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TECHNOLOGY
FACULTY OF INFORMATICS
DEPARTMENT OF INFORMATION TECHNOLOGY**



JOB PORTAL

A PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE
AWARD OF BACHELORS OF SCIENCE(B.Sc.) IN INFORMATION TECHNOLOGY



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DECLARATION

We hereby declare that the entire thesis work entitled, “JOB PORTAL SYSTEM” submitted to the department of Information Technology, Hawassa University College, in fulfilment of the requirement for the award of the degree of BSc Information Technology.

I further declare that the thesis either in part or full, has not been submitted earlier by me or others for the award of any degree in any University

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Acronyms and Abbreviation

Course: Subject

CPU: Central Processing Unit

Cr. Hr.: Credit Hours

F.K: Foreign key

HTTP:Hyper Text Transfer Protocol

Instructor: Teacher

MYSQL: Structured Query Language (database management system)

SDD: System Design Document

OOSAD: Object Oriented System Analysis and Design

PHP: Hypertext Preprocessor (text editor)

P.K: Primary key

RAM: Random Access Memory

Scheduled: prepared

SWOT: Strength, Weaknesses, Opportunities and Threat.

UML: Unified Modeling Language

WAMP: Windows, Apache, MSSQL, and PHP/Perl/Python)

Abstract

People are unable to get access to job opportunities due to inefficient distribution of information on job offers but now the Internet has made a huge impact on knowledge management and information dissemination all over the world. The Internet has changed the way of looking for job vacancies and searching for right and qualified candidates, through the development of job portals. Job portal system has made job searching processes easier. This project deals with the design and development of a Job Portal System. The purpose of this project is to develop a web-based system for users that will eliminate or reduce the manual work in job searching process and also reduce cost and time spent when advertising job vacancies. It allows job seekers to register online, search and apply for employment and also allows recruiters to register online, post job vacancies and look for suitable candidates.

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Chapter One

1.1 Introduction

Online job portal system (JPS) is a web-based system in which Jobseekers can register themselves online, view organization requirements and apply for the suitable job. The system provides online help to the users all over the world. This kind of system plays an important role in simplifying the recruitment process. The system has facilities where prospective candidates can upload their CV's and Apply for Job suited to them. It also makes it possible for organization to post their staffing requirements and view profiles of interested candidates. Earlier Recruitment was done manually and it was all at a time-consuming work for both Job seekers and Employers. Now it's all possible fractions of second. The system has been designed to do a whole lot more than just reduce paperwork. Job portal system makes possible managers to access information that is crucial to managing their staff. The primary purpose to develop this system to optimize Recruitment process for an organization, besides the qualified applicant could be sort by this system based on their qualification and company requirements. This system contains server that contains the database of Job seeker and Employer; client that contains GUI (graphical user interface). And also, the system we are going to develop will have detailed information about the job (job search, latest job, job categories). In this time everyone, either experienced or fresher, is in search for a Job. This system can prove to be very helpful since it allows users of different profile to be registered and search job on the basis of their qualification. Every user can access through Job title, location of Job and apply for multiple jobs at a time. Generally, this system will improve and make easy the way of finding for jobs by minimizing the cost and effort of Jobseekers with a special feature like user friendly interface, possibility of storing and accessing data locally. This means the Jobseeker will not waste budget by moving from place to place.

1.2 Background of the project

Technology is a body of knowledge used to create tool, develop skills, and extract or collect materials. It is also the application of science (the combination of the scientific method and material) to meet an objective or solve a problem. In addition, technology is a meaningful application in invention, production, and utilization of goods and services, and in the establishment of human activities. Job portal system is a web-based application, which helps end user to find a job with searching criteria like preferred location, job type, and work profile. One can post his/her details on this system with all relative information. The project and implementation helps in proper management and coordination of the records and information. Computerized Job portal system is developed to facilitate the General Administrative system to manage information of the Job Seeker and Job Provider and the processes involved in a Placement company so that, the organization can access accurate information quickly and easily as and when required, thereby improving its operational efficiency and effectiveness. In today's competitive environment, where everybody is on the top, information plays very crucial role. As fast as information is accessed and processed, it can give good result. Today is a fast way of transferring Data and Information over wide area, hence we have used internet as a way for exchanging information. Computerized Systems helps to fulfill these goals. Computerization of the official works will help in doing lot of manual work quickly. It will help in easy storage and access of all information, in short period of time.

