American College of Technology (ACT)

Department of Computer Science

Undergraduate Project proposal

Title: Seraye Job Portal System

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Abstract

Seraye Job Portal System

In a world with an ever-evolving job market, the Seraye Job Portal System emerges as a revolutionary online platform designed to bridge the gap between qualified candidates and relevant job openings. Its primary objective is to foster a more efficient and effective hiring process, benefiting both employers and job seekers within the region.

Seraye empowers job seekers by equipping them with the tools they need to showcase their talents and actively pursue their dream careers. It allows them to create comprehensive profiles that highlight their skills, experience, and qualifications. This serves as a digital storefront, attracting potential employers searching for the perfect fit. Job seekers can then leverage the platform's powerful search functionalities to pinpoint suitable positions based on specific criteria, including industry, location, and desired job title. Gone are the days of scouring countless websites; Seraye streamlines the application process by allowing candidates to submit their applications directly through the platform. Additionally, the system proactively sends notifications about relevant job openings, ensuring qualified individuals don't miss out on exciting opportunities. Furthermore, Seraye provides crucial tools for managing resumes and applications, keeping them current and readily available to potential employers.

Employers seeking to recruit top talent can unlock the power of Seraye's dynamic features. The platform enables them to advertise job vacancies with detailed descriptions and clearly defined requirements, attracting a wider pool of qualified candidates. Seraye goes beyond simply posting jobs. Its advanced search functionalities allow employers to filter applicants based on specific skills and experience, saving them valuable time and resources during the initial screening process. Once they've identified promising candidates, Seraye streamlines the application management process by providing a central location to review applications, track progress, and communicate directly with interested individuals. This fosters a more efficient and transparent recruitment experience, allowing employers to quickly identify the best fit for their open positions.

By providing a centralized platform with user-friendly features, the Seraye Job Portal System aims to revolutionize the job market. It empowers both employers and job seekers, fostering a more efficient and effective hiring experience for everyone involved.

1. Introduction

1.1.Background of the organization

Seraye Job Portal is poised to emerge as a startup specializing in management systems in 2024. This innovative platform will cater to the needs of both employers and job seekers, aiming to streamline the recruitment process and bridge the talent gap within Ethiopia.

1.2. Statement of Problem

1.2.1. Existing system

Traditional Requirement Management Systems (RMS), requirements reside primarily within text-heavy documents like word files or spreadsheets. These documents act as the central source, but with limited features for traceability. Stakeholders must manually link requirements to other project artifacts. Tracking aspects like requirement status, dependencies, and conflicts often relies on basic tools like spreadsheets. Collaboration and information sharing also revolve around these documents, further adding to the manual burden. Analysis and management tasks require extensive manual review of these documents.

1.2.2. Major problem of existing system

The Major problem of existing system include

- Inefficiency: Traditional job search methods, like newspaper ads or personal networks, are often time-consuming and lack reach.
- Information Asymmetry: Both employers and job seekers struggle to find the perfect match due to limited access to qualified candidates or suitable opportunities.
- Scattered Job Listings: Job postings are spread across various platforms, making it difficult for job seekers to find all relevant opportunities.
- Limited Candidate Pool: Companies, especially those outside major cities, have difficulty accessing a diverse talent pool.
- Lack of Transparency: The application process can be opaque, leaving job seekers frustrated and unsure about their candidacy status.

1.2.3. Proposed system

Seraye Job Portal is a web application designed to streamline and automate various aspects of the recruitment process. It serves as a centralized platform for managing and organizing candidate data, job postings, application tracking, interview scheduling, and other recruitment-related activities. The system aims to improve efficiency, reduce manual paperwork, enhance collaboration among hiring teams, and ensure a smooth and effective recruitment workflow.

1.2.4. Advantage of proposed system

Some of the advantages of the proposed system include

- Wider Talent Pool: Reach a larger pool of qualified candidates by posting jobs online.
- Reduced Costs: Potentially lower recruitment costs compared to traditional methods like advertising in newspapers.
- Faster Hiring: Efficiently screen and shortlist candidates online.
- Improved Candidate Quality: Attract candidates actively searching for jobs. Wider Job Search: Access a wider range of job opportunities from various employers.
- Convenience and Efficiency: Search for jobs, apply online, and manage applications from anywhere, anytime. Filter and tailor your job search using relevant keywords and location preferences to find the perfect fit.
- Improved Visibility: Get your profile seen by potential employers.

1.3. Motivation

Seraye Job portal systems were created to streamline recruitment, connecting a wider pool of qualified candidates with employers, all while offering a more efficient, cost-effective, and potentially profitable service.

1.4. Scope and Limitation of the project

1.4.1. Scope of the project

The scope of a recruitment management system (RMS) includes various aspects of the recruitment process. It includes job posting and application management, allowing organizations to create and publish job openings, receive online applications, and track candidate progress. Interview scheduling and management tools are provided, enabling efficient coordination of interview slots and tracking outcomes and feedback. The system also facilitates candidate communication and engagement, sending automated emails and updates on application status. Candidate data and profile management are central to the system, serving as a repository for storing candidate information, resumes, and application history. Collaboration and workflow management features enable effective coordination among recruiters, hiring managers, and interviewers.

1.4.2. Limitation of the project

For employers, a large applicant pool can lead to information overload, making it difficult to find the perfect match. Job seekers might face competition from applicants who don't quite meet the requirements, or struggle to showcase their true value in an online format. The impersonal nature of online applications can make it challenging to find the ideal job fit. Security concerns linger, as both employers and job seekers share sensitive information on these platforms. Furthermore, not everyone has equal access to technology or the digital literacy needed to navigate job portals effectively.

1.5. Objective

1.5.1. General Objective

The general objective of Seraye Job Portal is to connect employers with qualified candidates, streamlining the recruitment process.

1.5.2. Specific Objective

To achieve the general objective, the following specific objectives are attempted.

- Discover relevant opportunities: Enable targeted searches based on specific skills, experience, location, salary range, and job type .

- Showcase qualifications: Build a strong online profile highlighting skills, experience, and achievements to attract potential employers.
- Simplify applications: Apply for jobs electronically with ease, reducing paperwork and streamlining the application process.
- Stay informed: Receive job alerts and notifications about relevant opportunities based on preferences.
- Source qualified candidates: Access a wider pool of qualified candidates matching specific job requirements.
- Reduce time-to-hire: Streamline the recruitment process by efficiently screening applications and scheduling interviews.
- Increase transparency: Promote clear communication between employers and job seekers regarding expectations and application status.
- Foster diversity & inclusion: Encourage fair hiring practices by offering features like anonymous applications or skills-based filtering.

1.6. Methodology

1.6.1. Data collection methodology

We used the following methods to collect relevant data required for our project.

- Interview: we gathered necessary information about the background of the recruitment system of different companies. We also asked some job seekers how they apply to jobs.
- Document analysis: we also collected certain relevant information from written documents like existing data set and reports.
- Web analysis: we also tried to analyze other existing job portal systems and recruitment management systems of different companies.

1.6.2. System design and analysis tools

- Microsoft Office: Applications are used to collect and prepare system requirement specification documents.
- Drow.io: Application is used to design ULM tools for system analysis and design phase since these tools have fully object-oriented features that help in the preparation of system design document.
- Trillo: is selected to prepare project schedules within their correspondence timetable.

1.6.3. System development tools

We used different tools for the accomplishment of the project. The following is a list of tools we used.

For frontend development we used.

- HTML
- Bootstrap
- JavaScript
- Jquery
- Ajax

For Backend development we used:

- Python
- SQLite

Third Party Frameworks and Libraries

- Django
- Highcharts

We also used: Visual Studio, which provides easy and supportive text editors.

2. System Requirement Specification

2.1. Background Overview

Traditional recruitment is stuck in a paper chase. Resumes, often lengthy and text-heavy, make it hard for recruiters to identify the best fit for a role. Parsing skills and experience from these documents is slow and cumbersome. This limited approach restricts the talent pool, as qualified candidates who don't perfectly match the keywords might get overlooked. The whole process is time-consuming, with manual screening and scheduling leading to delays in filling open positions.

This job portal system aims to bridge the gap between job seekers and employers. It offers a centralized online platform for efficient job searching and recruitment. Job seekers gain access to a wider range of opportunities, while employers can find qualified candidates with ease.

2.2. Functional Requirement

A functional requirement defines a function of a software system or its component. Describe what should be done by the system and described it as a set of inputs, the behavior, and outputs. When it comes to functional requirements, it states how the system reacts to particular input and what kind of output or process is carried out through the system. Following is a list of functional requirements that are identified by Seraye Job Portal during the analysis stage.

User Management

- ❖ For All Users:
  - User registration and login with secure authentication
  - Profile creation and editing (including basic information and contact details)
  - Password reset functionality

Job Seeker Functions

- ❖ Job Search:

  - Search for jobs using various criteria (e.g., keywords, location, job title, industry)
  - Filter search results based on specific preferences
  - View detailed job descriptions and requirements

- ❖ Profile Management:

  - Create and maintain an online profile showcasing skills and experience
  - Create optimized resumes
  - Manage privacy settings for profile information
  - Allow users to take skill assessments to showcase their capabilities to employers.
  - Provide job seekers with career path recommendations based on their skills and experience.
  - Offer salary comparison tools to help job seekers understand market value for their positions.

- ❖ Job Application:

  - Apply for jobs electronically by submitting resumes and cover letters
  - Track application status

Employer Functions

- ❖ Job Posting:

  - Create and publish job openings with detailed descriptions
  - Specify requirements, skills, and experience needed
  - Set deadlines for applications
  - Manage job visibility (paid vs. free listings)
  - Posts job with link on telegram channel when a job is posted.

❖ Candidate Management:

- Search and filter resumes based on specific criteria (e.g., skills, experience)
- View applicant profiles and resumes
- Shortlist and contact potential candidates
- Track application progress

❖ User Management

- Allow employers to create company profiles highlighting their work culture and employee benefits.
- Offer collaboration tools for internal teams to streamline communication during the hiring process.
- Provide tools for employers to electronically send and manage job offers.

Communication Tools

❖ For All Users:

- Secure messaging system for communication between job seekers and employers
- Job alert system for job seekers to receive notifications about relevant opportunities

System Administration

- User management (add/edit/delete/deactivate or activate users)
- Content moderation (manage job postings and user profiles)
- System analytics and reporting (track usage and user behavior)
- Allow for creation of customized reports on user activity, job postings, and application trend.
- Sends Email to all activities like user creation , Job status change etc

2.3. Non-Function Requirement

Non-functional requirements define how the job portal system should operate, rather than what specific actions it performs. Here are some key non-functional requirements for Seraye job portal:

Performance

- Scalability: The system should be able to handle a growing number of users and job postings without significant performance degradation.
- Speed: Pages should load quickly and searches should return results promptly to maintain user engagement.
- Uptime: The system should be available to users most of the time, with minimal downtime for maintenance or technical issues.

Security:

- User Authentication: Secure login mechanisms using strong passwords or multi-factor authentication.
- Data Encryption: Sensitive user data like resumes and personal information should be encrypted at rest and in transit.
- Authorization: Implement user roles and permissions to control access to specific functionalities within the system.

Reliability:

- Data Integrity: Ensure data consistency and accuracy throughout the system to avoid errors in searches or applications.
- Backup and Recovery: Implement robust backup and recovery procedures to minimize data loss in case of system failures.
- Disaster Recovery: Have a plan in place to restore system functionality in case of major disruptions or outages.

Maintainability:

- Modular Design: Design the system using modular components for easier maintenance and future upgrades.
- Logging and Monitoring: Implement logging and monitoring tools to track system activity and identify potential issues.

Other Considerations:

- SEO Optimization: Optimize the website for search engines to improve discoverability and attract organic traffic.

2.4. Feasibility study

2.4.1. Technical Feasibility

The system that we’re going to build doesn’t consume high technological resources. The technical team is capable of translating ideas into workable systems. The team members have learned the programming languages required to complete the project, such as HTML, CSS, JavaScript, Bootstrap, jQuery , Ajax, Python, Django and Restful. Team members have the required skill to develop the system so that the project can be said technically feasible.

2.4.2. Operation Feasibility

The job portal system is operationally feasible. Its scalable design and remote accessibility make it convenient for users. Integration with existing HR systems is possible, and features like automated tasks can streamline workflows. Challenges include user adoption and data security, but these can be addressed through training, security protocols, and phased integration. Overall, the system offers a feasible solution for improving the job search and recruitment process.

2.4.3. Economic Feasibility

The job portal system offers a promising economic outlook. Our primary revenue stream comes from companies and employers through subscription plans. These subscriptions provide them with premium features like targeted job postings, advanced candidate search filters, and access to detailed applicant profiles. Additionally, advertising space on the platform caters to relevant companies and recruitment agencies, generating another income source. Hence, it is economically feasible for the new system to be implemented.

2.4.4. Schedule Feasibility

The schedule feasibility of the Seraye Job Portal System is achievable within the defined timeframe. A realistic project timeline should be developed, considering key milestones such as system development, testing, and deployment. The availability of skilled team members and resources should be taken into account to ensure efficient progress.

A well-defined project management approach, such as Agile can help in effectively managing the development process and meeting deadlines. Regular monitoring and progress tracking will be essential to identify and address any potential delays or bottlenecks.

It is important to note that unexpected challenges may arise during development, such as technical complexities, changes in requirements, or resource constraints. However, with proper planning, risk mitigation strategies, and proactive project management, the schedule feasibility of the Seraye Job Portal System can be ensured.

3. System Analysis and Modeling

3.1. Overview

In this chapter, different types of requirement modeling techniques will be used to better describe the system's functionality. We will analyze the requirements of the system in depth to identify its key components to create a system that will efficiently achieve its goals. The models planned to be used are Scenario-Based Modeling, Behavioral/Dynamic Modeling, and Class-Based Modeling. In the scenario-based modeling use case, actor identification, use case description and activity diagrams will be used. In the dynamic modeling, sequence diagram and state diagram will be used. In the class-based modeling, identifying classes and class diagram will be used.

3.2. Scenario Based Modeling

Scenario-based modeling with UML is the technique that begins with the creation of different scenarios to understand the problem to be solved.

3.2.1. Use case identification

Use Case identification is essential for simplifying the system and better understanding it in simple terms as a result it will help us during the development of the system.

For Job Seeker

- Login / Register / Log out
- Create profile
- Edit profile
- Create online resume
    - Add personal information
    - Add Education
    - Add projects
    - Add work experience
    - Add language
    - Add Skills
- Apply for jobs
- Search jobs
- Filter jobs
- Manage applied jobs

- Bookmark jobs
- Manage Bookmark jobs
- Validate Skills
- Print resume

For Employer

- Login / Register / Log out
- Create profile
- Manage profile
- Post Jobs
- Manage Posted Jobs
- Manage Shortlist candidates
- Filter Candidate
- View Candidate Profile
- View Analysis (Total user, view, posted jobs, applicants, application status ….)
- Manage Accounts
- Export Jobs , Candidates , Interview statues
- Manage Interview Lists

For Administrator

- Login / Log out
- Manage Profile
- Manage Companies
- Manage Job Categories
- Manage Job Posting
- Manage Skills
- Manage Users
- Manage Blogs
- Manage Social Media
- Manage Contact US Message
- Manage Audit
- View Analysis (Total user, companies, posted jobs, applicants, top views companies, recent messages, blogs ….)

