



Bilkent University

Department of Computer Engineering

CS413 Course Project

Jobify

Software Requirements Specifications

Emre Tolga Ayan, Cemal Arda Kızılkaya, Enes Merdane, Alptekin Önder

Instructor: Haluk Altunel

Teaching Assistant(s): Saeed Karimi

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1. Introduction

This document contains information related to the specifications of the web-based career portal Jobify. The document consists of five sections. Section 1 explains the scope of the project and provides the definitions for the terms that will be used throughout the rest of the document. Section 2 provides an overview of the functionalities of the system. Section 3 explains the system requirements in detail.

1.1. Purpose

The purpose of this document is to describe the requirements of the web-based career portal Jobify, which aims to make the job searching and recruiting processes easier. This document provides a general overview, the requirements, the features, and the constraints of the system.

1.2. Scope

The main goal of the web-based career Jobify is to simplify the processes of recruiting for employers and job searching for prospective candidates. The portal eliminates the need of going through dozens of career portals for the prospective candidates by collecting the job advertisements on other popular platforms that are relevant for the prospectives and present the results to them in a single page. The prospectives will be able to upload their resume to the system to fill in their information automatically without the need of filling them in one by one manually. On the other hand, the employers will be able to post their job advertisements only on Jobify in order to reach as many candidates as possible without the need of posting separate advertisements on a handful of different platforms. Lastly, the information given by the users that are registered to Jobify will be verified by the employees of Jobify to provide reliable profiles to other users.

1.3. Definitions, acronyms, and abbreviations

User: User is every person or enterprise which uses Jobify to create enterprise or candidate profiles, post job offers, search for job offers, apply for jobs, and search for candidates. The functionality he/she is using can be one of these functionalities or all of them. That is, user definition includes the employees, candidate employees, and enterprises. A user can be registered or unregistered in the system. According to that situation, the definitions may change respectively.

- **Employees/candidate employees:** Employees and candidate employees are the people whose main aim is to search for job offers and find a good one for them to apply. Their usage includes creating candidate profiles, searching for job offers and applying for jobs.
- **Enterprises:** Enterprises are the users whose main aim is to search for good candidates and recruit them. Their usage includes creating enterprise profiles, searching for candidates, and contacting candidates.

- **Registered users:** Registered employees and enterprises are the ones who are registered to Jobify and whose profile information is verified by Jobify. They are authorized to use all functionalities listed in the user section.
- **Unregistered users:** Unregistered users are the ones who are not registered to Jobify or the ones whose profile has not been verified by Jobify yet. The unregistered enterprises are authorized to search for candidates only. The unregistered employees are authorized to search for job offers posted by the enterprises only.

1.4. References

- **LinkedIn:** LinkedIn is a social network mainly focusing on professional networking and career development. However, it also allows companies to post job advertisements and search for appropriate candidates for their company. Therefore, such functionalities of LinkedIn are considered while deciding on the requirements of Jobify [1].
- **Indeed:** Indeed is a job seeking website which has millions of daily users. It allows users to upload their resume, create job alert emails, search for jobs and apply them directly. Because it has the same perspective as Jobify does, the functionalities of Indeed are also considered while deciding on functionalities of the system [2].
- **isbul.com[2], [3] and kariyer.net[4]** are other job seeking websites similar to LinkedIn and Indeed.

We have followed IEEE's SRS standards to write this document, which is included at the end of this document.

1.5. Overview

In the remaining sections of this document, an overall description of the system will be given and the functionalities of the product will be discussed briefly. Also, the assumptions, technical constraints regarding the application, and the expected user profile will be described. Later on, the interfaces of the system will be described in great detail and the requirements of the system will be explained.

2. Overall description

In this section, a more detailed overview of the system will be given and the high-level descriptions of the functionalities of Jobify will be provided. Then, the expected user profile of Jobify will be described and the possible use cases of different user groups will be

explained. Afterwards, the constraints surrounding the application will be explained. Finally, the technical assumptions regarding the use of Jobify will be explained.

