



## **BranchNet: A system of connecting profile and paths**

### **Supervised By**

**Md. Rajib Mia**

**Lecturer**

Department of Software Engineering  
Daffodil International University

### **Submitted By**

**Md. Abdullah Al Mahamud Hridoy**

**ID: 213-35-756**

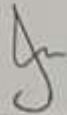
Department of Software Engineering  
Daffodil International University

This project report has been submitted in fulfilment of the requirements for the degree a  
**Bachelor of Science in Software Engineering**

## APPROVAL

This thesis titled on "**BranchNet: A system of connecting profile and paths**", submitted by **Student Name (ID: 213-35-756 )** to the Department of Software Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Software Engineering and approval as to its style and contents.

### BOARD OF EXAMINERS



Chairman

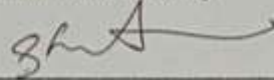
**Dr. Imran Mahmud**

**Professor & Head**

Department of Software Engineering

Faculty of Science and Information Technology

Daffodil International University



Internal Examiner 1

**Md Shohel Arman**

**Assistant Professor**

Department of Software Engineering

Faculty of Science and Information Technology

Daffodil International University



Internal Examiner 2

**Md. Rajib Mia**

**Lecturer (Senior Scale)**

Department of Software Engineering

Faculty of Science and Information Technology

Daffodil International University



External Examiner

**Md Habibur Rahman**

**Associate Professor**

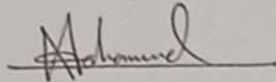
Department of Computer Science and Engineering

Islamic University, Bangladesh

## Declaration

I acknowledge that I have done this Project under the supervision of Md. Rajib Mia, Senior Lecturer, Department of Software Engineering, Daffodil International University. I also assert that this Project is my original work for the degree of B.Sc. in Software Engineering and that neither the whole work nor any part has been submitted for another degree in this or any other university.

Submitted by:



Md. Abdullah Al Mahamud Hridoy

ID: 213-35-756

Department of Software Engineering Daffodil

International University

Certified by



Md. Rajib Mia

Assistant Professor

Department of Software Engineering

Daffodil International University

## **Acknowledgement**

I would also like to state my deepest appreciation to my senior supervisor, Md. Rajib Mia, who has been by my side, guiding, and giving me useful recommendations during the entire development of this project. His works and actions were important in influencing my thoughts and making sure that I accomplished this work well.

I also owe something to my teachers in the Department of Software engineering in Daffodil International University who provided me with a solid background and atmosphere which led me to investigate new ideas such as Project Documentation, system design and Testing.

I want to thank my friends and classmates who took their time to check my work and provided feedback, as well as, encouraged me when I needed it.

Last, I owe great debt to my parents and my family whose support, which was unconditional, poise, and belief in me even during this process. The achievement of this project would not have been possible without their encouragement..

## Table of Content

<b>Approval .....</b>	<b>ii</b>
<b>Declaration.....</b>	<b>iii</b>
<b>Acknowledgement ... ..</b>	<b>iv</b>
<b>Chapter 1:</b>	
<b>Introduction.....</b>	<b>1</b>
1.1 Project Overview and Purpose.....	2
1.2 Background .....	2
1.3 Project Planning and Initiation .....	3
Feasibility Study .....	3
Phase 1: Preliminary Analysis & Project Scope .....	4
1. Problem Statement .....	4
2. Proposed Solution.....	4
3. Project Scope.....	5
Phase 2 : Feasibility Study(Market, Economical, Technical).....	6
2.1 Market feasibility.....	6
2.1.1 Target Market .....	6
2.1.2 Market Needs & Trends.....	6
2.1.3 market Competitor.....	7
2.2 Technical Feasibility.....	8
2.3 Financial Feasibility.....	9
1.4 Target User Profile and Tentative Elicitation .....	10
Target User 1: organization.....	10
Target User 2: Job Seeker / Student / Professional.....	11
Target User 3: Administrator .....	11
1.5 System Requirements.....	12
1.6 Project Scheduling.....	13
a. Time Frame / Gantt Chart (20 Weeks) .....	13
b. Risk Management .....	14
<b>Chapter 2: Design and Implementation .....</b>	<b>15</b>
2.1 Functional Requirements.....	15
2.2 Non-Functional Requirements .....	18
2.3 System Design.....	19
a. Use case Diagram .....	19
b. Case Description .....	20

Case Description-01: User Registration.....	20
Case Description-02: Login .....	21
Case Description- 03: Forgot Password.....	22
Case Description-04: Profile Management.....	23
Case Description-05: Job Posting .....	24
Case Description-06: Job Search .....	25
Case Description-07 Job Application .....	26
Case Description- 08. Resume Upload.....	27
Case Description-09 Notification.....	28
Case Description-10 Application Status & Tracking.....	29
Case Description- 11: Log Out .....	30
c. Activity Diagram.....	31
Activity Diagram-01: User Registration .....	31
Activity Diagram -02: Login.....	32
Activity Diagram - 03: Forgot Password .....	33
Activity Diagram -04: Profile Management .....	34
Activity Diagram -05: Job Posting .....	35
Activity Diagram -06: Job Search .....	36
Activity Diagram -07: Job Application.....	37
Activity Diagram -08: Resume Upload.....	38
Activity Diagram - 09. Notification.....	39
Activity Diagram -10: Application Status & Tracking.....	40
Activity Diagram -11: Log Out.....	41
d. Sequence Diagram.....	42
Sequence Diagram -01: User Registration .....	42
Sequence Diagram -02: Login .....	43
Sequence Diagram -03: Forgot Password.....	44
Sequence Diagram -04: Profile Management .....	45
Sequence Diagram -05: Job Posting .....	46
Sequence Diagram -06: Job Search .....	47
Sequence Diagram -07: Job Application .....	48
Sequence Diagram -08: Resume Upload .....	49
Sequence Diagram -09: Application Status & Tracking .....	50

Sequence Diagram -09. Notification .....	51
Sequence Diagram -11: Log Out.....	52
e. ERD .....	53
<b>Chapter 3: Software Testing.....</b>	<b>54</b>
3.1 Testing Features.....	54
3.2 System Testing .....	55
<b>Chapter 4: Deployment and Maintenance .....</b>	<b>56</b>
4.1 Software Release Life Cycle.....	56
<b>Chapter 5: User Manual .....</b>	<b>57</b>
5.1 User Registration.....	57
5.2 Log in .....	57
5.3 Job Seeker Dashboard .....	58
5.4 Search & Filter.....	59
5.5 Resume Upload.....	60
5.6 Profile Management.....	60
5.7 Recruiter Sign up .....	61
5.8 Recruiter Log in .....	62
5.9 Post Job .....	63
5.10 Logout .....	63
<b>Chapter 6: Project Summary .....</b>	<b>64</b>
<b>Appendix A: Source Code.....</b>	<b>64</b>

## **Chapter 1: Introduction**

This web based recruitment site is a flexible web based platform that links job seekers and potential employers. It facilitates the smooth recruitment processes since it allows users to register, create profiles, add their resumes, and search through jobs based on their categories, such as location, job type, and qualification. Employers are able to easily post the available posts, screen incoming applications, and also process the information regarding their candidates. Moreover, The system has also integrated smart job recommendation and user friendly administration interface that allows users to manage users and listings. The platform has been built using modern web technologies, which allows it to provide a responsive design, safe data management, and the possibility to expand to the required extent. The core purpose of it is to make the process of hiring easier and provide a convenient, comfortable experience to both the job seekers and the job recruiters.

## **1.1 Project Overview and Purpose**

BranchNet is a web based job portal that is particularly created to consolidate IT job opportunities in Bangladesh. The site will also make the process of hiring easier since it will link employers and job seekers in an efficient and smooth manner. Employers are able to post job vacancies with detailed job descriptions and handle applications, whereas job seekers are able to create their own profiles, upload resumes, search and apply with relevant jobs and monitor their status. BranchNet offers real-time job alerts and personalized recommendations to increase the user engagement. The system has been developed with the help of contemporary web technologies and its focus is on scalability, security, and convenient experience of not only recruiters but also applicants. The main objective is to enhance access to employment opportunities, minimize the recruitment process, and help the growth of the workforce in the IT industry of Bangladesh.

## **1.2 Background**

The job market in the IT sector in Bangladesh is at present facing a fragmentation challenge because of lack of a centralized platform to provide employment technology. The job seekers are having a challenge in search of good job announcements in various sources and the employers are also having problems in accessing a total talent pool effectively. Outdated manual approaches to recruitment slacken the pace of hiring as well as restrict transparency. BranchNet was developed to solve such problems with the help of the digital space that brings the IT job opportunities and future employees together. Through offering organized, automated platform with filtering, notification facility, the platform will be designed to encourage equitable, timely and efficient matching of job openings and job seekers, as part of the overall development and assessment of the IT sector in Bangladesh.

## 1.2 Project Planning and Initiation

### 1.2.1 Feasibility Study

<b>Factor</b>	<b>Assessment &amp; Justification</b>
<b>Technical</b>	Uses React Js, Express Js, MongoDB, JWT for secure authentication, and Cloudinary for media storage, Github
<b>Operational</b>	User-friendly UI with real-time notifications and upload features. Hosted on Vercel for reliability. Minimal training needed.
<b>Market</b>	Targets growing IT job market in Bangladesh. Differentiates by focusing on IT jobs compared to general portals like Bdjobs.
<b>Economic</b>	Built on open-source stack and cloud services, low startup cost. Potential for revenue via premium features and ads.

## **Phase 1: Preliminary Analysis & Project Scope**

### **1. Problem Statement**

As it stands, no single and distinct platform, which focuses entirely on IT job listing in Bangladesh, exists. This causes disjointed job ads, difficulties in locating applicable IT jobs as well as inefficient access among both employers and job seekers.

### **2 Proposed Solution**

It is an online job portal which is a centralized job portal linking job seekers to employers in the specific sector of the IT industry in Bangladesh. The system allows the users to create profiles, post their resumes, browse and apply to the job opportunities based on some relevant criteria like skills, location and qualifications. Employers have the advantage of being able to post employment opportunities, filter applications easily, and manage the information of the job applicants. Other functionalities are a personalized job suggestion, email notifications, and an in-depth administrator dashboard, which can be used successfully to manage user accounts and job advertisements. The platform is developed based on the current web technologies with the focus on the responsive user interface, the high level of data security, and the ability to be scaled to meet the requirements of increasing users. The idea is to provide a smooth recruitment process that would speed up the hiring process and maximize utility to both the candidate and the recruiter.

### **3. Project Scope**

- 1 Create a website and/or mobile app dedicated to job listings.
- 2 Develop a platform for employers to post detailed job vacancies, including job descriptions and requirements.
- 3 Grant job seekers to register, build profiles, upload resumes, and submit job applications.
- 4 Implement a comprehensive search and filtering system based on job titles, skills, location, experience level, and company.
- 5 Provide job alerts and notifications to keep job seekers informed about new opportunities.
- 6 Equip employers with tools to manage applicants and monitor the hiring process.
- 7 Design dashboards for both job seekers and employers to track their activities and progress efficiently.

## **Phase 2 : Feasibility Study (Market, Economical, Technical)**

### **2.1 Market Feasibility**

The online recruitment industry is rapidly growing, driven by digital transformation and increasing employer demand for efficient hiring solutions. Global job portals have become essential tools for talent acquisition, simplifying job seeker-employer matching and improving hiring speed and quality.

#### **Target Market**

- **Primary:** Job seekers and recruiters in Bangladesh initially, a growing market with rising internet penetration and digital literacy.
- **Secondary:** Expansion potential to other emerging markets with similar recruitment challenges.
- **User Segments:**
  - Fresh graduates and entry-level candidates seeking job opportunities.
  - Experienced professionals looking for career growth.
  - Companies of all sizes seeking to streamline hiring and reach a wider talent pool.

#### **Market Needs and Trends**

- **Automation:** Employers seek automated tools to reduce manual hiring tasks.
- **AI Integration:** Growing demand for AI-powered candidate ranking to improve selection.
- **Mobile Accessibility:** Increasing need for mobile-optimized portals and dedicated apps.
- **Networking and Professional Development:** Users want platforms combining job search with professional networking.
- **Real-Time Communication:** Messaging and interview scheduling features are increasingly essential.
- **Premium Features:** Employers willing to pay for job promotion and premium listings.

### 2.1.1 Market Competitors

Competitor	Key Features	Strengths	Weaknesses	Pricing Model
<b>BranchNet</b>	AI-driven CV ranking, job posting, networking	Focused on IT jobs, AI integration, multi-role system	Early stage, limited users, missing features like video interviews, mobile apps	Freemium, planned premium modules
<b>BDJobs</b>	Job postings, resume database	Largest local user base, trusted brand	Limited AI, less networking features	Subscription, pay-per-post
<b>LinkedIn</b>	Professional network, job postings, endorsements	Massive global network, strong brand	Competitive, expensive for small employers	Free + subscriptions
<b>Rozee.pk</b>	Job listings, employer branding	Regional leader, easy-to-use interface	Less AI and networking focus	Freemium + paid listings
<b>Indeed</b>	Job aggregator, company reviews	Huge listings, easy to use	Mostly aggregator, limited networking capabilities	Pay-per-click ads, sponsored jobs
<b>Naukri.com</b>	Broad job listings, resume search	Very large database, strong employer relations	Complex UI, limited networking	Subscription + pay-per-post

## 2.2 : Technical Feasibility

<b>Component</b>	<b>Technology / Tool</b>	<b>Description</b>
<b>Frontend</b>	React Js (Vite, Tailwind)	Creating responsive user interfaces and SPA features.
<b>Backend</b>	Express Js (Node.js)	REST API server handling business logic and routing.
<b>Database</b>	MongoDB	MongoDB for scalability and handy
<b>Authentication</b>	JWT, Clerk	Secure login, user management, and token-based authentication.
<b>Media Upload</b>	Cloudinary	Cloud service to upload and manage images, resumes, media.
<b>Deployment</b>	Vercel	Cloud platform for hosting frontend and backend services.

The project is technologically feasible as it utilizes well-documented, mature technologies and frameworks, supports robust security, is scalable through cloud infrastructure, and employs a modular architecture that enables smooth integration and efficient maintenance.

### 2.3 : Financial Feasibility

<b>Cost Item</b>	<b>Qty / Term</b>	<b>Unit Cost (USD)</b>	<b>Sub-Total (USD)</b>
<b>Cloud Hosting (MongoDB Atlas for data + Clerk dashboard for user management)</b>	1 year	0 (Free tier initial)	0
<b>Domain</b>	1 year	12	12
<b>Email Service (Transactional)</b>	1 year (basic)	10	10
<b>Clouinary (Media Upload)</b>	1 year (free tier benefits)	0	0
<b>Deployment (Vercel)</b>	1 year (free tier)	0	0
<b>Contingency (10%)</b>	—	—	2.2 (estimate)
<b>Total</b>			24.2

### 1.3 Target User Profile and Tentative Elicitation

#### Target User 1: Organization

Aspect	Details – Target User 1 (HR / Recruiter)
<b>Profile</b>	Individual seeking employment in IT, ranging from fresh graduates to experienced professionals.
<b>Goals</b>	<ul style="list-style-type: none"><li>- Find relevant IT job opportunities easily.</li><li>- Create and manage professional profile and resume.</li><li>- Apply to jobs and track application status.</li><li>- Receive job alerts and recommendations.</li></ul>
<b>Pain Points</b>	<ul style="list-style-type: none"><li>- Difficulty finding IT-specific jobs in one place.</li><li>- Lack of timely updates on application status.</li><li>- Managing multiple job applications across platforms is cumbersome.</li></ul>
<b>Elicitation</b>	<ul style="list-style-type: none"><li>- Needs advanced, easy-to-use search and filter options.</li><li>- Wants real-time notifications.</li><li>- Requires a personalized dashboard to manage applications and profile.</li></ul>

## Target User 2: Job Seeker / Student / Professional

Aspect	Details – Target User 2 (Job Seeker / Professional)
<b>Profile</b>	HR professionals or recruiters responsible for filling IT vacancies within their companies.
<b>Goals</b>	<ul style="list-style-type: none"><li>- Post detailed job listings quickly.</li><li>- Efficiently sort and review job applications.</li><li>- Manage job vacancies and candidate records.</li><li>- Communicate effectively with candidates.</li></ul>
<b>Pain Points</b>	<ul style="list-style-type: none"><li>- Filtering through irrelevant or unqualified candidates.</li><li>- Managing multiple openings and recruiters.</li><li>- Tracking recruitment progress manually.</li></ul>
<b>Elicitation</b>	<ul style="list-style-type: none"><li>- Requires bulk job posting and easy editing.</li><li>- Needs applicant tracking system.</li><li>- Prefers automated alerts and status updates.</li><li>- Wants dashboard to monitor jobs and candidates.</li></ul>

## Target User 3: Administrator

Aspect	Details – Administrator
<b>Profile</b>	Admin responsible for overall management, security, and smooth operation of the job portal platform.
<b>Goals</b>	<ul style="list-style-type: none"><li>- Monitor user activities and system metrics.</li><li>- Manage users, job listings, and system content.</li><li>- Ensure data security and compliance.</li><li>- Handle disputes or reports efficiently.</li></ul>
<b>Pain Points</b>	<ul style="list-style-type: none"><li>- Difficulty ensuring platform security.</li><li>- Managing system performance under heavy load.</li><li>- Coordinating between users and technical teams.</li></ul>
<b>Elicitation</b>	<ul style="list-style-type: none"><li>- Needs comprehensive admin dashboard.</li><li>- Requires access controls and audit logs.</li><li>- Wants tools for user management and reporting.</li><li>- Prefers automated alerts on system issues.</li></ul>

## 1.5 System Requirements

<b>Category</b>	<b>Minimum Specification</b>
<b>Server OS</b>	Ubuntu 20.04 LTS or Windows Server 2019
<b>Backend Framework</b>	Express.js (Node.js v16+)
<b>Frontend</b>	React.js (latest stable version)
<b>Database</b>	MongoDB 4.4+
<b>Memory</b>	2 GB RAM
<b>Storage</b>	50 GB SSD (for application data, user resumes, backups)
<b>Browser</b>	Chrome, Firefox, Edge, Safari (latest two versions supported)
<b>Network</b>	Minimum 10 Mbps bandwidth (for smooth upload/download and notifications)

## 1.7 Project Scheduling

### a. Time Frame / Gantt Chart (30 Weeks)

The project is planned over 20 weeks in eight phases. Each phase ends with a clear milestone with delivery.

