

Fusion ERP

**Software Requirements
Specification**

for

SA-1-Hostel Management

Revision History

Name	Date	Reason for Changes	Version
HM_1.0	23, March 2023	Initial SRS	V1.0

Name	Date	Reason for Changes	Version
SA_1	21 th , Jan 2024	Updated SRS	V2.0

TEAM MEMBERS:

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1. Introduction

1.1. Introduction about the Fusion – A brief Description

FusionIIIT stands as a testament to the seamless integration and automation of diverse functions within PDPM Indian Institute of Information Technology, Design and Manufacturing, Jabalpur. Crafted with precision using Python 3.8 and powered by the Django Web framework, this initiative is a student-driven endeavor designed to elevate the institute's operational landscape. Encompassing everything from efficient administration management to academic prowess and miscellaneous departmental tasks, FusionIIIT is a holistic solution that harmonizes the intricacies of campus life.

Imagine it as a digital wizard that takes care of everything, from organizing the administrative stuff to making academics smoother. It's not just limited to the usual tasks; FusionIIIT jumps into various departments and sections, making sure every corner of campus life runs smoothly.

In the admin side, it handles the complicated paperwork and processes. For academics, it brings a digital touch, making learning and managing courses easier. But it doesn't stop there; FusionIIIT is like a friendly companion for all the different parts of the campus, making sure everything works well.

In simpler terms, FusionIIIT is not just a tool – it's a helpful friend, making life at PDPM IIITDM Jabalpur more organized and enjoyable for everyone

1.2. Purpose of the module :

SA-1-Hostel Management Module is software designed to manage different activities related to the hostels' activities of PDPM IIITDM Jabalpur. The software is designed to provide a platform for Warden, Caretaker and Students to interact mutually and perform different necessary functions. The different activities that come under the

SA-1- Hostel Management module are view staff information, check & book guest room, view & edit guards shift,manage attendance of students,display notices to manage hostel related activities and many more.

1.3. Scope of the module

The user's of this module will be the Warden/Caretaker/Student. This software system will be both a web and app based system to be used by the users.

Interface will enable the **Warden** to view staff's info, **Caretaker** to create notice, check guest room, check attendance, view & edit guards shift and **Students** to get notice, book guest room and many more functions.

References

- Staff Member of Hostel
- Professor Dr.Atul Gupta Associate Professor, Head of Computer Sc. & Engineering, Indian Institute of Information Technology Design and Manufacturing, Jabalpur.

2. User/Actor Description(characteristics)

2.1. Warden

The warden, as a key actor in the Hostel Management System, plays a central role in overseeing various aspects to ensure a well-organized and secure living environment for students. He can view guard & staff info ,students and rooms info, can send notice to everyone and can view messages from caretakers as well.Here is a brief overview of the functionalities associated with the warden.

Specific Functionalities:

- **guard information:** Allows the warden to access information about the guards, ensuring awareness of security personnel and their schedules.
- **Viewing Staff Information:** Provides the warden with the ability to view information about hostel staff, facilitating communication and coordination.
- **Managing Notice Board:** Empowers the warden to manage and update the hostel notice board, including sending notices to everyone.
- **Viewing Rooms:** Permits the warden to access information about hostel rooms, aiding in oversight and organization.
- **Viewing Student Information:** Provides the warden with the ability to access information about students, fostering an understanding of the resident population.
- **Searching and Generating Reports:** Enables the warden to search for specific information and generate reports, supporting informed decision-making and analysis.

2.2. Caretaker

Caretaker(s) who will be present at hostel 24/7 will also be given necessary functions to perform in the Hostel management system. He can view guard's shift, allotted rooms to students, can verify booking of guest room, can manage(view,edit) attendance of students, approve students leave requests, view hostel inventory, impose fines on students and can send notice to everyone and can view notice from warden as well. Here is a brief overview of the functionalities associated with the Caretaker.

Specific Functionalities:

- **Approving Leave:** Allows the caretaker to review and approve leave requests submitted by students through the portal.
- **Managing Inventory:** Permits the caretaker to oversee and manage the hostel inventory efficiently.
- **Viewing Staff info:** Provides access to information about hostel staff, facilitating effective communication and coordination.
- **Managing Notice Board:** Enables the caretaker to manage and update the hostel notice board, including sending notices to everyone and viewing notices from the warden.
- **Managing students:** Empowers the caretaker to oversee and manage various aspects related to student activities and information.
- **Managing guest room:** Allows the caretaker to verify and manage the booking of guest rooms, ensuring a smooth and organized reservation process.
- **Managing rooms:** Provides the caretaker with the ability to view and manage the allocation of rooms to students.
- **Managing fines:** Allows the caretaker to impose fines on students for any violations or infractions, maintaining discipline.
- **Searching generated report:** Enables the caretaker to search for specific information and generate reports, facilitating data-driven decision-making and analysis.

