UNIVERSITY OF INFORMATION TECHNOLOGY VNU-HCM FALCUTY OF INFORMATION SYSTEM

SOFWARE ENGINEERING FINAL PROJECT

CYBER GAMING

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Presented to Presented by

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# PREFACE

The current period has seen an expansion in information technology, which has changed the nature and scope of operations for many enterprises, organizations, and people. The field of cyber management is one of the ways to show the use of technology applications not only helps optimize procedures but also opens up new prospects. Creating a modern cyber gaming management system is not only a trend, but also essential to improve service quality for the customers who enjoy their leisure time the most, especially in an era when people are becoming increasingly busy and have no time for themselves.

Our culminating project focused on constructing a robust, multifunctional cyber gaming management system. Throughout the implementation process, we received dedicated support from Assistant Lecturer Tran Vinh Khiem, while also benefiting from the specialized insights shared by Lecturer Nguyen Tuan Nam. The knowledge and skills we acquired not only deepened our understanding of software technology, but also empowered us to apply it effectively during the development of our cyber gaming management solution.

We wish to sincerely express our gratitude to Assistant Lecturer Tran Vinh Khiem for his unwavering commitment and extensive efforts in guiding us through this undertaking. Within this report, we will thoroughly explore the system's functionalities, outline the development process, and discuss the challenges we encountered. We trust that by the end of this document, readers will have gained a comprehensive insight into the work we have accomplished.

# FINAL PROJECT: THE 6TL CYBER GAMING

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# CHAPTER 1: INTRODUCTION.

In Vietnam, computer games (PC) continue to attract a large number of players, particularly in the field of eSports. According to a report by Decision Lab and Vero, 44.9% of eSports players in Vietnam use the PC platform, highlighting the popularity of computers within the gaming community.

This preference stems from the immersive experience that PCs provide and the longstanding habit of playing games at internet cafes over the years. Additionally, PC games such as Than Trung by DUT Studio have achieved significant success, topping the trending charts on Steam on the day of release, surpassing even Dota 2 and GTA V.

In the fast-evolving digital era, the adoption of Cyber Gaming (CG) has become a pivotal trend. Confronted with the challenges of low-spec computers and increasing demand for operational efficiency, gaming businesses are embracing CG as an all-in-one solution. This strategic move is fueled by the need to secure a competitive edge in a technology-centric age and fulfill the growing expectations of both customers and industry benchmarks. By offering a variety of games and associated services, CG effectively tackles existing operational obstacles while promising to elevate the overall gaming experience.

# CHAPTER 2: PURPOSE OF CYBER GAMING SYSTEM.

The purpose of the Software Requirements Specification (SRS) document for a Cyber Gaming (CG) is to provide a comprehensive and detailed blueprint for the development and implementation of the system.

This essential document delineates both functional and non-functional requirements of the RMS, acting as a key channel of communication among all stakeholders, including developers, project managers, and end users.

The SRS clearly specifies the system’s features, functionalities, limitations, and performance benchmarks, ensuring a unified comprehension of the project’s scope and objectives. By detailing user expectations, system behavior, and technical parameters, the SRS lowers the risk of misinterpretation and guarantees that the resulting Cyber Gaming aligns with the intended business requirements.

At its core, the SRS functions as a pivotal guide, directing the development team towards producing an effective, fully operational, and customized cyber management solution.

# CHAPTER 3: SCOPE OF CYBER GAMING SYSTEM.

The Cyber Gaming (CG) solution is a specialized software platform that streamlines and enhances various operational facets of gaming activities. More specifically, it equips administrators and users with key features—ranging from order management to financial oversight and supplemental services—ultimately elevating the overall efficiency and profitability of the enterprise.

The scope of cyber gaming system encompasses the following key functionalities:

* **Order Management**: The system facilitates order processing, items management, and menu customization, ensuring swift and accurate order execution. It includes features for order placement and tracking to enhance the customer experience.
* **Seamless Billing Process**: The system will handle billing, payment processing, and receipt generation. It accommodates various payment methods and ensures accuracy in financial transactions.
* **Security:** Databases contain information of admins and users, can easy to check, add, delete account. Each role will be guaranteed to have limited access to the system
* **Forgot Password Mechanism:** Offering a secure and user-friendly method for users to reset their passwords through email verification.

# CHAPTER 4: FUNCTIONAL REQUIREMENTOF RESTAURANT MANAGEMENT SYSTEM.

## 4.1 Functions of CG

### **4.1.1 User Authentication and Access Control:**

- **Administrator**: Unlimited privileges to utilize every available system feature.

