



BASAVARAJESWARI GROUP OF INSTITUTIONS

## BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

Autonomous Institute under Visvesvaraya Technological University, Belgavi

NBA and NAAC Accredited Institution\*

(Recognized by Govt. of Karnataka, approved by AICTE, New Delhi)

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### DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING



#### A Project Work Report



on

#### **“CAREERNET – A SECURE JOB BOARD”**

A dissertation submitted to the Department of Computer Science & Engineering of Visvesvaraya Technological University in partial fulfilment for award of the Degree of Bachelor of Engineering

#### Project Associates

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**3BR21CS102**

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## Visvesvaraya Technological University

Belagavi, Karnataka

2024-2025

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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**CERTIFICATE**

This is to certify that the PROJECT WORK entitled “**CAREERNET – A SECURE JOB BOARD**” has been successfully presented by **M AKSHAI KUMAR** bearing **3BR21CS102** bonafide students of VIII semester B.E. for the partial fulfillment of the requirements for the award of **Bachelor Degree in Computer Science & Engineering** of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI during the academic year 2024-2025. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the said Degree.

Signature of Project guide  
**Dr. T R Muhibur Rahman**

Signature of HOD  
**Dr. R. N. Kulkarni**

Signature of Principal  
**Dr. Yadavalli Basavaraj**

EXTERNAL VIVA

Name of the Examiners

Signature with Date

1.

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## ABSTRACT

This project aims to develop a SaaS-based job portal designed to offer a secure and dependable platform for job seekers to find genuine employment opportunities. With the rise in online job scams, many people face challenges in identifying real job openings. To address this, the platform will include strong verification systems for job postings and employers, helping to prevent fake listings and build user trust.

The portal will feature a clean and user-friendly interface to ensure that users can easily navigate and apply for jobs. A customized chatbot will be included to guide users, answer common questions, and provide a smooth user experience. The platform also ensures the protection of user data through real-time security features, helping to keep sensitive information safe during the job search and application process.

Using the Software as a Service (SaaS) model, the platform will be hosted on the cloud, allowing for easy updates, high availability, and access from any device. This model makes the system scalable and cost-effective for both users and administrators. The platform will support role-based access, giving different permissions to job seekers, recruiters, and admins to manage listings and applications effectively.

## ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of project work on “**CAREERNET – A SECURE JOB BOARD**” would be incomplete without the mention of the people who made it possible, whose noble gesture, affection, guidance, encouragement, and support crowned our efforts with success. It is our privilege to express our gratitude and respect to all those who inspired us in the completion of this project work.

We are deeply indebted to **Dr. T. R. Muhibur Rahman** Department of CSE, our guide & coordinator on this project, for consistently providing us with the required guidance to helping us in the timely and successful completion of this project. Despite his extremely busy schedule in the Department, he was always available to share his deep insights, wide knowledge, and extensive experience with us. We also thank **Dr. R. N. Kulkarni**, H.O.D. Department of CSE, for his coordination and valuable suggestions given to us in completing the project. We also thank Principal **Dr. Yadavalli Basavaraj**, Management, and non-teaching staff for their coordination and valuable suggestions given to us in completing the project work.

M AKSHAI KUMAR

3BR21CS102

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## CHAPTER 1

### INTRODUCTION

#### INTRODUCTION TO PROJECT

In today's digital era, online job portals have become a popular medium for job seekers and employers to connect. However, the growing dependency on these platforms has also led to an alarming rise in fraudulent activities. Many job seekers fall victim to fake job postings, phishing schemes, and scam websites, resulting in significant financial losses and the risk of identity theft. These scams not only waste time but also reduce the trust users place in online employment platforms.

To address these challenges, this project proposes the development of a secure, reliable, and user-friendly SaaS-based job portal. The primary goal of the platform is to protect users from job-related frauds by ensuring only verified companies and job postings are accessible on the portal. The platform employs strict validation and verification mechanisms to authenticate employers and posted job listings, thereby minimizing the chances of fraudulent activity.

Security and accessibility are at the core of this platform's design. With the integration of a robust authentication system and role-based access control (RBAC), users are provided with access permissions that suit their roles. Job seekers can search and apply for jobs, while administrators are equipped with tools to verify companies, manage job listings, and update the status of job applications. This separation of roles ensures a secure and efficient workflow across the system.

The architecture of the portal is built using modern technologies to ensure scalability, performance, and data protection. The frontend is developed using ReactJS and TailwindCSS for a responsive and visually clean user interface. The backend leverages Node.js and Express.js for fast server-side operations, while MongoDB serves as the database to securely store user information, job postings, and application data.

## CHAPTER 2

### VISION AND MISSION

#### **Vision:**

To create a secure and reliable online platform that empowers job seekers to find genuine employment opportunities, while protecting them from job scams.

#### **Mission:**

To provide a trusted and user-friendly job portal that:

1. Verifies job postings and companies.
2. Ensures secure communication channels.
3. Protects user data and privacy.
4. Offers a seamless job search experience.



