



Faculty of ICT, Mahidol University

Project: Phase 2

By

Group: `_init_.py`

6488004 Kittipich Aiumbhornsinn

6488073 Chalisa Sae-ngow

6488087 Thanatchaya Sujarit

6488089 Pattaravit Suksri

6488134 Jirateep Rudeerudchanawong

6488168 Linfeng Zhang

Submitted to

ITCS371 Software Engineering

Asst. Prof. Dr. Thanwadee Sunetnanta

Asst. Prof. Dr. Morakot Choetkiertikul

Dr. Chaoyong Ragkhitwetsagul

A report submitted

as the partial fulfillment of the requirements for the project

November 2023

Requirements & Constraints

Following tables are the requirements which are divided into requirements categories: functional requirements and non-functional requirements. The code of the requirements will be in the “FRXX” format and “NRXX” format where “FR” stands for functional requirements and “NR” stands for non-functional requirements while “XX” is the number of particular requirements. Similarly, for the constraints, “CTXX” format will be used where “CT” stands for constraints and “XX” is the number of particular constraints.

Functional Requirements

Code	Requirements	Importance
FR01	Payment can only be done using credit cards.	Must
FR02	Users are able to search for the game.	Must
FR03	System must provide a wishlist system for each user where users can modify their list at any time.	Must
FR04	Users are able to evaluate the game they have played on the scale of 1 to 5 stars.	Must
FR05	System is able to list all of the games that are available on the system to users.	Must
FR06	Users are able to choose the kind or genre of the game they would like to play.	Must
FR07	Each game in the system must provide the specification of the machine that the game can be played on.	Must
FR08	System is able to tell the price and appropriateness rating of the game.	Must
FR09	Administrator of the system can manage and organize the game list in the system.	Must
FR10	Game creators must be able to upload game executables, provide descriptions, and set prices for their games.	Must
FR11	Users must be able to create and manage their accounts.	Must
FR12	Users must have an option for downloading the game to their computer or store in the cloud.	Must
FR13	Must have items market to sell items in the game to other users.	Must
FR14	User data and credit card information must be encrypted for security.	Must

FR15	Games must be available to download through the system.	Must
FR16	Users are able to obtain digital licenses of the game by purchasing the game through the system.	Must
FR17	Applications must have a shopping cart for multiple games in the cart and be paid at once.	Must
FR18	Able to manage digital rights of the game.	Must
FR19	User information must have a name, address and credit card.	Must
FR20	Users are able to create an account.	Must
FR21	System should be able to announce the upcoming available games to users at some part of the user interface.	Should