1.3 Team composition

Table 1:Team composition

Title name	Job portal system			
Prepared by	Name	ID	E-mail	Responsibility
	Abel Kibebe	IT/0006/09	Abelkibebe5@gmail.com	Programmer
	Berhanu Somega	IT/0020/09	somegaberhanu@gmail.com	Project Manager
	Hailemariam Yihun	IT/0033/09	haile123mariam.@gmail.com	System Analyst
	Yetmwork Abera	IT/0068/09	yetmworkabera@gmail.com	System Designer
	Dawit Teferi	IT/0020/09	dawirteferi@gmail.com	System Designer
	Meseret Wube	IT/0025/08	meseretwubie@gmail.com	Programmer
Date	Dec 2019			
Advisor	Mr. Wondwossen Ergete			

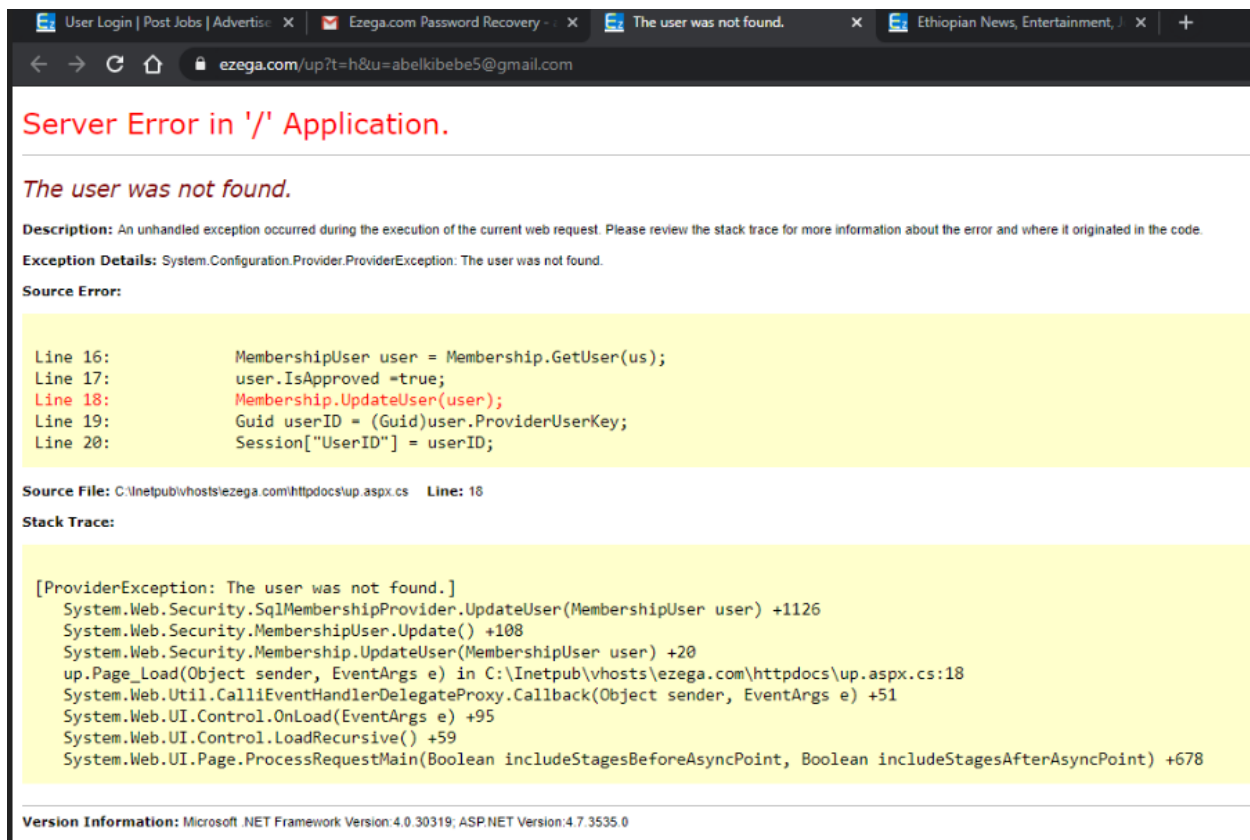
1.4 statement of problems

Currently, In Ethiopia employment has been made manually and is being made manually, most of job seekers viewing available jobs, or applying for the job at the agency can be done for which job seekers has to go the agency and check the available jobs at the agency by reading different Newspapers, job announcements posts on notice board, In the current Ethiopia where technology is also advancing the job recruitment process has abit changed though some problems still occur. there are still some online web applications for the job portal like Ezega.com, MJobs.net , Ethiojobs and ethio translation, but each websites has their own problem.