## CHAPTER 3

### LITERATURE SURVEY

S.No	Authors	Description	Implementation	Accuracy Level (%)	Remarks
1	Sharma P et al.	Implementation of role-based access in modern job portals using secure authentication and access policies	Access control mechanisms integrated with user roles (admin recruiter job seeker)	95	Improves security and ensures role-specific access
2	Shiva Maharaj et al.	Comparative study of scalable web frameworks and development paradigms	Evaluation of monolithic vs microservices frameworks for large-scale portals	90	Supports flexible architecture decisions for performance optimization
3	Khan A et al.	Application of user-centric design principles in job portals	Implemented UI UX guidelines such as responsive layouts easy navigation	88	Enhances user satisfaction and usability metrics

4	Patel D et al.	Cloud infrastructure deployment for job portals emphasizing scalability and storage	Adoption of AWS Azure services for scalable compute and database management	92	Ensures high availability and reduced latency
5	Singh A et al.	AI-based job matching and recommendation engines for employment platforms	Machine learning models trained on user behaviour and job data	93	Improves relevance of job suggestions and user engagement
6	Rao P et al.	Automated chatbot integration in job portals for real-time support	Deployed NLP-driven bots for FAQs application guidance and support	89	Reduces support team workload and boosts response time
7	Verma R et al.	Privacy and GDPR compliance practices in job portals	Implemented encryption consent mechanisms and secure data handling	94	Ensures user trust and regulatory adherence

## CHAPTER 4

### PROBLEM STATEMENT

The increasing prevalence of job scams has made it more difficult for individuals to find genuine employment opportunities online. Many job seekers fall victim to fraudulent job postings, fake emails, and scam websites that can lead to serious consequences such as financial loss and identity theft. These scams not only harm individuals but also reduce trust in online job platforms.

To address this growing problem, there is a need for a secure and trustworthy job portal that protects users from these threats. This project aims to develop a job portal using the Software as a Service (SaaS) model that ensures the safety and reliability of both job seekers and employers. The platform will include strong verification methods to confirm the authenticity of job postings and companies. By doing so, it aims to reduce fake listings and build user confidence.

## CHAPTER 5

### OBJECTIVES

1. **Develop a platform with strong security protocols and a user-friendly design:** Prioritize the implementation of advanced security features such as role-based access control (RBAC), data encryption, and two-factor authentication (2FA) to safeguard user information. Additionally, integrate a user-friendly design by utilizing modern frameworks like React.js to ensure a smooth and responsive interface. This ensures both a secure environment for sensitive data and an intuitive navigation experience for users.
2. **Validate job listings and company profiles to maintain credibility:** Implement strict validation processes for job listings and company profiles by requiring administrators or trusted users to verify the authenticity of these entries. Use backend systems to validate the legitimacy of companies and job roles, checking for accuracy in descriptions, qualifications, and compliance with regulations. This ensures the platform maintains a high level of trust and quality for its users.
3. **Continuously improve the platform in line with evolving industry trends:** Stay updated with the latest advancements in web development, job market trends, and technology stacks. Regularly incorporate new features, such as AI-driven job recommendations and real-time updates, and ensure the platform adapts to industry standards. Monitor user feedback and analytics to guide continuous platform enhancements, focusing on increasing usability and relevance.
4. **Implement a seamless application process for both job seekers and recruiters:** Design a streamlined application flow for job seekers that allows easy submission of resumes, personal details, and job preferences. For recruiters, create a simple interface for posting job listings, reviewing candidates, and managing applications. Ensure both parties can track application statuses efficiently and facilitate communication within the platform to promote a smooth and effective recruitment process.

## CHAPTER 6

### SCOPE OF THE PROJECT

1. **Platform Development:** The platform designed as a scalable Software-as-a-Service (SaaS) web application, ensuring that it is accessible across all devices, including desktops, tablets, and smartphones. It must be built to scale, allowing for increased user traffic and data volume as the platform grows. Technologies such as React.js for the frontend, Node.js for the backend, and cloud hosting solutions like AWS or Azure can be used to ensure scalability and availability, with a focus on maintaining a responsive and seamless experience for users.
2. **Database Design:** The platform's database is a cloud-based and secure, designed to handle job postings, user profiles, and applications effectively. A relational database MongoDB can be used depending on the nature of the data. The database should be structured to facilitate fast searches, profile management, and job matching while ensuring data integrity and security. Backup strategies, redundancy, and real-time synchronization across servers will ensure reliability and continuity of data access.
3. **Security Measures:** Implement robust security protocols to ensure the safety of sensitive user data. This includes encryption for data both at rest and in transit using technologies like SSL/TLS and AES encryption. Access control mechanisms should be put in place to limit data access based on user roles (e.g., job seekers, recruiters, and admins). Additional security measures such as multi-factor authentication (MFA) and regular security audits should be incorporated to prevent unauthorized access and ensure data privacy in compliance with relevant regulations like GDPR.
4. **User Experience:** Prioritize a seamless and intuitive user experience by focusing on responsive design, easy navigation, and an aesthetically pleasing interface. Regular updates and feature releases should be implemented to ensure the platform stays current with evolving user needs and industry trends. The SaaS model ensures continuous availability, meaning the platform is always accessible without downtime, providing users with a consistent experience. Regular testing and user feedback will help identify areas for improvement, ensuring the platform remains user-friendly and reliable.

