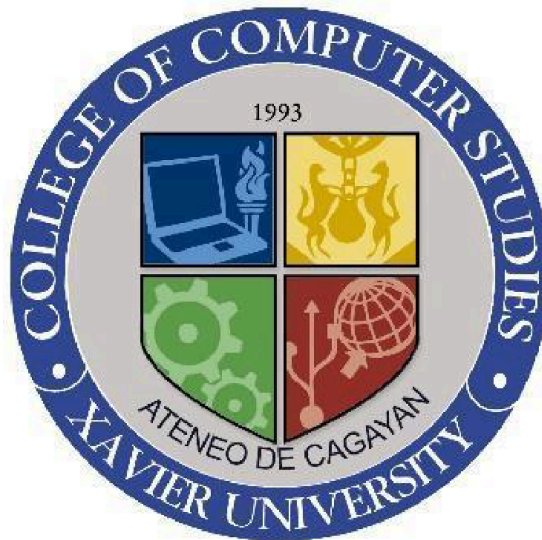**XAVIER UNIVERSITY – ATENEO DE CAGAYAN**

COLLEGE OF COMPUTER STUDIES
DEPARTMENT OF INFORMATION TECHNOLOGY

Milestone II - Requirements Analysis, Specifications, and design

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Milestone II - Requirements Analysis, Specifications, and Design for Video Game Bulletin (VGB)

This report addresses Milestone II for the Video Game Bulletin (VGB) project, focusing on requirements analysis, specifications, and the conceptual and logical data model design.

Description of the Database Application

The Video Game Bulletin (VGB) is a proposed web-based platform designed to be a streamlined, centralized hub for video game enthusiasts to track upcoming and newly released games and consoles. The platform's core is a database that provides accurate, timely release information, solving the challenge of fragmented digital information.

- **Major Functions and Basic Operations Supported**

  The VGB system's functionalities are divided into three major application areas: User-Facing Information and Discovery, Interactive User Features, and Administrative Content Management.

  - **User-Facing Information and Discovery:** This area focuses on displaying game release information and providing search capabilities.

    - **Basic Operations (Use Cases):** Users can check releases for games (viewing the real-time release calendar or list), search games (finding games by title or simple keywords), and view game details (seeing description, specs, and platform information).

- **User Groups:** Guest User, Registered User, and Administrator.

- ○ **Interactive User Features:** This area enables community engagement and personalized content tracking.

  - **Basic Operations (Use Cases):** Users can create an account (registering to access interactive features), favorite games (adding a game to a personal list), and comment on games (posting a comment).

  - **User Groups:** Registered User and Administrator (Guest Users can perform the Creating an account operation).

- ○ **Administrative Content Management:** This area focuses on maintaining the accuracy and consistency of the game information database.

  - **Basic Operations (Use Cases):** The Administrator is responsible for monitoring databases (checking database status and consistency), adding game information (inputting new game data), updating game information (modifying existing game data), and removing game information (deleting game data).

  - **User Groups:** Administrator only.

Description of Requirements

- **Data Requirements**

  The database must store and manage all information necessary to support the VGB's functions, including data about the games themselves, user interactions, and system management.

  - **Game**

    Stores core game details including Game_ID (Primary Key), Title, Description, Release Date, and Status (e.g., Upcoming, Released).

  - **Platform**

    Stores platform information including Platform_ID (Primary Key), Name (e.g., PC, PS5, Xbox Series X), and Specs.

  - **User**

    Stores user account data including User_ID (Primary Key), Username, Password (Hashed), Email, Registration Date, and User_Type (Guest, Registered, Admin).

  - **Comment**

    Stores user comments including Comment_ID (Primary Key), Text, Date/Time Posted, associated User_ID, and associated Game_ID.

○ **Game-Platform Relationship**

Stores the specific Date a Game was released on a particular Platform.

○ **Favorite**

Stores tracking data including the Date Added, associated User_ID, and associated Game_ID.