2.1. Product perspective

2.1.1. System interfaces

Job advertisements on Jobify will be mainly scraped from other platforms. This means that the backend of the portal must communicate with a service that scrapes those advertisements periodically. The backend must save this information to the database, and the frontend of the portal must be able to display these advertisements in a proper way.

2.1.2. User interfaces

The following interfaces will be shown with mockups in detailed, in the chapter 3.1

- **Main Page:** This page will be shown when the user enters the screen. The user will see a menu to navigate among the pages, a small filtering window to filter the job advertisements, job advertisements listed in cards row by row with short and critical information. Each job advertisement will be clickable to open the details page. The user can scroll the website to see more job advertisements.
- **Detailed Advertisement Information Page:** This page will be shown when clicked on an advertisement. This page will show job title, job information, other information that employers are willing to share, and an apply button. When the apply button is clicked, if the advertisement is scraped, the related page will be opened in the scraped page. Otherwise, it will open a popup window to upload a CV, or select from preset CVs.
- **Profile Page:** In this page, the user will be able to see his or her CVs, and previous applications. The user will be able to update his or her information from this page. Also, the user will be able to specify the notification settings from this page.
- **Employer Page:** This page will be available for employers. The employer can see the current advertisements, he or she can remove or edit the advertisements, or can see the applications to the current advertisements. Also, the employer can specify the notification settings from this page.
- **Job posting Page:** This page will be available for employers. The employer can create a job advertisement by filling the form in the page. Then, he or she can post the advertisement by clicking the post button.

- Login/Signup Page: From this page, users will be able to login or sign up for the platform.
- Messaging Page: This page will allow employers and employees to communicate with each other.

2.1.3. Software interfaces

- Data management system: Backend will be connected with a MySQL database server that will store the user information and job advertisements. This MySQL server is planned to be built on Heroku (<https://www.heroku.com/>).
- Hosting: For hosting, Heroku (<https://www.heroku.com/>) will be used initially since it is easy to deploy and free with limited options. Later, premium plans in Heroku can be used or hosting can be changed according to the needs of the portal.

2.1.4. Operations

Other job seeking platforms (e.g. linkedin.com, isbul.net, kariyer.net, indeed.com) will be scraped using a Python script that will work on Heroku. Scraper will scrape periodically and save the scraped content to the database.

2.2. Product functions

There are several functions of Jobify which make it stand apart from other career portals and that are crucial for its purpose.

The main function of the system is its ability to scrape job advertisements from other major career platforms. This functionality will make the job searching process much easier for the job seekers since it will present a wide variety of job advertisements from a handful of different platforms to the user alongside the advertisements posted on Jobify in a single application without the need of going through a bunch of different websites.

Another function of Jobify that comes in handy is the ability to fill in user details by just uploading a CV to the system. This function will make the registration process much easier compared to other platforms, which tend to overwhelm users by asking them to provide dozens of information before allowing them to benefit from the system itself.

Also, Jobify is capable of filtering the job advertisements to present the user with the advertisements that suit them the most, thus making their job searching process much easier.

Moreover, enterprises can create their job advertisements and choose the specific criteria they are looking for in the employee.

Lastly, Jobify will be notifying the job seekers about new advertisements that they might find suitable for them and the employers will be notified when someone applies to an open position.

2.3. User characteristics

The users of Jobify can be divided into two groups:

- **Enterprises:** Enterprises are expected to be any company who would like to recruit candidates for their company. They are supposed to be the companies which have active projects which are verified by Jobify.
- **Candidates:** Candidates are expected to be any employee who is searching for jobs. They are supposed to be employees whose information is verified by Jobify and they have to be old enough to work at a job.

2.4. Constraints

- Jobify servers should run on docker containers in order to be more reliable, scalable and easy to control the overall system. Also, this kind of structure increases the capability of parallel computing in the system.
- The Jobify mobile application will run on Android using Java language and on iOS using Swift language. Jobify servers will use MySQL as a database and the website will be built with Python.
- Jobify should be online 24/7 so that all enterprises and candidates can access anytime they want. Therefore it should not be taken down for update or maintenance. Also, it should be able to scrap the jobs from other sites continuously and send job applications to these sites correctly.
- Jobify should secure all the data of candidates and enterprises in the database.
- Jobify should take website security certificates (like SSL) in order to show that it is trustable.

