Software Requirement Specification

for

Department Stock Management System

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1 Introduction

1.1 Purpose

The purpose of this document is to provide a detailed description about the requirements of the project Department Stock Management System. This document outlines the functional and non-functional requirements of the project, the constraints in which it operates, the deliverables, and the assumptions based on which it is built. It provides a clear understanding of the system's capabilities and constraints to its readers.

1.2 Document Conventions

AWS: Amazon Web Service
TSK : Technical Stock Keeper

1.3 Intended Audience and Reading Suggestions

1. Team members
2. Project Guide
3. Project coordinator
4. Anyone who is interested in developing similar stock management system for an organization.

1.4 Project Scope

The scope of the project includes:

1. *Need:-*
    - Provide a secure, role-based system for faculty and principals to streamline inspection workflows and maintain stock records.
    - Enable centralized access to inventory data for better decision-making and transparency.
    - Automate inventory management to reduce manual effort and errors.
2. *Deliverables:-*
    - User registration and login capabilities.
    - Role-based dashboards for principals and faculty.
    - Automated workflows for assigning, inspecting, and reviewing inventory tasks.
    - Secure, cloud-hosted storage for inventory and user data.
3. *Exclusions:-*
    - The system does not cover inventory management for departments outside of Computer Science.
    - Mobile application development is not included.
    - The system does not automate the manual stock verification.
4. *Assumptions:-*
    - The department will provide accurate initial data to populate the inventory database.
    - User roles and permissions are predefined and will not require frequent changes.

1.5 References

IEEE Standards Association. (1998). IEEE 830-1998 - IEEE Recommended Practice for Software Requirements Specifications.

2 Overall Description

2.1 Product Perspective

The Department Stock Management System is a specialized web application designed to streamline and automate the inventory management processes within the Computer Science Engineering Department of RIT Kottayam. This system integrates role-based workflows Principal, HOD, Stock In Charge and Custodian, ensuring secure and efficient management of departmental assets like computers, furniture, and other lab equipment.

2.2 Product Features

1. User Authentication
2. Stock Allocation
3. Stock Verification
4. Stock Transfer
5. Stock Maintenance
6. Stock Clearance
7. Stock Handover
8. User Based Notification
9. Report Generation
10. Add a Stock System

2.3 User Classes and Characteristics

1. Principal
2. HOD
3. Faculty In charge
4. Custodian
5. Technical Stock Keeper

2.4 Operating Environment

The Hardware and Software required for this project are mentioned in section 4.2 and section 4.3. The client-side operates on desktops, laptops, or tablets using widely supported web browsers such as Google Chrome, Mozilla Firefox, and Microsoft Edge. On the server side, the system utilizes Django as the backend framework and ReactJS for the frontend. Data storage is managed using MongoDB, ensuring secure and efficient database operations. The system supports deployment on cloud platform AWS for scalability or can be hosted on on-premises servers.

2.5 Design and Implementation Constraints

The implementation is limited to a small development team to maintain simplicity and manage resource constraints effectively. Collaborative development is supported using tools like Git for version control, enabling seamless integration of modular components. The project adheres to well-known design conventions and standardized programming practices to enhance code readability, scalability, and ease of maintenance.The use of Django and ReactJS ensures the system can be easily modified and expanded in the future.

2.6 Assumptions and Dependencies

The key assumption of the project include

1. The user is an employee of the institution.
2. The user has an active role in stock keeping.

3 System Features

The system has following features.

1. User Authentication
2. Stock Allocation
3. Stock Verification
4. Stock Transfer
5. Stock Maintenance
6. Stock Clearance
7. Stock Handover
8. User Based Notification
9. Report Generation
10. Add a stock System

3.1 User Authentication

3.1.1 Description and Priority

This feature ensures secure access to the system based on user roles, Each valid user is suppose to be authenticated by the system so as to have access to the system. This feature enables to provide different interfaces and functionalities for various users, depending on their roles. This in turn ensures accountability and smooth workflow management.
Priority: High

3.1.2 Stimulus/Response Sequences

- Stimulus: User credentials.
- Response: Successful login if the user is an authenticated user. An Error message if the user is not an authenticated user.