Activities \ Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Proposal	Yellow	Yellow	Green																	
Requirements			Yellow	Green	Green															
Planning					Yellow	Green														
Design							Green	Green	Green	Green										
Development									Yellow	Yellow	Green	Green	Green	Green						
Testing															Green	Green				
Assessment																	Green	Green		
Documentations																			Yellow	Green

## a. Risk Management

ID	Risk Description	Mitigation Strategy
R1	Data Breach or Unauthorized Access	Implement Role-based access control, OAuth 2.0, strong password policies and HTTPS encryption.
R2	Downtime or Server Outage	Use cloud hosting with high availability (e.g., Vercel, MongoDB Atlas), backups, and monitoring.
R4	Performance Bottlenecks with Increased Users	Deploy scalable infrastructure using Docker, Kubernetes, and auto-scaling features.
R5	Loss of User Data	Regular automated backups to cloud storage (e.g., AWS S3), and disaster recovery planning.
R6	Phishing or Social Engineering Attacks	Provide user security training, enforce MFA, and implement email filtering systems.
R7	Application Vulnerabilities (e.g., SQL Injections, XSS)	Use input validation, parameterized queries, and regular security audits and penetration testing.
R8	Insufficient User Adoption or Market Penetration	Conduct thorough market research, user feedback loops, and implement continuous feature improvements

## Chapter 2: Design and Implementation

### 2.1 Functional Requirements

<b>FR01</b>	<b>User Registration</b>
<b>Description</b>	Users can register and log in with roles (Recruiter, Job Seeker).
<b>Stakeholders</b>	Job Seeker, Recruiter, Admin

<b>FR02</b>	<b>Login</b>
<b>Description</b>	Allows users to log in and access their dashboard.
<b>Stakeholders</b>	Job Seeker, Recruiter, Admin

<b>FR03</b>	<b>Forgot Password</b>
<b>Description</b>	Let's user to change password
<b>Stakeholders</b>	Job Seeker, Recruiter, Admin

<b>FR04</b>	<b>Profile Management</b>
<b>Description</b>	Let users create and edit their personal or company profile.
<b>Stakeholders</b>	Job Seeker, Recruiter

<b>FR05</b>	<b>Job Posting</b>
<b>Description</b>	Recruiters can add jobs with title, category, salary, location, and description
<b>Stakeholders</b>	Recruiter, Admin

<b>FR06</b>	<b>Job Search</b>
<b>Description</b>	Job seekers can view available jobs, search by category/location, and filter them
<b>Stakeholders</b>	Recruiter, Job Seeker, Admin

<b>FR07</b>	<b>Job Application</b>
<b>Description</b>	Users can apply for jobs, and recruiters can see who applied.
<b>Stakeholders</b>	Recruiter, Job Seeker, Admin

<b>FR08</b>	<b>Resume Upload</b>
<b>Description</b>	To upload, update, and manage resumes, accessible to recruiters for evaluation.
<b>Stakeholders</b>	Job Seeker

<b>FR09</b>	<b>Notification</b>
<b>Description</b>	Sends real-time alerts and email notifications for job postings, application status updates, and system messages.
<b>Stakeholders</b>	Recruiter, Job Seeker, Admin

<b>FR10</b>	<b>Application Status &amp; Tracking</b>
<b>Description</b>	Show “Pending”, “Accepted”, or “Rejected” status for applications.
<b>Stakeholders</b>	Recruiter, Job Seeker, Admin

<b>FR11</b>	<b>Logout</b>
<b>Description</b>	Ends user session and logs them out.
<b>Stakeholders</b>	Recruiter, Job Seeker, Admin

## 2.2 Non-Functional Requirements

<b>ID</b>	<b>Category</b>	<b>Description</b>
NFR1	<b>Performance</b>	Public pages should load within $\leq 2$ seconds on standard broadband; resume upload/save operations within $\leq 1$ second.
NFR2	<b>Security</b>	Secure user authentication with JWT and Clerk, HTTPS encryption, and role-based access control.
NFR3	<b>Usability</b>	Responsive design using Tailwind CSS, supporting seamless experience across desktop, tablet, and mobile.
NFR4	<b>Scalability</b>	Backend deployed on Vercel and MongoDB Atlas, supporting cloud-based horizontal scaling.
NFR5	<b>Reliability</b>	System uptime targeted at 99.9%, with MongoDB Atlas backups and disaster recovery plans in place.
NFR6	<b>Maintainability</b>	Modular React and Express codebase with GitHub version control and Jira for issue tracking; CI/CD pipelines enable smooth updates.

# System Design

## a. Use Case Diagram

**Primary Actors:** Job Seeker, Recruiter

**Secondary Actor:** Admin

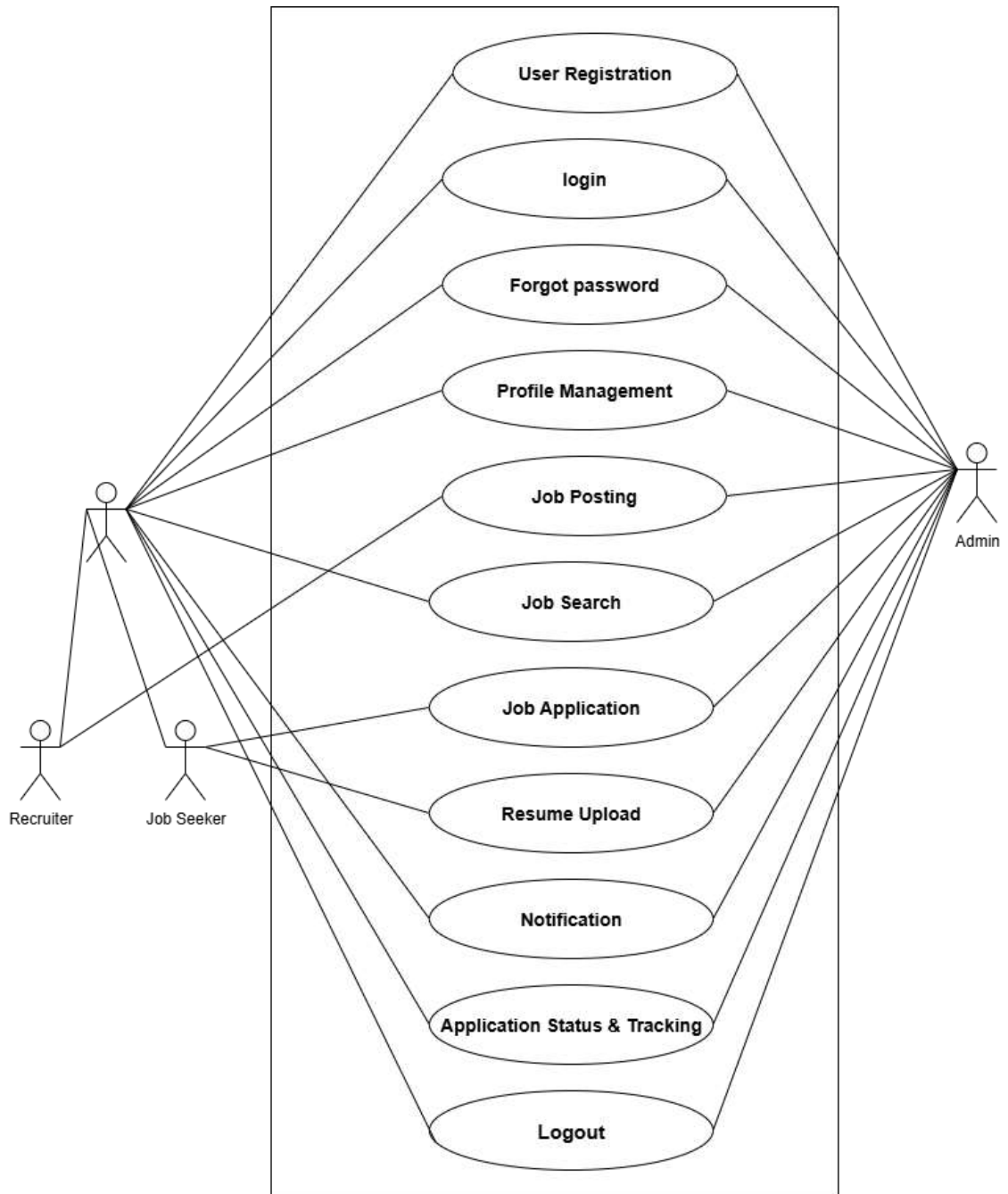


Figure 1: Use Case Diagram

b. Case Description

**Case Description-01: User Registration**

<b>Use Case</b>	<b>User Registration</b>
<b>Goal</b>	To create an account for user.
<b>Precondition</b>	User did not registered before.
<b>Success End Condition</b>	Account created successfully and stored.
<b>Failed End Condition</b>	Username/email already exists or invalid data entered.
<b>Primary Actors</b>	Job Seeker, Recruiter
<b>Secondary Actors</b>	N/A
<b>Description / Main Success Scenario</b>	<ol style="list-style-type: none"><li>1. User enters required registration details.</li><li>2. validating input.</li><li>3. Storing user data.</li><li>4. Show confirmation.</li></ol>
<b>Alternative Flows</b>	A1: Duplicate username/email should show error. A2: Weak password → show requirements.
<b>Quality Requirements</b>	Response time $\leq$ 3 seconds.

## Case Description-02: Login

Use Case	Login
Goal	To access account and dashboard for user.
Precondition	User must have an account.
Success End Condition	Successfully logged in.
Failed End Condition	Invalid login credentials.
Primary Actors	Job Seeker, Recruiter, Admin
Secondary Actors	N/A
Description / Main Success Scenario	<ol style="list-style-type: none"><li>1. User input email/username and password.</li><li>2. Validating the input.</li><li>3. If correct, redirects to dashboard.</li></ol>
Alternative Flows	A1: Wrong password → show error message. A2: Account inactive → show notification.
Quality Requirements	Response time $\leq$ 3 seconds.

### Case Description- 03: Forgot Password

Use Case	Forgot Password
<b>Goal</b>	Enable users to reset forgotten passwords.
<b>Precondition</b>	User must have a registered email address.
<b>Success End Condition</b>	Reset link sent and password changed.
<b>Failed End Condition</b>	Email not registered or reset link expired.
<b>Primary Actors</b>	Job Seeker, Recruiter, Admin
<b>Secondary Actors</b>	Email system
<b>Description / Main Success Scenario</b>	<ol style="list-style-type: none"> <li>1. User requesting to reset password.</li> <li>2. System sends a secure reset link.</li> <li>3. Sets a new password.</li> </ol>
<b>Alternative Flows</b>	<p>A1: Email unrecognized → show error.</p> <p>A2: Reset link expired → request new link.</p>
<b>Quality Requirements</b>	Reset link sent within 1 minute.

## Case Description- 04: Profile Management

Use Case	Profile Management
Goal	Users can view and update their details.
Precondition	User should be logged in.
Success End Condition	Profile information is updated and saved.
Failed End Condition	Update fails or data is not saved.
Primary Actors	User (Job Seeker or Recruiter)
Secondary Actors	Database
Description / Main Success Scenario	<ol style="list-style-type: none"><li>1. Opens profile page.</li><li>2. Editing personal or career information.</li><li>3. Submits changes.</li><li>4. System validates and saves updates.</li><li>5. Confirmation message shown.</li></ol>
Alternative Flows	A1: Invalid input → show error messages. A2: Server error → retry option displayed.
Quality Requirements	<ol style="list-style-type: none"><li>1. Changes should reflect within 1 second.</li><li>2. Validation must be performed on both client and server side.</li></ol>

## Case Description-05: Job Posting

Use Case	Job Posting
<b>Goal</b>	Create and manage job listings.
<b>Precondition</b>	Recruiter should be logged in.
<b>Success End Condition</b>	Job posted, deleted or updated successfully.
<b>Failed End Condition</b>	Missing required fields or invalid inputs.
<b>Primary Actors</b>	Recruiter
<b>Secondary Actors</b>	N/A
<b>Description / Main Success Scenario</b>	<ol style="list-style-type: none"><li>1. Recruiter fills job details.</li><li>2. System validates and saves posting.</li><li>3. Job becomes available to seekers.</li></ol>
<b>Alternative Flows</b>	A1: Missing info → show error messages.
<b>Quality Requirements</b>	Save/update within 3 seconds.

## Case Description-06: Job Search

<b>Use Case</b>	<b>Job Search</b>
<b>Goal</b>	Enable users to search for job postings.
<b>Precondition</b>	User logged in or guest.
<b>Success End Condition</b>	Showing matching job results.
<b>Failed End Condition</b>	No results matching criteria.
<b>Primary Actors</b>	Job Seeker
<b>Secondary Actors</b>	N/A
<b>Description / Main Success Scenario</b>	<ol style="list-style-type: none"><li>1. User selects filters.</li><li>2. Finding jobs that are matched.</li><li>3. Results displayed.</li></ol>
<b>Alternative Flows</b>	A1: No matches → show “No jobs found” message.
<b>Quality Requirements</b>	Results load within 3 seconds.

## Case Description-07: Job Application

Use Case	Job Application
<b>Goal</b>	To apply for jobs for job Seeker
<b>Precondition</b>	User logged in with completed profile.
<b>Success End Condition</b>	Application submitted successfully and recruiter notified.
<b>Failed End Condition</b>	Incomplete profile or system failure.
<b>Primary Actors</b>	Job Seeker, Recruiter
<b>Secondary Actors</b>	Notification system
<b>Description / Main Success Scenario</b>	<ol style="list-style-type: none"><li>1. Selects a job.</li><li>2. System submits application.</li><li>3. Recruiter notified.</li></ol>
<b>Alternative Flows</b>	A1: Profile incomplete → prompt completion. A2: Network failure → retry.
<b>Quality Requirements</b>	Processing within 3 seconds.

## Case Description-08: Resume Upload

Use Case	Resume Upload
<b>Goal</b>	To upload and update Job seekers resume securely.
<b>Precondition</b>	User should be logged in and created profile.
<b>Success End Condition</b>	Resume uploaded/updated successfully and accessible to recruiters.
<b>Failed End Condition</b>	Upload failure due to invalid format, size, or network issue.
<b>Primary Actors</b>	Job Seeker, Recruiter
<b>Secondary Actors</b>	Notification system
<b>Description / Main Success Scenario</b>	<ol style="list-style-type: none"> <li>1. User selects resume upload.</li> <li>2. System validates and uploads file.</li> <li>3. Recruiters can view the uploaded resume.</li> <li>4. User receives upload success notification.</li> </ol>
<b>Alternative Flows</b>	<p>A1: I file format → prompt user to upload supported file.</p> <p>A2: Too large file size → notify user.</p> <p>A3: Network failure → retry upload.</p>
<b>Quality Requirements</b>	Upload processing limited to 3 seconds; resume file types validated (PDF, DOC, DOCX).

