

SWP391

**Report 3 – Software Requirement Specification**

– Danang, April 2023 –

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# Record of Changes

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **A\*, M, D** | **In charge** | **Change Description** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

\*A - Added M - Modified D - Deleted

# Software Requirement Specification

## Product Overview

Nowadays, with the increasing number of students enrolling at FPT University each year, the issue of student accommodation management is becoming crucial. Currently, most accommodation management is done manually using paper-based records and documents, which is time-consuming and prone to errors.

Applying information technology to dormitory management is essential to facilitate easier management, avoid data loss, and enable quick and efficient processing of information with high accuracy. It saves time and effort for managers and enhances the overall experience of students. To address these challenges and provide a more reasonable approach to dormitory management with the application of information technology, we propose developing a Student Dormitory Management System at FPT University.

The Student Dormitory Management System will assist in managing room allocation, accommodation registration, as well as storing and processing information about students and the dormitory situation. It will simplify the management process and save time.

**Figure 1. Overview of FPT Dormitory Management**

## User Requirements

### Actors

|  |  |  |
| --- | --- | --- |
| **#** | **Actor** | **Description** |
| 1 | Guest | Guest is a person who accesses the FPT Dormitory Management system without logging. They have access to the landing page and can view announcements, service and contact information about dormitory. |
| 2 | Student | Students are individuals who have an account in the FPT Dormitory Management system. They have the ability to logging to their account using valid credentials, manage their information, view available rooms and their details (e.g., room types, occupancy, amenities, price,…), reserve a room for a specific academic term and receive confirmation of their room reservation and allocation, check-out from the dormitory at the end of each academic term or when vacating the room, submit maintenance requests, billing and payment, receive important updates, deadlines, and relevant information through the system . |
| 3 | Manager | Manager who have full control over the system such as users’ accounts management, room management, room allocation and assignment in the FPT Dormitory Management system... will be called Manager. |

**Table 1. All actors in the system**

**Guest :**

● Sign up (with ID student)

● View landing page

● View service information page

● View contact information page

● View dormitory rules

**User :**

● Logging (with ID student)

● Manage personal profile (Update or change password for account)

● View all rooms and their details (e.g., room types, occupancy, amenities, price,…)

● View roommates information.

● Search by categories (e.g., gender, room types, occupancy, amenities, price,…)

● Reserve a room for a specific academic term (fill form to provide with necessary information and procedures for the check-in process)

● Billing and payment for a specific academic term (e.g., room before each semester, the amount of electricity and water used by month, water and electric bill after each semester)

● Request to change room with another student

● Submit maintenance or recommendations requests for manager

**Manager :**

● Logging (with Manager ID)

● Manage announcements (CRUD an announcement)

● Manage reserve rooms (change the status of the student's room rental request after the room fee has been paid or delete the request reserve room)

● Manage student information (View all student account and their information – update – delete – search)

● Manage room (CRUD a room)

● Manage collect room fee and other fees (Check the payment status for room fee/electricity fee/water fee, Send total bill)

● Statistic (Total number of rented accommodation (all/male/female), total number of unregistered spaces (all/male/female), total student’s room fees paid)

### Use Cases

* + - 1. *Diagram(s)*

###### Use Case Overview

Below is an overview of the use cases for the FPT Dormitory Management System.

A screenshot of a black screen

Description automatically generated with low confidence

**Figure 2. FPT Dormitory Management System Use Case Diagram**

###### Use Case for Authentication

In the FPT Dormitory Management system, all actors except for guests are required to go through authentication upon entry. This process verifies the identity of the user and ensures that only authorised individuals are granted access. By enforcing authentication, the system can protect sensitive information and prevent unauthorised access.

A screen shot of a computer screen

Description automatically generated with low confidence

**Figure 3. Use Case for Authentication**

###### Use Case for Student

Below is a subsystem use case for the Student actor.

A screenshot of a cell phone

Description automatically generated with medium confidence

**Figure 4. Use Case for Student**

###### Use Case Manager

A picture containing screenshot, text, black and white, black

Description automatically generatedBelow is a subsystem use case for the Manager actor.

