



Software Requirements Specification

for

Employee Management System

Version 1.0

Prepared by

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1 Introduction	4
1.1 Document Purpose	4
1.2 Product Scope	4
1.3 Intended Audience and Document Overview	4
1.4 Definitions, Acronyms, and Abbreviations	5
1.4.1 Abbreviations	5
1.4.2 Acronyms	5
1.5 Document Conventions	6
1.6 References and Acknowledgments	6
2 Overall Description	6
2.1 Product Overview	6
2.2 Product Functionality	8
2.3 Design and Implementation Constraints	8
2.4 Assumptions and Dependencies	8
3 Specific Requirements	9
3.1 External Interface Requirements	9
3.1.1 User Interfaces	9
3.1.2 Hardware Interfaces	9
3.1.3 Software Interfaces	9
3.2 Functional Requirements	10
3.3 Use Case Model	10
3.3.1 Login - U1	11
3.3.2 Notify Admin Employee Status - U2	13
3.3.3 Insert Employee Data - U3	14
3.3.4 Search And Filter - U4	15
3.3.5 Increment Salary-U5	17
3.3.6 Download Filtered Result-U6	19
3.3.7 Update Employee Details - U7	20
3.3.8 Notify Employee - U8	22
3.3.9 Delete Employee Details - U9	23
4 Other Non-functional Requirements	24
4.1 Performance Requirements	24
4.2 Safety and Security Requirements	25
4.3 Software Quality Attributes	25
5 Other Requirements	26
Appendix A - Activity Log	26
Appendix B - Contributions	26

Revisions

Version	Primary Author(s)	Description of Version	Date Completed
03	Ruben Sinu Kurian, Sayooj Geo Ninan, Abhay Unni Nambiar, Anagha MV, Vishnu V Nair.	Revisions and changes as suggested by the Review Team	23/03/2023
02	Ruben Sinu Kurian, Sayooj Geo Ninan, Abhay Unni Nambiar, Anagha MV, Vishnu V Nair.	Revisions and changes suggested by the Project Manager	17/03/2023
01	Ruben Sinu Kurian, Sayooj Geo Ninan, Abhay Unni Nambiar, Anagha MV, Vishnu V Nair.	Document created based on the specifications made by the client.	15/03/2023

1 Introduction

This document is based on the Employee Management System to assist HR managers (admin) to manage employees efficiently. It allows managers to deal with all the employee data and get notifications on important events (contract renewal, salary incrementation, probation period). In this section, the reader would be able to get a brief idea about the software and its requirements. Moreover, the use cases and their interface with the users are clearly illustrated and explained using use case diagrams and descriptions.

1.1 Document Purpose

The main purpose of this document is to provide a working example of a Software Requirements Specification (SRS) based on ISO/IEC/IEEE 29148:2018 standard. The document identifies the requirements and use cases of the software model as well as the hardware and software requirements for the implementation of the module.

1.2 Product Scope

This document is based on the Employee management module intended for the admin to assist their daily functions. In order to accomplish that the module allows managers to perform many functions.

The functions include:

- Add employee data
- Edit or modify existing employee data
- Delete an existing employee
- Search for an employee based on various employee data fields
- Export search results in Excel format
- Receive notifications regarding contract renewal, probation period, promotion, etc well in advance

The application works as a web application that requires an uninterrupted internet connection for usage. All the important employee data is stored and hosted on the cloud, with necessary backup features.

1.3 Intended Audience and Document Overview

This SRS document is intended for all the stakeholders and developers of the software module. The document contains requirements and specifications for the development of the proposed software module. This document starts with an introduction followed by the product description, software and hardware requirements, intended use cases, and other non-functional requirements.

