SENG_491/CMPE_491

Graduation Project

Prepared by

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1. Introduction

1.1 Description

- KariyerLAB is a website allowing students to apply for internships, scholarships, and jobs through a central website. Companies often victimize students and new graduates with fake applications or by not responding to real applications. KariyerLAB will prevent this victimization with a new system where students will score companies. Since students will not prefer low-scoring companies, no company will be able to take this situation, thus students will be able to get rid of victimization and take more transparent and confident steps toward their careers. University students, companies, and scholarship-granting institutions will register with the system. The most basic features of the system will be filling out the application form, uploading documents, monitoring the application status, evaluating the application, commenting, filtering, and searching for advertisements.

1.2 Constraints

- **Economic Constraints**: Project budget (hosting cost, server cost, third-party integration costs).
- **Social Constraints**: Requirement to comply with accessibility standards (for different devices).
- **Legal Constraints:** Compliance with data privacy laws, and labor and internship laws that vary from country to country.
- **Ethical Constraints:** Ensuring the security of students' personal information, equality, and fairness in companies' application processes.
- **Security Constraints:** Protection against online security threats (hacking, data theft).
- **Manufacturability Constraints:** Current technological capabilities of the development team, time, and resources.
- **Sustainability Constraints:** Long-term maintenance costs of the website and efficient use of resources.

1.3 Professional and Ethical Issues

- **Data Privacy Principle:** Protection of students' and companies' data, not sharing data without users' consent.
- **Equality Principle:** The website should not cause discrimination, equal opportunities should be provided to every student and applicant.
- **Transparency Principle:** Fair evaluation and conclusion of applications, clear information should be provided during the application process.
- **User Responsibility Principle:** The data uploaded by users to the system should be accurate, and false or fake information should not be uploaded.

2.   Requirements

2.1   Functional Requirements

2.1.1   Create CV

- Users can create their CVs using the template CV theme. This way, they can easily deliver their summary information to the employer. Our template CV theme contains all the information that a CV should have. It includes all the necessary information about the user, such as experience, education, age, and hobbies.

2.1.2   Create Profil

- Users must have a profile for each user who is an employer or a job seeker. This profile includes summary information such as contact information and personal information about the job seeker. A profile design that summarizes information about the institution is required for the employer. Images can be included in the profile.

2.1.3   Apply for the Internship

- The user looking for a job/internship can send information about himself/herself to the employer through the application function. In this way, the employer becomes aware of the user and includes the person in the evaluation process.

2.1.4   Apply for the Job

- The user looking for a job/internship can send information about himself/herself to the employer through the application function. In this way, the employer becomes aware of the user and includes the person in the evaluation process.

2.1.5   Apply for the Scholarship

- Institutions can also publish scholarship advertisements on their profiles, which can be applied for by individual users. In this way, employers are informed about the candidates and carry out the evaluation.

2.1.6   Write Comment

- Employers or job seekers can state their satisfaction or dissatisfaction from the moment they are involved in any process until the end. In this way, people share with other users whether the institution has managed this process correctly.

2.1.7   Do Evaluation

- Students evaluate the internship, job, or scholarship advertisements they apply for. This evaluation includes the processes, communication, or overall application experience of the company they apply to. Companies will display these evaluations graphically and evaluate on their behalf.

2.1.8   Publish the Posts

- Companies should be able to publish a new job posting after creating it. The published job posting should be viewable by users according to the relevant category (internship, job, scholarship). Before the job posting is published, the system verifies the job posting by warning about missing or incorrect information.

2.1.9 Delete the Posts

- Companies should be able to delete internship, job, and scholarship advertisements they publish on the platform when necessary. This process can be used if the advertisement is no longer valid, contains incorrect information, or if there is a need to update the advertisement.

2.1.10 Feedback to User

- Companies that post ads should be able to provide feedback to protect users from fake ads and inform users of suspicious situations. This feature will be implemented to increase the security of applications. Today, there are quite a few fake ads in some applications. We expect companies to respond sensibly to applications made to ads.

2.1.11 Write a Comment

- Users can comment on specific posts, such as internship, job, or scholarship listings, and view comments from other users. Comments must be in text and have a character limit (e.g. 500 characters). Comments are listed chronologically.

2.1.12 Login

- Our login form has two main fields: username and password. If you successfully log in, you will be directed to the home page. During login, the password field is securely masked; that is, it appears as " **** " while entering the password.

2.1.13 Log Out

- A log-out feature is provided so users can safely end their active sessions and exit the system.

2.1.14 Display the Data

- Users who post ads can view their internship, job, and scholarship applications graphically. With metrics such as application numbers, accepted/rejected applications, application status, and this data must be up-to-date.

2.1.15 Get the Help From Chat Bot

- Chat Bot is an add-on that aims to speed up the job search process of individual users. By using Chat, users can filter the advertisements for themselves more quickly and thus avoid the hassle of scanning all the advertisements. Chat Bot aims to save time.

