Software Requirements Specification

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1. Introduction

- The Grievance Redressal System for CASFOS must provide a web-based platform for the development of a Comprehensive Database Management System (CDMS), intended to serve as a centralized digital platform for managing key institutional operations. The primary focus of this system is to efficiently handle three major functional areas:

  1.Asset Management
  2.**Faculty Information Management**
  3.**Role-Based Data Viewing**.

- Institutions often face challenges with traditional, manual methods of data recording, tracking, and approval processes.

- These methods can lead to delays, lack of transparency, data redundancy, and difficulty in retrieving information when needed.

- The proposed CDMS is designed to overcome these limitations by providing a **fully digitized, role-based, and modular system** that caters to various stakeholders within the organization, such as administrators, staff, department heads, and principal-level authorities.

1.1 Purpose

- This document defines the functional and non-functional requirements of the Comprehensive Database Management System (CDMS) to be used within an institution for managing **asset lifecycle**, **faculty onboarding and tracking**, and **centralized viewing of records**.
- The CDMS aims to streamline operations by replacing manual processes, enhancing transparency, enabling role-based access, and ensuring centralized monitoring of all data.

1.2 Scope

The **Comprehensive Database Management System (CDMS)** is designed to function as an all-in-one platform that integrates multiple institutional processes under a single interface. The goal is to eliminate the fragmented and manual handling of data by offering digitized modules tailored to specific operational needs such as asset tracking, faculty lifecycle management, and centralized viewing for decision-makers.

The system shall include the following functional capabilities:

- **Dashboard with Analytics:** The system shall display key metrics filtered by date ranges, including:
  - Recent Notification
  - Permanent Assets in Store(by year and month wise filter)
  - Consumable Assets in Store
  - Issued Permanent Assets
  - Issued Temporary Assets

- Total Sessions Handled(Internal,External & Contract faculty)
- Total No. of Administrators
- Total No. of Data Entry Staff
- Total No.of Viewers
- Expenditure summaries

- **Asset Management Module:**
  - The system shall provide a dynamic form allowing users to select complaint category, premises, and specific location. It must support multimedia upload (images/videos) for better documentation.
- **Faculty Management Module:**
  - The faculty module streamlines the onboarding process of teaching and non-teaching staff.(includes Internal,External & Contract Faculty)
  - It includes features for entering personal and academic details, verification by designated authorities, rating conduct or performance, and managing approvals.
  - This centralized handling reduces paperwork and improves data integrity across departments.
- **Multimedia Support:**
  - Upload of **before and after images/pdf bills** to enhance clarity and transparency.
- **Hierarchical Workflow:**
  - The system shall automatically route Asset Data through a predefined hierarchy, such as from Data Entry Staff to Asset Manager to Head Of Office, and finally back to the database.
  - The system shall automatically route Faculty Data through a predefined hierarchy, such as from Faculty Entry Staff to Faculty Verifier to Head Of Office, and finally back to the database.
  - The Principal have an access to view,Report the issues and gave the conduct for faculty.

- **Real-Time Notifications:**
  - The system shall send status updates to data entered and relevant roles as the complaint progresses through various stages.
- **Admin Privileges:**
  - Admin users shall create, manage, and delete user accounts and roles and Approve the New User.
- **Audit and Reporting:**
  - Periodic reports generation for performance analysis and auditing purposes(PDF and Excel file Format).

1.3 Definitions, Acronyms, and Abbreviations

1.3.1 Roles Involved

Role Acronym	**Full Title**
PI	Principal of CASFOS
AENTRY_STAFF	Asset Entry Staff
A_MANAGER	Asset Manager
FENTRY_STAFF	Faculty Entry Staff
F_VERIFIER	Faculty Verifier(FI)
HOO	Head Of Office
VIEWER	Viewer

1.3.2 Data Status

Status Code	**Definitions**
CONSUMABLE	It Indicates the Consumable Assets type for easy access of Assets
PERMANENT	It Indicates the Permanent Assets type for easy access of Assets.
SERVICE	It indicates that the asset is under Service.
DIPOSAL	It Indicates that the Asset is not able to use in future.
APPROVE	It indicates that Asset Manager/Faculty Verifier was acknowledged.
REJECTED	It indicates that Asset Manager/Faculty Verifier was not acknowledged.
VIEW	It indicates that Able to view the overall data.
ADD CONDUCT	The Principal has rights to gave the conduct to all faculty.
VERIFY	The Faculty Verifier acknowledge that then it stores into the database
REJECT	The Faculty Verifier not acknowledged the Faculty Data