## CHAPTER 7

### System Requirements and Specification

#### 7.1 Hardware Requirements:

- **Server:** Physical/virtual server with sufficient CPU, RAM, and storage.
- **Network:** Reliable connection with adequate bandwidth.
- **Client Devices:** User-accessible devices with a web browser (laptops, desktops, tablets, smartphones).

#### 7.2 Software Requirements:

- **Operating System:** Linux or Windows Server.
- **Database:** MongoDB
- **Languages:** Node.js (backend) and ReactJs, TailwindCSS (frontend).
- **Frameworks:** Express.js for web development.

#### 7.3 Functional Requirements:

- **User Authentication:** Secure login, registration.
- **User Management:** Users can browse, search, and apply for jobs, Users can check the status of their applications (accepted or rejected). Users can interact with customized chat-bot.
- **Recruiter Authentication:** Secure login, registration.
- **Recruiter Management:** Recruiter can create companies and post jobs. Recruiter can view job applicants and update their application status.

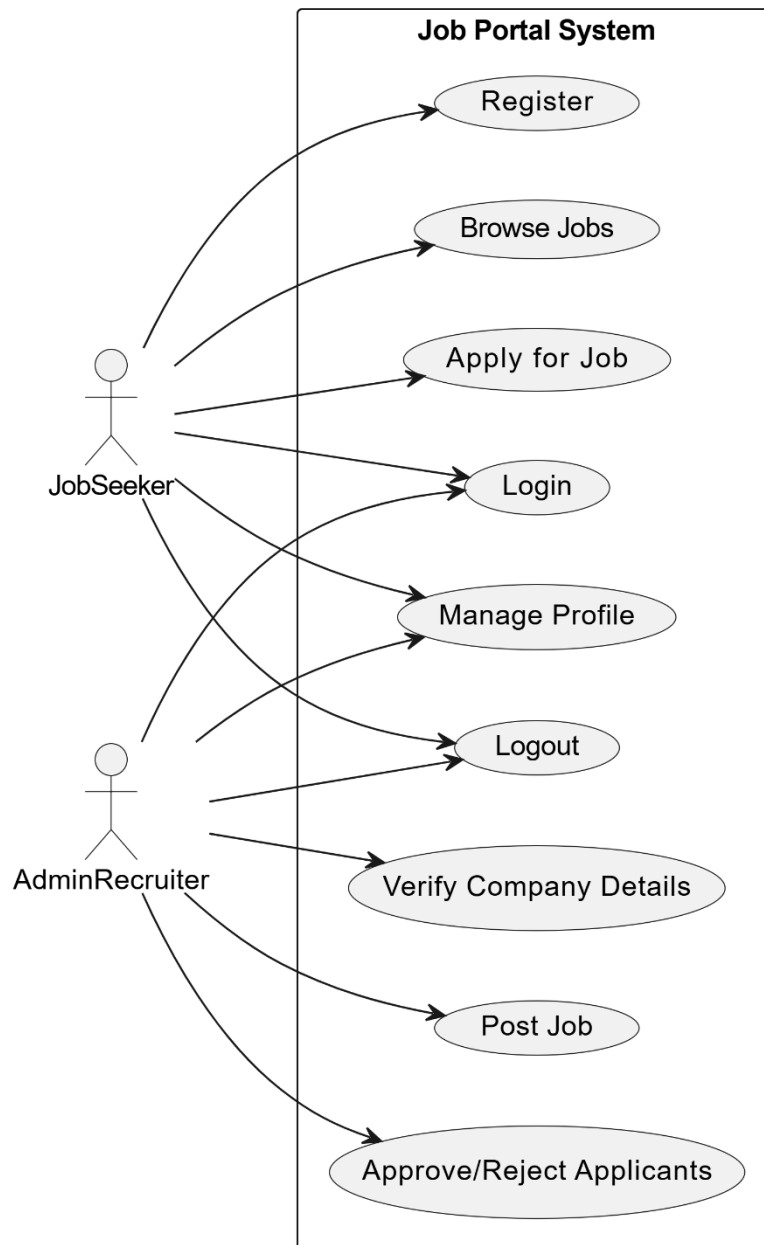
#### 7.4 Non-Functional Requirements:

- **Performance:** Quick page loads and support for concurrent users.
- **Security:** Protect user data with encryption and ensure role-based access control.
- **Usability:** Intuitive and user-friendly interface.
- **Compatibility:** Support multiple devices and browsers.
- **Scalability:** Handles increased data and traffic seamlessly.