## Case Description-09: Notification

Use Case	Notification
<b>Goal</b>	Notify users in real-time about job postings, application status, and messages.
<b>Precondition</b>	User logged in and has opted-in for notifications.
<b>Success End Condition</b>	Deliver notification successfully to the appropriate users.
<b>Failed End Condition</b>	Delivery failure due to network issues or user preferences.
<b>Primary Actors</b>	Job Seeker, Recruiter, Admin
<b>Secondary Actors</b>	Notification system (email, push notifications)
<b>Description / Main Success Scenario</b>	<ol style="list-style-type: none"> <li>1. System detects an event (new job, application update).</li> <li>2. Generates notification content.</li> <li>3. Sends notification to appropriate users.</li> <li>4. Logs delivery status.</li> <li>5. User receives notification.</li> </ol>
<b>Alternative Flows</b>	<p>A1: User notification preferences disable certain notifications.</p> <p>A2: Network failure → retry or defer notification.</p> <p>A3: Notification system downtime → log and alert admin.</p>
<b>Quality Requirements</b>	Notifications must be sent within 2 seconds of an event trigger; delivery success rate > 95%.

## Case Description-10: Application Status & Tracking

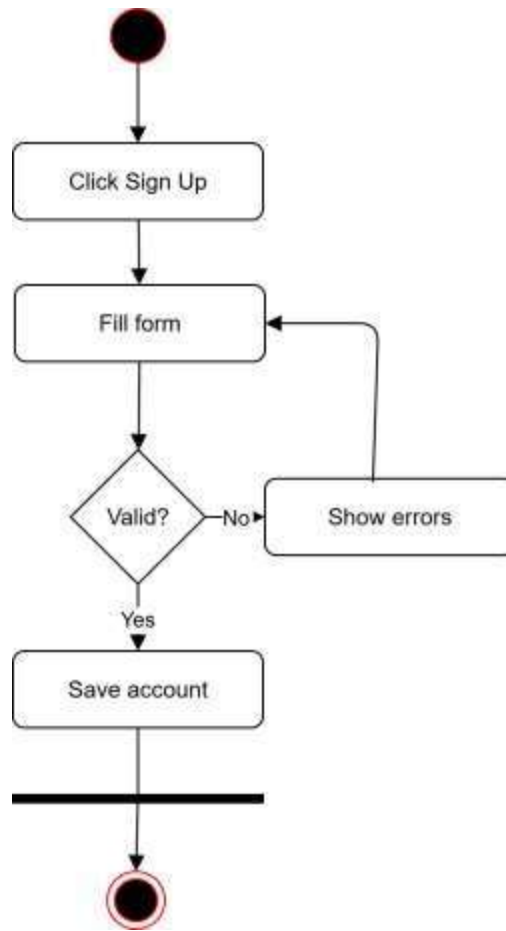
Use Case	Application Status & Tracking
<b>Goal</b>	Enable users to trail the their job applications status in real-time and receive updates on progress.
<b>Precondition</b>	User has applied for one or more jobs through the system.
<b>Success End Condition</b>	User can view updated status of their applications (e.g., submitted, under review, shortlisted, rejected).
<b>Failed End Condition</b>	Status data is unavailable or fails to update properly.
<b>Primary Actors</b>	Job Seeker
<b>Secondary Actors</b>	Recruitment System / Database
<b>Description / Main Success Scenario</b>	<ol style="list-style-type: none"> <li>1. Navigates to application status page after logged in.</li> <li>2. System collects current application statuses.</li> <li>3. Statuses and relevant details displayed.</li> <li>4. User optionally receives notifications on status changes.</li> </ol>
<b>Alternative Flows</b>	<p>A1: System unable to retrieve status → show error message.</p> <p>A2: No applications found → show “No applications” message.</p>
<b>Quality Requirements</b>	<ol style="list-style-type: none"> <li>1. Status updates should reflect changes within 10 seconds.</li> <li>2. System must handle concurrent tracking for multiple applications efficiently..</li> </ol>

## Case Description-11: logout

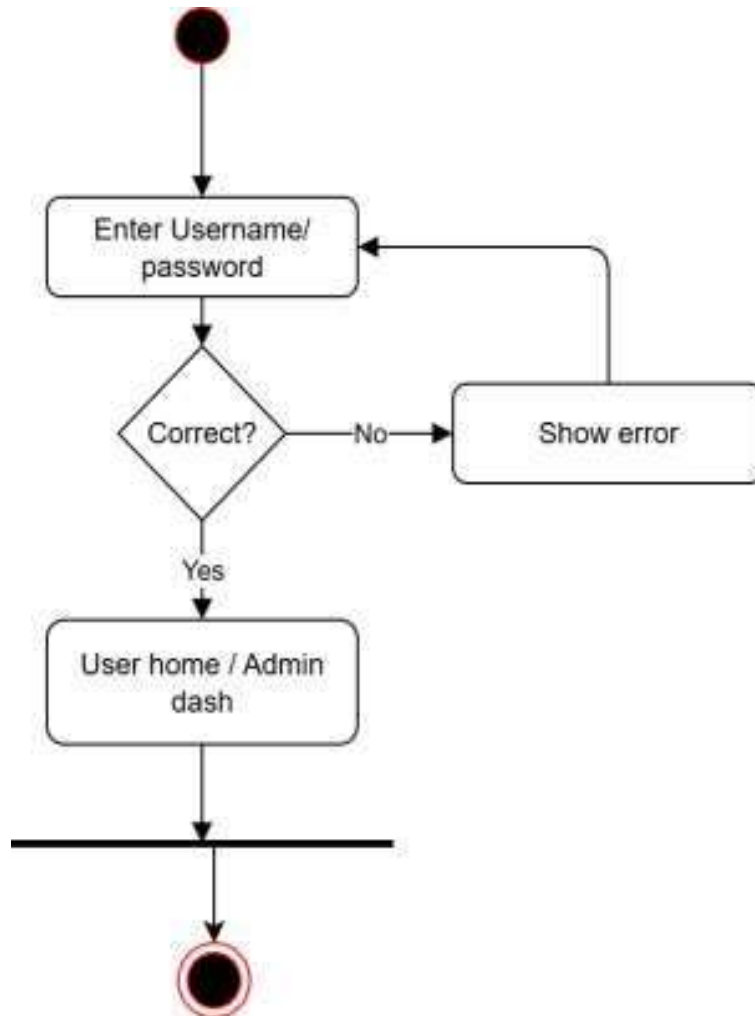
Use Case	Logout
<b>Goal</b>	Enable users to end their sessions securely.
<b>Precondition</b>	User should be logged in.
<b>Success End Condition</b>	Redirected to login page after Session terminated.
<b>Failed End Condition</b>	Session issues or failure to log out.
<b>Primary Actors</b>	Job Seeker, Recruiter, Admin
<b>Secondary Actors</b>	N/A
<b>Description / Main Success Scenario</b>	<ol style="list-style-type: none"><li>1. User triggers logout.</li><li>2. System close session.</li><li>3. Redirected to login.</li></ol>
<b>Alternative Flows</b>	A1: Session expired → show login page directly.
<b>Quality Requirements</b>	Logout completes instantly.

## b. Activity Diagram

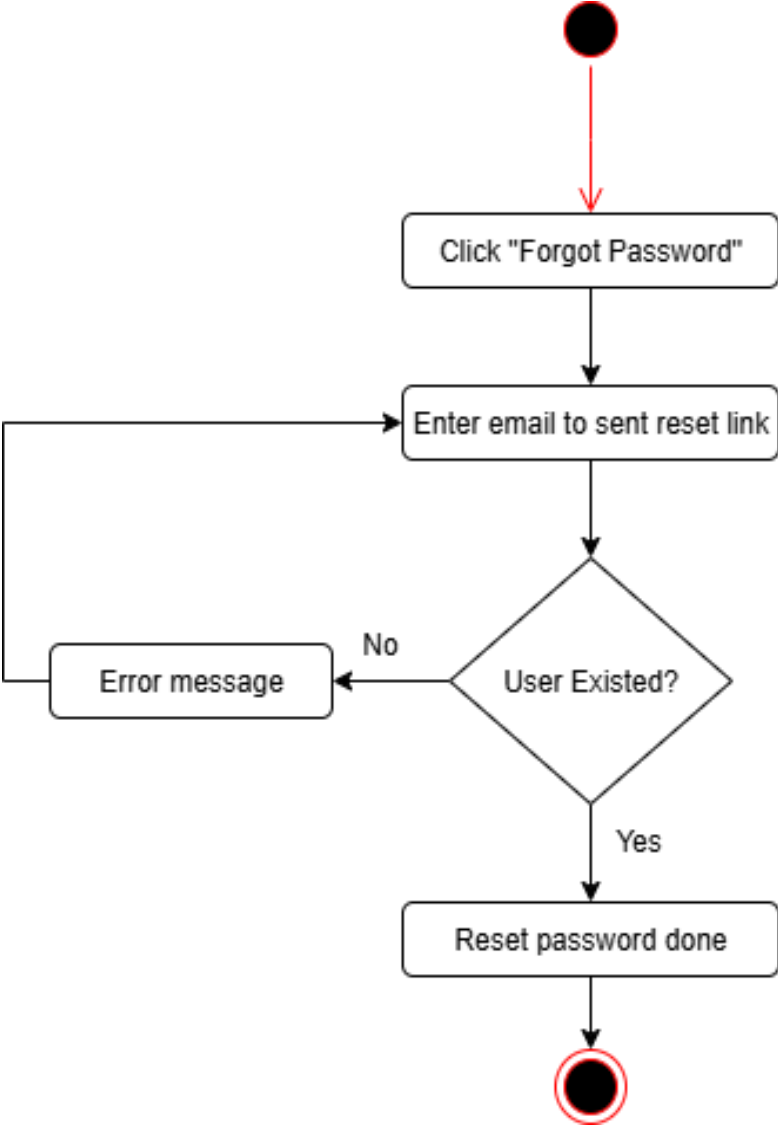
### Activity Diagram-01: User Registration



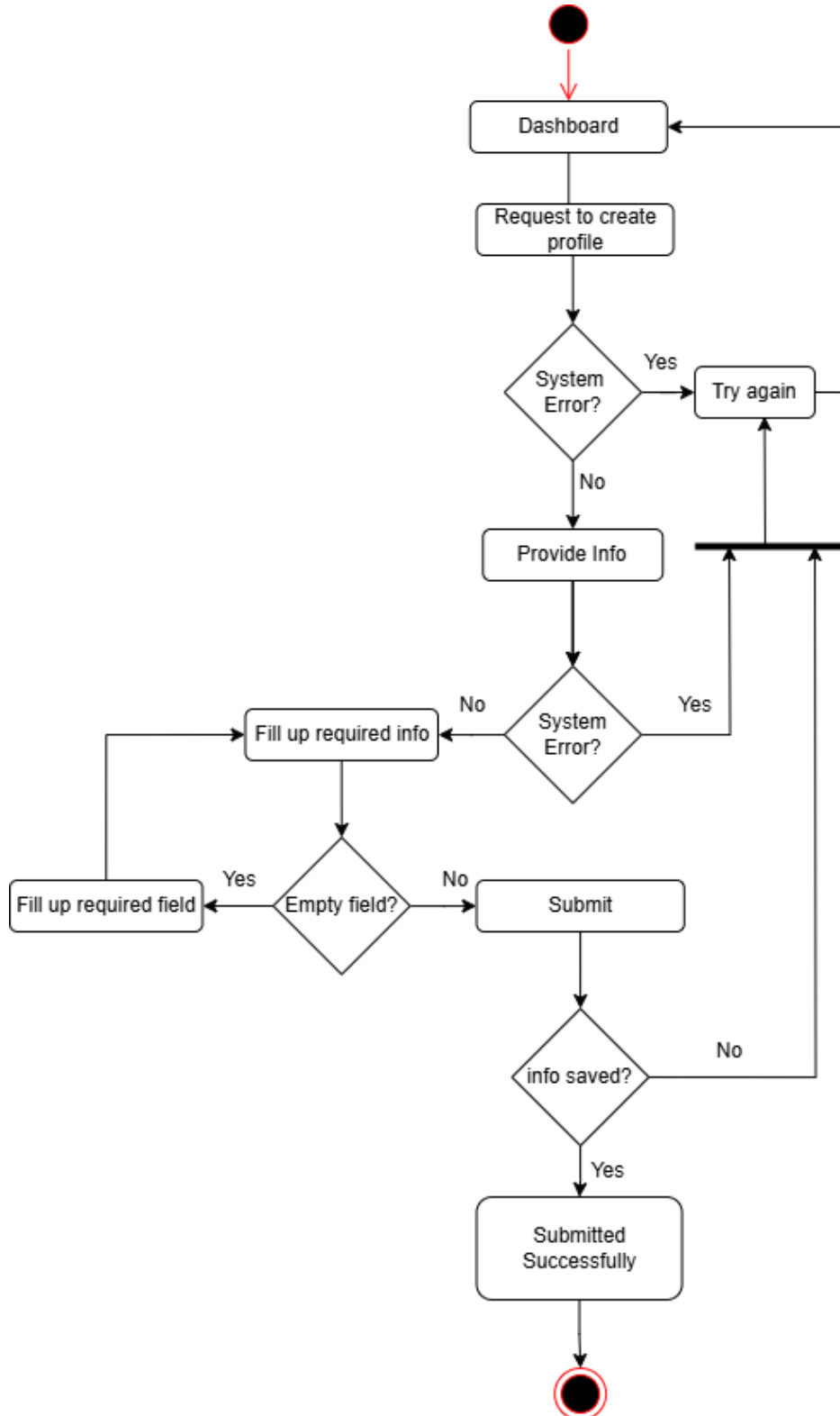
## Activity Diagram-02: Login



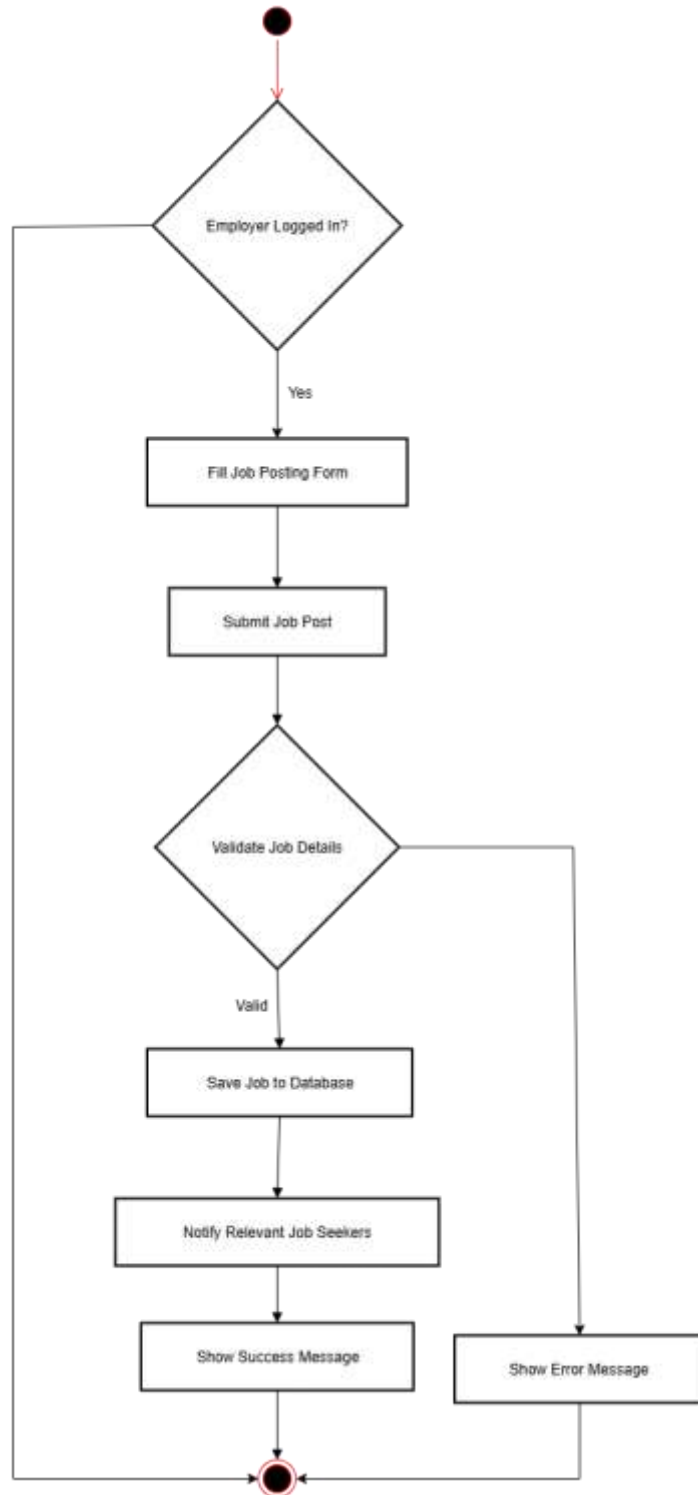
**Activity Diagram-03: Forgot Password**



