WOLKITE UNIVERSITY

COLLEGE OF COMPUTING AND INFORMATICS

DEPARTMENT OF SOFTWARE ENGINEERING

PROJECT ON

ONLINE JOB SEARCH SYSTEM

BY

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ONLINE JOB SEARCH SYSTEM

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IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR

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DECLARATION

This is to declare that this project work which is done under the supervision of Yohanise Abate (MSc.) and having the title Online Job Search System is the sole contribution of: Bonsa Fekadu, Beshada Nugusie, Dawit Ababu.

No part of the project work has been reproduced illegally (copy and paste) which can be considered as Plagiarism. All referenced parts have been used to argue the idea and have been cited properly. We will be responsible and liable for any consequence if violation of this declaration is proven.

Date: _____

Group Members:

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Approval Form

This is to confirm that the project report entitled Online Job Search System submitted to **Wolkite University, College of Computing and Informatics Department of Software Engineering** by: Bonsa Fekadu, Beshada Nugusie, Dawit Ababu is approved for submission.

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LIST OF ABBREVIATIONS

CSS	Cascading Style Sheet
GUI	Graphical User Interface
HTML	Hyper Text Markup Language
MYSQL	My Structure Query Language
OOSAD	Object Oriented System Analysis and Development
OS	Operating System
PHP	Personal Home Page
SRS	Software Requirements Specification
UML	Unified Modelling Language
WAMP	Window Apache MySQL PHP

Abstracts

Job search system or a job search site is a powerful system a that helps job seekers to view and apply for jobs in different agencies by accessing it through online job search system without the need for moving physically from agency to agency. There is a few job portal website in our country, they are not successful to give a desired service due to the current online job portal works in only one language that are foreign language, does not have responsive layout, applicant Selection criteria is not clear and they are complex to apply. The proposed system solves the problems of the existing system by applying the concept of object oriented system development methodology and by providing the system work in local languages, make the layout of the system responsive and give good layout for user of system, make the system easy for new user through making easy graphical user interface and including user manual in proposed system that make best for use.

CHAPTER ONE

1. INTRODUCTION

An online job search system is a web-based software programmed tool and automated computer programs that browse the internet in a methodical and automated manner, a job search site is a website which posts jobs supplied by employers and allow job seeker to search job that match their qualification The intention of online job search system is facilitate both the candidates seeking jobs as well as the employers looking for employees for their companies. In this online application, any job seeker can search for the available jobs at any moment with updated information. When he/she finds a job, he/she can post application to the job on line. Employers can advertise the vacancies by taking the membership, logging in and posting the job information with the eligibility criteria for the jobs. This software establishes a direct connection between the employer and the job seeker. A job seeker can directly visit this system and view the jobs availability information along with downloading the required information (Dr.T.K.Shaik Shavali, 2017).

Job search system or a job search site is a powerful, flexible and easy to use software which is developed to provide a common platform for interaction to address the communication gap between job seekers and recruiters. The system is to make the job searching processes simpler and easier (DADZIE, 2018).

There are many job search portals in Ethiopia where hundreds or even thousands of job postings are published available for job seekers to search and a system that helps job seekers to view and apply for jobs in different agencies those online job portals not support more than one language, the process of recruiting a candidate is not transparent, they have poor interface and have no user manual. So the main aim of our project is to develop a web-based system that hopefully eliminate or reduce the manual work in job searching process and also reduce the problem of the currently used system.

The proposed search system solves the general problem of current online job portal by providing the system work in three languages, in Amharic, Afaan Oromo and including English language, select the best fit Applicant without human intervention, make the layout of the system responsive

that work on any size of device and give good layout for user of system, make the system easy for new user through making easy graphical user inter face and including user manual in proposed system that make best for use.

1.1 Background of The Project

There are many websites in Ethiopia that provide job vacancy announcements. All of these websites have their own qualities, for example, if you are looking for jobs in NGO's or foreign companies, Ethiojobs is the best option. In fact, all you need to do is upload your resume, which give you the chance to get discovered by the requirement team of the company. In the past, Newspaper was the most reliable way of hunting jobs in Ethiopia, and one newspaper stands out the most: Ethiopian Reporter Newspaper which recently launched a website to help people get the latest job vacancies online over the internet. With Ethiopian reporter job you can rest assured that you get almost 90% of job vacancy announcements in Ethiopia. There are also other many more similar websites, to mention some: etcareer, ezega, mjobs, ethiojobs, etc…And for people who spend some time on Facebook there is a page called Job Vacancy Ethiopia, that provides information on the latest job vacancies on Facebook. We have many options to choose from, and most of the job posts we get from these websites will be some home similar, we just need to choose our preferred site. There is also another website that focuses on accounting and banking jobs in Ethiopia, where we can get the latest vacancy announcements from Ethiopian Banks (Z, 2008).

1.2 Statement of The Problem

Online Job portals are now becoming popular in our countries and some of these existing systems are geez job ethiojob, m job, etc. thus job portals are a single site where hundreds or even thousands of job postings are published available for job seekers to search and a system that helps job seekers to view and apply for jobs in only one language. The problems encountered in the existing systems are:

- The existing system doesn't support Multilanguage. Hence they have supported English language only. More than half of our country citizens are not good at English language, so they cannot have interest to use the system.

- Selecting best fit Applicant is difficult for employers, because of lot of Applicant are apply check and compute candidates those is huge task.
- The layout of the current system is not responsive to user of smartphone and on some tablet.
- Most of the existing system is complex to use for new user.
- Poor searching engine, cannot target the specific user query or keyword.
- The process of recruitment through current job portal is not transparent, the computation criteria is not clear between candidates which make other applicants to think the process have a corruption.
- Because of the existing system works only in English language for employer it's difficult to get many applicants this may result in employer's loss interest to use the system.

1.3 Objectives

1.3.1 General Objective

The general objective of this project is to develop the system that improve existing job searching system.

1.3.2 Specific Objective

In order to achieve the general objective, we:

- Identifying all problem of the current existing system.
- Analyzing the collected data through different techniques.
- Design the architecture for the proposed system
- Develop user friendly and interactive system
- Testing of developed system through different techniques.

1.4 Feasibility Analysis

- Feasibility analysis enables the system to determine either or not the project can be developed, evaluates and identifies the newly developed system. Therefore, the feasibility analysis of proposed system involves the following feasibility:

1.4.1 Technical feasibility

The proposed system develops by using technologically system development techniques works on different plat forms such as Windows operating systems, macOS and other web-based applications. The system developed by using available hardware and software such as computer and web-based applications. Our group members have technical knowledge about:

- PHP to write the code or implementation with WAMP server.
- MySQL to build the database to store the data.
- Unified Modelling Language (UML) model to do analyzing and designing in good manner. So the group members have enough capability to developing the project.

1.4.2 Operational Feasibility

The operational feasibility of the proposed system is simple for user to interact with system, user friendly with GUI, no more complexes to user because we use well-defined graphical user interface and follow steps of the way of existing system working. The proposed system be available for user to access the system, because the system store data on server work 24/7 hours. The system is also compatible with all operating systems and web browsers. So, the project is operationally feasible.

1.4.3 Economic Feasibility

The proposed system developed as part of project work, there is no manual cost to spend for the proposed system. Also all the resources are already available, it gives an indication of the system is economically possible for development. The Job seekers also need not to waste their money as travel expenditure to find the jobs. So the proposed system is economically feasible.

1.4.4 Legal Feasibility

The project team members built the system without violating rules and regulations of the governments, the content of proposed system is secular it means any preference of system cannot relate to any religion and custom. Support user from any race and ethnic. The system being built is for the sake of productivity of the users, so that the project is legally feasible.

1.4.5 Time Feasibility

The time given for this project is around six months. First three months for pre-SRS and the next three months are for implementation of the designed. We plan to finish our design within given time. To achieved the project, we use the schedule which is organized by the department level, this also help us to finish the design on time give us. According to the data we gathered from the observation we have concluded that the application is time feasible. The proposed system is an automated system that can execute task with fast response time.

1.5 Scope and Limitation

1.5.1 Scope of The Project

- Proposed System provides Job searching, apply for the job, Job Postings, List of job View information, update information, change language, notify applicants, show selected applicant and the criteria of selection.

1.5.2 Limitation

- The proposed project support three languages that is Amharic, Afaan Oromo and English Only.
- The proposed system not provide SMS notify.

1.6 Significance of The Project

The main purpose of this project is to develop a job search system which enables the job seekers to apply for jobs that match their qualifications in an easy, cost effective and timely manner. That means it enables the job seekers to search for jobs through their electronic device anywhere any time. And also employer can select qualified candidates in an easy, cost effective and timely manner. This online job search system have a significance beyond the current online job portal work in three languages make a system open many user, selection (computation) of best fit candidates is done by system without any human intervention this increase an applicant believes of system.

The following are tangible significances of the system.

- Decrease wastage of the resource: - by storing the data in to computerized system and performing task in computerized way .so, this decreases the resource that use for store and perform different activity.
- Cost saving: - this means companies or organization using the system spend less to advertise their job vacancy as compared to the use tradition method
- Satisfaction of the users: - the system provides better quality service that leads to access the system in simple and faster to use the system way it satisfies the user.
- Improved productivity: -system works in different language so different user can use the systems
- Save time: - online job search system which enables the job seekers to apply for jobs that match their qualifications in an easy, and save time.
- Reduce disputes among job seeker when they find notice board.

1.7 Benefit of The Project

Different parts are going to be benefited from the new system such as:

- **Job seekers:** - benefited from the proposed system by searching the latest job on his electronic device and decrease their tired of finding posted job on notice board. And minimizes the cost and time of the jobseeker. In addition, no need of search site from other than internet.
- **Employer:** - save wastage of time to place a paper of latest job on notice board every time and take qualified applicant easily.
- **Developer:** - after the completion of this project the members of this project help to get better skill and experience of how to gather requirement and analysis, design the structure of proposed system, implement and test the proposed system functionality, deploy and maintain.

1.8 Methodology of the Project

1.8.1. Data collection Tool/Techniques

To develop our project, the primary task is understanding more about the current Job search System being used to find jobs; we gather different information from web based job search applications like and also we gather data using the following techniques.

- **Observation:** The team observe the problem of existing system by seeing current online job portal problem how it works, what makes difficult to apply and we are familiar with the problem so it is does not difficult to understand what are difficult or make them lose interest to use the existing system, Generally, online job search system remove all this problem of the job seekers and employers.

1.8.2 System Analysis and Design

The method of the system development can be done through OOSAD (Object oriented system analysis and design) during the whole project life cycle. In our project, we apply the concept of object oriented system development methodology due to:

- It is easy to understand as a so we can clearly know system analysis and design to develop proposed system.
- It provides reusability. Due to its re-usability, we can use another system component.
- Increased Quality. Because of it allow modularity.

1.8.3 System development methodology

We chose ITERATIVE MODEL to incorporating the necessary changes ideas comes from applicants and employer on every phase to its preceding phases. The change idea paths allow the phase to be reworked in which errors are committed and these changes are reflected in the later phases. Because of the system is used by different kind of user we can update proposed system depending on user's desire, due to an iterative model allow to make change and update proposed system, we select iterative model.

1.8.4 system testing methodology

Unit Testing

Unit testing involves the testing of each unit or an individual component such as job seeker module, employer, admin module… of the software application. It is the first level of functional testing. The aim behind unit testing is to validate unit components with its performance. A unit is a single testable part of a software system like a log in, apply, register and tested during the development phase of the application software. The purpose of unit testing is to test the correctness of isolated code.

Integration testing

Once each individual part of the system is tested, every smallest unit is tested, different modules of the system are now integrated together and tested. We use integration to test their integration of different modules of proposed system (job seeker module, employer module, admin module) with each other in one. Whether the integration works or whether a part of the system that is functional individually starts failing when integrated with another part is what integration testing is all about.

System testing

That an integrated system meets all its specifications and requirements is decided by system Testing. We use system testing to test the flow function of integrated of proposed system, the function of job application passes through path of different modules i.e. registration module, login module, job search module, admin module. These all flow of functions are tested using system testing.

1.8.5 Tools used for this project

1.8.5.1 Front end

- HTML and CSS: - In order to design the user interface.
- JavaScript: - used for validation of user input.

1.8.5.2 Back end

- MYSQL**: -**It is the database management system tool for adding, accessing and processing data in a database.
- PHP: -it can be run in any platform in order to collect information from the user interface, storing it in a database, retrieving data from the database and displaying on the user interface.

1.8.5.3 Documentation and Modeling Tools

- Enterprise architect and it is one of the appropriate tools for use UML modeling.
- Microsoft word: in order to document the project

1.9 Budget and time schedule of project

1.9.1 Cost breakdown

Table 1. 1. Cost Breakdown

Type	Material	Amount	Price(birr)
Software cost	Documentation		3890
	Software development cost		100000
	Testing and Maintenance cost		50000
	Deployment cost		25000
Total			203,890

1.9.2 Time schedule of the project

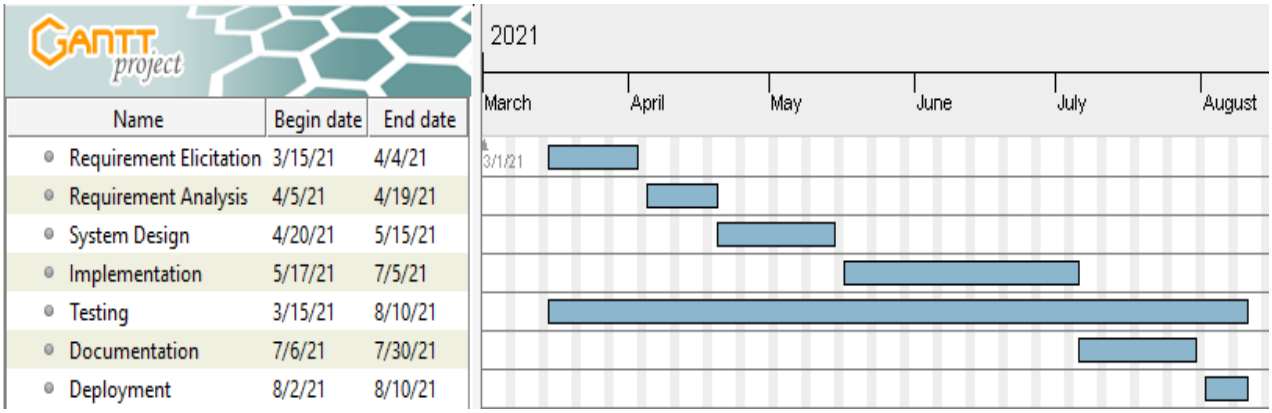

Figure 1. 1. Time Schedule of project

1.10 Team Composition

Table 1. 2.Team Composition

No	Role	Name
1	Requirement gathering	All member
2	Requirement analysis	All member
3	System analysis	Beshada Nuguse and Dawit Ababu
4	System Design	Bonsa Fekadu and Dawit Ababu
5	Implementation	All member
6	Testing	Bonsa Fekadu and Beshada Nuguse
7	Documentation	All member

1.11 Document Organization

- Chapter one defines and describes concepts with regard to the introduction of the chapter that discusses problems in the existing system, scope and limitation, methodology, development tools, schedule and cost breakdown.
- Chapter two describe the existing system.
- Chapter Three is about Overview of proposed system which includes functional and non-functional requirements.
- Chapter four Consists of a flow of events which is the scenario, use case model with its description of the major use cases.
- Chapter five deals with system design. Which includes the overview of the system, design consideration, design goal, design tradeoffs, the architecture of the System, subsystem decomposition, persistent data management, and class interface

CHAPTER TWO

2. DESCRIPTION OF THE EXISTING SYSTEM

2.1 Introduction of Existing system

The existing of Job Portal is facilitating both the candidates seeking jobs as well as the employers looking for employees for their companies. In this online application, any job seeker can search for the available jobs at any moment with updated information. When he finds a job, he can post his application to the job on line. Employers can advertise the vacancies by taking the membership, logging in and posting the job information with the eligibility criteria for the jobs. This software establishes a direct connection between the employer and the job seeker. A job seeker can directly visit this portal and view the jobs availability information. When he logs into the system, he would be able to upload his application and post walk-in details which he knows would be held by a company. Further, the user be able to view the list of companies for which has already applied. This enables him to take a decision when he gets a call from a company and how much time elapsed since he has applied for the company.

2.2. Users of Existing System

Current system encompasses different players (actors) to carry out the whole activities.

Administrator: A person who manages the entire system

Employee: A company that have the right to post job and edit profile in case of ethiojob.net/mjob.com and can place a vacancy paper on notice board in case of manual system.

