Software Requirements Specification

for

CareerConnectDB

Version 1.0

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1. Introduction

1.1 Purpose

This document specifies the software requirements for the Job Recruitment System. The system provides a platform for job seekers and employers to interact, manage job postings, apply for jobs, track applications, and analyze hiring trends. This SRS focuses on the core functionalities and subsystems that make up the software, covering user management, job management, applications, company data, hiring metrics, notifications, interviews, and recruitment tracking.

1.2 Intended Audience and Reading Suggestions

- Project Managers: To track project progress and ensure scope adherence.
- Users (Employers & Job Seekers): To understand system capabilities and limitations.
- Marketing & Documentation Teams: To create user guides and promotional materials.

1.3 Product Scope

The Job Recruitment System aims to simplify the hiring process by offering an integrated platform for job seekers and employers. The key objectives are:

- Provide a user-friendly and efficient job application and hiring system.
- Enable employers to post jobs, review applications, and track hiring metrics.
- Allow job seekers to search for jobs, apply, and track their application status,interview status
- Keep job seekers and employers notified
- Offer insights into hiring trends, employer response times, and recruitment analytics.

1.4 References

- Database System Concepts Seventh Edition by Avi Silberschatz, ,Henry F. Korth, ,S. Sudarshan
- https://erdplus.com/

2. Overall Description

2.1 Product Perspective

The Job Recruitment System was designed to make job searching and hiring easier by consolidating all recruitment processes into one platform. Instead of navigating multiple job boards, company websites, and email threads, users can manage everything from job applications to interviews in a single app. The motivation behind this product comes from personal experiences—finding a job is often difficult, and we wanted to create something that simplifies the process for both job seekers and employers. This system is a standalone product designed to centralize recruitment, making it more transparent and accessible.

2.2 Product Functions

- Register as an employer or job seeker.
- Create, edit, and manage job listings.
- Search for and apply to job postings.
- Track application status updates.
- Receive job alerts and notifications.
- Schedule and manage interviews.
- Analyze hiring metrics and trends.
- Monitor the entire recruitment process from job posting to final selection.

2.3 User Classes and Characteristics

The system will serve different user classes with varying needs and access levels:

- **Job Seekers**
  - Regular users searching for job opportunities.
  - Can apply for jobs, track application progress, and receive notifications.
  - Do not require technical expertise or knowledge about the backend/databse
- **Employers**
  - Users responsible for posting job listings and managing applicants.
  - Can schedule interviews, track hiring metrics, and manage recruitment data.
  - Have higher access privileges than job seekers.
- **Administrators**
  - Manage the overall platform, ensuring smooth operations.
  - Can modify user roles, resolve disputes, and maintain system integrity.
  - Require technical expertise, will have access to the backend
- **Recruitment Analysts**
  - Use hiring metrics to track industry trends and hiring efficiency.
  - Access statistical reports on applications, response times, and success rates.
  - Need data analysis skills to interpret reports effectively.
  - Will use queries to interpret data

2.4 Operating Environment

The software is a Windows Form Application developed in Visual Studio for the front-end. The backend utilizes SQL+ for database management. The system will run on Windows operating systems.

2.5 Design and Implementation Constraints

- **Security Considerations**: We're adding basic authentication, but we won't be able to implement advanced security features due to time and resource limits.
- **Testing Constraints**: The app will not be tested with real world data.
- **Database Access**: We don't have access to a proper database for analysis, so we won't be able to test with real-world data.

2.6 User Documentation

We won't be providing separate user manuals or tutorials since the app is designed to be self-explanatory and easy to use. The interface is straightforward, so users should be able to navigate it without extra documentation.

2.7 Assumptions and Dependencies

We don't have access to a real database for analysis, so we will be working with test data. The app is designed to run locally, and we are not implementing cloud storage or external API integrations due to project constraints. We assume that basic authentication will be enough for this project, as we don't have the resources to implement advanced security features.

