

Chapter 4:

System Design

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SYSTEM DESIGN

4.1 INTRODUCTION

In this chapter we will cover all the relevant designs and tables related to the project of Job Explorer system. Its architecture, detailed design (use case diagrams, detail use case, activity diagrams, component diagrams), and database designs (ERD).

4.2 ARCHITECTURAL DESIGN

Fig 4.1: Architectural Diagram

4.3 DETAILED DESIGN

4.3.1 Use Case Diagrams

4.3.1.1 User Registration and Authentication Use Case Diagram

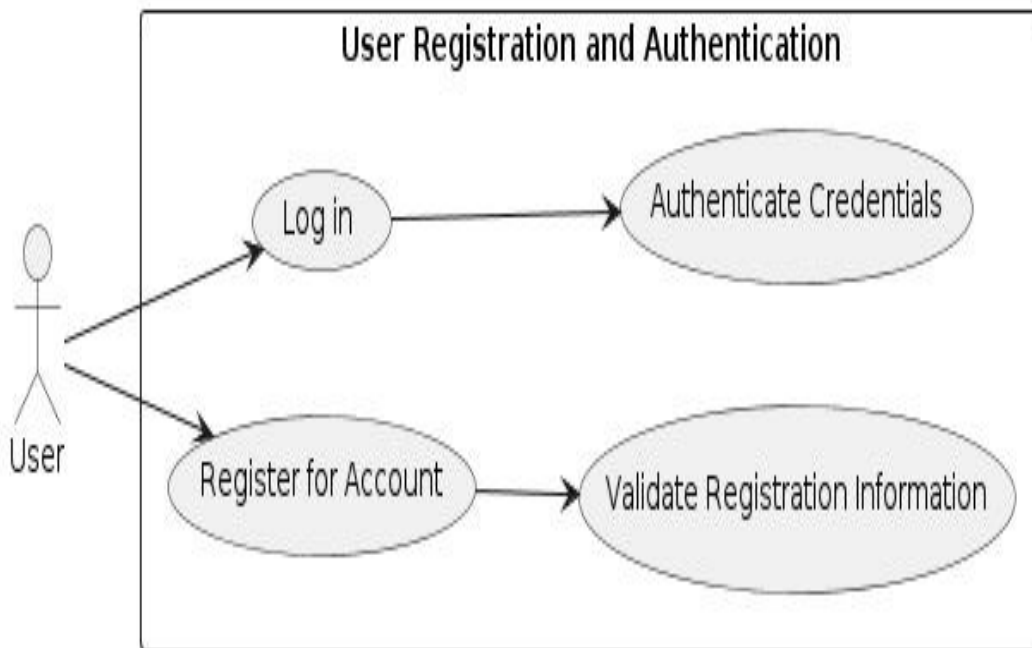
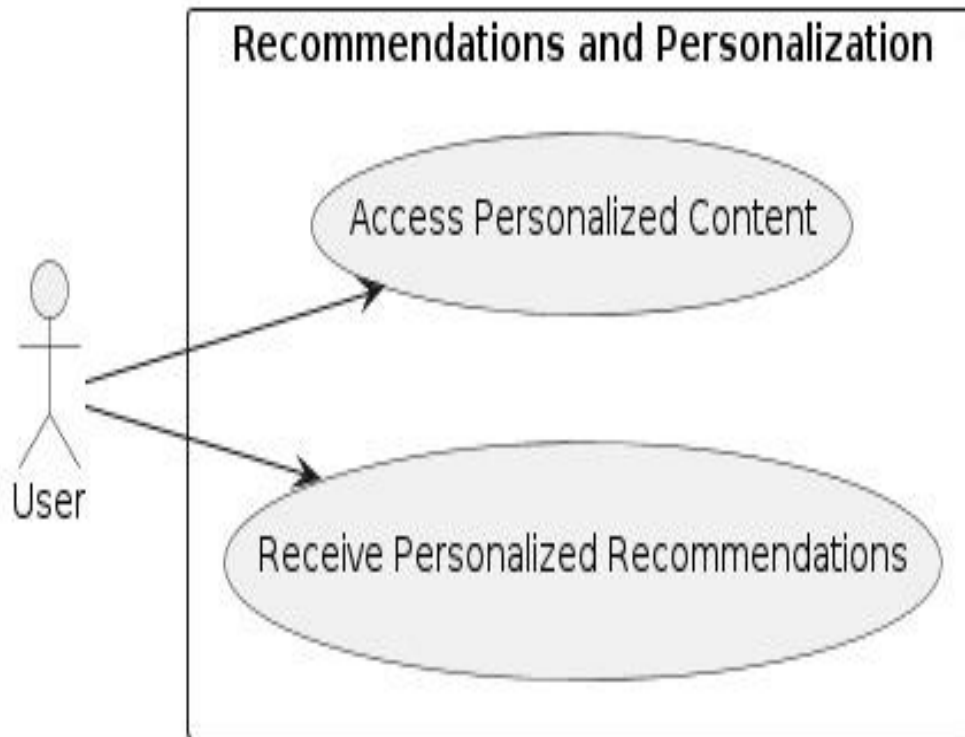
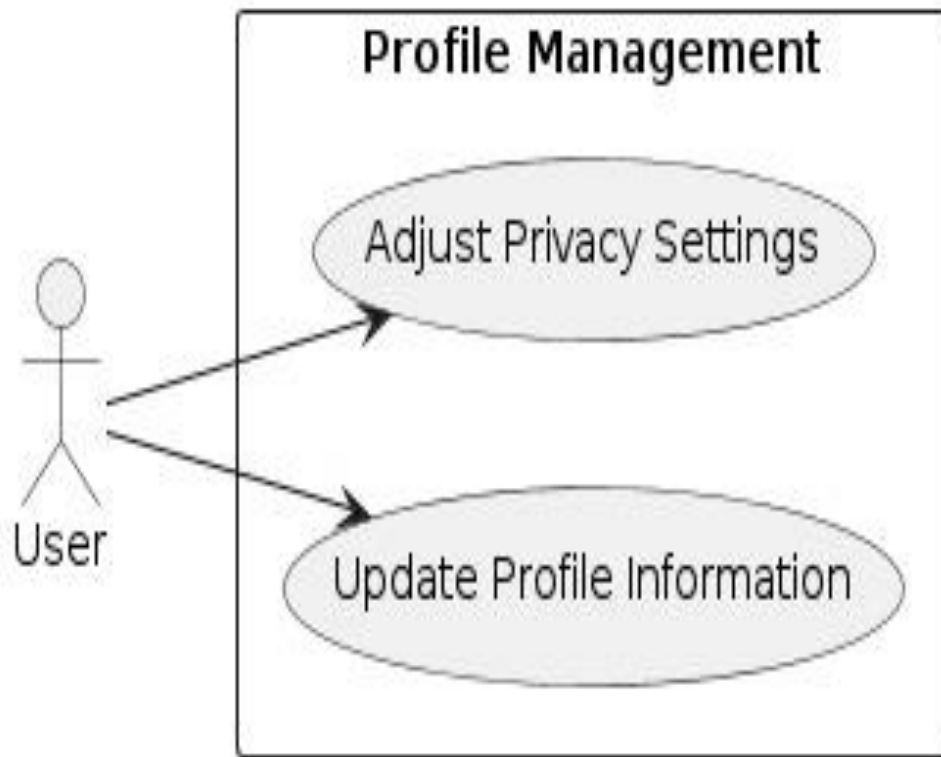


