CAPSTONE PROJECT SRS

(SOFTWARE REQUIREMENT SPECIFICATIONS)

PROJECT TITLE – SkillSage

GROUP – 09

Team Members

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Chapter 1: Introduction

1.1 Purpose

The purpose of this document is to provide a comprehensive understanding for the development of a 'SkillSage' application. The document serves as a comprehensive guide, outlining the purpose and features of the system, the constraints under which it must operate and provides the necessary specifications for the development of a sophisticated Skill matrix application.

1.2 Scope

The Scope of this document is to outline the boundaries and limits of SkillSage application. It defines what the system will and will not do. The document also specifies the functional and non-functional requirements for the development of the application. It is intended for the employees(users) and the administrators to get a brief idea of the project.

1.3 Definition, Acronyms & Abbreviations

- **HTML:** Hypertext Markup Language
- **CSS:** Cascading Style Sheets
- **JS:** JavaScript
- **ReactJS:** JavaScript library for building user interfaces
- **Spring Boot:** Java backend framework
- **MySQL**: reliable, scalable, and ease of use in managing relational database

1.4 References

- **Java Documentation:** Java Documentation - Get Started (oracle.com)
- **Spring Boot Documentation:** Spring Boot Reference Documentation
- **React JS Documentation:** https://reactjs.org/docs/getting-started.html
- **MySQL Documentation:** https://dev.mysql.com/doc/

1.5 Overview

The document presents a comprehensive compilation of requirements and specifications for the "Skill Matrix" system . It delineates the project's objectives, scope, and a detailed set of functional and non-functional prerequisites essential for the project's successful development.

The subsequent chapter, the Overall Description section, provides an overview of the system's functionality. This section outlines informal requirements and serves as a contextual foundation for the technical requirements specified in the ensuing chapter.

In the third chapter, the Requirements Specification section, the document is tailored primarily for developers. It delves into technical details, articulating the intricacies of the system's functionality in terms geared towards a technical audience.

Both segments of the document encapsulate a holistic portrayal of the software product, catering to distinct audiences through the use of language suited to their respective understanding and expertise.

Chapter 2: Overall Description

2.1 Product Perspective

“SkillSage” web application serves as a comprehensive tool for talent management, workforce optimization, and strategic decision-making within an organisation. It aims to maximise the potential of the workforce while aligning individual skills with organisational goals and objectives.

2.2 Product Functions

User Authentication and Authorization: Secure login and profile management.

Skill Matrix Data Management: Create, edit, and manage a comprehensive list of skills relevant to the organisation's needs.

Skill Search and Filtering: Implement search and filtering capabilities to easily locate employees with specific skills or proficiency levels.

2.3 Users Classes and Characteristics

Employees: Basic user access to view and update their own skill profiles.

Administrators: Full access to view, update, and add skills and skill profiles to the skill matrix. Ability to manage user permissions and roles.

2.4 Design and Implementation Constraints

User Authentication and Authorization Constraints: The design must consider constraints related to user authentication and authorization mechanisms. Security measures such as multi-factor authentication and role-based access control may impose design considerations.

Scalability and Performance Constraints: If the organisation expects significant growth, the application must be designed to scale horizontally or vertically to accommodate increased user loads. Meeting performance expectations, such as response times and system availability, may be critical for user satisfaction.

Technology Stack Limitations: The project will be constrained by the compatibility and limitations of the chosen technology stack, including Spring Boot, Mysql, HTML, CSS, and React. Compatibility issues and constraints related to the specific versions of these technologies may impact the design and implementation.

2.5 Assumptions and Dependencies

2.5.1 Assumptions:

Data Accuracy: The data entered by users in the skill matrix is accurate. Decisions and insights generated from the skill matrix depend on the correctness of the data.

Regular Updates: Users will regularly update their skill profiles to reflect changes in their skills. Outdated information can lead to inaccurate skill assessments, impacting decision-making processes.

Security Compliance: The implemented security measures meet or exceed organisational and regulatory standards. Security is crucial for protecting sensitive employee data stored in the skill matrix.

2.5.2 Dependencies:

Technology Dependencies: Availability and compatibility of required technologies (e.g., specific versions of databases, frameworks). Regularly check for updates and patches, and maintain a list of supported technologies.

Data Source Integration: Availability and cooperation of data sources, especially if the skill matrix relies on external data. Establish clear communication channels and agreements with relevant data sources.

Change Management: Successful implementation of change management strategies. Develop a change management plan, communicate changes effectively, and address concerns proactively.

Chapter 3: Specific Requirements

3.1 Functional Requirements

3.1.1 User Registration

- Users can enter their employee ID,password login to the page.
- User profiles store information such as employees skills in a technology and their level of expertise in that technology.

3.1.2 Dashboard Functionality

- Allows employees to read,update,and delete their skills in various technologies.
- Admins can download the report of employees and view their skill level for better planning.

3.2 DB Requirements

3.2.1 User Database

Stores employees profiles, login credentials, and their skills.

3.2.2 Database Retrieval

Response time of less than 500 milliseconds for data queries.

3.2.3 Database Structure

The database structure is designed to accommodate various entities such as employee skill in a technology and their level of expertise in that technology.

3.3 Performance Requirements

Response Time: Dashboard interactions should have a response time of less than 1 second to ensure a seamless user experience.

Scalability: The system should be able to scale horizontally to support a doubling of user load without a significant degradation in performance.

3.4 Software Quality Attributes

Security: Ensuring robust security measures to protect user data, implementing encryption, secure authentication methods, and access control to prevent unauthorised access or data breaches.

Reliability: The system's ability to perform consistently and accurately under varying conditions, ensuring data integrity, user authentication, and reliable functionality throughout user interactions.

3.5 Software & Hardware Requirements

3.5.1 Software Requirements

Frontend Development:	HTML, CSS, JavaScript: For creating the user interface and interactivity within the Skill Matrix application.
Backend Development:	**Spring Boot:** Spring Boot enables developers to build robust applications having secure as well as clear configurations without losing much time and effort on its complex framework.
Database Management System:	**MySQL:** It is used for user authentication and authorization.
Hosting and Deployment:	**Cloud Hosting:** Utilising cloud-based services for hosting and deploying the Skill Matrix application.
Version Control:	**Git:** For version control, enabling collaborative development, tracking changes, and managing codebase versions.

Continuous Integration/Continuous Deployment (CI/CD):	**Jenkins**: Integrated into the development workflow to automate the CI/CD pipeline for efficient development, testing, and deployment processes.

3.5.2 Hardware Requirements

Development Machines: Standard development machines with sufficient RAM (8GB or more), modern processors, and ample storage.

Build and Deployment Servers: Servers with sufficient resources for building and deploying the application.

Database Server: Dedicated server or cloud-based instance with adequate resources for hosting the MySQL database.

AWS Infrastructure: Cloud-based infrastructure on AWS (e.g., EC2 instances).