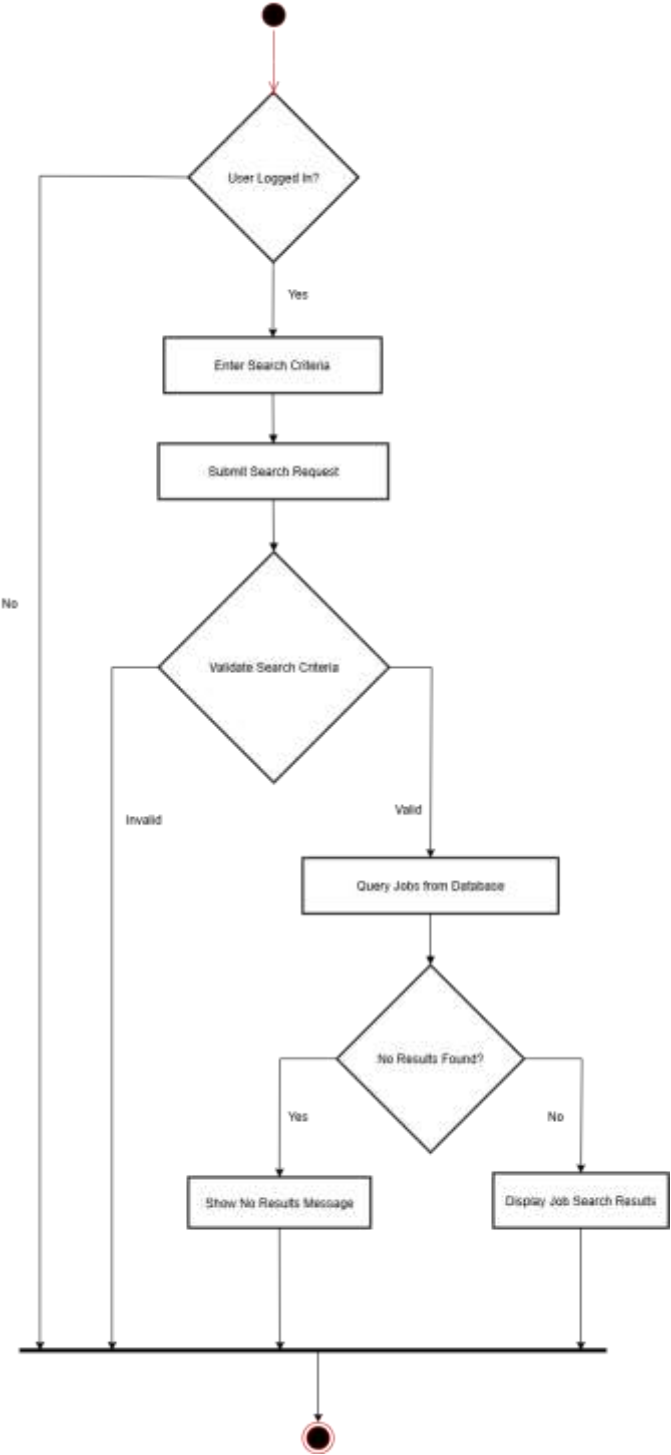
## Activity Diagram-04: Profile management