## CHAPTER 8

### SYSTEM DESIGN

#### 8.1 System Architecture Diagram



**Fig 8.1 Use Case Diagram**

## 8.2 Sequence Diagram

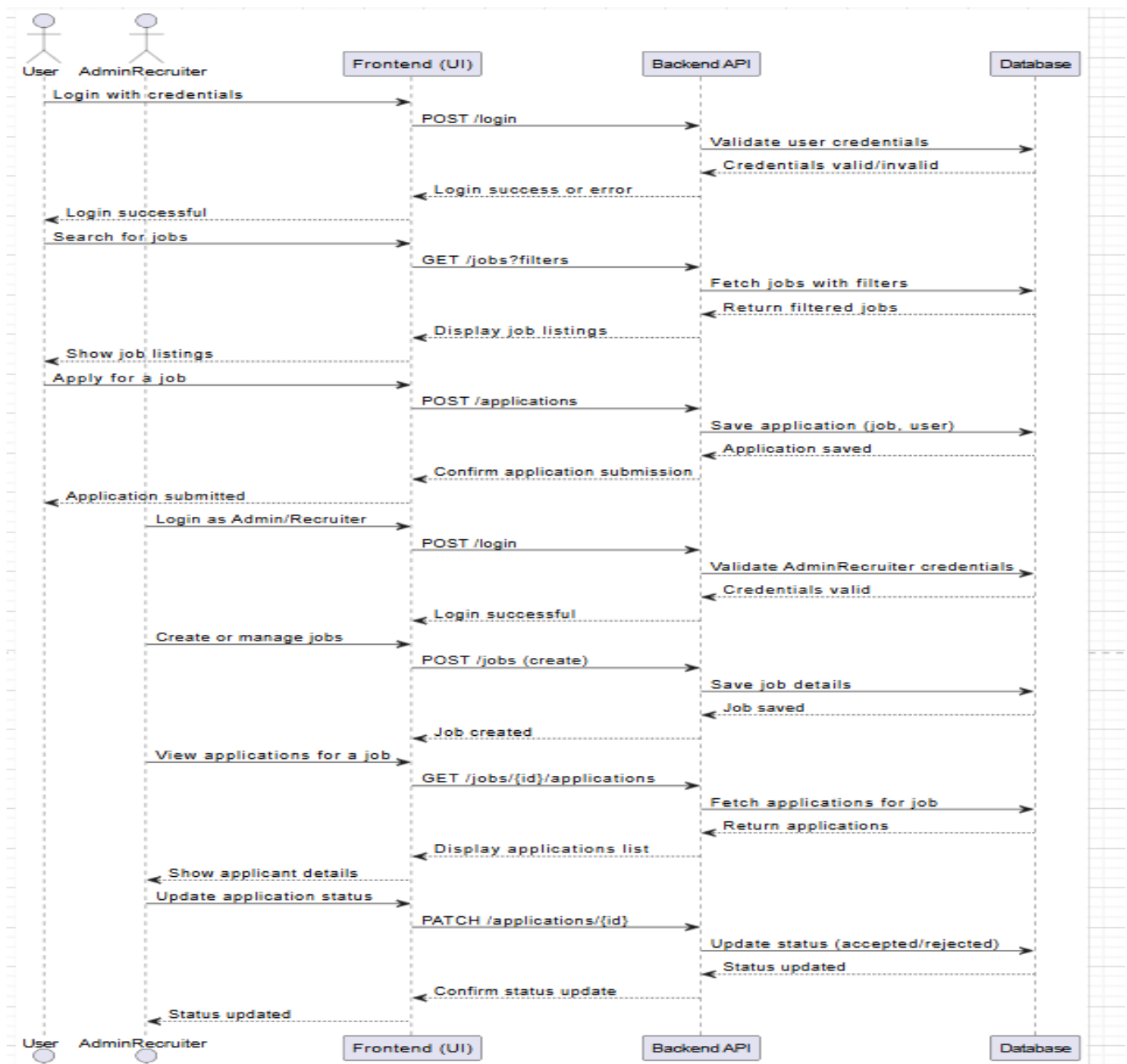
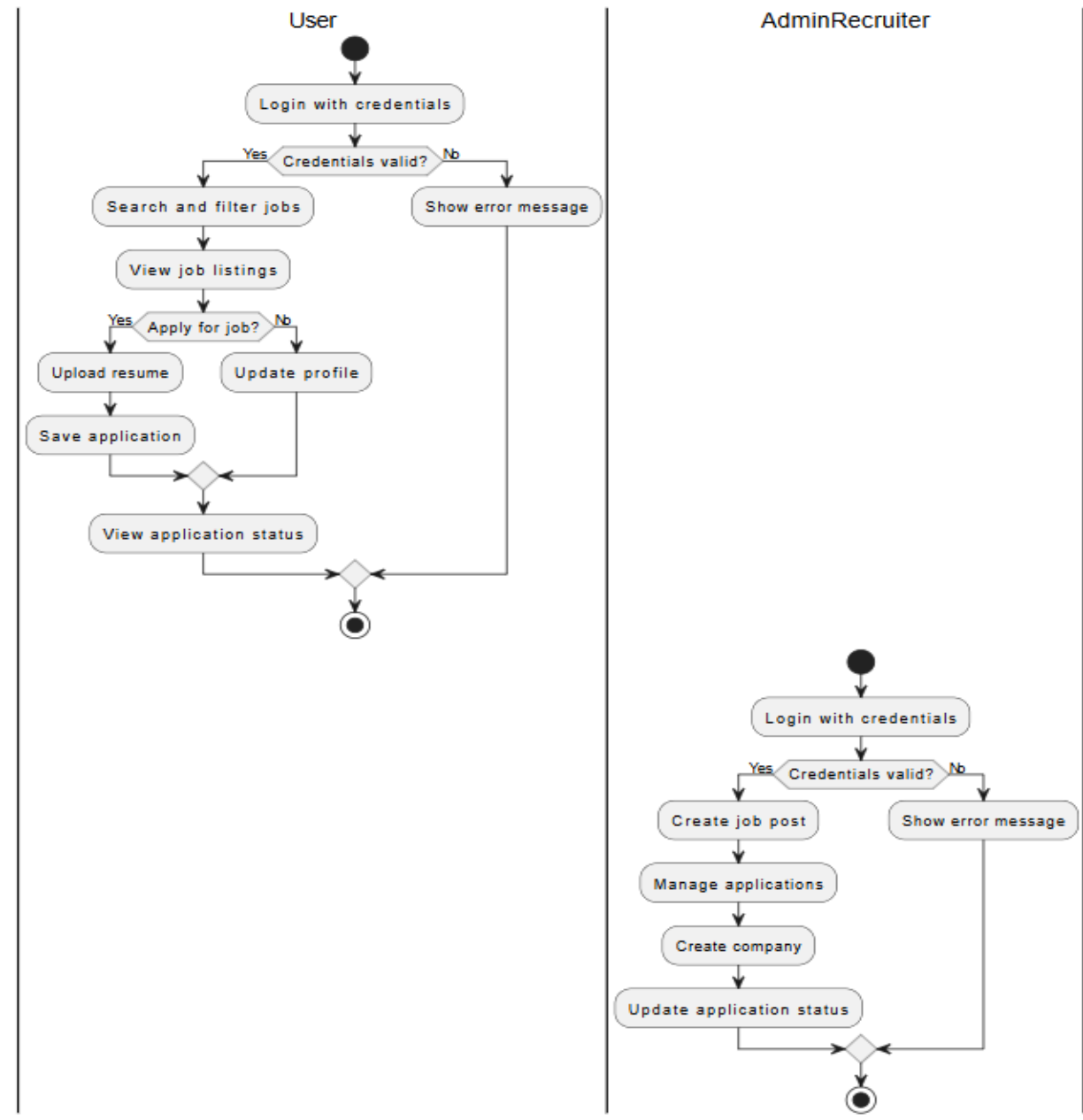


