Software Design Specification

Table of Contents

1. Introduction

1.1 Purpose

The purpose of this Software Design Specification (SDS) is to provide a detailed description of the design of the Grievance Portal software system. This document outlines the software design and architecture, data design, component design, and human interface design.

1.2 Scope

The Grievance Portal - “Awaaz” software system is designed to provide a platform for users to submit and track grievances related to various services. The system will have three primary user roles: Citizen, Admin and Officer.

1.3 Overview

This document provides an overview of the software design of the Grievance Portal system. It describes the system architecture, data design, component design, and human interface design.

1.4 References

The following references were used in the creation of this SRS document:

- IEEEStd830-1998,IEEERecommendedPracticeforSoftwareRequirements Specifications
- IndianGovernmentwebsitesrelatedtopublicservices
- SRSdocument

1.5 Definitions and Acronyms

- SDS: Software Design Specification
- GUI: Graphical User Interface

2. System Overview

The Citizens will be able to submit their grievances and the Officers will be able to view their grievances on the basis of their department and level of authority. The admins of each district will be able to register new officers and view the statistics of the officers in his district. There is an automatic tracking system that details all the actions taken by the officers on a certain complaint, along with extra features such as responsive web design, reminder sending button, etc.

3. System Architecture

3.1 Architectural Design

The system will be designed using a 3-tier architecture, consisting of a presentation layer, application layer, and database layer. The presentation layer will be responsible for rendering the GUI and user interactions. The application layer will handle all business logic and communication with the database layer. The database layer will be responsible for storing and retrieving data.

3.2 Decomposition Description

The Grievance Portal system will be decomposed into the following components:

- Presentationlayer
- Applicationlayer
- Databaselayer

.

3.3 Design Rationale

The 3-tier architecture was chosen to provide a separation of concerns and increase modularity. This architecture will also allow for easy scalability and maintenance.

4. Data Design

4.1 Data Description

The following data entities will be used in the Grievance Portal system:

- Userdata:Containsuserinformation,includingname,email,andpassword.
- Complaintdata:Containsinformationaboutgrievancessubmittedbyusers,including subject, description, department, status, and an action history object that contains a record of all the actions taken upon that complaint.
- Officerdata:Containsinformationsuchasname,email,password,department,level, district, etc.
- OfficerRatingsdata:Containsinformationabouttheratingofanofficer,andinwhich complaint he got how much rating.
- Admin:Containsinformationsuchasemailid,passwordoftheadmin.

4.2 Data Dictionary

The following data dictionary describes the data entities used in the Grievance Portal system:

User data

- ID:Theuniqueidentifierfortheuser.
- Name:Theuser'sname.
- Email:Theuser'semailaddress.
- Password:Theuser'spassword.
- Age:Theuser’sage.
- Phonenumber:Theuser’sphonenumber.
- District:Theuser’sdistrict.

Complaint data

- ID:Theuniqueidentifierforthegrievance.
- Createdby:TheIDoftheuserwhosubmittedthegrievance.
- Contact:Theemailaddressoftheuserwhocreatedthegrievance.
- Subject:Thesubjectofthegrievance.
- Description:Thedescriptionofthegrievance.
- Department:Thedepartmentofthegrievance.
- OfficerID:Theofficerassignedtothegrievance.
- Actionhistory:Thearrayofactionstakenonthegrievance.
- Status:Thestatusofthegrievance(Pending,InProcess,Resolved).
- DateSubmitted:Thedatethegrievancewassubmitted.
- Rating:Theratingofthegrievance.
- ReopenCount:Thenumberoftimesthegrievancewasreopened.

Officer data

- ID:Theuniqueidentifierfortheofficer.
- Name:Theofficer’sname.
- Department:Theofficer’sdepartment.
- Level:Theofficer’slevel.
- District:Theofficer’sdistrict.

- Email:Theofficer'semailaddress/
- Password:Theofficer'spassword.
- District:Theofficer'sdistrict.

Officer Ratings data

- OfficerId:Theofficer'suniqueIdentifier.
- AverageRating:Theofficer'saveragerating.
- Ratings:Anarrayofratingsinwhicheachratingcontainsthecomplaintid,useridand number of stars given.

Admin Data

- ID:Theuniqueidentifierfortheadmin.
- Name:Theadmin'sname.
- District:Theadmin'sdistrict
- Email:Theadmin'semailaddress.
- Password:Theadmin'spassword.

5. Component Design

5.1 Component Description

The Grievance Portal system will consist of several components, which will be developed using the following technologies:

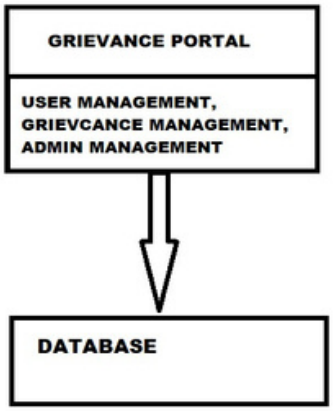
- Frontend:ReactJS,TailwindCSS
- Backend:Node.js,Express.js,MongoDB

The following components have been developed for the system:

User Management Component: This component will be responsible for managing user authentication and authorization. It will handle user login, registration, and password recovery functionalities.
Grievance Management Component: This component will handle the core functionality of the system, which is the management of grievances. It will allow users to submit their grievances, track their status, and receive updates on their grievances.
Admin Management Component: This component will provide administrative functionalities to the system. It will allow administrators to view and manage all grievances, manage user accounts, and generate reports.

5.2 Component Diagram

The component diagram below illustrates the components and their relationships in the system.



6. Human Interface Design

6.1 Overview of User Interface

The Grievance Portal system will have a user-friendly and intuitive interface. The user interface will be designed to provide a seamless experience to the users, and it will be developed using HTML, CSS, and JavaScript. The following section provides a detailed description of the various screens that will be developed for the system.