Fig 4.2: User Registration and Authentication Use Case Diagram

4.3.1.2 Recommendation and Personalization Use Case Diagram

**Fig 4.3: Recommendation and Personalization Use Case Diagrams**

4.3.1.3 Profile Management Use Case Diagram

**Fig 4.4: profile Management Use Case Diagram**

4.3.1.4 Job Listing and posting Use Case Diagram

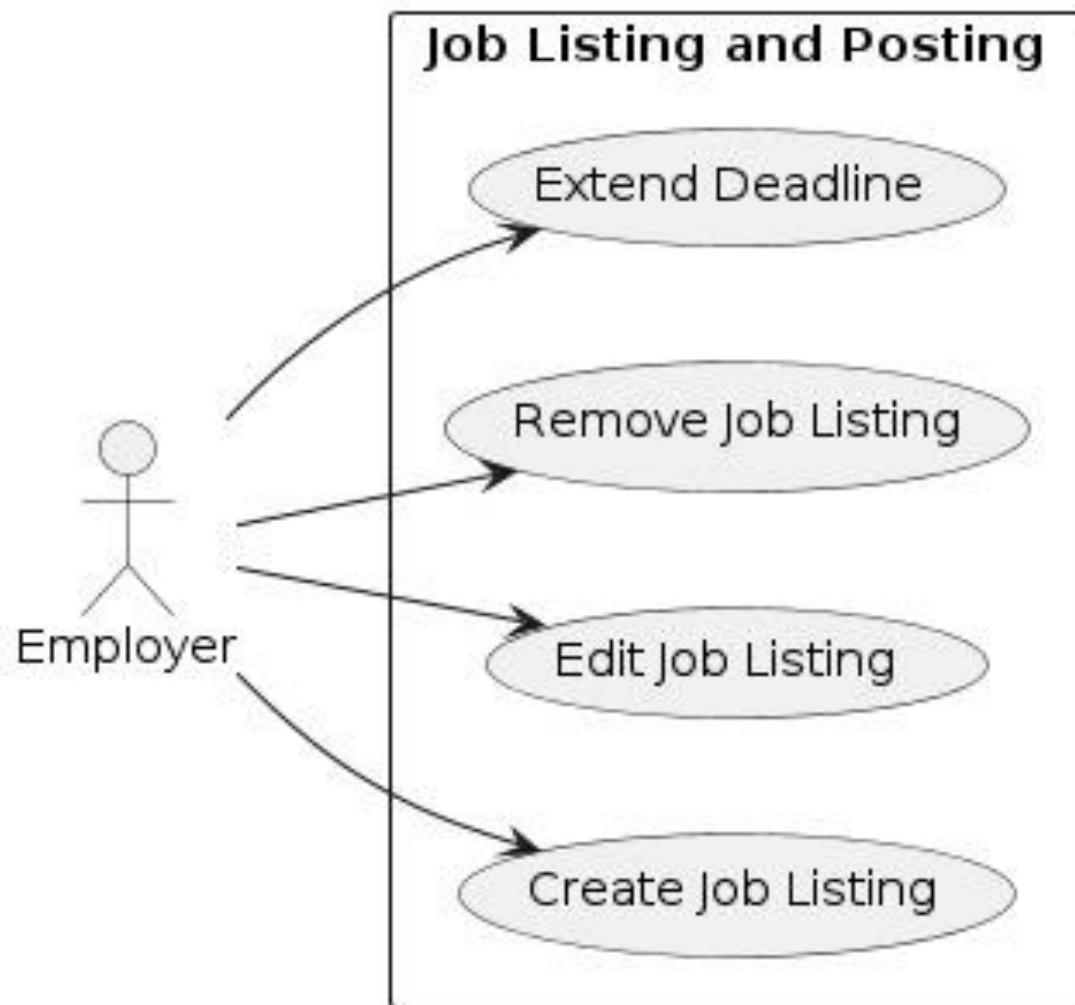
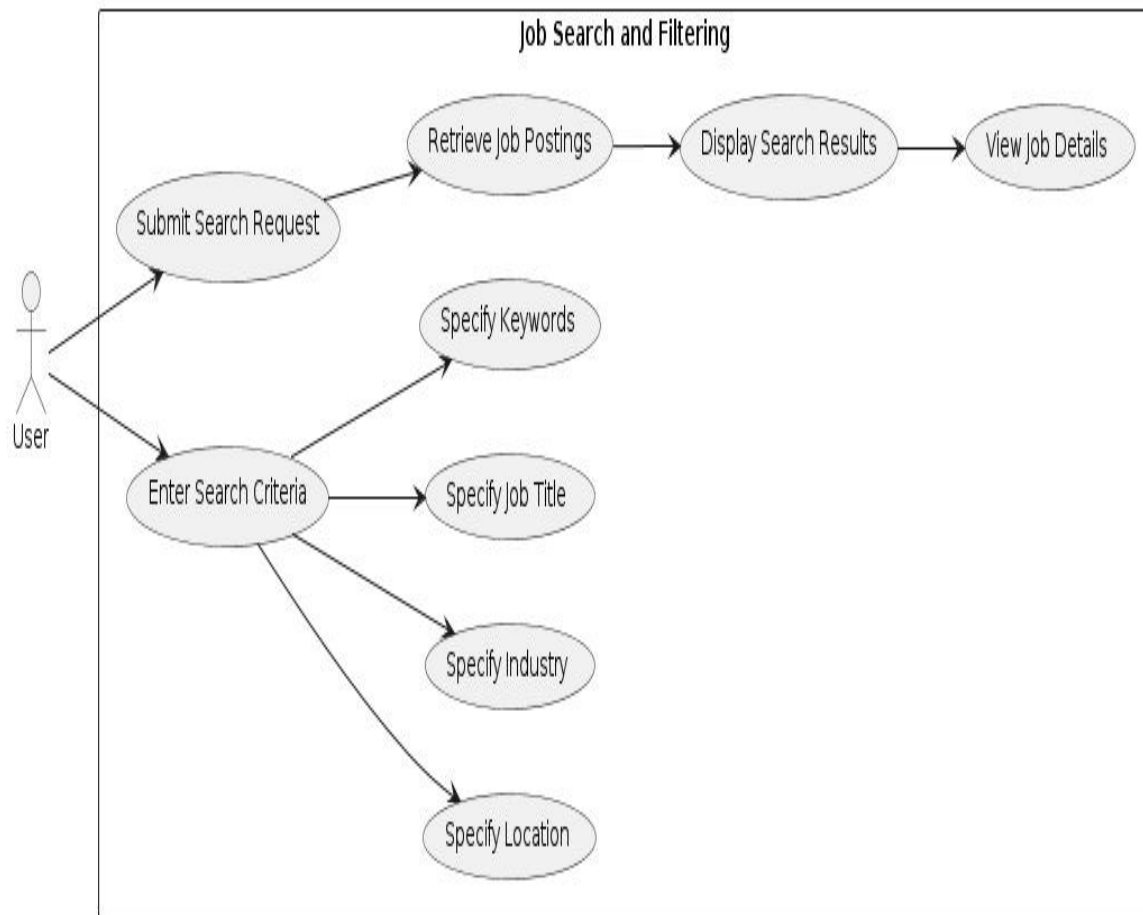