Job seeker: a person who can get information about a latest job from ethiojob.net/mjob.com. and from notice board

2.3 Major Functions of Existing System

- ✓ **job seekers registration**

Input

- by using scanning method convert into softy copy of the CV
- A soft copy of necessary document

Process

- The user to open registration form
- User to fill the form
- The system checks the filling data and to display the registration is success full.
- End process

Output

Applicant registration

- ✓ **New job(Vacancies) registration**

Input

- New vacancy announced by TV, Radio and different magazine.
- Different companies, organizations, institutions, embassies etc.
- They send their job vacancies to the system.

Process

- The manager selects appropriate job portal and login.
- registers the new job in the job form
- End of process

Output

- New job title registration.
- Updating job title file
  - ✓ **Update posted job (vacancies)**

Input

- Old title to be updated
- new title which update the old one

Process

- The system administrator updates the title file
- The manager checks the update file

- ❖ Registers the updated file in the job form

Output

- Update the job title file.

2.4 Forms and Others Documents of the Existing System

There are different forms and documents that used to fill up the full information of the user, job title from which the more appropriate one for our system (job searching system) are user's Registration Form, job title registration Form.

User's Registration Form Fr01

User's Registration Form contains the full information of the user and other required information's. User Registration Form is a form which used when he/she join the service of job searching system

Job registration Form Fr02

The job title registration Form contains the full information of the job and other required information's. Job Title Registration Form is a form which used when the new job to attach in the web site.

2.5. Drawbacks of the Existing System

In our country Ethiopia there is no enough jobs searching system. There is a few jobs website that are not successful to give a desired service. The reason is

- ❖ users not easily understand systems because the system not support Multilanguage or the current online job portal system are developed by only one language, works only in English language.
- ❖ Not have simple and comfortable interface.

System complex to uses for a person who cannot have experience and knowledge of English language like:

- ❖ How to register and login

- How to use searching and apply job.
- How to view latest job.

The many layout of the current system is not responsive to user of smartphone and on some tablet.

2.6 Business Rules of the Existing System

The existing business rule of job search method has its own set of rules and regulations between the job seeker and the company. This rule and regulations must be fulfilled by job seekers to search, view and apply for job posted by the company. The rules are:

- The job seeker must be free from charges
- The company should be legally licensed

CHAPTER THREE

3. PROPOSED SYSTEM

The online job search System is web-based system for job seekers and employer. This application contains server containing the database of job seeker and employer; client containing GUI (graphical user interface). And our system will also have detailed information about the job (job search, latest job, categories of jobs). This system enables job seekers to search and view details of a specific job and applies for jobs posted from different employers and generate and forward announcement and vacancy notifications in return in three languages. It also shortlists qualified candidates who fulfill the criteria required by the employers.

3.1 Functional Requirements

Statements of services the proposed system should provide, how the proposed system should react to particular inputs and how the system should behave in particular situations.

- System works in three languages.
- the system screens the job seeker application qualifications and select the top fit from the applicant without any human intervention.
- Enable the applicant to view selected applicant and show applicant's detail.
- Enable the job seeker, employer, administrator to login and logout through their authentication.
- Enable the user to manage his/her profile.
- Enable the job seeker to receive and view job notification.
- Enable the job seeker to view, post, update his/her resume.
- Enable job seeker to search job, view job detail, apply for job, View latest job, view jobs based on their category.
- Enable the administrator to view, approve and reject the employers detail.
- Enable the employer to post and manage Job.
- Search job from worldwide that indexed by
- Show number of visitor.
- Show number of company.

3.2 Non-functional Requirement

- **Hardware considerations**

The proposed system layout is responsive on different hardware by considering their screen size, and storage. The Software product to be developed should run on existing computers and Android-based smartphones. Our online job search system can run in any modern hardware devices. Job search system is a client-server system it will be installed on the server. And in most client-server systems there is a dedicated server which responds to the different requests of the clients from different locations, which might also have their own hard ware specifications.

- **Security**

A user must log in to the system with a user name and password. The system should allow login to only authorized users. i.e. users that have previously created an account through user name (E-Mail) and password. The system has two groups of users: The Admin and users (job seekers and employers). The Admin user has full privilege to perform on the system. Whereas users can only perform limited operations based on the privilege given by the administrator. The data that is stored in the database is private. The proposed system security developed with MD5 encryption

- **Maintainability**

The system develops using object oriented software development technique that makes the software highly maintainable. After the proposed system deployed if the change is needed on layout, contents, optimization, function addition or complete system changes can be done as its necessity. The modification can be applied, from simple code to the design changes including database. If there are any additional requirements the system is flexible to change.

- **Performance**

The proposed system is web-based system so it should have easy and efficient code manipulation and have clear database. React.js also gives us a high rate of performance since it enables us to use reusable components, it renders a lot faster. Thus, the response time should be very small i.e. not more than 2.5 seconds. And we are confident that the android system will be much faster than our website. Because android applications are usually 1.5 times faster than websites and they perform actions much faster too.

- **User Interface and Human Factors**

The proposed system develops is by using GUI (graphical user interface) that is easily understandable interface that users can interact with the system through the user interface easily. The layout is meaningful and purposeful which Consider the spatial relationships between items on the page and structure the page based on importance. Careful placement of items increases the readability. Make a user feel comfortable and able to get things done quickly, layout and design throughout the site through use of common UI element and create consistence to help facilitate efficiency.

- **Error Handling and Validation**

The proposed system checks the validity of a user at log in any user can view the different part of the system based on the access level specified by the system administrator. The system should trap errors occurring due to invalid input then it displays error message. It handles and show error by in a user friendly manner, without exaggerating the user. We handle this error in client side by using React.js validator and the error type is sent from the backend tool Node.js.

- **Documentation**

Our system online job search system has well defined document which helps to easily maintain the system. We will also prepare short and precise help file on how to use the system for the system users. It will have a helping guide for the user of the system. It shows the process of how they will have to use

CHAPTER 4

4. SYSTEM ANALAYSIS

In this chapter the major activities performed or identified are: the function of the use case, identifying actors, identifying use case, constructing use case model and use case scenarios and finally, user interface designing. There are three types of models in the analysis model: functional, object, and dynamic models. Usage case diagrams may be used to explain the functional model. The object model is represented by class diagrams. Sequence, state map, and operation diagrams can also be used to represent a dynamic model. We used use cases, sequence diagrams, activity diagrams, state diagrams, and class diagrams to define the research process in terms of functional and hierarchical models for this project.

4.1. System Model

System modelling involves the evaluation of system components in relationship with one another to determine their requirements and how to satisfy them. Some system modelling tools will be employed during the course of this project that will support development tasks, from analysis to design, then to implementation. This will be represented with the use of the sequence diagram, activity diagram, state chart diagram, collaboration diagram and class diagram for the job search system. We may represent our system using various system models such as use case models, entity models, and dynamic models, which define the problem to be solved and are more intuitive than more complex natural language descriptions of the system requirement.

- **Use Case Model**

The use case model is used to define the abstract models of our system, with each use case model presenting the creation of abstract models of the system. Our system's core elements and processes are described using the Use Case Model (use case diagram, use case definition, use case scenario). The functional device elements are captured in this Use Case Model. Use Case Models are a perfect way to show user role flows, describe the device specifications being modeled, and help write the scenarios later used in testing.

Table 4. 1. Use case and Actors

Actors	Use case
Administrator Job Seeker Employer	Register Login Logout View Job Change language Apply for Job Manage Resume Manage Profile Post Job Approve Employer View Applicant View Notification

4.1.1.1. Use Case Diagram

Usage case diagrams are used to capture the system's logical specifications. It refers to the system's capabilities or the support it provides.

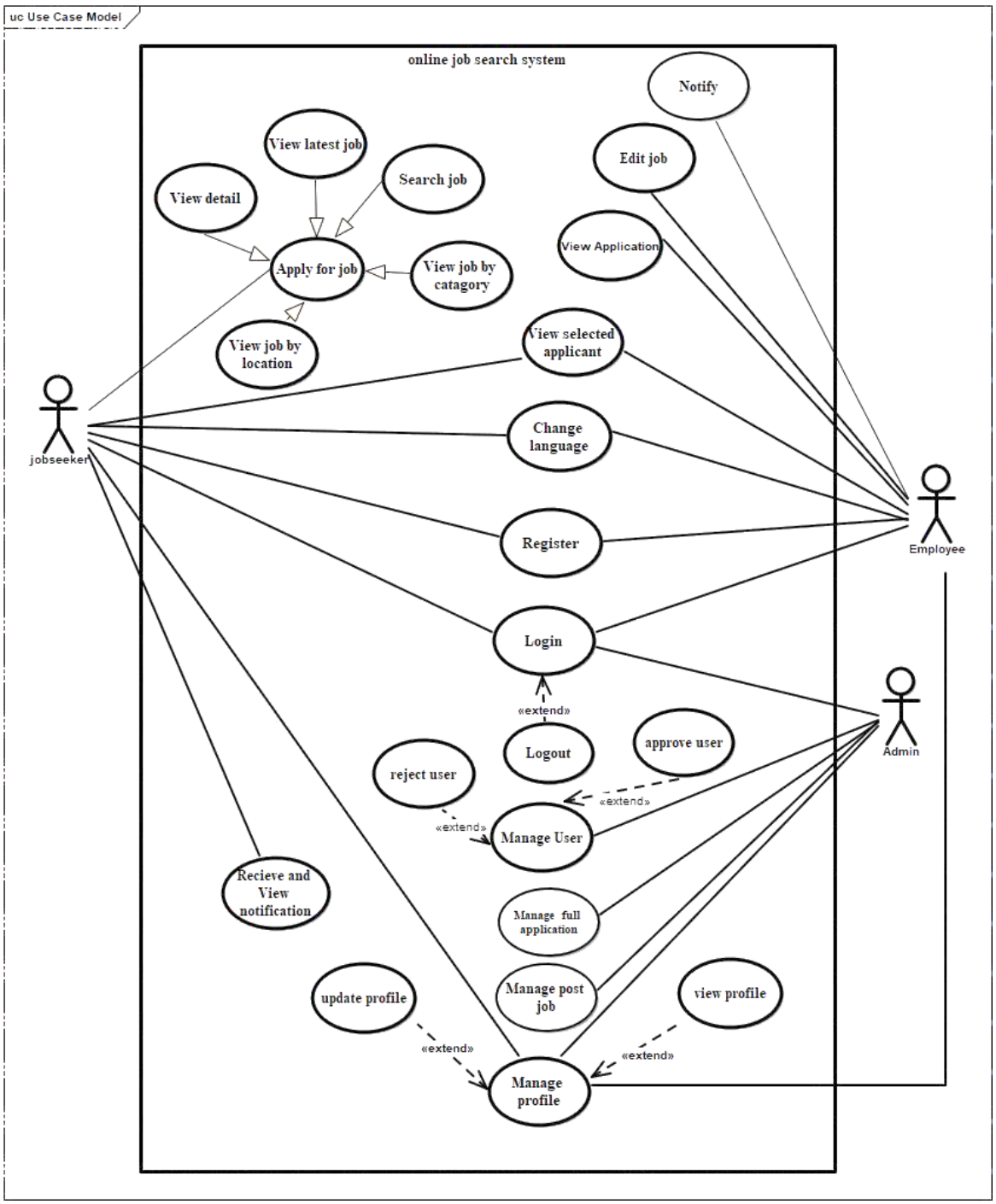

Figure 4. 1. Use case diagram

4.1.1.2. Use Case Description

Table 4. 2. Use case description for Register

Use Case Name	Register

Actors	Job Seeker, Employer
Purpose	Enable Job Seeker or Employer to register
Overview	The Job Seeker or the Employer registers his/her personal information
Pre-condition	Open application The system displays Home page
Post-condition	The system registers the Job Seeker or Employer

Main Course of Action	
Actor Action	System Action
1. Click Register Button	
	2.Display registration form
3.Enters personal information	
4.Click Save Button	
	5.Verify all inputs
	6.Done
7.Use Case Ends	

Table 4. 3. Use case description for Login

Use Case Name	Login
Actors	Job Seeker, Employer, Administrator
Purpose	To Authenticate
Overview	The actors enter the required information and the system will authenticate

Pre –condition	Open the application The actors must have an existing account
Post-condition	The system displays home page
Main Course of Action	
Actor Action	System Action
1. Enter Username and Password 2. Click Login Button 5. Use Case End	 3.Check validity of Username and Password 4.Display home page
Alternative Course of Action	
4a. The system displays “Please Enter User account and Password” message 4b. The system displays “Invalid Username or Password” message	

Table 4. 4. Use case description for Search Job

Use Case Name	Search Job
Actor	Job Seeker
Purpose	To search a Job
Overview	The Actor enter the name of the Job and the system will display the Job
Pre-condition	Open application
Post-condition	Results of Searched Job display to the Job Seeker
Main Course of Action	
Actor Action	System Action

1. Click Search Job Button 3.Enter Search Criteria 4.Click Search Button 7. Use Case End	 2.Display Search Job form 5.Retrieve the Job from the Database 6.Display the Job
Alternative Course of Action	
4a. The system displays “Please Fill the Criteria” message 4b. The system displays “No Job Found ” message	

Table 4. 5. Use case description for Change language

Use Case Name	Change language
Actor	Job Seeker and Employer
Purpose	To change language of User interface
Overview	The Actor select specific language and the system will display selected language user interface
Pre-condition	Open application
Post-condition	Selected user interface language display to the Job Seeker or Employer
Main Course of Action	
Actor Action	System Action
1. Click Select Language Button 3.Select specific language 5. Use Case End	 2.Display list of language 4.Change the language of user interface

Table 4. 6. Use case description for View Job Detail

Use Case Name	View Job Detail	
Actor	Job Seeker	
Purpose	To view detail information about the Job	
Overview	The actor enter the name of the job and the system will display detail information of the job	
Pre-condition	Should receive notification for available jobs Should have searched a particular job	
Post-condition	The Job Seeker will view Job detail	
Main Course of Action		
Actor Action		System Action
1. Click View Job Detail Button 4. Use Case End		2. Retrieve Job Detail from the database 3. Display Job Detail
Alternative Course of Action		
1a .Click on Back Button		

Table 4. 7. Use case description for View Latest Jobs

Use Case Name	View Latest Jobs
Actor	Job Seeker
Purpose	To view latest jobs
Overview	The system displays latest jobs posted
Pre-condition	Open application There should exist some new job offers
Post-condition	Latest jobs are viewed by the Job Seeker
Main Course of Action	

Actor Action	**System Action**
1.Click Latest Jobs Button 4. Use Case Ends	2.Retrieves latest jobs from database 3.Displays list of recent jobs
Alternative Course of Action	
3a. The system displays “No Recent Job Found” message	

Table 4. 8. Use case description for View Jobs by Category

Use Case Name	View Jobs by Category
Actor	Job Seeker
Purpose	To view list of Jobs by their Category
Overview	The actor can view the list of jobs by their category
Pre-condition	Open application There should exist available job offers
Post-condition	Job seekers can View Jobs by Category
Main Course of action	
Actor Action	System Action
1. Click on Job by Category Button 4.Click on the specific job Category 7.Use Case End	2.Retrieves Jobs based on their category from database 3.Displays jobs based on their category 5. Retrieve clicked job from database 6. Displays Job Detail
Alternative Course of Action	

3 a. The system displays “No Job is found” message

Table 4. 9. Use case description for Apply For Job

Use Case Name	Apply For Job	
Actor	Job Seeker	
Purpose	Enable Job Seeker to Apply for the Job	
Overview	The Job Seeker get Notification for available Jobs to apply that matches with his/her qualification	
Pre-condition	Should receive notifications of new job vacancies	
Post-condition	Successfully applied	
Main Course of Action		
Actor Action		System Action
1. Click on Notification 3. Click on the Job title 5.Click on apply Button 7.Use Case End		2.Retrive and display list of jobs that are available 4.Displays detail Information about the Job 6. Done
Alternative Course of Action		
5.a. Click on Reject Button		

Table 4. 10. Use case description for Manage Resume

Use Case Name	Manage Resume
Actor	Job Seeker

Purpose	Enable Job Seeker to post, or edit his/her Resume
Overview	The Job Seeker can update and Post his/her resume
Pre-condition	Login to the system View his/her resume
Post-condition	Resume of Job Seeker is posted or updated
Main Course of Action	
Actor Action	System Action
1. Click on Resume Button 3.Select his/her Resume 4.Click on Save Button 7.Use Case End	2. Display Resume page 5.Check the input 6. Done
Alternative Course of Action	
6. a The system displays “Please Select your Resume” message	

Table 4. 11.Use case description for Manage Profile

Use Case Name	Manage Profile
Actor	Employer ,Job Seeker, Administrator
Purpose	The Administrator, Employer, Job Seeker can update their rating and profile
Overview /	The employers or Job Seekers can Manage their account
Pre-condition	Login to the system View their profile

Post-condition	Manage account
Main Course of Action	
Actor Action	**System Action**
1. Click on Manage Profile Button 3.Make Change and Save	 2.Retrive and display the Profile 4.display profile successfully updated
Alternative Course of Action	
3. a. The system displays “Cancel” saving message 4. a. The system displays “Update Failed” message	