**Figure 5. Use Case for Manager**

**A picture containing text, diagram, screenshot, parallel

Description automatically generated**

#### 2.2.3 Descriptions

Below is a summary of the use cases present in the FLearning system:

|  |  |  |
| --- | --- | --- |
| **ID** | **Use Case** | **Actors** |
| UC-1 | Sign Up | Guest |
| UC-2 | Sign In | User, Manager |
| UC-3 | Sign Out | User, Manager |
| UC-4 | Change Password | User, Manager |
| UC-5 | Manage Profile | User, Manager |
| UC-6 | View Landing Page | Guest, User, Manager |
| UC-7 | Manage student information | Manager |
| UC-8 | View all student information | Manager |
| UC-9 | Update student information | Manager |

**Table 2. Use case Description**

### 2.3 Feature Common

#### 2.3.1 Authenticate User

##### 2.3.1.1 Sign Up

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Use Case ID: | **UC-01** | | Use Case Name: | **Sign Up** |
| Created By: | HungPN | | Date Created: | 2023/05/21 |
| Primary Actor: | Guest | | Secondary Actor: | None |
| Description: | This use case describes the process of new visitors creating an account on FDorm website, provide the student ID to become a registered user. | | | |
| Priority: | High | | | |
| Trigger: | The guest clicks on the "Tạo tài khoản" link in the Sign in page or accesses the sign-up page with a link. | | | |
| Preconditions: | PRE-01: Guest has a valid email student ID. | | | |
| Post - Conditions: | POST-1: FDorm system works stably, without error.  POST-2: The guest can use their account to login to FDorm system. | | | |
| Basic Flow: | 1. 2. 3. 4.  5. | The guest accesses the landing page.  Click on “Đăng nhập” button.  System redirects to the sign-in page.  Click on “Tạo tài khoản” link.  Type in all the required fields needed to create an account. | | |
|  | 6. | Click on button “Tạo tài khoản”. | | |
|  | 8. | System redirects to the sign-in page. | | |
| Alternative Flow: | None |  | | |
| Exception Flow: | **5a. The guest fills in invalid username (student ID).**  5a1. The system gives an error message and inform the guest to fill in another username.  **5b. The guest fills in a username (student ID) already exists.**  5b1. The system gives an error message and inform the guest to fill in another username. | | | |
| Business Rules: | BR-02, BR-03, BR-04 | | | |

##### 2.3.1.2 Sign In

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: | **UC-02** | Use Case Name: | **Sign In** |
| Created By: | HungPN | Date Created: | 2023/05/21 |
| Primary Actor: | User, Manager | Secondary Actor: | None |
| Description: | This use case describes how a user can sign in to their account. The system verifies the credentials and grants access to the user's account. | | |
| Priority: | High | | |
| Trigger: | Users want to login to the FDorm system using a Fdorm account. | | |
| Preconditions: | PRE-01: User has a created and valid account. PRE-02: User account has been authorised. | | |
| Post - Conditions: | POST-1: Fdorm system works stably, without error.  POST-2: User successfully logged into the Fdorm system. | | |
| Basic Flow: | 1. User access to the sign-in page. 2. User to choose login with Fdorm account. 3. User type in account info and press sign in button. 4. System verifies the user's account information and allows the user to access the system. 5. System redirects to Landing page. | | |
| Alternative Flow: | None | | |
| Exception Flow: | **4c. The system fails to verify the user's account information and display message.**  4c1. Users stop the login process.  4c2. Users click on Forgot password. | | |
| Business Rules: | BR-02, BR-16 | | |

##### 2.3.1.3 Sign Out

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: | **UC-03** | Use Case Name: | **Sign Out** |
| Created By: | HungPN | Date Created: | 2023/05/21 |
| Primary Actor: | User, Manager | Secondary Actor: | None |
| Description: | This use case describes how a user can sign out of their account, which clears any active cookies and logs them out of the system. | | |
| Priority: | High | | |
| Trigger: | The user wants to log out of the Fdorm website and clicks on the log out option. | | |
| Preconditions: | PRE-01: User has logged in into Fdorm system. | | |
| Post - Conditions: | POST-1: Fdorm system works stably, without error.  POST-2: System navigates the users back to landing page. | | |
| Basic Flow: | 1. User hovers and clicks the logout option. 2. The user is now no longer determined as any role but Guest. 3. The guest will be navigated back to the Landing page. | | |
| Alternative Flow: | None | | |
| Exception Flow: | None | | |
| Business Rules: | BR-16 | | |