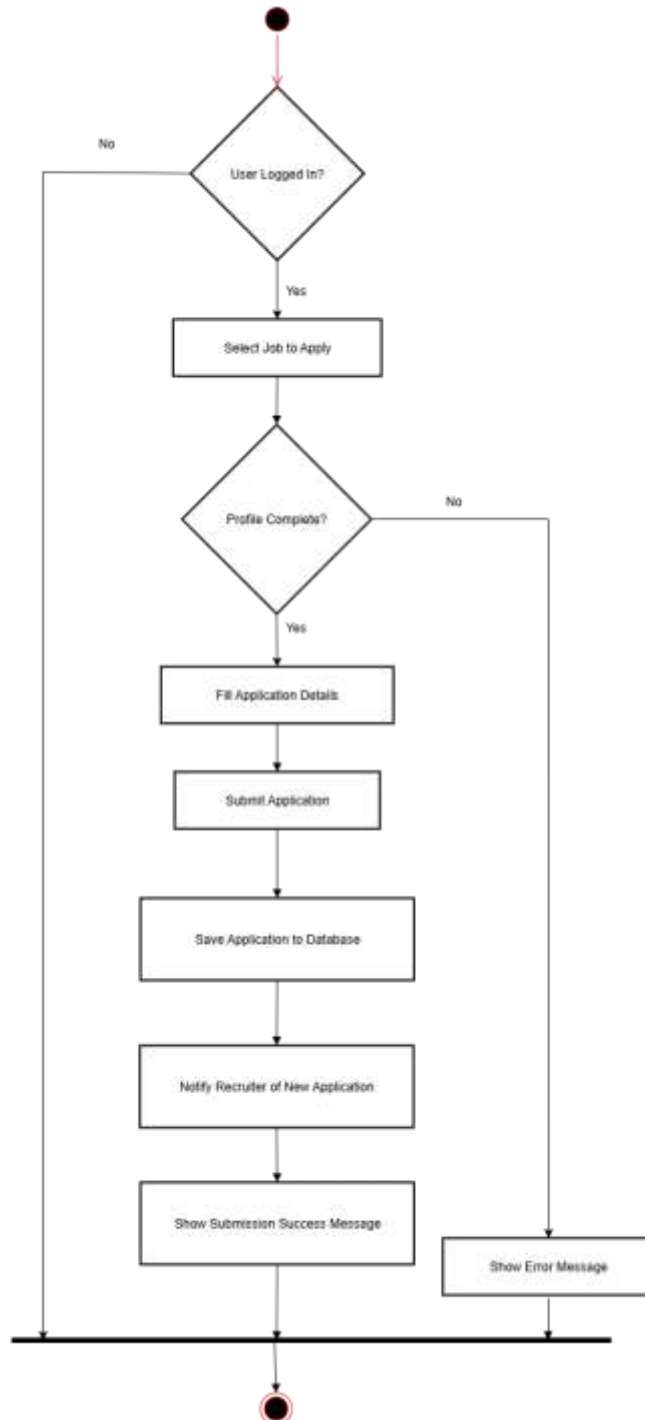
## Activity Diagram-05: Job Post



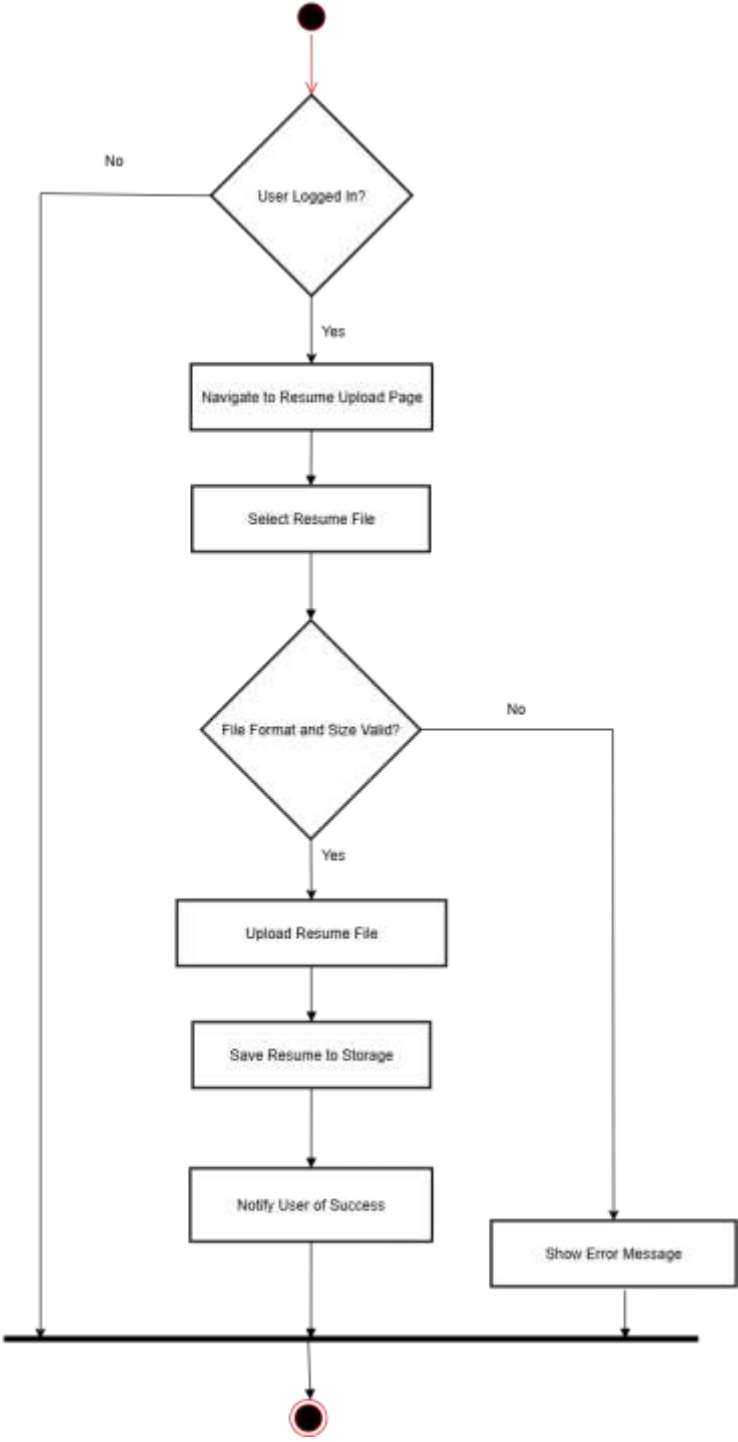
# Activity Diagram-06 : Job Search



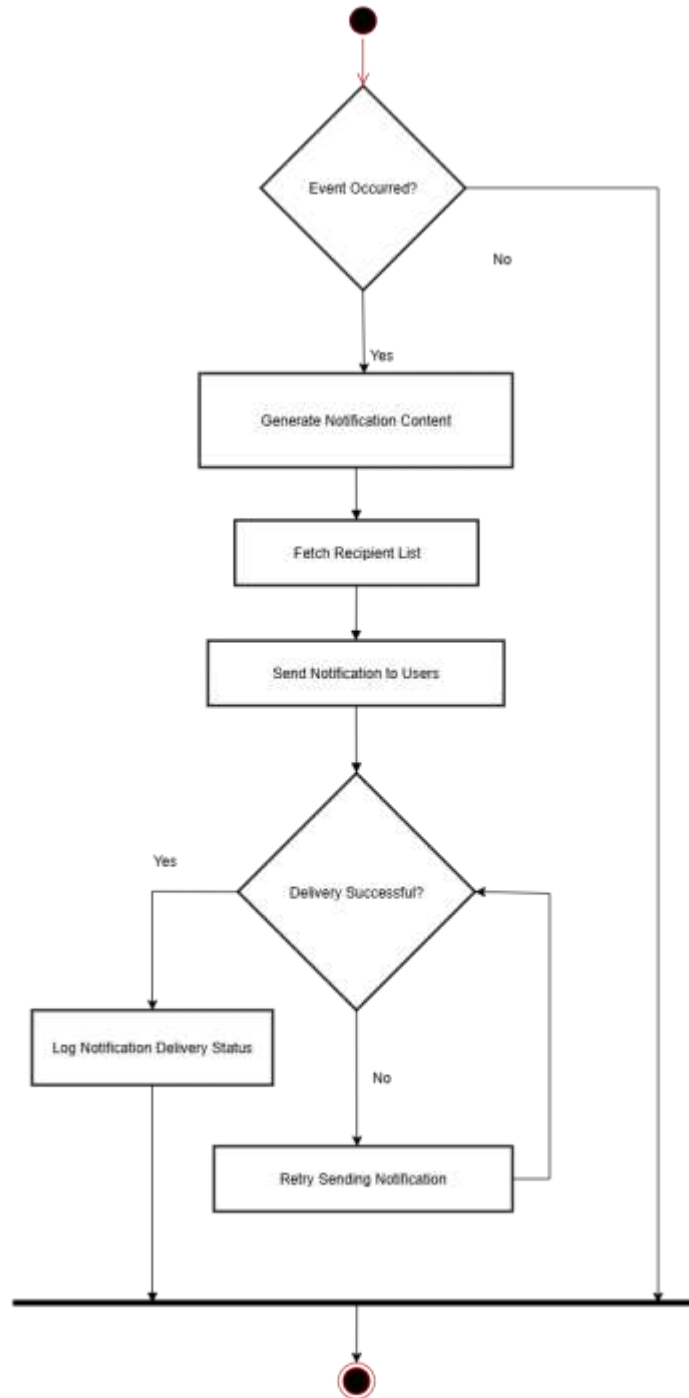
## Activity Diagram-07: Job Application



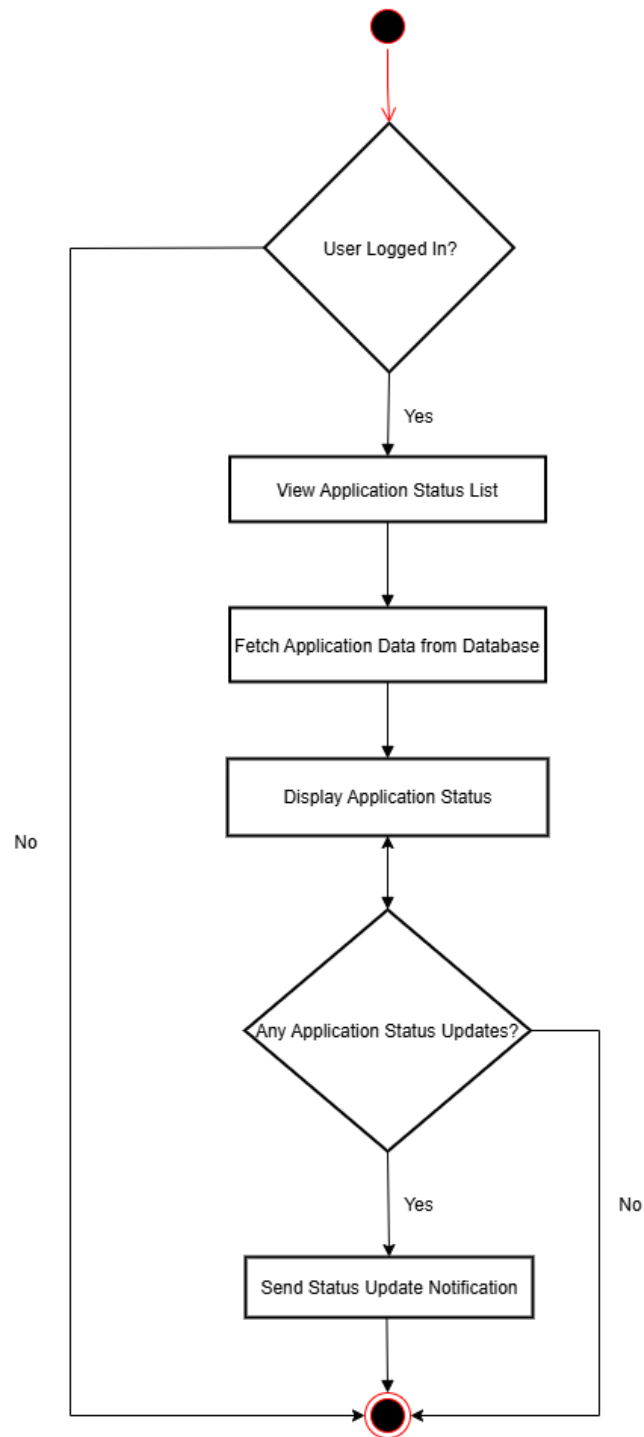
# Activity Diagram-08: Resume Upload



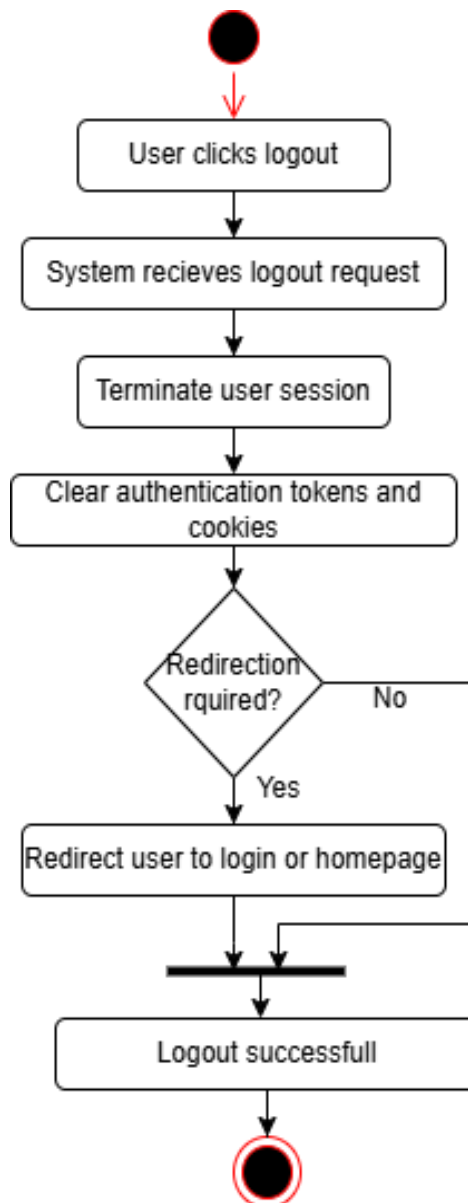
## Activity Diagram-09: Notification



## Activity Diagram -10: Application Status & Tracking

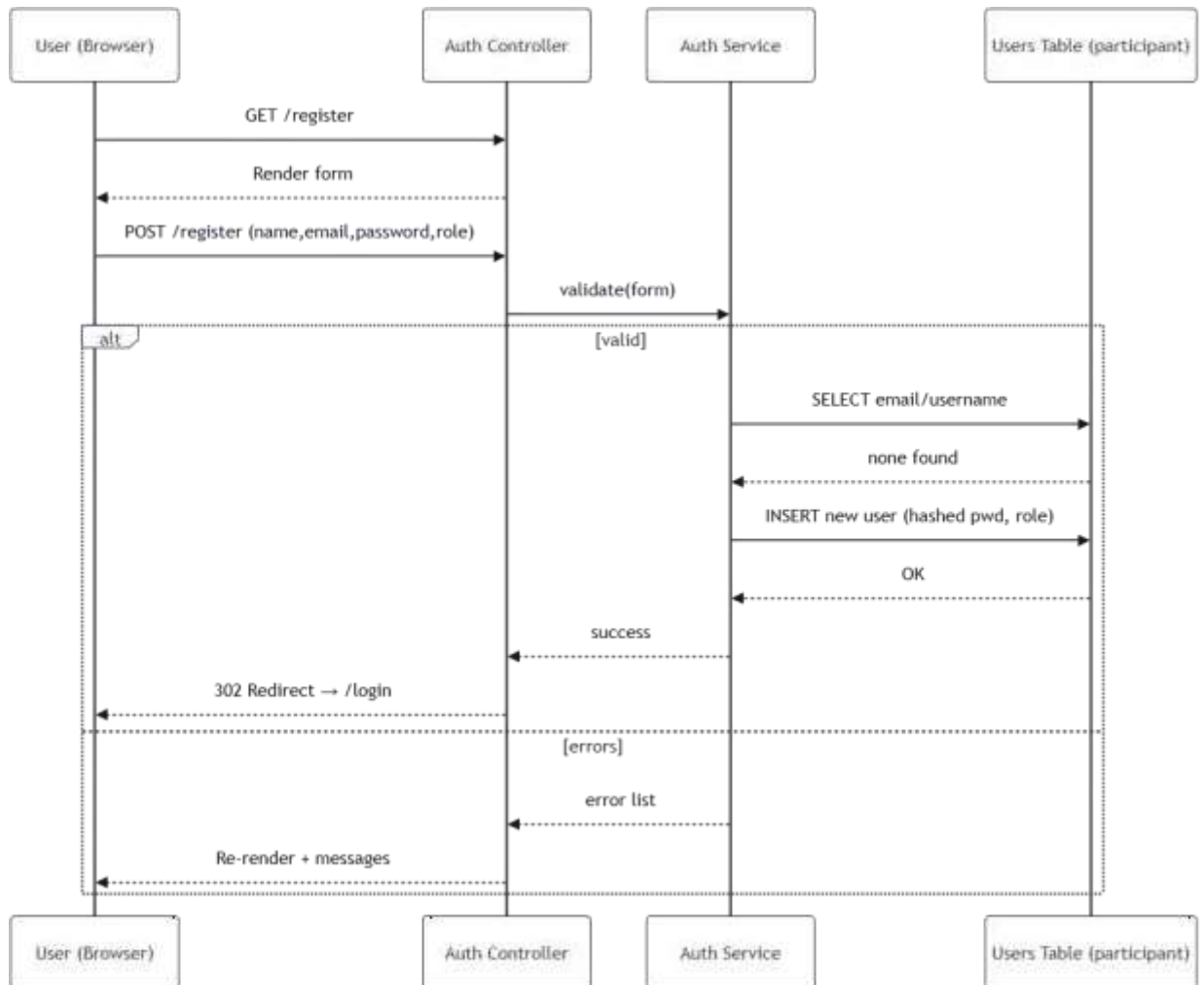


## Activity Diagram-11: Logout



### c. Sequence Diagram

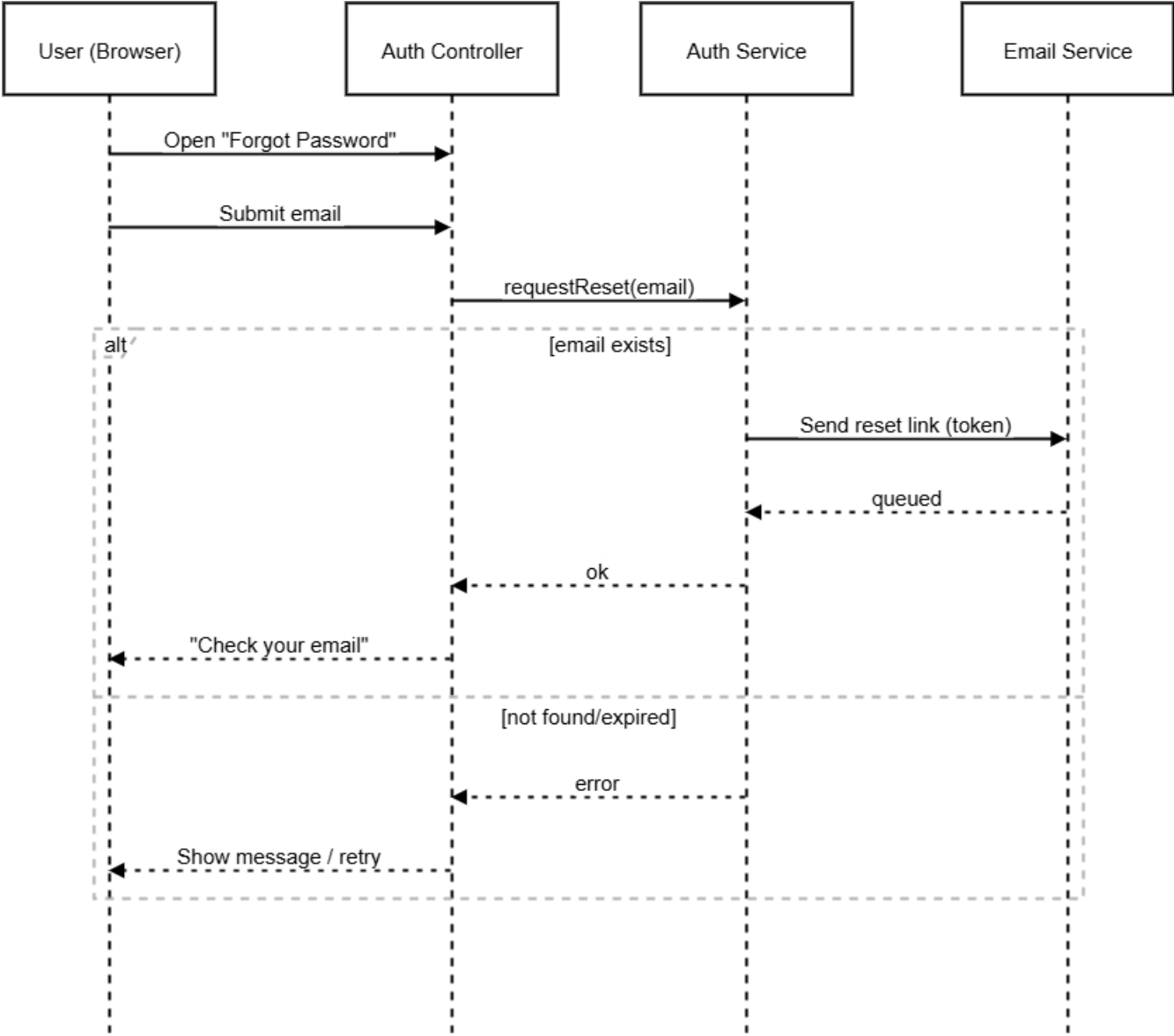
#### Sequence Diagram-01: User Registration



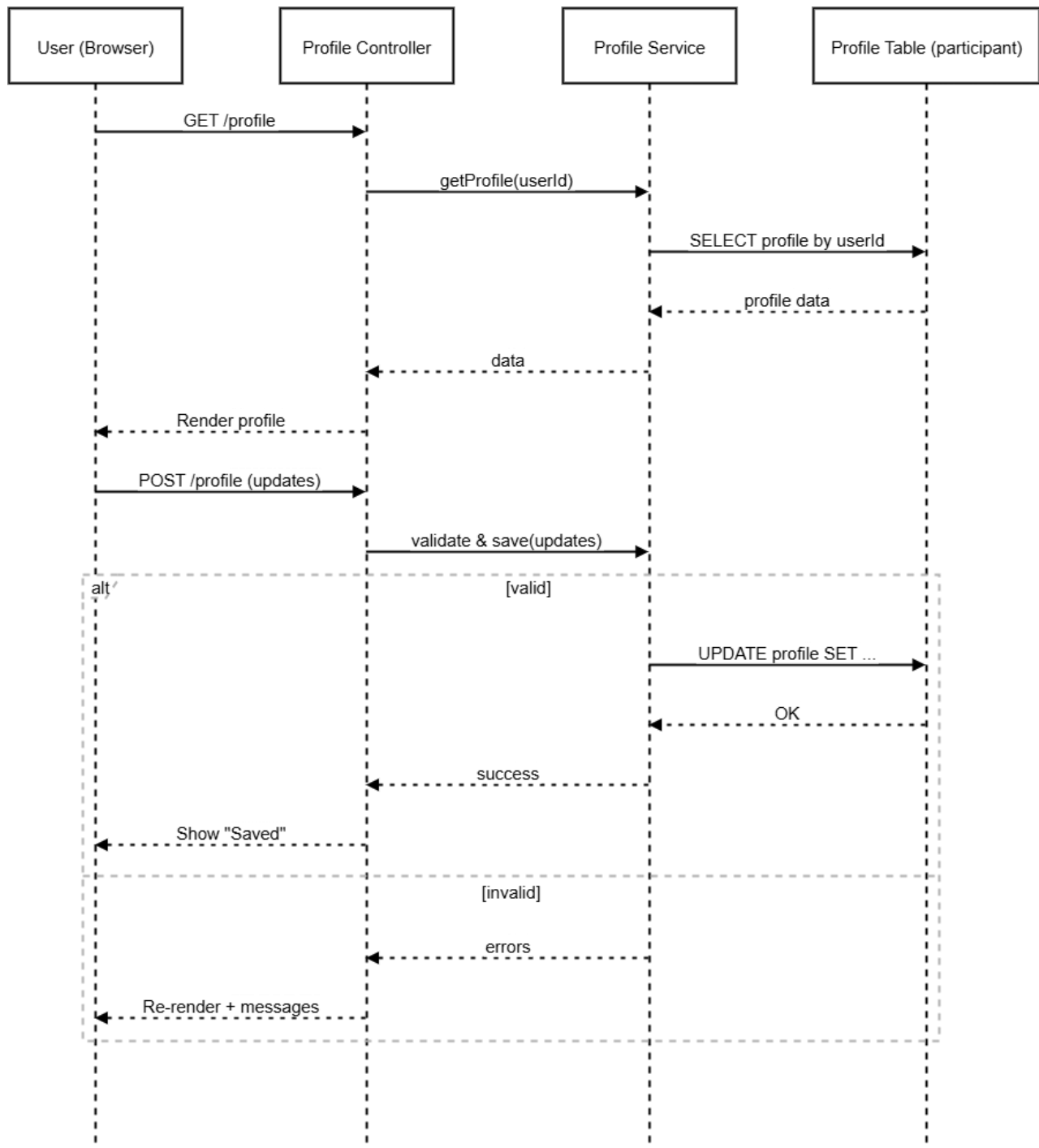
# Sequence Diagram-02: Login



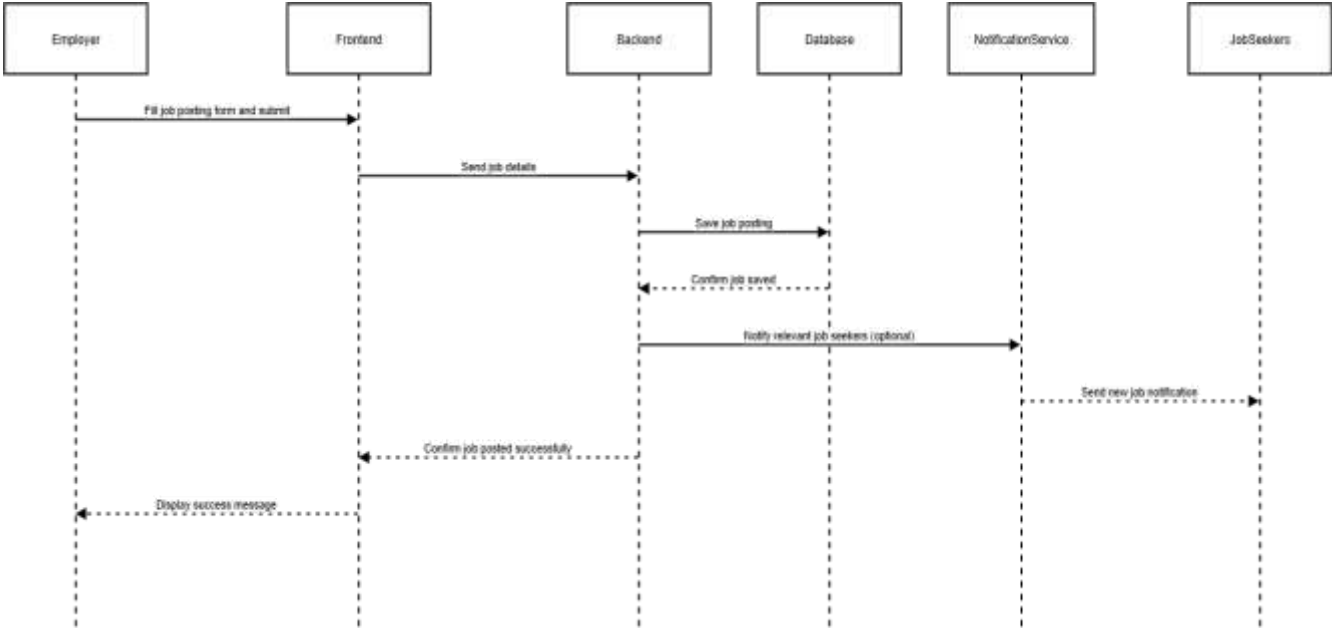
### Sequence Diagram-03: Forgot password