2.5. Assumptions and dependencies

- The users will have a device that can handle the Jobify.
- The users will have an email address that they can use to register to Jobify.
- The users will be using a modern browser (i.e. Safari, Chrome, Firefox) to access Jobify's web application.

3. Specific requirements

3.1. External interface requirements

3.1.1. User interfaces

- **Main Page:** Main page is the page that contains the job advertisements, filtering window to filter the jobs and short descriptions of the advertisements. In this page, the user can search for an ad, and can filter the results based on the location, source webpage, working type, or publication date. Based on the filterings, the jobs will be shown as in the figure. For each advertisement, title, employer name, location, publication date, and working type will be displayed with a short description of the job. Also, the user can sort the advertisements based on any filtering type. On every page, the user will be able to see the menu bar at the top.

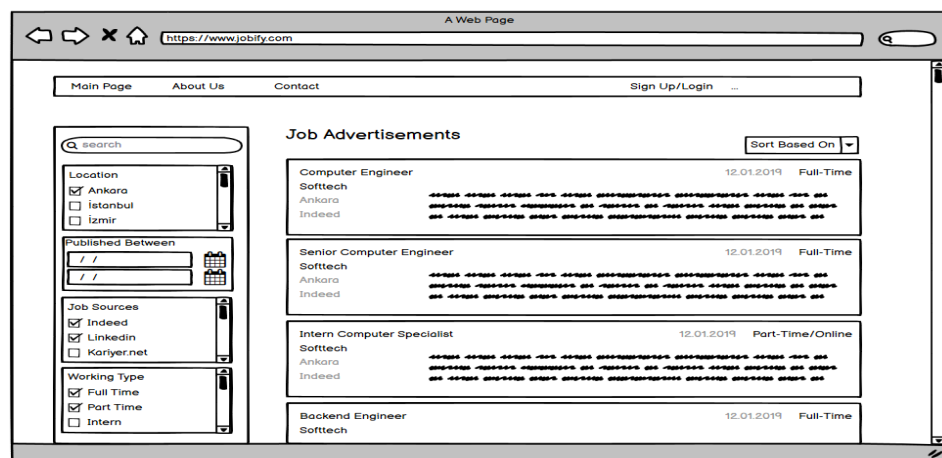


Figure 1: Jobify Main Page

- **Detailed Job Advertisement Page:** In this page, the user can see a more detailed version of the job advertisement. If this page is displayed by the publisher account, a "modify" and "see applications" icons will appear to navigate corresponding pages.

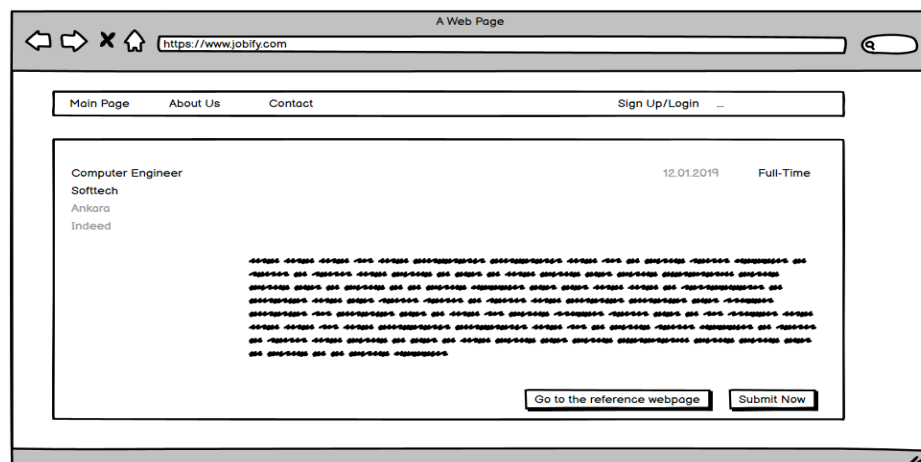


Figure 2: Jobify Job Advertisement Page

- **Profile Page:** In this page job seekers can see their information, can change them, or can upload a CV.