Fig 8.2 Sequence Diagram



### 8.3 Activity Diagram



**Fig 8.3 Activity Diagram**

## CHAPTER 9

### IMPLEMENTATION

#### 9.1 Overview of System Implementation

##### 1. Environment Setup:

- Prepare the necessary infrastructure, including servers, operating systems, web servers, and databases.
- Set up development and testing environments for coding and quality assurance.

##### 2. Frontend and Backend Development:

- Develop the user interface (UI) based on the provided design mockups and wireframes.
- Implement the frontend using Reactjs, TailwindCSS, ensuring responsiveness and user-friendliness.
- Develop the backend logic for user authentication, data management, and core functionalities (creating, updating, posting) using Node.js and ExpressJs.
- Create RESTful APIs to enable communication between the frontend and backend.

##### 3. Database Integration:

- Design and implement the database schema to store user data, content, and interactions.
- Integrate the database with the backend to ensure secure and efficient data access.

##### 4. Deployment:

- Deploy the frontend, backend, and database to the production environment.
- Monitor the portal's performance and stability after deployment.

## 9.2 Module Description

### 1. User Authentication Module

- Handles registration, login, password hashing, JWT issuance.
- Supports roles: student, recruiter, admin.
- Implements access control and email verification.

### 2. Job Posting & Management Module

- Recruiters can post jobs with details like title, description, experience, etc.
- Admin verifies or moderates job posts before public listing.
- Jobs can be edited or deleted by the posting recruiter.

### 3. Resume Upload & Applicant Module

- Job seekers can upload resumes, update profile details.
- Applied jobs are tracked; recruiters can view applicants with resume download links.
- Resume parsing or AI-based matching (optional advanced feature).

### 4. Recruiter Verification Module

- Signup requests from recruiters remain pending until approved by admin.
- Admin can view all recruiter requests, and approve or reject them.
- Verified recruiters gain full access to post and manage jobs.

### 5. Admin Dashboard Module

- View user statistics, pending recruiter requests, and flagged job posts.
- Manage users, roles, and platform-wide settings.
  - Monitor activity logs and ensure compliance.