1.4 Definitions, Acronyms, and Abbreviations

1.4.1 Abbreviations

SI-NO	Abbreviation	Full form
1.	DB	Database
2.	EMS	Employee Management System
3.	HR	Human Resources (department)
4	JS	Javascript
5	VSCode	Visual Studio Code

1.4.2 Acronyms

SL-NO	Acronyms	Full Form
1	MERN	MySQL, Express, React, Node JS (technology stack)
2	MySQL	My Structured Query Language (relational database management system)
3.	SDLC	Software Development Life Cycle (a design paradigm)
4.	SRS	Software Requirements Specification

1.5 Document Conventions

Typographic conventions:

- Arial font size 11 is used for paragraphs, and font size 12 is used for subheadings.
- The section headers are in Times font.
- Headings and subheadings are in bold.
- Comments are made in italics

1.6 References and Acknowledgments

References:

- [ReqView Software Requirements Specification Example](#)
- [Pavithra-Rajan/swimiNIT \(github.com\)](#)

2 Overall Description

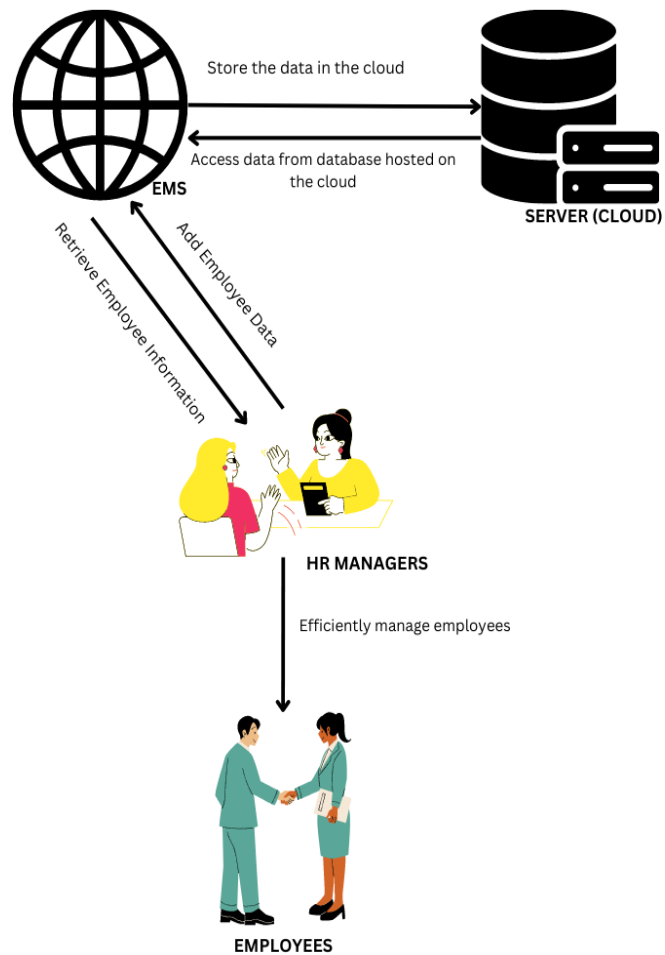
2.1 Product Overview

The software product is aimed at replacing and improving the traditional method of an employee management system which keeps a physical log of all employee details and requires the admin to frequently visit the log to get informed about an employee's job status. The product brings in additional features which notify the admin about an employee's job status (if required). Compared to the traditional method, searching for an employee or a set of employees will become easier as searching can be done via search filters or by name.

The software is a website hosted on the cloud and the database. The admin can access the website at any time using any device that supports modern browsers. Using this application, the admin's work is minimized as all-important employee details can be retrieved within seconds from the software whenever required.

The admin will also be able to add details of new employees or update and modify existing employee details. To make this process simpler, the software provides the option to add employees one by one manually, or by importing an Excel consisting of the list of employees needed to be added.

The admin also has the facility to search and filter employees based on various fields and details, and also export search results in Excel format for later use. Additionally, the admin will receive all necessary and important updates regarding employee status on their application interface, which allows the admin to take necessary action, and if required, to inform the concerned employee.



A high-level description of the EMS

2.2 Product Functionality

The primary functionalities to be implemented in the product are:-

- Employee searching using name and search result filtering based on employee data details.
- Adding, updating, and deleting employees.
- Modification of employee data entries of a particular employee.
- Notifications intended to inform the admin well in advance about an employee's contract renewal, probation period, promotion, etc
- Exporting the entire list of search-filtered employee entries to an excel document.
- Notifying employees regarding important events if required with permission from the admin.
- The admin must be able to generate reports containing incremented salaries of employees and must be able to update the same after receiving approval from the appropriate authority.