● **Transaction Requirements**

Transaction requirements describe the specific actions and processes that modify or retrieve data from the system, driven by the use cases.

○ **Search Games (Guest/Registered/Admin)**

Retrieve a list of Games matching a keyword in the Title or Description.

○ **Check Releases (Guest/Registered/Admin)**

Retrieve a list of Games ordered by Release Date.

○ **View Game Details (Guest/Registered/Admin)**

Retrieve a single Game's details, including its Description and associated Platforms and Specs.

- ○ **Create Account (Guest User)**

  Insert a new record into the User entity with a Username, Password, and Email.

- ○ **Favoriting on Games (Registered/Admin)**

  Insert a record into the Favorite relationship entity, linking a User to a Game.

- ○ **Commenting on Games (Registered/Admin)**

  Insert a record into the Comment entity, linking a User and their Comment Text to a Game.

- ○ **Add Game Infos (Administrator)**

  Insert a new record into the Game entity and new records into the Platform entity and Game-Platform relationship as needed.

- ○ **Update Games Info (Administrator)**

  Update records in the Game, Platform, or Game-Platform entities to ensure accuracy.

- ○ **Remove Games Info (Administrator)**

  Delete records from the Game, and related records from Comment and Favorite entities.

- ○ **Monitor Databases (Administrator)**

    Retrieve information on database status and consistency.

- **Output Requirements**

    Output requirements focus on the information delivered to the users through the web application's interface.

    - ○ **Release Calendar/List**

        Provides the Game Title, Status, and Release Date (in a real-time display) to all users.

    - ○ **Search Results**

        Presents a list of Game Titles matching the search criteria, possibly with a snippet of the description, to all users.

    - ○ **Game Detail Page**

        Displays the Game Title, Description, Specs and Platform information, Release Date, User Comments, and a mechanism (button/status) for Favoriting, to all users.

    - ○ **User's Favorite List**

        Shows a list of Game Titles the Registered User has favorited, potentially including their Release Date, to Registered Users and Administrators.

○ **Administrative Log/Report**

Provides database consistency and status updates (for monitoring) to the Administrator.

Conceptual Data Model: Entity-Relationship Diagram (ERD)

This section details the conceptual data model for the VGB system. It uses the four core entities and resolves the two Many-to-Many (M:N) relationships by defining associative entities, ensuring all cardinality and participation constraints are met.