Non-Functional Requirements

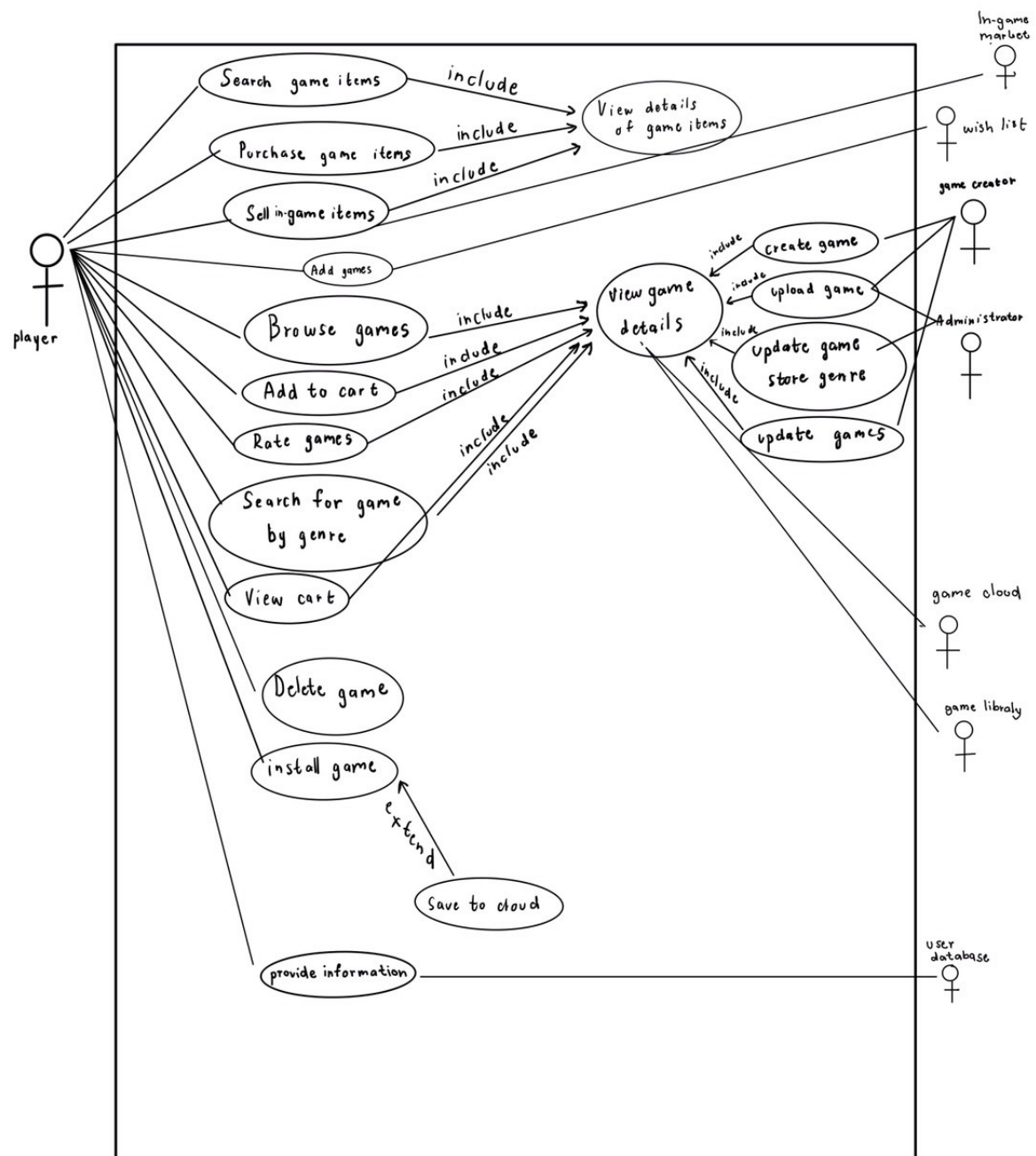
Code	Requirements	Importance
NR01	The system must have 99.999% uptime guarantee.	Must
NR02	Have a nice looking user interface with good user experience design.	Must
NR03	Game data is saved in the cloud.	Must
NR04	Ensure the security of the data.	Must
NR05	Data transfer between the system and users must be encrypted.	Must
NR06	System must be able to handle 10,000 active users at the same time.	Must
NR07	The application must be natively compatible with Windows-based PCs.	Must
NR08	Cloud storages must be available for users to store their games.	Must
NR09	User interface must be attractive to users.	Must
NR10	The response time of the system should be no longer than 1 second for all user interactions.	Should

Constraints

Code	Constraints	Importance
CT01	System is only available on Windows computers only.	Must
CT02	The games must be age-restricted.	Must

Previous phase revision

Use case diagram



DFD Context

When revising a Data Flow Diagram (DFD), the primary objective is to create an accurate and up-to-date representation of the system or process it describes. This updated DFD not only captures the essential functionalities like game searching, selection, data saving, downloading, and in-game transactions, but it also extends its scope to encompass a wider array of features and components.

In this present DFD, the richness of information has grown significantly. It now includes user profiles, ensuring a comprehensive understanding of users' preferences and behavior within the system. Moreover, the introduction of a reporting record system allows for the tracking and analysis of user activities and system performance.