2.2 Non-Functional Requirements

2.2.1. Performance Requirement

- **Loading Time**: Pages should load quickly to enhance user experience. For example, the homepage should be targeted at a load time of less than 3 seconds.
- **Response Time**: Quick response to user interactions is crucial. Response time to user interface interactions should not exceed 2 seconds. They are providing immediate feedback rather than making users wait after clicking a button.
- **Scalability**: The website should be able to handle increasing user traffic without a decrease in performance.
- **Caching**: Caching frequently accessed data and pages to enhance performance, especially for sites with dynamic content.
- **Database Optimization**: Optimizing database queries for fast performance. Techniques such as database indexing and minimizing unnecessary queries can be employed.

2.2.2. Safety Requirements

- **Data Backup and Recovery:** Implementing regular data backups and establishing procedures for data recovery in case of system failures or data loss incidents.
- **Disaster Recovery Plan:** Develop a comprehensive plan to restore system functionality at the end of a natural disaster, cyberattack, or other unforeseen incidents.
- **Secure Transmission of Sensitive Information:** Ensuring that sensitive information such as payment details or personal data is transmitted securely over the network using encryption and secure protocols (e.g., HTTPS).
- **Access Control and User Permissions:** Implementing access control mechanisms to restrict unauthorized access to sensitive data and functionalities within the system.
- **Error Handling and Logging:** Implementing robust error handling mechanisms to gracefully handle unexpected errors and log relevant information for troubleshooting purposes without exposing sensitive data.

2.2.3. Security Requirements

- **Internal Security Requirements:** For internal security, the system uses **TLS** encryption for every data exchange. It performs routine security checks to prevent any risks and limits who can see what based on their job.
- **JWT Security Requirement**: JWT is necessary to authenticate user sessions and securely transport identity information. Measures such as properly signing and encrypting JWTs, ensuring reliable key management, and setting appropriate token expiration times should be taken.
- **CORS Security Requirement:** CORS must be configured correctly in the web application. This involves configuring CORS to allow the browser to load resources from other domains in a manner that does not pose security risks. Incorrect CORS settings may expose the application to risks where attackers could exploit security vulnerabilities.

2.2.4. Testing

- The system should be tested regularly under different scenarios. Performance, security, and functionality tests should be performed to ensure that the system works correctly. In addition, improvement studies should be carried out based on user feedback.

2.2.5. Accessibility

- It should be fully compatible with mobile devices and different screen sizes. The page's structure and content should be arranged to improve the user experience on different devices.
- The menu and page structure should be simple, understandable, and easy to navigate. Users should be able to easily access the information they are looking for.
- Drop-down menus should be accessible with the keyboard or using assistive technology. In addition, menus and other navigation elements should work smoothly on mobile devices.