6.2 Screen Images

The following are the screen images that will be developed for the Grievance Portal system:

- **Home Screen**: This screen will be the first screen that the users will see when they access the system. It will provide an overview of the system and the functionalities that the users can perform.
- **LoginScreen**:Thisscreenwillallowuserstologintothesystem.Itwill provide a form for users to enter their login credentials.
- **RegistrationScreen**:Thisscreenwillallownewuserstoregisterforthe system. It will provide a form for users to enter their personal details and create a new account.
- **DashboardScreen**:Thisscreenwillprovideanoverviewofthe grievances submitted by the user. It will display the status of each grievance and allow users to view the details of each grievance. Here the

user can also send a reminder to the officer or rate the officer when the complaint is resolved.

- **GrievanceSubmissionScreen**:Thisscreenwillallowuserstosubmita new grievance. It will provide a form for users to enter the details of their grievance.
- **GrievanceDetailsScreen**:Thisscreenwilldisplaythedetailsofa grievance. It will show the status of the grievance, the date of submission, and the details of the grievance.
- **OfficerDashboardScreen**:Thisscreenwillprovideanoverviewofallthe grievances in the system. It will display the status of each grievance and allow officers to view the details of each grievance.
- **OfficerGrievanceDetailsScreen:**Thisscreenwilldisplaythedetailsof a grievance. It will allow administrators to update the status of the grievance and add comments.
- **AdminDashboardScreen:**Thisscreenwilldisplaythedetailsofthe officers in the district of the administrator, such as the id of the officer, the number of pending, in process and resolved grievances that it has.
- **AdminOfficerRegistrationScreen**:Thisscreenwillallowthe administrator to register a new officer with their email ID and password.

6.3 Screen Objects and Actions

The following table provides a list of the screen objects and the actions that can be performed on them.

Screen Object	Action
Home screen	View system overview, Signup Enter Login
Login	Credentials, Login Enter Personal details,
Registration Screen	Create Account View Grievance Status,
Dashboard Screen	View Grievance Details, Send Reminder, Rate Officer
Grievance Submission Screen	Enter Grievance Details, Submit Grievance
Grievance Updation Screen	Update Grievance Status, Provide Feedback

Officer Registration Screen	Admin can register new officer

7. Requirement Matrix

Use Case	Actors	Pre-conditions	Main Success Scenario	Extensions	Post-condition
4.1 User Registration and Login	Citizens	Internet connectivity.Only forallowedmail ids.	User clicks on thelogin button.App checksforthe authorization oflogin.	Idor password incorrect. Showserror dialogbox.	Userscannow accessallfeaturesof theapp.
4.2 Add New Grievance	Citizens	Internet connectivity.User hasloggedintohis account.	Usercreates anew grievance.	Shows Grievance filed dialog box.	Userscannowclose theappandwaitfor theresponseorfile anothergrievance.
4.3 View Pending Grievances	Citizens, Grievance Officer	Internet connectivity.User musthavelogged andfileatleastone grievance	Userseesa tableshowing allpending grievances	Showthe detailsof the grievance.	Userscancheckall oftheirpending grievances.
4.4 Check Action History	Citizens, Admin i.e. Grievance Officer	Internet connectivity.Admin musthavetaken actiononatleast onegrievance submittedbythe user	Userseesa tableshowing allgrievances onwhich actionhas beentaken.	Itwillshow thedetails ofthe grievance.	Userseesatable showingall grievancesonwhich actionhasbeen taken.
4.5 Send Reminder	Citizens, Grievance Officer	Internet connectivity. The grievance should be a valid one.	Usersendsa reminderalert totheadmin.	The user can define thepriority ofthe reminder.	Usersendsa reminderalerttothe admin.
4.6 Delete Grievance	Citizens, Grievance Officer	Internet connectivity. Grievance must have been resolved or no need for.	The grievance is deleted fromthe database.	canadda comment.	The grievance is deleted from the database.

4.7 Submit Grievance to Department	Grievance Officer	Internet connectivity. Grievanceshould be assigned to the appropriate department.	The Grievance getssentto the appropriate Government Department foraction.	NIL	The Department can view all the details of thegrievance.
4.8 Take Action on Grievance	Grievance Officer	Internet connectivity. Grievance should be a valid one.	Astatushas been assignedto thegrievance.not.	adda question for theuserif theyare satisfiedor	Userscangivetheir satisfactionand reviews.
4.9 View Grievances	Grievance Officer	Internet connectivity. Officer login	Admin can view all the grievances and assign thebest course of action.	Can inform the user if some other details are requiredor thereis some mistake.	Admincannow assignthegrievance totheappropriate department.
4.10 Reopen Grievances	Grievance Officer	Internet connectivity.User login	Userscan reopenthe grievance.	Display a message indicating the grievance hasbeen reopened.	Departmentreceives thereopened grievanceasanew onewithaction historydenotingthat itwasreopened.

8. Appendices

This section contains additional information that is not necessary for understanding the software design but may be helpful for maintenance or future enhancements.

8.1 Glossary

Term	Definition

Admin	Administrator who has access to all system functionalities.
Officer	Officer who can view and update grievances.
Grievance	A complaint submitted by a user regarding an issue they have faced.

8.2 System Requirements

The system should be able to run on any modern web browser and operating system. The database management system should be capable of handling a large number of transactions without compromising on the system's performance.

8.3 Future Enhancements

The following are some of the features that can be added to the system in the future:
Ability to attach files to the grievance.
Ability to track the time taken to resolve a grievance.
Integration with other systems used by the organization.

IEEE Std 830-1998, IEEE Recommended Practice for Software Design Specifications.