2. Overall Description

2.1 Product Perspective

- The proposed system shall be a web-based Comprehensive Database management Systeml intended exclusively for internal use within CASFOS by faculty, staff, and technical/administrative personnel. The system shall be responsive, supporting access via both desktop (computers/laptops) and mobile devices using standard web browsers.
- The CDMS is developed as a responsive web application to support seamless access from desktops, laptops, and mobile devices via standard web browsers. Each user is assigned a unique login ID and password, with access privileges tailored according to their assigned role such as VIEWER, AENTRY_STAFF, A_MANAGER, FENTRY_STAFF, F_VERIFIER, HOO (Head of Office), or PL (Principal).
- Upon successful authentication, users will be redirected to a role-specific dashboard where they can perform actions relevant to their responsibilities.
- The system allows for multimedia uploads (such as images and files), dynamic filtering of data, real-time tracking of asset/faculty status, and visual dashboards for easy monitoring.

2.2 Product Functions

The system shall provide a centralized web-based platform for comprehensive database management system at CASFOS, supporting multiple user roles and their respective actions. The major functional requirements include:

- **Asset Management**: Entry staff can submit new asset entries, upload images, generate and upload signed bills.The Asset Manager reviews submitted assets and can either approve or reject them with remarks.For service or maintenance, the asset entry staff initiate service requests which must be approved or rejected by the Asset Manager
- For condemnation or disposal, disposal requests initiated by asset staff are forwarded to the Asset Manager and then escalated to the Head of Office for final approval.(**AENTRY_STAFF—>A_MANAGER—>HOO**)

- **Faculty Management**:Faculty Entry Staff can input data for Internal, External, and Contract faculty. Data can be filtered and viewed using dynamic search options.The Faculty Verifier checks and validates the entered data, either approving or rejecting it with appropriate remarks.The Head of Office is responsible for approving or updating faculty records and assigning roles to new users.
- The Principal has access to all faculty records and can rate or provide a conduct score based on performance. They also have the authority to raise issues or flag erroneous data**(F_ENTRYSTAFF—>F_VERIFIER→HO→PL)**

- **Multimedia Upload**: The system shall support uploading of before and after images/videos along with bills that signed and work updates for enhanced transparency.
- **Audit & Reporting**: The system shall generate periodic reports for auditing purposes, including complaint statistics, department-wise performance, and expenditure tracking.

- **Price Entry and Remarks**: The system shall allow EE users to input or defer cost estimates for complaints and provide remarks when marking complaints as “Not Satisfied.”

2.3 User Classes and Characteristics

The system shall support multiple user roles, each with specific responsibilities and access rights. While certain features like **Dashboard**, **Your Activity**, and **Notification** shall be universally accessible across all roles, the functionality within "Your Activity" shall vary depending on the user’s position.

- **PRINCIPAL** acts as the highest authority in the system with oversight across both asset and faculty modules. This role has access to view, update, and manage key information. The Principal shall be able to review faculty records, raise issues when discrepancies are found, and assign conduct scores to faculty based on performance evaluations. Additionally, the Principal can view detailed analytics related to both assets and faculty, contributing to strategic planning and administrative decision-making.
- **Head Of Office (HOO)**plays a central managerial role in both faculty and asset workflows. This role has the authority to approve or reject user accounts and assign specific roles. For faculty data, the HOO shall be responsible for final approvals and updates, ensuring that only accurate, verified entries are stored in the system. In the asset module, the HOO gives the final approval for condemnation requests submitted through the hierarchical workflow, thereby controlling the disposal of institutional resources..
- **Asset Manager(A_MANAGER)** is responsible for reviewing, verifying, and managing the lifecycle of all assets in the system. This includes approval or rejection of new asset entries submitted by asset entry staff. Additionally, the Asset Manager oversees service requests for existing assets and validates them based on documentation and operational needs. Disposal requests are also reviewed and, if appropriate, forwarded to the Head of Office. The Asset Manager ensures that all asset-related data aligns with institutional policies and technical standards
- **Asset Entry Staff (AENTRY_STAFF)** serves as the initial point of contact for asset data entry. They are responsible for submitting new asset entries, uploading associated documents (like photos, bills), and generating signed bills post-issuance. For assets requiring servicing or condemnation, this role initiates the respective requests, which are then escalated to the Asset Manager and beyond. Though limited in approval powers, their role is critical for initiating asset records and maintaining up-to-date data.
- **Faculty Verifier(F_VRERIFIER)** ensures the accuracy and completeness of faculty data submitted by the entry staff. This role is responsible for validating the details of internal, external, and contract faculty. They can either accept entries that meet the necessary standards or reject them with appropriate remarks. Their decisions play a pivotal role in maintaining data integrity and ensuring that only verified records are presented to higher-level roles like HOO or Principal for final approval.
- **Faculty Entry Staff (FENTRY_STAFF)** handles the entry of faculty data into the system. They are tasked with collecting and inputting information across various categories—Internal, External, and Contract faculty. This role is equipped with advanced search and filter capabilities to manage and review the entered data efficiently. However, they do