### 6. Chatbot/Support Module

- Automates FAQs and assists users during job search or posting.
- Uses basic NLP or predefined flow trees.

## CHAPTER 10

### RESULT AND CONCLUSION

#### Results

The successful implementation of this project will result in a fully functional SaaS-based job portal designed to enhance security, streamline the job search process, and improve communication between job seekers and employers. The platform will provide secure user registration and login functionalities, protecting user credentials and ensuring authorized access. A simplified and intuitive job application process will allow users to easily browse and apply for jobs. Real-time application status tracking will provide transparency and keep users informed.

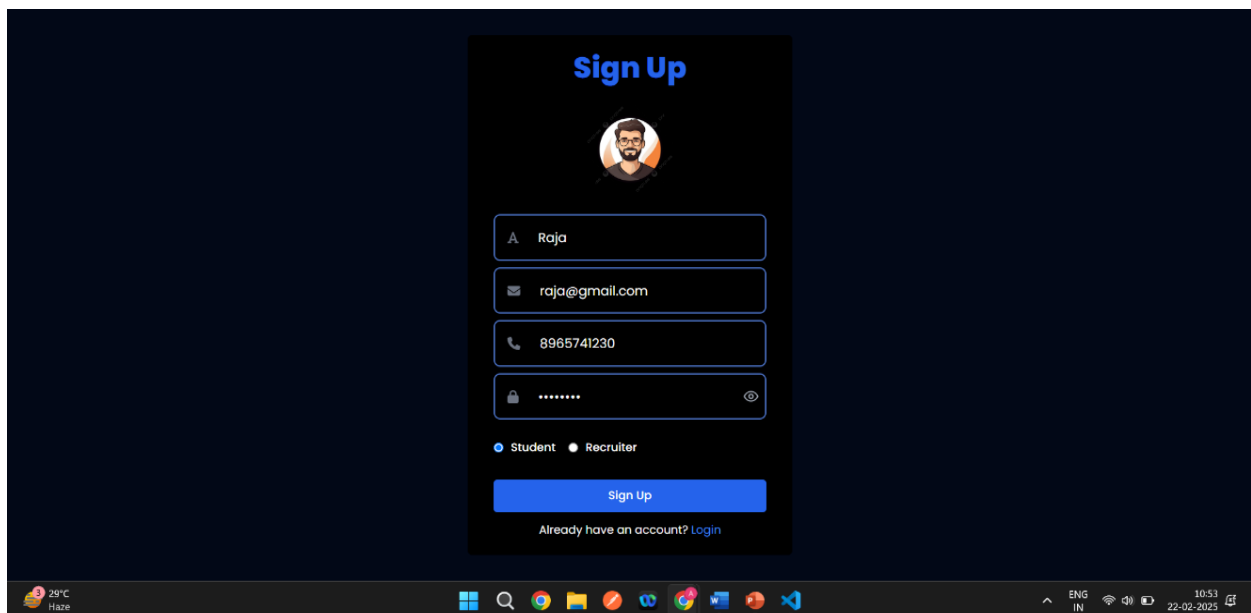


Fig 10.1 SignUp Page

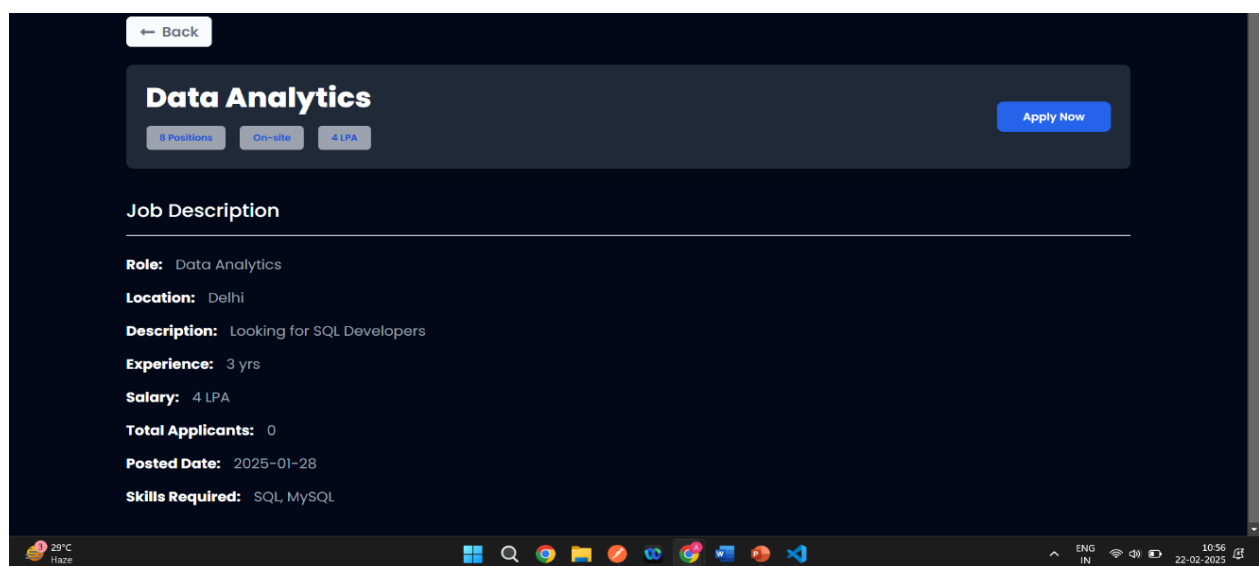


Fig 10.3 User applying for job

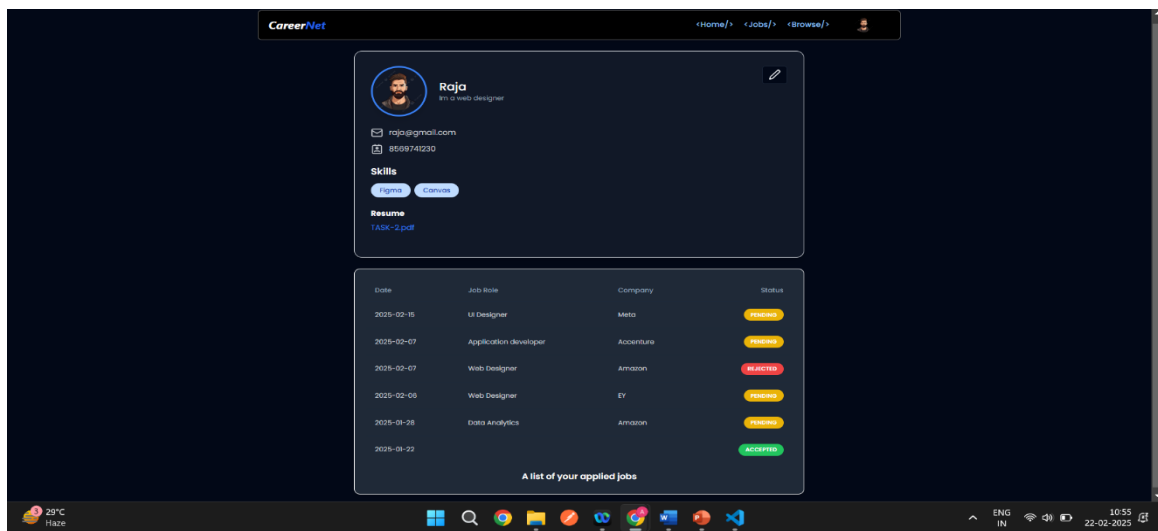


Fig 10.4 User Profile

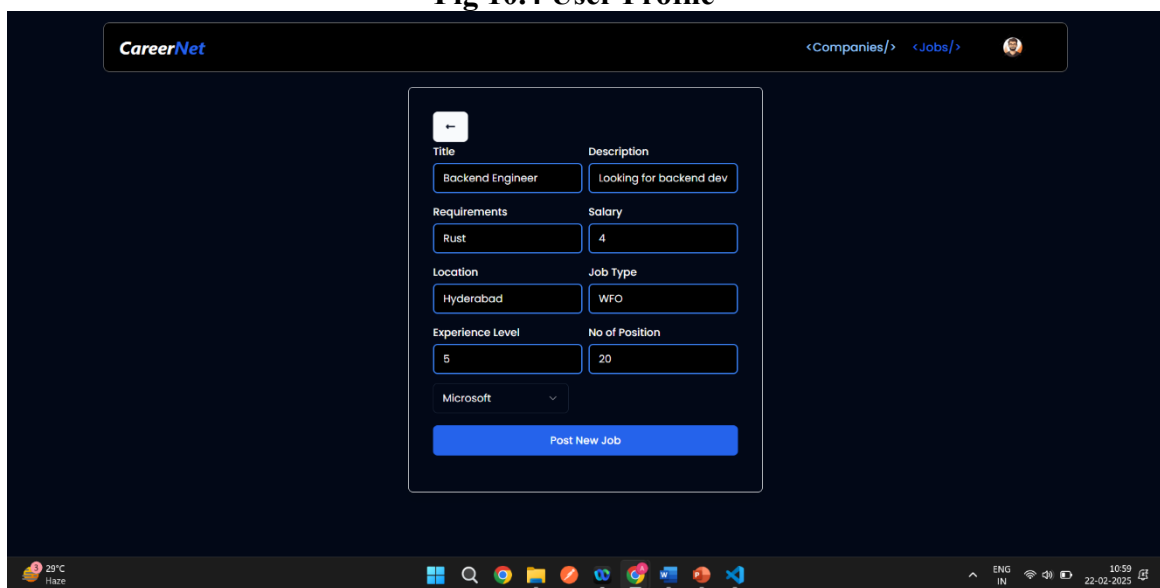


Fig 10.5 Admin creating new company

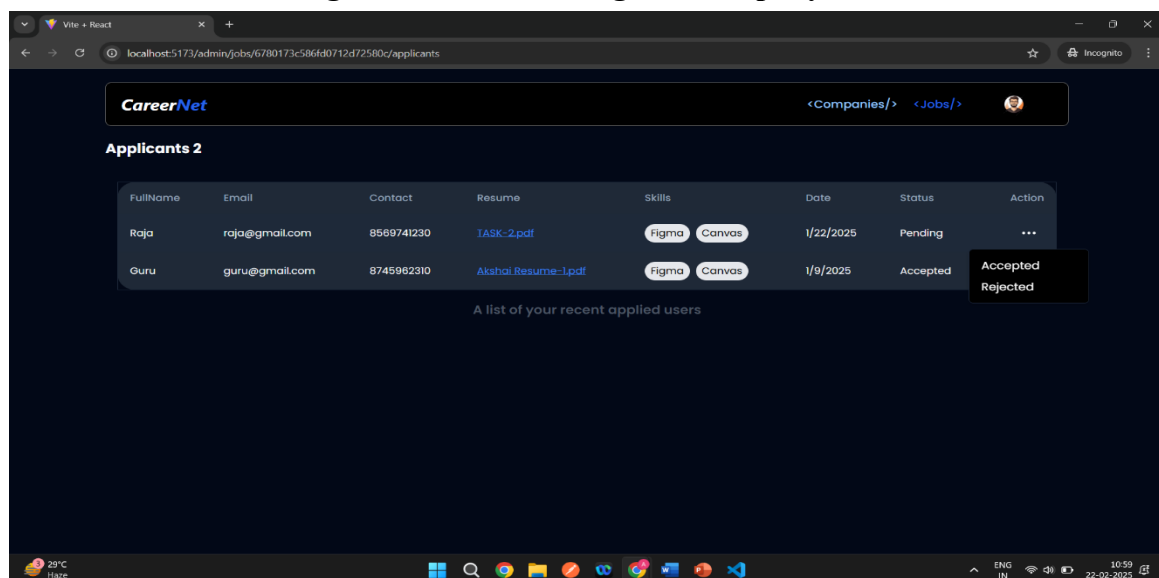


Fig 10.6 Admin updating status of applicants.

## CHAPTER 11

### TEST CASES

Test_ID	Inputs	Expected Outcome	Reason
T_001	Full name email phone password role(student) profile photo	User registered successfully	All fields are valid and meet format requirements
T_002	Correct email and password	User logs in successfully	Valid credentials match stored records
T_003	Logged-in user applies for a new job	Status updates to "applied"	Application submitted successfully