Table 4. 12. Use case description for Approve Employer

Use Case Name	Approve Employer
Actor	Administrator
Purpose	To approve and reject the employer
Overview	The administrator view registered employers and approve or reject them
Pre-condition	Employers must be on Pending State
Post-condition	Employers are either approved or rejected
Main Course of Action	
Actor Action	System Action
1. Click on Approve Button 3.Click on a specific Employer 5.Click on Save Button	 2. Retrieve and display list of employers which are on pending state 4.Display employer detail
Alternative Course of Action	

Table 4. 13. Use case description for Post Job

Use Case Name	Post Job	
Actor	Employee	
Purpose	To enable Employer to Post Jobs	
Overview	The employers can post, edit and delete jobs	
Pre-condition	Login into the system Employers must be approved	
Post-condition	Job is successfully Posted	
Main Course of Action		
Actor Action		System Action
1. Click on Post Job button 3.The Employer fills Job details 4.Click on post Button 7.Use Case Ends		2. Displays Post Job page 5.Checks all inputs 6.Done
Alternative Course of Action		
6.a.The system displays “Please fill all required fields” message		

Table 4. 14. Use case description for View Selected Applicants

Use Case Name	View Selected Applicants
Actor	Employer
Purpose	Enable the Employer to view eligible applicants from the system

Overview	The Employers can view eligible applicants that fulfils their own company criteria
Pre-condition	The system should shortlist eligible applicants
Post-condition	Eligible applicants are viewed by Employers
Main Course of Action	
Actor Action	System Action
1. Click on View Notified Applicants Button 4.Employers view each job seekers detail 5.Click on Save Button 6. Use case end	2.Retrieves list of notified applicants from database 3.Display list of eligible applicants
Alternative Course of Action	
3.a. The system displays “Minimum number of applicants” message 4. a. Click on View Button 2.a.The system Retrieve and display available applicants 4.Click on Save Button 4.b. Click on Cancel Button	

Table 4. 15. Use case description for View Notification

Use Case Name	View Notification
Actor	Job seeker
Purpose	To enable the job seekers to apply or reject for a job

Overview	The System evaluates applicant data based on employers criteria The System generates vacancy notification for job seekers that fulfills employers criteria The System compares applied applicants based on their resume The System generates list of eligible applicants and send it to the employers for approval. The employers check validity of eligible applicants resume to verify The System generates an announcement notification for those applicants that they got the job.
Pre-condition	The system must be generate notification
Post-condition	The Job seeker apply or reject for a job

Main Course of Action	
Actor Action	System Action
1.click on view notification button 4.use case end	2.retrieves generated notification from database 3.display notification
Alternative Course of Action	
3a.the system generates and displays “no new notification found” message	

4.1.1.3. Use Case Scenario

Scenario name: Login.

Participant actors: User.

Normal flow of events:

- User should have account to login.
- The System display login page.
- User insert username and password then click on login button.
- The System validate input value.
- User access the system, which provided for him.
- End-use case.

What if it goes wrong?

- If the user can't insert username or password and if username or password is incorrect the system display notification such as "the field is empty or you entered wrong username or password"

Scenario name: Search Job.

Participant actors: User.

Normal flow of events:

- User Open application.
- User Click Search Job Button
- System Display Search Job form
- User Enter Search Criteria and Click Search Button
- System Retrieve the Job from the Database and Display the Job
- User access the system

What if it goes wrong?

- If User can't insert correct criteria the system display notification such as "the field is empty or you entered wrong criteria" and re-enter correct data

4.2. Object Model

4.2.1. Class Diagram

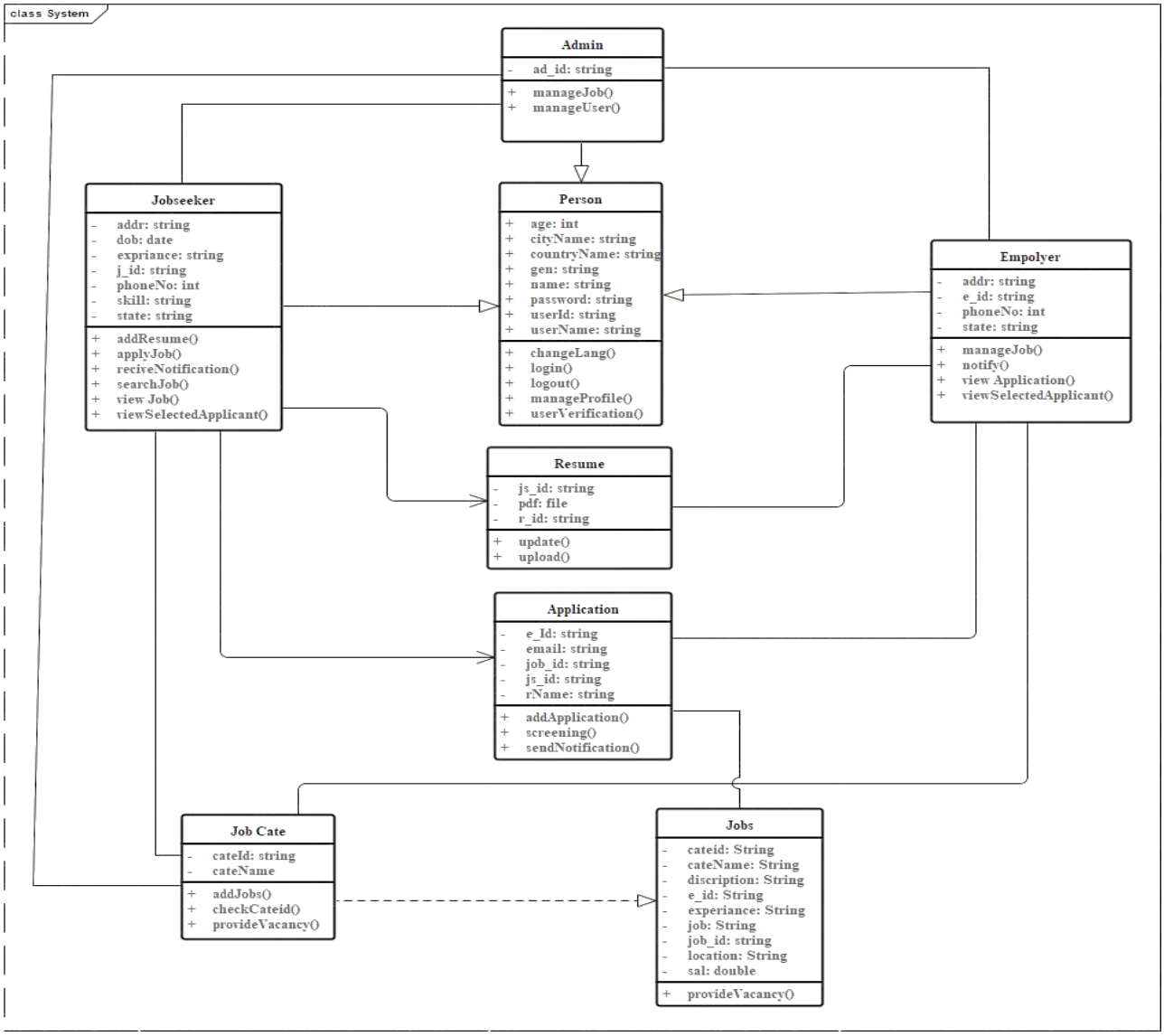

Figure 4. 2. Class Diagram

4.2.2. Data Dictionary

Table 4. 16. Data dictionary for Job seeker

Field Name	Data type	Data size	Constraints	Description
First name	String	30	Not null	Holds the First name of the jobseeker.

Last name	String	30	Not null	Holds the Last name of the jobseeker.
Password	String	20	Not null	Describe the Id used when jobseeker login to the system when he/she perform some action.
Email	String	30	Not null	Describe email used when jobseeker login to the system.
Id	String	20	Primary key	Uniquely identification of individual jobseeker
Phoneno	Int	20	Not null	Holds phone numbers of job seekers
Gender	String	10	Not null	Describe the gender when jobseeker register to the system
DOB	Date	20	Not null	Holds date of birth of jobseeker when job seeker signup
Country	String	30	Not null	Holds country of jobseekers when signup
Experience	String	50	Not null	Contain experience of applicant
State	String	50	Not null	Holds state of job seeker

Table 4. 17. Data dictionary for Administrator

Field Name	Data type	Data size	Constraints	Description
First Name	String	30	Not null	Holds the First name of the Administrator.
Last Name	String	30	Not null	Holds the Last name of the Administrator.
Password	String	20	Not null	Describe the Id used when Admin login to the system when he/she perform some action.
Email	String	20	Not null	Describe email used when Admin login to the system.

Id	String	20	Primary key	Holds identification of Administrator
Address	String	30	Not null	Contain address of administrator

Table 4. 18. Data dictionary for employer.

Field Name	Data type	Data Size	Constraints	Description
Eid	String	10	primary	Describe the Id used to identifying Employer
Company name	String	150	primary	Holds the company name of the employer.
Password	String	50	primary	Describe the Id used when employer login to the system when he/she perform some action.
City	String	50	Not Null	Identifying the city of the company
Phone Number	String	10	primary	Describe the phone number of employer.
Company Description	String	200	Not Null	Describe the place which job is post by the employer.
State	string	100	Not Null	Describe the state of Employer

Table 4. 19. Data dictionary for Resume.

Field Name	Data type	Data size	Constraints	Description
Education Background	String	200	Not Null	Describe the education background of job seeker.
JId	String	50	Forge key	Describe the Id used to identifying job seeker
Qualification	String	150	Not Null	Describe the standard of the job seeker.
Experience	String	150	Not Null	Describe the ability of the job seeker.

Language	String	100	Not Null	Describe the language job seeker.

Table 4. 20. Data dictionary for Job.

Field Name	Data type	Data size	constraints	Description
Job Title	String	100	Not null	Describe the title of the job.
Job Number	String	20	Not null	Describe the number of the job.
Job Category	String	50	Primary	Describe the job posted when the job seeker view.
Job Location	String	30	Not null	Describe the location of the job.
Posted Date	Date	40	Not null	Describe the date of posted job.
Deadline	Date	30	Not null	Describe the deadline of posted job.
Salary	Double	60	Not null	Describe how much money be needed
Job Description	String	200	Not null	Describe detail about the job