not have verification or approval privileges; their role is focused on accurate and timely data entry.

- **Viewer (VIEWER)** is a passive role designed for users who need informational access without the ability to modify data. This role can view all available faculty and asset data but cannot perform any actions like adding, updating, approving, or rejecting records. The Viewer interface allows for filtered searches and read-only access to support transparency and awareness among departments or observers.

3. Functional Requirements

3.1 User Management and Authentication

- The system shall support user authentication via username and password.
- An Admin user shall have the ability to:
    - Add new users.
    - Edit existing user details.
    - Delete users.
    - Reset user passwords.

3.2 New Faculty Registration

- Users shall be able to submit the Asset's by providing the following details:
    - Faculty Type
    - Name
    - Cadre
    - Year of Allotment
    - RR/SFS Date
    - Date of Joining
    - Date Of Releiving
    - Address
    - Phone Number
    - Email Address
    - Photography
    - Add Details About DomainKnowledge
    - Education Details
    - Books and Article Published
    - Modules handled
    - Other Responsiblities

3.3 New Asset Registration

- Users shall be able to submit the Asset's by providing the following details:
    - Asset Type
    - Asset Category
    - Entry Date
    - Purchase Date
    - Supplier Name
    - Supplier address
    - Source
    - Mode of Purchase
    - Bill No
    - Bill Photo
    - Received By with unique Asset ID's
- User shall be able to submit the Return /Maintenance Asset's by providing the following details.
    - Asset Condition
    - Remarks about Asset Condition.
    - Service Number
    - Service date
    - Service Amount

3.4 Asset and Faculty Management Workflow

3.4.1 Asset Lifecycle Workflow

- When a new asset is acquired, the **Asset Entry Staff (AENTRY_STAFF)** shall initiate the entry process by submitting detailed information about the asset, including type, category, specifications, and multimedia attachments such as bills, warranty documents, or photographs.
- Upon submission, the entry is automatically routed to the **Asset Manager (A_MANAGER)** for validation and further action.
- If the asset category is mismatched or incorrect, the Asset Manager may return the entry to the staff for correction with appropriate remarks.

3.4.2 Asset Manager Actions

- The **Asset Manager** is responsible for reviewing the submitted asset details. They shall have the ability to: **Approve** the asset if all details are valid and complete.
- **Reject** the asset entry with comments, prompting re-submission by the AENTRY_STAFF.
- Once approved, the asset becomes active in the system and is available for issuance or service tracking.

3.4.3 Asset Issuance and Bill Generation

- After approval, the **Asset Entry Staff** shall issue the asset to the designated department or personnel. They are responsible for(Generating the asset issuance bill.)
- Uploading a **signed bill** confirming the asset's handover.
- Updating the asset status in the system for traceability.

3.4.4 Asset Servicing Workflow

- If an asset requires servicing due to malfunction or periodic maintenance, the **Asset Entry Staff** shall initiate a **Service Request**, attaching relevant service notes and media (if needed).
- **Approves** or **Rejects** the service request.
- May return the request with instructions for additional information or corrections. Upon approval, servicing details and post-service verification media shall be added to the asset's history.

3.4.5 Asset Disposal (Condemnation) Workflow

- In cases where assets are deemed no longer usable, outdated, or economically impractical to maintain, the system provides a structured **Disposal (Condemnation) Workflow**.
- This process is initiated by the **Asset Entry Staff**, who raise a formal **Disposal Request** for the asset in question. The request includes details such as the reason for disposal, current condition of the asset, and supporting media like photographs or documents.
- Once submitted, the request enters a multi-level approval hierarchy designed to ensure accountability and traceability.
- The first level of review is handled by the **Asset Manager**, who examines the request for completeness, validity, and compliance with asset disposal policies. Upon preliminary approval, the request is forwarded to the **Head of Office (HOO)**, who holds the final authority on whether the asset should be disposed of asset. If the HOO approves the request, the system updates the asset's status to **"Disposed"**, and the asset is formally removed from the active inventory, ensuring that outdated or non-functional assets do not remain in circulation.