2.2.6. Exception Management

- Users' errors should be handled appropriately by the system. If there is an issue, the user should be given instructions on what to do and be presented with informative error messages.
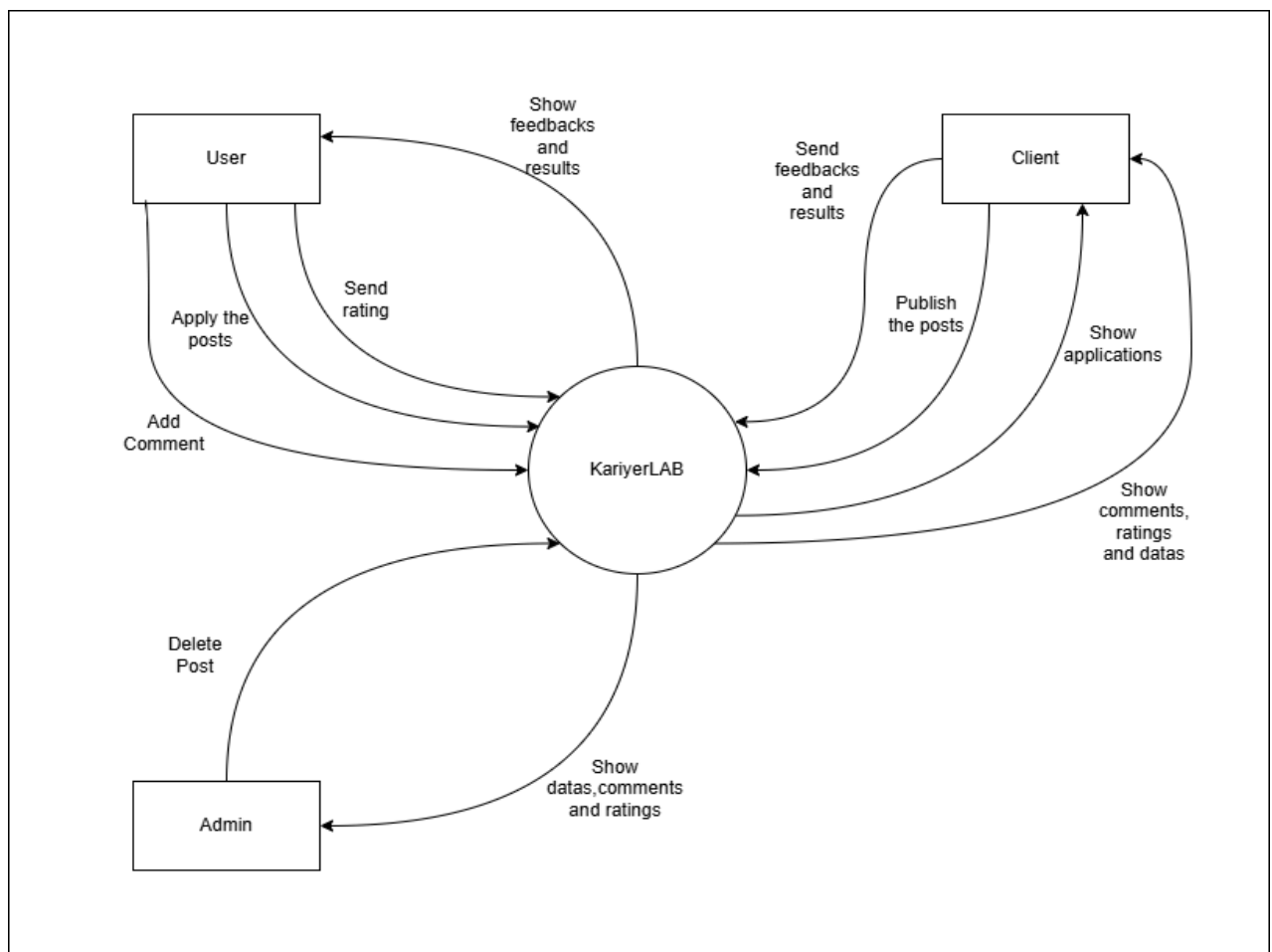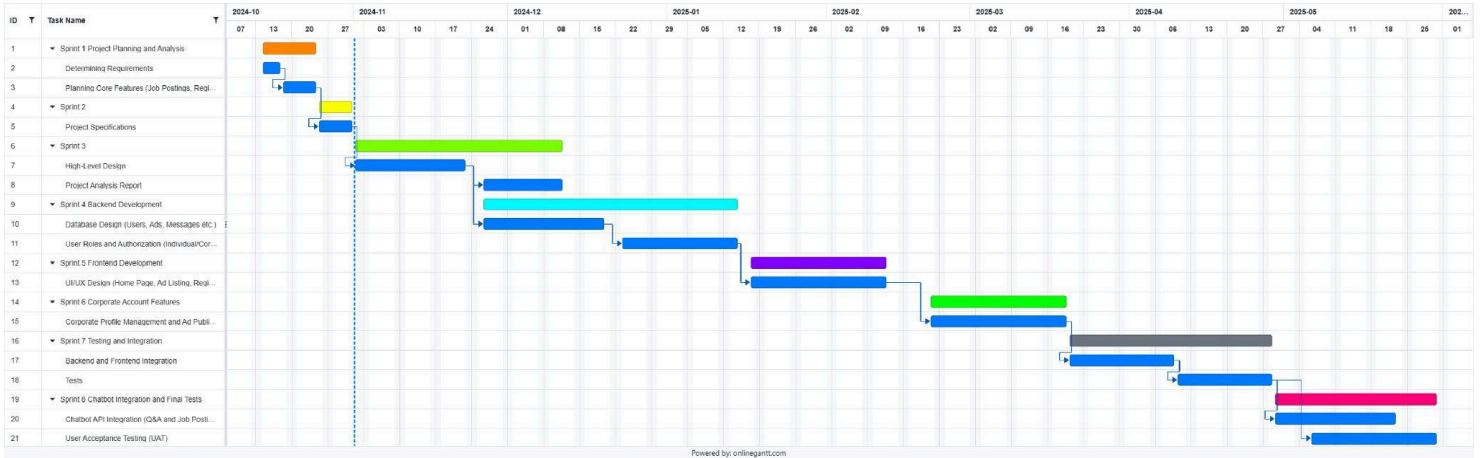
3. System Context Diagram

Figure 1: System Context Diagram

4. Gantt Chart

5. Stakeholders

- Project Manager: Mustafa Karakuş, Anıl Çelik, Ahmet Hakan Aksoy
- Development Team: Mustafa Karakuş, Anıl Çelik, Ahmet Hakan Aksoy
- Client: Özlem Albayrak, Elif Kurtaran Özbudak
- User: All students who sign up for the system.
- Sponsors: TED University

6. Roles and Responsibilities

- Mustafa Karakuş: Front-End Development
- Anıl Çelik: Database Design and Testing
- Ahmet Hakan Aksoy: Back-End Development

7. Methodology

Selected Methodology: Agile

- In the KariyerLAB project, the Agile methodology is suitable because user requirements are likely to change over time. Agile allows rapid adaptation to continuous improvement requirements and changes in user demands. Regular feedback from users helps us develop a user-friendly and need-based system. In addition, since a functional product emerges at the end of each sprint, possible errors are detected and corrected at an early stage, thus adopting a flexible and user-focused approach.

8. References

- The code affirms an obligation of computing professionals to use their skills for the benefit of society. Code of Ethics. (n.d.). https://www.acm.org/code-of-ethics