Figure 3: Employee Profile Page

- **Employer Page:** In this page, employers can see their posts or modify their information.

Figure 4: Employer Profile Page

- **Job Posting Page:** This page will be opened if the employer clicks on the button “Post New Advertisement” in the previous page, or if he or she clicks on the “modify” button in a previously created job advertisement. If the employer clicks on the “modify” button, text fields will be already filled with previous information, and he or she can modify the necessary parts and post it again.

A Web Page

https://www.jobify.com

Main Page About Us Contact ...

Job Advertisement

Title: Senior Software Engineer

Location: Ankara

Working Type: Full-Time

Last Date: / /

Summary:

Description:

Post

Figure 5: Job Posting Page

- **Sign Up/Login Page:** From this page, users can sign up or login.

A Web Page

https://www.jobify.com

Main Page About Us Contact Sign Up/Login ...

Login

Password

Email

Login

Sign Up

Employee

Name

Surname

Email

Password

Password Again

Employer

Company Name

Email

Password

Password Again

Submit

Figure 6: Signup/ Login Page

- **Messaging Page:** This page allows companies and candidates to communicate with each other. This page has two variations for candidates and companies. In the candidate version, the company information is displayed below the chat windows.

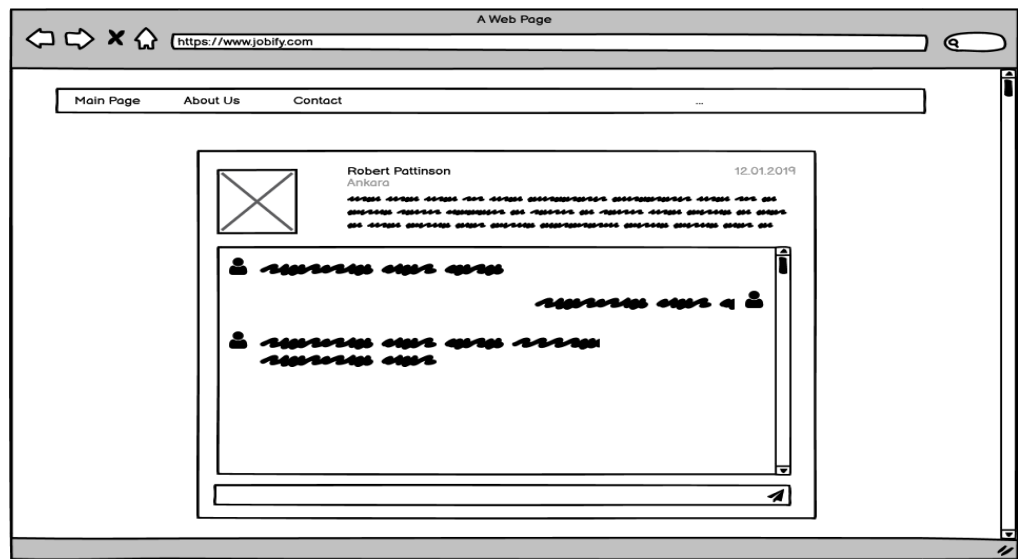


Figure 7: Messaging Page of Employer

In the company version, candidate information is shown.