4.3. Dynamic Model

4.3.1. Sequence Diagram

A sequence diagram of use case can describe as following

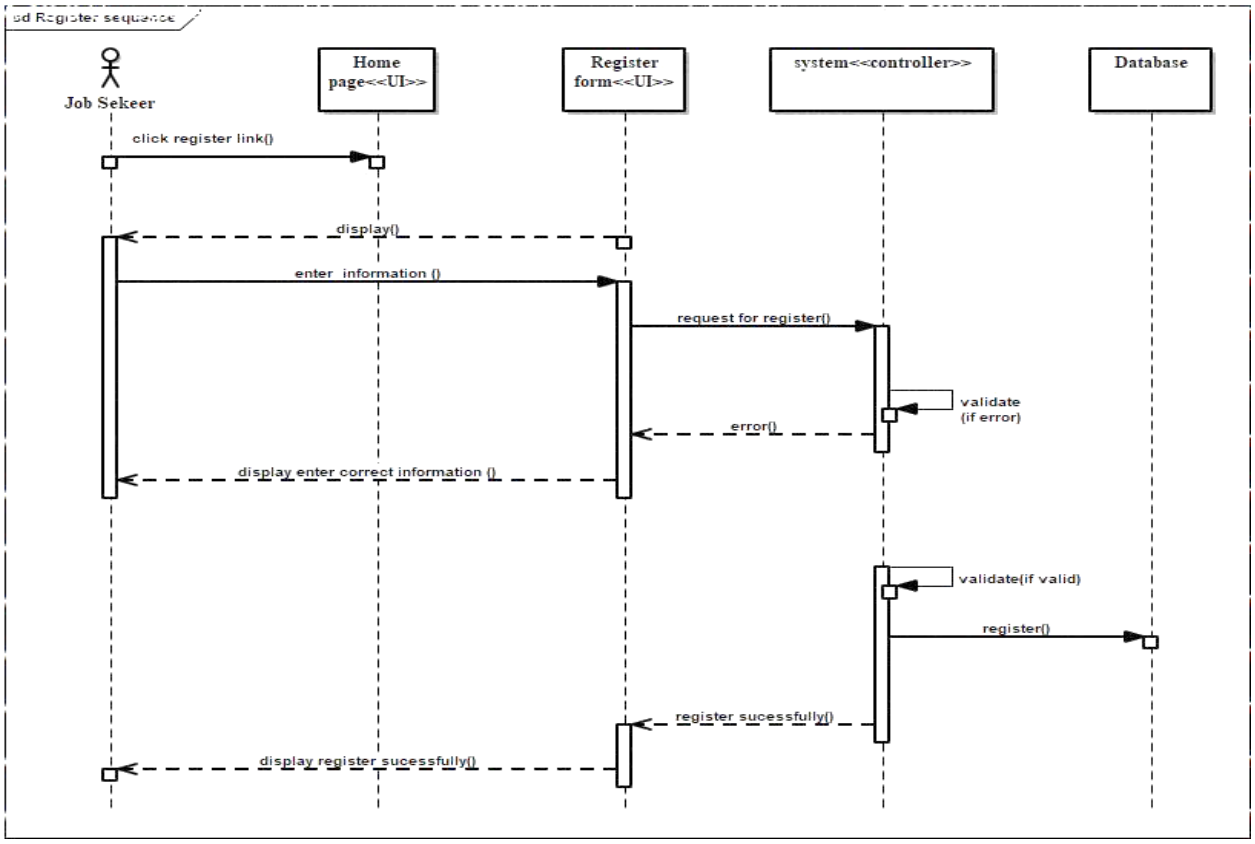

Figure 4. 3. Sequence diagram for Resgister

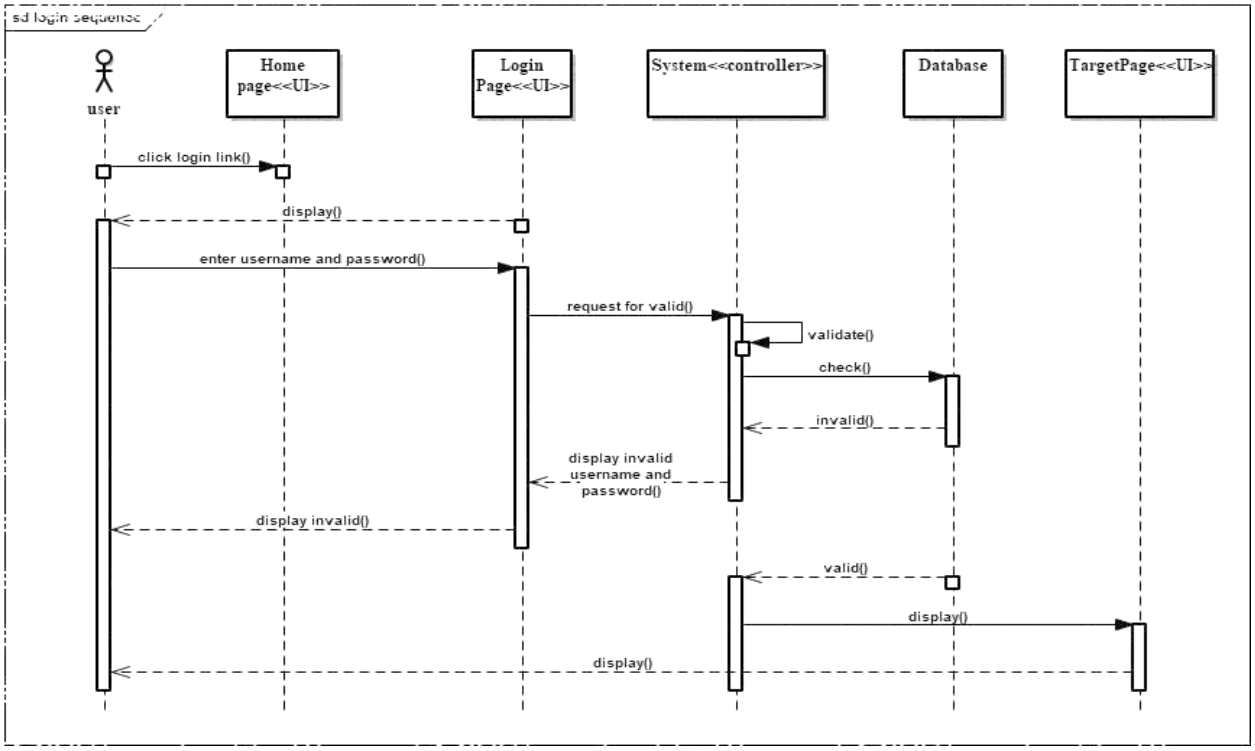

Figure 4. 4. Sequence diagram for Login

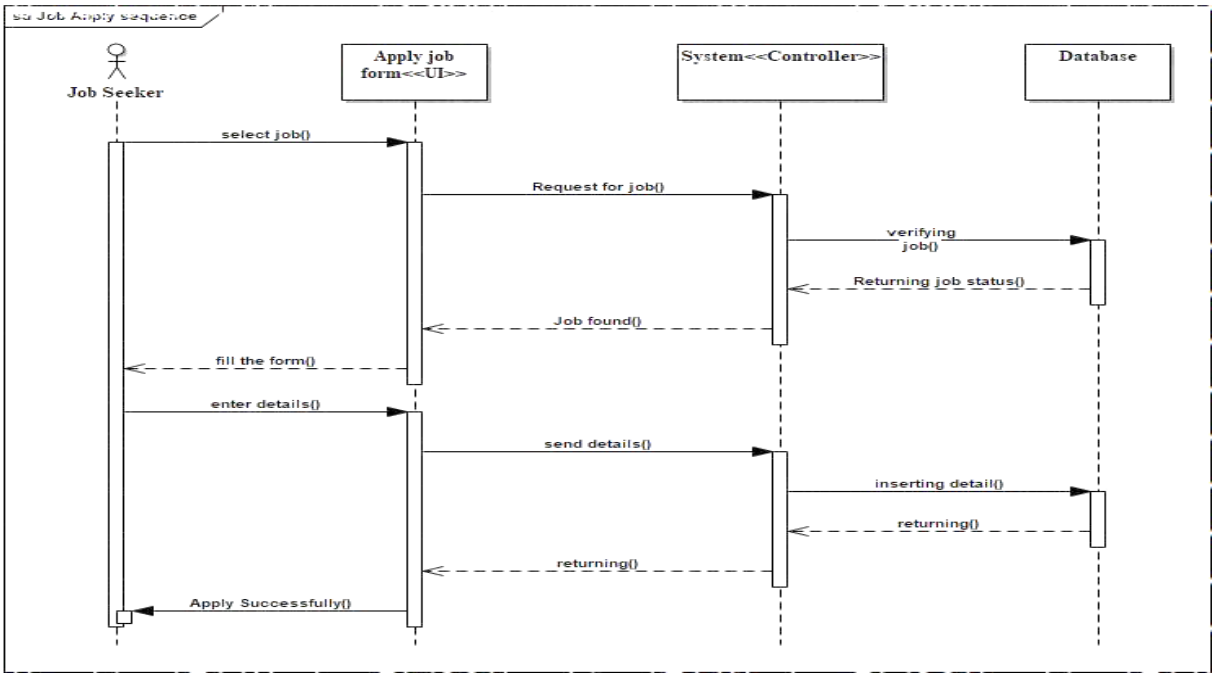

Figure 4. 5. Sequence diagram for Apply For Job

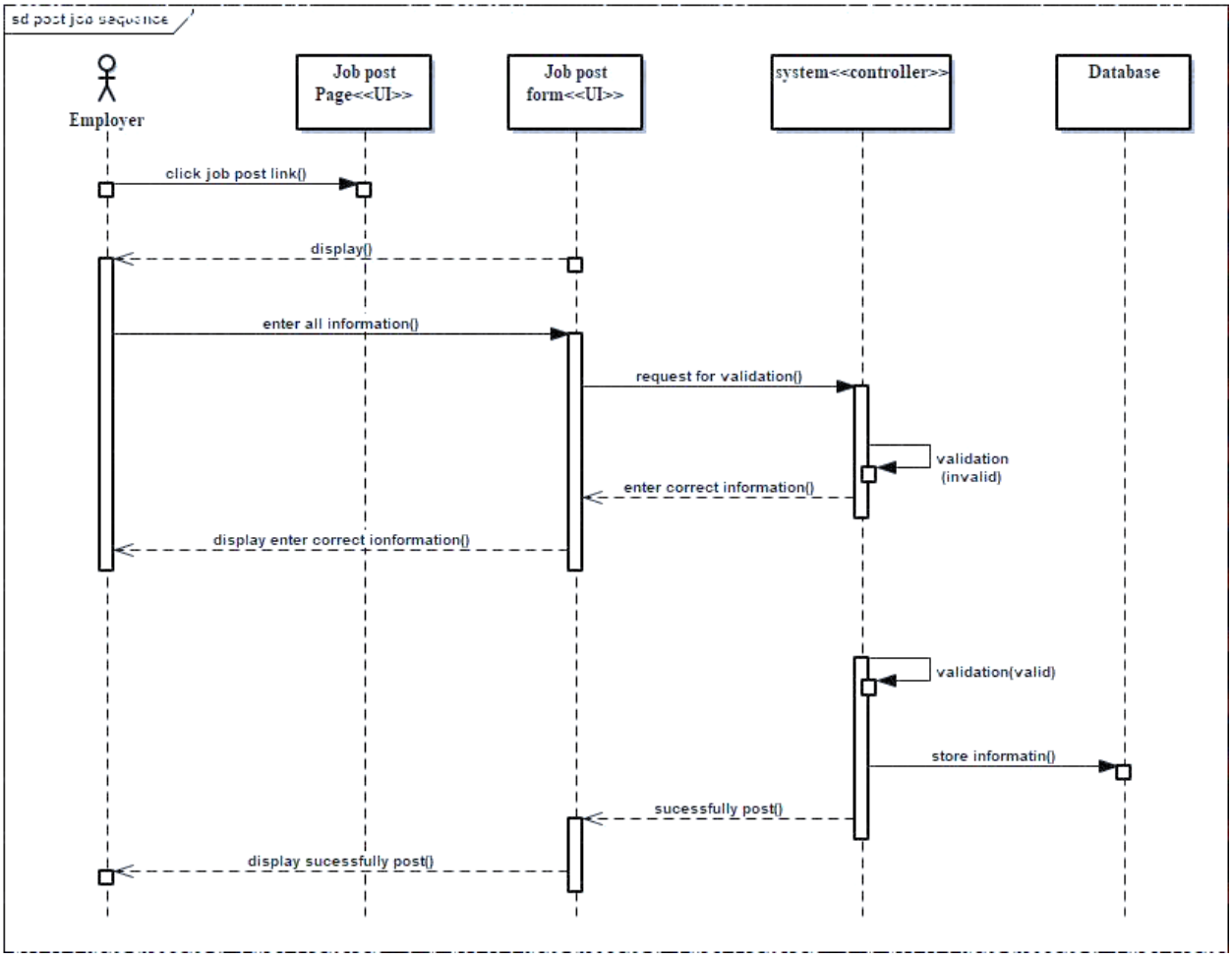

Figure 4. 6. Sequence diagram for Post Job

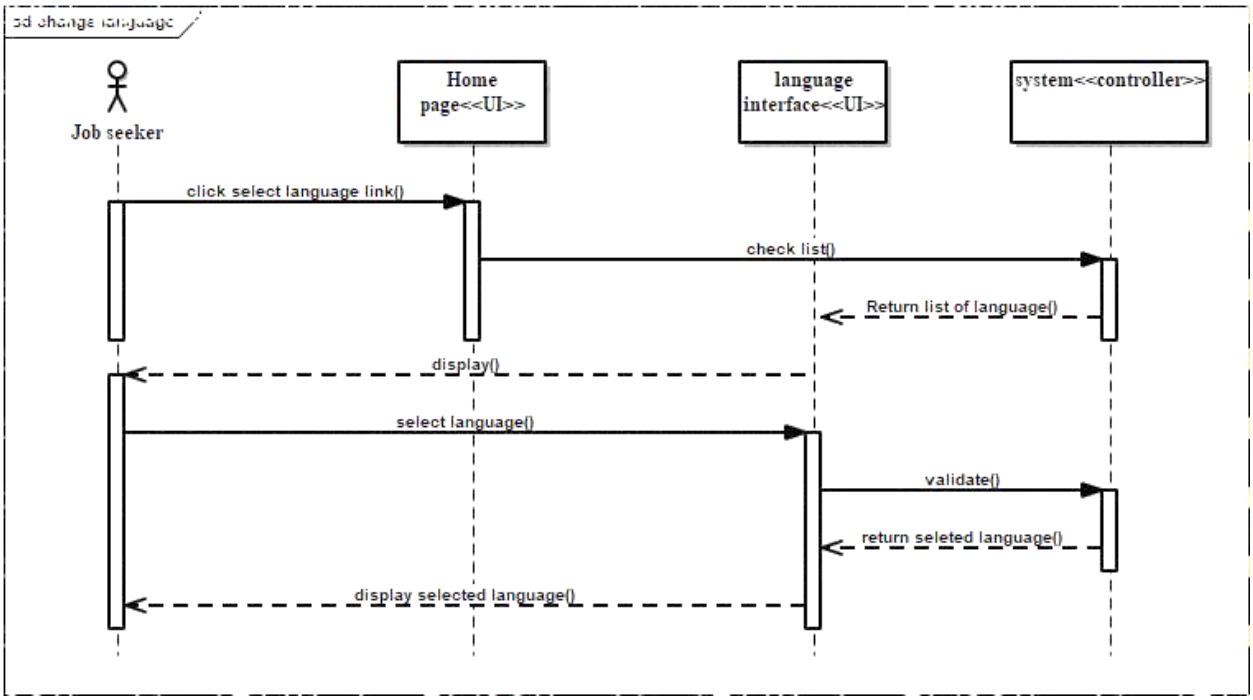

Figure 4. 7. Sequence diagram for Change Language

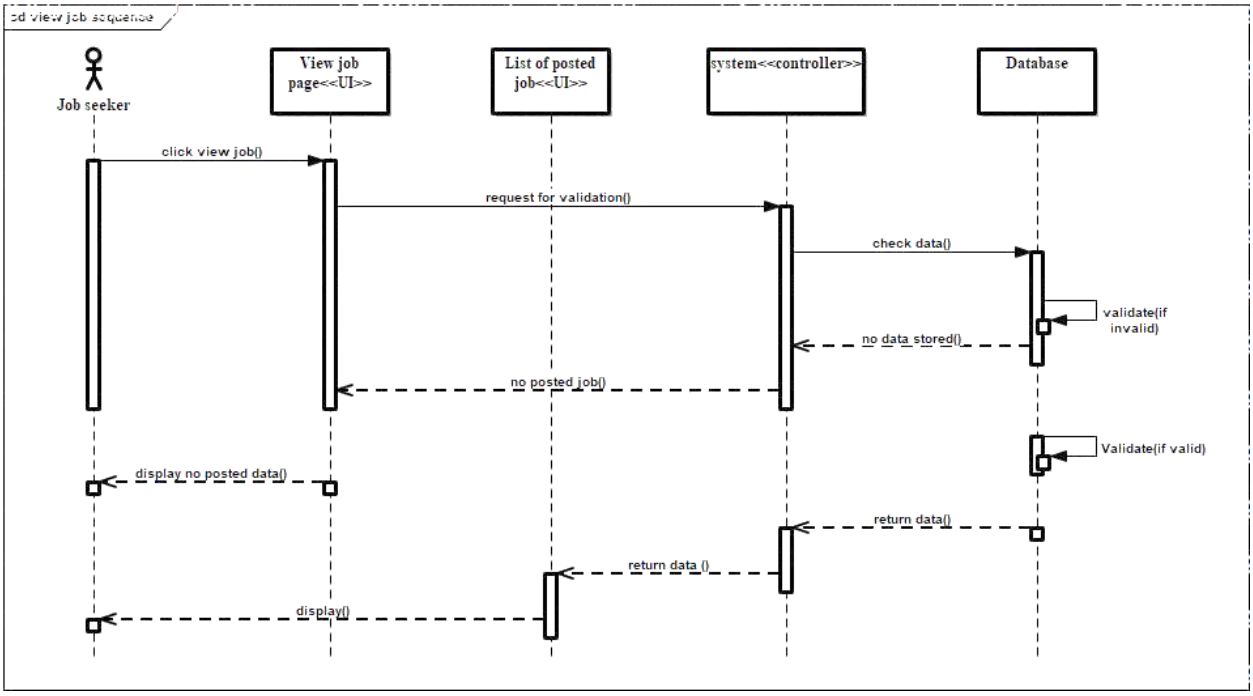

Figure 4. 8. Sequence diagram for View Job

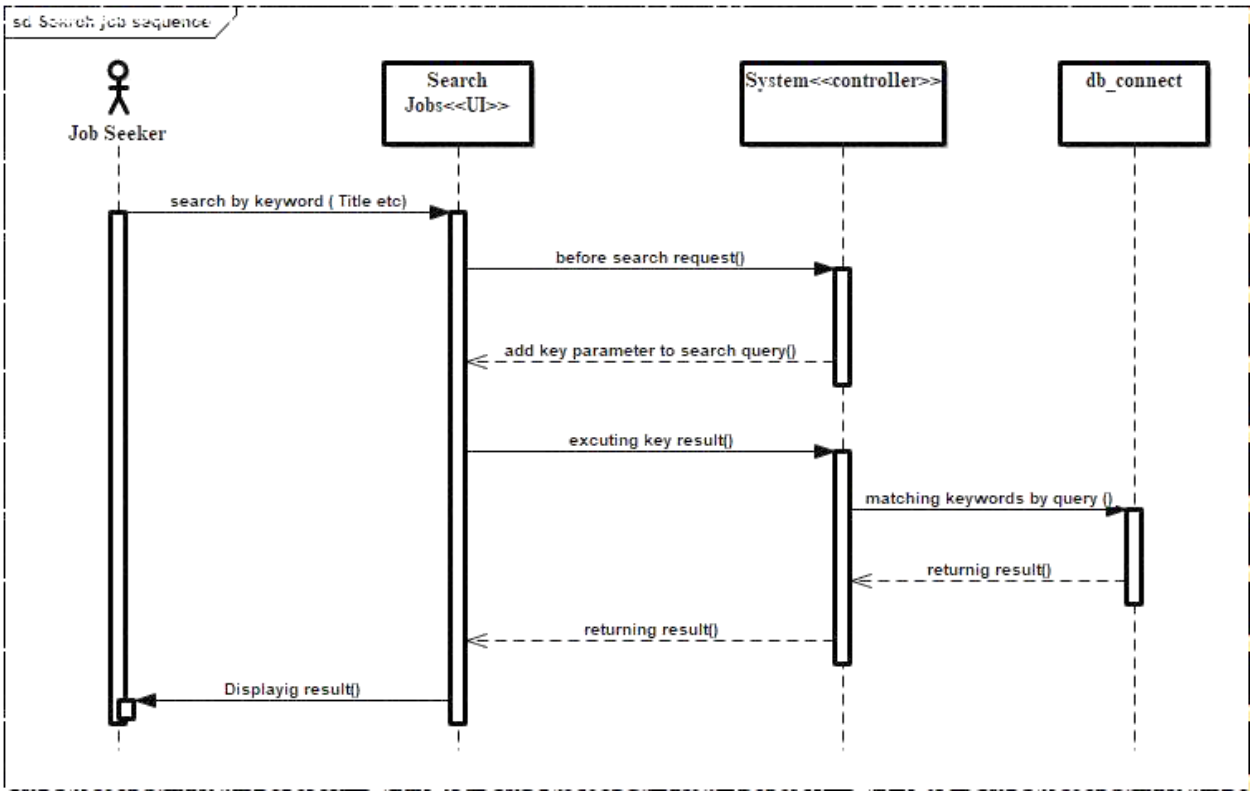

Figure 4. 9. Sequence diagram for Search Job

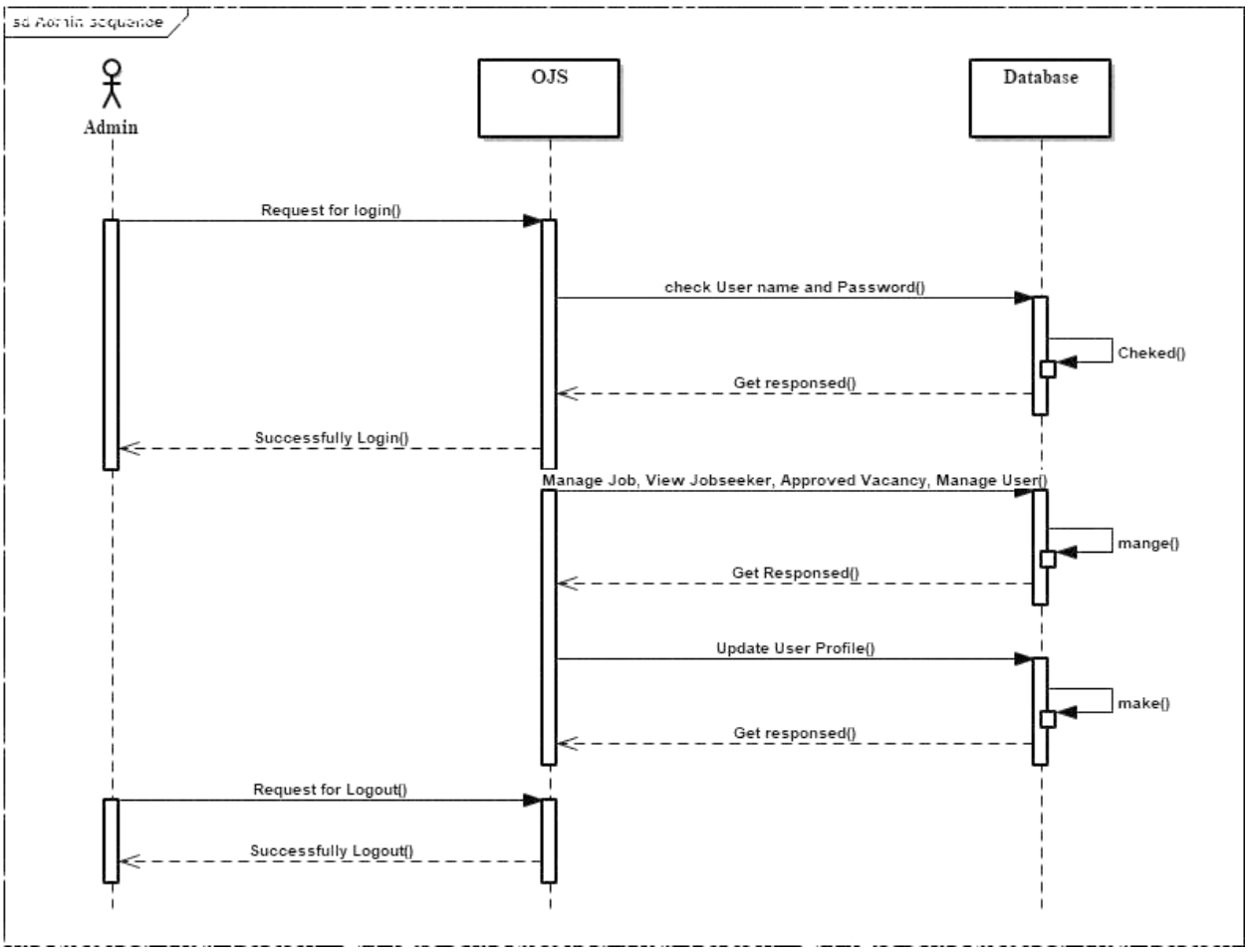

Figure 4. 10. Sequence diagram for Admin

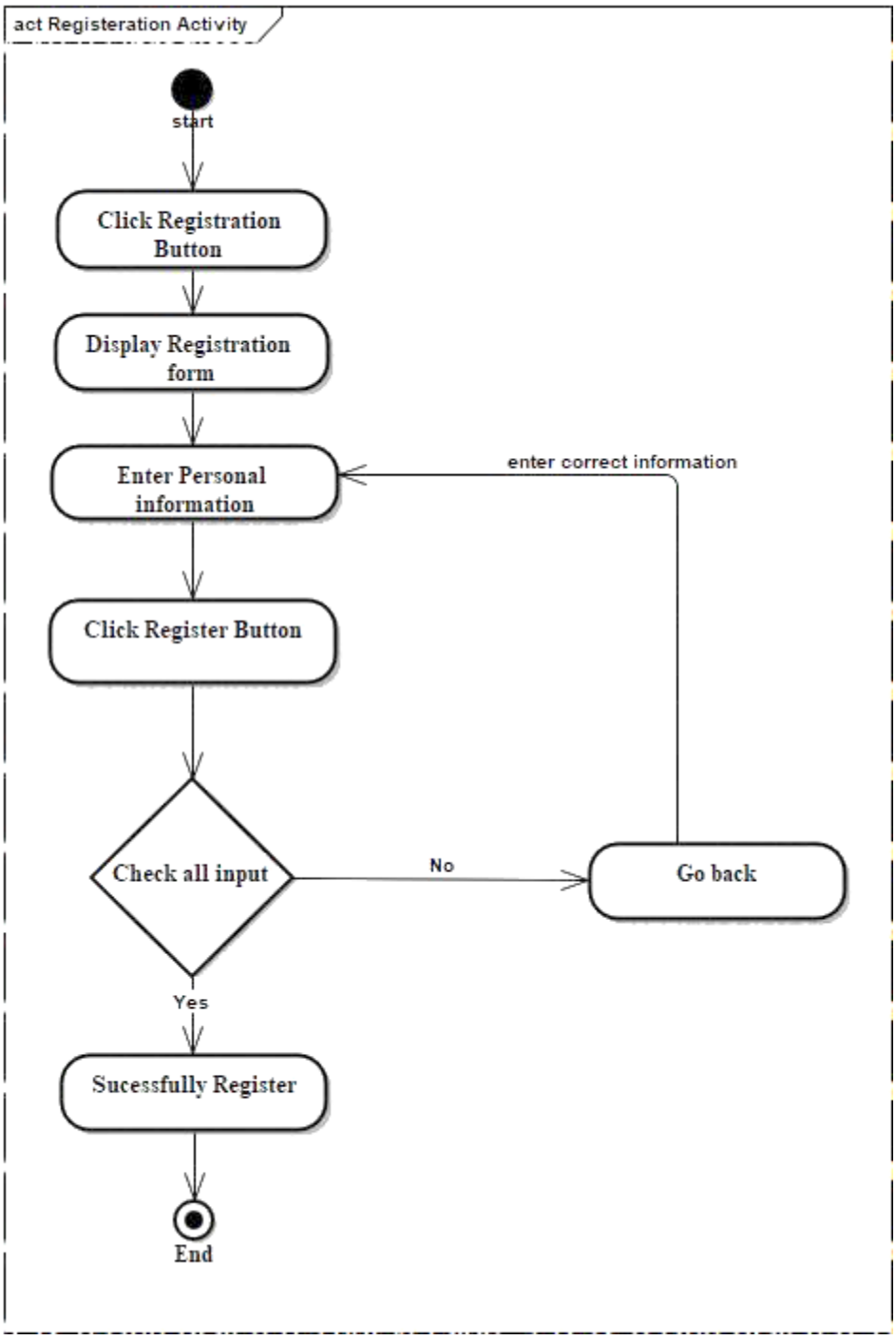

Figure 4. 11. Activity diagram for register

4.3.2. Activity Diagram

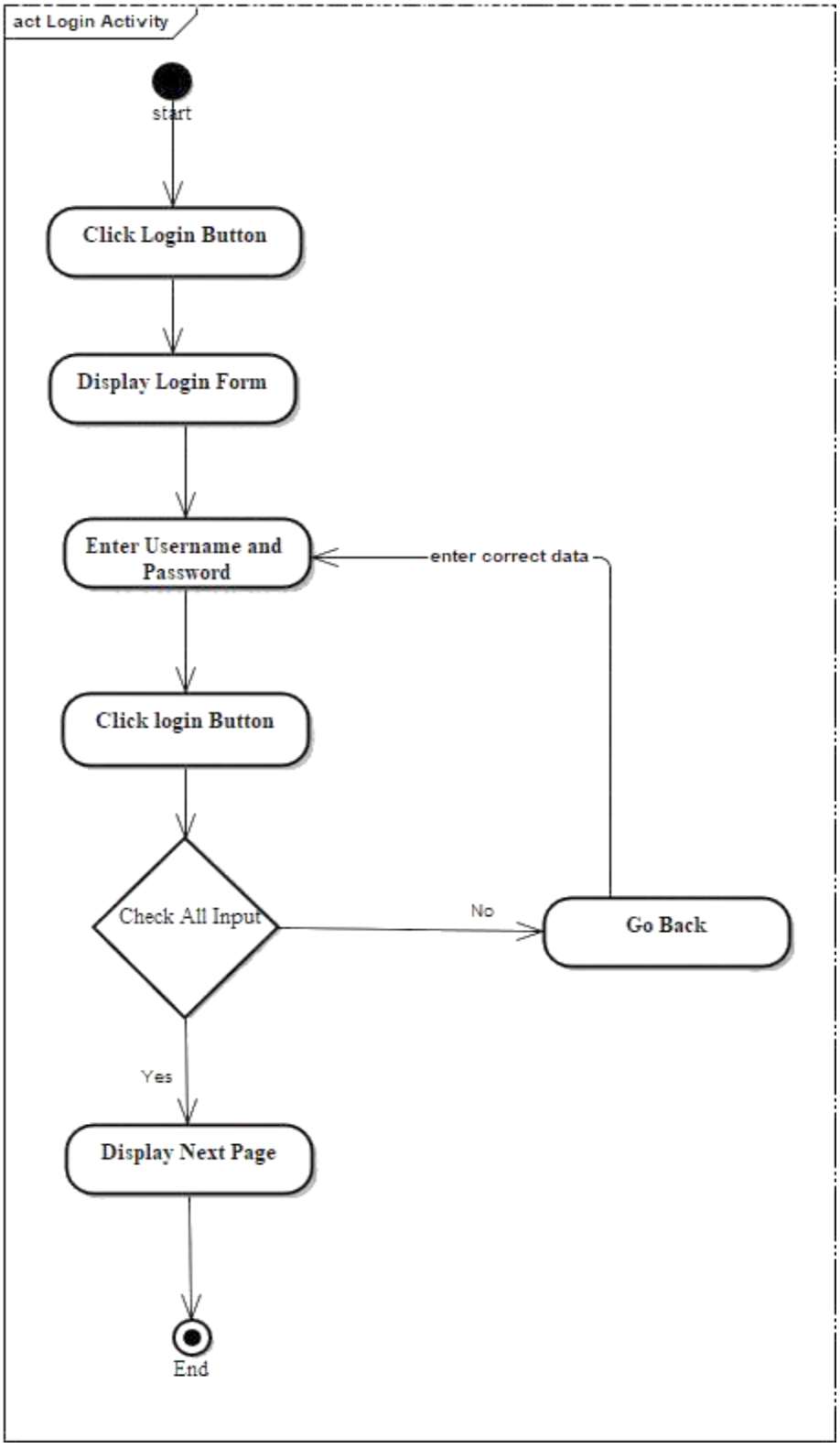

Figure 4. 12. Activity diagram for login

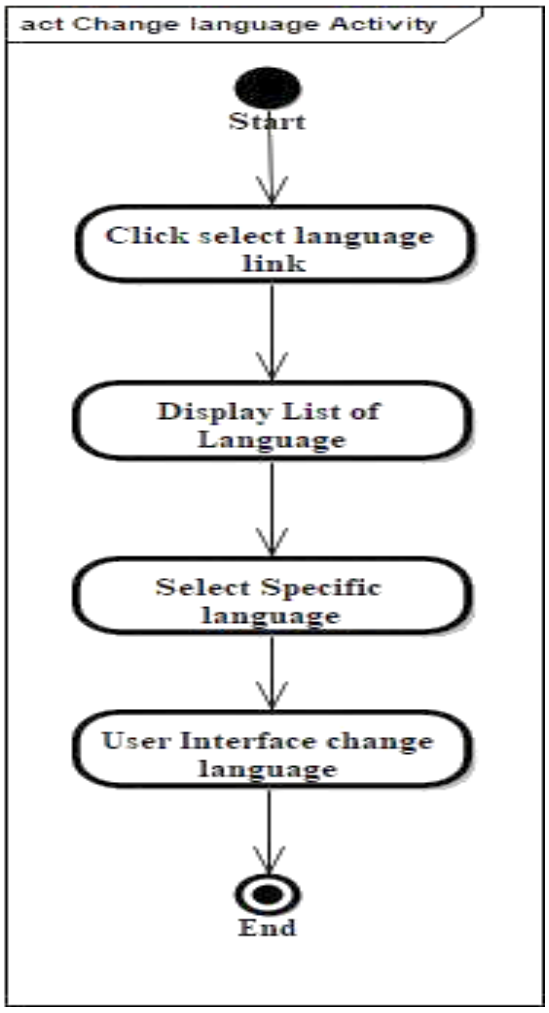

Figure 4. 13. Activity diagram for Change Language

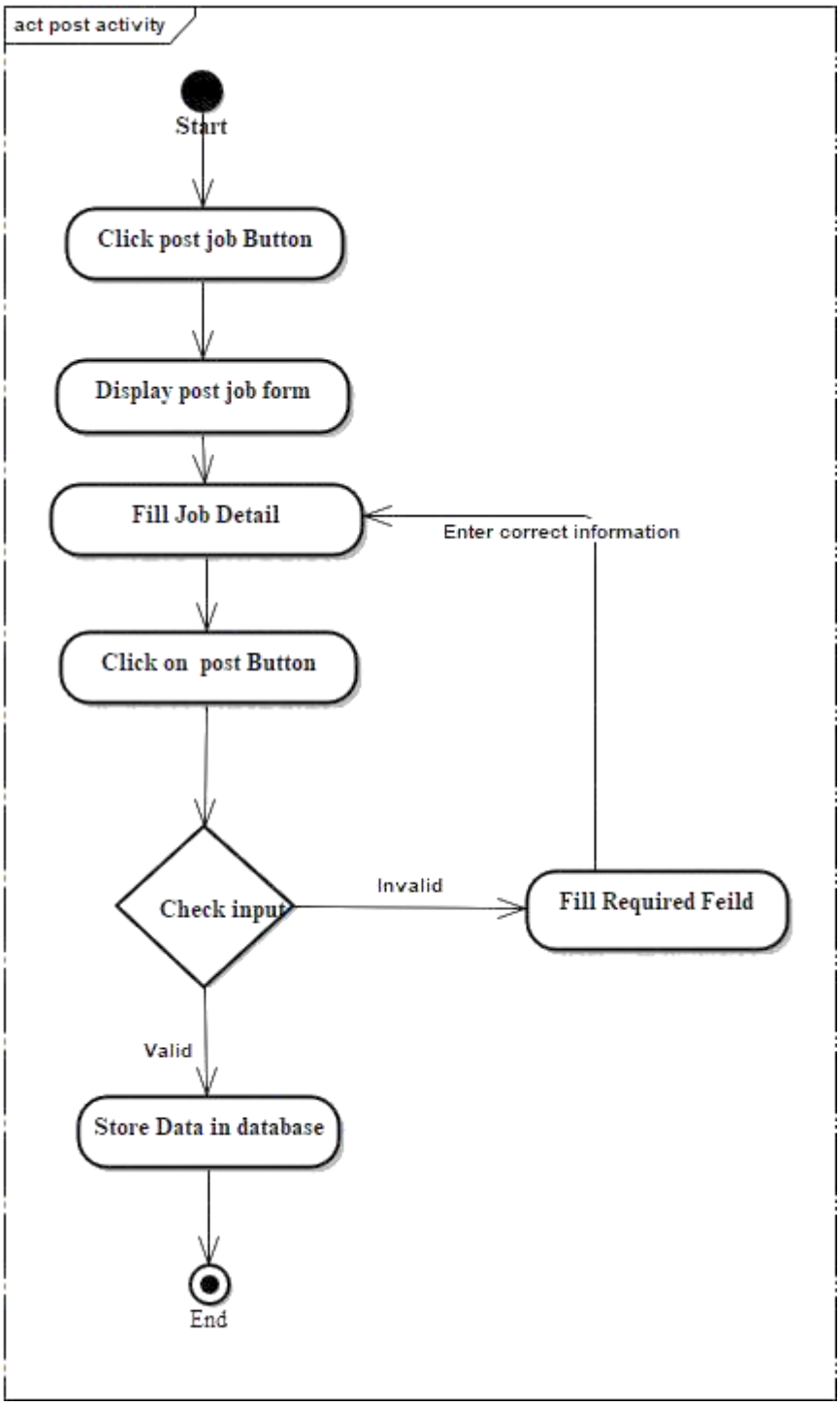

Figure 4. 14. Activity diagram for Post Job

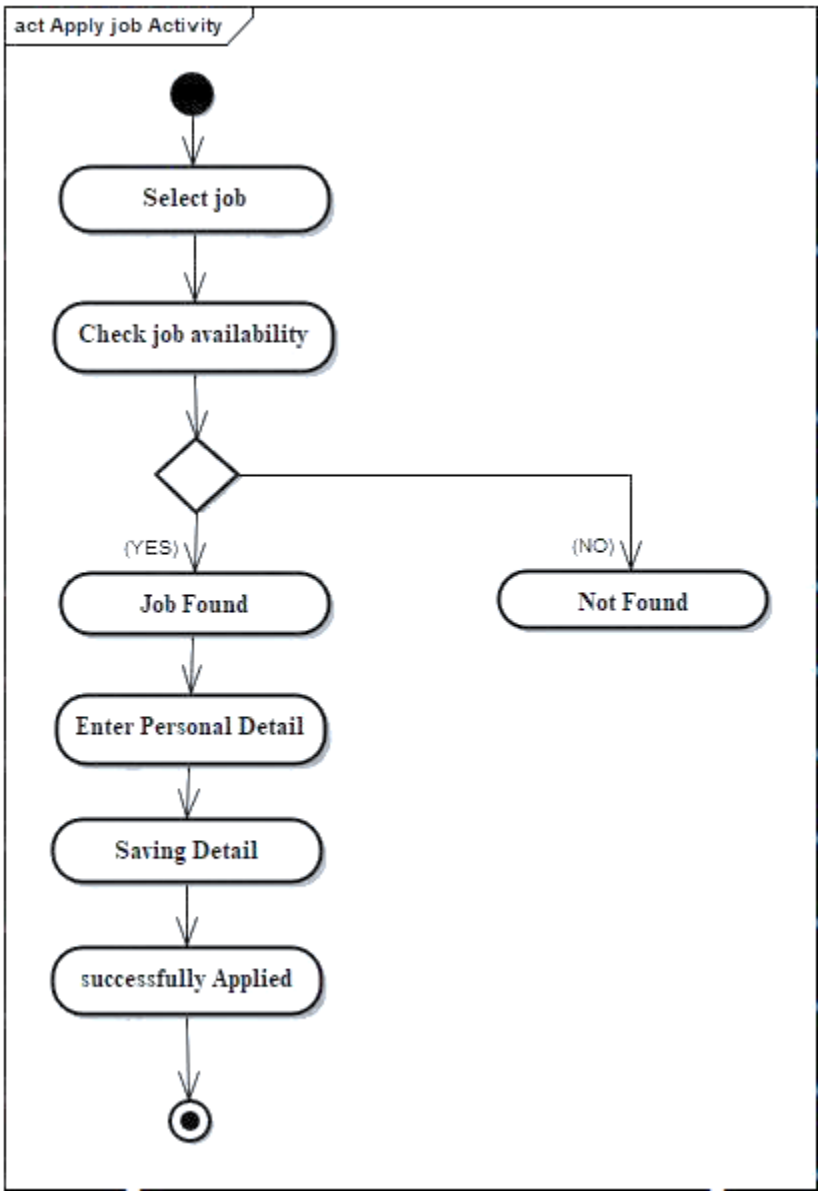

Figure 4. 15. Activity diagram for Apply for job

4.3.3. State Chart Diagram

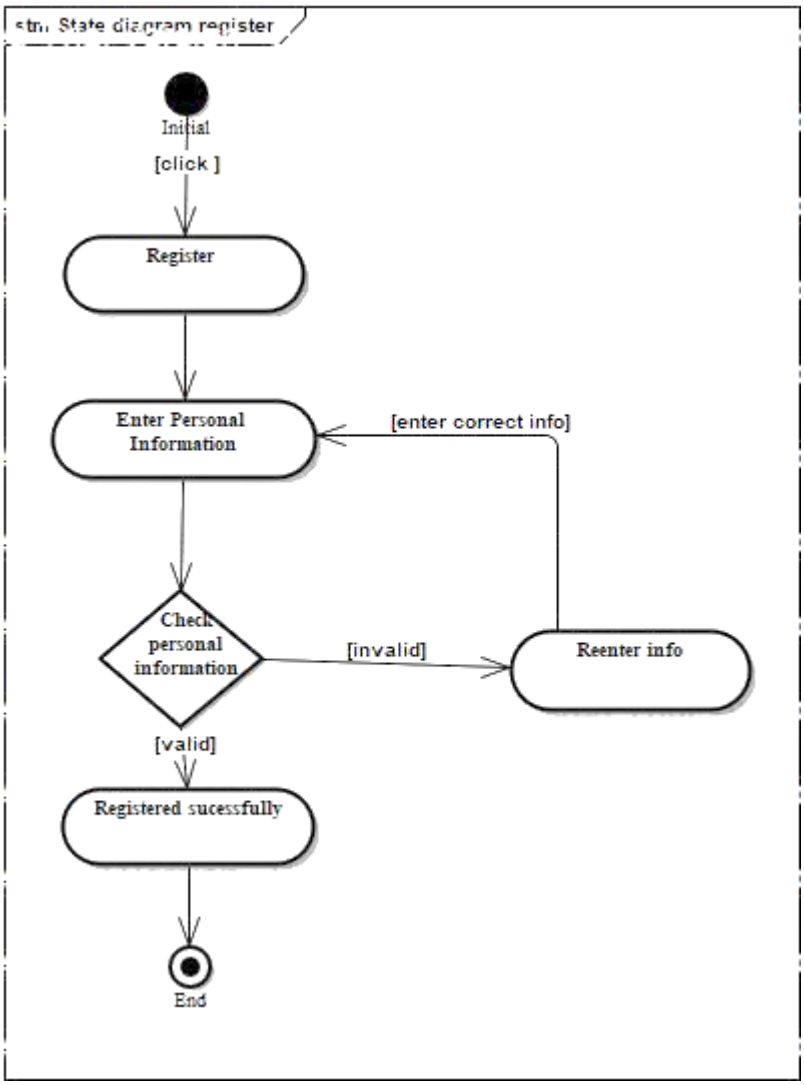

Figure 4. 16. State diagram for Register

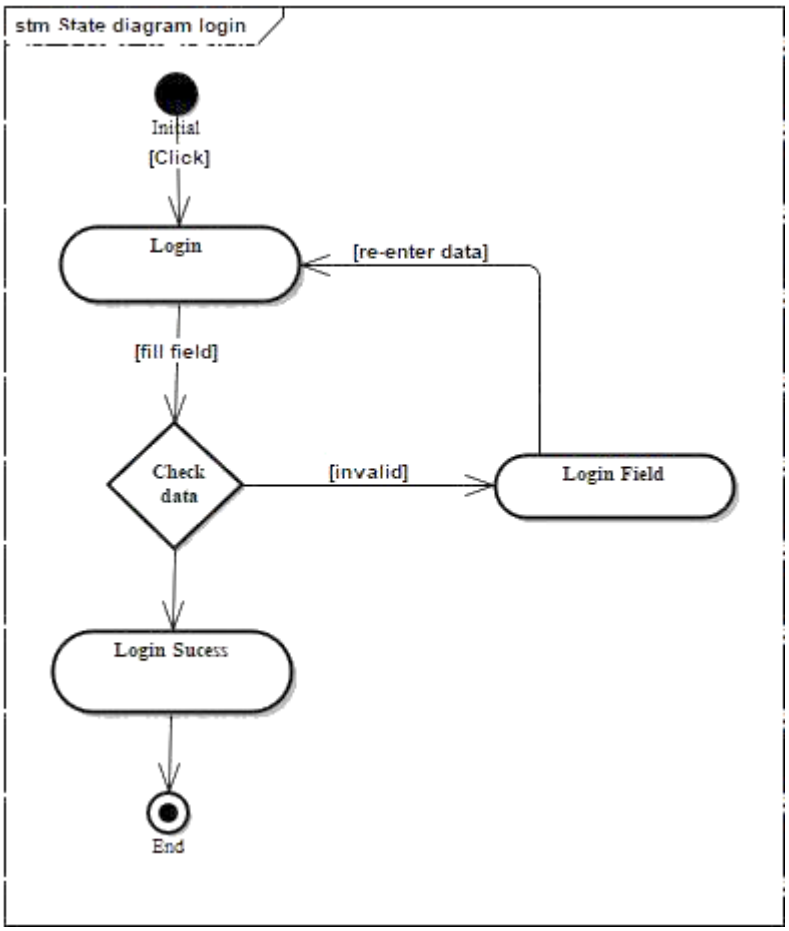

Figure 4. 17. State diagram for login

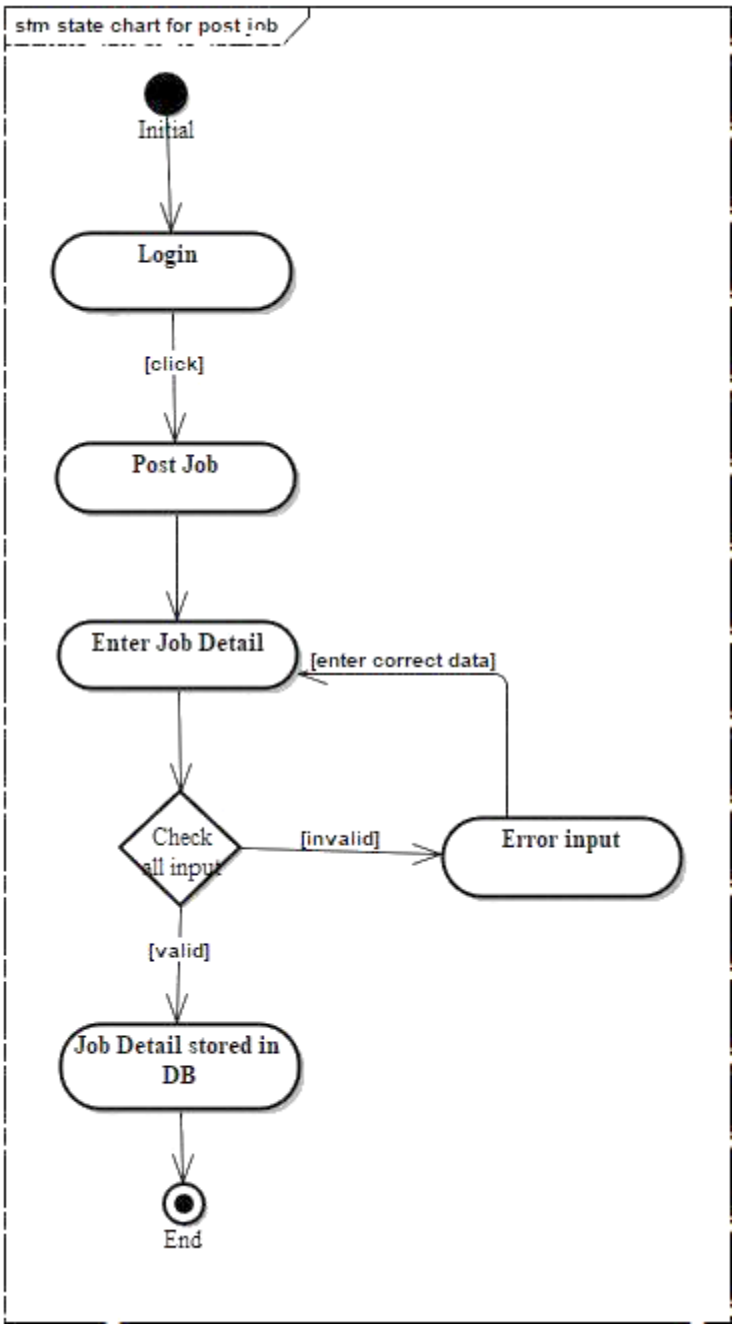

Figure 4. 18. State diagram for Post Job

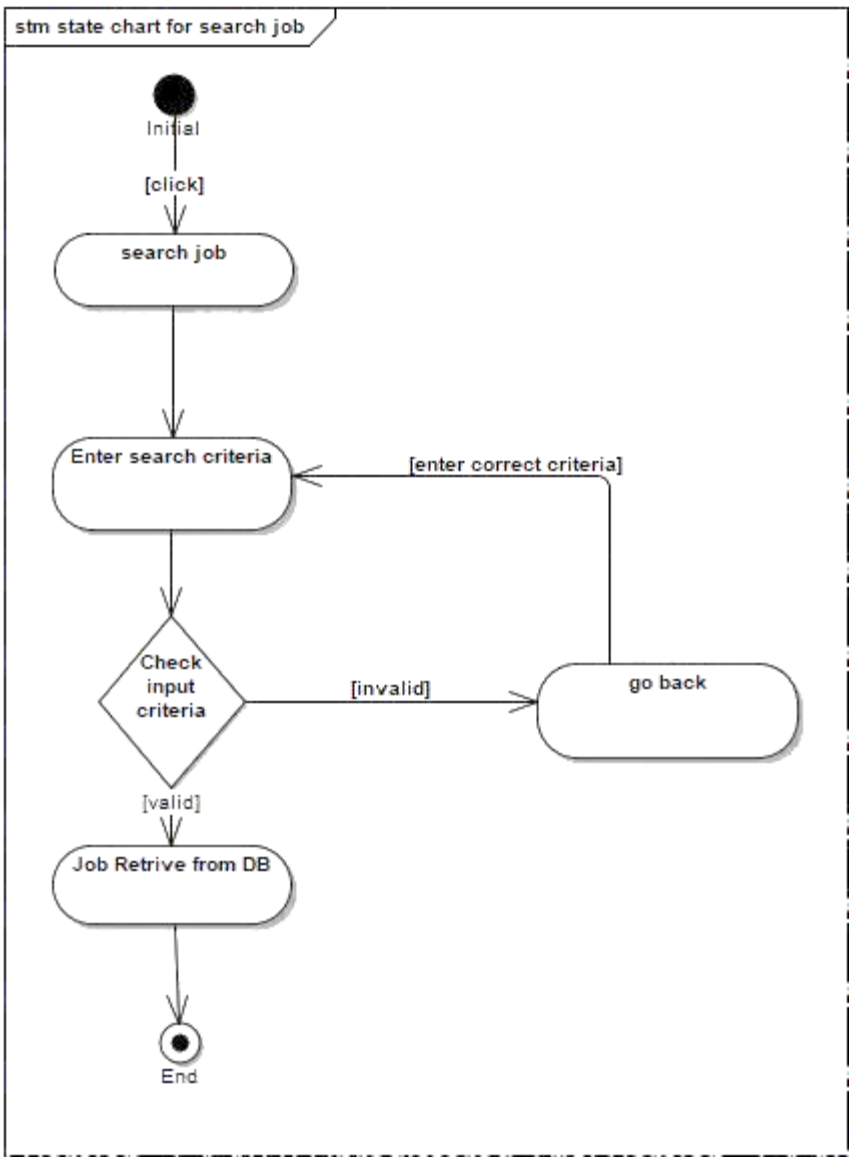

