A logo of a university

Description automatically generated**Software Requirement Engineering**

***CLO: 03 <Analyzing>***

**Assignment:** 03

**Section:** A

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6. **Introduction:**
   1. **Purpose**

* **Purpose of SRS**

This Software Requirements Specification (SRS) serves as a detailed blueprint for the development of the Comsats Alumni Portal, providing clear guidelines and expectations for the development team.

* **Intended Audience**

The intended audience includes developers, testers, project managers, and stakeholders invested in the success of the portal

**1.2 Scope**

* **Identified Software product**

The Comsats Alumni Portal is envisioned as a sophisticated platform for alumni to connect, engage, and stay informed about university-related activities.

* **Inclusion and Exclusion**

The system encompasses a wide array of features such as sign-up, login, events, e-library, job sharing, profile updates, alumni card application, complaints, news updates, admin panel, discussion forums, fundraising, and logout.

Exclusions involve functionalities not directly contributing to alumni engagement.

* **User classes and benefit**
* **Alumni:** can seemlessly connect, network, and stay informed about university activities, enhancing their engagement and fostering a sense of community.
* **Admin:** Administrators gain efficient tools for managing user accounts, overseeing system activities, and addressing concerns, ensuring a smooth and well-maintained alumni portal.

**1.3 Definitions, Acronyms, and Abbreviations**

* **Abrbreviations Definitions**
* **SRS:** Software Requirement Specification
* **FR:** Functional Requirements
* **NFR:** Non-Functional Requirements

**1.4 References**

* **Referenced Documents**

No external references have been utilized in the creation of this SRS document.

**1.5 Overview**

This section provides a brief overview of the content and organization structure of the Software Requirements Specification (SRS) document.

* **Content Overview:**

This document serves as a comprehensive guide detailing the requirements for the Comsats Alumni Portal. It encompasses both functional and non-functional aspects, providing a thorough understanding of the desired features and characteristics of the system.

* **Organizational Structure:**

The SRS document is thoughtfuly organized into distinct sections to facilitate a systematic approach to understanding and implementing the Comsats Alumini Portal. The structure includes:

* **Introduction**

Clearly outlines the purpose, scope, definitions, references, and an overview of the document’s content.

* **General Description**

Delves into the external interfaces, detailed specifications of functions, performance requirements, logical database requirements, design constraints, software system quality attributes, and object-oriented models.

* **Appendices**

Supplementary information and detailed data that support the content of the main document. This section may include additional diagrams, charts, or reference materials.

* **Index**

An alphabetical listing of topics and terms with corresponding page numbers. The index serves as a quick reference guide for readers to locate specific information within the document.

1. **General Description**
   1. **Product Perspective**

* **Bussiness Case**

The Comsats Alumni Portal is designed to address the growing need for an interconnected and dynamic platform catering to the alumni community of Comsats University. The business case is rooted in the following key aspects:

1. **Enhanced Alumni Engagement**

* Facilitates seamless interaction and networking opportunities among alumni.
* Strengthens the relationship between the university and its graduates.

1. **Knowledge Sharing and Continous Learning**

Provides an E-Library for alumni to access digital resources, fostering continuous learning and professional development.

1. **Career Development and Opportunities**

Offers a centralized space for alumni to share job opportunities, mentorship programs, and participate in fundraising campaigns.

* **System fit into**

The Comsats Alumni Portal aligns with the strategic goals of the university and the Alumni Association, enhancing the overall alumni experience. It contributes to:

1. **Alumni Network Strengthening**

Encourages alumni to stay connected and engaged, fostering a vibrant and supportive community.

1. **University Reputation**

Showcases the university's commitment to its graduates, enhancing the institution's reputation.

1. **Resource Sharing**

Provides a centralized platform for resource sharing, job opportunities, and mentorship, creating a hub for alumni collaboration.

* **External Interfaces**

1. **System Interfaces**

**Database Management System (DBMS):**

The portal interacts with a DBMS for efficient data storage and retrieval.

* **User Interfaces**

1. **Web interface**

Alumni, administrators, and potential employers access the portal through a user-friendly web interface.

* **System Interfaces**

1. **Operating System Capability**

The portal is designed to be compatible with major operating systems.