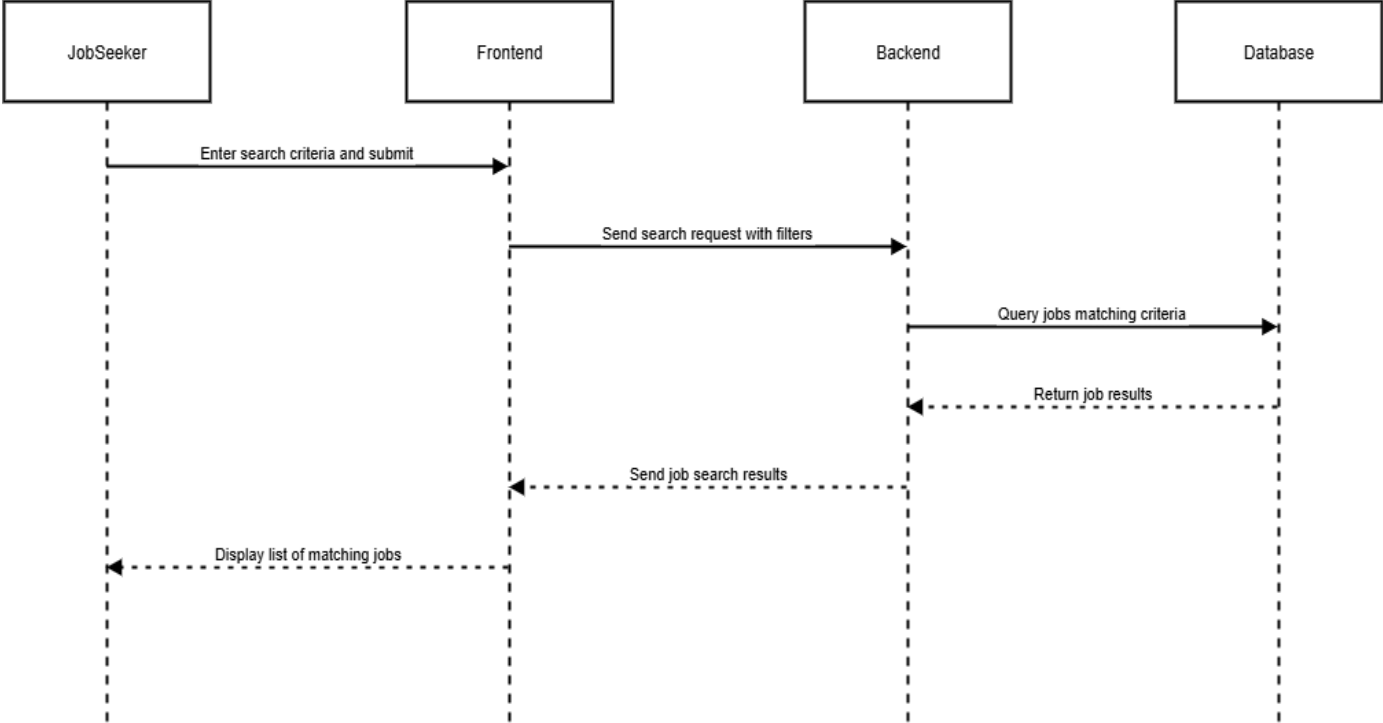
## Sequence Diagram-04: Profile Management



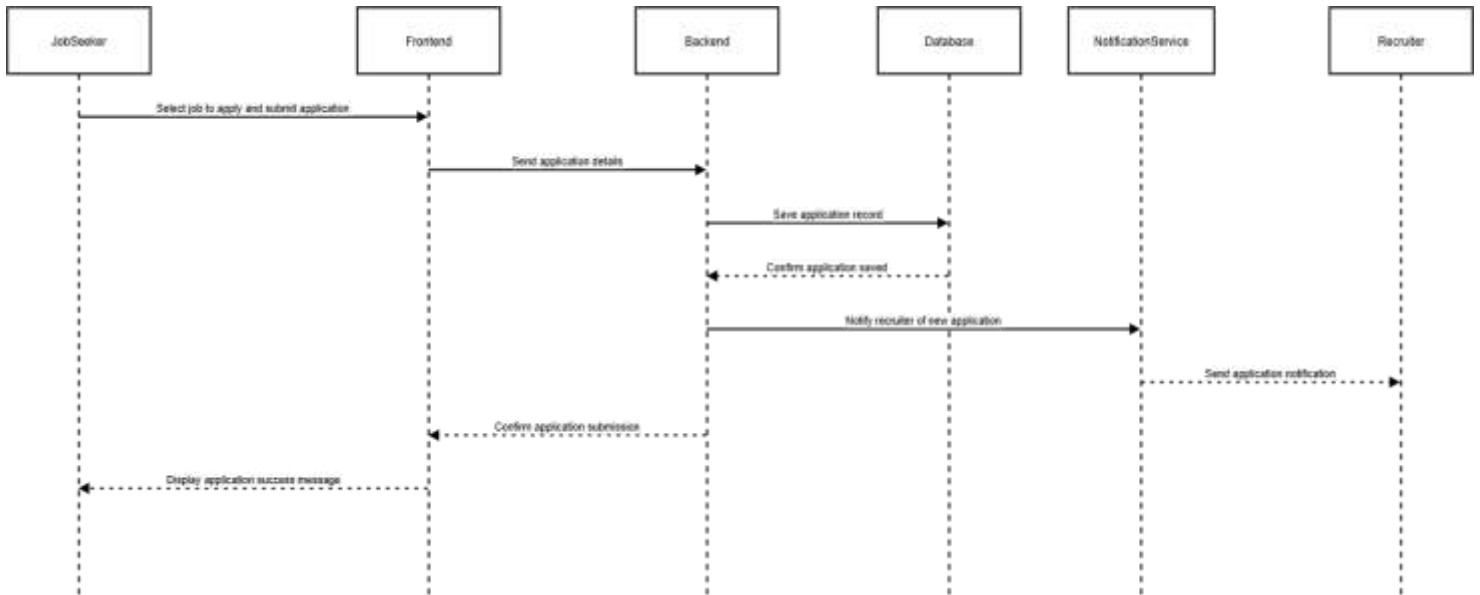
# Sequence Diagram-05: Job Post



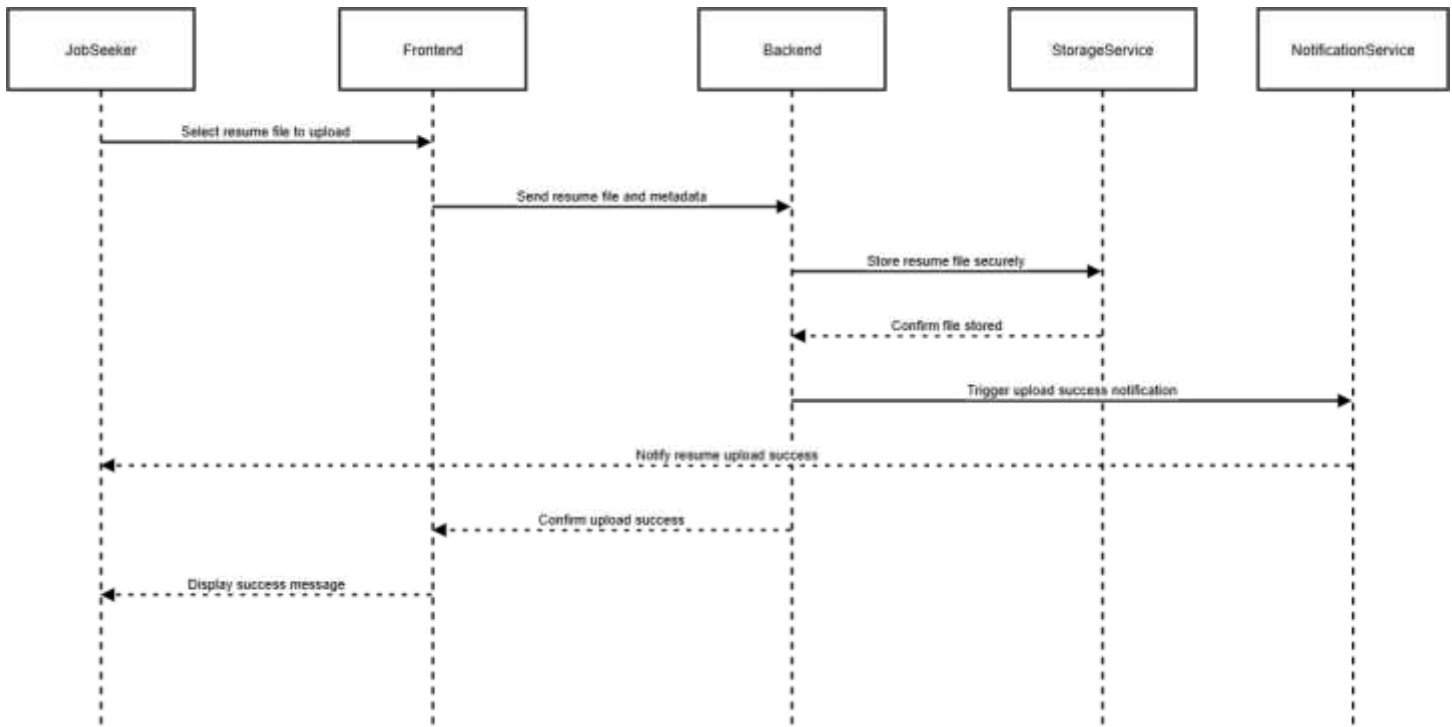
# Sequence Diagram-06: job Search



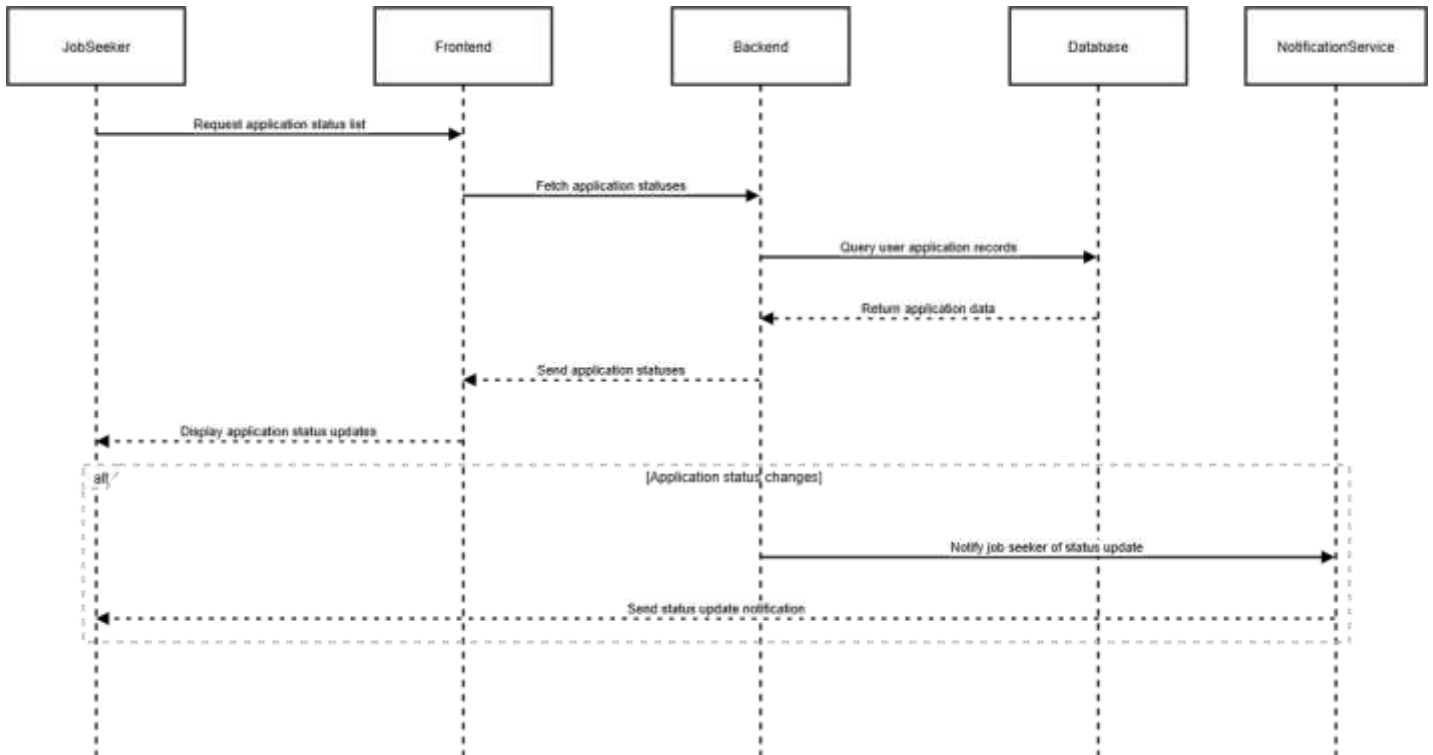
## Sequence Diagram-07 : Job Application



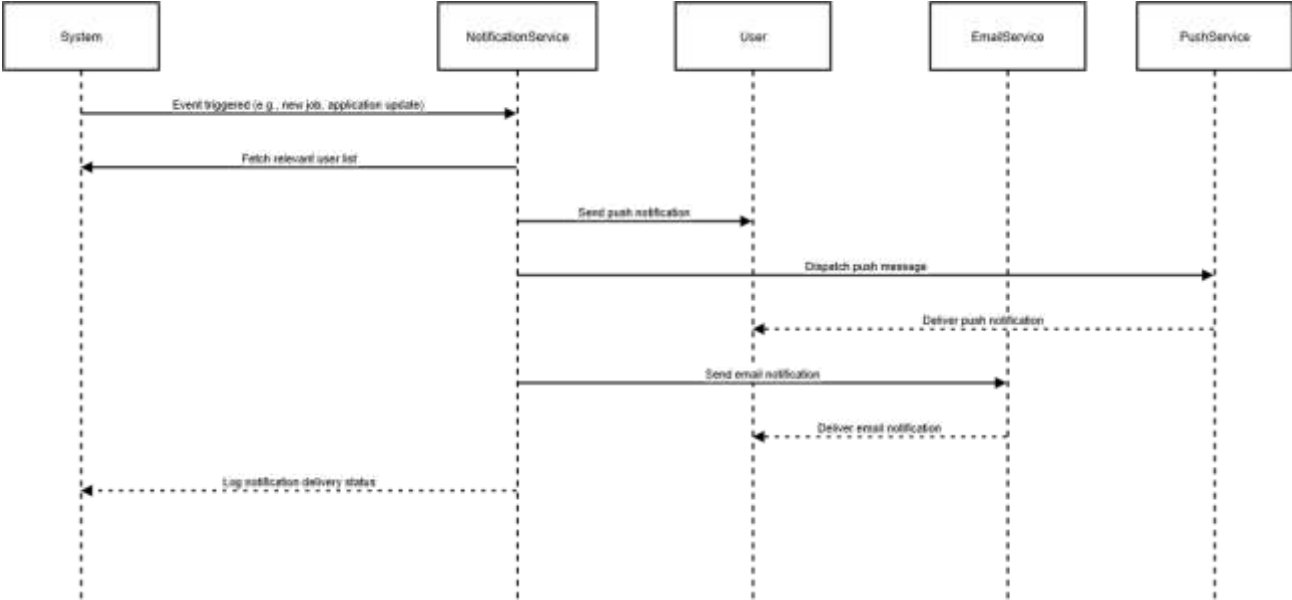
## Sequence Diagram-08 : Resume Upload



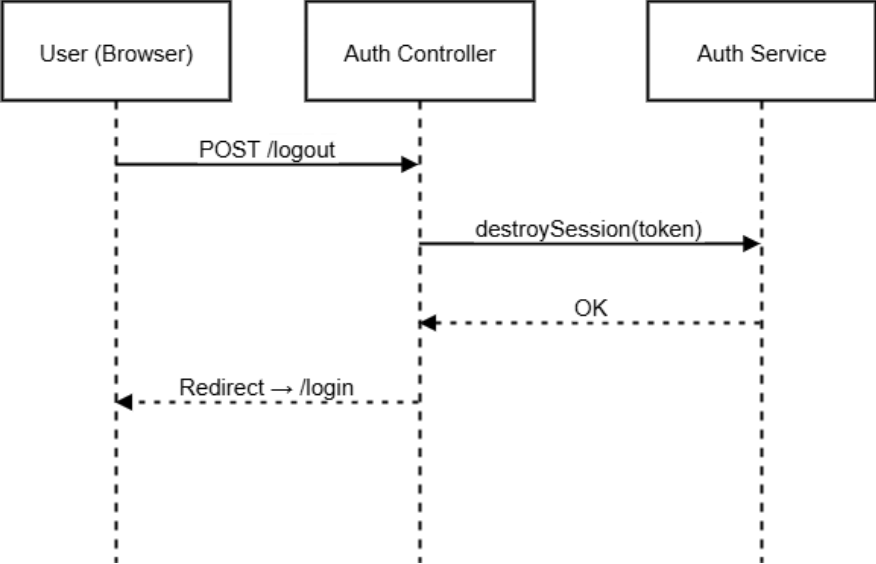
## Sequence Diagram-09 : Application Status & Tracking