3. External Interface Requirements

3.1 User Interfaces

- **Login Page**
    - Users enter their username and password to log in.
    - The system checks the username to determine if the user is a Job Seeker or an Employer and redirects them to the appropriate dashboard.
    - There is also a button to go to the Sign-up Page for new users.
- **Sign-up Page**
    - New users can register by providing their details.
    - If they select Employer as their role, additional hidden fields appear to collect company-related information.
    - Once registered, users are redirected back to the Login Page to log in.
- **Employer Dashboard**
    - Employers can enter new job listings, including job title, description, and requirements.
    - Employers can check the number of applications submitted for each job.
- **User Dashboard**
    - Job Seekers can browse job listings and apply.
    - Users can navigate to check their interview status, notifications, or view their scheduled interviews.
- **Company Page**
    - Employers can enter the company name when adding a new job listing.
    - Allows managing company details like location, industry, and company description.
- **Notifications Page**
    - Displays job-related notifications for the user (e.g., new job postings, employer responses, system updates).
- **Interview Status Page**
    - Shows details of scheduled interviews and their current status (accepted, rejected, pending).

The UI is simple and self-explanatory, ensuring users can navigate easily. Standard buttons and navigation elements are used, and error messages will appear when needed (e.g., incorrect login, missing details in forms). The design follows the Windows Forms Application standard with clear transitions between forms.

3.2 Hardware Interfaces

There are no hardware interfaces for this application. The system runs entirely on a Windows PC and operates as a Windows Forms Application with a SQL+ database backend. Since it is a software-based project, there are no external hardware components involved. Currently the system is on a local host , TCP/IP would be used to securely share data over a network when the system is fully developed.

3.3 Software Interfaces

Our project is a Windows Forms Application developed in Visual Studio and connected to a SQL+ backend.

- **Operating System:** Windows
- **Frontend:** Windows Forms (C#) in Visual Studio
- **Backend Database:** SQL+ (PL/SQL)
- **Database Connection:** ADO.NET / ODBC for executing queries and retrieving data

Data Flow & Communication

- **Incoming Data:**
    - User credentials (for login/sign-up)
    - Job listings entered by employers
    - Job applications submitted by users
    - Interview schedules and notifications
- **Outgoing Data:**
    - User authentication status
    - Job listings for job seekers
    - Application status updates
    - Notifications and interview details

The frontend will send queries to the SQL+ database, which will return relevant data to be displayed in the UI. No external APIs or third-party software integrations are involved

3.4 Communications Interfaces

Our project does not require internet-based communication, email services, or web-based interactions. The system operates entirely offline.

4. System Features

4.1 User Authentication

4.1.1 Description and Priority

This feature allows users to log in or sign up based on their role (Job Seeker or Employer). If signing up as an Employer, additional company details need to be filled in. Upon login, users are redirected to their respective dashboards.
Priority: High

4.1.2 Stimulus/Response Sequences

- User opens the application and is presented with the Login Page.
- User enters their Username and Password and clicks "Login".
    - SQL Query: A SELECT query validates the user's credentials against the Users table.
- If credentials are correct, they are redirected to either the Job Seeker Dashboard or Employer Dashboard.
- If incorrect, an error message is displayed.
- If the user selects "Sign Up":
    - If the Employer role is selected, additional fields appear for company details.
    - SQL Query: An INSERT query adds user and company details to the Users and Employers tables.
- Once completed, the account is created, and the user can log in.

4.1.3 Functional Requirements

- REQ-1: The system must allow users to register with a unique username and password.
    - SQL Query: An INSERT query adds new user details to the Users table.
- REQ-2: The system must validate login credentials before granting access.
    - SQL Query: A SELECT query checks the Users table for matching username and password.
- REQ-3: The system must redirect users to the correct dashboard based on their role.
- REQ-4: If the user provides incorrect credentials, an error message must be displayed.
- REQ-5: Employers must provide company details when signing up.
    - SQL Query: An INSERT query for employer-specific company information in the Employers table.

4.2 Job Management

4.2.1 Description and Priority

Employers can create, edit, and manage job listings. Job Seekers can view available jobs and apply.
Priority: High

4.2.2 Stimulus/Response Sequences

- Employers log in and navigate to the Job Management Page.
- Employers enter job details (Title, Description) and submit the listing.

    - SQL Query: An INSERT query adds the new job listing to the Jobs table.
- Job Seekers view available jobs and apply with a single click.
    - SQL Query: An INSERT query records the application in the Applications table.

4.2.3 Functional Requirements

- REQ-6: Employers must be able to post new job listings.
    - SQL Query: An INSERT query adds job details to the Jobs table.
- REQ-7: Employers should be able to view and edit their job listings.
    - SQL Query: An UPDATE query modifies job details in the Jobs table.
- REQ-8: Job Seekers must be able to browse and apply for jobs.
    - SQL Query: A SELECT query retrieves available job listings for job seekers, and an INSERT query records job applications.