* **Communication Interfaces**

1. **Email notifications**

The system sends email notifications for account verification, event updates, and other relevant information.

* **Constraints**

1. **Memory**

The system should efficiently manage memory usage to ensure optimal performance.

1. **Operational**

The portal should operate seamlessly, handling multiple user interactions concurrently.

1. **Site Adaption**

The system should be adaptable to various hosting environments and configurations.

* 1. **Product Functions**

**Functional Capabilities**

Major functional capabilities include user authentication, event management, e-library access, job posting, profile updates, alumni card application, complaint handling, news and updates, admin panel management, discussion forums, fundraising, and logout functionalities.

**Use Case Diagram:**

A diagram of a program

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A diagram of an alumni association

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* 1. **User Characteristics**

1. **Alumini**
2. **Technical Proficiency**

**Capabilities:** Navigate web-based interfaces

**Skills:** Efficiently use various portal features

1. **Information Reterivel**

**Capabilities:** Use the E-Library and access digital resources

**Skills:** Search, download and utilize educational materials

**2.** **Administrators**

**1. System Administration**

**Capabilites:** Manage user accounts and platform settings

**Skills:** Troubleshoot and resolve technical problems

**2. Analytics and Reporting**

**Capabilities:** Use analytical tools for tracking and reporting.

**Skills:** Interpret data for informed decision-making

**3. Justification**

**User-Centered Design**

Design considers user technical proficiency for a friendly experience.

**Training and Support**

Portal provides tutorials and support features for user assistance.

**Continous Improvement:**

User feedback informs updates to align with evolving technical skills.

**2.4 Constraints**

**1. Regulatory Policies**

**Description:** The development of the portal must comply with local and international regulatory policies related to data privacy, security, and user rights.

**Impact:** The adherence to regulatory policies may restrict certain features or data handling practices, influencing the overall system design.

**2. Target Platform**

**Description:** The portal is targeted for web-based platforms, requiring compatibility with major web browsers (e.g., Chrome, Firefox, Safari).

**Impact:** Developers must ensure consistent performance and functionality across supported browsers, limiting choices in adopting browser-specific technologies.

**3. Database**

**Description:** The system is designed to interact with a specific Database Management System (DBMS) for data storage and retrieval.

**Impact:** Developers are constrained by the chosen DBMS's capabilities and may face limitations in data modelling or query optimization.

**4. Network Software and Protocols**

**Description:** The portal relies on specific network software and protocols for communication between the client and server.

**Impact:** Developers must adhere to the chosen protocols, limiting the choice of communication technologies and potentially affecting data transfer efficiency.

**5. Development Standards Requirements**

**Description:** The development process must adhere to predefined coding standards, design principles, and best practices

**Impact:** Developers are constrained by the established standards, influencing code organization, naming conventions, and architectural decisions.

**2.5 Assumptions and Dependencies**

**1. Resource Availability**

**Assumption:** Stable and high speed internet connectivity

**Impact:** The portal that assumes that users, including alumini and administrators, have access to stable and high-speed internet connectivity for optimal performance. If this assumption is not met, it may affect the user experience, especially in accessing digital resources and participating in real-time interactions.

**Assumption:** Adequate Server Resources

**Impact:** The assumption is that the web servers hosting the portal have sufficient resources to handle concurrent user interactions. Insufficient server resources may result in slow response times and decreased system reliability.

**Assumption:** Availability of Database Servers

**Impact:** The system assumes uninterrupted access to the designated Database Management System (DBMS). Any downtime or limitations in database server availability may affect data retrieval and storage functionalities.

**Assumption:** Routine maintenance Windows

**Impact:** The system assumes scheduled maintenance windows for updates and optimizations. Lack of these windows may impact the ability to implement necessary improvements without disrupting service.

**2. User Adoption and Participation**

**Assumption:** User Adoption and Active Participation

**Impact:** The system assumes a certain level of user adoption and active participation from alumni. If the adoption rate is lower than expected, it may impact the overall engagement and utilization of portal features.