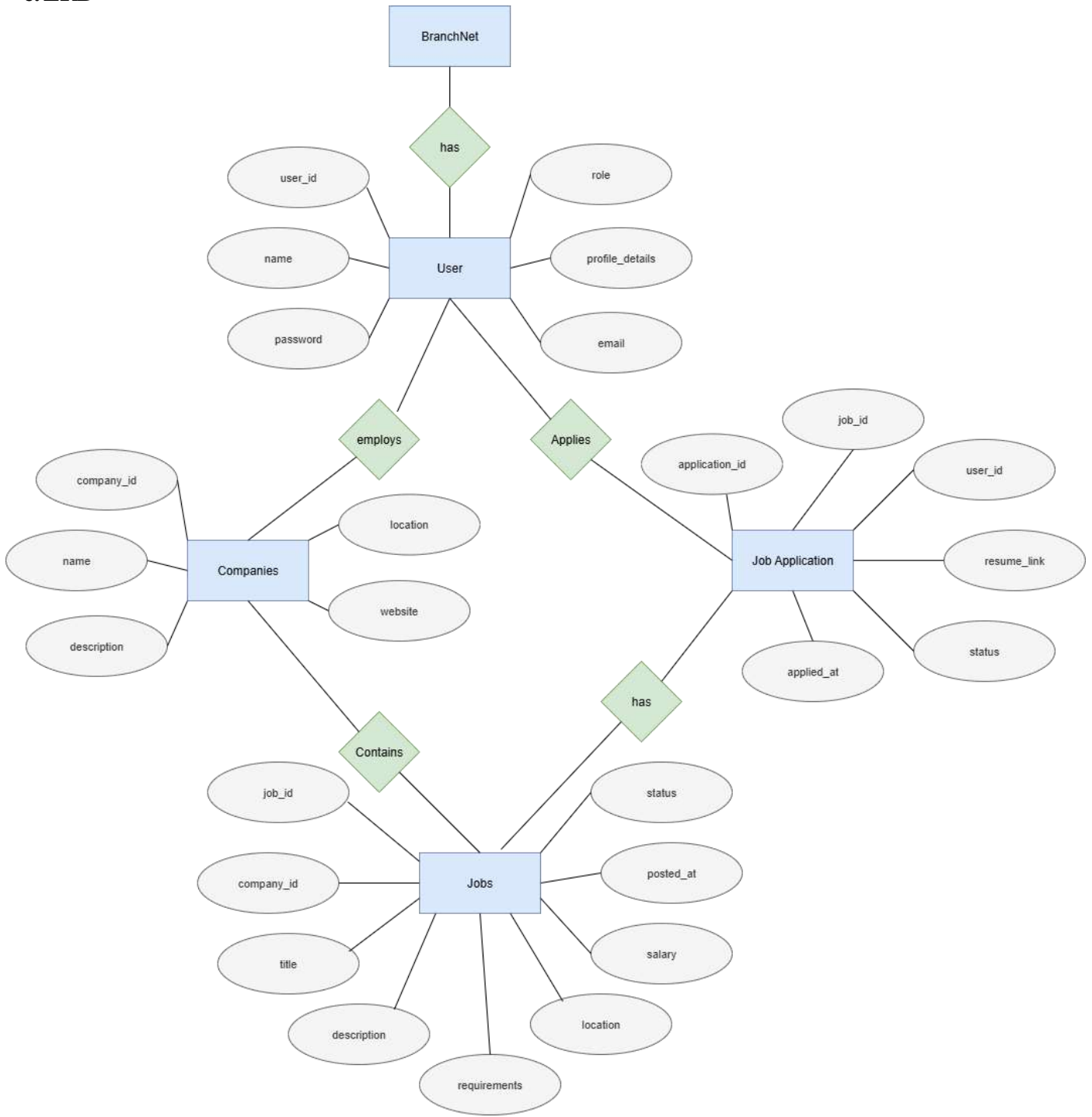
# Sequence Diagram-10: Notification



# Sequence Diagram-11: Logout



**e. ERD**



*Figure - Entity Relationship Diagram (ERD)*

## Chapter 3: Software Testing

### 3.1 Testing Features

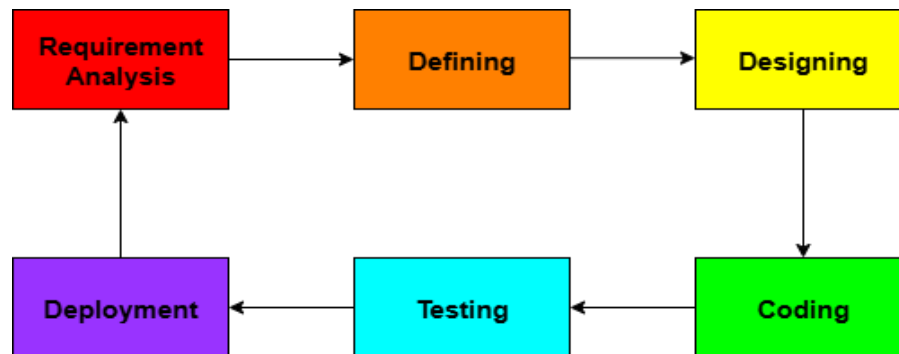
<b>Feature Area</b>	<b>Specific Functionality Tested</b>
<b>User Authentication</b>	Sign-Up, Login, Logout, Role-based access control (Job Seeker, Employer, Admin), Invalid credential handling, Password reset
<b>Job Posting</b>	Add new job, Edit job details, Delete or archive job, Job category and location validation
<b>Job Search &amp; Filter</b>	Search by job title, skills, location, experience level, and company; Filter accuracy
<b>Job Application</b>	Apply for job, Upload resume validation, Duplicate application prevention, Application status update (Pending, Accepted, Rejected)
<b>Employer Dashboard</b>	View/manage posted jobs, Review applicants per job, Resume download, Communication with applicants
<b>Job Seeker Dashboard</b>	View applied jobs, Track application responses, Edit profile and resume upload, Save jobs for later
<b>Notifications</b>	Job alerts, Application status notifications, Email notifications functionality
<b>Admin Panel</b>	Manage users, Manage jobs, Monitor system activities, Generate reports (jobs, users, applications)

### 3.2 System Testing

Case ID	Feature	Test Steps (summary)	Expected Result	Status
TC-01	Positive – User Registration	Fill sign-up form with valid info → Submit	User account created; redirected to login page	Pass
TC-02	Negative – Duplicate Email	Try to register with a email that has already been registered	Error message “Email already in use” appears	Pass
TC-03	Positive – Post Job	Recruiter logs in → Fill job post form → Submit	Job visible in job listings	Pass
TC-04	Negative – Empty Resume Upload	Submit application without uploading resume	Error “Resume upload required” displayed	Pass
TC-05	Positive – Apply for Job	Job seeker applies to open job	Application recorded and visible to recruiter	Pass
TC-06	Negative – Apply without Complete Profile	Attempt apply with incomplete profile	Prompt “Complete profile before applying”	Pass
TC-07	Positive – View Ranked Resumes	Recruiter views applicant list	Resumes displayed ranked by relevance score	Pass
TC-08	Positive – Notification	Trigger event such as new job or application status update	User receives notification promptly	Pass
TC-09	Positive – Update Profile	User edits and saves profile changes	Changes saved and reflected	Pass
TC-10	Negative – Wrong Password	Login attempt with incorrect password	Error “Invalid password” shown	Pass

## Chapter 4: Deployment and Maintenance

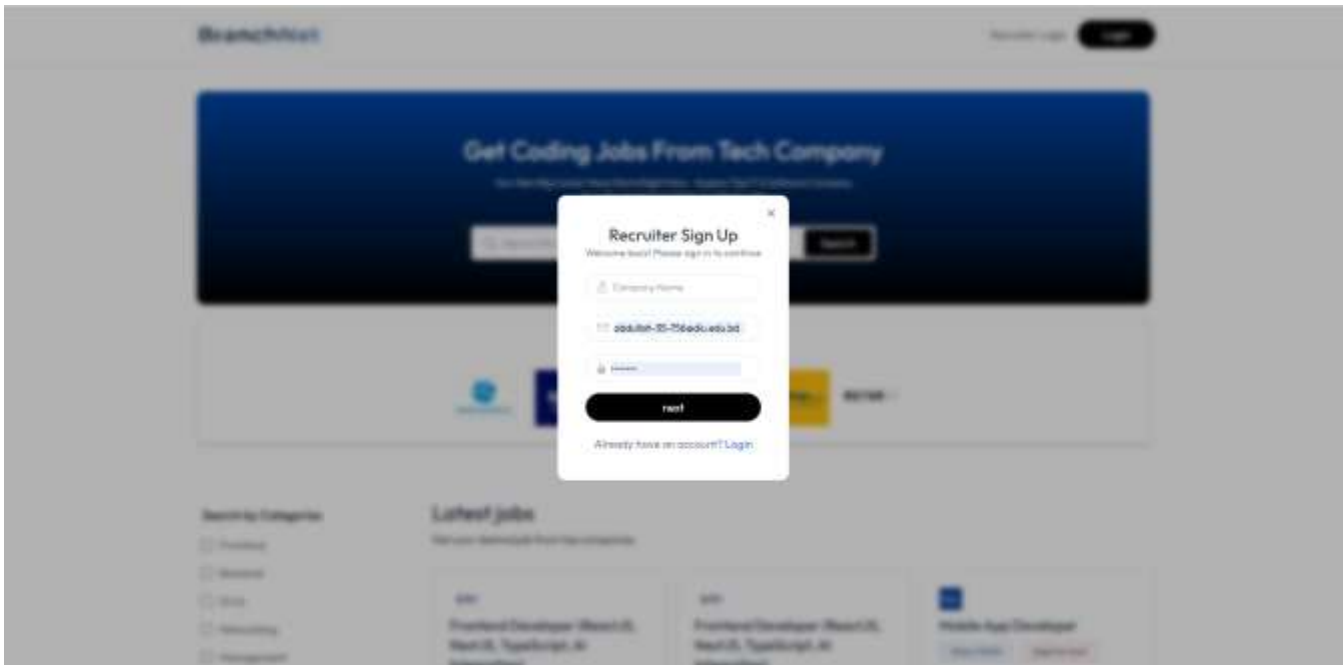
### 4.1 Software Release Life Cycle



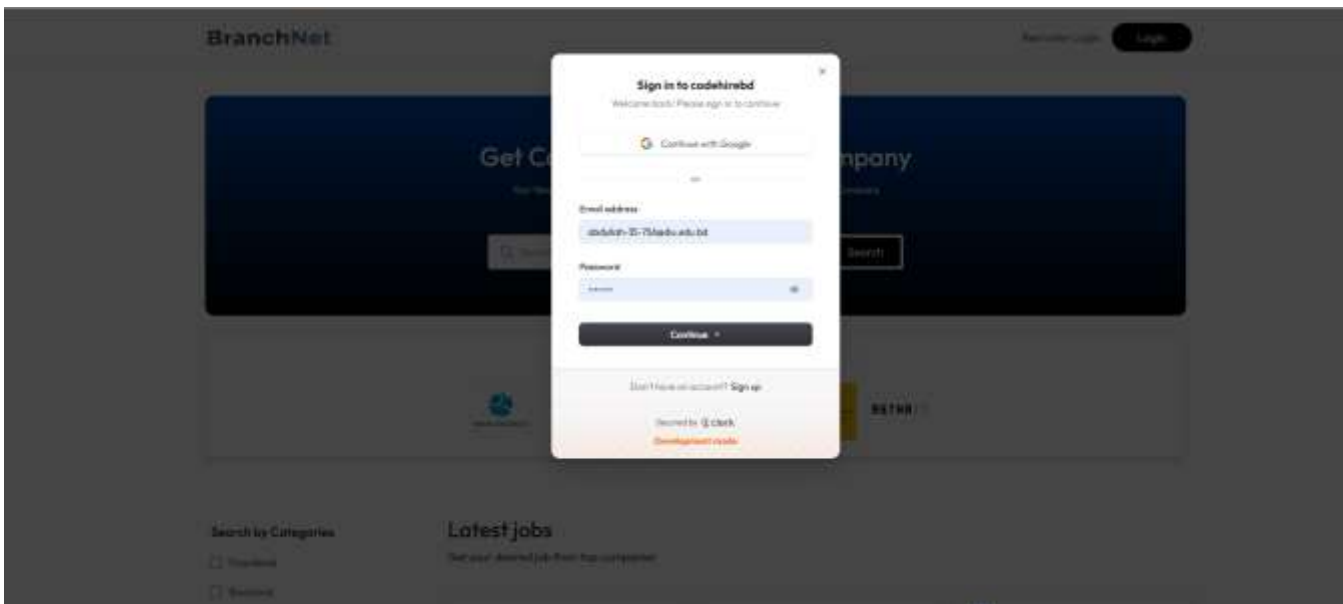
- **Requirement Analysis** – Both functional and non-functional requirements are Collected and prioritized aligned with the goals of the job portal project, targeting on registration, job posting, resume management, and application tracking.
- **Defining** – Documented detailed system specifications, designed database schemas for users, jobs, and applications.
- **Designing** – Created backend APIs with Express.js, frontend structures with React, and database models using MongoDB to guide development.
- **Implementation** – Developed key modules leveraging Node.js, React, and cloud services like Vercel and MongoDB Atlas.
- **Testing** – Performed UAT(user acceptance testing), integration testing and unit testing to ensure functionality, performance, and usability.
- **Deployment** – Deployed on cloud platforms with Vercel for frontend and MongoDB Atlas for backend database, with environment settings optimized for production use.
- **Maintenance** – Continuously monitored system health, fixed bugs, optimized features, and rolled out updates to enhance user experience and system reliability.

## Chapter 5: User Manual

### 5.1 User Registration



### 5.2 Log in



## 5.3 Job Seeker Dashboard

**BranchNet** Applied Jobs | Hi, Muhammad Hridoy

### Get Coding Jobs From Tech Company

Your Next Big Career Move Starts Right Here - Explore Top IT & Software Company Vacancies and Get your Dream Job!

Search for jobs Location Search

Trusted by

**Search by Categories**

- Frontend
- Backend
- UI/UX
- Networking
- Management
- Marketing
- Cybersecurity

**Search by Location**

- Mirpur DOHS
- Gulshan
- Sonari
- Rajshahi
- Dhaka
- Moulvibazar
- Barisal

### Latest jobs

Get your dream job from top companies

#### Software Testing

Bangladesh Register level

Need to test security of a product?

Apply now Learn more

#### Frontend Developer (ReactJS, NextJS, TypeScript, AI Integration)

Dhaka Intermediate level

Expanding business online is an exciting, fast-paced and high-growth environment. We are seeking a highly motivated, self-driven AI-integration specialist, and a Frontend Developer (ReactJS).

Apply now Learn more

#### Frontend Developer (ReactJS, NextJS, TypeScript, AI Integration)

Dhaka Intermediate level

Customer Service is Limited to a leading Retail and Health brand will focus on strategic growth, delivering AI-integration, and efficient software tool.

Apply now Learn more

#### Mobile App Developer

Mirpur DOHS Register level

Join our dynamic Mobile App Development team to create engaging mobile experiences for iOS and Android platforms. You will be responsible for the full.

Apply now Learn more

#### Mobile App Developer

Mirpur DOHS Register level

Join our dynamic Mobile App Development team to create engaging mobile experiences for iOS and Android platforms. You will be responsible for the full.

Apply now Learn more

#### Mobile App Developer

Mirpur DOHS Register level

Join our dynamic Mobile App Development team to create engaging mobile experiences for iOS and Android platforms. You will be responsible for the full.