Enhancements in security have been incorporated with the integration of a 2Factor Authentication (2FA) system. This safeguards user accounts and data, reinforcing trust and safety in the system. Additionally, an amplification system has been introduced, enabling the platform to promote and amplify noteworthy content, benefiting both users and creators.

The account management system has been bolstered to provide a more seamless and efficient user experience. It allows for easy account customization, preferences management, and streamlined access to various features.

The system itself has undergone substantial improvements. The addition of a game rating system enables users to evaluate and share their experiences, fostering a community of feedback and engagement. An admin system facilitates efficient platform management, including content moderation and user support. A creator system empowers content creators with tools to manage their creations, enhancing the overall ecosystem.

Shopping functionalities have been expanded with the incorporation of a cart system, making it convenient for users to collect and purchase multiple games in one go. Furthermore, the inclusion of a wishlist feature allows users to curate a personalized collection of desired games for future consideration.

In conclusion, this revised DFD not only represents a more comprehensive and sophisticated system but also reflects the evolving needs and expectations of stakeholders. It enables better understanding, analysis, and enhancement of the system, fostering a dynamic and user-centric environment.

Revision Log

Added

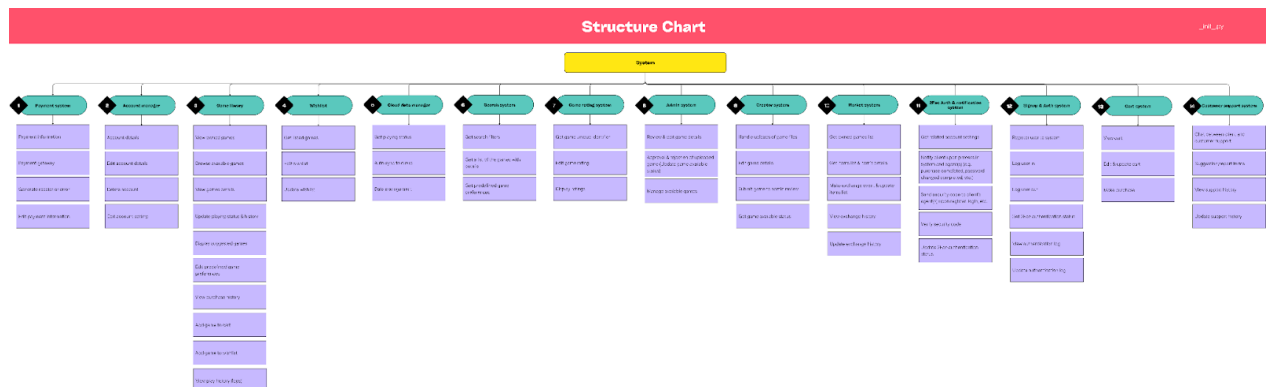
1. Account Manager: Responsible for managing user details, enabling efficient user profile administration.
2. Game Library: Offers a comprehensive overview of game statuses, allowing users to keep track of their gaming experiences.
3. Wish List: Empowers users to curate and manage their gaming aspirations.

4. Cloud Data Manager: Seamlessly handles game data and cloud storage, safeguarding essential information and ensuring easy accessibility.
5. Search System: Simplifies game discovery with robust keyword-based search capabilities.
6. Game Rating System: Allows users to rate and share feedback on games they've played.
7. Admin System: Approves or declines new games, maintaining quality control.
8. Creator System: Supports game creators, providing a platform for developers to showcase their work and interact with the community.
9. Market System: Lists games for potential buyers and offers developers a platform to market their creations.
10. Two-Factor Authentication & Notification System: Enhances user security and settings with two-factor authentication and keeps users informed through notifications.
11. Sign Up & Authentication System: Streamlines user registration and ensures secure authentication, providing access to the platform's services.
12. Cart System: Enables seamless payment processing, ensuring a smooth user experience when purchasing games and in-game items.