##### 2.3.1.4 Change Password

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: | **UC-04** | Use Case Name: | Change Password |
| Created By: | ThyNH | Date Created: | 2023/05/21 |
| Primary Actor: | User, Manager | Secondary Actor: | None |
| Description: | This use case describes the process that allows a user to update their current password to a new one. This use case is typically found in systems or applications where user authentication and security are essential. | | |
| Priority: | Medium | | |
| Trigger: | The user wants to change their password and clicks on the Change password option. | | |
| Preconditions: | PRE-01: The user must be logged into the Fdorm system. | | |
| Post - Conditions: | POST-1: The user's password is successfully changed and updated in the system.  POST-2: The user can log in using the new password for future access. | | |
| Basic Flow: | 1. The user accesses the account and system presents the user with the option to change their password 2. User hovers and clicks the “Change Password” option. 3. The system prompts the user to enter their current username, password for verification purposes and prompts the user to enter their new password. 4. The user enters their current username, password and new password 5. If the account existed and the new password meets the requirements, the system updates the user's password and stores it securely. The user can now log in using the new password for future access. 6. User will be navigated back to the Sign in. | | |
| Alternative Flow: | None | | |
| Exception Flow: | **4a. If the user enters an incorrect current password or username not exist**  4b. The system displays an error message and prompts the user to re-enter the current password or username.  5a. **If the new password does not meet the specified requirements**  5b. The system notifies the user and provides guidelines on the password criteria. The system may request the user to re-enter the new password to ensure accuracy and avoid any typing mistakes. | | |
| Business Rules: | BR-16 | | |

##### 2.3.1.5 Manage Profile

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: | **UC-05** | Use Case Name: | Manage Profile |
| Created By: | ThyNH | Date Created: | 2023/05/21 |
| Primary Actor: | User, Manager | Secondary Actor: | None |
| Description: | This use case refers to the functionality that allows a user to view and update their personal information and preferences in Fdorm system. It involves tasks such as editing contact details, uploading profile pictures, updating preferences. | | |
| Priority: | High | | |
| Trigger: | The user wants to view and change their profile and clicks on the manage profile option. | | |
| Preconditions: | PRE-01: The user must be logged into the Fdorm system. | | |
| Post - Conditions: | POST-1: The user's profile information is successfully updated and saved in the system.  POST-2: The user can view their updated profile information. | | |
| Basic Flow: | 1. The user accesses to the account and choose manage profile within the Fdorm system. 2. The system displays the user's current profile information, such as name, contact details, profile picture, and other relevant data. 3. The user enter relevant data the desired fiels to modify their profile. The user makes the necessary changes to their profile information, such as updating their name, email address, phone number, or other relevant details. 4. If applicable, the user can upload a new profile picture by selecting a file from their device. 5. Once the user has made the desired changes, they can save or apply the modifications. 6. The system validates the updated profile information for any required fields or constraints. If all the provided information is valid, the system updates the user's profile with the new data. 7. The user can now view their updated profile information. | | |
| Alternative Flow: | None | | |
| Exception Flow: | None | | |
| Business Rules: | BR-16 | | |

