Sukkur IBA University

Software Requirement Specification (SRS)

For

Schools Hub – Bridge Between Schools and Parents

Version1.0

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Document History

[Revision history will be maintained to keep a track of changes done by anyone in the document.]

Version	Name of Person	Date	Description of Changes
1	Muhammad Umair	20/10/2023	Introduction
2	Muhammad Daud	25/10/2023	Overall System Description
3	Najeebullah Khan	30/10/2023	External Interface Requirements
4	Muhammad Umair	3/11/2023	Functional Requirements
5	Najeebullah Khan	4/11/2023	Non Functional Requirements
6	Muhammad Daud	6/11/2023	Appendices

Distribution List

[Following table will contain list of people whom the document will be distributed after every sign-off]

Name	Role
Dr. Muhammad Ismail	Supervisor
Najeebullah Khan	Project Manager
Muhammad Umair	Group Member
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Document Sign-off

[Following table will contain sign-off details of document. Once the document is prepared and revised, this should be signed-off by the sign-off authority.

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Version	Sign-Off Authority	Project Role	Sign-Off Date
1	Dr. Muhammad Ismail	Supervisor	

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1. INTRODUCTION

The proposed web platform seeks to revolutionize the process of selecting the desired educational institution for children by creating a comprehensive and user-friendly interface that connects schools with prospective parents. This innovative platform will serve as a centralized schooling hub, hosting profiles of various schools, enabling end users to select school and make well-informed decisions for their children's future with respect to their needs. In this digital age, the school selection process can be overwhelming for parents seeking the optimal learning environment for their children. Our platform aims to simplify this process by allowing schools to create and maintain detailed profiles, showcasing their facilities, curriculum, faculty, extracurricular activities, and other essential information. Users, primarily parents and guardians, will have the ability to search, filter, and compare schools based on a variety of parameters such as location, teaching methodology, available facilities, tuition fees, and academic performance.

1.1 Purpose of the Document

The purpose of this document is to provide a comprehensive Software Requirements Specification (SRS) for the "Schools Hub – Bridge between Schools and Parents" project. The SRS serves as a detailed reference that outlines the software requirements, functionalities, and constraints for the development of the web and AI-based platform. This document aims to establish a clear understanding of the project's scope, objectives, and technical requirements for all stakeholders involved in the project, including the development team, project managers, and other relevant parties. This document describes the project’s targeted audience; its Functional and Non-Functional Requirements and also contains all the necessary details that will help us to define the System/Project. Also, this SRS document helps designers and developers during the development phase.

1.2 Intended Audience

The intended audience for this document is the development team, project supervisor and the FYPC (Final Year Project Committee) or the evaluation committee of this project. It can also include testers so that they can validate the System/Product by using this document.

1.3 Document Convention

The font of the document is the Times New Roman and font size will be 12. The headings will be selected from styles i.e., Heading 1 or Heading 2. The line space is 1.5 after every heading and the text is justified.

2. OVERALL SYSTEM DESCRIPTION

2.1 Project Background

In an ever-evolving educational landscape, selecting the desired educational institution for children has become increasingly complex. The "Schools Hub – Bridge Between Schools and Parents" project is born out of the need to simplify this process by creating a web and AI-based platform that connects schools with parents, providing comprehensive information and personalized recommendations.

This platform aims to address the challenges faced by parents and guardians in choosing schools by offering a user-friendly, centralized hub that bridges the information gap, making school selection a more straightforward and informed process. Initially targeting metropolitan cities in Pakistan, this project strives to revolutionize how parents choose the best educational environment for their children in the digital age.

2.2 Project Scope

The project scope for "Schools Hub – Bridge between Schools and Parents" includes the development of a web and AI-based platform that connects educational institutions (schools) with parents or guardians. This section outlines the project's boundaries and limitations.

In-Scope Features:

1. **User Management:**

   - User registration for parents, guardians, and students.
   - User authentication and authorization.

2. **School Management:**

   - School registration for educational institutions.
   - School profile creation and update information.