4.3 Application Tracking

4.3.1 Description and Priority

Users can track the status of their job applications. Employers can see the number of applications received for each job.
Priority: Medium

4.3.2 Stimulus/Response Sequences

- Job Seekers log in and navigate to the Application Status Page.
    - SQL Query: A SELECT query fetches application status from the Applications table.
- The system displays their submitted applications and current status (Pending, Accepted, Rejected).
- Employers log in and navigate to the Job Management Page, where they see the number of applications received per job listing.
    - SQL Query: A COUNT query retrieves the number of applications for each job from the Applications table.

4.3.3 Functional Requirements

- REQ-9: The system must allow Job Seekers to check the status of their applications.
    - SQL Query: A SELECT query fetches application status from the Applications table.
- REQ-10: The system must allow Employers to view the total number of applicants per job listing.
    - SQL Query: A COUNT query retrieves the number of applicants for each job from the Applications table.

4.4 Notifications and Interviews

4.4.1 Description and Priority

Users can check notifications for job updates and scheduled interviews.
Priority: Medium

4.4.2 Stimulus/Response Sequences

- Job Seekers log in and navigate to the Notifications Page.
    - SQL Query: A SELECT query retrieves notifications from the Notifications table.
- The system displays job alerts and interview schedules.
- Users can view interview details and status separately on the Interview Status Page.
    - SQL Query: A SELECT query fetches interview details and their status from the Interviews table.

4.4.3 Functional Requirements

- REQ-11: Users should be notified when they receive a job alert or interview invitation.
    - SQL Query: A SELECT query checks for new notifications in the Notifications table.
- REQ-12: Users must be able to view their scheduled interviews separately.
    - SQL Query: A SELECT query retrieves interview details from the Interviews table.

4.5 Company Management

4.5.1 Description and Priority

Employers must be able to enter and manage company details.
Priority: Low

4.5.2 Stimulus/Response Sequences

- Employers log in and navigate to the Company Page.
- They enter company details (Name, Industry, Location) and submit.
    - SQL Query: An INSERT or UPDATE query updates the Employers table with company details.
- The system saves and links this data to job postings.

4.5.3 Functional Requirements

- REQ-13: Employers must be able to enter and update company details.
    - SQL Query: An UPDATE query modifies company details in the Employers table.
- REQ-14: The system should link job listings to the corresponding company.
    - SQL Query: An UPDATE query links job listings to the correct company by updating the EmployerID in the Jobs table.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

Query Response Time: The system should ensure that SQL queries for job applications, hiring trends, and employer response times return results within 2 seconds under normal load conditions. This is crucial for maintaining user engagement and providing timely insights.

Throughput: The system should handle at least 100 concurrent user sessions without significant performance degradation. This ensures that multiple users can access and interact with the platform simultaneously without experiencing delays.

Resource Utilization: The system should optimize CPU, memory, and disk usage to prevent bottlenecks. For example, it should not exceed 70% CPU utilization during peak hours to maintain responsiveness.

5.2 Safety Requirements

Data Integrity: The system must ensure that all data entered by users is validated and stored securely to prevent data corruption or loss. This includes implementing robust backup and recovery processes.

User Protection: The system should protect users from potential harm by ensuring that all interactions are secure and that user data is not shared without consent. This includes compliance with relevant data protection regulations.

5.3 Security Requirements

Authentication: Implement strong user authentication using passwords and consider two-factor authentication for enhanced security. All user interactions should be encrypted.

Access Control: Ensure role-based access control, where employers and job seekers have limited access to their respective functionalities. Only authorized personnel should have administrative privileges.

Data Encryption: Encrypt sensitive data both at rest and in transit to prevent unauthorized access.

5.4 Software Quality Attributes

Availability: The system should be available 99.9% of the time, ensuring minimal downtime for maintenance or failures.

Usability: The interface should be intuitive, allowing users to easily navigate and perform tasks without extensive training.

Maintainability: The system should be designed to allow for easy updates and bug fixes without disrupting service.

Flexibility: The system should be adaptable to future changes in hiring trends and technologies.

5.5 Business Rules

User Roles: Only employers can create job postings, while job seekers can apply for jobs. Both roles should have access to their respective dashboards.

Application Status: Applications can only be marked as pending, accepted, or rejected by employers. Job seekers can view their application status.

Job Posting Validation: Job postings must include a title, description, and company details before they can be published.

Notification Rules: Users receive notifications for job postings matching their preferences and for updates on their applications.

Appendix A: Analysis Models