Corrected

1. Data can't flow between GameData and User (both are entities)

Functional decomposition diagram (Structure chart)



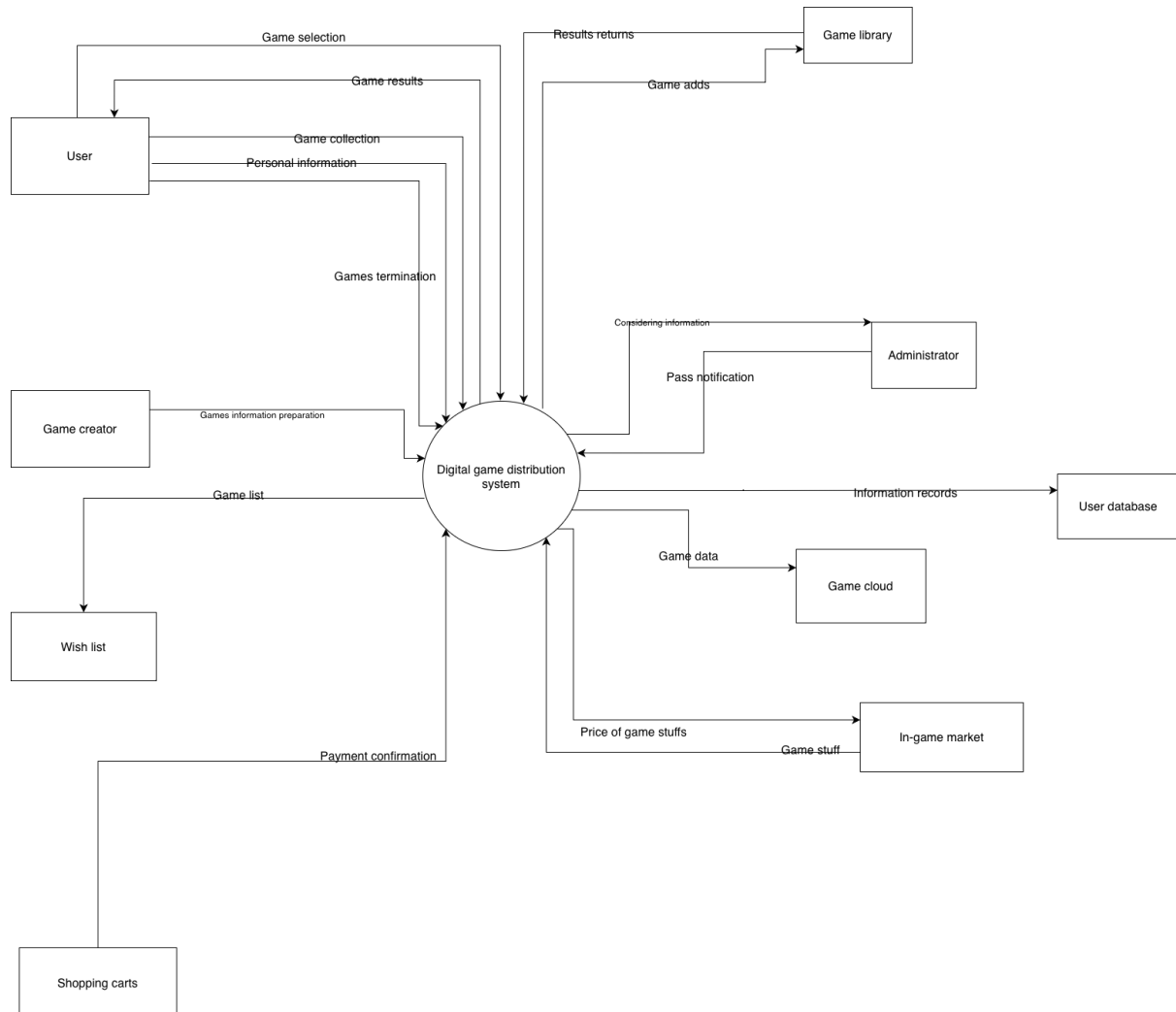
Structure explanation

System

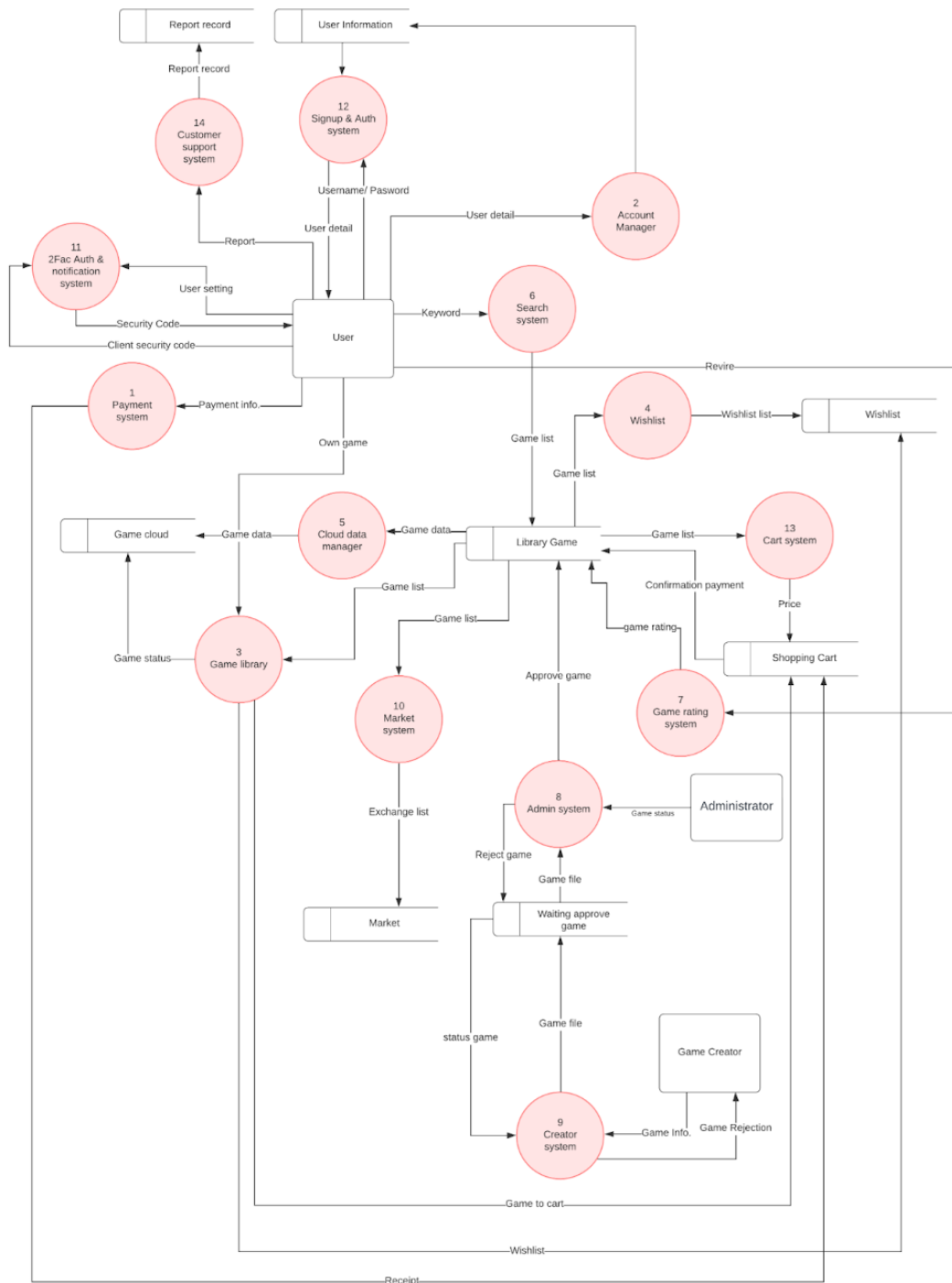
1. Payment system
 - 1.1. Payment information
 - 1.2. Payment gateway
 - 1.3. Generate receipt or error
 - 1.4. Edit payment information
2. Account Manager
 - 2.1. Account details
 - 2.2. Edit account details
 - 2.3. Delete account
 - 2.4. Edit account setting
3. Game library
 - 3.1. View owned games
 - 3.2. Browse available games
 - 3.3. View games details
 - 3.4. Update playing status & history
 - 3.5. Display suggested games
 - 3.6. Edit predefined game preferences
 - 3.7. View purchase history
 - 3.8. Add game to cart
 - 3.9. Add game to wishlist
 - 3.10. View play history (log)
4. Wishlist
 - 4.1. Get listed games
 - 4.2. Edit wishlist
 - 4.3. Update wishlist
5. Cloud data manager
 - 5.1. Get playing status
 - 5.2. Auto sync to cloud
 - 5.3. Data management