● **Entity-Relationship Diagram (ERD)**

The following diagram illustrates the conceptual data model for the VGB application.
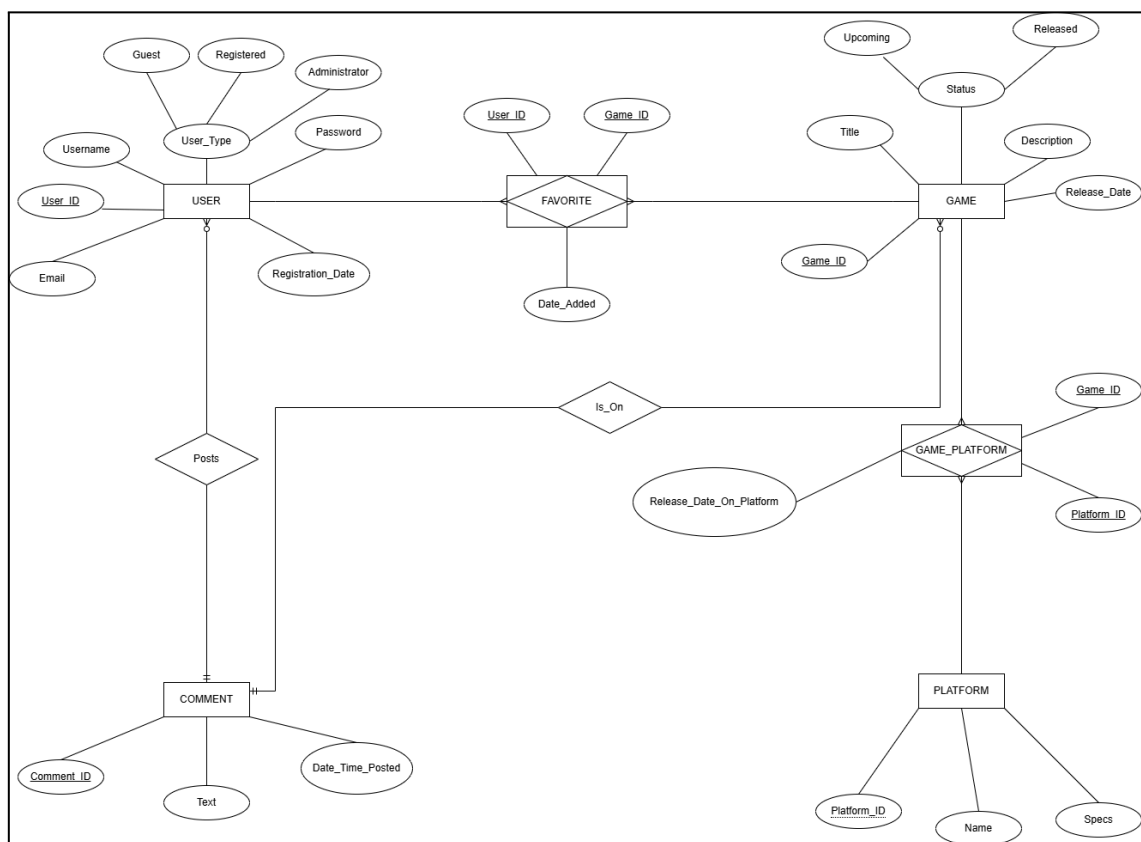

Figure 1.1: ER Diagram of the Video Game Bulletin (VGB)

Logical Data Model: Relational Mapping

The conceptual ERD is mapped into a logical data model consisting of a set of six relations (tables), including primary keys (PK) and foreign keys (FK).
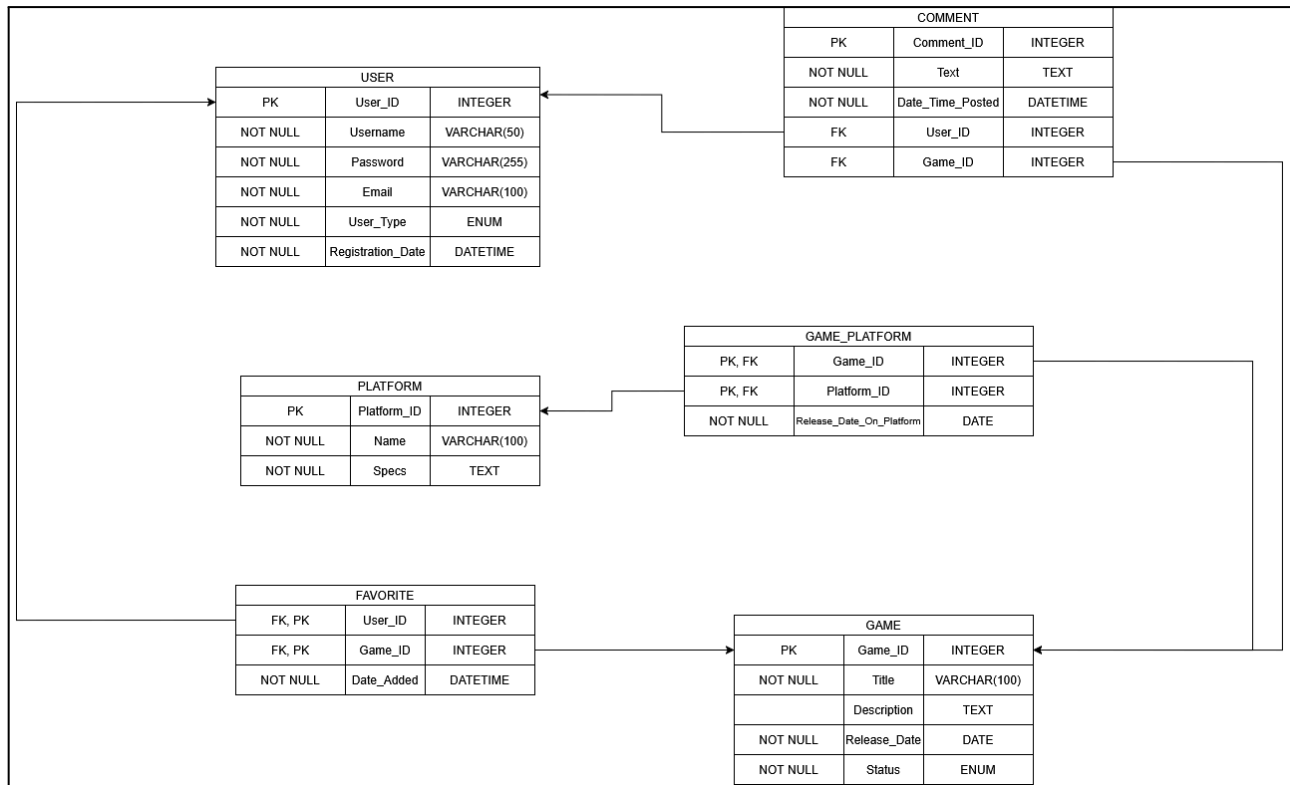