##### 2.3.1.6 View Landing Page

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: | **UC-06** | Use Case Name: | View Landing Page |
| Created By: | ThyNH | Date Created: | 2023/05/21 |
| Primary Actor: | Guest, User, Manager | Secondary Actor: | None |
| Description: | This use case describes how a user can view the homepage, which displays announcements, service and contact information about dormitory. | | |
| Priority: | High | | |
| Trigger: | Users access the Fdorm system and the view Homepage. | | |
| Preconditions: | PRE-01: The user must be logged into the Fdorm system. | | |
| Post - Conditions: | POST-1: The website is accessible and functional without error.  POST-2: The user has a device with an internet connection and a compatible browser  POST-3: User is able to navigate to other pages or features of the system | | |
| Basic Flow: | 1. The user opens a web browser or launches the system. 2. System displays the landing page, typically showcasing key information, features, and functionalities. User views the available features and content on the landing page. 3. The user can interact with the landing page elements, such as clicking on links or buttons, to navigate to other pages or perform specific actions. 4. The landing page can provide options for the user to log in or sign up for an account. | | |
| Alternative Flow: | None | | |
| Exception Flow: | None | | |
| Business Rules: | BR-16 | | |

#### 2.3.2 View Common Feature as Manager

##### 2.3.2.1 Manage Student Information

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: | **UC-07** | Use Case Name: | **Manage Student Information** |
| Created By: | KietNHG | Date Created: | 2023/05/23 |
| Primary Actor: | Manager | Secondary Actor: | None |
| Description: | This use case describes how a manager can manage students’ information. | | |
| Priority: | High | | |
| Trigger: | Manager wants to manage a student’s information. | | |
| Preconditions: | PRE-01: User logged in into the system.  PRE-02: User’s account is a “Manager” account. | | |
| Post - Conditions: | POST-1: FDorm system works stably, without error.  POST-2: System displays menu with options to manage student’s information.  POST-3: User is able to navigate to other pages or features of the application. | | |
| Basic Flow: | 1. Manager chooses the “Manage students” option 2. The system directs the manager to the Manage students page. | | |
| Alternative Flow: | None | | |
| Exception Flow: | None | | |
| Business Rules: | BR-16 | | |

##### 2.3.2.2 View All Student Information

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: | **UC-08** | Use Case Name: | **View All Student Information** |
| Created By: | KietNHG | Date Created: | 2023/05/23 |
| Primary Actor: | Manager | Secondary Actor: | None |
| Description: | This use case describes how a manager can view all students’ information. | | |
| Priority: | High | | |
| Trigger: | Manager wants to view all students’ information. | | |
| Preconditions: | PRE-01: User logged in into the system.  PRE-02: User’s account is a “Manager” account.  PRE-03: User is in “Manage students” page. | | |
| Post - Conditions: | POST-1: FDorm system works stably, without error.  POST-2: System displays all student’s information.  POST-3: User is able to navigate to other pages or features of the application. | | |
| Basic Flow: | 1. Manager chooses the “Manage students” option 2. The system displays all registered student’s information on the screen. | | |
| Alternative Flow: | None | | |
| Exception Flow: | **2d. The system fails to display students’ information.**  2d1: No students exist in the database. | | |
| Business Rules: | BR-16 | | |

##### 2.3.2.3 Update Student Information

|  |  |  |  |
| --- | --- | --- | --- |
| Use Case ID: | **UC-09** | Use Case Name: | **Update Student Information** |
| Created By: | KietNHG | Date Created: | 2023/05/23 |
| Primary Actor: | Manager | Secondary Actor: | None |
| Description: | This use case describes how a manager can change or update a student’s information. | | |
| Priority: | High | | |
| Trigger: | Manager wants to update a student’s information. | | |
| Preconditions: | PRE-01: User logged in into the system.  PRE-02: User’s account is a “Manager” account. | | |
| Post - Conditions: | POST-1: FDorm system works stably, without error.  POST-2: Student’s information is updated.  POST-3: User is able to navigate to other pages or features of the application. | | |
| Basic Flow: | 1. Manager clicks the “Update” button on a student’s profile. 2. The system displays the options to update the student’s information. 3. The manager inputs the updated information of the student. 4. The manager clicks “Finish updating”. 5. The updated information of the student is stored. | | |
| Alternative Flow: | 4b. The manager clicks “Cancel”.  5b. The information of the student is unchanged. | | |
| Exception Flow: | **5e. The system fails to update the information.**  5e1. There was an empty field.  5e2. There was an error with the inputted data.  5e3. The manager stopped the updating process. | | |
| Business Rules: | BR-16 | | |