2.3 Design and Implementation Constraints

Cloud Database: Free MySQL will be used to host the database on the cloud. Since the service is used on a free-tier basis, there will be a limit of 5MB of storage that can be used for the complete application, as well as allowed bandwidth of 100GB.

Design Conventions and standards: The application will follow the SDLC model of the software development process as per principles and paradigms

Development Environment: The development environment used for the application will be VS Code.

2.4 Assumptions and Dependencies

- There will only be a single manager account (admin), whose credentials will be hardcoded into the database for verification.
- There will be an uninterrupted internet connection provided to the admin while accessing the application.
- Since we will develop our application, additional user interfaces and additional functionalities may be included in the future. It depends on the cycle of the project and the development team.
- The admin is considered the HR representative manager who will be accessing the application.

3 Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

- Login page for admin to login into the application with his credentials.
- Forgot password page to enter the username.
- Page to enter OTP for verification of the user.
- Change password page for the user.
- Interface for searching and viewing the list of employees.
- Interface for viewing user details.
- Interface for editing user details.
- A form interface for adding a new employee.
- A form interface for editing an existing employee.
- Interface for uploading an excel sheet and adding multiple employee details to the database at once.
- Notification page that gives notifications on various events for the admin.
- Interface for users to export search results into Excel format.
- Interface to filter employees based on the salary renewal dates, generate reports with incremented salaries, and update the salary if required.

3.1.2 Hardware Interfaces

There are no specific hardware interfaces required for this web application.

3.1.3 Software Interfaces

The application is based on the MERN stack. This includes MySQL, Express, React, and Node JS.

Web Server

Node JS is used as the web server for running the application

Backend

Express JS is used as the backend for hosting the application

Frontend

React is the framework used to create reactive and responsive front-end and to integrate with the backend.

Database

The employee data is stored using MySQL (relational database management system) and is hosted on the cloud.

3.2 Functional Requirements

F1: The system shall authenticate the admin's access to the application.

F2: The system shall allow the admin to search and filter employees based on various fields as search parameters.

F3: The system shall allow the admin to generate and view reports.

F4: The system shall allow the admin to insert employee data.

F5: The system shall allow the admin to update existing employee data.

F6: The system shall notify the admin regarding important employee updates on the beginning and 15th of every month.

F7: The system shall display login errors and recovery measures in case of wrong credentials.