3. **AI-Based Career Path Guidance:**

   - User profiles for students, including characteristics, interests, skills, and academic goals.

- Personalized career path guidance using AI.

4. **Search and Filtering:**

- Advance filtering based on criteria such as location, facilities, activities, tuition fees, schooling type, school medium, curriculum, class size, total students enrolled, school level, school system.
- Searching schools by specific name.

5. **Reviews and Ratings**

- User-submitted reviews and ratings for schools.
- Display of reviews and ratings on school profiles.

2.3 Not In Scope

Everything other than above features and information is out of our project scope.

2.4 Project Objectives:

The project's objectives are to create a user-friendly platform that simplifies school selection, bridges the information gap between schools and parents, and utilizes AI based career path guidance feature on user provide data. Additionally, the project aims to enhance search and filtering capabilities, enable user-generated reviews and ratings, and focus on metropolitan cities in Pakistan, all to empower informed decision-making in education.

2.5 Stockholders:

Stakeholders of our system are:

1. **Parents/Children:** Parents who are looking for desired institution for their children future.
2. **Development Team:** Team from Sukkur IBA University that develops the software
3. **Supervisor:** Faculty of SIBAU that supervises and guides the development.
4. **FYP Committee:** Faculty of SIBAU that evaluates the development.

2.6 Operating Environment

The web application will be compatible with the following Browsers

- Google Chrome
- Mozilla Firefox
- Safari

It will rely on modern web technologies and frameworks, leveraging the MERN stack, which comprises MongoDB, Express.js, React, and Node.js. The platform will be hosted on a cloud-based infrastructure, providing scalability and reliability. Users will require internet connectivity to access and interact with the system.

2.7 System Constraints

- **Software Constraints**

  i. The software (web application) needs to be designed using MERN with NoSQL as a database.

  ii. The software will be user-friendly.

  iii. The software will be interactive.

  iv. The software will be deployed initially in localhost and can be shifted later on to the cloud.

- **Hardware Constraints**

  i. User should have a desktop, laptop, mobile or any other device for accessing our platform on browsers.

- **Cultural Constraints**

  i. The software product will be in the English language

- **User Constraints**

  i. All the users should be authorized

2. 8 Assumptions and Dependencies

- **Assumptions:**

  - Users have internet access and suitable devices.
  - Data accuracy is the responsibility of schools and users.
  - Compliance with regulations, including data privacy laws, is expected.

- **Dependencies:**

  - Reliance on third-party services, such as cloud hosting.
  - Platform performance is dependent on browser compatibility.
  - The platform's functionality depends on accurate and timely data input.

3. EXTERNAL INTERFACE REQUIREMENTS

These requirements include user interfaces (interaction logic between software and user), such as Hardware Interfaces, Software Interfaces, Communications Interfaces.

3.1 Hardware Interface:

The project primarily operates as a web-based platform, and thus, it does not have direct hardware interfaces for end-users. Users are expected to access the platform via their own devices, including desktops, laptops, tablets, and smartphones, with standard hardware components, such as input devices (keyboard and mouse or touchscreens) and display screens. The platform does not impose specific hardware requirements but aims to be compatible with a range of devices.

3.2 Software Interface:

The project interfaces with a range of software components to ensure a seamless user experience. The platform is designed to be compatible with modern web browsers such as Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge. Users can access it from various operating systems, including Windows, macOS, iOS, and Android, enabling flexibility across different devices. In the development process, industry-standard tools like Visual Studio Code, Git for version control, and project management platforms are used to facilitate efficient collaboration and code management. These software interfaces guarantee broad accessibility and effective development practices.

- **Admin Module:**

The admin module is responsible for managing user accounts, school profiles, data quality, platform configuration, user support, reporting, and security. Admins oversee and ensure the platform's integrity, data accuracy, and adherence to policies.

- **Features for Admin:**

- User account management (creation, modification, deactivation).
- School profile oversight (validation, removal).
- Data moderation for quality control.
- Platform configuration and customization.
- User support and issue resolution.
- Reporting and analytics tools.
- Security measures and access control.