**3. User Adoption and Participation**

**Assumption:** Active collaboration with the Alumini Association

**Impact:** The successful operation of the portal assumes continuous collaboration with the Alumni Association for content updates, event notifications, and alumni engagement initiatives. Lack of collaboration may limit the effectiveness of certain features.

**3. Specific Requirements**

**3.1 External Interfaces**

**Inputs:**

1. **User Registration**

**Inputs:** Email, password

**Source:** Users through the registeration interface

**Format:** Web-based form

1. **Login Credentials**

**Inputs:** Email, password

**Source:** Users through the login interface

**Format:** Secure login fields

1. **Event Registration**

**Inputs:** User details, event preferences

**Source:** Alumini interacting with the Events section

**Format:** Event registeration form

**Outputs:**

1. **Registration Verfication**

**Outputs:** Approval/rejection notification

**Destination:** Users through a pop-up message

**Format:** Text notification

1. **Event Notifications**

**Outputs:** Upcoming event details

**Destination:** Alumini through notifications

**Format:** Text and visual notification

1. **E-Library Recomendations**

**Outputs:** Personalized reading suggestions

**Destination:** Alumini Accessing the E-Library

**Format:** Visual and text reomendations

* 1. **Functional Requirements**
* **Use case specifications**

1. **Alumni’s Use Case Functions**

* **Sign-up**
* The registration form includes fields for a valid email and password.
* Password must have at least 2 special characters, 2 alphabets, and 2 digits, with an upper limit of 8 characters.
* System notifies the user of any invalid fields (email or password).
* Account registration verification status communicated through a pop-up message.
* User can log in only after 0.2ms of successful registration.
* **Login**
* Secure login interface.
* System authenticates the email and password.
* Error message displayed within 0.1ms for incorrect credentials.
* Invalid attempts trigger a 30s timer, increasing to an upper limit of 24 hours.
* Forgot password feature with email redirect method
* **Update Profile**
* Profile update form within the user account.
* Allows users to update personal details, including name, contact number, and email address.
* Users control the visibility of their updated information, choosing between public or private.
* **Apply for Card**
* Online application form accessible within the portal.
* Users submit their request for an alumni identification card.
* **Place Complaint**
* Dedicated interface for complaint submission.
* Users can place a complaint about any issue.
* The system removes the complaint upon issue resolution.
* **Upload Job News**
* Interface to upload job news.
* Alumni can post job opportunities and mentorship for fellow alumni or students.
* **Change Theme**
* Theme options available within user settings.
* Users can customize the portal theme according to their preferences.
* **Participate in Discussion Forum**
* Threaded discussion model within the forum section.
* Alumni can participate in professional or academic discussions.
* **Logout**
* Secure logout functionality.
* Allows alumni to log out of their accounts

1. **Admin’s Use Case Functions**

* **Login**
* Secure admin login interface.
* System authenticates admin credentials.
* Error message displayed within 0.1ms for incorrect credentials.
* **Manage User Account**
* Admin interface to modify user accounts.
* Allows admins to manage user-related settings.
* **Notify Upcoming Events**
* Admin interface to notify users about upcoming events.
* Enables admins to communicate event details efficiently.
* **Review Complaint**
* Admin interface to access and review complaints.
* Provides a platform for admins to evaluate and address user complaints.
* **Remove Complaint**
  + Admin interface to remove complaints upon resolution.
  + Ensures a streamlined process for resolving and removing complaints.
* **Manage Fundrasing Compaign**
* Admin interface to oversee and manage fundraising activities.
* Enables admins to monitor and coordinate fundraising campaigns.
* **Upload Job News**
* Admin interface to upload job news visible to alumni.
* Allows admins to share relevant job information with the alumni community.
* **Update Portal**
* Admin interface for system updates and improvements.
* Facilitates regular maintenance and enhancements to the portal.
* **Logout**
* Secure admin logout functionality.
* Allows admins to log out of their accounts.
  1. **Performance Requirements**
* **Response Time**