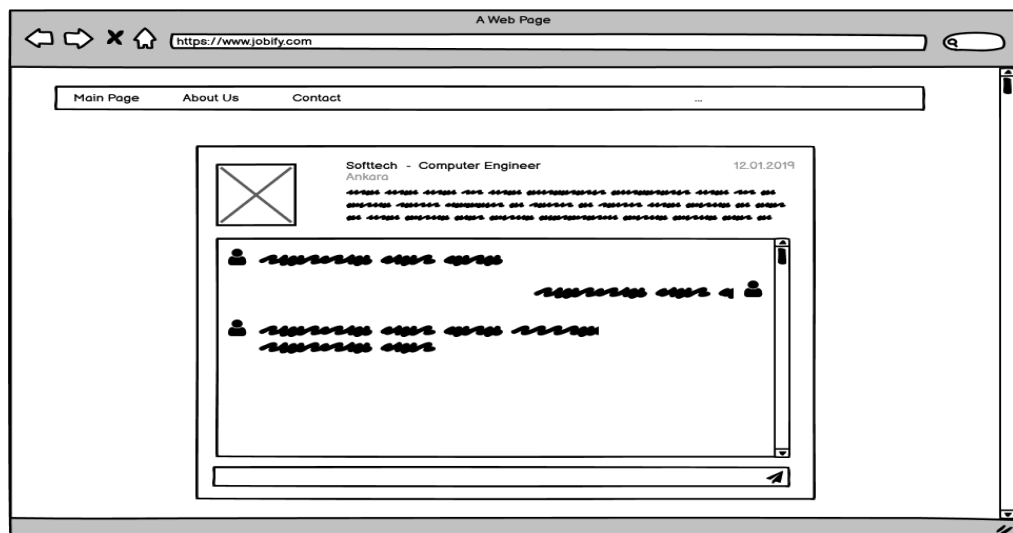


Figure 8: Messaging Page of Employee

- **Applications Page:** This page will be available for companies to see the applications to their job advertisement. The employer will be able to filter the candidates based on the location they prefer, age, and education status. In this page, they will see the contact information of the candidates, and they will be able to download their cv for examination. Also, they can prefer to open the messaging page.

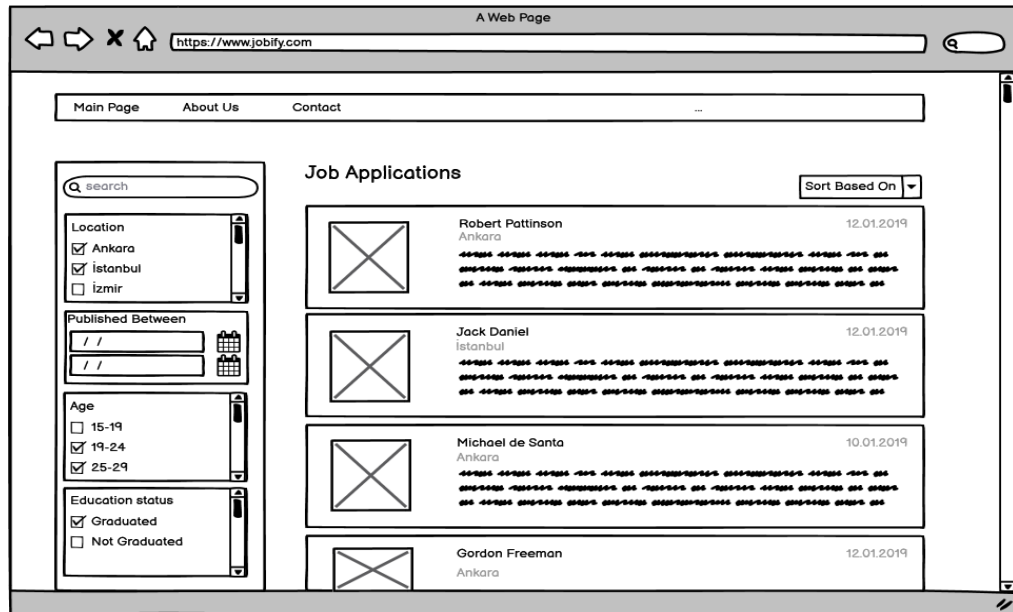


Figure 9: Applications Page with Candidates

3.1.2. Hardware interfaces

Since the system being implemented doesn't involve any kind of special hardware, the users can access the system by using their existing devices without the need of additional hardware. The system will run on a server which is capable of serving many users around the world simultaneously without any issues.