- **Client Module:**

The project is dedicated to meeting the needs of end-users, predominantly parents, guardians, and students. This module serves as the primary interface through which users engage with the platform and access vital information regarding schools. Its functionalities encompass user registration, school search and discovery, AI-driven recommendations, school profiles, reviews and ratings, user account management, user support, and device accessibility. Users can register accounts, search for schools based on various criteria, receive personalized recommendations, access comprehensive school profiles, read and submit reviews, manage their accounts, seek assistance, and utilize the platform on a variety of devices. The client module aims to simplify the school selection process, empower users with valuable insights, and facilitate informed decisions in their quest for the ideal educational institution.

- **Features for a client:**

- User registration for account creation.
- School search and discovery with filtering options.
- AI-driven career guidance feature.
- Access to comprehensive school profiles.
- Ability to read and submit reviews and ratings.
- Accessibility across various devices.

3.3 Communication Interface:

The system will be following the client server architecture for communication. System will be using the HTTP protocol to communicate over internet and system shall use JWT (JSON Web Token) for the security and authentication communication.

3.4 User Interface:

The system provides a smart platform for user to login with their respective accounts by entering account details. If any of account details is invalid, the system will notify the user accordingly or if user forgets the password, the system will help to retrieve it after doing some security checks. When the user has successfully logged in and can interact with the system as parent/child according to provided account credentials, various interfaces could be:

- **Login Screen:** Sign in / Sign up Screen
- **End User Screen:** Browse profiles / Use features
- **School Profile Screen:** Manage Profile
- **Schools List Screen:** Registered schools list for end user

4. FUNCTIONAL REQUIREMENTS

4.1 Functional Hierarchy

In functional hierarchy includes user registration, authentication, and role/permission management. Involves messaging, notifications, and alerts/announcements to facilitate interaction between users. It covers academic progress tracking, grade input, and report access for students and parents. Incorporates AI-driven educational resources, query handling, and scheduling assistance. It Manages news and updates, event creation, and school policy updates on the platform.

The following diagram describes the functional hierarchy of each user role in this system.