**Objective:** Ensure quick page loads for optimal user experience

**Requirement:** Page must load within 0.5 seconds.

* **System Availability**

**Objective:** Maintain a high level of availability for user access

**Requirement:** The system must be available and accessible to users 23.8 hours a day.

* **User Authentication Speed**

**Objective:** Provide swift user authentication process

**Requirement:** User authentication must occur within 0.1 milliseconds.

* **Complaint Resolution Time**

**Objective:** Promptly address and resolve complaints

**Requirement:** Admins should review and resolve complaints within a maximum of 24 hours.

* **Event Notification Timing**

**Objective:** Timely notification of upcoming events to users

**Requirement:** Notification of upcoming events must be sent in advance to ensure user awareness.

* **System Backup Frequency**

**Objective:** Ensure data safety and recovery capabilities

**Requirement:** The system should regularly backup data at least once every 24 hours.

* **Data Recovery Time**

**Objective:** Effeciently recover the portal in case of data loss or system failure

**Requirement:** The system must successfully resume within 0.6 milliseconds after a failure.

* **User Registration Time**

**Objective:** Minimize the time for user registration process.

**Requirement:** Users should be able to log in only 0.2 milliseconds after successful registration.

* 1. **Logical Database Requirements**

1. **Professional Details**

Capture information on current and past employment, including company names, positions held, and industry.

1. **User Accounts**

Maintain user accounts for alumni, administrators, and other authorized personnel.

1. **Event Details**

Store information about alumni events, reunions, and gatherings.

1. **RSVP Tracking**

Record alumni responses to event invitations and manage attendance data.

1. **Messaging System**

Implement a messaging system for alumni to communicate with each other and with the university.

1. **Donation Tracking**

Record and manage alumni donations to the university.

1. **Search and Filters**

Allow users to search for alumni based on various criteria such as graduation year, location, and profession.

1. **Privacy Control**

Implement privacy settings to allow alumni to control the visibility of their information in the directory.

1. **Data Constraints**

Enforce constraints to ensure data accuracy and consistency.

1. **Report Generation**

Provide tools to generate reports on alumni demographics, engagement, and other relevant metrics.

* 1. **Design Constraints**

1. **Standard Complaince**

**Objective:** Ensure that the Comsats Alumni Portal adheres to relevant industry standards for consistent and interoperable performance.

**Design Constraints:**

* The system must comply with web development standards such as HTML5, CSS3, and JavaScript ECMAScript 6 for a modern and secure web experience.
* Accessibility standards (e.g., WCAG) must be followed to guarantee an inclusive user experience.
* Compatibility with major web browsers (e.g., Chrome, Firefox, Safari) is mandatory.

1. **Accounting and Auditing Procedures**

**Objective:** Implement robust accounting and auditing procedures to maintain financial transparency and accountability.

**Design Constraints:**

* The system must comply with relevant accounting standards and principles.
* All financial transactions, especially those related to fundraising campaigns, must be recorded and traceable.
* Regular audits and financial reviews should be conducted to ensure accuracy and legality.
  1. **Quality Attributes**

1. **Relaiblility**

* Mean Time to Failure (MTTF): Not more than 5 seconds.
* System Recovery Time: Within 0.6 milliseconds.

1. **Response Time**

* **Page Load Time:** Within 0.5 seconds.

1. **Security**

* **Access Control:** System provides access only to authorized users.
* **Data Encryption:** All sensitive data is encrypted.

1. **Availability**

* **System Availability:** 23.8 hours a day.

1. **Portability**

* **Cross-Platform Compatibility:** The system shall work efficiently on different operating systems and devices.

1. **Usability**

* **User-Friendly Interface:** The system interface should be intuitive and easy to navigate.
* **Help Documentation:** Comprehensive documentation is available for every module.

1. **Maintainability**

* **Ease of Maintenance:** The system should be designed for straightforward maintenance and debugging.

1. **Scalability**

* **User Capacity:** The system shall be designed to handle a growing user base effectively.

1. **Appendices**

**Appendix A: Use Case Diagrams**

A.1 Alumni Portal Use Case Diagram

**Appendix B: Data Flow Diagram**

B.1 Data Flow Diagram for Alumni Portal

**Appendix C: Abbreviations**

C.1 SRS: Software Requirements Specification

C.2 FR: Functional Requirement

C.3 NFR: Non-Functional Requirement

**Appendix D: Database Schema**

D.1 Entity-Relationship Diagram for Comsats Alumni Portal Database *(TBD)*

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