UE22CS341A: Software Engineering

Case Study

Unit 1 Deliverable

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1. Introduction

1.1 Purpose

This document specifies the requirements for the Alumni Network and Job Portal system. The system is designed to facilitate communication and networking among alumni and students of an educational institution, provide a platform for sharing job opportunities, and allow for mentoring and career development activities.

1.2 Scope

The Alumni Network and Job Portal system aims to connect alumni, current students, and faculty members. It enables users to create profiles, post and search for job opportunities, share news and events, participate in forums, and connect for mentoring purposes. The system will be accessible via web and mobile applications.

1.3 Definitions, Acronyms, and Abbreviations

- **Alumni**: Graduates of the educational institution.
- **Job Portal**: A feature that allows users to post and apply for jobs.
- **Mentoring**: Guidance provided by alumni to students or other alumni.
- **UI**: User Interface
- **API**: Application Programming Interface

1.4 References

- [AlmaConnect: Alumni Networking Portal helping you discover & connect with alums](#)

AlmaConnect is an alumni networking platform. Private Alumni networks exist for schools, colleges, and companies where alumni can sign up and connect with the current students.

1.5 Overview

This document outlines the functional and non-functional requirements, system features, external interface requirements, and other specifications for the Alumni Network and Job Portal.

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2. Overall Description

2.1 Product Perspective
The Alumni Network and Job Portal is a standalone system that can be integrated with the educational institution's existing database. It includes modules for user management, job postings, and mentoring.

2.2 Product Functions

1. **User Registration and Authentication**: Users can create profiles and log in using their credentials or social media accounts.
2. **Profile Management**: Users can update personal information, and professional details, and add resumes or portfolios.
3. **Job Posting and Search**: Employers can post job openings, and users can search and apply for jobs.
4. **Mentoring Platform**: Alumni can offer mentoring services, and users can request mentorship.
5. **Networking**: Users can connect with others, send messages, and join discussion forums.
6. **Notification System**: Alerts for new job postings, events, messages, and updates.

2.3 User Classes and Characteristics

- **Alumni**: Former students who want to stay connected, mentor, or seek job opportunities.
- **Students**: Current students looking for networking, mentorship, and job opportunities.
- **Employers**: Organizations or individuals who wish to post job openings and connect with alumni.
- **Administrators**: Manage the system, user activities, and content.

2.4 Operating Environment

- **Software**: Web-based application compatible with major browsers, Relational database management system, MySQL.
- **Hardware**: Standard server and client-side hardware requirements, internet connectivity.

2.5 Design and Implementation Constraints

- Compliance with Privacy Laws.
- Secure Data Transmission.
- Scalability.

2.6 Assumptions and Dependencies

The institution will provide a verified database of alumni, students and employers for initial

setup.
Regular updation of databases by the administrator.

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3. External Interface Requirements

3.1 User Interfaces

Intuitive, user-friendly web interface accessible from desktops and mobile devices.

3.2 Hardware and Software Interfaces

- Interfaces with the client-side browsers to deliver content.
- Interfaces with the web server for data storage and retrieval.

3.3 Communication Interfaces

- HTTPS
- Email and SMS, for sending notifications and alerts to users.

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4. System Features

4.1 User Registration and Authentication
4.1.1 Description: The system requires users to register and authenticate using their credentials.
4.1.2 Functional Requirements:

- The system shall allow users to register using email.
- The system shall validate user credentials against stored data in the database.
- The system shall allow users to reset passwords via email.

4.2 Profile Management
4.2.1 Description: Allows users to manage their personal and professional information.
4.2.2 Functional Requirements:

- The system shall allow users to update their profiles with personal, educational, and professional information.
- The system shall allow users to upload documents such as resumes and certificates.
- The system shall allow users to set privacy preferences for their profiles.

4.3 Job Posting and Search
4.3.1 Description: Enables users to post and search for job opportunities.
4.3.2 Functional Requirements:

- The system shall allow employers to post job openings with details like job description, location, and requirements.
- The system shall allow users to search for jobs using various filters.
- The system shall allow users to apply for jobs directly through the portal.

4.4 Mentoring Platform
4.4.1 Description: Provides a platform for mentoring relationships between alumni and students.
4.4.2 Functional Requirements:

- The system shall allow alumni to sign up as mentors and specify their areas of expertise.
- The system shall allow students and other alumni to request mentorship.
- The system shall facilitate communication between mentors and mentees.

4.5 Networking
4.5.1 Description: Facilitates networking among users.
4.5.2 Functional Requirements:

- The system shall allow users to search for and connect with other users.
- The system shall allow users to send private messages and participate in group discussions.
- The system shall allow users to join and create discussion forums based on topics of interest.

4.6 Notification System
4.6.1 Description: Sends notifications to users about relevant activities.
4.6.2 Functional Requirements:

- The system shall send notifications for new messages, job postings, events, and updates.
- The system shall allow users to customize their notification preferences.

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5. Non-Functional Requirements

5.1 Performance Requirements

- The system shall respond to user actions within 2 seconds.
- The system shall handle up to 10,000 concurrent users.

5.2 Security Requirements

- The system shall encrypt all sensitive data during transmission.
- The system shall provide role-based access control for different user types (e.g., alumni, students, employers and administrators).

5.3 Usability Requirements

- The system shall provide a responsive and intuitive user interface.

5.4 Reliability Requirements

- The system shall have an uptime of 99.9%.
- The system shall provide regular backups to prevent data loss.

5.5 Scalability Requirements

- The system shall be able to scale horizontally to accommodate increasing numbers of users and data.

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6. Other Requirements

6.1 Regulatory Requirements

- The system shall comply with the Digital Personal Data Protection Act for data protection and privacy.

6.2 Environmental Requirements

- The system shall be operational under typical internet conditions globally.

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7. Requirements Traceability Matrix (RTM)

The RTM ensures that all requirements are covered by design, development, and testing activities. Below is a simplified RTM example for the Alumni Network and Job Portal:

Requirement ID	Description	Design Specification	Implementation Module	Test Case ID
FR-1	User Registration and Authentication	User Management Module	Authentication API	TC-1
FR-2	Profile Management	Profile Module	Profile Interface	TC-2
FR-3	Job Posting and Search	Job Management Module	Job Portal API	TC-3
FR-5	Mentoring Platform	Mentoring Module	Mentorship Interface	TC-5
FR-6	Notification System	Notification Module	SMS and Emails	TC-6
FR-7	Networking System	Networking Module	Networking Interface	TC-7