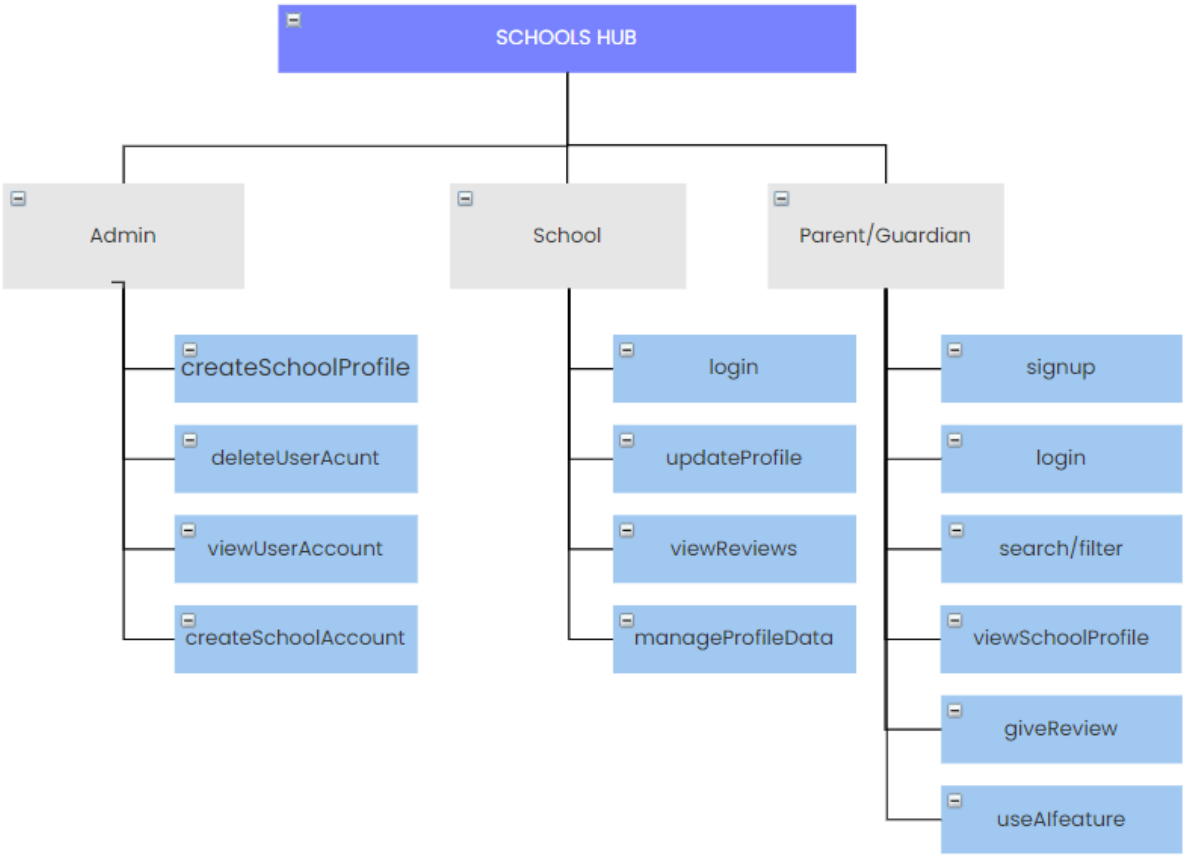

Figure 1: Functional Hierarchy

4.2 Use Cases

In our system there are three types of users, and they are parent/child, schools and admin. So, each user has different use cases, and they are shown in below figure. Admin will have the main role that he will be managing every user's account and will be able to see all information. Parents/children will have all access to their profiles, and they can search for their desired schools. Schools can manage their profiles, update schools info, response to feedback and other necessary details.