F8: The system shall allow the admin to download reports

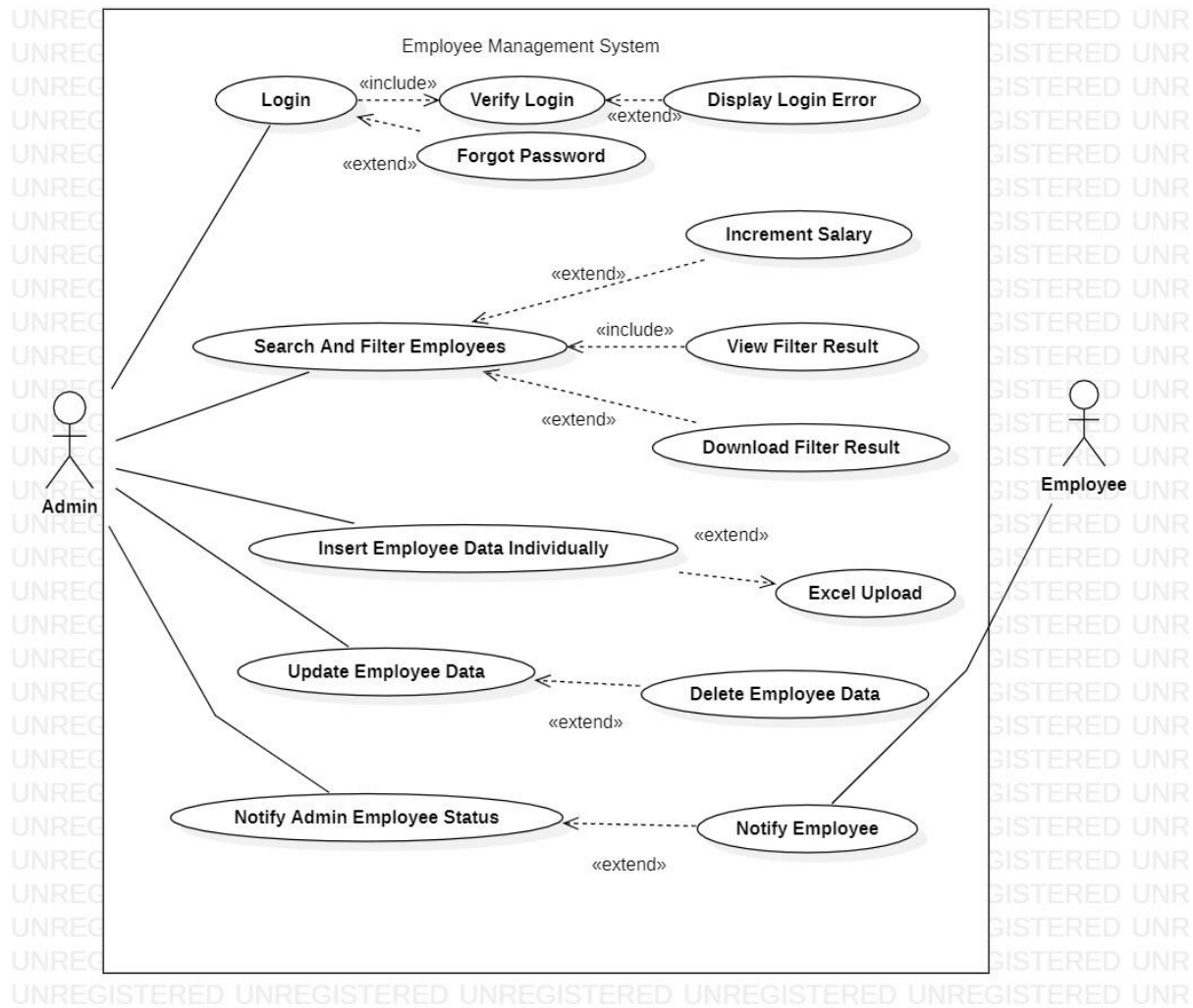
F9: The system shall allow the admin to upload Excel files for adding new employee details.

F10: The system shall allow the admin to increment the salary of the selected employees.

F11: The system shall allow the admin to delete existing employee details.

F12: The system shall notify the employee regarding important updates.

3.3 Use Case Model



3.3.1 Login - U1

Author – Abhay Unni Nambiar

Purpose - To authenticate the admin for using this application and accessing all the employee data

Requirements Traceability – F1,F7

Priority - High

Preconditions - The admin must be able to access the login page of the application.

Post conditions - The correct username and password will be entered and the user will be granted access to the various functionalities of the website.

Actors – Admin

Extends – None

Basic Flow

Actor's action	System's reaction
1. The user enters their correct username and password and clicks the login button	2. The system authenticates the user and gives them access to all the data and various functionalities of the application.

Alternate Flow: None

Exceptions:

1. The user forgets their password.

Actor's action	System's reaction
1. The user forgets their password and clicks the forgot password button and enters their username	1. The system checks whether the username is present in the database and sends an automated email carrying an OTP to their mail id using which they can verify themselves. Once verified, they will get redirected to a change password page where they can create a new password. On completion of these procedures, the user will be redirected to the login page.

2. The user enters the wrong credentials.

Actor's action	System's reaction
2. The user enters the wrong password or username	3. The system flashes the wrong password or username message and lets the user enter the login details again.

Includes - None

Notes/Issues - None

3.3.2 Notify Admin Employee Status - U2

Author – Ruben Sinu Kurian

Purpose - To notify the admin regarding updates of employee status such as contract renewal, probation period, and salary incrementation.

Requirements Traceability – F6

Priority - High

Preconditions - The admin must be successfully logged into the application

Post conditions - The admin is notified regarding various updates of employee status.

Actors – Admin

Extends – U8

Flow of Events

Basic Flow

Actor's action	System's reaction
<ol style="list-style-type: none">1. The user clicks on the notification button that is present on the navigation bar.3. The user can click the "Export as Excel" option to download the list of employees as an excel document.5. The user can click "Delete" on each notification and discard them.	<ol style="list-style-type: none">2. The system shows the notification that displays the list of employees that have a common update such as renewal, probation period, etc.4. The system shows an interface prompting the user where to save the exported excel on the local machine.6. The notification is cleared

Alternate Flow: None

Exceptions: None

Includes - None

Notes/Issues - The notifications regarding employee details shall be updated beginning and on the 15th of every month.