Figure 1.2: Relational Mapping of Video Game Bulletin (VGB)

Data Dictionary

TABLE NAME	ATTRIBUTE NAME	CONTENTS	DATA TYPE	FORMAT	NULL?	PK OR FK	FK REFERENCE TABLE
User	User_ID	Unique Identification Code of User	INT	11	NO	PK	
	Username	User's Unique Login Name	VARCHAR	50	NO		
	Password	Encrypted Password for Login	VARCHAR	255	NO		
	Email	User's Email Address	VARCHAR	100	NO		
	User_Type	Defines if the User is a Guest, Registered or Admin	ENUM		NO		
	Registration_Date	Date and Time of Account Registration	DATETIME	YYYY-MM-DD hh:mm:ss	NO		
GAME	Game_ID	Unique Identification Code for Each Game	INT	11	NO	PK	
	Title	Official Title Of The Game	VARCHAR	100	NO		
	Description	Detailed Texts Detailing About The Game	TEXT		YES		
	Release_Date	Official Release Date Of The Game	DATE	YYYY-MM-DD	YES		
	Status	States If The Game is Upcoming or Released	ENUM		NO		
PLATFORM	Platform_ID	Unique Identification Code for Each Platform	INT	11	NO	PK	
	Name	Official Platform Name	VARCHAR	100	NO		
	Specs	Technical Description of the Platform's Specifications	TEXT		YES		
COMMENT	Comment_ID	Unique Identificaiton Code for Each Comment	INT	11	NO	PK	
	Text	Content of the Comment	TEXT		NO		
	Date_Time_Posted	Date and Time of When the Comment was Posted	DATETIME	YYYY-MM-DD hh:mm:ss	NO		
	User_ID	The User who created the comment	INT	11	NO	FK	USER
	Game_ID	The Game the comment belongs to	INT	11	NO	FK	GAME
FAVORITE	User_ID	The User Who Favorited The Game	INT	11	NO	PK, FK	USER
	Game_ID	The Game That Was Favorited	INT	11	NO	PK, FK	GAME
	Date_Added	Date and Time When The Game Was Favorited	DATETIME	YYYY-MM-DD hh:mm:ss	NO		
GAME_PLATFORM	Game_ID	The Game Released On The Platform	INT	11	NO	PK, FK	GAME
	Platform_ID	The Platform Where The Game Is Released	INT	11	NO	PK, FK	PLATFORM
	Release_Date_On_Platform	Release Date Of The Game On That Platform	DATE	YYYY-MM-DD	NO		

Figure 1.3: Data Dictionary of Video Game Bulletin (VGB)