Figure 4. 19. State diagram for Search Job

CHAPTER 5

5. SYSTEM DESIGN

The transformation of the Analysis model into a system architecture model is known as system design. At the architectural and comprehensive design levels, design is the method of defining, arranging, and structuring device elements. The proposed Online job search system design outline is a proposed solution for a current system challenge. When we have a solution for a particular challenge, we split our alternative scheme into various groups based on its complexity.

5.1 Design Goals

Project priorities are the objectives for a piece of design work. Stakeholders usually agree on these guidelines for comparing design options and assessing design outcomes. The aim of design is to provide a high-quality model of the system. The design objectives are drawn from nonfunctional specifications, which are the descriptions of the system's feature features and attributes, as well as any restrictions that might restrict the proposed system's boundary. The Design Goals define the device qualities that should be accomplished and discussed throughout the system's design. The below are few examples of design objectives.

Maintenance

Maintenance: The device must be preserved in the event of malfunction or alteration. The machine must satisfy the following maintenance requirements in order to be maintainable.

- Extensibility: Adding additional features to the system can be accomplished by simply creating a single website and integrating it with the current system.
- Modifiability: If a system feature or page is to be changed, the change must be made to that process or page alone, without changing the overall system organization.

Robustness

Robustness: Since the interface is web-based and only requires menu-driven access, there would be no user side interaction issues problem. However, an error may occur on the server side during the data entry process. During this time, the machine can display an error page and begin to function without loss or affection.

Performance

Users are becoming more unable to wait for a page to load, so the system can have as good a performance as possible. This can be achieved by quickly loadable interface components and a quick reaction time while browsing, modifying, deleting, adding, and accessing information from the database.

5.2 Current System Architectures

The existing system is built on a three-tier architecture. Any one of the three tiers can be upgraded or replaced separately in a three-tier architecture. There are three levels of the three-tier architecture: first tier, middle tier, and third tier. A user interface is present in the top tier, where user services such as session, text data, and dialog and view management can be found. The middle tier offers process management services shared among various applications, such as process creation, process control, and process resourcing. Database maintenance is provided by the third layer. The data management aspect maintains data consistency in the distributed environment, and the unified process logic, which allows administration simpler by localizing system features, is put on the middle tier of this architecture.

