Faculty of ICT, Mahidol University

Project: Phase 1

By

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Submitted to

ITCS371 Software Engineering

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as the partial fulfillment of the requirements for the project

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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	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

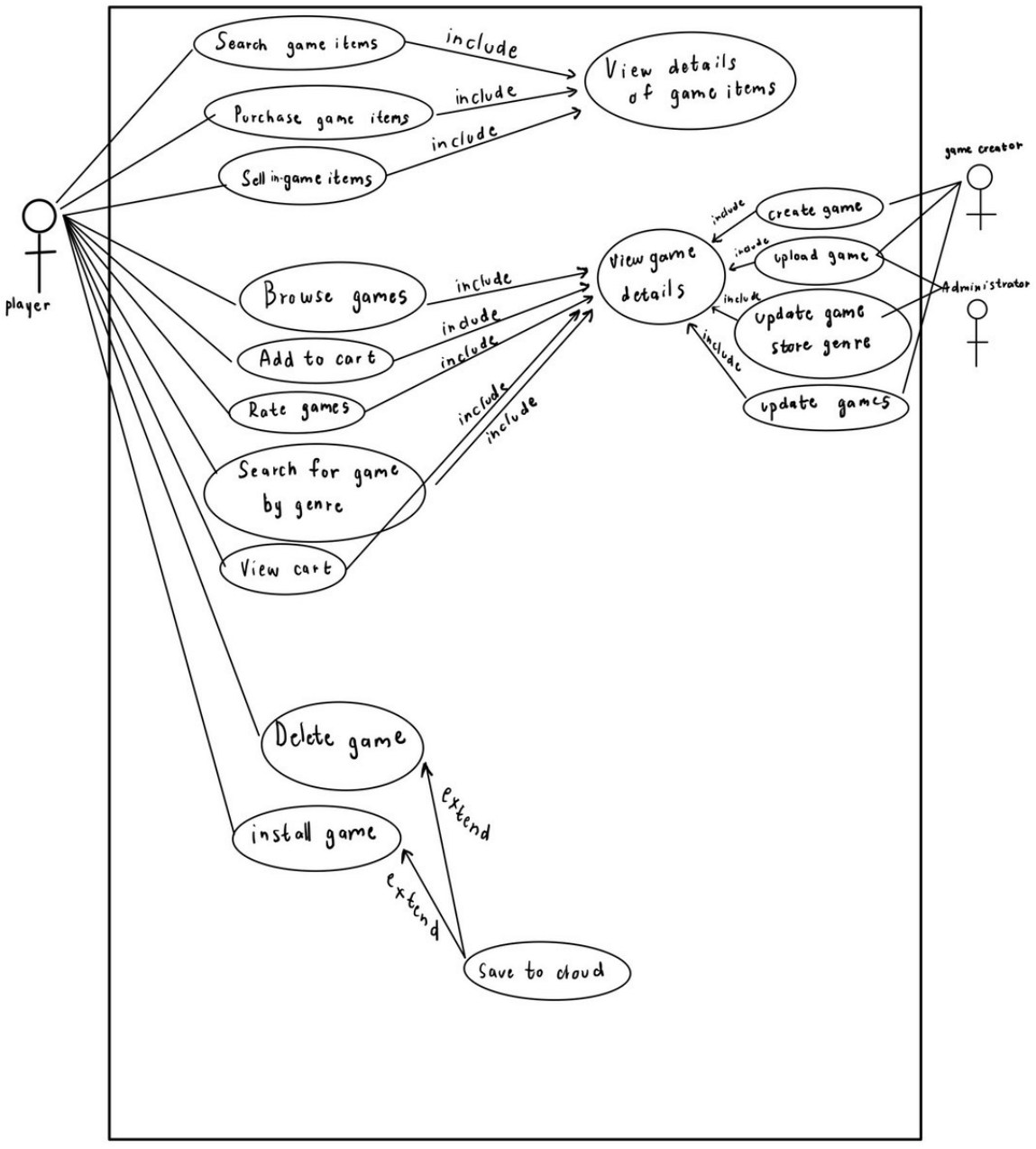
Constraints

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

Identifying Actors

1. **Users:** When they play the game, there is some game equipment that they can trade in the virtual marketplace.
2. **Developers/Programmers**: The team of software engineers and developers responsible for creating the application and ensuring it functions as described. This includes frontend and backend developers.
3. **Game Creator**: The creators of the games available on the platform, including both small independent game developers and third-party game developers who partner with the platform. (Upload the game, including information such as gameplay, price and size.)
4. **Administrators/Moderators**: Individuals who manage and oversee the platform, including reviewing and approving new games, managing user accounts, and ensuring the platform's smooth operation.
5. **UX/UI Designers**: Designers responsible for creating an attractive and user-friendly interface for the application, ensuring a positive user experience.
6. **Database Administrators**: Professionals responsible for managing and securing the database where user and game data is stored.