Fig 4.5: job Listing and posting Use Case Diagram

4.3.1.5 Job search and Filtering Use Case Diagram

**Fig 4.6: job search and Filtering Use Case Diagram**

4.3.1.6 Communication and Messaging Use Case Diagram

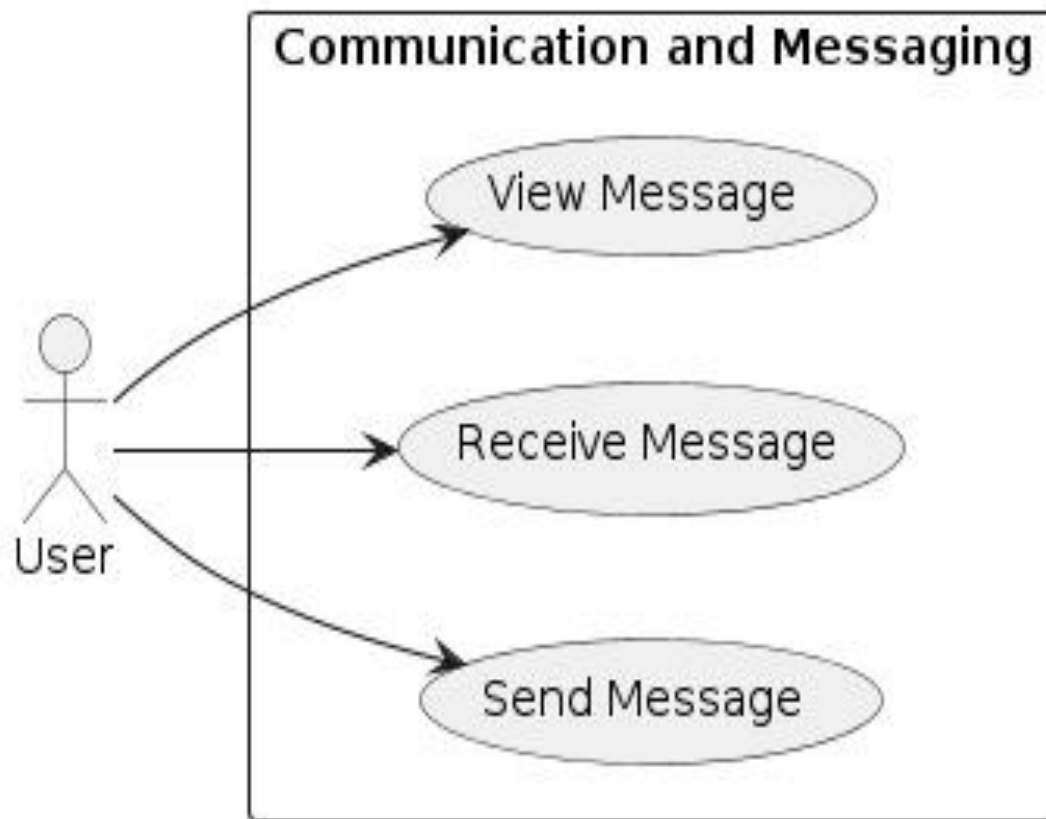
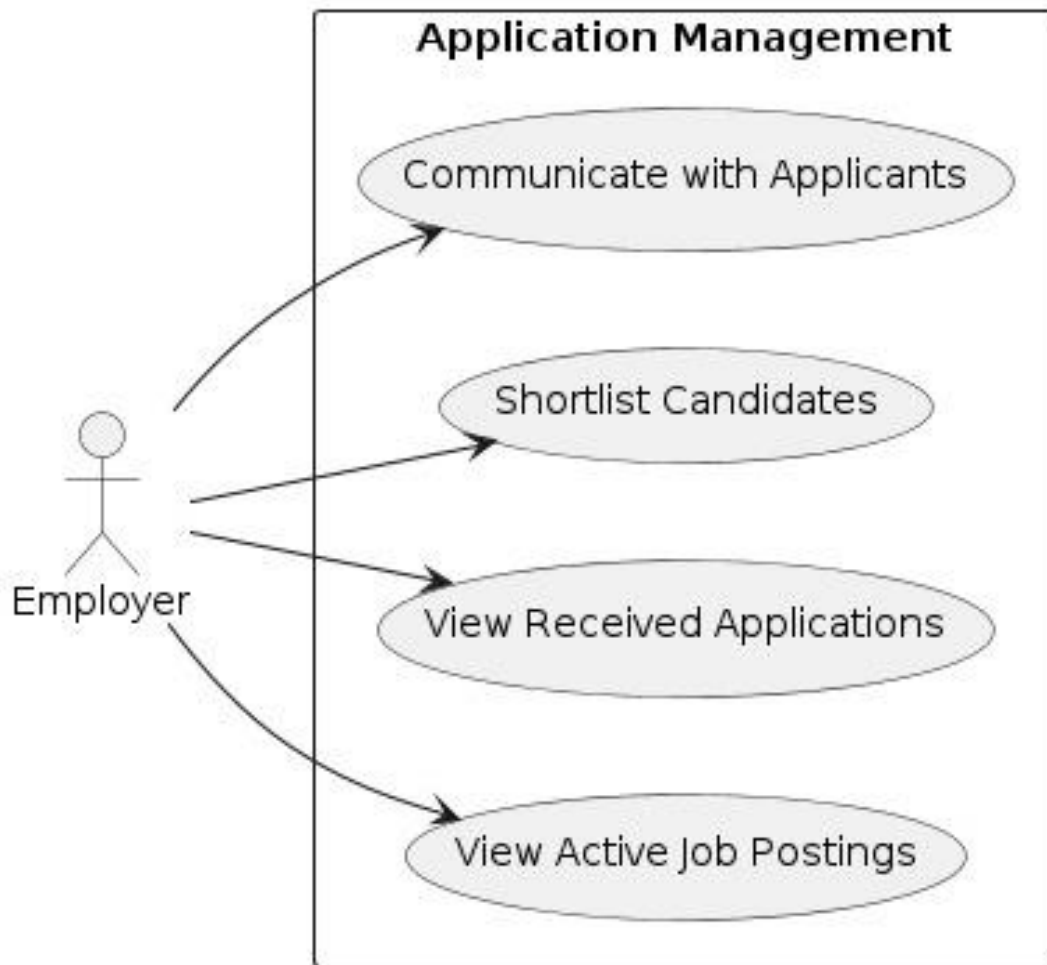
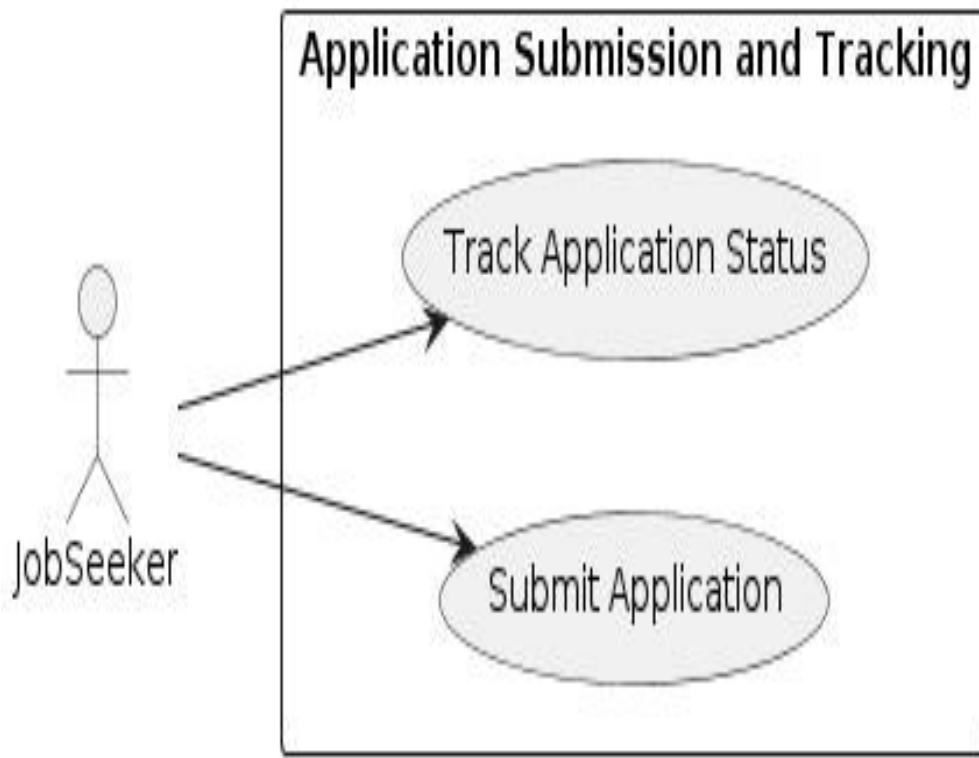