3.3.3 Insert Employee Data - U3

Author – Ruben Sinu Kurian

Purpose - To provide an interface to insert employee details onto the application

Requirements Traceability – F4, F9

Priority - High

Preconditions - The admin must be successfully logged into the system.

Post conditions - The admin would be able to successfully add employee(s) to the EMS.

Actors – Admin

Extends – None

Flow of Events

Basic Flow

Actor's Action	System Reaction
<ol style="list-style-type: none">1. The admin selects the option "Add Employee" from the navigation bar.3. The admin adds all the details mentioned in the form and presses the "Submit" option.	<ol style="list-style-type: none">2. The system loads the form interface that allows the admin to add the employee details manually.4. The system verifies all the entered details on client-side, before storing them in the database. The system notifies the admin that the submission was complete and redirects to the home page.

Alternate Flow

Actor's Action	System Reaction
<ol style="list-style-type: none">1. The admin selects the option "Add Employees" from the navigation bar.	<ol style="list-style-type: none">2. The system loads a web page asking the admin to export an Excel

3. The admin clicks the “+” button, and imports an excel document from the local machine.	document that contains a list of employees with all required data fields. 4. The system verifies on the client side based on correctness and stores the data on the database. The admin is later notified that the data submission was successful.
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Exceptions

Actor's action	System's Reaction
The admin enters the wrong data format or incomplete data on specific fields.	The client-side verification catches this error and notifies the admin that the data submission was incorrect and then redirects the admin to the initial page.

Includes - None

Notes/Issues - None

3.3.4 Search And Filter - U4

Author – Vishnu V Nair

Purpose – This purpose of this use case is to efficiently search and filter the employee database based on various fields.

Requirements Traceability – F2,F3

Priority – High

Preconditions – The user is logged in and has access to the employee database.

Postconditions –

1. The user is able to search for and filter employees based on various criteria.
2. The user is able to view employee details for selected employees.
3. The system updates the search results and filters in real-time as the user enters search criteria or selects filters.

Actors – Admin

Extends –U5, U6

Flow of Events

Basic Flow

Actor's action	System's reaction
1. The user navigates to the employee search page. 3. The user enters one or more search criteria, such as employee name or department. 5. The user selects one or more filters to further refine the search results, such as by employee status or job title. 7. The user selects an employee from the search results to view their details.	2. The system displays a search form with fields for entering search criteria. 4. The system displays a list of employees that match the search criteria. 6. The system updates the search results to reflect the selected filters. 8. The system displays the employee's details, such as their contact information and job history.

Alternate Flow

Actor's action	System's reaction
3a. The user enters no search criteria 5a. The user enters no filters	3b. The system displays an error message and prompts the user to enter the search criteria. 5b. System displays unfiltered results.

Includes -None

Notes/Issues

-
- The system must ensure that employee data is stored securely and is only accessible to authorized users.
 - The system must enforce appropriate access controls to ensure that users can only view employee data for employees in their own department or team.
 - The system must provide the user with appropriate error messages and feedback to help them refine their search criteria and select appropriate filters.

3.3.5 Increment Salary-U5

Author – Vishnu V Nair

Purpose – To generate a report of employees with incremented salaries for review by the client and higher officials.

Requirements Traceability – F10

Priority – Medium

Precondition-

1. The admin is logged in to the system.
2. Employee records with their respective salary increment percentages are available in the database.

Post conditions –

1. A report of employees with incremented salaries has been generated and is available for review by the client and higher officials.
2. Employee records in the database have been updated with the incremented salary values if approved by the higher officials.