Apply now Learn more

< 1 2 >

### Download Mobile App For Better Experience

GET IT ON Google Play Download on the App Store

BranchNet | Copyright © BranchNet Group. All rights reserved.

f t b

## 5.4 Search and Filter

### Get Coding Jobs From Tech Company

Your Next Big Career Move Starts Right Here - Explore Top IT & Software Company from Bangladesh and Get your Desire Job!

Search for jobs

Gulshan

Search

Trusted by



#### Search by Categories

- Frontend
- Backend
- UI/UX
- Networking
- Management
- Marketing
- Cybersecurity

#### Search by Location

- Mirpur DOHS
- Gulshan
- Banani
- Agargaon
- Shamoli
- Motijheel
- Badda

#### Latest jobs

Get your desired job from top companies

**Frontend Developer (ReactJS, NextJS, TypeScript, AI Integration)**

Gulshan Intermediate level

Codemen Solutions Limited is a leading SaaS and PaaS-based software service provider, delivering AI-driven, scalable, and efficient solutions to cl

[Apply now](#) [Learn more](#)

**Frontend Developer (ReactJS, NextJS, TypeScript, AI Integration)**

Gulshan Intermediate level

Codemen Solutions Limited is a leading SaaS and PaaS-based software service provider, delivering AI-driven, scalable, and efficient solutions to cl

[Apply now](#) [Learn more](#)

< 1 >

## 5.5 Resume Upload

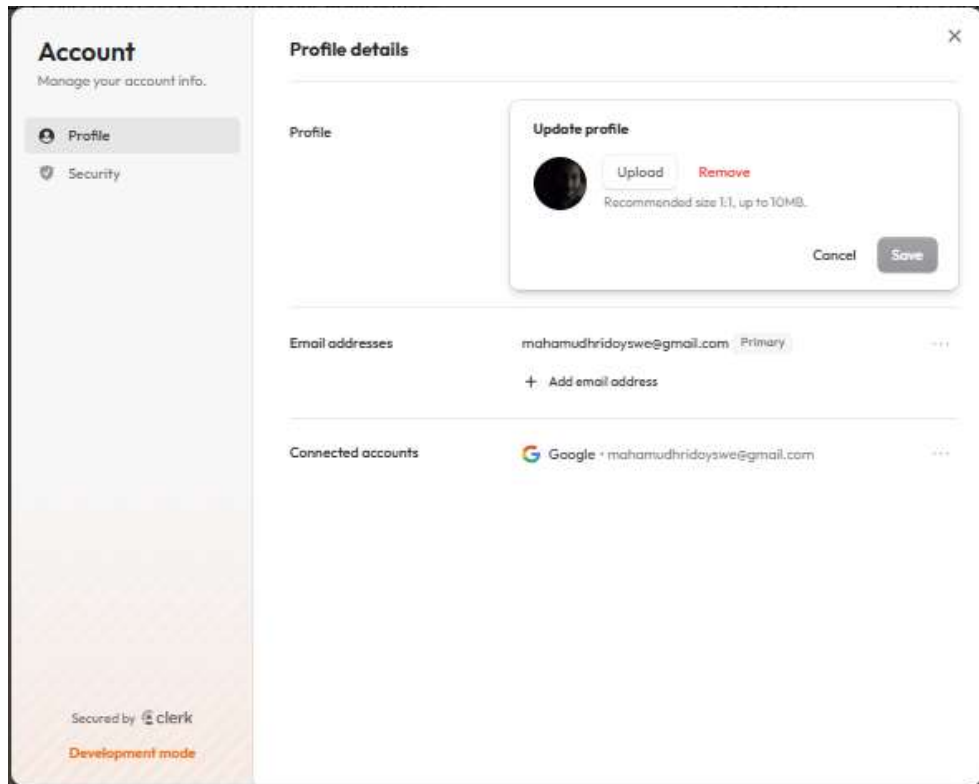
### Your Resume

Select Resume  Save

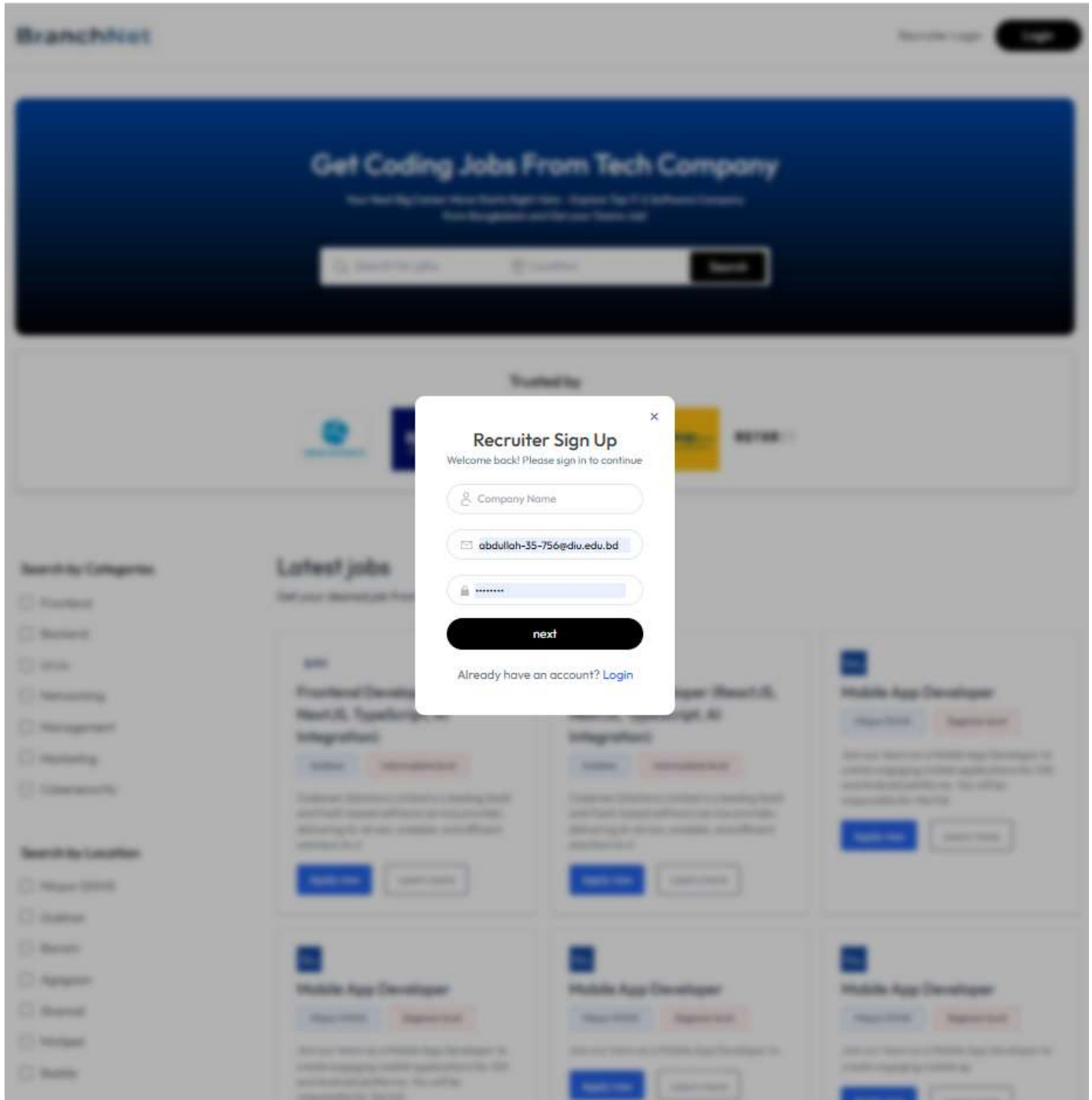
### Jobs Applied

Company	Job Title	Location	Date	Status
 iBOS	Frontend Developer (ReactJS, NextJS, TypeScript, AI Integration)	Gulshan	Sep 7, 2025	Pending

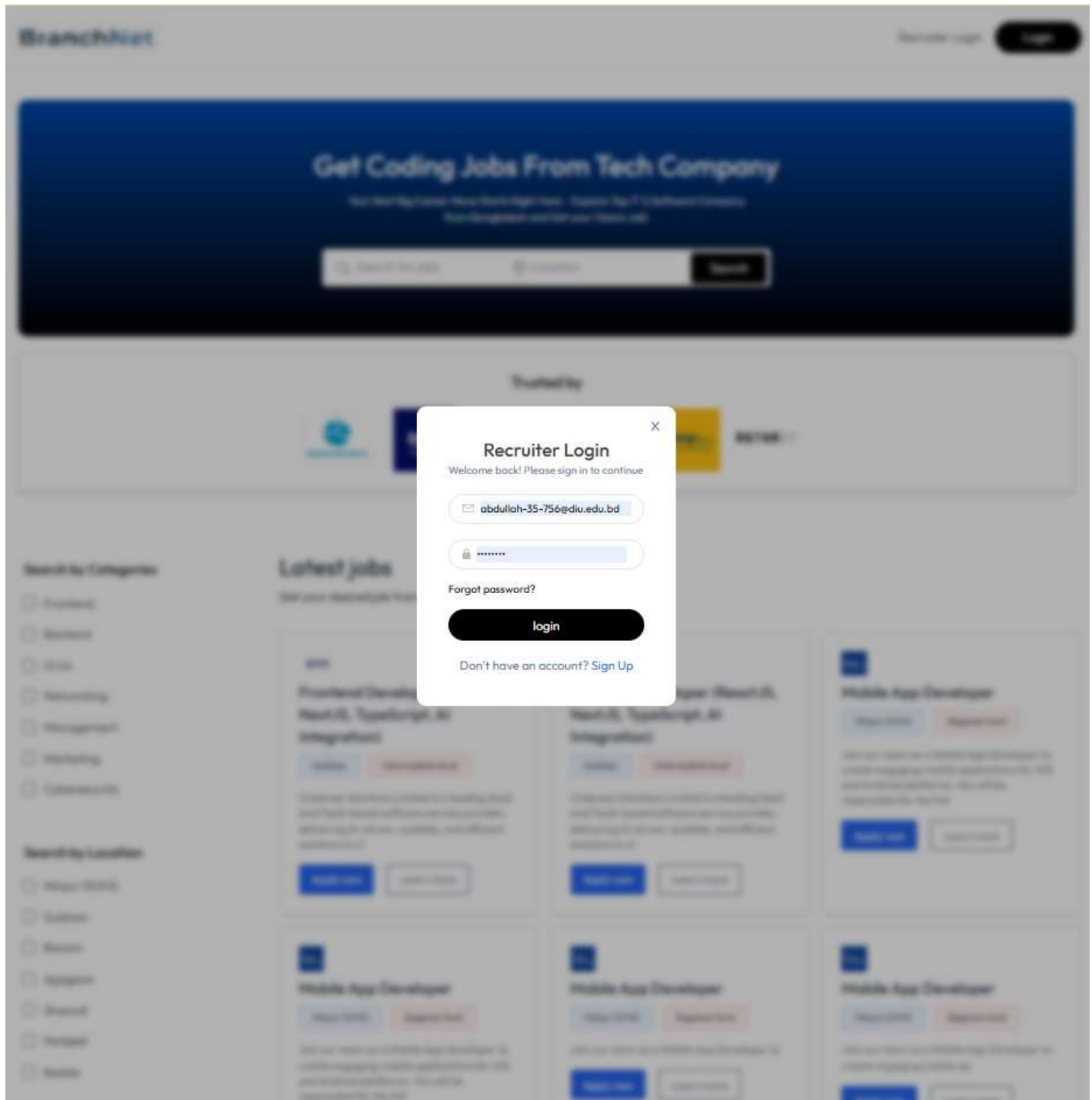
## 5.6 Profile Management



## 5.7 Recruiter Sign Up



## 5.8 Recruiter Login



## 5.9 Post Job

The screenshot shows the 'Add Job' form in the BranchNet application. The form includes the following fields and controls:

- Job Title:** A text input field.
- Job Description:** A rich text editor with a toolbar containing icons for bold, italic, underline, link, and list.
- Job Category:** A dropdown menu with 'Hardware' selected.
- Job Location:** A dropdown menu with 'Dhaka (DCA)' selected.
- Job Level:** A dropdown menu with 'Departmental' selected.
- Job Salary:** A text input field.
- ADD:** A black button to submit the form.

On the left side, there is a sidebar with navigation options: 'Add Job', 'Manage Job', and 'New Dashboard'. In the top right corner, the user's name 'Mahamud Hridoy' is displayed next to a profile icon.

## 5.10 Log Out

The screenshot shows the BranchNet homepage. The main banner features the text 'Get Coding Jobs From Tech Company' and 'Your Next Big Career Move Starts Right Here - Explore Top IT & Software Company from Bangladesh and Get your Desire Job!'. Below the banner is a search bar with 'Search for jobs', a 'Location' dropdown, and a 'Search' button.

In the top right corner, the user is logged in as 'Mahamud Hridoy'. A dropdown menu is open, showing the following options:

- Profile picture and name: Mahamud Hridoy, mahamudhridoyawe@gmail.com
- Manage account
- Sign out

At the bottom of the page, there is a 'Trusted by' section with logos for Brain Station 23, Bjit, IBOS, enosis, Therap, and ASTHAIIT.

## Chapter 6: Project Summary

BranchNet is an online system created to revolutionize the conventional recruitment and professional networking. It substitutes the manual recruiting processes in old systems with centralized, smart and user-centric system. It has three user types: Job Seekers, who can create CVs and apply to the job; Recruiters, who are able to post job offers and see candidates. BranchNet will be built with the help of javascript and MongoDB as well as modern frontend technologies that render its performance at a certain scale, and flexibility in deployment on cloud services, such as AWS or Google Cloud.

Even though the platform achieves its fundamental goals, it does have a number of limitations at the moment:

- No built-in video interview or calendar scheduling tools.
- Lacks in-app premium job promotion or subscription modules.
- Real-time chat is basic and does not support media/file sharing.
- Limited support for offline access or mobile app versions.
- No messaging

Planned future enhancements include:

- Integration with video interview and scheduling APIs.
- Dedicated Android/iOS mobile apps for job seekers and recruiters.
- Advanced AI modules for skills testing and document verification..
- Smart notifications and timeline-based dashboards.
- Messaging

BranchNet can be used in the global recruitment process, but its initial purpose was the job market of Bangladesh, which is flexible and scalable. The platform is effective in solving several critical issues such as the lack of skills, hiring discrimination, and inefficient networking.

### Source Code

Github- [BranchNet](#)

# Plagiarism Report

213-35-756

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

/0

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15

PAGE 16

PAGE 17

PAGE 18

PAGE 19

PAGE 20

PAGE 21

PAGE 22

---

PAGE 23

---

PAGE 24

---

PAGE 25

---

PAGE 26

---

PAGE 27

---

PAGE 28

---

PAGE 29

---

PAGE 30

---

PAGE 31

---

PAGE 32

---

PAGE 33

---

PAGE 34

---

PAGE 35

---

PAGE 36

---

PAGE 37

---

PAGE 38

---

PAGE 39

---

PAGE 40

---

PAGE 41

---

PAGE 42

---

PAGE 43

---

PAGE 44

---

PAGE 45

---

PAGE 46

---

PAGE 47

---

PAGE 48

---

PAGE 49

---

PAGE 50

---

PAGE 51

---

PAGE 52

---

PAGE 53

---

PAGE 54

---

PAGE 55

---

PAGE 56

---

PAGE 57

---

PAGE 58

---

PAGE 59

---

PAGE 60

---

PAGE 61

---

PAGE 62

---

PAGE 63

---

PAGE 64

---

PAGE 65

---

PAGE 66

---

PAGE 67

---

PAGE 68

---

PAGE 69

---

PAGE 70

---

PAGE 71

---

# Account Clearence

The screenshot shows a student dashboard with a dark sidebar on the left containing navigation links: Dashboard, Student Profile, Payment Ledger, Registration/Exam Clearance, and Registered Course. The main content area is titled 'Dashboard' and 'Student Portal'. It features four blue summary cards: 'Total Payable' (755,000.00), 'Total Paid' (755,000.00), 'Total Due' (0.00), and 'Total Other' (4,700.00). The user's name 'Md. Abdullah Al Mahamud Hridoy' and ID '213-33-734' are visible in the top right corner.

Category	Amount
Total Payable	755,000.00
Total Paid	755,000.00
Total Due	0.00
Total Other	4,700.00