Fig 4.7: communication and Messaging Use Case Diagram

4.3.1.7 Application Management Use Case Diagram

**Fig 4.8: Application Management Use Case Diagram**

4.3.1.8 Application Submission and tracking Use Case Diagram

**Fig 4.9: Application Submission and tracking Use Case Diagram**

4.1.1.1 Job Explorer system Use Case Diagram

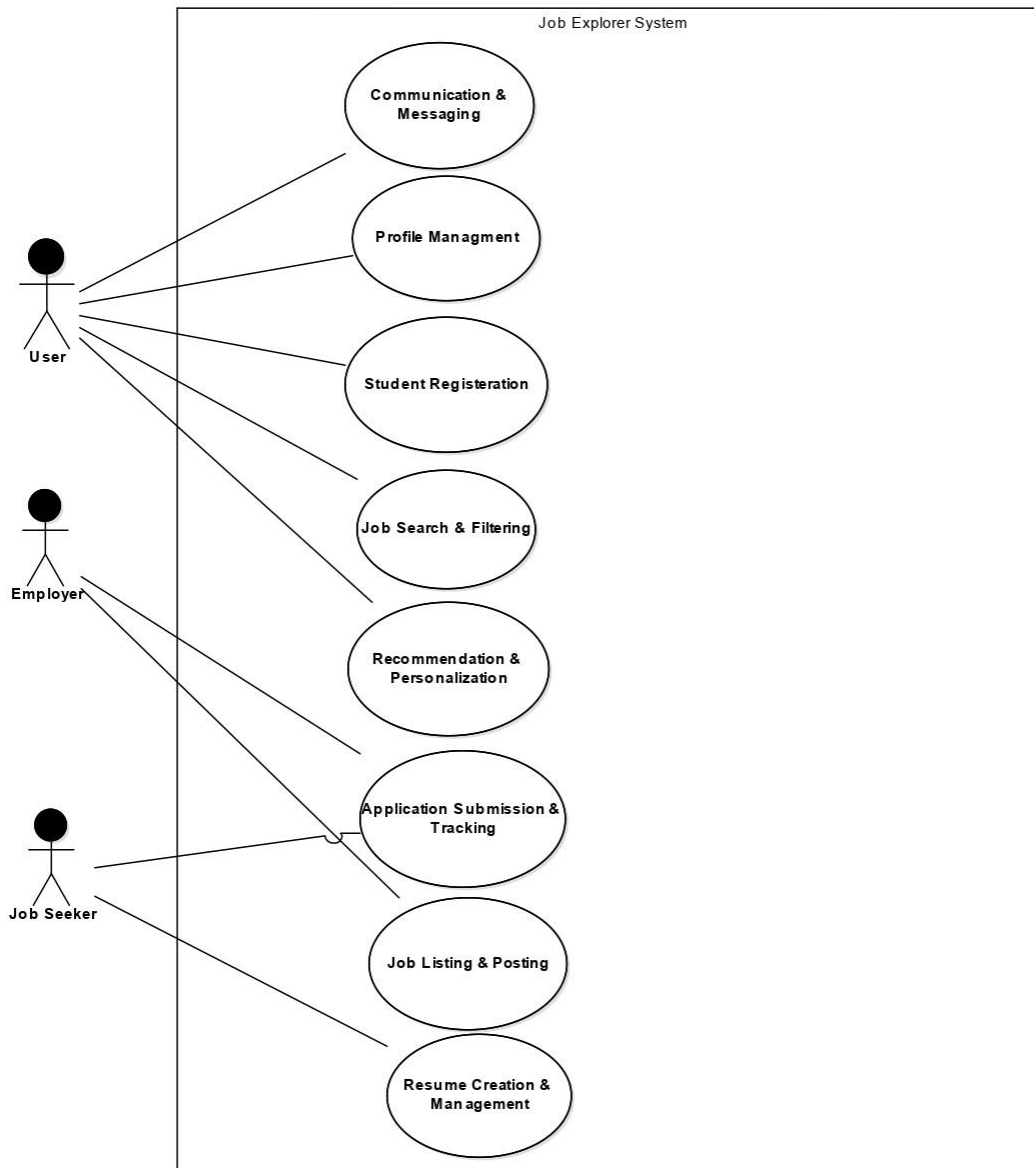


Fig 4.10: Job Explorer system Use Case Diagram

4.1.2 Fully Dressed Use Cases

4.1.2.1 Authentication

User Registration and Authentication

Table 4.1: User Registration and Authentication Fully Dressed Use Case

Use Case ID	001
Use Case	User Registration and Authentication
Actors	user

Description	User wants to create an account.	
Preconditions	Describes the process of user registration and authentication on the job portal platform	
Post Conditions	User successfully registers for an account and is authenticated to access the platform.	
Basic Flow	1. User accesses the job portal platform. 2. User selects the option to register for a new account. 3. System presents the user with a registration form. 4. User fills out the form with accurate information. 5. System validates the information.	6. If valid, system creates a new user account and stores information. 7. System sends confirmation email to user's provided email address. 8. User receives email and verifies their account. 9. User can log in to the platform.
Alternate Flow	Existing User: Can choose to log in instead of registering. Invalid Registration Information: System prompts user to correct errors.	Email Verification Failure: User can request new confirmation email or contact support.

4.1.2.1.1 Job searching and Filtering

Table 4.2: job search and Flittering Fully Dressed Use Case

Use Case ID	002
Use Case	Job search and Filtering

Actors	User	
Description	Describes the process of searching for job opportunities and filtering search results on the job portal platform.	
Preconditions	User must be registered and authenticated on the platform.	
Post Conditions	User receives a list of job postings matching the search criteria and can further refine or view details of specific job postings.	
Basic Flow	1. User accesses the job portal platform and navigates to the job search section. 2. System presents the user with a search interface. 3. User inputs desired search criteria. 4. User submits the search request.	5. System retrieves matching job postings from the database. 6. System displays search results to the user. 7. User reviews results and may refine search criteria. 8. If interested in a job, user clicks to view detailed information. 9. System presents detailed job description. 10. User decides to apply for the job.
Alternative Flow	<p>Invalid Search Criteria: System displays error message and prompts user to correct input.</p> <p>No Matching Results: System informs user and provides suggestions for refining search</p>	<p>Filtering Results: User can further filter results based on additional criteria.</p> <p>Saved Searches: System may offer option to save search criteria for future use.</p>

4.1.2.1.2 Job listing and posting

Table 4.3: job listing and posting Fully Dressed Use Case

Use Case ID	003	
Use Case	Job listing and posting	
Actors	Employer	
Description	Describes the process of searching for job opportunities and filtering search results on the job portal platform.	
Preconditions	Job listing is successfully created and published on the platform.	
Post Conditions	Employer must be registered and authenticated on the platform.	
Basic Flow	1. Employer accesses the job portal platform and navigates to the job posting section. 2. System presents employer with a job posting form. 3. Employer fills out the job posting form with relevant information. 4. System validates the information provided.	5. If valid, system creates a new job listing and stores it in the database. 6. Job listing is published on the platform and made visible to job seekers. 7. Employer receives confirmation message indicating successful posting.
Alternate Flow	Invalid Information: System prompts employer to correct errors Editing Job Listing: Employer can edit listing to update information. Removing Job Listing: Employer can remove job listing from platform. Extending Deadline: Employer can update job listing with new deadline.	Removing Job Listing: Employer can remove job listing from platform Extending Deadline: Employer can update job listing with new deadline