2.3. Student

Students will be main stakeholders in this management system and most of the services/automation provided by this hostel management system are mostly intended for the use of students. Students will be at home page after logging in with user id and password, proceeding further to the portal where he can view notice boards, allotted rooms to students and can book guest rooms as well. Students can also register a complaint, apply for leave and also view the fines imposed on them.

Specific Functionalities:

- **Viewing Allotted Room:** Allows students to access information regarding the hostel room allotted to them upon logging into the portal.
- **Requesting Guest Room:** Permits students to request and book guest rooms through the portal for specific durations.
- **Registering Complaint:** Enables students to register complaints, addressing any concerns or issues they may encounter in the hostel.
- **Viewing Notice Board:** Provides students with the ability to access and view important notices and announcements on the hostel notice board.
- **Viewing fines:** Allows students to review any fines imposed on them, providing transparency in financial matters related to hostel management.
- **Applying for Leave:** Facilitates the process for students to apply for leave directly through the portal, streamlining communication with hostel authorities.
- **Viewing Attendance:** Permits students to view their attendance records, offering insights into their presence within the hostel premises.

2.4. Super Admin

The Super Admin is the most privileged admin who oversees the important actions like allotting wardens and caretakers for each of hostels (who in turn manage students) and also adding/deleting hostels from the Hostel Management System when new hostels/old hostels are constructed/deprecated respectively.

Specific Functionalities:

- **Manage Hostels:** Can Add/Delete Hostels from the existing database when new hostels/old hostels are added/deprecated respectively. This gives more flexibility without making the Hostel Management system obsolete over each passing year.
- **Manage Wardens:** Super Admin can manage wardens(add,delete,update) for each hostel after each consecutive year (or) whenever necessary.
- **Manage Caretaker:** Super Admin can manage caretakers(add,delete,update) for each hostel after each consecutive year (or) whenever necessary.

Assumptions and Dependencies

We assume that the warden, caretaker and student of their respective hostel will be given the user id and password by the admin which will be the same across the entire fusion portal.

3. Functional Requirements

3.1. Use Case Diagram



3.2-Use Case Description

Student

request_guest_room:

UC ID	UC#1
Use case Name	request_guest_room
Description	This use case shows that the students can book the guest rooms.
Actor	Students
Precondition	Student must be logged in and the room should be available to book
Main Flow	<ol style="list-style-type: none">1) Students check the availability of rooms .2) If available, students will request for room.
Post Conditions	Notification to caretaker
Alternet Flow	Not Applicable
Sub Flow	Not Applicable
Global Alternate Flow	Not Applicable

view_alloted_room:

UC ID	UC#2
Use case Name	view_alloted_room
Description	Students can view their allotted room from the list.
Actor	Student
Precondition	Students must be logged in.
Main Flow	<ol style="list-style-type: none">1) Accesses the "View Allotted Room" section.2) Students select the hostel and they can see their name in the list.
Post Conditions	Not Applicable
Alternet Flow	Not Applicable
Sub Flow	Not Applicable
Global Alternate Flow	Not Applicable

register_complaint:

UC ID	UC#3
Use case Name	register_complaint
Description	The student reports any issues or concerns related to hostel facilities, maintenance, or other grievances.
Actor	Students
Precondition	Students must be logged in.
Main Flow	1. Navigate to the "Register Complaint" section. 2. Describe the complaint and submit it.
Post Conditions	Not Applicable
Alternet Flow	Not Applicable
Sub Flow	Not Applicable
Global Alternate Flow	Not Applicable

view_notice_board:

UC ID	UC#4
Use case Name	view_notice_board
Description	The student can access and view important notices and announcements posted by the caretaker or warden.
Actor	Student
Precondition	Students must be logged in.
Main Flow	1.Visits the "View Notice Board" section.
Post Conditions	Not Applicable
Alternet Flow	Not Applicable
Sub Flow	Not Applicable
Global Alternate Flow	Not Applicable

view_fines:

UC ID	UC#5
Use case Name	view_fines
Description	The student can check and view any fines imposed on them for rule violations or overdue payments.
	Student
Precondition	Students must be logged in.
Main Flow	1. Navigate to the "View Fines" section. [A1]
Post Conditions	Not Applicable
Alternet Flow	[A1] Students pay the fine.
Sub-Flow	Not Applicable
Global Alternate Flow	Not Applicable

apply_for_leave:

UC ID	UC#6
Use case Name	apply_for_leave
Description	Student can apply for leave
Actor	Student
Precondition	Students must be logged in.
Main Flow	1. Requests leave through the system[A1]
Post Conditions	Not Applicable
Alternet Flow	[A1] Student attach the required documents for leave
Sub Flow	Not Applicable
Global Alternate Flow	Not Applicable

Caretaker:-

approve_leave:

UC ID	UC#7
Use case Name	approve_leave
Description	The caretaker reviews and approves leave applications submitted by students.
Actor	Caretaker
Precondition	Caretaker must login first.
Main Flow	Accesses the "Approve Leave" section. Reviews leave applications and takes appropriate action.
Post Conditions	Caretaker will either approve or reject the leave According to that student will get notification
Alternate Flow	If the caretaker needs additional information to approve the leave, the system prompts the caretaker to request more details.
Sub Flow	The caretaker can leave comments when approving or denying leave.
Global Alternate Flow	Not Applicable

manage_inventory:

UC ID	UC#8
Use case Name	manage_inventory
Description	The caretaker manages the hostel's inventory, including tracking and updating stock levels of essential items.
Actor	Caretaker
Precondition	The caretaker is logged into the system.
Main Flow	Navigates to the "Manage Inventory" section. Updates inventory records as needed.
Post Conditions	The leave application is approved or denied, and the student is notified.
Alternate Flow	If an item is out of stock, the system notifies the caretaker to reorder or update the inventory status.
Sub Flow	
Global Alternate Flow	

manage_notice_board:

UC ID	UC#9
Use case Name	manage_notice_board
Description	The caretaker can create, edit, and delete notices on the hostel's notice board.
Actor	Caretaker, Warden
Precondition	The caretaker is logged into the system.
Main Flow	Accesses the "Manage Notice Board" section. Creates, edits, or deletes notices.
Post Conditions	Notices on the notice board are created, edited, or deleted as per caretaker's actions.
Alternate Flow	If there is an issue saving the notice, the system prompts the caretaker to try again.
Sub Flow	
Global Alternate Flow	

manage_student:

UC ID	UC#10
Use case Name	manage_student
Description	The caretaker can add, edit, or remove student information from the hostel database.
Actor	Caretaker
Precondition	The caretaker is logged into the system.
Main Flow	Navigates to the "Manage Student" section. Adds, edits, or removes student records.
Post Conditions	Student records are added, edited, or removed based on the caretaker's actions.
Alternate Flow	If there is an error in updating student records, the system notifies the caretaker and suggests corrective actions.
Sub Flow	
Global Alternate Flow	

Manage Guest Room:

UC ID	UC#11
Use case Name	manage_guest_room
Description	The caretaker handles guest room requests, allocates rooms, and maintains records of guest stays.
Actor	Caretaker
Precondition	The caretaker is logged into the system.
Main Flow	Accesses the "Manage Guest Room" section. Allocates rooms and manages guest stay records.
Post Conditions	Guest room allocation and related records are updated.
Alternate Flow	If there is a conflict in guest room allocation, the system prompts the caretaker to resolve the conflict manually.
Sub Flow	NIL
Global Alternate Flow	NIL

manage_rooms:

UC ID	UC#12
Use case Name	manage_rooms
Description	The caretaker oversees the allocation and management of regular hostel rooms.
Actor	Caretaker
Precondition	The caretaker is logged into the system.
Main Flow	Navigates to the "Manage Rooms" section. Allocates rooms and manages room-related information.
Post Conditions	Regular room allocations and related information are updated.
Alternate Flow	If there is an error in updating room information, the system notifies the caretaker and suggests corrective actions.
Sub Flow	Not Applicable
Global Alternate Flow	Not Applicable

search/generate_report:

UC ID	UC#13
Use case Name	search/generate_report
Description	The caretaker can search and generate reports related to various hostel activities and records.
Actor	Caretaker, Warden
Precondition	The caretaker is logged into the system.
Main Flow	Accesses the "Search/Generate Report" section. Specifies search criteria and generates reports.
Post Conditions	Reports are generated based on the specified search criteria.
Alternate Flow	If there are no results for the specified search criteria, the system displays a message indicating no data found.
Sub Flow	Not Applicable
Global Alternate Flow	Not Applicable

manage_fines:

UC ID	UC#14
Use case Name	manage_fines
Description	The caretaker can add, edit, or remove fines imposed on students for rule violations.
Actor	Caretaker
Precondition	The caretaker is logged into the system.
Main Flow	Navigates to the "Manage Fines" section. Manages fines for rule violations.
Post Conditions	Fines for rule violations are added, edited, or removed.
Alternate Flow	If there is an error in adding or updating fines, the system notifies the caretaker and suggests corrective actions.
Sub Flow	Not Applicable
Global Alternate Flow	Not Applicable

view_staff_info:

UC ID	UC#15
Use case Name	view_staff_info
Description	The caretaker can view information about hostel staff members.
Actor	Caretaker, Warden
Precondition	The caretaker is logged into the system.
Main Flow	Accesses the "View Staff Info" section.
Post Conditions	The caretaker can view information about hostel staff.
Alternate Flow	If there is an issue retrieving staff information, the system displays an error message.
Sub Flow	Not Applicable
Global Alternate Flow	Not Applicable

Warden

view_guard_shift:

UC ID	UC#16
Use case Name	view_guard_shift
Description	The warden can view shifts of guards for duty.
Actor	Warden
Precondition	The warden is logged into the system.
Main Flow	1. Warden goes to view the guard shift section.
Post Conditions	Not Applicable
Alternate Flow	Not Applicable
Sub Flow	Not Applicable
Global Alternate Flow	Warden can return to dashboard.

view_rooms:

UC ID	UC#17
Use case Name	view_rooms
Description	The warden can view room details of students of his hostel.
Actor	Warden
Precondition	The warden is logged into the system.
Main Flow	1. The Warden goes to the view rooms section. [GA1]
Post Conditions	Not Applicable
Alternate Flow	Not Applicable
Sub Flow	Not Applicable
Global Alternate Flow	GA1 : Warden can return to the dashboard.

view_student:

UC ID	UC#18
Use case Name	view_student
Description	The warden can view details of students of his hostel.
Actor	Warden
Precondition	The warden is logged into the system.
Main Flow	1. Warden goes to view the guard shift section.
Post Conditions	Not Applicable
Alternate Flow	Not Applicable
Sub Flow	Not Applicable
Global Alternate Flow	Warden can return to the dashboard.

Super Admin-

manage_hostel:

UC ID	UC#19
Use case Name	manage_hostel
Description	Super Admin can add/delete hostels from the existing database when new hostels/old hostels are added/deprecated respectively.This gives more flexibility without making the Hostel Management system obsolete over each passing year.
Actor	Super Admin
Precondition	The super admin must be logged into the system. and have appropriate administrative privileges.
Main Flow	Will be able to add/delete list of hostels from the database whenever necessary according to the needs.
Post Conditions	Not Applicable
Alternate Flow	Not Applicable
Sub Flow	Not Applicable
Global Alternate Flow	

manage_warden:

UC ID	UC#20
Use case Name	manage_warden
Description	Super Admin can manage wardens(add,delete,update) for each hostel after each consecutive year (or) whenever necessary.
Actor	Super Admin
Precondition	The super admin must be logged into the system. and have appropriate administrative privileges.
Main Flow	Will be able to update(add/delete) the warden for each allotted hostel
Post Conditions	The new & old wardens will receive notification informing the change
Alternate Flow	Not Applicable
Sub Flow	Not Applicable
Global Alternate Flow	

Manage warden

manage_caretaker:

UC ID	UC#21
Use case Name	manage_caretaker
Description	Super Admin can manage caretakers(add,delete,update) for each hostel after each consecutive year (or) whenever necessary.
Actor	Super Admin
Precondition	The super admin must be logged into the system. and have appropriate administrative privileges.
Main Flow	Will be able to update(add/delete) the caretaker(s) for each allotted hostel
Post Conditions	The new & old caretakers will receive notification informing the change
Alternate Flow	Not Applicable
Sub Flow	Not Applicable
Global Alternate Flow	

3.3. Other Functional Requirements

- Since each room in each hostel may be accommodating a different number of students, So Caretaker must be given flexibility in the software to allot as many students as possible in a single room with his own discretion.
- When new hostels are constructed and existing ones are deprecated/renovated, the Superadmin must be having the flexibility to add and delete hostels based on the requirements
- Students must get notification each time when fine is imposed on them without rate limit.
- The Warden/caretaker can schedule Events and meetings for students and display them in the notice board and also can view the staff's detail and view their working shifts and also view students info along with their allocated rooms.