3.5 Faculty Data Entry

- The **Faculty Management Workflow** begins with the **Faculty Entry Staff (FENTRY_STAFF)**, who are responsible for entering new faculty profiles into the system. Faculty data can be categorized under **Internal**, **External**, or **Contract** types based on their association with the institution. Each record must include essential details such as the faculty member's name, contact information, educational qualifications, years of experience, domain and subdomain expertise, and any additional information relevant to their role.

- In addition to basic information, the system allows **optional uploads of supporting documents**, such as academic certificates, ID proofs, or prior employment records. This helps in maintaining a comprehensive digital profile for each faculty member.

- To streamline operations and internal coordination, the system also supports **advanced filtering and search functionalities**, enabling users to quickly locate faculty based on name, department, domain, or category.

3.6 Faculty Verification

- Once the faculty data is successfully entered, it is automatically routed to the **Faculty Verifier (F_VERIFIER)** for validation. The verifier plays a crucial role in ensuring that all submitted information is accurate and supported by valid documentation.

- Each faculty record is thoroughly reviewed against the uploaded certificates, qualification details, and domain expertise to maintain high data integrity.

- After validation, the verifier either **accepts or rejects** the faculty entry. Accepted records proceed to the next level for final approval, while rejected entries are accompanied by **clear remarks and reasons** for rejection.

- These remarks guide the Faculty Entry Staff in correcting any issues before re-submitting the record. This layered review process ensures that only verified and authentic faculty data is stored in the system.

- Color-codes for complaints in various status
    - Approved - Green
    - Emergency - Red

3.7 Faculty Approval and Updation

- Following verification, the faculty data is sent to the Head of Office (HOO), who has the final decision-making authority. The HOO reviews all approved and rejected entries to ensure completeness and institutional relevance. They may approve new faculty records, update existing profiles, or request clarifications on flagged data when needed.
- This step ensures that the institution maintains an up-to-date, accurate, and verified database of all faculty members. The HOO's ability to modify records also enables real-time updates in case of role changes, promotions, or faculty exits. This role is critical in maintaining data consistency across the faculty directory and providing institutional oversight.

3.8 Principal Oversight and Conduct Assignment

- The **Principal (PL)** acts as the highest-level authority in the Faculty Management Workflow and has **full access to the entire faculty database**. The Principal's responsibilities go beyond simple data viewing—they are empowered to **assign conduct ratings** to faculty members based on various performance metrics, institutional contribution, and peer feedback. These ratings contribute to performance evaluations, promotions, and disciplinary decisions.

- Moreover, if the Principal identifies **any inconsistencies or data errors**, they are authorized to raise flags and recommend corrections. The system also allows the Principal to **view and update faculty and asset data** across departments, making their role pivotal in maintaining institutional standards, transparency, and strategic oversight.

4. Non Function Requirements

4.1 Performance and Scalability

- The system shall support processing up to 500 Entry per day without performance degradation.
- The system shall be capable of handling up to 20 concurrent users accessing the platform simultaneously.

4.2 Security

- The system shall enforce secure data transmission using HTTPS protocol.
- The system shall implement SSL encryption for all sensitive communications.
- JWT (JSON Web Token) based authentication shall be used for secure session management and API access.
- The system shall implement Role-Based Access Control (RBAC) to restrict access based on user roles and permissions.
- Email communication failures shall be logged, and the system shall attempt automatic retries.

4.3 Reliability and Availability

- The system shall perform weekly data backups to ensure recovery in the event of data loss or system failure.
- Backed-up data shall be stored securely and be readily available for disaster recovery.
- The system shall be designed to ensure high availability and minimize downtime.

4.4 Usability and Accessibility

- The system shall be responsive and optimized for mobile phones, tablets, and desktop devices.
- The user interface shall display clear success and error messages using toast notifications in the website.

- All user-facing features shall be designed for ease of use, with an intuitive and accessible interface.

4.5 Deployment Environment

- The system shall be deployable on a Windows Server environment.

Appendix A: State Diagram