3.1.3 Functional Requirements

1. The system must provide a secure login mechanism that validates users based on their credentials.
2. Failed login attempts should trigger alerts after a certain threshold.

3.2 Stock Allocation

3.2.1 Description and Priority

This functionality ensures allocation of inventory items (e.g., computers, furniture) to specific classrooms, labs within department based on requirements.
Priority: High

3.2.2 Stimulus/Response Sequences

- Stimulus: Notification send by TSK to the HOD for allocating some inventory items into one of the department premises.
- Response: The items get allocated to the respective premises and notifications are send to stock-in-charge, HOD and TSK .

3.2.3 Functional Requirements

1. The HOD must be able to forward the notification send by the TSK to stock-in-charge of respective premises.
2. The stock-in-charge must be able to forward the notification send by the HOD to the respective custodian.
3. The custodian accepts the notification from the stock in charge and inserts the items into the respective stock inventory.
4. The stock notifications must be send to stock in charge, HOD and TSK to notify that the inventory items are successfully allocated to the respected premises.

3.3 Stock Verification and Remarks

3.3.1 Description and Priority

This feature allows the annual stock verification process and the submission of the annual report in online mode.
Priority: High

3.3.2 Stimulus/Response Sequences

- Stimulus: Assigned Faculty performs a stock verification for their assigned inventory.
- Response: A Report is forwarded to the principal and after verification the system updates the condition of items and logs remarks for future reference.

3.3.3 Functional Requirements

1. Principal must be able to assign a faculty for verifying the stock and send a notification to the respective persons.
2. The HOD must be able to create a temporary login credentials for each faculty who were assigned stock verification duty by the principal and to send these details to the respective faculty.
3. Each Faculty who was assigned the stock verification duty must be able to view the items of the respective premises and must be able to mark the present status of the items (working, damaged, or under maintenance). Further, on completion of the status entries, the faculty must be able to submit the inferences to the principal.
4. The Principal must be able to access the inferences sent by the faculty who were assigned stock verification duty as separate reports and approve them.
5. The HOD must be able to delete the temporary user credentials on completion of the respective stock verification an the approval of the principal.

3.4 User Based Notification

3.4.1 Description and Priority

This feature ensures timely updates for all users about assigned tasks, approvals, and changes in inventory status, enhancing communication and transparency.
Priority: High

3.4.2 Stimulus/Response Sequences

- Stimulus: Successful Login of users.
- Response: System sends notifications to corresponding users.

3.4.3 Functional Requirements

1. Notifications should be available on the user dashboard.
2. Alerts must include task details, user assignment updates, and approval updates.

3.5 Report Generation

3.5.1 Description and Priority

This feature enables filtered and comprehensive reports about inventory items based on specific criteria. It supports on-demand report generation for better decision-making and resource planning. **Priority: High**

3.5.2 Stimulus/Response Sequences

- Stimulus: Specific filter options chosen by the user
- Response: Reports based on specified filter options.

3.5.3 Functional Requirements

1. The Users must be able to select various filter options including the item type, condition (working, damaged, under maintenance), location and other specifications.
2. Reports should support export in formats like PDF and Excel for offline use.

3.6 Stock Transfer

3.6.1 Description and Priority

This feature enables the stock-in-charge to transfer items from one premise to another premise.
Priority: High

3.6.2 Stimulus/Response Sequences

- Stimulus: The stock-in-charge initiates the transfer of items from one inventory to another.
- Response: The item is removed from the source inventory and added to the specified destination inventory, with records updated accordingly.

3.6.3 Functional Requirements

1. The stock-in-charge must be able to select the destination premise and specify the item to be transferred.
2. The stock-in-charge of the destination premise must receive the notification to accept or reject the item.
3. A provision to update the stock of both the premises if the stock-in-charge of the respective premise accepts the notification.
4. A provision to send notifications regarding the transfer to the custodians of both the premises.

3.7 Stock Clearance

3.7.1 Description and Priority

This feature allows the custodian to remove damaged or unwanted items from the premise. **Priority: High**

3.7.2 Stimulus/Response Sequences

- Stimulus: The item(s) to be removed
- Response: The removal of the selected items from the respective premise.