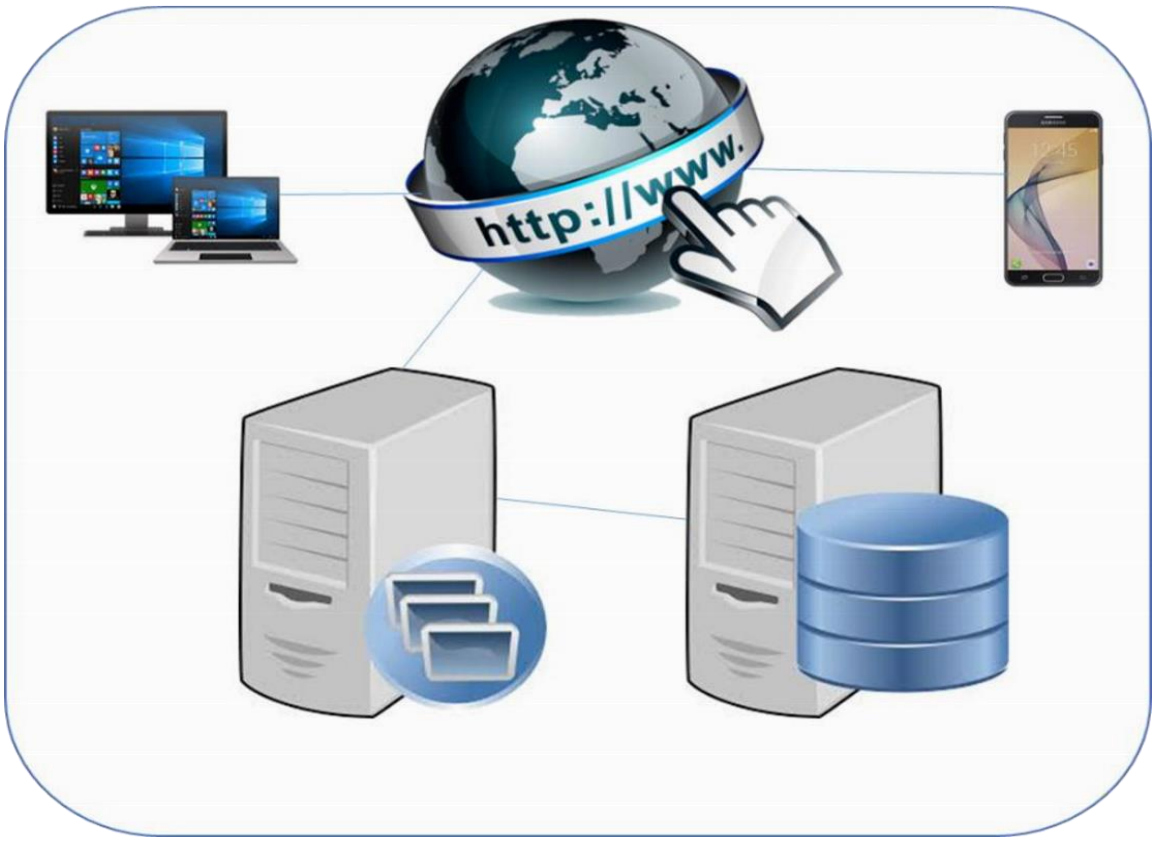

Figure 5. 1. Current System Architecture

5.3 Proposed System Architecture

Our proposed structure is made up of three layers: a presentation layer, a business logic layer, and a data layer. The presentation layer is the application's database layer and its topmost layer. When we use this device, this is the layer we see. It is the user's guide to our device, and it collects data from them. This layer's key purpose is to communicate with the application layer. This layer sends information to the application layer in the form of keyboard and mouse clicks. If a user wants to log into the device, for example, they can see two text boxes and a login button where they will type their user name and password and then press on login. The business logic layer is an application layer that communicates with the data layer and sends data from the database to the display layer. It serves as a connection between the presentation and data layers. As the user clicks the login button in the previous case, the application layer interacts with the database and sends data to the presentation layer. The third layer is the data layer, which is where the user's data is saved. Clients of our system usually use a browser to connect to the system over the internet. When

a user enters data and performs a certain operation, the application server processes a client request to communicate with the database server.

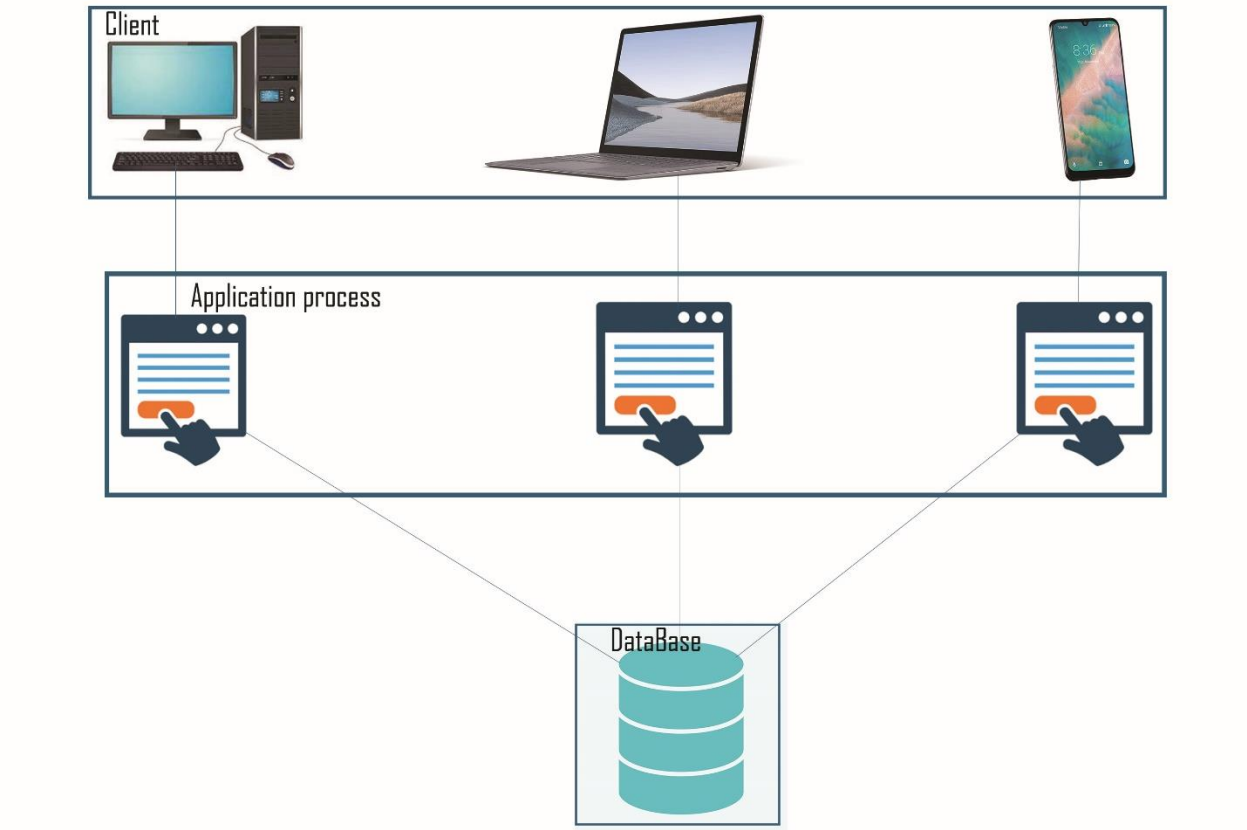

Figure 5. 2. Proposed System Architecture

5.3.1 Subsystem Decomposition and Description

The aim of system decomposition is to reduce the architecture model's complexity and distribute the system's class into large-scale, coherent components. Components of a system are either computation units or data stores. A component's name is usually chosen to reflect the component's position or the work it performs. When a system is in use, its various components are likely to communicate in order to deliver the function that is required of it. The following subcomponent is available in our system.

The administrator subsystem- is in charge of overseeing the actions that the administrator takes.

- Login
- Logout

- Manage Employer
- Manage system content
- Manage profile

Job seeker subsystem is in charge of dealing with job seeker behavior

- Search for job
- View job vacancy
- Apply for job
- Change language
- Register
- Receive notification
- Manage profile

Employer of subsystem is responsible for

- Login
- Logout
- Register
- Post job
- Post selected applicant
- Edit job
- Delete job
- View Application
- Change language
- Delete job

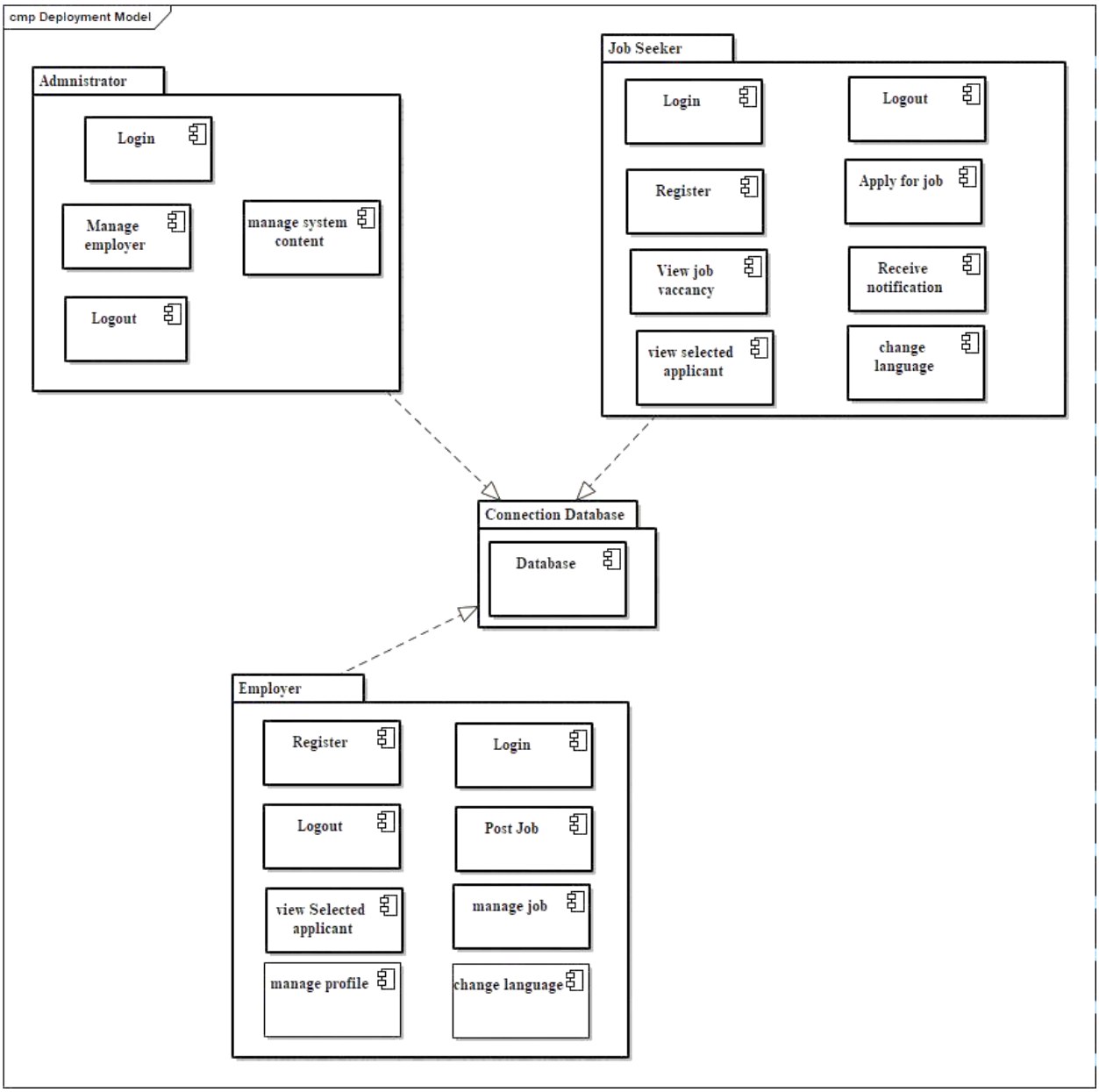

Figure 5. 3. Subsystem Decomposition and Description

5.3.2 Hardware/Software Mapping

Deployment diagram shows a static view of the run-time configuration of processing nodes and the components that run on those nodes. In other words, deployment diagrams show the hardware for our system, the software that is installed on hardware, and the middleware used to connect the disparate machines to one another. we want to create a deployment diagram for applications that are deployed to several machines. It also shows how the software and the hardware components

work together. Deployment diagram used to show the hardware of the system, the software that is installed in the hardware and also the middleware that is used to connect the disparate machines to one and other.it also shows how the software and hardware components of the system work together.

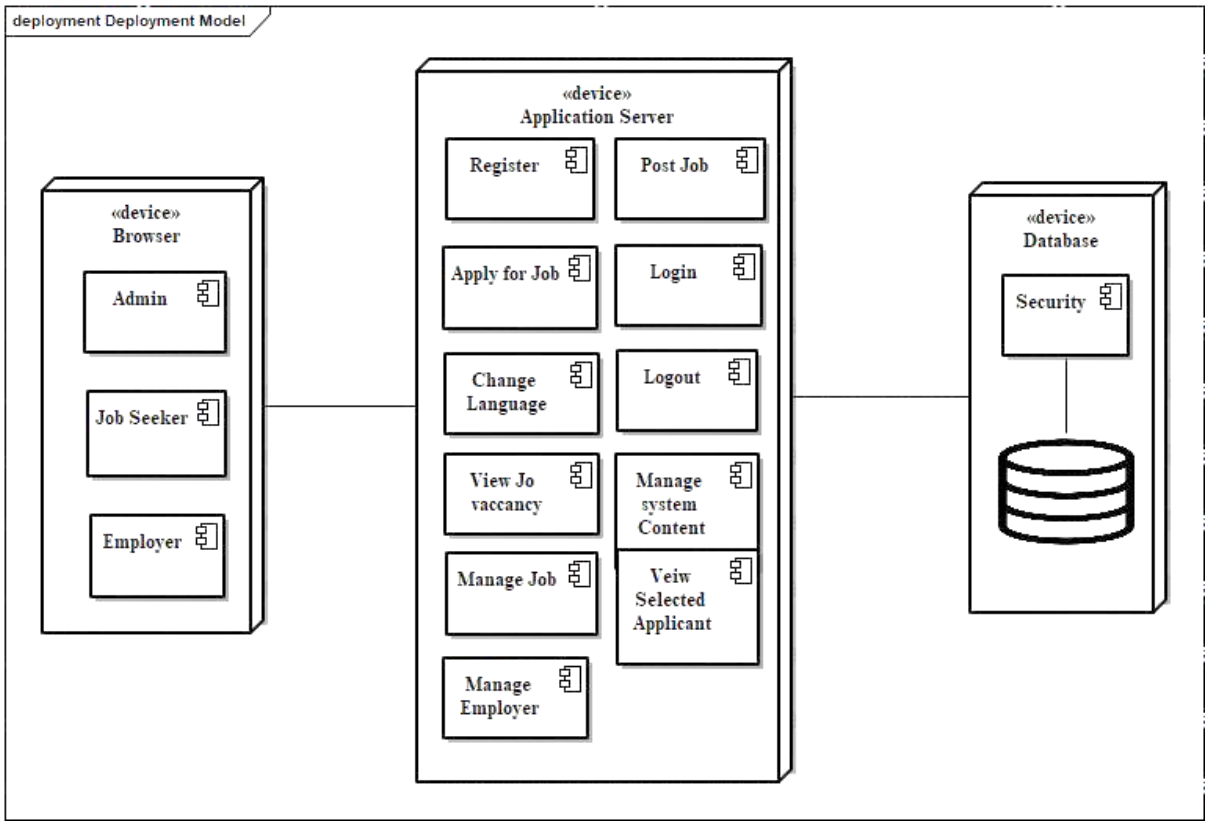

Figure 5. 4. Hardware/Software Mapping

5.3.3 Detailed Class Diagram

Detail class diagram is class diagram that include attributes, methods, attribute data types, visibility of attributes and methods, inheritance, association, aggregation, composition, dependency, and municipality (cardinality and optimality). The following figure, uses the UML class diagram to specify attributes and operations with their visibility information. The following table shows the detail class diagram of our system.