3.2.2. Actor identification

For Job Seeker

- Has the responsibility of controlling his profile
- Has the responsibility of create resume
- Has the ability to Apply for jobs , Search jobs , Filter jobs , Manage applied jobs, Bookmark jobs , Manage Bookmark jobs , Validate Skills and Print resume

For Employer

- Has the responsibility of controlling companies profile and his profile
- Has the responsibility of Post Jobs
- Has the responsibility of managing of other company admins and interviewers
- Has the ability to Manage Posted Jobs, Manage Shortlist candidates, Filter Candidate, View Candidate Profile, View Analysis (Total user, view, posted jobs, applicants, application status ….), Manage Accounts, Export Jobs, Export Candidates lists, Export Interview statues list

For Interview

- Has the responsibility of Managing Interview Lists
- Has the ability of taking notes on interview

For Administrator

- Has the responsibility of controlling his profile
- Has the responsibility of managing all accounts
- Has the ability to Manage Companies, Manage Job Categories, Manage Job Posting, Manage Skills, Manage Users, Manage Blogs, Manage Social Media, Manage Contact US Message, Manage Audit
- Has the ability to View Analysis (Total user, companies, posted jobs, applicants, top views companies, recent messages, blogs ….)

3.2.3. Use case diagram

A use case is a collection of interactions between external actors and a system. We used the following use cases in order to represent functionalities.