Use Case Diagram



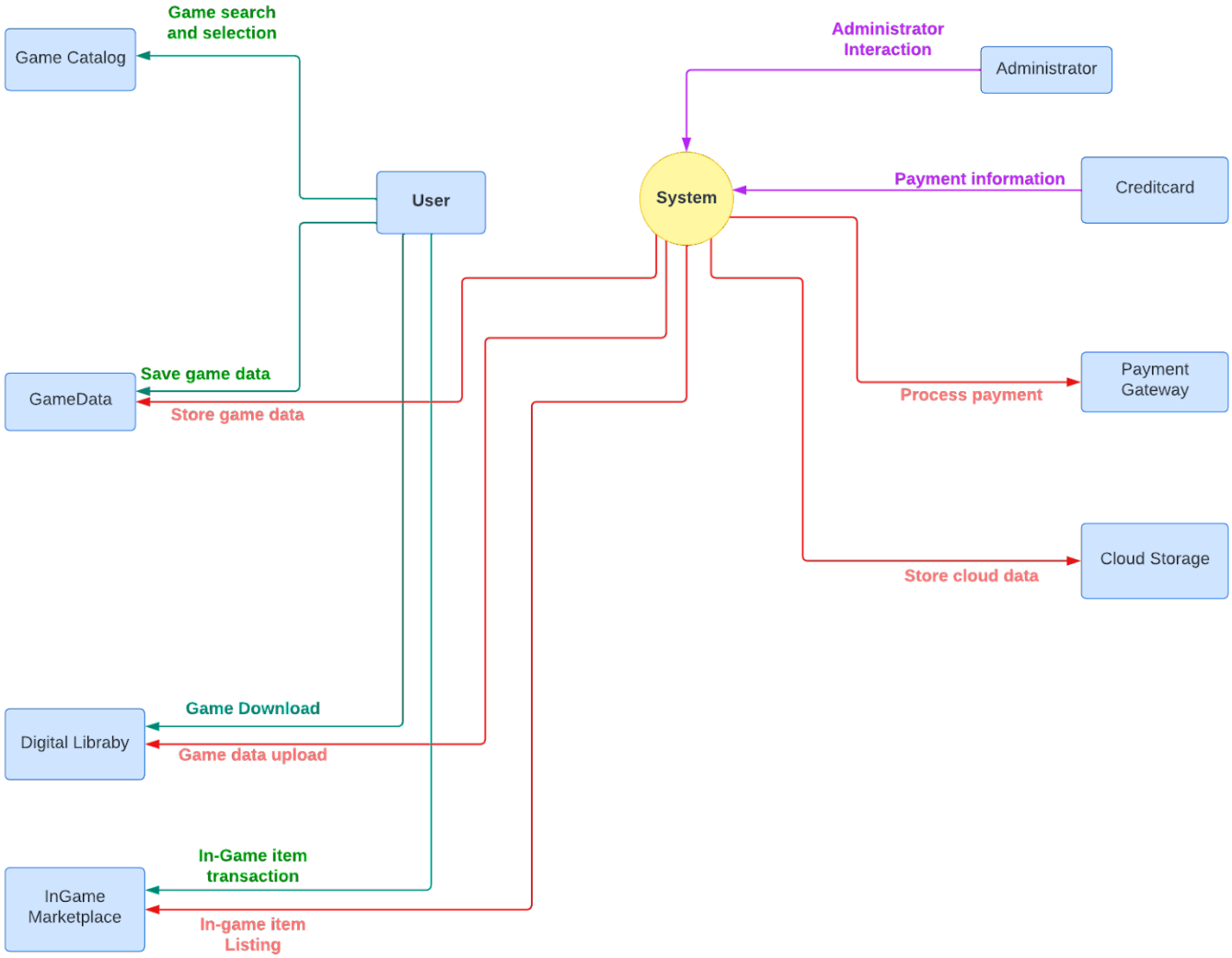
Use Case Narrative

Use Case Name	Purchase and Play a Game
Goal in Context	A user can browse, select, purchase, and play a game from the digital game distribution system.
Primary Actor	User
Secondary Actor	Payment Gateway
Precondition	The user must register and log in to the account. Each account must link a credit card to their account.
Trigger	The user decides to purchase and play a game.
Scenario (Typical flow of Events)	1. Sign up for an account, make one, or sign in if you already have one. 2. The system will show the game that is related to the keyword whether the user browses the available games or searches for specific games by genre, creator, or keyword. 3. When a user decides to purchase a game, they add it in their shopping cart. 4. The user continues to the shopping cart, reviews the games they've chosen, and authorizes the transaction by paying with a credit card. 5. The user gets the option to download and play the game from their library following a successful purchase. 6. While playing the game, the user has the option of saving game data on their computer or in the cloud. 7. After finishing a game, the player has the option to keep the game's data on their computer, delete it, or upload it to the cloud.
Exceptions	Exception 1. The user has been informed that if the payment is unsuccessful, the purchase process will be abandoned. Exception 2. If there is a problem with the game download or cloud storage, the user is alerted and given help choices.
Post-condition	The user successfully purchases and owns the game, and it will be available in the library when the user wants to play.

Use Case Name	Manage Wishlist
Goal in Context	Allow users to maintain a list of games they are interested in for future purchases.
Primary Actor	User
Secondary Actor	None
Precondition	The user must register and log in to the account.
Trigger	The user wants to add, remove, or review games on their wishlist.
Scenario (Typical flow of Events)	1. A user logs into their account. 2. They use the application's navigation to find their wishlist. 3. The user's most recent wishlist, which also includes previously added games, is shown by the system. 4. The user has the option to browse game descriptions, see game information, and add or remove titles from their wishlist. 5. The customer updates the wishlist and saves the desired titles for a later purchase.
Exceptions	Exception 1. If the games that were removed from Wishlist by the game distribution platform caused the game to disappear from Wishlist.
Post-condition	The selected games are added to the user's wishlist, enabling them to keep track of and buy games they are interested in the future.

Use Case Name	Sell Items on the In-Game Marketplace
Goal in Context	Users can list and sell items in-game on the marketplace to other users.
Primary Actor	User (Seller)
Secondary Actor	User (Buyer)
Precondition	The user must register and log in to the account, and they should have the in-game item they intend to sell to other users.