- **User**: Access to order management and table-related functionalities.

- Access control limit certain functionalities based on user roles.

### **4.1.2 Items Management**

- The system allows staff to assign and track items include foods, drinks, games… and manages the amount.

- **Administrator:** Can track all the items and easily to add/delete items if needed

- **User**: Friendly UI so that users can find any things they want easy and fast

### **4.1.3 Menu Management**

- Menu items categorized into logical groups or sections (e.g., foods, drinks, cart,…) to facilitate easy navigation and ordering.

- The system provide an intuitive interface for authorized manager to create new menu items, including details such as item name, category, pricing, and description.

- The system should facilitate the removal of menu items, ensuring that any outdated or discontinued offerings are no longer displayed.

- The system enables admin to establish and adjust menu item prices, taking into account various cost factors.

- The system permits the uploading and linking of images to each menu item, enhancing its visual appeal and assisting customers in making informed choices.

### **4.1.4 Billing and Payment**

- Generation of accurate bills.

- Integration with payment processors and receipt printing.

### **4.1.5 Order processing**

- The order creation process supports the addition of multiple items per order, including different quantities and various order types, such as food, drink, card...

- Order information, including item details and pricing, shall be synchronized.

- Restaurant staff have the capability to mark orders as complete, updating the order status accordingly.

### **4.1.6 Forgot Password Mechanism**

- Secure Citizen Identification Card-based to reset password

- Verification process to ensure the identity of the user

- Log of password reset activities for audit purposes

## 4.2 Use-case diagrams and specifications:

### **4.2.1 User Authentication and Access Control**

This component of the cyber gaming system focuses on account verification and associated functionalities. It acts as the secure entry point for users to log into their accounts and provides mechanisms for account recovery in situations where passwords are forgotten.

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| **Name** | **Register** | **Login** |
| Scenario | A user or admin registers an account to access the CYBER GAMING management system. | A user or admin initiates the process to gain access to their account on the CYBER GAMING management software. |
| Description | This use case describes how a new user or admin creates an account by providing all required information and meeting system requirements. | This use case describes the process by which a user or admin logs into the CYBER GAMING management system to access functionalities specific to their roles. |
| Actor | User, Admin | User, Admin |
| Trigger | The actor selects the "Register" option on the login/registration interface. | The actor selects the "Login" option on the main interface. |
| Related Use Cases | Login, Forgot Password | Forgot Password, Exit |
| Pre-condition | - The system must be operational and accessible.  - The actor must provide a valid, unique email. | - The actor must have an active account with a username and password.  - The CYBER GAMING management system must be operational and accessible. |
| Post-condition | - The system saves the actor's information and redirects them to the login page. | - If the login is successful, the actor is granted access to the system with privileges according to their role.  - If the login fails, the system remains at the login screen, allowing retry or password recovery. |
| Flow of Events | 1. The actor selects the "Register" option.  2. Fills out the registration form.  3. Submits the form.  4. The system validates data.  5. If successful, data is saved.  6. If validation fails, error messages are shown. | 1. The actor enters the login screen and inputs their username and password.  2. Submits the information by selecting the "Login" button.  3. The system verifies credentials.  4. If credentials match, access is granted.  5. If credentials do not match, an error message is displayed. |
| Exception Conditions | If the email is already registered, the system suggests recovering the account. | If incorrect login information is entered multiple times, the account may be temporarily locked. |

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| **Name** | **Forgot Password** |
| Scenario | A user or admin attempts to recover their account after forgetting their password. |
| Description | This use case describes the process by which a user or admin can recover their password if they have forgotten it. |
| Actor | User, Admin |
| Trigger | The actor selects the "Forgot Password" option on the login screen. |
| Related Use Cases | Login, Exit |
| Pre-condition | - The actor must have an active account with a registered email.  - The system must be operational and accessible. |
| Post-condition | - The actor receives a password recovery link via email.  - The system records the recovery action for security auditing. |
| Flow of Events | 1) User  1.1 Selects the "Forgot Password" option.  1.2 System check account and inform for admin  1.3 Admin receive notification and choose whatever password to reset 2) Admin  There is no way for admin to reset password themselves |
| Exception Conditions | -Admin forgot password so that the system can’t work, they must lend other account to continue the business  -Admin must check whether that account is really belonged to that user by manual method e.g. Citizen Identification Card |

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| **Name** | **Exit** |
| Scenario | A user or admin wants to exit the application. |
| Description | This use case enables the user or admin to terminate their session and close the application. |
| Actor | User, Admin |
| Trigger | The actor selects the "Exit" option within the application. |
| Related Use Cases | Login |
| Pre-condition | - The actor must be logged into the system. |
| Post-condition | - The application is closed, and the actor’s session ends. |
| Flow of Events | 1. The actor selects the "Exit" option.  2. The system logs the actor out.  3. The application closes, returning the actor to their device's home screen or desktop. |

### **4.2.2 Items Management**

The "Items Management" module within the Cyber Gaming platform focuses on overseeing and updating information for the items featured on the menu. This component ensures that the menu remains current and accurately represents the offerings. Its core functionalities include adding, deleting, editing, and searching for items.