6. Search system
 - 6.1. Get search filters
 - 6.2. Get a list of the games with details
 - 6.3. Get predefined game preferences
7. Game rating system
 - 7.1. Get game unique identifier
 - 7.2. Edit game rating
 - 7.3. Display ratings
8. Admin system
 - 8.1. Review & edit game details
 - 8.2. Approval & rejection of uploaded game (Update game available status)
 - 8.3. Manage available games
9. Creator system
 - 9.1. Handle uploads of game files
 - 9.2. Edit game details
 - 9.3. Submit game to admin review
 - 9.4. Get game available status
10. Market system
 - 10.1. Get owned games list
 - 10.2. Get items list & item's details
 - 10.3. Make exchange event & update item list
 - 10.4. View exchange history
 - 10.5. Update exchange history
11. 2Fac Auth & notification system
 - 11.1. Get related account settings
 - 11.2. Notify client upon process in system and agent(s) (e.g. purchase completed, password changed completed, etc.)
 - 11.3. Send security code to client's agent(s) upon registration, login, etc.
 - 11.4. Verify security code
 - 11.5. Update 2Fac authentication status
12. Signup & Auth system
 - 12.1. Register user to system
 - 12.2. Log user in
 - 12.3. Log user out
 - 12.4. Get 2Fac authentication status
 - 12.5. View authentication log
 - 12.6. Update authentication log
13. Cart system
 - 13.1. View cart
 - 13.2. Edit & update cart
 - 13.3. Make purchase
14. Customer support system
 - 14.1. Chat between client and customer support
 - 14.2. Suggestion/report forms
 - 14.3. View support history
 - 14.4. Update support history