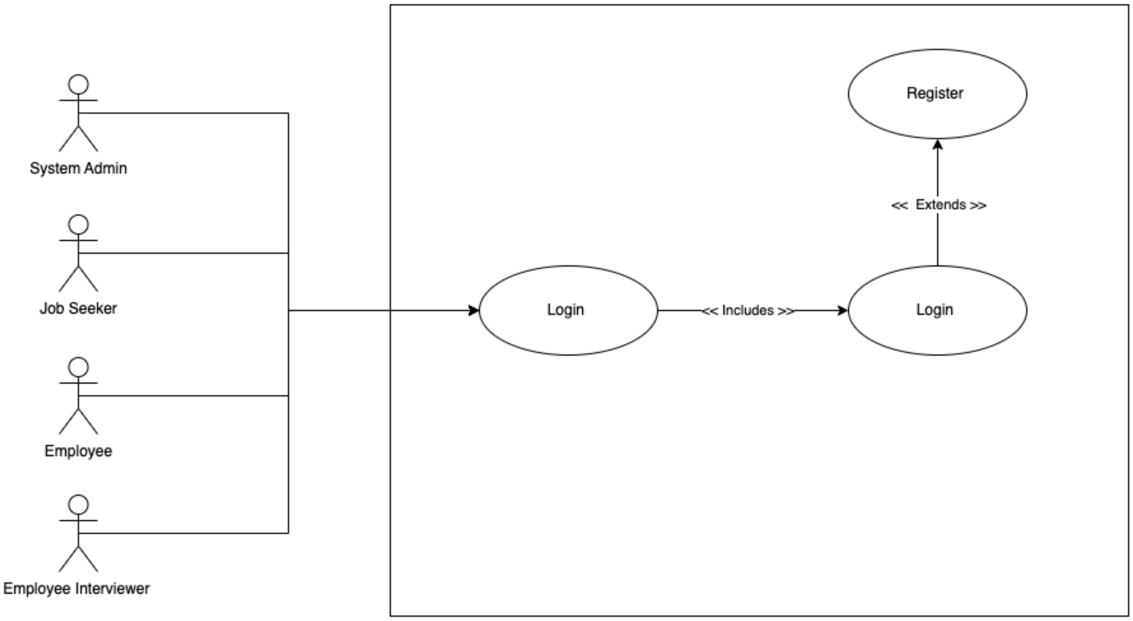


Figure 1Use Case Diagram for Authentication

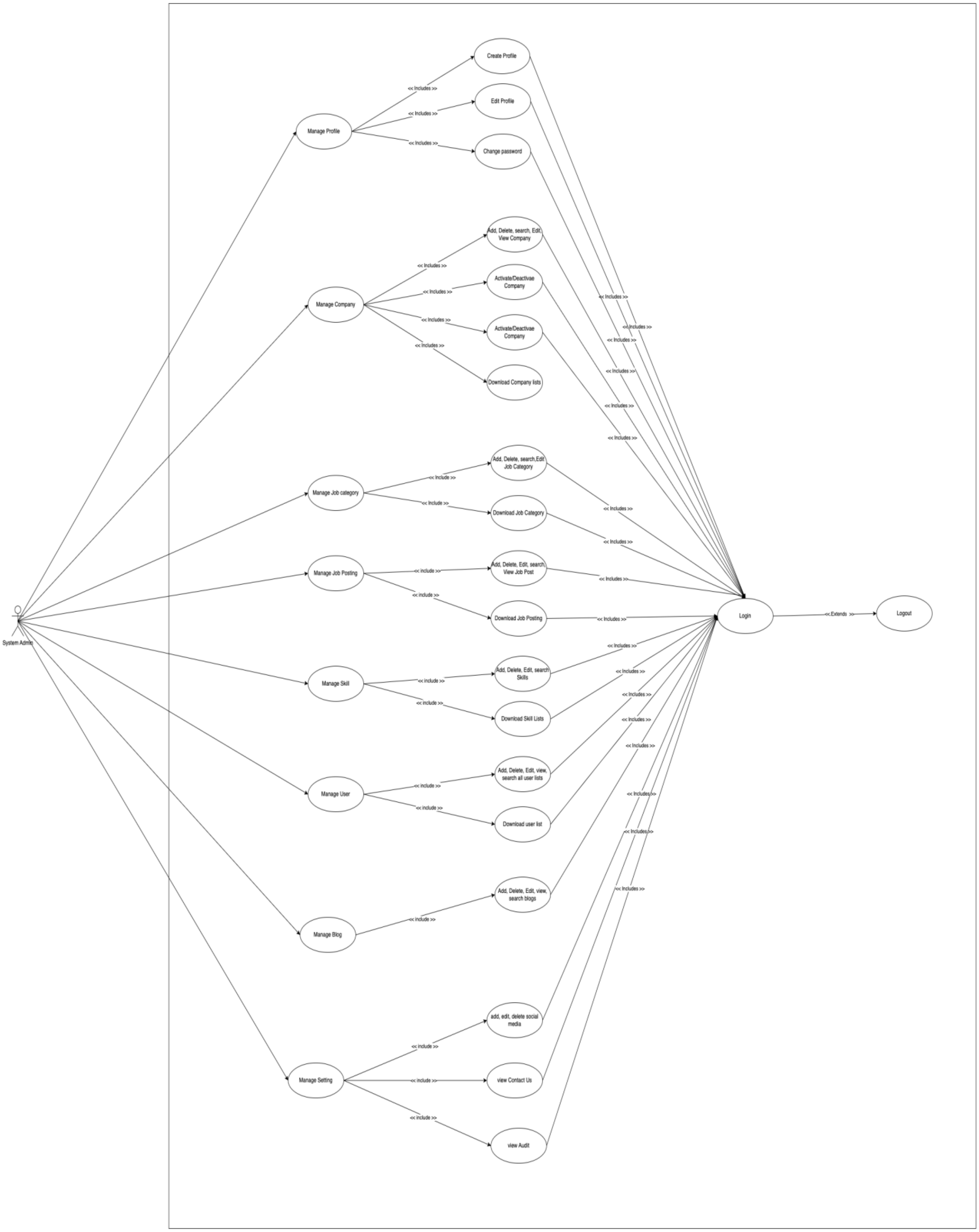


Figure 2 Use Case Diagram for the System administrator of the system

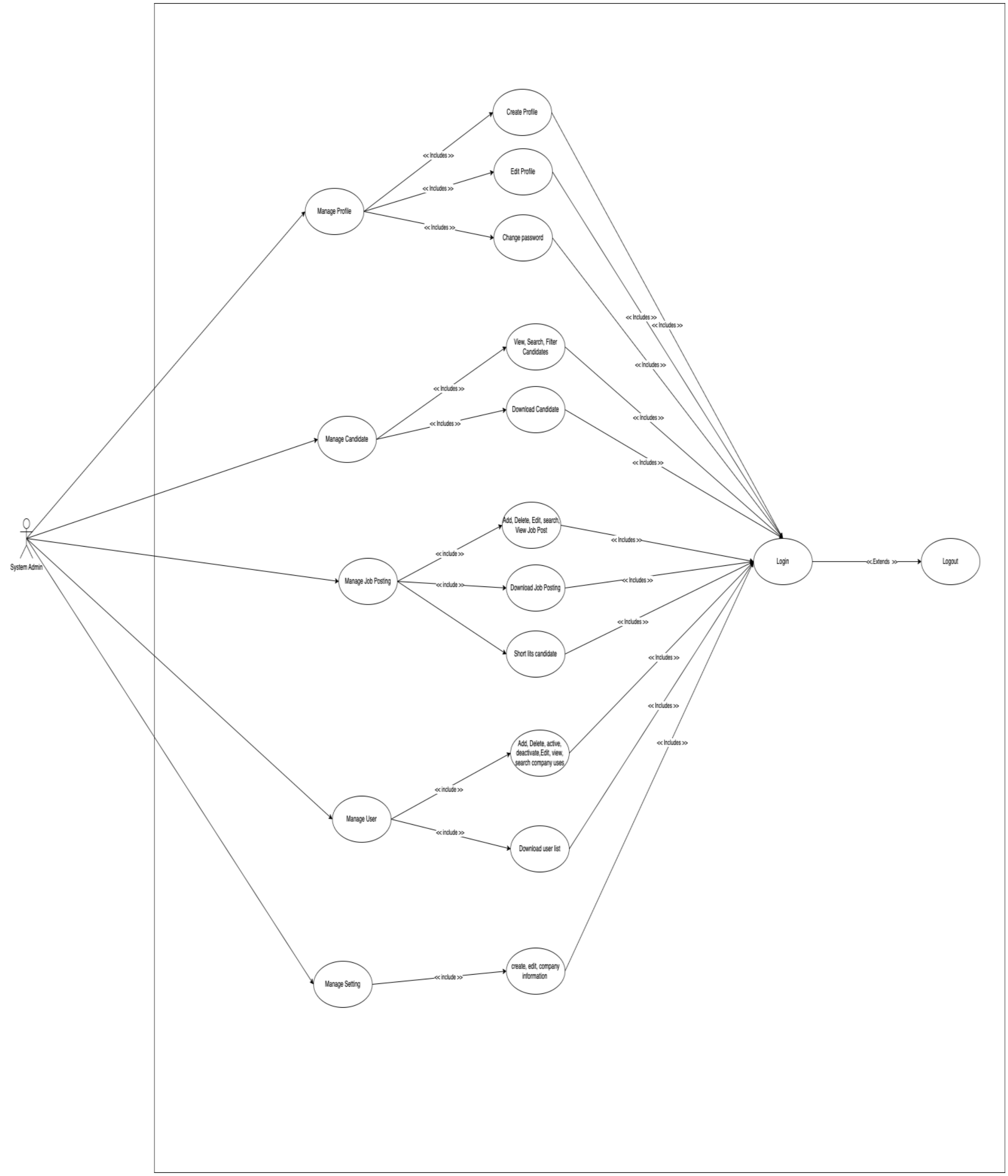


Figure 3 Use Case Diagram for the Company Administrator of the system

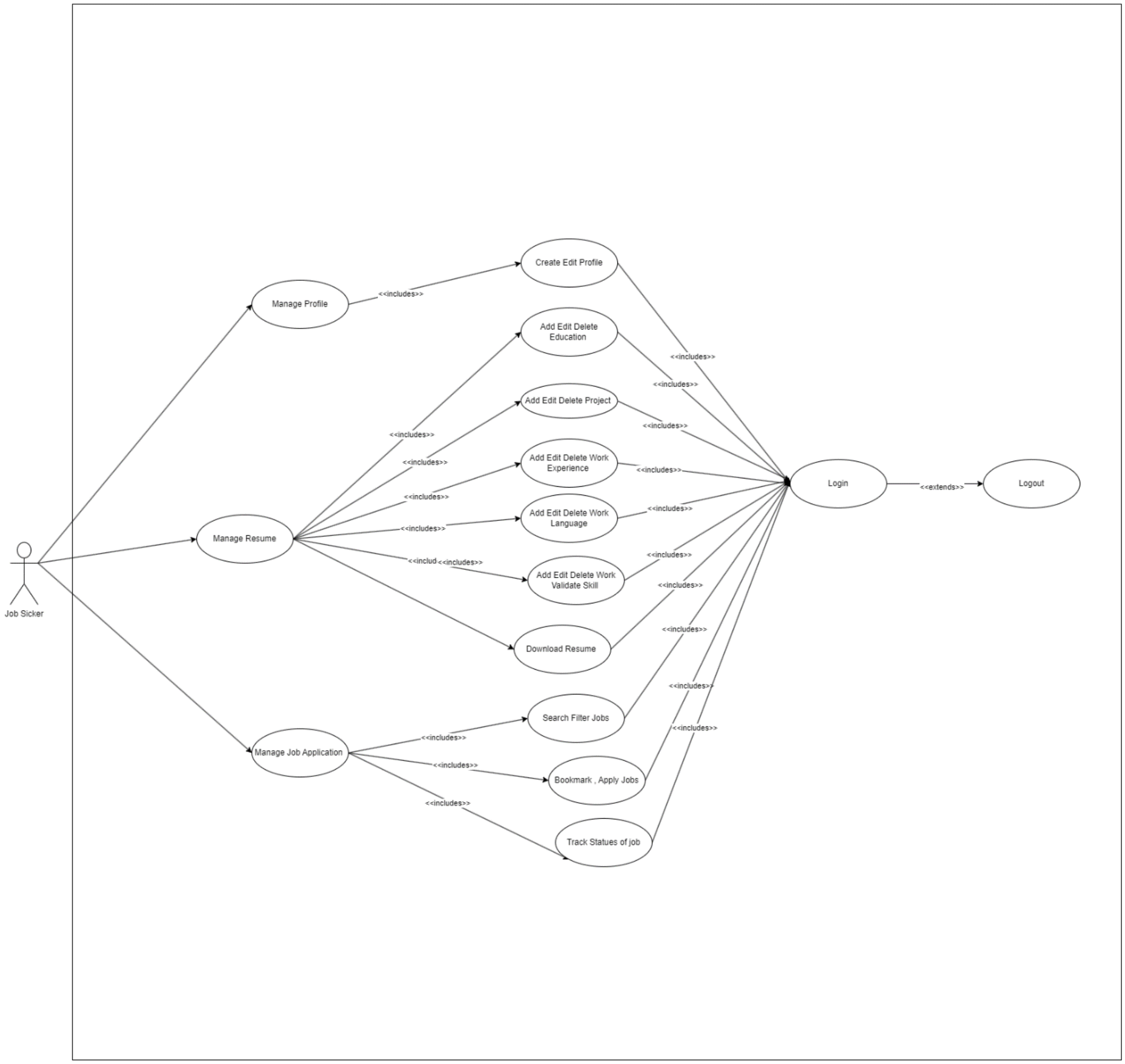


Figure 4 Use Case Diagram for the job seeker of the system

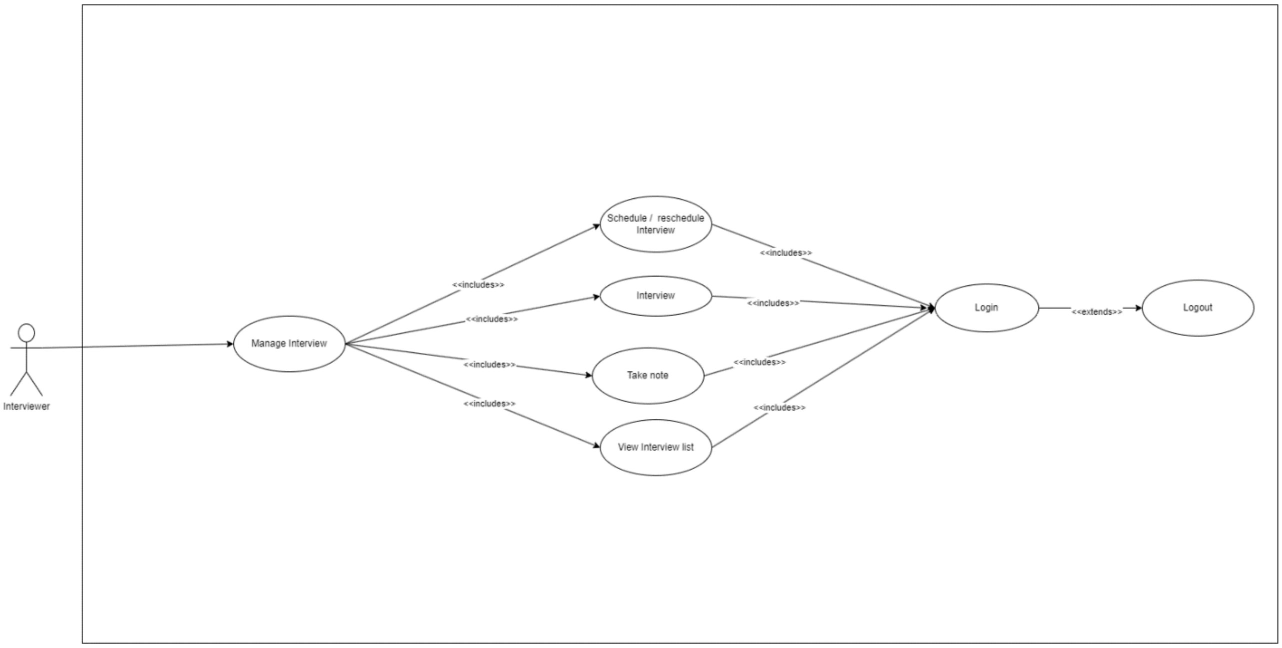


Figure 5 Use Case Diagram for the company interviewer of the system

3.2.4. Use case description

Use-case Name	Register	
Identifier	UC-001	
Includes	-	
Description	After opening the website going to the register page, and the actor requires the system to register	
Actor	Company Administrator, Job seeker	
Pre-Condition	-	
Post-Condition	Job seeker (First name, Last name, User name, Email, Password) will be generated Company (Company name, Description, Email, Address, Phone, Admin User name and password) will be generated	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites - Actor go to register page	- System will display home page - System will display registration page
Scenario	- Add information and click submit	- System will open form to be filled. - System will verify and register to database.
Alternative Course of Action ❖ If the actor enters invalid information, ✓ Registration will be denied, The actor will be notified about the situation and The actor will be asked to retry ❖ If the actor already registered, ✓ The actor will be notified about the situation, Redirected to the login page.		

Table 1 Use Case Description for registration

Use-case Name	Login	
Identifier	UC-002	
Includes	UC-001	
Description	After opening the website going to the login page, and the actor requires the system to login	
Actor	Company Administrator, Job seeker, System Admin, Company Interviewer	
Pre-Condition	Actor must have been registered on the system. Actor must have his/her own role, Email and password.	
Post-Condition	Actor will be authorized to use the system based on their role.	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites - Actor go to login page - Actor inputs credentials	- System will display home page - System will display login page - System will authenticate user and redirect to their page
Alternative Course of Action ❖ If the actor enters invalid Email and Password - The actor will be notified Email or Password is Incorrected. The actor will be promoted to re-enter Email and Password. ❖ The actor will be promoted if the actor forgotten their password.		

Table 2 Use Case Description for login

<table>
<tr><td>Use-case Name</td><td colspan="2">Manage Profile</td></tr>
<tr><td>Identifier</td><td colspan="2">UC-003</td></tr>
<tr><td>Includes</td><td colspan="2">UC-002</td></tr>
<tr><td>Description</td><td colspan="2">After opening the website going to the profile page, and the actor requires the system to edit , create profile</td></tr>
<tr><td>Actor</td><td colspan="2">Company Administrator, Job seeker, System Admin, Company Interviewer</td></tr>
<tr><td>Pre-Condition</td><td colspan="2">Actor must have been logged in</td></tr>
<tr><td>Post-Condition</td><td colspan="2">User will have updated profile</td></tr>
<tr><td colspan="2"><b>ACTOR</b></td><td><b>SYSTEM</b></td></tr>
<tr><td>Flow of Event</td><td>- Actor open the websites
- Actor go to profile page
- Select edit profile
- Add info and click save</td><td>- System will display home page
- System will display profile page
- System will update profile</td></tr>
<tr><td colspan="3"><b>Alternative Course of Action</b>
❖ If the actor enters invalid information,
✓ Update will be denied, The actor will be notified about the situation and The actor will be asked to retry</td></tr>
</table>

Table 3 Use Case Description for manage profile

Use-case Name	Manage Company	
Identifier	UC-004	
Includes	UC-002	
Description	After opening the website going to the companies page, and the actor requires the system to add , edit , delete , update companies	
Actor	System Admin	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have add , edit , delete , update companies	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites - Actor go to companies page	- System will display home page - System will display companies page
Scenario	**Add** - Select add companies - Add info and click save	- System will open form to be filled. - System will verify and register to database.
Scenario	**Edit** - Select edit company to be edited - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Delete** - Select delete company to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Scenario	**Activate/Deactivate** - Select activate/deactivate company - Confirm	- System will prompt Modal to conform activation or deactivation - System will verify updates to database.

Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Add will be denied, The actor will be notified about the situation and The actor will be asked to retry

Table 4Use Case Description for manage company

Use-case Name	Manage Job Category	
Identifier	UC-005	
Includes	UC-002	
Description	After opening the website going to the job category page, and the actor requires the system to add , edit , delete , update job category	
Actor	System Admin	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have add , edit , delete , update job category	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites - Actor go to job category page	- System will display home page - System will display job category page
Scenario	**Add** - Select add job category - Add info and click save	- System will open form to be filled. - System will verify and register to database.
Scenario	**Edit** - Select edit job category to be edited - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Delete** - Select delete job category to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Add will be denied, The actor will be notified about the situation and The actor will be asked to retry		

Table 5 Use Case Description for manage job category

Use-case Name	Manage Job Posting	
Identifier	UC-006	
Includes	UC-002	
Description	After opening the website going to the job posting page, and the actor requires the system to add , edit , delete , update job posting	
Actor	System Admin , Company Admin	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have add , edit , delete , update job posting	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites - Actor go to job posting page	- System will display home page - System will display job posting page
Scenario	**Add** - Select add job posting - Add info and click save	- System will open form to be filled. - System will verify and register to database.
Scenario	**Edit** - Select edit job posting to be edited - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Delete** - Select delete job posting to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Edit / Add will be denied, The actor will be notified about the situation and The actor will be asked to retry		

Table 6 Use Case Description for manage job posting

Use-case Name	Manage Skills	
Identifier	UC-007	
Includes	UC-002	
Description	After opening the website going to the skill page, and the actor requires the system to add , edit , delete , update skill	
Actor	System Admin	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have add , edit , delete , update skill	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites - Actor go to skill page	- System will display home page - System will display job skill page
Scenario	**Add** - Select add skill - Add info and click save	- System will open form to be filled. - System will verify and register to database.
Scenario	**Edit** - Select edit skill to be edited - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Delete** - Select delete skill to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Edit / Add will be denied, The actor will be notified about the situation and The actor will be asked to retry		

Table 7 Use Case Description for manage skills

Use-case Name	Manage User	
Identifier	UC-008	
Includes	UC-002	
Description	After opening the website going to the user page, and the actor requires the system to add , edit , delete , update user	
Actor	System Admin , Company Admin	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have add , edit , delete , update user	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites - Actor go to user page	- System will display home page - System will display job user page
Scenario	**Add** - Select add user - Add info and click save	- System will open form to be filled. - System will verify and register to database.
Scenario	**Edit** - Select edit user to be edited - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Delete** - Select delete user to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Scenario	**Activate/Deactivate** - Select activate/deactivate user - Confirm	- System will prompt Modal to conform activation or deactivation - System will verify updates to database.

Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Edit / Add will be denied, The actor will be notified about the situation and The actor will be asked to retry

Table 8 Use Case Description for manage user

Use-case Name	Manage Blog	
Identifier	UC-009	
Includes	UC-002	
Description	After opening the website going to the blog page, and the actor requires the system to add , edit , delete , update blog	
Actor	System Admin	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have add , edit , delete , update blog	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites - Actor go to blog page	- System will display home page - System will display blog page
Scenario	**Add** - Select add blog - Add info and click save	- System will open form to be filled. - System will verify and register to database.
Scenario	**Edit** - Select edit blog to be edited - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Delete** - Select delete blog to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Edit / Add will be denied, The actor will be notified about the situation and The actor will be asked to retry		

Table 9 Use Case Description for manage blog

Use-case Name	Manage Setting	
Identifier	UC-0010	
Includes	UC-002	
Description	After opening the website going to the setting page, and the actor requires the system to add , edit , delete , update setting	
Actor	System Admin	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have add , edit , delete , update setting	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites - Actor go to setting page	- System will display home page - System will display setting page
Scenario	**Add** - Select add social media - Add info and click save	- System will open form to be filled. - System will verify and register to database.
Scenario	**Edit** - Select edit social media to be edited - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Delete** - Select social media to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Edit / Add will be denied, The actor will be notified about the situation and The actor will be asked to retry		

Table 10 Use Case Description for manage setting

Use-case Name	Manage Applicant	
Identifier	UC-0011	
Includes	UC-002	
Description	After opening the website going to the applicant page, and the actor requires the system to view , filter applicant	
Actor	Company Admin	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have view and filter applicant	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites	- System will display home page
Scenario	**View** - Actor go to applicant page	- System will display applicant page
Scenario	**Filter** - Type key word on search bar and click search	- System will filter and display applicants on based input
Alternative Course of Action ❖ If the actor enters invalid key word, ✓ Actor will receive no output, The actor will be notified about the situation.		

Table 11 Use Case Description for manage applicant

Use-case Name	Manage Company Information	
Identifier	UC-0012	
Includes	UC-002	
Description	After opening the website going to the company info page, and the actor requires the system to view , update , create company info	
Actor	Company Admin	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have view , update , create company info	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites	- System will display home page
Scenario	**View** - Actor go to company info page	- System will display company info page
Scenario	**Edit** - Select edit company info to be edited - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Edit will be denied, The actor will be notified about the situation and The actor will be asked to retry		

Table 12 Use Case Description for manage company information

Use-case Name	Manage Resume	
Identifier	UC-0013	
Includes	UC-002	
Description	After opening the website going to the profile page, and the actor requires the system to view , update , create , delete profile page	
Actor	Candidate	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have delete , view , update , create profile	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites - Actor go to profile page	- System will display home page - System will display profile page
Scenario	**View and edit personal info** - Actor go to personal info page - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**View , edit and add education** - Actor go to education page - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Delete Education** - Select Education to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Scenario	**View , edit and add Experience** - Actor go to experience page - Add info and click save	- System will open form to be filled. - System will verify and updates to database.

Scenario	**Delete Experience** - Select experience to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Scenario	**View , edit and add Project** - Actor go to project page - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Delete Project** - Select project to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Scenario	**View , edit and add Language** - Actor go to language page - Add info and click save	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Delete Language** - Select language to be deleted - Confirm Delete	- System will prompt Modal to conform deletion - System will verify and deletes from database.
Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Edit / Add will be denied, The actor will be notified about the situation and The actor will be asked to retry		

Table 13 Use Case Description for manage resume

Use-case Name	Manage Job application	
Identifier	UC-0014	
Includes	UC-002	
Description	After opening the website going to the job page, and the actor requires the system to search , filter, bookmark, apply jobs	
Actor	Candidate	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have bookmark, apply jobs	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites	- System will display home page
Scenario	**View** Actor go to job page	- System will display job page
Scenario	**Filter** - Type key word on search bar and click search	- System will filter and display jobs on based input
Scenario	**Bookmark** - Select jobs to be bookmarked	- System will add job to bookmarks.
Scenario	**Apply for job** - Select Apply - Add info and click apply	- System will open form to be filled. - System will verify and updates to database.
Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Edit / Add will be denied, The actor will be notified about the situation and The actor will be asked to retry		

Table 14Use Case Description for manage job application

Use-case Name	Manage Interviews	
Identifier	UC-0015	
Includes	UC-002	
Description	After opening the website going to the interview page, and the actor requires the system to schedule , interview , take note, view interview	
Actor	Candidate	
Pre-Condition	Actor must have been logged in	
Post-Condition	User will have bookmark, apply jobs	
ACTOR		**SYSTEM**
Flow of Event	- Actor open the websites	- System will display home page
Scenario	**View** Actor go to interview page	- System will display interview page
Scenario	**Schedule** - Select schedule - Add info and click schedule	- System will open form to be filled. - System will verify and updates to database.
Scenario	**Interview** - Select interview - Add info and click interview	- System will open form to be filled. - System will verify and updates to database.
Alternative Course of Action ❖ If the actor enters invalid information, ✓ Update / Edit / Add will be denied, The actor will be notified about the situation and The actor will be asked to retry		

Table 15 Use Case Description for manage interviews

3.2.5. Activity diagram

An activity diagram visually presents a series of actions or flow of control in a system similar to a flowchart or a data flow diagram. Activity diagrams are often used in business process modeling. They can also describe the steps in a use case diagram. Activities modeled can be sequential and concurrent. In both cases an activity diagram will have a beginning (an initial state) and an end (a final state).