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| **Name** | **Add New Items** |
| Scenario | Admin add new items include cards, new foods, drinks, combos for players into the menu |
| Description | This use case describes the progress of adding new items |
| Actor | Admin |
| Trigger | The need to expand the menu with new items |
| Pre-condition | The actor must be logged into the system |
| Post-condition | -That items not exist in the database  -Database update successfully the detail of that items  -Show on the menu for players to choose |
| Flow of events | 1. Admin log in their account for admin  2. Choose the sections they want to add  3. Enter the details for items, e.g. name, price, quantity, image  4. Click add  5. The system check if that items already exist  6. If that items are unique, then a pop-up inform add successfully, else it inform error |
| Exception conditions | - If that items existed, then system decline to add that items |

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| **Name** | **Delete Existing Items** |
| Scenario | Admin delete existing items include cards, new foods, drinks, combos for players out of the menu |
| Description | This use case describes the progress of delete existing items |
| Actor | Admin |
| Trigger | The need to shrink the menu with new items |
| Pre-condition | The actor must be logged into the system |
| Post-condition | -That items already exist in the database  -Database update successfully the after deleting that items  -The menu will not display that items anymore |
| Flow of events | 1. Admin log in their account for admin  2. Choose the sections they want to delete  3. Click delete  4. A pop-up will ask again if admin want to delete that items  5. The system check if that items already exist  6. If that items existed, then a pop-up inform delete successfully, else it inform error |
| Exception conditions | - If that items not exist, then system decline to delete that items  - System will create a back-up storage to recover the action, will delete permanently after 30 days |

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| **Name** | **Check the number of items** |
| Scenario | Admin or user want to see if the items are in stock |
| Description | This use case describes the progress of checking the number items |
| Actor | Admin, user |
| Trigger | The need to show the current quantity of that items |
| Pre-condition | -The actor must be logged into the system  -That item must exist in the database and display on the menu |
| Post-condition | -Always update the quantity of that items in database  -If they are out of stock, pop-up will display a error message, otherwise update the database |
| Flow of events | 1) User:  1.1 Log in their account  1.2 Choose the section they want to make order  1.3 If the items are out of stock, a notify will be displayed below that items and they can’t do anything with it  1.4 If the item is still in stock but the quantity ordered exceeds the available stock, reject the transaction.  1.5 If the item is still in stock and the quantity ordered matches the available stock, proceed with the transaction and display an 'Out of Stock' message below the item.  1.6 Database update correctly the numbers of items  2) Admin  2.1 Log in their account  2.2 Choose the section they want to check |
| Exception conditions | - Database makes mistake in calculating the quantity of items, e.g. quantity below 0,..  - Database don’t update the quantity of items |

### **4.2.3 Manage Account**

The "MANAGE ACCOUNT" section within the cyber gaming system is designed to handle user account administration and ensure the security and accuracy of user data. This section offers critical functionalities for account management, such as adding new accounts, deleting inactive or unnecessary accounts, and searching for existing accounts. By providing these features, the system helps maintain up-to-date and secure user information.

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| **Name** | **Add account** |
| Scenario | Admin add new account into the database, as well as the money and play hour of that account |
| Description | This use case describes the progress of add new account |
| Actor | Admin |
| Trigger | The need to grant system access for user |
| Pre-condition | - Admin logged into their account  - User registered account |
| Post-condition | -Username must not contain “Admin”  -Database for user update successfully  -User can use all the service provided |
| Flow of events | 1. Admin log in their account for admin  2. User registered account  3. System check if the username contain “Admin”  4. If contain “Admin” show error message, else check the play hour they want and calculate the money they need to pay  5. Admin receive the notification  6. Choose add to add it into the database for user  7. System keep track of that account |
| Exception conditions | -If a user intentionally enters a username containing "Admin" more than three times, a notification should be sent to the admin, and a fine will be imposed on the user.  -If a user selects too few hours of gameplay, the admin has the right to deny the account addition. |