3.1.3. Software interfaces

- Data management system: Backend will be connected with a MySQL database server that will store the user information and job advertisements. This MySQL server is planned to be built on Heroku (<https://www.heroku.com/>). Data management system must be running 7/24. If there is an error, this error must be handled in 30 minutes since without a database, the portal is not functional.
- Hosting: For hosting, Heroku (<https://www.heroku.com/>) will be used initially since it is easy to deploy and free with limited options. Later, premium plans in Heroku can be used or hosting can be changed according to the needs of the portal. Like the data management system, hosting service must be available 7/24 for access.

3.1.4. Operations

- The website must update its database periodically. This is done by a scraper which will run on Heroku. The scraper will scrape

advertisements from other websites each night. This scraper must send at most 2 requests per second not to overwhelm other websites. Scraper must handle any errors while scraping the content since it is an automatic task, and it must continue other advertisements or websites in case of an error. Scraper must complete its operation in maximum 30 minutes.

3.2. System features

3.2.1. Automatic CV Scan and Registration Process

3.2.1.1. Introduction/Purpose of feature

Automatic CV Scan feature will provide the opportunity of registering by uploading their CVs to candidates. As a result, candidates will not have to go through a long registration process like other career platforms.

3.2.1.2. Stimulus/Response sequence

This function will be executed when a new user tries to register to Jobify. If the user chooses the option to “register automatically with CV” option, the system will ask for a CV to upload to the server. Server will read the CV and find keywords that should match the properties in the registration process. Then the system fills the properties and finishes the registration process with only asking for an id and password to the user.

3.2.1.3. Associated functional requirements

3.2.1.3.1. Supporting Different File Formats

The system should support different files formats when it comes to Scanning a CV. These formats should involve the most popular document formats and image formats.

3.2.1.3.2. Register Function

System must support register options for candidates and enterprises separately. The candidate register function properties should match the CV.

3.2.2. Gathering Job Advertisements

3.2.2.1. Introduction/Purpose of feature

System will scrap other career platforms to gather job advertisements. This feature will provide opportunity to users so that they can see the job advertisements from various websites, in the same platform. In this way users do not have

to visit all the other career platforms and sign up to them in order to see the job positions.

3.2.2.2. Stimulus/Response sequence

This feature requires a continuous scraping process. This process should be carried out periodically in order to supply candidates with the latest job advertisements. Every time the process is activated, the system will look to specified career platforms to find the new jobs advertisements.

3.2.2.3. Associated functional requirements

3.2.2.3.1. Scraping Websites

System should be able to access specified career portals and download new job advertisements.

3.2.2.3.2. Logging In

Users should be logged in, in order to use that functionality and find job advertisements.

3.2.3. Checking Candidate Information

3.2.3.1. Introduction/Purpose of feature

System will try to validate whether the information that candidates enter about themselves are true or not. In this way, the Jobify platform will be highly trustable for both enterprises and candidates.

3.2.3.2. Stimulus/Response sequence

This feature requires a newly registered candidate to the system. When candidates register to the system, they fill their information to corresponding fields in their profile. After that, that information is pending to be approved by the system. After one or two days, the system either approves or disapproves the information filled in their profile. The result is written to the candidate's profile. While applying for jobs, the employers are able to see the approval status of the information.

3.2.3.3. Associated functional requirements

3.2.3.3.1. Registration requirement

The candidate should be able to register the system and fill their required information in their profile without any exception.

3.2.4. Matching Candidates and Enterprises

3.2.4.1. Introduction/Purpose of feature

System will go through job advertisements and candidates and match the requirements of both. In this way the system will try to find the most suitable people for the job advertisements. Job seekers will be notified if a job that suits them is found.

3.2.4.2. Stimulus/Response sequence

Matching process will be carried out whenever a new job advertisement gets into the system or whenever a job seeker registers to the jobify. System will try to match the preferences of candidates and the preferences of the enterprises to each other.

3.2.4.3. Associated functional requirements

3.2.4.3.1. Selecting Job Preferences

Both Enterprises and candidates should be able to select their preferences. Enterprises should select their preferences about an employee and candidates should select their preferences about a job in Jobify.