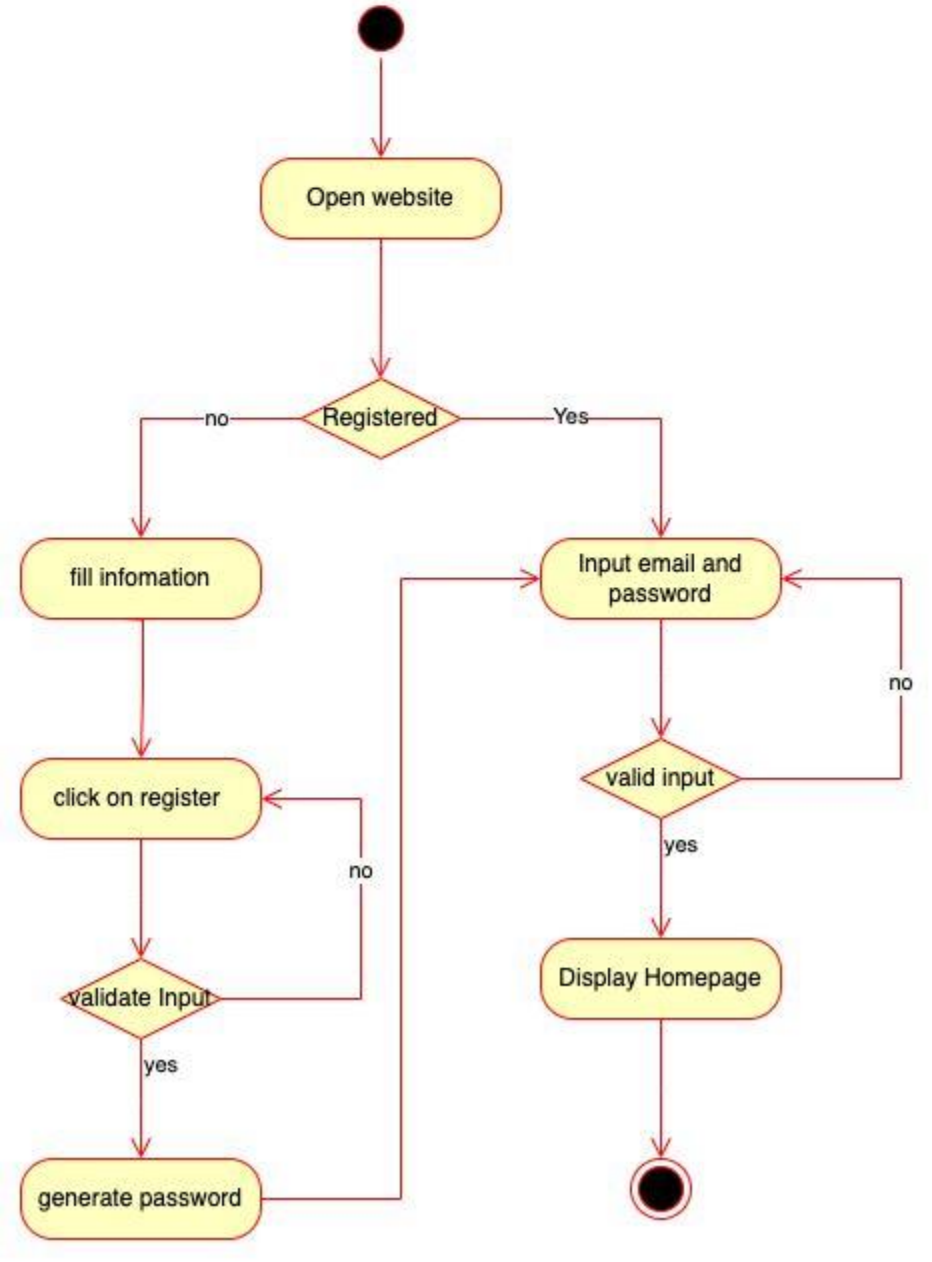


Figure 6 Activity diagram for authentication

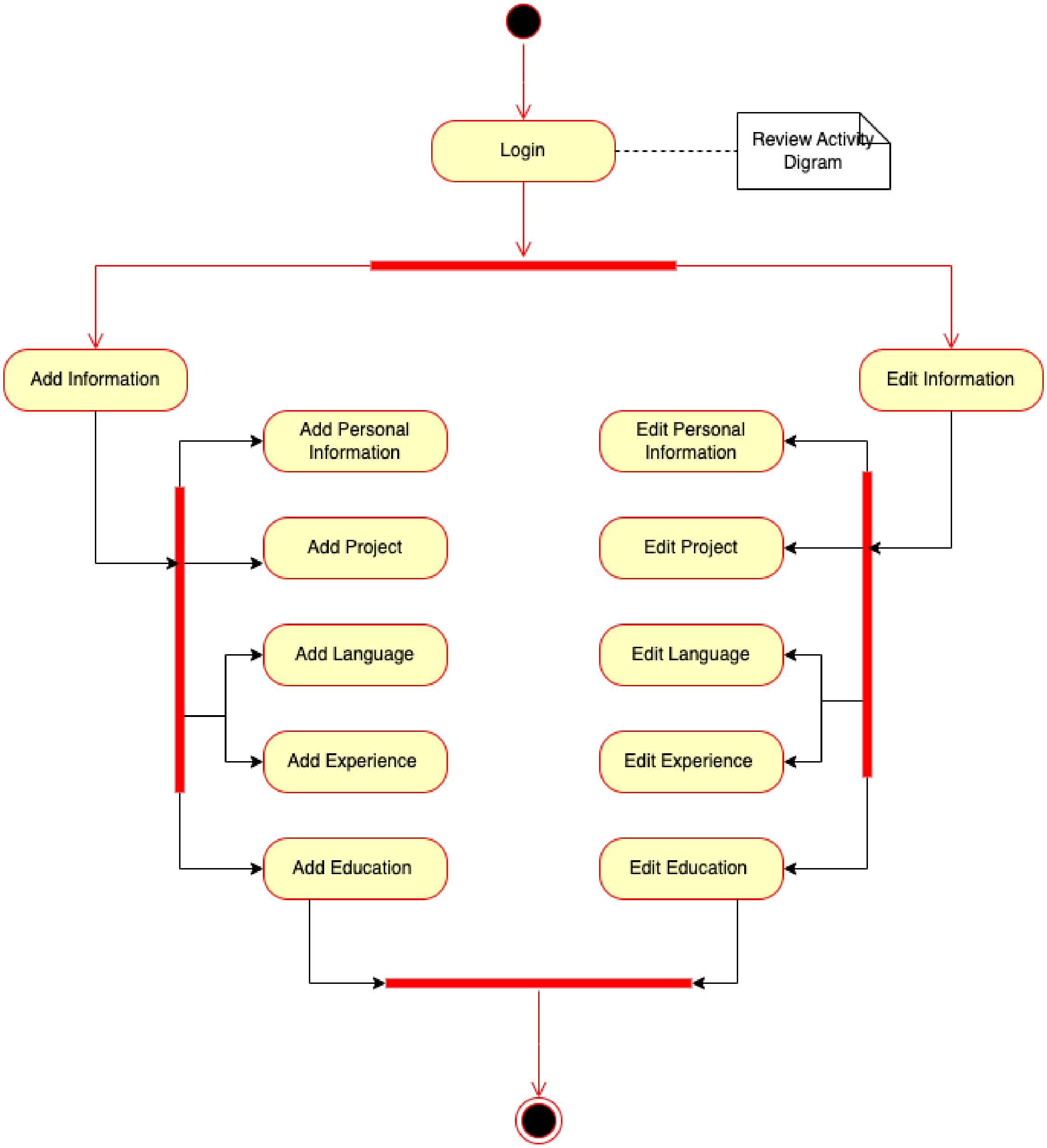


Figure 7 Activity Diagram for Add, Delete and update information

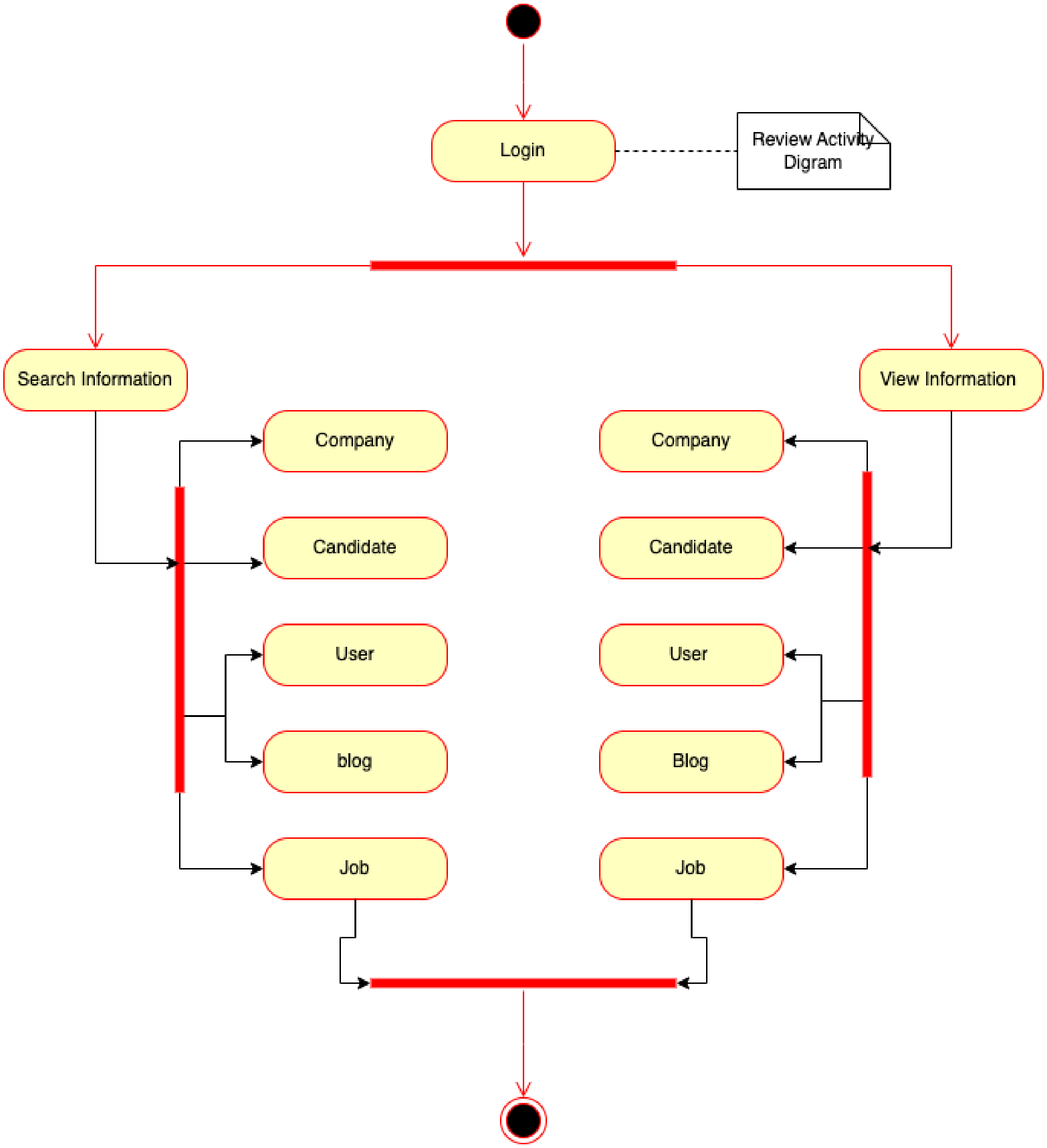


Figure 8 Activity Diagram for Search and View information

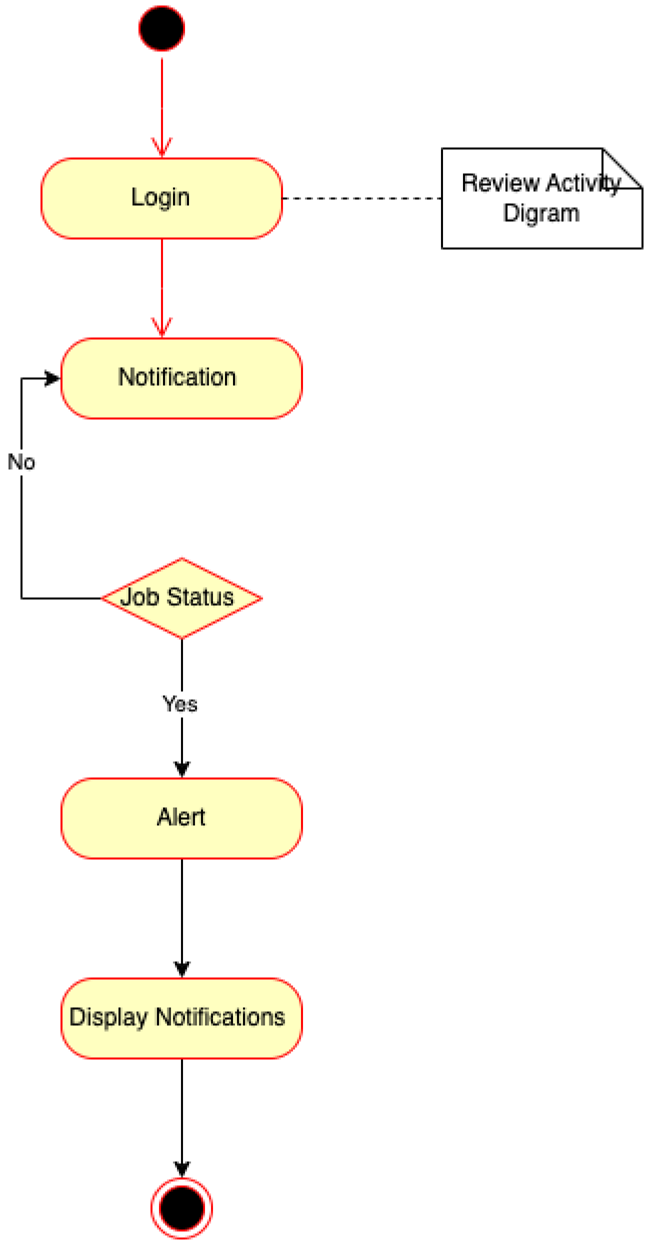


Figure 9 Activity Diagram for Notification

3.3. Behavioral/Dynamic Modeling

Describe and predict the interactions over time between multiple components of a phenomenon that are viewed as a system. It focuses on the mechanism of how the components and the system evolve across time.

