 1-5.
  - a. Enforced with a CHECK constraint to ensuring rating BETWEEN 1 and 5.
9. A game must belong to at least genre, developer, and publisher.
  - a. Enforced with NOT NULL for genre, developer\_id and publisher\_id foreign keys attributes.
  - b. franchise\_id may be NULL due to some games not being included in a franchise.
10. A game must have a non-negative price.
  - a. Enforced with NOT NULL and CHECK constraint ensuring price >= 0.
11. A game must be unique to the platform.
  - a. We will be using a composite primary key of game\_id and platform\_id which will help ensure a unique identity.
12. A platform must exist before a game can be assigned to it.
  - a. Enforced with the platform\_id.
13. A developer and publisher must exist before being associated with a game.
  - a. Enforced with Foreign Key constraints on developer\_id and publisher\_id in games entity.
14. If a user deletes their account, all reviews, ratings, and follows are also removed.
  - a. Enforced using ON DELETE CASCADE on user\_id foreign keys in dependent tables (user\_following, user\_reviews, user\_games).