3.2.4.3.2. Logging in

The user should be logged in to Jobify in order to make use of that feature.

3.2.5. Searching and Filtering

3.2.5.1. Introduction/Purpose of feature

The system will allow enterprises to search for candidates by their name, skills, cities etc and candidates to search for companies by filtering in the search menu. If nothing is searched, a default list of candidates or companies should be displayed on the main page.

3.2.5.2. Stimulus/Response sequence

The users can use the search field in the main page. After the user presses enter, the results of the search operation will be displayed on the main page.

3.2.6. Sending Messages to Candidates/Enterprises

3.2.6.1. Introduction/Purpose of feature

The system will allow enterprises to send messages to candidates and candidates to enterprises. In this way, users will not need any other platform to contact each other.

3.2.6.2. Stimulus/Response sequence

After registration to the system, the candidates will search for open positions using the search functionality of the system. Then, they will be able to apply to the positions. After they apply, the enterprise will be able to contact them using this feature through the system. Similarly, the candidate can also reply to their message using this system feature.

3.2.6.3. Associated functional requirements

3.2.6.3.1. Registration and Login requirement

The candidate should be able to register and login to the system successfully to be able to send the message to other users.

3.2.6.3.2. Search and Filtering requirement

The candidates should be able to list or search for the job advertisements using the system so that they will apply and the company may send a reply to them. Similarly, the companies should be able to list or search for candidates to send messages to them.

3.2.7. Posting Job Advertisements Requirement

3.2.7.1. Introduction/Purpose of feature

The system will allow enterprises to post job advertisements using the system.

3.2.7.2. Stimulus/Response sequence

After registration to the system, the enterprises will be able to post job advertisements and get applications to their job advertisements.

3.2.7.3. Associated functional requirements

3.2.7.3.1. Registration and Login requirement

The company should be registered and logged in to the system to post job advertisements.

3.3. Performance requirements

- Jobify should support 5000 simultaneous users.
- Jobify should be able to handle 5000 user interactions in 2 second.
- Response time of Jobify should not be over 2 second for 95% of requests.
- Filter task should take 1 seconds at most.
- Search task should take 2 seconds at most

- System should be online 7/24 if there is no internet connection problem.
- The system should check the validation of user information in 2 days.

3.4. Design constraints

- The system consists of two parts, which include a web application and a mobile application. These parts will be sharing the same back-end architecture.
- The system will use MySQL for database management.
- The system will be deployed on Heroku.
- The amount of storage usage that the Jobify app in mobile should not exceed 100 MB.
- The amount of memory usage should not exceed 100 MB.

3.5. Software system attributes

3.5.1. Maintainability

The system must be designed in a way that would make it easier to add new features to the existing system in the future without affecting the existing functionality of the system.

3.5.2. Reliability

The data being stored in the system should be consistent with the user activities.

3.5.3. Portability

- The system should be able to run on different web browsers that the users might prefer, such as Safari or Chrome.
- The system should be able to run on different types of devices and operating systems.

3.5.4. Security

Jobify protects their users' data from hackers by using different encoding systems. Also Jobify website has SSL certificate which indicates the website is approved as trustable.

3.5.5. Availability

The servers of Jobify must be running all the time without any problems.

3.6. Other requirements

3.6.1. Login and Sign Up

Most of the Jobify features require a user account in order to benefit from them. Therefore, people who want to use Jobify should sign up and log in to the system. “Signup” and “Login” are the foundation of all features.

3.6.2. Personal Information

Candidates should specify what they are looking for in the Jobify system. Candidates should list their criteria for a job they are looking for in order to find the job they want easily. Also, candidates should enter their personal information such as education level, contact info to the Jobify system.

3.6.3. Applying for a Job

Candidates can apply to jobs they want in the system. If the job advertisement is posted on another career portal then they will be directed to that career portal.

3.6.4. Creating a New Job Advertisements

Enterprises can create job advertisements and specify the criterias that they are looking for in the candidates.

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