Actors – Admin

Extends –None

Flow of Events

Basic Flow

Actor's action	System's reaction
<p>1. The admin selects the option to generate a salary increment report.</p> <p>3. The admin enters the salary renewal date and submits the request.</p> <p>7. The admin clicks the "Export" option to generate the report. The admin reviews the report to ensure its accuracy.</p> <p>8. The higher officials approve the incremented salary values.</p> <p>9. The admin updates the employee records with the incremented salary values in the database by clicking the "Update" button near the report interface.</p>	<p>2. The system prompts the admin to enter the salary renewal date for the report.</p> <p>4. The system searches the database for employees whose salary renewal date matches the entered date.</p> <p>5. The system calculates the salary increment for each employee based on the increment percentage provided by the client.</p> <p>6. The system generates a report containing a list of employees with their original salary and their incremented salary values.</p>

Alternate Flow - None

Exceptions-

Actor's action	System's reaction
<p>The higher officials reject the incremented salary values. The admin clicks the "Cancel" option near the report interface.</p>	<p>The system cancels the increment operation and the salary remains unchanged.</p>

Includes -None

Notes/Issues -None

3.3.6 Download Filtered Result-U6

Author – Vishnu V Nair

Purpose – To download the list of employees who satisfy certain search and filter criteria.

Requirements Traceability – F8

Priority – Medium

Precondition -

1. The Admin has already logged in to the system.
2. The Admin has performed a search and filter operation on the employees using the system.

Post conditions –

The list of employees who satisfied the search and filter criteria has been downloaded in the selected file format.

Actors – Admin

Extends –None

Flow of Events

Basic Flow

Actor's action	System's reaction
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1. The Admin selects the option to download filtered results. 3. The Admin selects the desired file format for the download (e.g. CSV, Excel, PDF). 4. The Admin clicks on the "Download" button. 6. The Admin chooses to save or open the file as desired.	2. The system displays a form with the list of all employees who satisfied the search and filter criteria. 5. The system generates the file and prompts the Admin to save or open it.
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Alternate Flow- None

Exceptions

Actor's action	System's reaction
3a.The user selects a file format that is not supported. 4a.User tries to download the file without any employee that satisfies the search and filter criteria.	3b. The system displays an error message and prompts the Admin to select a different format. 4b. The system displays an error message and the use case ends.

Includes -None

Notes/Issues -None

3.3.7 Update Employee Details - U7

Author – Sayooj Geo Ninan

Purpose - To update data entries for a pre-existing employee.

Requirements Traceability – F5

Priority - High

Preconditions -

1. There must exist at least one employee in the database.
2. The admin must be logged into the system.

Post conditions - The employee details for the intended employee (if present) will be modified.

Actors – Admin

Extends – U9

Basic Flow

Actor's action	System's reaction
<ol style="list-style-type: none">1. The user searches for a particular employee using either the name or search filters on the search page.3. The user selects the employee whose details need to be updated.5. The user selects the update option.7. The user enters the updated employee details and selects confirm.	<ol style="list-style-type: none">3. The system searches by matching the entered data and provides a list of employees.4. The system provides the show page for that particular employee.6. The system gives the input fields for the user to enter the modified details.8. The system changes the data entries of the particular employee to the values entered by the user.

Alternate Flow: None

Exceptions:

Actor's action	System's reaction
<ol style="list-style-type: none">1. When the user tries to search for an invalid employee.	<ol style="list-style-type: none">2. The system gives an alert telling the user that there is no employee with the entered details.

Includes - None

Notes/Issues - None

3.3.8 Notify Employee - U8

Author – Anagha M V

Purpose - To notify the employee regarding current employment status with permission from the admin.

Requirements Traceability – F12

Priority - Medium

Preconditions - The user is logged into the system and is currently accessing the notification page.

Post conditions - An email will be sent with a subject regarding employee status. Additionally, the admin can write custom messages if they wish to do so.

Actors – Admin

Extends – None

Flow of Events

Basic Flow -

Actor's action	System's reaction
1. The user clicks on the notification button that is present on the navigation bar.	2. The system shows the notification that displays the list of employees that has a common update such as renewal, probation period, etc
3. The user can click on the option "Inform Employees" on the side of the notification message.	4. The system redirects the admin to an interface where they can add any custom message along with the notification mail.
5. The user can enter a message or leave the text area empty and press "Submit"	6. The notification mail is sent along with the custom message.

Alternate Flow - None

Exceptions:

Actor's action	System's reaction
The user clicks the "Exit" button after getting directed to the interface with the text area.	The system redirects the admin to the notification page and no mail is sent.

Includes - None

Notes/Issues - Any relevant notes or issues that need to be resolved

3.3.9 Delete Employee Details - U9

Author – Ruben Sinu Kurian

Purpose - To delete data entries of a pre-existing employee.