3.3.1. Sequence diagram

Interaction diagrams that shows detail how operations are carried out. They capture the interaction between objects in the context of a collaboration. Sequence Diagrams are time focus and they show the order of the interaction visually by using the vertical axis of the diagram to represent time what messages are sent and when.

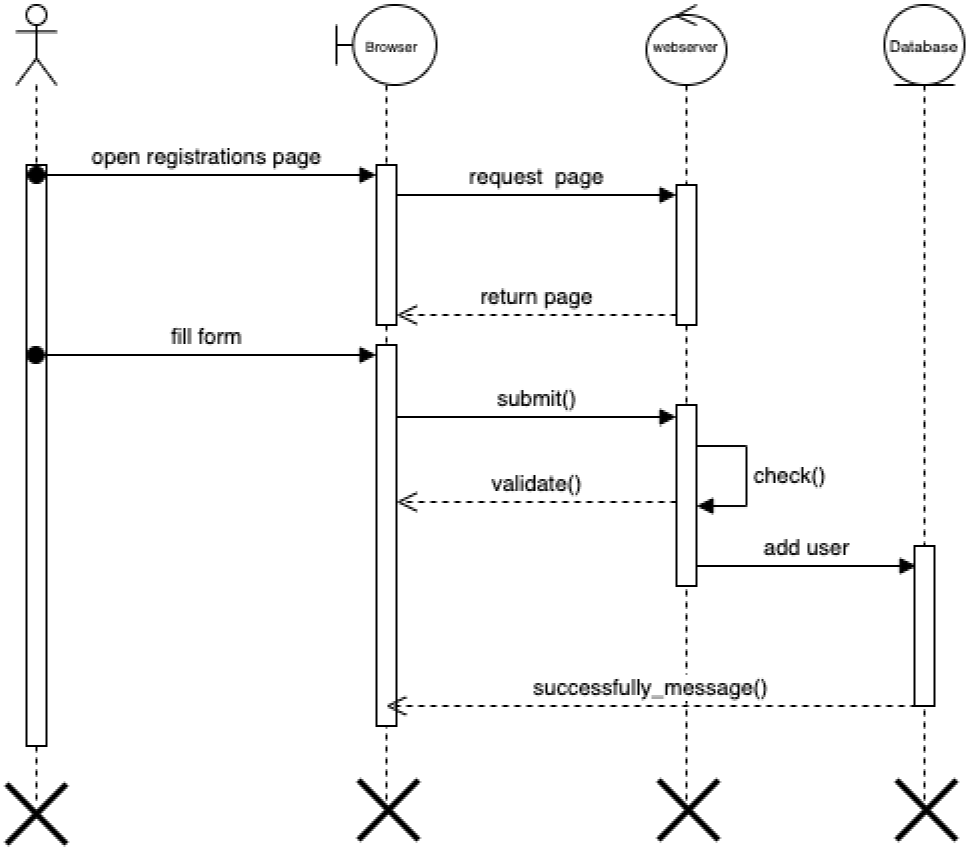


Figure 10 Sequence Diagram for Registration

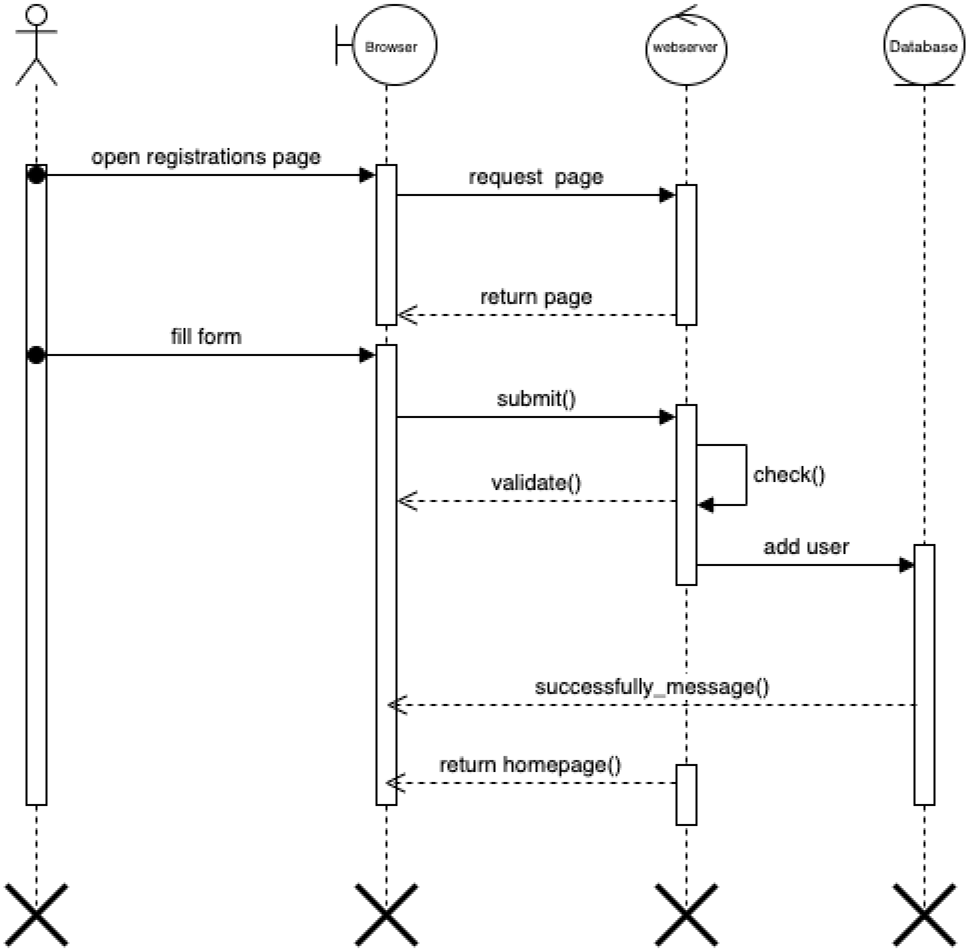


Figure 11 Sequence Diagram for login

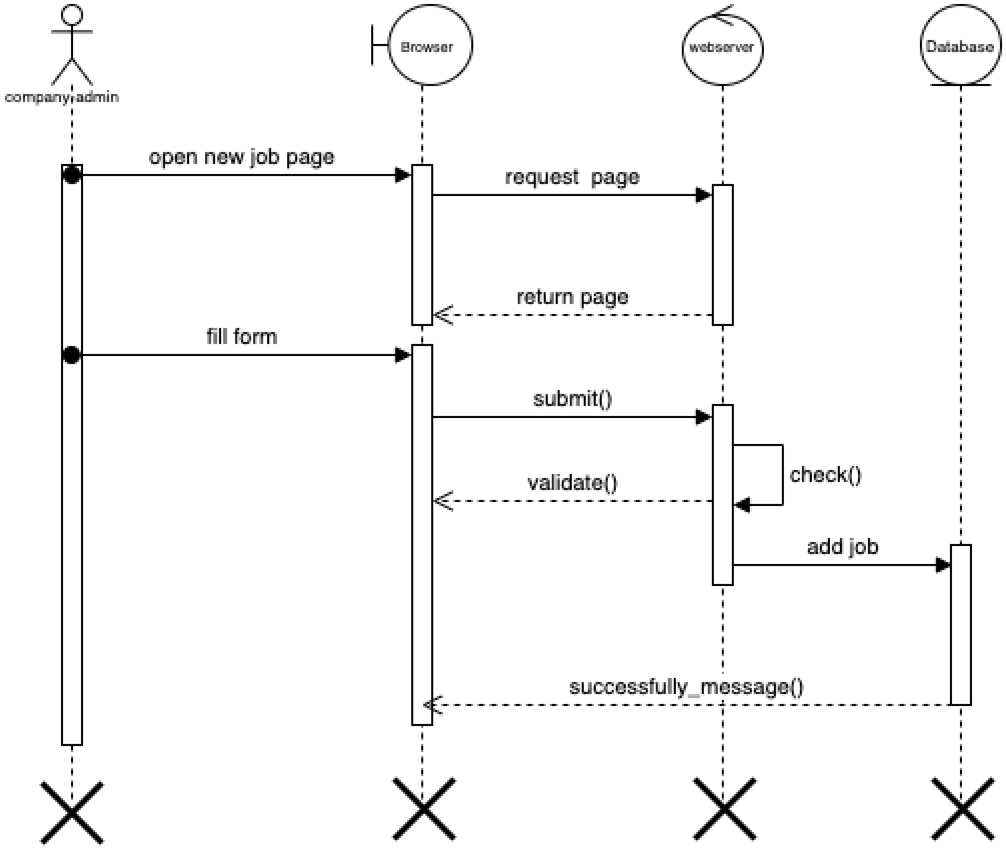


Figure 12 Sequence Diagram for post new Job

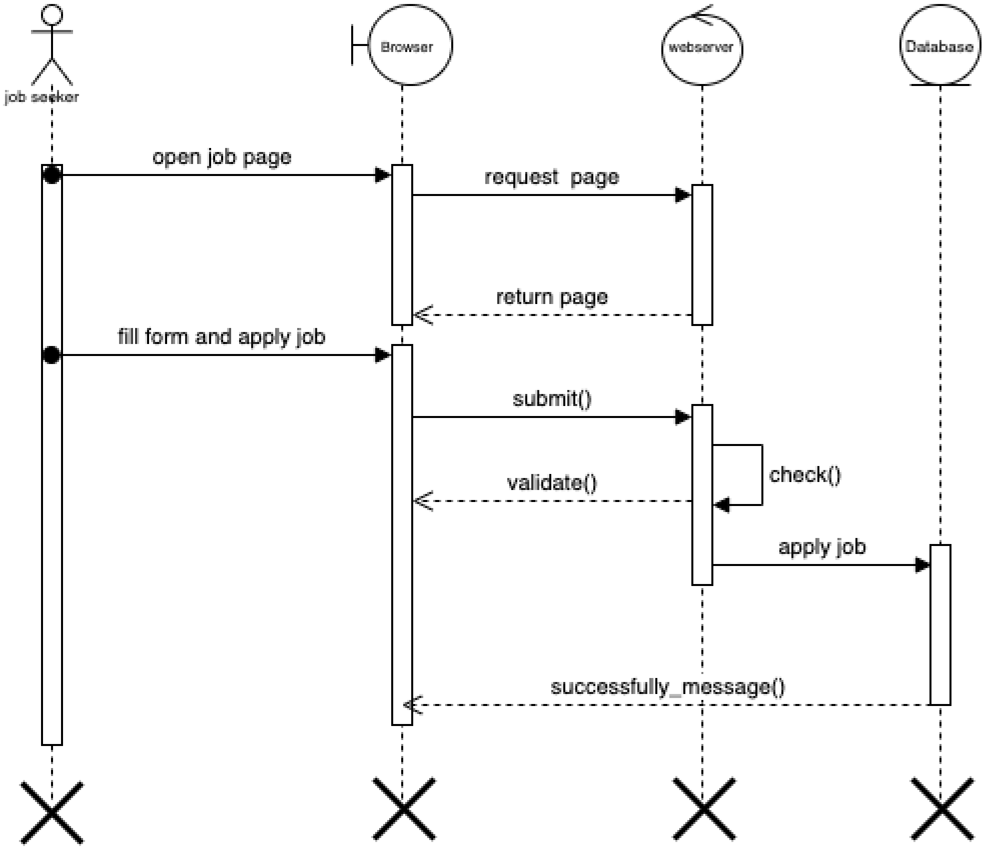


Figure 13 Sequence Diagram for apply Job

3.3.2. State Diagram

A state diagram is type of diagram that describe a single object and illustrate how that object behaves in response to a series of events in your system.