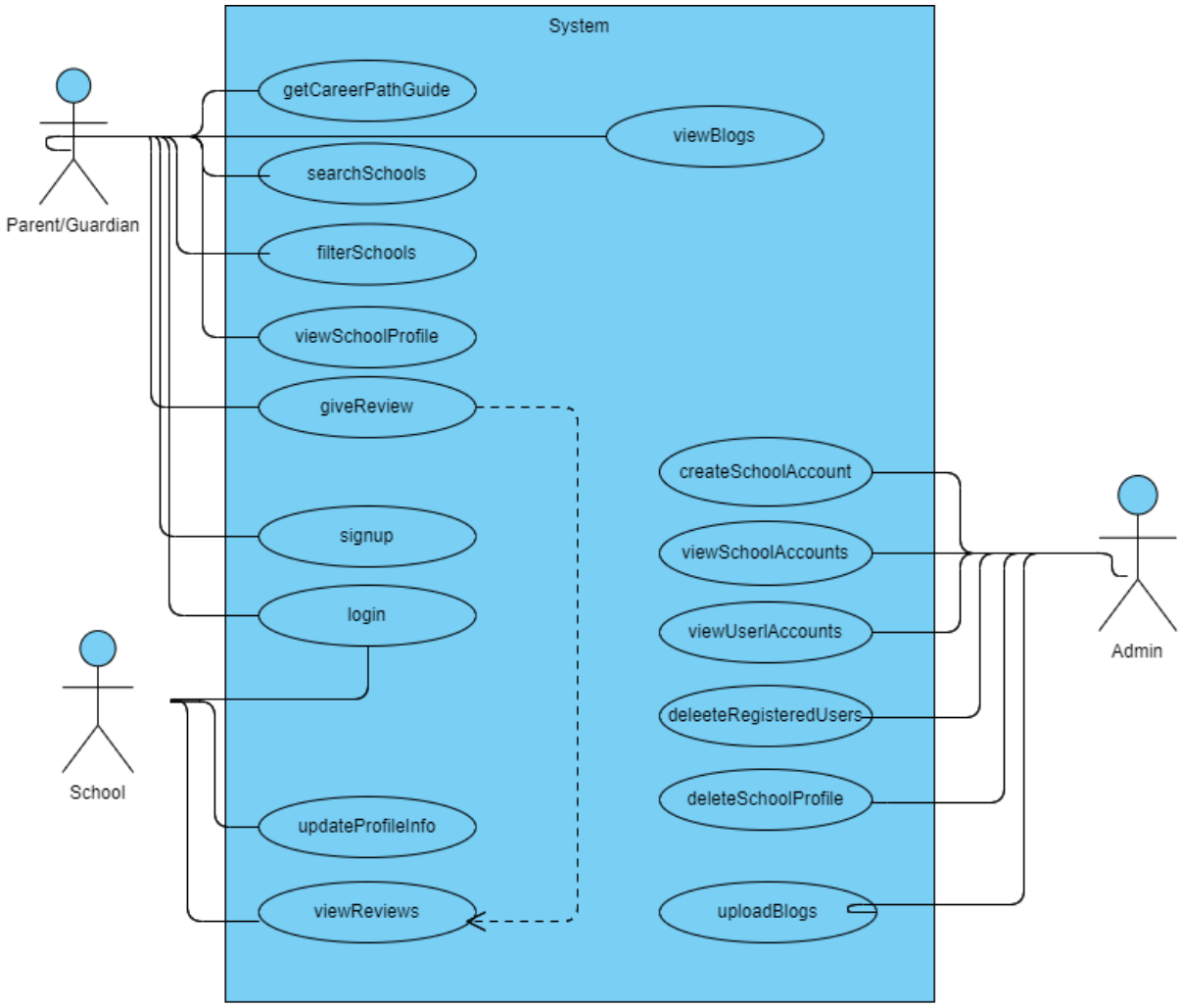

Figure 2: Use Case Diagram of the System

➢ Sign Up

User register to the system to create an account.

Use Case Description	
Use Case name:	Sign Up
Use Case Description: A user of the System registered in to the System.	
Primary actor: Register In User	**Other actors:** (Students / Parents / Schools)
Pre-conditions: User should have internet connection and must provide required information to be able to access the system. The user accesses the registration page and has a valid email address.	
Flow of Events: 1. User selects the "Sign Up" option on the platform. 2. User provides personal information such as name, email address, and password. 3. The system validates the email format and password strength. 4. User submits the registration form. 5. The system sends a verification link to the provided email address. 6. User clicks the verification link to complete the registration. The use case concludes.	
Post-conditions: • The user's account is created and verified, allowing them to log in and access platform features.	

Table 1. Sign Up Use Case

➢ Sign In

Use Case Description	
Use Case name:	Sign In
Use Case Description: A user of the System logs in to the System.	
Primary actor: Logged In User	**Other actors: :** (Students / Parents / Schools)
Pre-conditions: • Users have previously registered accounts and are attempting to log in to access the platform.	
Flow of Events: 1. The user accesses the "Schools Hub" login page. 2. The system presents the user with fields to enter their credentials, typically their registered email address and password. 3. The user enters their email address and password. 4. The system verifies the provided credentials against the stored user data. 5. If the credentials are valid, the user gains access to their account and the platform's features. 6. If the credentials are invalid, the system displays an error message and may offer options for password recovery or account assistance.	
Alternative and exceptional flows: The following happens if the User enters an invalid username and/or password: 1. The system explains why the User failed authentication. 2. The system recommends adjustments to the User in order for the User to pass authentication. 3. The system prompts the User to enter the correct information again. 4. If the user exceeds the maximum number of failed login attempts, the account may be temporarily locked for security reasons. The user can choose to reset their password or contact support for assistance. 5. Password recovery options may be available, allowing users to reset their password by receiving a link via email or other recovery methods.	
Post-conditions: • The user is logged in and can access the features available in their respective user role (e.g., parent, teacher, and school staff).	