4.1.2.1.3 Resume creation and management

Table 4.4: Resume creation and Management Fully Dressed Use Case

Use Case ID	004	
Use Case	Resume creation and Management	
Actors	Job seeker	
Description	Describes the process of creating, uploading, and managing resumes on the job Explorer platform.	
Preconditions	Job seeker must be registered and authenticated on the platform.	
Post Conditions	Job seeker's resume is successfully created, uploaded, and managed on the platform.	
Basic Flow	1. Job seeker accesses the job portal platform and navigates to the resume management section. 2. System presents job seeker with options to create a new resume or upload an existing one. 3. If creating a new resume, job seeker fills out resume form with personal information, education background, work experience, skills, etc. 4. If uploading an existing resume, job seeker selects file from device and uploads it to platform	5. System validates resume information provided by job seeker. 6. Once resume is created or uploaded, job seeker can view and manage it on the platform. 7. Job seeker can edit and update resume information as needed. 8. Job seeker can format resume according to predefined templates or customize layout.
Alternate Flow	Invalid Information: System prompts job seeker to correct errors. Uploading Different Formats: System may support various file formats for resume uploads.	Resume Versioning: Job seeker may maintain multiple versions of their resume on the platform.

4.1.2.2 Application submission Tracking

4.1.2.2.1 Application submission Tracking

Table 4.5: Application submission Tracking Fully Dressed Use Case

Use Case ID	005	
Use Case	Application submission and Tracking	
Actors	Job seeker Employer	
Description	Describes the process of job seekers submitting applications and tracking their status, and employers managing received applications on the job portal platform.	
Preconditions	Job seeker must be registered and authenticated on the platform. Job posting must be active and available on the platform.	
Post Conditions	Job seeker's application is successfully submitted to the employer. Job seeker can track the status of their application on the platform. Employer receives and reviews the job seeker's application.	
Basic Flow	Job seeker 1. Job seeker accesses job listing and reviews details. 2. Job seeker decides to apply and selects the option to submit an application. 3. System presents job seeker with application form or prompts them to upload documents. 4. Job seeker fills out form or uploads documents. 5. Job seeker reviews application. 6. Job seeker submits application. 7. System confirms successful submission.	Employer 1. Employer accesses job postings section. 2. System presents list of active job postings and associated applications. 3. Employer selects specific job posting. 4. System displays list of received applications. 5. Employer reviews applications, shortlists candidates, and manages recruitment process.
Alternate Flow	Incomplete Application: System prompts job seeker to provide missing information	Application Deadline: System notifies job seeker if application is submitted after deadline. Application Withdrawal: Job seeker may withdraw application.

4.1.2.2.2 Communication and Messaging

Table 4.6: communication and Messaging Fully Dressed Use Case

Use Case ID	006	
Use Case	Communication and Messaging	
Actors	User Job seeker Employer	
Description	Describes the process of users, including job seekers and employers, communicating with each other through messaging on the job portal platform.	
Preconditions	User must be registered and authenticated on the platform.	
Post Conditions	Users can exchange messages with other users on the platform.	
Basic Flow	<div> <div> 1. User accesses the job portal platform and navigates to the messaging section. 2. System presents user with messaging interface displaying message inbox, sent messages, and options to compose new messages. 3. User selects message thread or composes new message. 4. If composing new message, user enters recipient's username or selects from list of contacts. </div> <div> 5. User writes message in composition field. 6. User reviews message. 7. Once satisfied, user sends message. 8. Recipient receives message in their inbox. 9. Both sender and recipient can continue conversation by exchanging additional messages. </div> </div>	

Alternate Flow	<p>Message Filtering: Users may filter messages based on criteria such as sender, date, or content.</p> <p>Message Notification: System may send notifications to users for new messages or updates to existing threads</p>	<p>Blocking Users: Users may block or report other users for unwanted or inappropriate messages.</p>
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4.1.2.2.3 Profile Management

Table 4.7: profile Management Fully Dressed Use Case

Use Case ID	007
Use Case	Profile Management
Actors	User
Description	Describes the process by which users can manage their profiles on the job portal platform, including updating personal information, adjusting privacy settings, and maintaining a professional online presence.

Preconditions	User must be registered and authenticated on the platform.	
Post Conditions	User's profile information is successfully updated and saved on the platform.	
Basic Flow	<ol style="list-style-type: none"> 1. User accesses the job portal platform and navigates to the profile management section. 2. System presents user with options to view and edit their profile information. 3. User selects option to edit their profile. 	<ol style="list-style-type: none"> 4. System displays user's profile information. 5. User updates desired fields. 6. User reviews updated profile information. 7. Once satisfied, user saves changes to their profile. 8. System confirms successful update and provides confirmation message to user.
Alternate Flow	<p>Privacy Settings: Users may adjust privacy settings for their profile.</p> <p>Profile Visibility: Users may choose to make their profiles public or private.</p>	<p>Profile Picture: Users may upload a profile picture.</p>

4.1.2.2.4 Recommendation and Personalization

Table 4.8: Edit Recommendation and Personalization Fully Dressed Use Case

Use Case ID	008	
Use Case	Recommendation and Personalization	
Actors	User	
Description	Describes the process by which the job portal platform provides personalized job recommendations and content to users based on their preferences, activity, and profile information.	
Preconditions	User must be registered and authenticated on the platform. User's profile information and activity history are available on the platform.	
Post Conditions	User receives personalized job recommendations and content tailored to their interests and preferences.	
Basic Flow	1. User accesses the job portal platform and navigates to the recommendations or personalized content section. 2. System analyzes user's profile information, including job preferences, skills, experience, and activity history. 3. Based on user's profile and activity history, system generates personalized job recommendations and content.	4. User views personalized recommendations and content. 5. User interacts with recommendations by exploring job listings, reading articles, or taking recommended actions. 6. System continues to track user's activity and preferences, refining future recommendations and content.
Alternate Flow	Feedback Loop: Users may provide feedback on relevance and usefulness of recommendations and content, improving future personalization efforts beyond initial suggestions.	Preference Adjustment: Users may adjust preferences or interests over time, prompting system to update recommendations accordingly. Exploration: Users may explore additional recommendations or content.