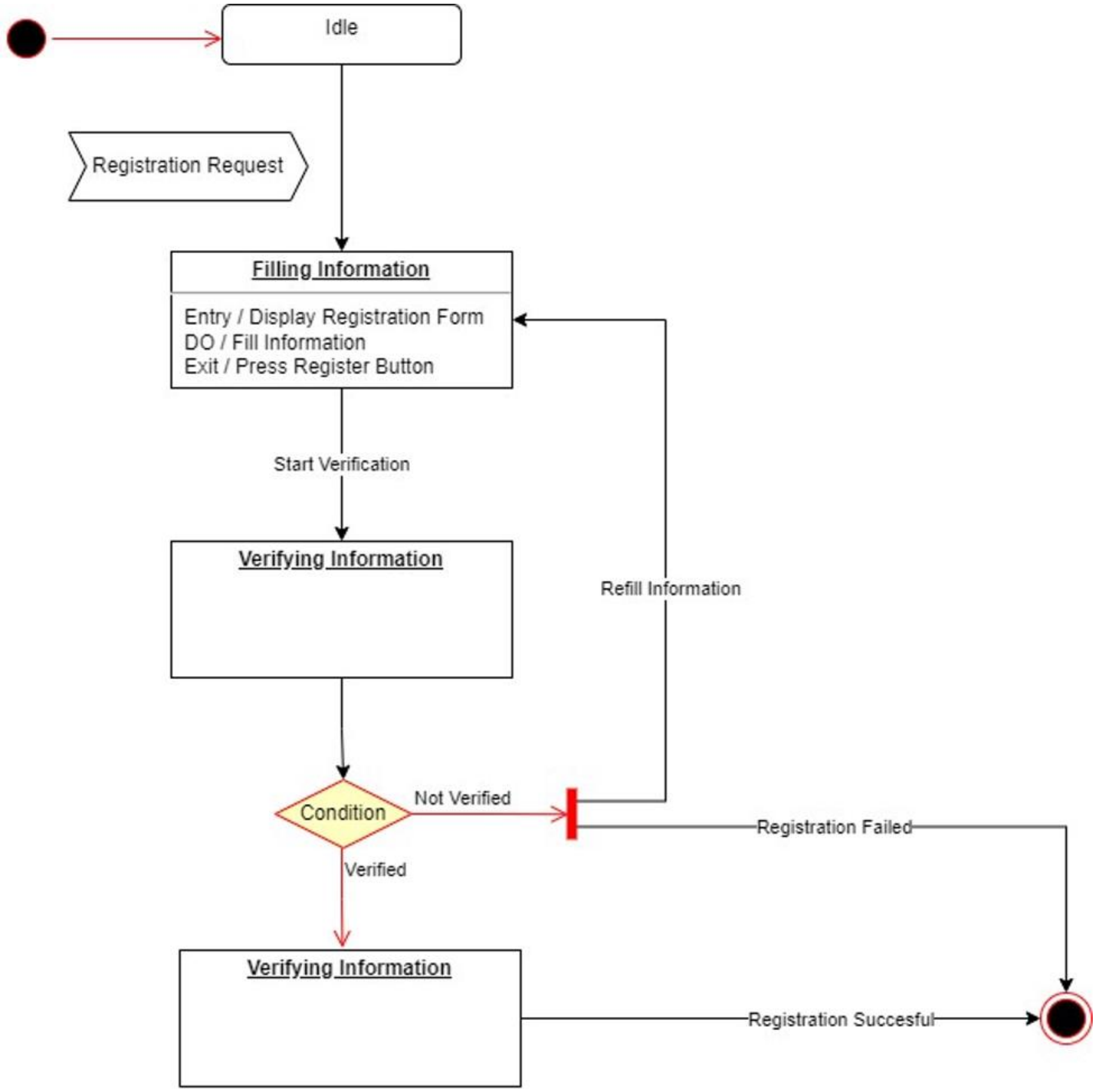


Figure 14 State Diagram for Add User

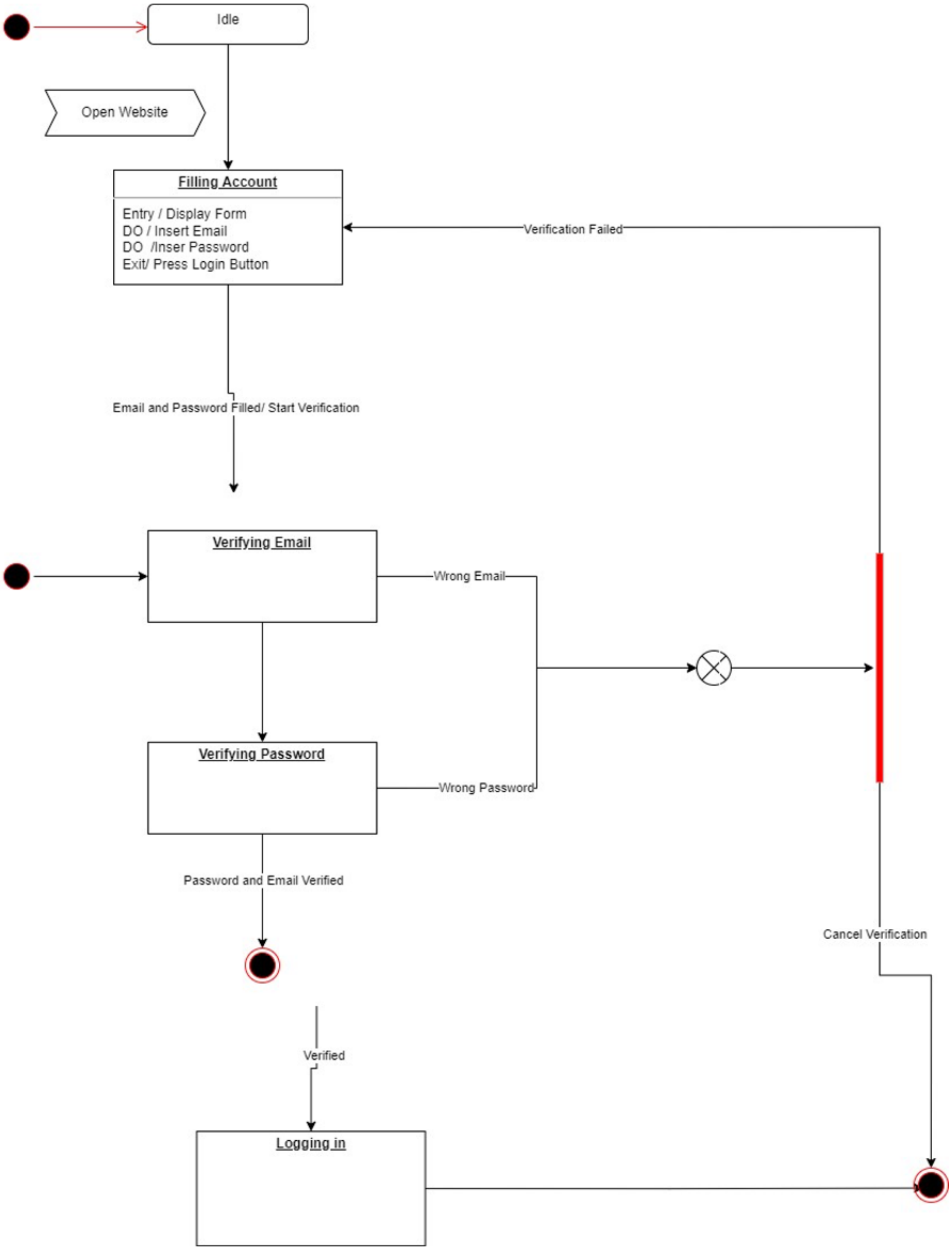


Figure 15 State Diagram for Login

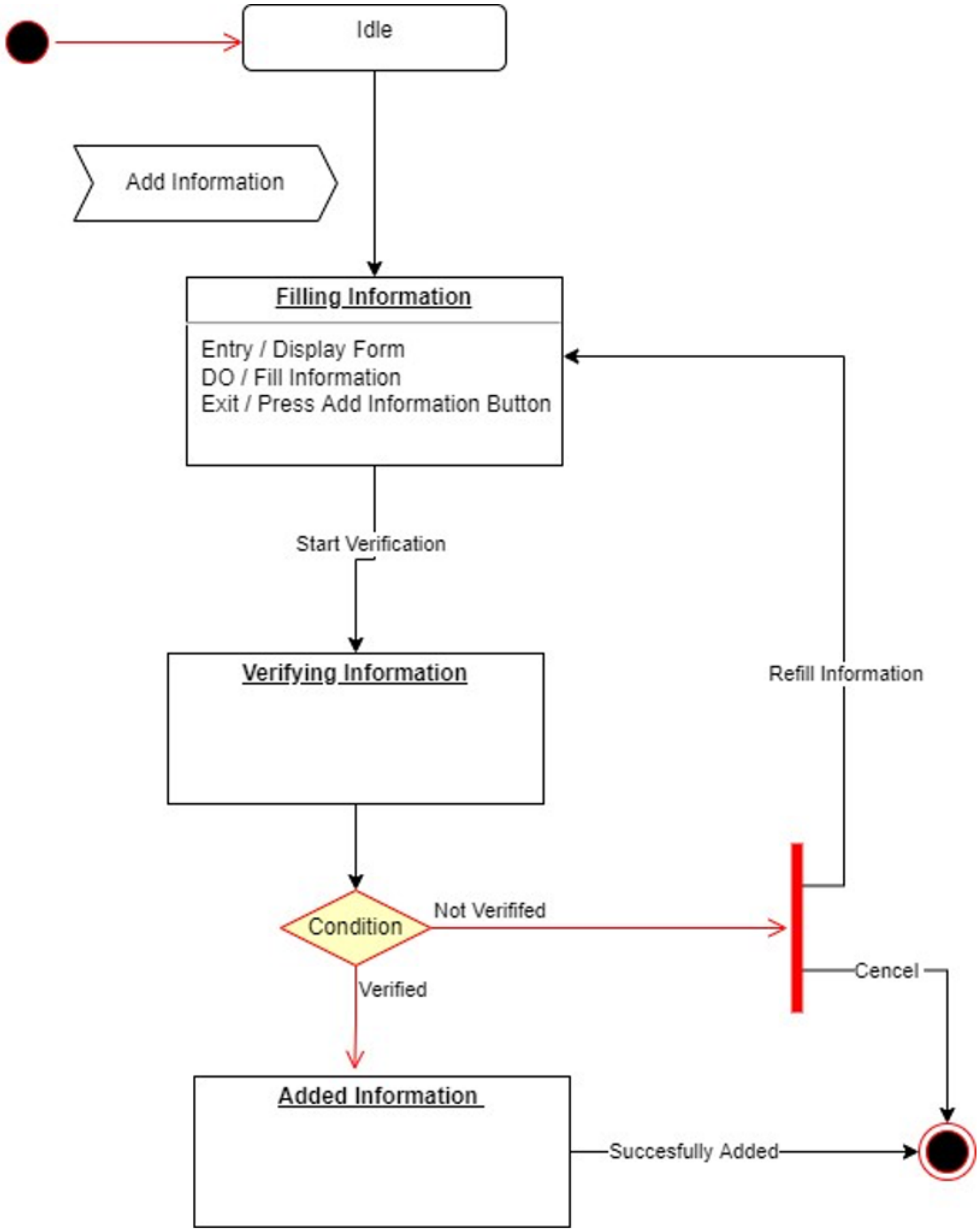


Figure 16 State Diagram for Add Information

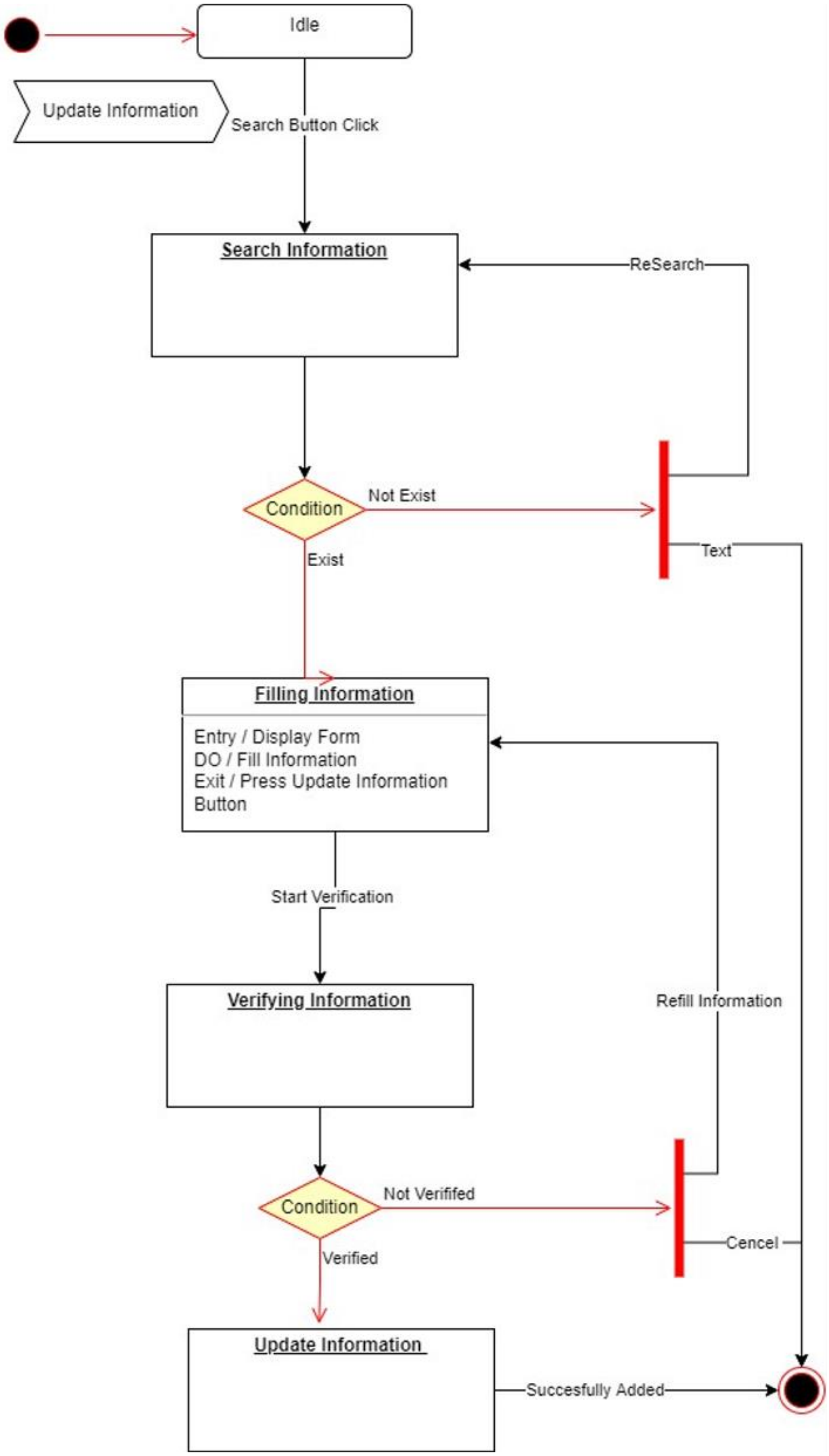


Figure 17 State Diagram for Search Information

3.3.3. Class-Based Modeling

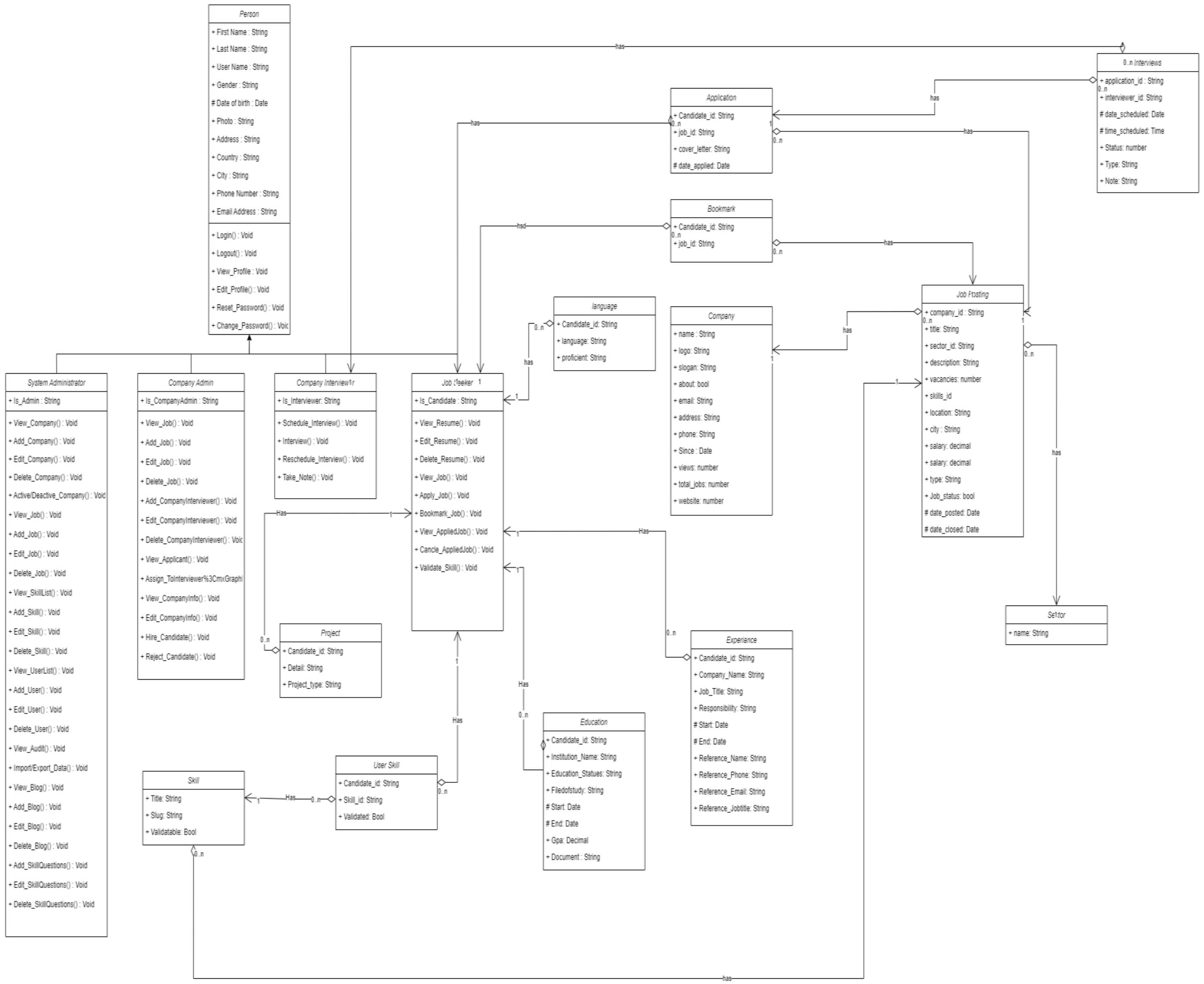
Class based modeling represents the object. The system manipulates the operations. Also defines the structure of the entire system by identifying the static structure of objects in that system. A class model defines attributes and operations for the objects of each class and also the relationship between the objects in the systems.