Trigger	The user wants to sell an item for other users on the in-game marketplace.
Scenario (Typical flow of Events)	1. A user logs into their account. 2. They use the application to access the in-game market. 3. The user chooses the "list an item for sale" option and enters information about the object, including its name, a description, a price, or maybe additional images. 4. The item is added to the market after the listing is verified by the system. 5. Other users have access to the marketplace and can look through the available things and make purchases. 6. Interested customers buy the seller's goods. 7. The seller receives notice of the purchase and has the option to negotiate the terms of the deal with the buyer. 8. After the transaction is successfully completed, the item is added to the buyer's inventory.
Exceptions	Exception 1. The system informs the user to enter the necessary data if the item listing to sell is inaccurate or incomplete. Exception 2. Both the seller and the buyer are alerted if there are problems with the transaction or item transfer, and help options are offered.
Post-condition	The item is successfully sold and transferred to the user (buyer), and the user (seller) has credit from the sale.

Data Flow Diagram



Bonus

Topic: Integration of Artificial Intelligence for Personalized Game Recommendations.

Explanation: The system shall leverage artificial intelligence (AI) and machine learning to provide personalized games recommendations to users based on their game installed history, preferences, and user interactions. The AI-driven recommendation engine will continuously analyze user behavior and patterns to suggest games that align with their interests, enhancing the user's discovery and playing experience.

Benefits

1. Enhanced User Experience: AI-driven recommendations will provide users with relevant game suggestions tailored to their tastes, increasing their engagement with the platform.
2. Improved game discovery: The system's ability to understand user preferences will lead to the discovery of games that users may not have otherwise encountered.
3. Increased User Satisfaction: Personalized recommendations will lead to more satisfying game choices, increasing user loyalty and retention.

Integration Approach

1. Collect and Analyze User Data: The system will gather data on users' installing history, genres of interest, and engagement patterns.
2. Train AI Models: AI models will be trained using machine learning techniques on the collected data to identify user preferences and patterns.
3. Generate Recommendations: The AI recommendation engine will utilize the trained models to generate personalized game recommendations for each user.
4. Continuous Learning: The AI system will continuously learn from user interactions and adapt its recommendations over time.

By integrating cutting-edge AI technology, the project can provide users with personalized recommendations that enhance their game installed discovery and reading experience, contributing to the overall success of the platform.