This module will be a platform for caretaker and warden to function daily official tasks in a smooth working environment; he will have an eagle eye on every staff member, guards of hostel and student profile as well. This will also provide a platform to students as well to connect with the caretaker and warden of their respective hostel.

3.4. Other constraints

- There is exactly only 1 warden for each hostel.
- There can be more than one caretaker but at least 1 caretaker for each hostel.

3.4.1. User Interfaces

The user interface should comply with the color scheming and

dashboard design of the FUSION IIT. Users should be able to navigate from one functionality to another. Inter module navigation should be smooth. All the functionalities should be easy to use and no specific training should be required for the usage of the module

3.4.2. Tech Stack Used

The system will be interacting with a database written in Django (Python Framework) and also be using PostgreSQL will be working on web browsers like Google Chrome, Mozilla Firefox, Safari etc. The mobile app version will be developed using Flutter UI SDK to work cross-platform on both android and IOS mobile devices.

3.4.3. Business rules (if any)

Once the fine amount fees are imposed on the student, the student should be able to appeal to the respective caretaker/warden only once to negotiate the issue for any mis-communication.

4. Non- Functional Requirements

4.1. Performance:

- Objective: The system must promptly respond to user interactions.
- Measures:
 - Response Time: Response time for all actions should be minimal to enhance user experience.
 - Inventory Updates: Swift updates to inventory to reflect real-time changes.
 - Notifications: Instant delivery of notifications to users.

4.2. Scalability:

- Objective: The system should effectively handle a large number of concurrent users.
- Measures:
 - Load Testing: Evaluate system performance under increasing load conditions.
 - Concurrency: Ensure seamless operation with a high volume of users simultaneously interacting with the system.

4.3. Availability:

- Objective: The system should be available 99.9% of the time.
- Measures:
 - Uptime Monitoring: Regularly monitor system uptime to ensure it meets the specified availability percentage.
 - Redundancy: Implement redundancy measures to minimize downtime in case of server failures or maintenance.

4.4. Security:

- Objective: Ensure data confidentiality and integrity. Implement role-based authorization for secure user actions.
- Measures:
 - Data Encryption: Employ encryption techniques to protect sensitive information during transmission and storage(hashing).
 - Access Controls: Implement role-based access controls to restrict users to actions relevant to their roles.
 - Audit Trails: Maintain logs to track user activities, facilitating accountability and identifying potential security issues.

5. Module dependencies with other fusion modules

5.1. UI Level

Warden Interface

Warden will be at home page after logging in with user id and password, proceeding further to the portal where he can view guard & staff info, students and rooms info, can send notice to everyone and can view messages from caretaker as well.

Caretaker Interface

Caretaker will be at home page after logging in with user id and password, proceeding further to portal where he can view guard's shift, allotted rooms to students, can verify booking of guest room, can manage(view,edit) attendance of students, approve students leave requests, view hostel inventory, impose fines on students and can send notice to everyone and can view notice from warden as well.

Student Interface

Students will be at home page after logging in with user id and password, proceeding further to the portal where he can view notice boards, allotted rooms to students and can book guest rooms as well. Students can also register a complaint, apply for leave and also view the fines imposed on them.

Super Admin Interface

Super Admin will be at home page after logging in with his/her user id and password, proceeding further to the portal where he can manage hostels, wardens and caretakers. This makes the automation complete in the Hostel Management Module.

5.2. DB Level Dependencies

DB tables that Hostel Management module depends upon:

From Globals module :

- ExtraInfo
- Stuff
- Faculty
- Staff

From Academic_info module :

- Student

5.3. Module Level Dependencies

- Other Modules which are used in our hostel management system.
 - 1) Globals
 - a) ExtraInfo
 - b) Stuff
 - c) Faculty
 - d) Staff
 - e) Complain
 - 2) Academic_info
 - a) Student

- Our Modules which are used and made in the backend.
 - a) Hall_caretaker
 - b) Hall_warden
 - c) Guest_room_detail
 - d) Guest_room_booking
 - d) Staff_schedule
 - e) Hostel_notice_board
 - f) Hostel_student_attendance
 - g) Hall_room
 - h) Worker_report