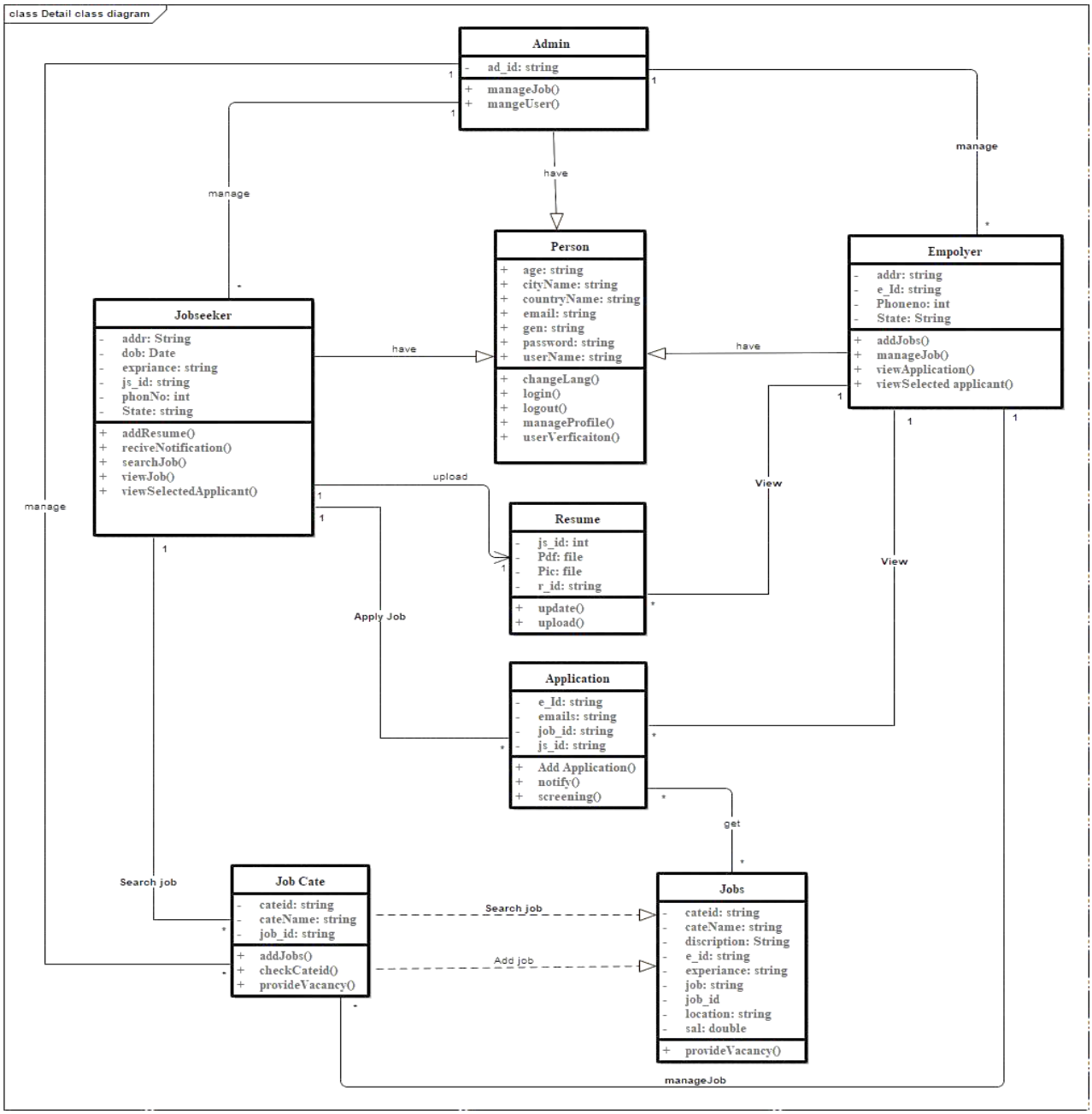

Figure 5. 5. Detailed Class Diagram

5.3.4 Persistent Data Management

Persistence modeling is used to communicate the design of the database, usually the data base to both the users and the developers. It is also used to describe the persistence data aspect of the system. The following tables indicate the persistence data management of the system.

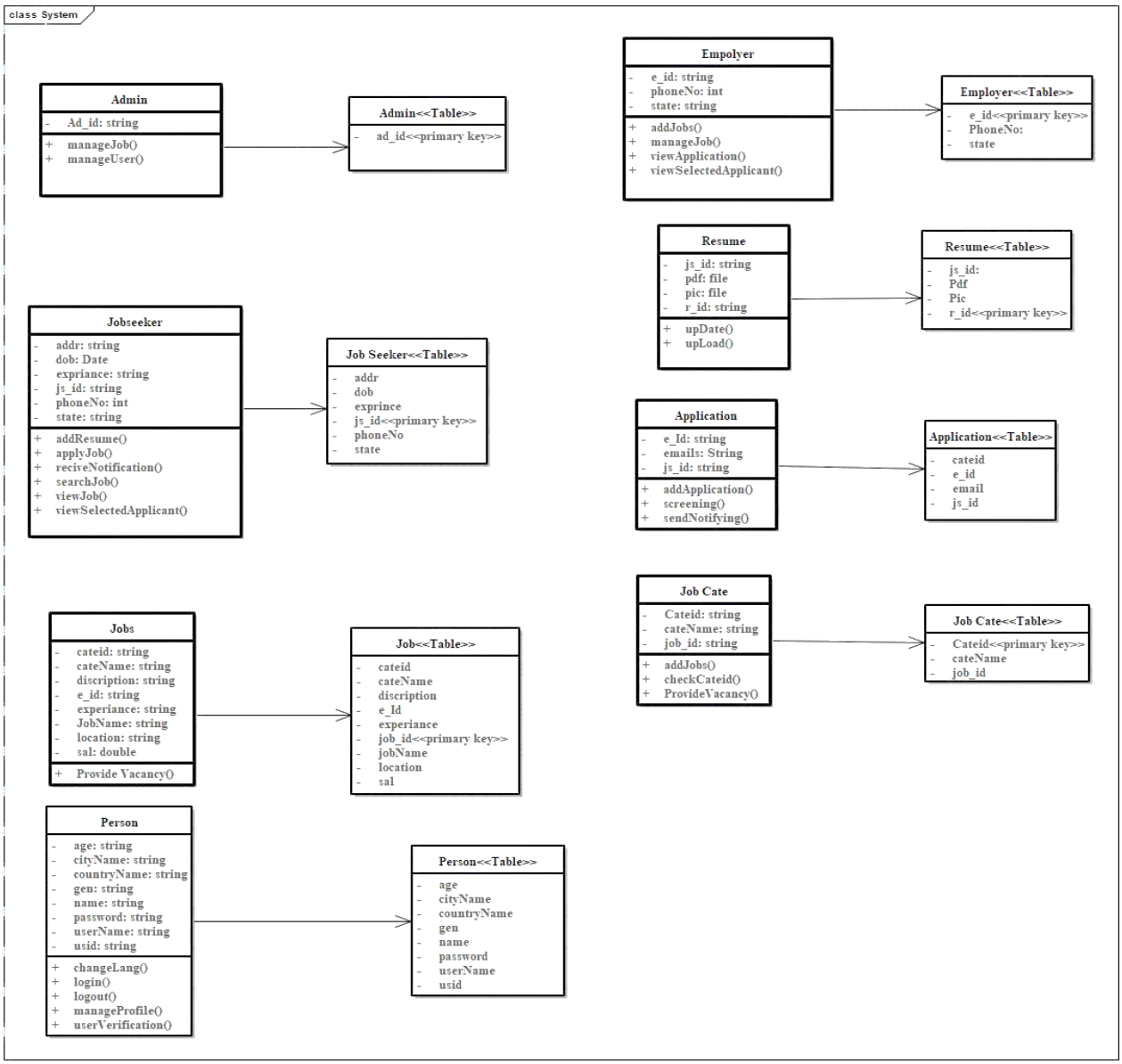

Figure 5. 6. Persistent Data Management

5.3.5 Access Control and Security

In our system, different actors have access to different information and data. Access control and security specifies what the user can access or what cannot perform by some users.

Table 5. 1. Access Control and Security

	Operation

Actor	Apply Job	Post Job	Manage profile	Manage User	View selected Applicant	Select Applicant
Job Seeker	✓	-	✓	-	✓	-
Employee	-	✓	✓	-	✓	-
System administrator	-	-	✓	✓	-	-
System controller			-	✓	-	✓

5.4 Packages

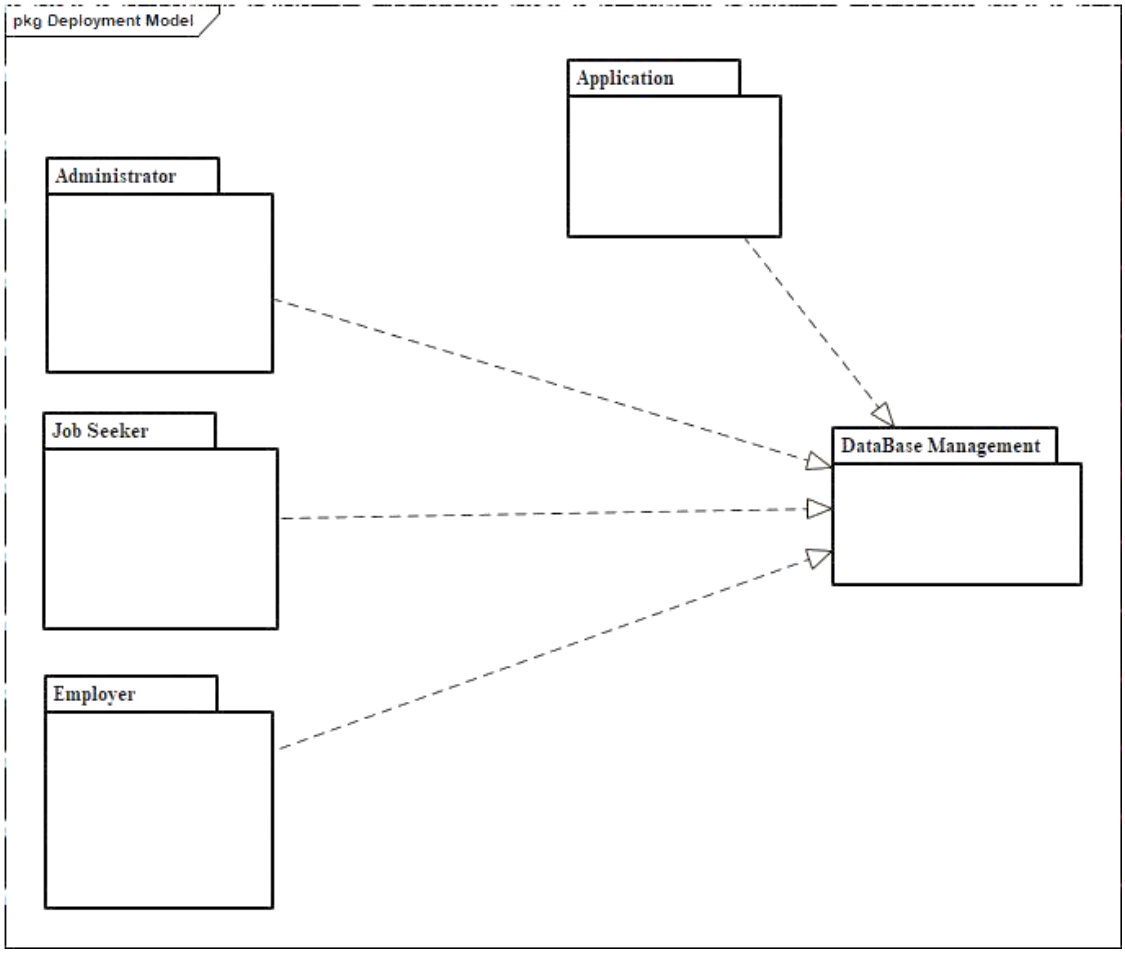

Figure 5. 7. Package

5.5 Algorithm Design

Algorithms are designed to show the flow of programs in the system. They are semantic driven rather than syntax driven. That means, the rule of syntax is not respected as other programming language but it has a complete meaning as that of syntax-based programming language. In addition, Algorithms show the flow and steps of logic in each function. This design part is important in the coding part of implementation. Some of the algorithms are listed below.

- Login
    - Open Application
    - User click on login link
    - System display login form.
    - User enter user name and password.
    - **If** user name and password is correct, **then**
    - **If** user is job seeker, **then** system display job seeker page.
    - **Else if** user is Employer**, then** system display Employer page.
    - **Else** user username and password is not correct, then system display error message and redisplay login form
- Create account
    - Home page displayed.
    - User click on sign up
    - System display sign up page.
    - User fulfill its information.
    - **If** entered information is correct, **then**
    - **If** user email is verified, t**hen** user information registered correctly.
    - **Else** user email is not verified, **then** system display your email is not verified message.
    - **Else** user information is not correct, **then** system display your input is incorrect message**.**

5.6 User Interface Design

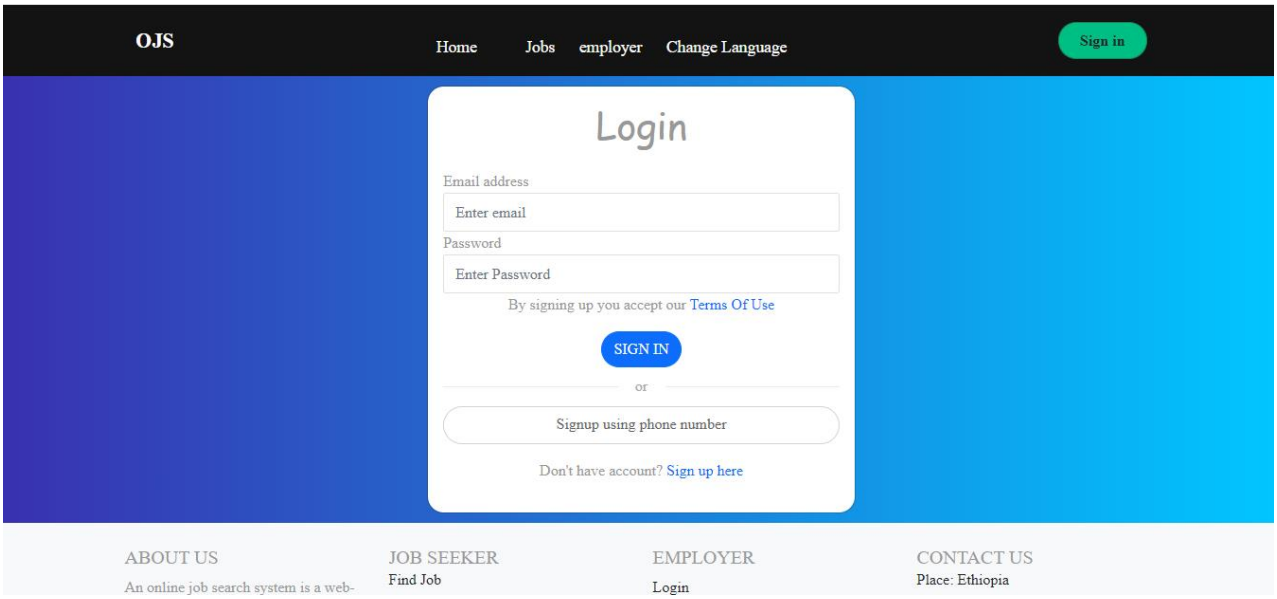

Figure 5. 8 Job Seeker Login Page

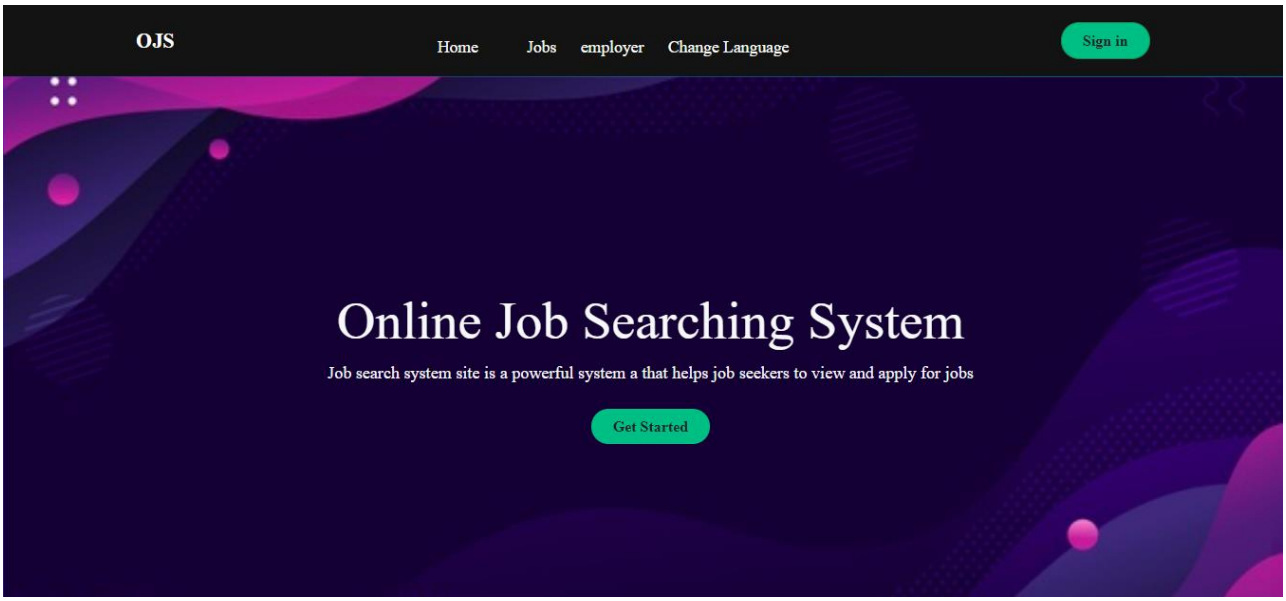

Figure 5. 9 Home page

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