3.3.4. Identifying classes

For Seraye Job Portal System we have identified the following classes

- Person
- System Administrator
- Company Admin
- Company Interviewer
- Job Seeker
- Project
- Skill
- User Skill
- Education
- Experience
- Language
- Company
- Job Posting
- Sector
- Bookmark
- Application
- Interview

3.3.5. Class Diagram



4. System Design

4.1. Overview

System design is the process outlining the architecture, components, interfaces, and data for a system to fulfill specified requirements. It essentially translates user needs into a detailed blueprint that guides the development phase. The objective is to create a well-structured and efficient system that meets the intended purpose while considering factors like scalability, maintainability, and performance.

Here's a breakdown of the key aspects of system design:

- **Components:** These are the building blocks that make up the system. Each component has a specific functionality and interacts with other components to achieve the overall system goals.
- **Modules:** A group of components working together to perform a particular task or set of tasks. Modules can further be broken down into smaller components for better organization.
- **Interfaces:** Defined communication channels that enable components to exchange data and collaborate.
- **Data:** The information that flows through the system and is processed by the components. System design involves designing data structures, storage mechanisms, and data flow patterns.

System design plays a vital role in software development as it lays the foundation for a robust, scalable, and maintainable system.

4.2. System Design

After analyzing the requirements, the next phase is designing the system. System Design is defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements. Systems design could be seen as the application of system theory to product development. In this phase, sufficient detailed data and information about the system and its system elements to enable the implementation consistent with architectural entities as defined in models and views of the system architecture are provided.

4.3. Architecture of the system

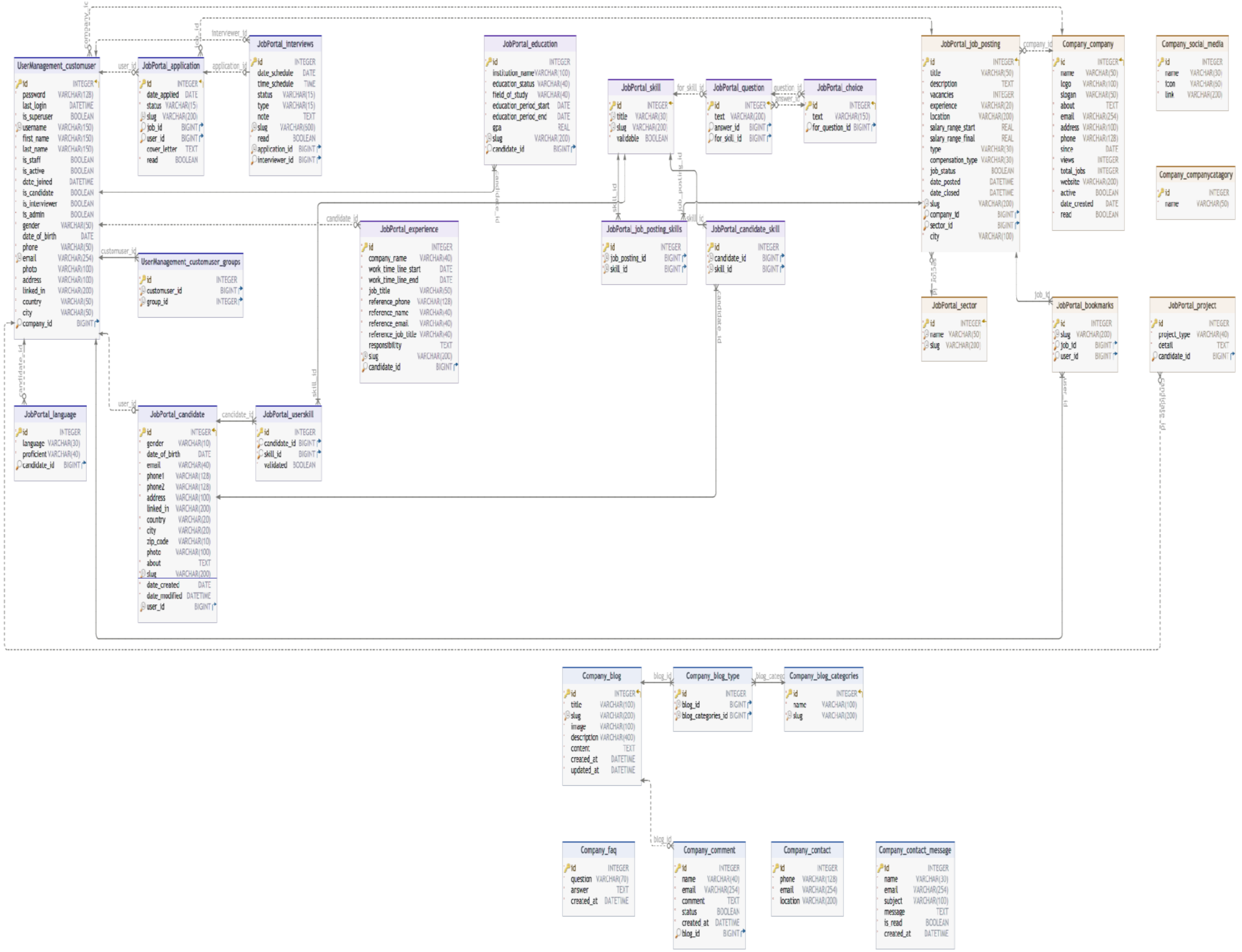
4.3.1. Overview

- Architectural Style
  - Language Based – Object-Oriented It is a design paradigm based on the division of responsibilities for an application or system into individual reusable and self-sufficient objects.
  - Layered – Client Server It is a distributed application structure that partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients.
  - Data-Flow – Batch-Sequential It is a classical data processing model in which, separate programs are executed in order and the data is passed as aggregate from one program to the next.
- Architectural Pattern
  - Model-View-Template architecture, otherwise known as MVT, is a software design pattern within Django that utilizes:
    - Models to handle data logic and structure of your database
    - Views to handle the applications logic and functionality
    - Templates to handle the layout and structure of the user facing application

4.4. Database design

Database design is the organization of data according to a database model. It involves classifying data and identifying inter relationships. It is the activity of representing classes, attributes and relationships in a database.

Physical database design is the stage where you take a logical data model and translate it into the nitty-gritty of how the data will be stored and accessed by a specific database management system (DBMS).


UserManagement_customuser
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password VARCHAR(128)
last_login DATETIME
is_superuser BOOLEAN
username VARCHAR(150)
first_name VARCHAR(150)
last_name VARCHAR(150)
is_staff BOOLEAN
is_active BOOLEAN
date_joined DATETIME
is_candidate BOOLEAN
is_interviewer BOOLEAN
is_admin BOOLEAN
gender VARCHAR(50)
date_of_birth DATE
phone VARCHAR(50)
email VARCHAR(254)
photo VARCHAR(100)
address VARCHAR(100)
linked_in VARCHAR(200)
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city VARCHAR(50)
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user_id BIGINT
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JobPortal_interviews
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time_schedule TIME
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type VARCHAR(15)
note TEXT
slug VARCHAR(500)
read BOOLEAN
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interviewer_id BIGINT
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education_period_end DATE
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slug VARCHAR(200)
candidate_id BIGINT
JobPortal_skill
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title VARCHAR(30)
slug VARCHAR(200)
validable BOOLEAN
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answer_id BIGINT
for_skill_id BIGINT
JobPortal_choice
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text VARCHAR(150)
for_question_id BIGINT
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salary_range_final REAL
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date_closed DATETIME
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proficient VARCHAR(40)
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JobPortal_candidate
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phone1 VARCHAR(128)
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address VARCHAR(100)
linked_in VARCHAR(200)
country VARCHAR(20)
city VARCHAR(20)
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slug VARCHAR(200)
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skill_id BIGINT
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blog_categories_id BIGINT
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slug VARCHAR(200)
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application_id
job_id
for_skill_id
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answer_id
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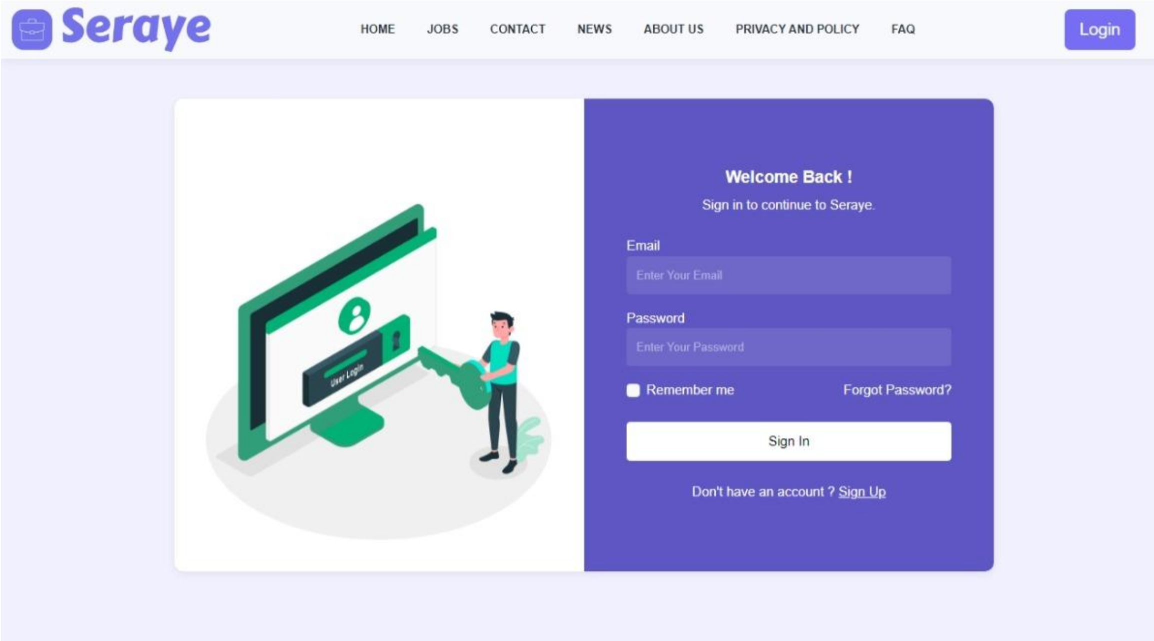
skill_id
job_posting_id
sector_id
blog_id
blog_categ

4.5. User Interface Design



Welcome Back !

Sign in to continue to Seraye.

Email

Enter Your Email

Password

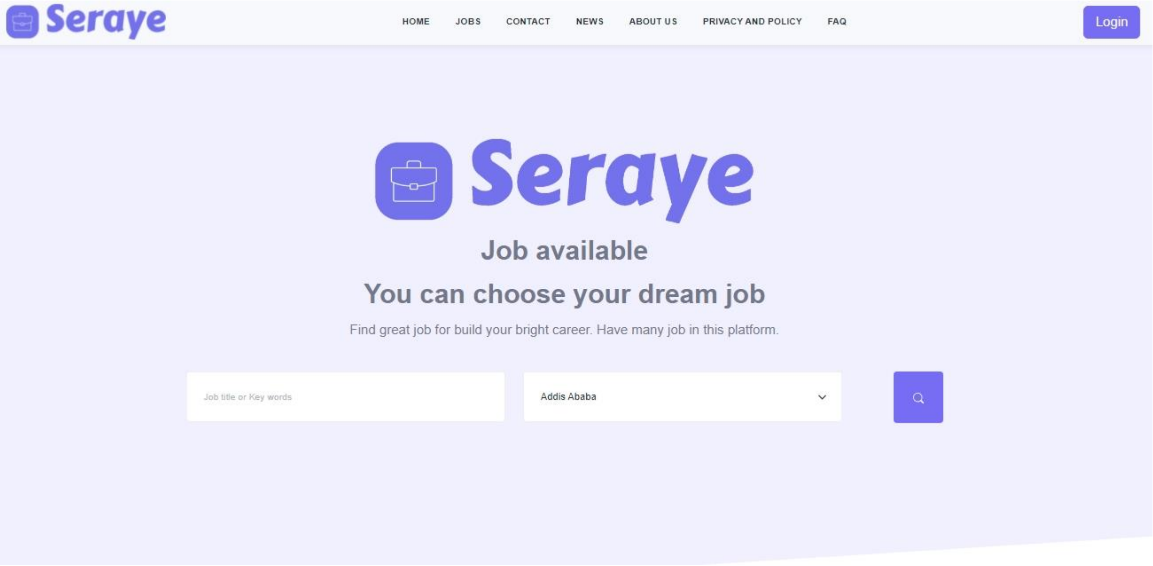
Enter Your Password

□ Remember me

Forgot Password?