Table 2. Sign In Use Case

- **School's Profile**

Use Case Description	
Use Case name:	School Profile Creation
Use Case Description: This use case involves the creation of schools profile and add school in our registered schools list on our platform.	
Primary actor: Admin	**Other actors:** Schools
Pre-conditions: • Admin will create user account for schools and then will provide login credentials to the school management for managing their profile.	
Flows of Event 1. Admin will create user account for school and add it in the registered schools list. 2. Admin will share login credentials with schools in order to login into our platform. 3. After receiving login credentials, school can log into our platform. 4. School will manage their profiles.	
Post-conditions: • School can update their profile and response to feedback on their profile.	

Table 3. School Profile Use Case

➢ Use Features

Use Case Description	
Use Case name:	Use Features
Use Case Description: This use case allows parents/children to login into our platform and then use the available feature in order to select desired school for their better future career.	
Primary actor: Parent	**Other actors:** Child, Student
Pre-conditions: • End user have to log in into our platform with registered account credentials like username/email and password.	

Flow of Events:
1. User will login to our platform. 2. He/she can browse schools profiles and can use available features to select schools. 3. Apply advanced search filters on schools data. 4. Use AI recommendation feature by providing the required details in order to get good schools results. 5. Go through the school's detailed profile and select best schools for their child.
Post-conditions: • Get required information from schools profile and proceed with further process by visiting the selected schools.

5. NON-FUNCTIONAL REQUIREMENTS

It helps in specifying the quality attributes of a software system, such as Performance, Safety, Security, and User Documentation. That are define followings:

5.1 Performance Requirements

The proposed platform must deliver high-performance standards, ensuring rapid response times for user interactions, scalability to accommodate growth, and efficient handling of transactional throughput. It needs to maintain high availability with minimal system failures, guarantee security with swift authentication and authorization, and perform well under peak loads. Efficient resource utilization, low network latency, and fast data processing for AI features are essential. These performance requirements are integral to providing a seamless user experience and maintaining system reliability.

- The system should identify the valid and invalid users.
- System shall take minimum load time depending on client's internet i.e., 2 to 5 seconds.
- The system must allow the intended audience to access its services 24 hours a day.
- The system should have data backup to recover it in case of system crash.

5.2 Security Requirements

Safety requirements are those requirements that are associated with the degree to which system does not cause harm to life or property:

- System shall not lose user account information.
- The system should not be capable enough to tackle with DoS attacks.
- The system should not lose any of parent, child or admin data to such person that has no identification to system.

5.3 Safety Requirements

The Safety requirements for the "Schools Hub" platform should include:

- **Data Safety:** Ensure the safety and integrity of student and parent data through regular backups.
- **User Safety:** Implement security features to protect user accounts and personal information.
- **Content Safety:** Enforce guidelines to prevent inappropriate or harmful content on the platform, especially if it involves student interactions.
- **Emergency Protocols**: Establish emergency response protocols to address unexpected system failures or security breaches swiftly and effectively.
- **User Education:** Provide users with safety guidelines and resources to promote responsible platform use.

These safety requirements aim to maintain a secure and safe environment for all platform users and their data.

5.4 User Documentation

User documentation for the platform should be comprehensive, accessible, and user-friendly. Here are key elements to include:

1. **Getting Started Guide:** Provide a step-by-step guide for new users on how to create an account, log in, and navigate the platform.
2. **User Roles:** Explain different user roles (e.g., parents, teachers, administrators) and their respective capabilities.

3. **Profile Overview:** Describe the features of the user profiles, highlighting key functions and actions.

4. **Account Settings:** Detail how users can manage their profiles, update information, and adjust preferences.

5. **Support and Help Center:** Offer access to a comprehensive help center or FAQ section where users can find answers to common questions.

6. **Contact Information:** Include contact details for customer support or technical assistance.

7. **Feedback and Suggestions:** Encourage users to provide feedback and offer suggestions for platform improvement**.**

User documentation should be available in written formats.

6. REFERENCES

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