Requirements Traceability – F11

Priority - Medium

Preconditions -

3. Admin must be logged into the application.
4. There must be an employee present that needs to be deleted.

Post conditions - The employee details for the intended employee (if present) will be deleted.

Actors – Admin

Extends – None

Basic Flow

Actor's action	System's reaction
1. The user searches for a particular employee using either the name or search filters on the search page.	2. The system searches by matching the entered data and provides a list of employees.
3. The user selects the employee whose details need to be updated.	4. The system provides the show page for that particular employee.
5. The user selects the "Delete" option.	6. The system asks the admin whether they want to delete the employee details from the database.

7. The user selects the “Yes” option.	8. The system deletes all the intended employee details from the database.
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Alternate Flow: None

Exceptions:

1. While searching

Actor’s action	System’s reaction
1. When the user tries to search for an invalid employee.	2. The system gives an alert telling the user that there is no employee with the entered details.

2. While deleting

Actor’s action	System’s reaction
2. When the user clicks the “No” option when the system asks for reconfirmation.	3. The system redirects the admin to the show page and the employee details are not deleted.

Includes - None

Notes/Issues - None

4 Other Non-functional Requirements

4.1 Performance Requirements

The software is required to perform the following tasks according to the client’s requirements:

- Admin can edit or add the employee data any number of times with a maximum execution time of 3 seconds.
- Load the search results within 5 seconds.

-
- Redirect to the landing page after login within 3 seconds.

4.2 Safety and Security Requirements

Authentication:

Only the admin will be able to log in and access the employee details provided that they have access to the login credentials .

Password(s):

The application will only allow strong passwords (with uppercase and lowercase letters, numbers, and a minimum of 8 characters) to be created by the user(s)

The password(s) will also be encrypted so that access to the database does not give you access to the password(s) directly.

Forgot Password:

If the admin forgets their password, they can still log in by accessing the One-Time-Password sent to their email and then changing their password afterward.

4.3 Software Quality Attributes

The software quality attributes of this website are-

Usability-

The application will be pretty user-friendly as most of the functionalities will be present on the navigation bar on the top of the screen and the remaining sub-functionalities will be visible clearly in the interface as well. This will make it easy for the user to use the application and navigate through the functionalities easily.

Maintainability-

The website will have a modular design with separation between modules which will make it easy to update or fix specific modules without affecting the others.

The website will be maintained using a version control system which helps all the developers to contribute to fixes and changes easily.

Compatibility-

The application will be compatible with all the popular browsers like Google Chrome, Brave, Mozilla Firefox, Microsoft Edge, etc, and all the operating systems which support these browsers. The hardware compatibility is as given in section 3.1.2 which are the basic requirements available in almost all modern mobile phones and computers.

Testability-

This application is easily testable as we can enter some dummy values or real sample values into the database and test all the actions out on these values as all the functionalities are dependent on the data fields of the employees.

The dummy data field values will be carefully chosen to test out specific functionalities.

Reliability-

The third-party database provider has adequate measures for data recovery in case of accidental data loss. With the supply of uninterrupted internet connectivity, the application is reliable for daily operations.

5 Other Requirements

There are no other requirements required for this project.

Appendix A - Activity Log

S.No	Date	Activity	Time
1.	17-02-2023	Client Meeting	2:00 to 3:30 PM
2.	19-02-2023	Discussion on Problem Statement	4:00 to 5:00 PM
3.	03-03-2023	Discussion on Feasibility Study	2:00 to 3:30 PM
4.	06-03-2023	Discussion on the division of work for SRS	3:00 to 4:00 PM
5.	13-03-2023	Proof-reading and general discussion on SRS.	3:00 to 4:30 PM

Appendix B - Contributions

S.NO	Group Member	Contribution
1.	Ruben Sinu Kurian	Section 1.1 - 1.3, Usecases: U2, U3, U9 Functional Requirements, User Interfaces
2.	Vishnu V Nair	Usecase Model, Usecases: U4, U5, U6

3.	Sayooj Geo Ninan	Usecases: U7, Overall Description
4.	Abhay Unni Nambiar	Usecases: U1, Other Non-functional Requirements, User Interfaces
5.	Anagha M V	Section 1.4 - 1.6, Usecases: U8