3.7.3 Functional Requirements

1. The stock-in-charge of the respective premise must be able to identify and select items that are eligible for clearance.
2. Once cleared, the system should automatically update the respective stock records to reflect the removed items.
3. A provision to send notifications to relevant parties.
4. A data storage to keep up the records of all the cleared items.

3.8 Stock Maintenance

3.8.1 Description and Priority

This feature ensures that the maintenance details of all inventory items is recorded. It allows users to identify and log items requiring repair or maintenance.
Priority: High

3.8.2 Stimulus/Response Sequences

- Stimulus: A notification sent by stock-in-charge of the item requiring maintenance to the party entrusted to do the maintenance.
- Response: The details of the maintenance performed on the item.

3.8.3 Functional Requirements

1. There must be a provision to send an email to the service provider.
2. Completed task should update the item status and maintenance details in inventory database.

3.9 Stock Handover

3.9.1 Description and Priority

This feature enables the transfer of inventory responsibilities from one stock-in-charge to another stock-in-charge.
Priority: low

3.9.2 Stimulus/Response Sequences

- Stimulus: The faculty sends a handover request to HOD.
- Response: HOD accepts the request and appoints a new faculty.

3.9.3 Functional Requirements

1. The party who wants to transfer the responsibility must be able to send a notification to HOD.
2. The HOD must be able to appoint a new faculty as stock-in-charge.
3. The HOD must be able to create a temporary login credentials for the new faculty.
4. The HOD must be able to remove the login credentials of the previous stock-in-charge.
5. Notifications regarding the stock handover must be sent to both the parties.

3.10 Add a Stock System

3.10.1 Description and Priority

This feature allows the addition of a new premise such as classroom, lab or any other workspace within the department.

Priority: High

3.10.2 Stimulus/Response Sequences

- Stimulus: The HOD add a new stock system.
- Response: A new inventory database is created.

3.10.3 Functional Requirements

1. The system must allow the creation of a new data storage for recording the details of the new stock system.
2. The HOD must be able to assign stock-in-charge and the custodian for the new stock system.

4 External Interface Requirements

4.1 User Interfaces

- Login page:- Allows various users to log in to the system based on their roles.
- Principal Dashboard:- Provides an overview of the entire department's inventory, including stock levels, recent activity, requests for approval and assign inspection duty
- HOD Dashboard:- Displays detailed information about stock levels, pending verification tasks, and transfer requests within their department.
- Faculty In-charge Dashboard:- Allows the Lab In-charge to enter new stock items, verify existing stock, and manage transfers of inventory items between labs.
- Custodian Dashboard:- Enables the custodian to view stock levels, assist with stock verification, and facilitate the transfer of items between different rooms or labs.
- TSK Dashboard:-

4.2 Hardware Interfaces

- Intel Core i3 processor or above
- Minimum 8 GB RAM

4.3 Software Interfaces

- Windows 10 or above/Mac/Linux
- MongoDB DBMS
- Any web browser

5 Other Nonfunctional Requirements

5.1 Performance Requirements

(a) Reliability:- Reliability is the ability to consistently perform its intended functions over time and under different conditions without unexpected failures or errors. The product is expected to have high reliability

(b) Response time:- Response time refers to the amount of time it takes for the web server to respond to a request made by a user.The product is expected to have a low response time.

5.2 Security Requirements

(a) Access Control:- The system should ensure that only authorized users can access or modify stock records.

(b) Role-Based Access Control:- Ensure users have access only to the resources and operations for which they are authorized.

5.3 Software Quality Attributes

(a) Usability:- The Usability refers to the ease with which the system can be used by the users of the system. It is expected to have high usability for the project under consideration.

(b) Testability and Maintainability:- The testability refers to how effectively the system can be evaluated and validated to meet its performance and functionality requirements. The Maintainability refers to how easily the system can be repaired and improved. It is expected to have high testability and maintainability for the project under consideration.

6 Other Requirements

There are no other requirements in this project