4.1.2.2.5 Application Management

Table 4.9: Application Management Fully Dressed Use Case

Use Case ID	009	
Use Case	Application Management	
Actors	Employer	
Description	Describes the process by which employers manage received job applications for posted job listings on the job portal platform, including reviewing, shortlisting, and communicating with applicants.	
Preconditions	Employer must be registered and authenticated on the platform. There must be active job postings on the platform to receive applications.	
Post Conditions	Employer successfully manages received job applications, including reviewing, shortlisting, and communicating with applicants as needed.	
Basic Flow	<div> <div> 1. Employer accesses the job portal platform and navigates to the application management section. 2. System presents employer with list of active job postings and associated applications 3. Employer selects specific job posting to view received applications. </div> <div> 4. System displays list of job seeker applications for selected job posting 5. Employer reviews applications. 6. Employer may choose to shortlist candidates or reject applicants 7. Employer communicates with selected candidates, schedules interviews, and manages recruitment process. </div> </div>	
Alternate Flow	Shortlisting Candidates: Employers may shortlist candidates based on specific criteria Communication with Applicants: Employers may communicate with applicants through platform.	Interview Scheduling: Employers may schedule interviews with selected candidates through
	Platform.	

4.1.3 Activity Diagrams:

4.1.4 Admin Activity Diagram

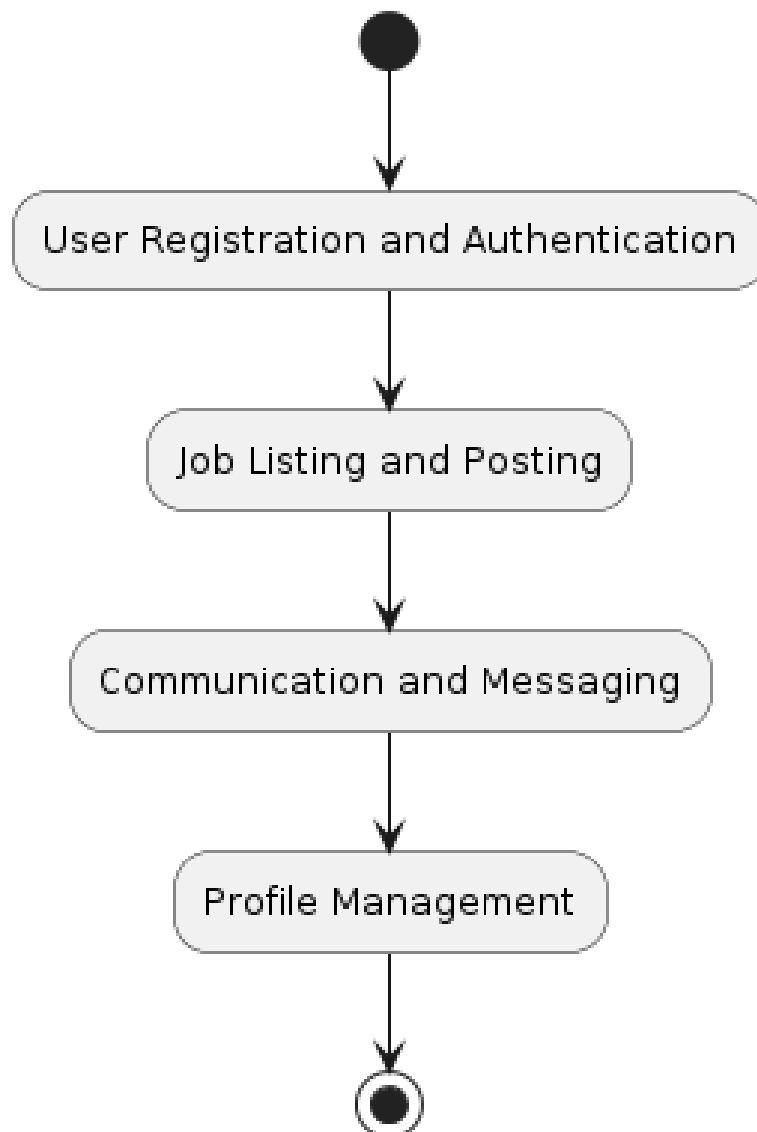


Fig 4.10: Admin Activity Diagram

4.1.1 Student Activity Diagram



Fig 5.1: Admin Activity Diagram

1.2.2 Job Seeker Activity Diagram

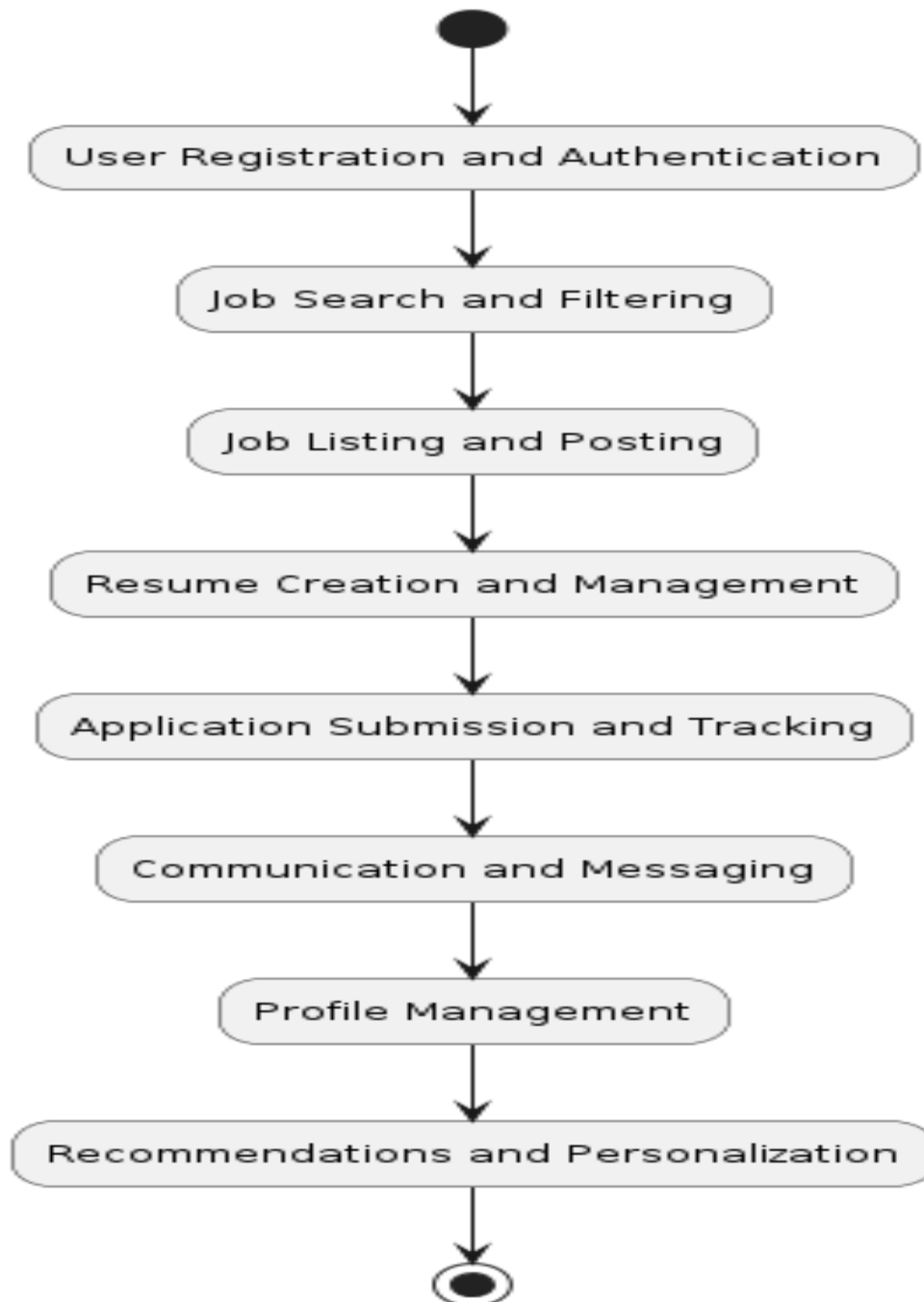


Fig 5.2: Job Seeker Activity Diagram

1.2.3 Employers Activity Diagram

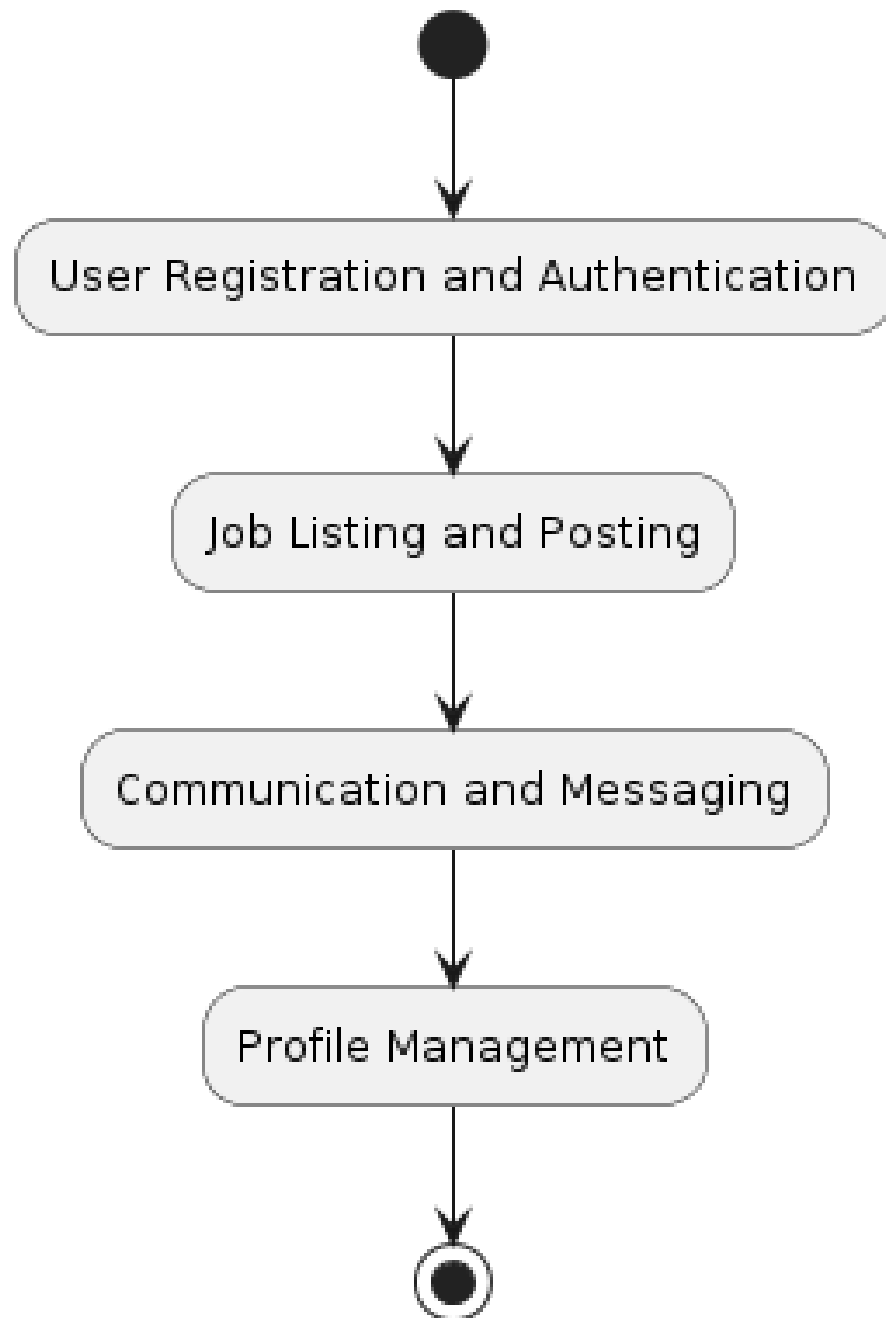


Fig 5.3: Employers Activity Diagram

4.1 DATABASE DESIGN

4.1.1 Entity Relationship Diagram

Fig 4.10: Entity Relationship Diagram

4.1.1.1 Data Dictionary

Here are the examples of the data being stored and more detailed descriptions of the database tables are given.