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| **Name** | **Delete account** |
| Scenario | Admin delete existed account out of the database |
| Description | This use case describes the progress of delete existed account |
| Actor | Admin |
| Trigger | The need to revoke all access of user |
| Pre-condition | - Admin logged into their account  - User had a account |
| Post-condition | - Database don’t store any information about that account  - User don’t have access to log in by that account |
| Flow of events | 1. Admin log in their account for admin  2. The user registered a valid account  3. Admin check if that account wasn’t use for a long time or was use for illegal job  5. Choose that account and click delete  6. System send a ask again if admin want to delete  7. Choose OK and database will delete all information about that account |

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| **Name** | **Find account** |
| Scenario | Admin find account in the database |
| Description | This use case describes the progress of finding existing account |
| Actor | Admin |
| Trigger | The need to check if that account exist in the database |
| Pre-condition | - Admin logged into their account  - User registered account |
| Post-condition | -Username must not contain “Admin”  -Search bar show correctly the account admin want to check |
| Flow of events | 1. Admin log in their account for admin  2. Admin input username in search bar  3. System check if that account exist  5. Display all related usernames if the username is not entered fully and belonged detail of that account |
| Exception conditions | -Admin may enter the wrong username so that system can’t find that account |

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| **Name** | **Check account profile** |
| Scenario | Admin, user want to check detail of account e.g. name, money left, play hour,.. |
| Description | This use case describes the progress of checking account profile |
| Actor | Admin, user |
| Trigger | The need to verify the information of that account for security |
| Pre-condition | - Admin logged into their account  - User registered account |
| Post-condition | - The actor has accessed detailed information about user accounts.  - The system displays comprehensive information about each account. |
| Flow of events | 1) User:  1.1 Choose the profile on the web  1.2 System displays name, an area to check or change the password  2) Admin:  2.1 Admin choose the section contain the list account  2.2 Double click on the account they want to check  2.3 System display all the status, name, password, hour play of that account |
| Exception conditions | - Database has a copy account list just in case system failure,  so that information of user will not disappear |

### **4.2.4 Order Processing**

Within the Cyber Gaming system, the **Manage Order Information** section is crucial for monitoring and streamlining all order-related activities. This section includes several essential features, such as selecting combos, choosing cards, picking food and beverages, specifying the quantities of food and drinks, generating bills, applying discounts, and offering the option to cancel orders.

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| **Name** | **Buy food, drink, cards or combos** |
| Scenario | User add what they like, admin receive order and service |
| Description | This use case describes the order processing |
| Actor | Admin, user |
| Trigger | The need to service the user what they want |
| Pre-condition | - Admin logged into their account  - User registered account  - Items are available on the menu |
| Post-condition | - Enough foods, drinks, cards  - Enough money  - Admin receive order and confirm  - Database update new quantity after a success order |
| Flow of events | 1) User  1.1. Log in the web  1.2. Choose sections they want  1.3. Choose specify items they want  1.4. Choose quantity  1.5. Confirm order  2) Admin  2.1. Log in the web  2.2. Receive order  2.3. Confirm order  2.4. Database update new quantity  2.5. Deliver the service and collect money |
| Exception conditions | - Not enough quantity in the database  - Not enough money of user  - Order things that don’t exist |

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| **Name** | **Edit the order** |
| Scenario | Users want to add, subtract or cancel the order |
| Description | This use case describes the edit order processing |
| Actor | User |
| Trigger | The need to click add, subtract, delete button in the payment section |
| Pre-condition | - User registered account  - Items are available on the menu  - Items already in the cart |
| Post-condition | - Screen display exactly the quantity of that items  - Calculate price match with the order |
| Flow of events | 1. Check payment section  2. choose option needed to change e.g. add, subtract, delete,..  3. System calculate the price  4. Click OK to process the order |
| Exception conditions | - When quantity equal 0 if click more subtract may resulting in negative number  - System can calculate the wrong price |

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| **Name** | **Make payment** |
| Scenario | User want to make payment for his order |
| Description | This use case describes the payment process |
| Actor | User |
| Trigger | The need to click “add to card” on the payment section |
| Pre-condition | - User registered account  - Items are in the payment section |
| Post-condition | - System confirm items in stock  - System confirm money  - Admin receive the notification |
| Flow of events | 1. Check payment section  2. Click “Add to card”  3. System check database to see if there are enough stock  4. System accept the order  5. System send admin a notification |
| Exception conditions | - When an order is made, database will update, so that if customer don’t have the money, admin must flexible to handle the situation |