Don't have an account ? Sign Up

Figure 20 Login Page



Job available

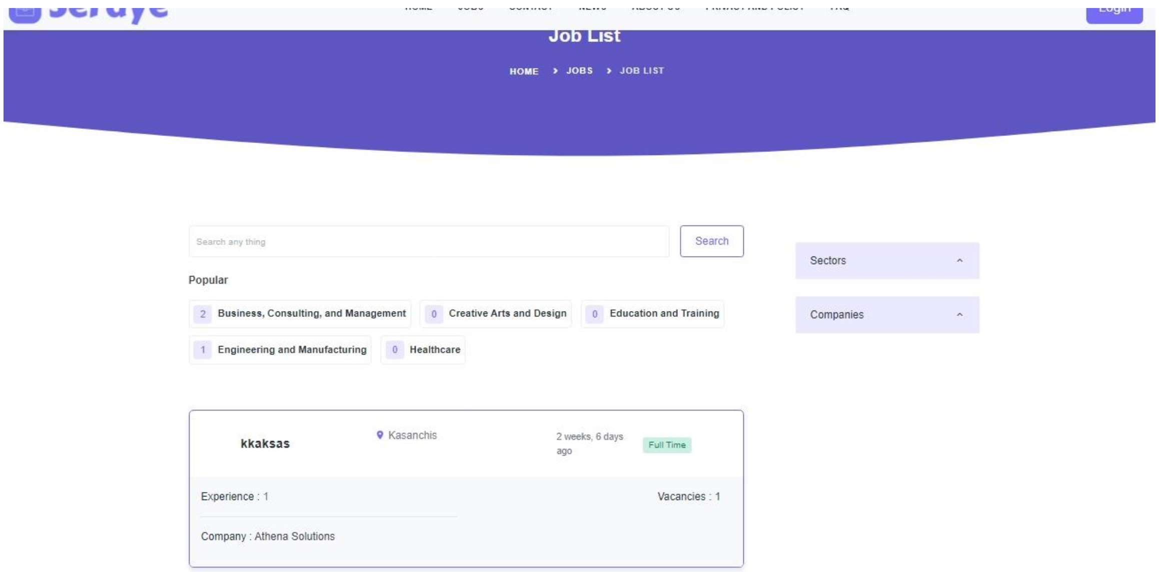
You can choose your dream job

Find great job for build your bright career. Have many job in this platform.

Job title or Key words

Addis Ababa

Figure 21 Home Page



Job List

HOME › JOBS › JOB LIST

Search any thing

Popular

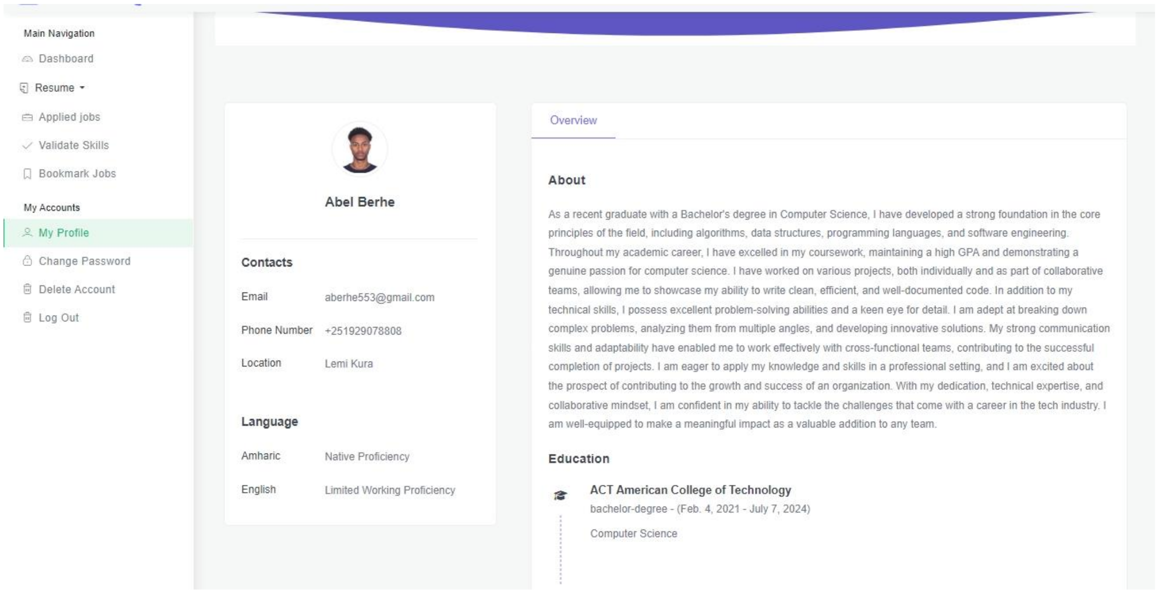
2 Business, Consulting, and Management
0 Creative Arts and Design
0 Education and Training
1 Engineering and Manufacturing
0 Healthcare

kkaksas
Kasanchis
2 weeks, 6 days ago
Full Time

Experience : 1
Vacancies : 1

Company : Athena Solutions

Figure 22 Jobs



Abel Berhe

Contacts

Email aberhe553@gmail.com

Phone Number +251929078808

Location Lemi Kura

Language

Amharic Native Proficiency

English Limited Working Proficiency

About

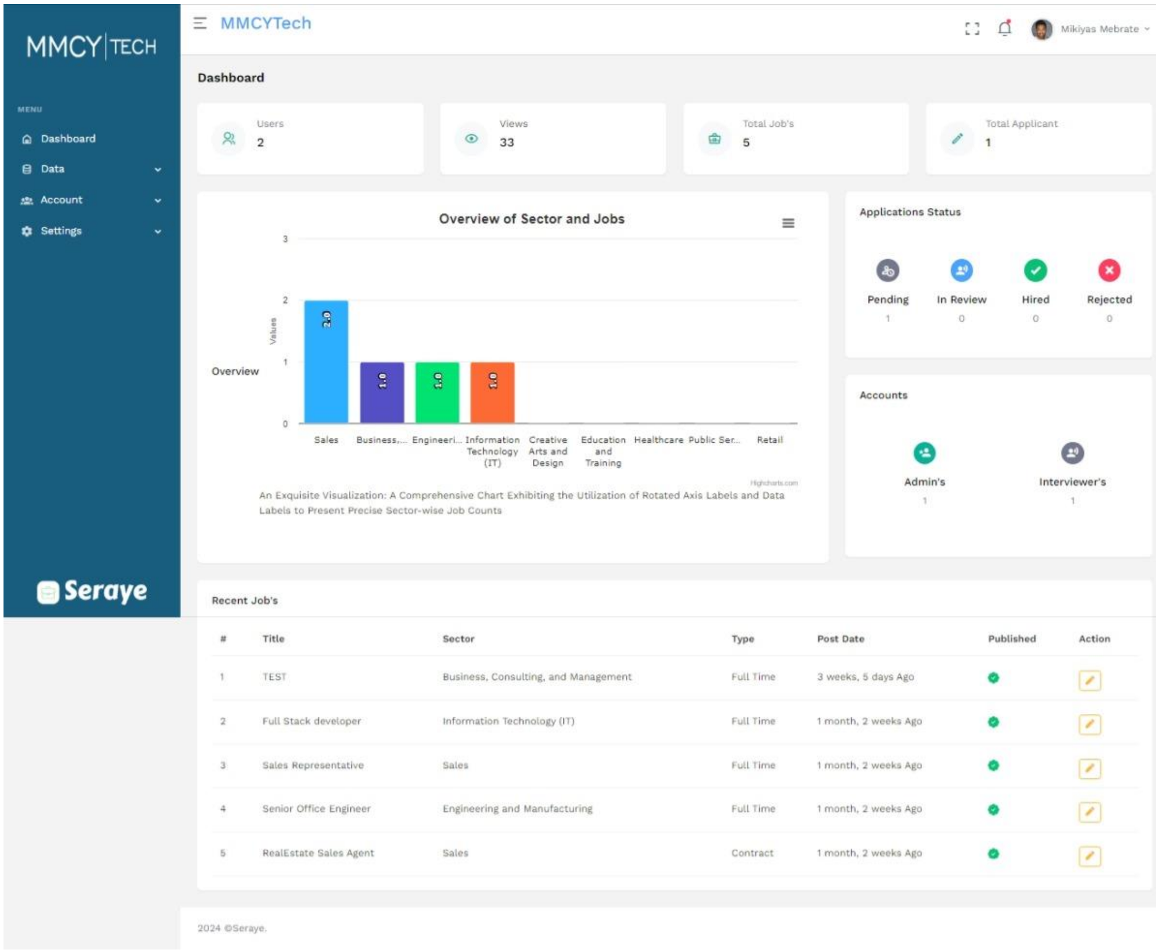
As a recent graduate with a Bachelor's degree in Computer Science, I have developed a strong foundation in the core principles of the field, including algorithms, data structures, programming languages, and software engineering. Throughout my academic career, I have excelled in my coursework, maintaining a high GPA and demonstrating a genuine passion for computer science. I have worked on various projects, both individually and as part of collaborative teams, allowing me to showcase my ability to write clean, efficient, and well-documented code. In addition to my technical skills, I possess excellent problem-solving abilities and a keen eye for detail. I am adept at breaking down complex problems, analyzing them from multiple angles, and developing innovative solutions. My strong communication skills and adaptability have enabled me to work effectively with cross-functional teams, contributing to the successful completion of projects. I am eager to apply my knowledge and skills in a professional setting, and I am excited about the prospect of contributing to the growth and success of an organization. With my dedication, technical expertise, and collaborative mindset, I am confident in my ability to tackle the challenges that come with a career in the tech industry. I am well-equipped to make a meaningful impact as a valuable addition to any team.

Education

ACT American College of Technology
bachelor-degree - (Feb. 4, 2021 - July 7, 2024)

Computer Science

Figure 23 Candidate Profile



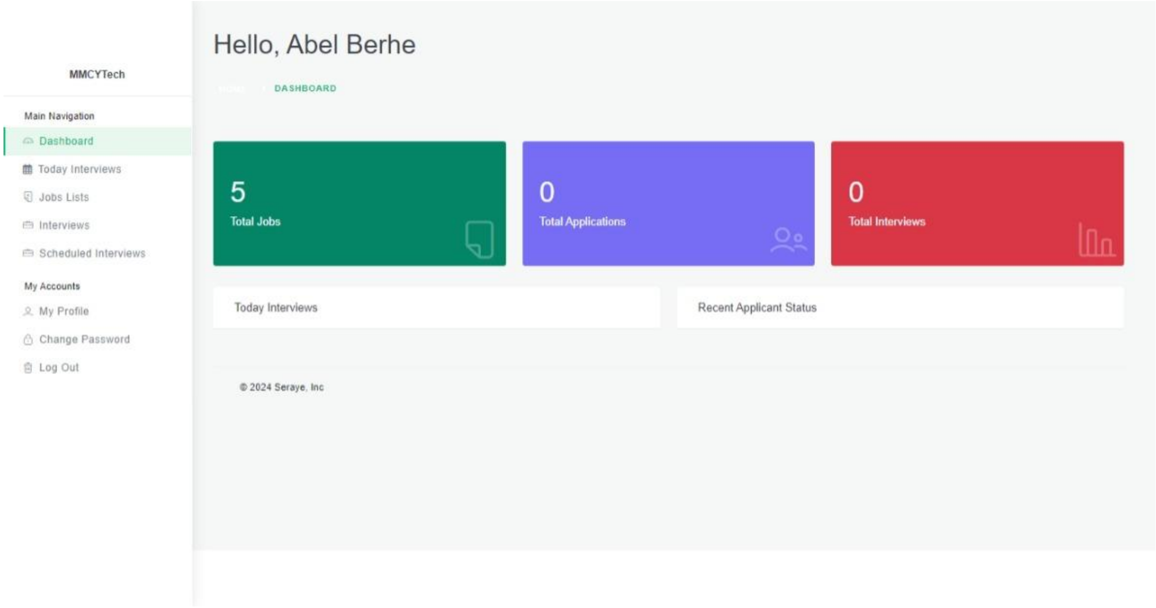
An Exquisite Visualization: A Comprehensive Chart Exhibiting the Utilization of Rotated Axis Labels and Data Labels to Present Precise Sector-wise Job Counts

Recent Job's

#	Title	Sector	Type	Post Date	Published	Action
1	TEST	Business, Consulting, and Management	Full Time	3 weeks, 5 days Ago	●	✎
2	Full Stack developer	Information Technology (IT)	Full Time	1 month, 2 weeks Ago	●	✎
3	Sales Representative	Sales	Full Time	1 month, 2 weeks Ago	●	✎
4	Senior Office Engineer	Engineering and Manufacturing	Full Time	1 month, 2 weeks Ago	●	✎
5	RealEstate Sales Agent	Sales	Contract	1 month, 2 weeks Ago	●	✎

2024 ©Seraye.

Figure 24 Company Admin Dashboard



Hello, Abel Berhe

5 Total Jobs

0 Total Applications

0 Total Interviews

Today Interviews

Recent Applicant Status

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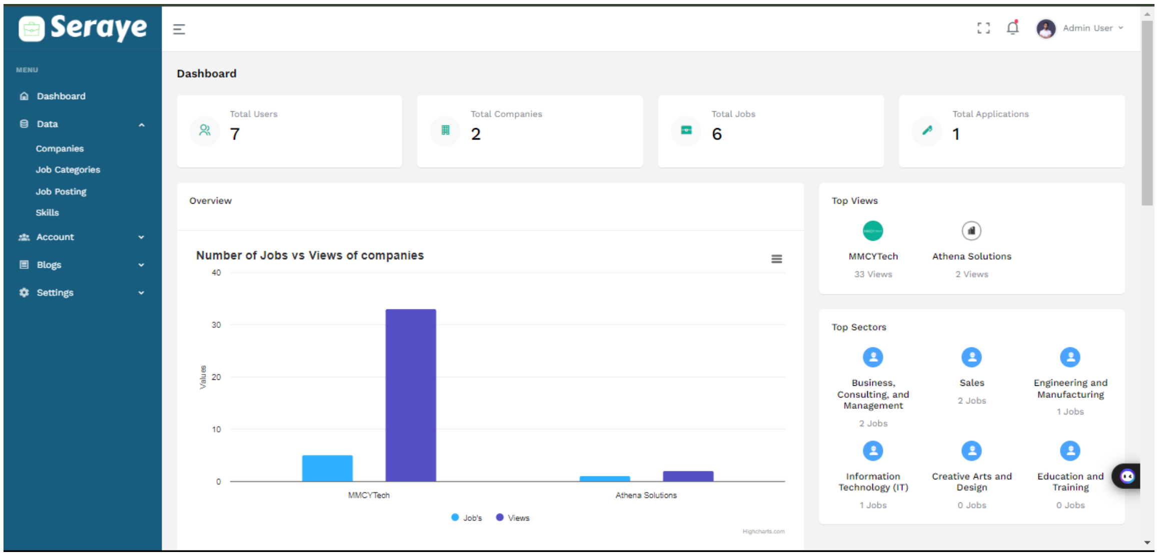
Figure 25 Company Interviewer Dashboard



Dashboard

Total Users 7

Total Companies 2

Total Jobs 6

Total Applications 1

Overview

Number of Jobs vs Views of companies

Top Views

MMCYTech 33 Views

Athena Solutions 2 Views

Top Sectors

Business, Consulting, and Management 2 Jobs

Sales 2 Jobs

Engineering and Manufacturing 1 Jobs

Information Technology (IT) 1 Jobs

Creative Arts and Design 0 Jobs

Education and Training 0 Jobs

Figure 26 System Admin Dashboard

5. Implementation and Testing

5.1. Implementation

5.2. Testing

6. Conclusion and Future Work