T_004	New user details Registration Same user logs in	User can log in after registering	Ensures user registration data is persisted and accessible
T_005	Registered user logs in and applies for a job	Job application is accepted and status updates	Confirms interaction between user session and job application logic
T_006	Admin submits a job post with valid details	Job post is saved in the database	Confirms data persistence to DB

## CHAPTER 12

### CONCLUSION

This SaaS-based job portal is designed to make the job search and hiring process easier and more secure for both job seekers and recruiters. It brings everything together in one place, allowing users to interact smoothly. Job seekers can search for jobs, apply easily, and track their application status. Recruiters, who also manage the platform, can post jobs, review applications, and select the right candidates.

The platform is built using modern web technologies and cloud support, which means it can handle many users at once and can grow as needed. Cloud storage ensures the platform is always available and can be accessed from anywhere without any major interruptions.

Security is a key part of the system. It protects user data and only allows verified users and companies to access or post job listings. There's also a built-in chatbot to help users with questions and guide them through the platform, making it more interactive and user-friendly.

Overall, this job portal offers a simple, safe, and smart way to connect job seekers with employers. In the future, more features like smart job suggestions and advanced reports can be added to make it even more useful.

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# BALLARI INSTITUTE OF TECHNOLOGY AND MANGEMENT, BALLARI

## DEPARTMENT OF COMPUTER SCIENCE s ENGINEERING



### Project Work (21CSP76) CO-PO Mapping

ACADEMIC YEAR 2024-25

U.S.N.	Student Name	Guide Name	Project Title
3BR21CS102	M AKSHAI KUMAR	Dr. T R Muhibur Rahman	CAREERNET - A SECURE JOB BOARD

### COURSE OUTCOMES(CO'S)

Course Outcomes CO	Description of Course Outcomes
CO1	Demonstrate the ability to apply core computer science concepts.
CO2	Identify and justify the technical aspects of the project with systematic approach.
CO3	Design, code & test software solutions for specific platform.
CO4	Present project outcome findings clearly & effectively.
CO5	Work on individual in team for development of technical project.

### CO-PO MAPPING

COPO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		3		2					1		2			
CO2		3	3	3									3	
CO3		3		3	3									2
CO4									2		2			
CO5									2	3		3		

Signature of Guide

### PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES (POs & PSOs)

**PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

**PO6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**PSO1** Demonstrate the principles, architecture and organization of computers, embedded systems and computer networks.

**PSO2** Develop software applications using advanced technologies to cater the growing needs of industry.



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