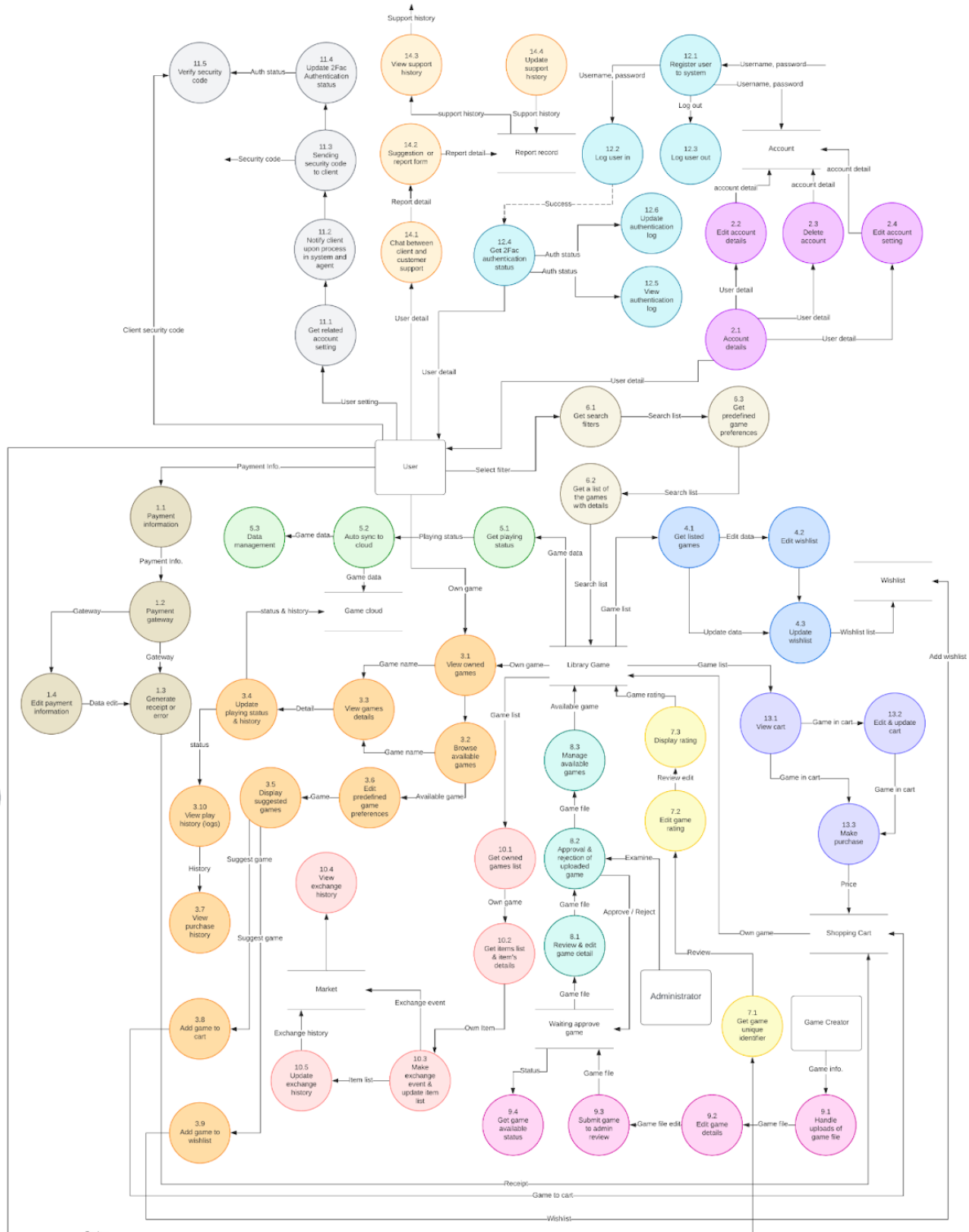
Data Flow Diagram Level 0 (Context diagram)



10



Data Flow Diagram Level 2



List of data stores and attributes

Data Stores	Attributes
User information	User ID, Username, Email Address, Password, First Name, Last Name, Date of Birth, Gender, Country, Account Creation Date, Account Last Updated Date, Profile Picture
Report record	Report ID, Reporter ID, Report Title, Report Message, Report Creation Date, Report Last Updated Date, Report Status
Game Cloud	Game ID, Title, Genre, Platform, Developer, Publisher, Release Date, Price, Rating, Available Status, Game Creation Date, Game Last Updated Date, Game Description, Game Image, Game File, Game Version, Game Update Information, Game Cloud Storage Location
Library Game	Library Game ID, Game ID, Player ID, Player Game Progress, Player Game Status, Player Game Achievements, Player Game Notes, Player Game Last Played Date, Player Game Added Date
Wishlist	Wishlist ID, Player ID, Game ID, Wishlist Creation Date, Wishlist Last Updated Date, Wishlist Priority
Shopping Cart	Shopping Cart ID, Player ID, Game ID, Quantity, Price, Shopping Cart Creation Date, Shopping Cart Last Updated Date
Market	Market ID, Item ID, Item Type, Item Name, Item Description, Item Price, Item Image, Item Quantity, Item Availability, Item Seller, Item Creation Date, Item Last Updated Date
Waiting approve game	Waiting Approve Game ID, Game ID, Developer ID, Game Submission Date, Game Review Status, Game Review Notes, Game Submission Guidelines, Game Review Checklist
Account	Account ID, User ID, Account Type, Account Balance, Payment Method, Billing Address, Shipping Address, Account Creation Date, Account Last Updated Date, Account Status