Problem definition based on the websites.

Ezega.com

This website has a very simple and good interface but it couldn't let you to sign in it asks you to register by providing forms but after you fill the forms it sends you an activation code to your Email, after u activate your account it says there is no user with this name



The screenshot shows a web browser window with the address bar displaying `ezega.com/up?t=h&u=abelkibebe5@gmail.com`. The page title is "Server Error in '/' Application." and the main content area displays the following error details:

The user was not found.

Description: An unhandled exception occurred during the execution of the current web request. Please review the stack trace for more information about the error and where it originated in the code.

Exception Details: System.Configuration.Provider.ProviderException: The user was not found.

Source Error:

```
Line 16:      MembershipUser user = Membership.GetUser(us);
Line 17:      user.IsApproved =true;
Line 18:      Membership.UpdateUser(user);
Line 19:      Guid userID = (Guid)user.ProviderUserKey;
Line 20:      Session["UserID"] = userID;
```

Source File: C:\inetpub\hosts\ezega.com\httpdocs\up.aspx.cs **Line:** 18

Stack Trace:

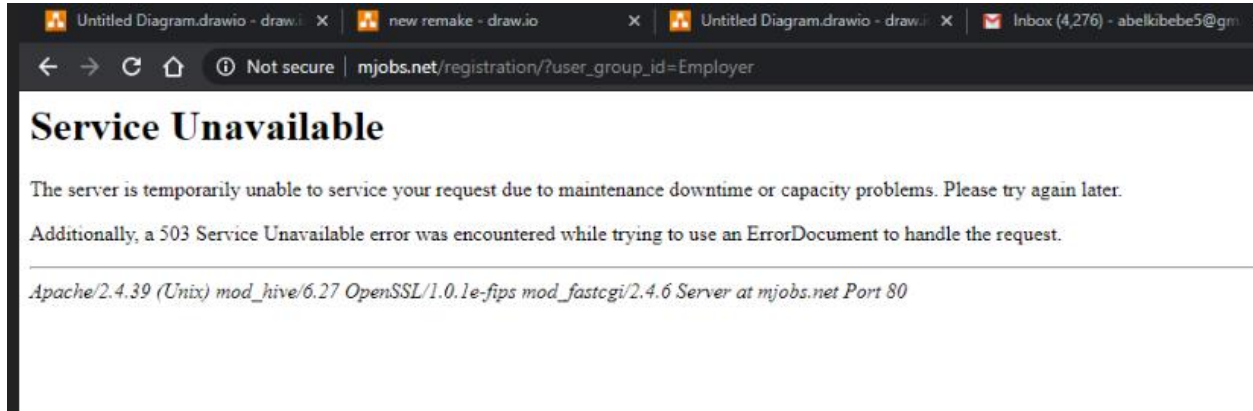
```
[ProviderException: The user was not found.]
System.Web.Security.SqlMembershipProvider.UpdateUser(MembershipUser user) +1126
System.Web.Security.MembershipUser.Update() +108
System.Web.Security.Membership.UpdateUser(MembershipUser user) +20
up.Page_Load(Object sender, EventArgs e) in C:\inetpub\hosts\ezega.com\httpdocs\up.aspx.cs:18
System.Web.Util.CalliEventHandlerDelegateProxy.Callback(Object sender, EventArgs e) +51
System.Web.UI.Control.OnLoad(EventArgs e) +95
System.Web.UI.Control.LoadRecursive() +59
System.Web.UI.Page.ProcessRequestMain(Boolean includeStagesBeforeAsyncPoint, Boolean includeStagesAfterAsyncPoint) +678
```

Version Information: Microsoft .NET Framework Version: 4.0.30319; ASP.NET Version: 4.7.3535.0

As long as we can't login its difficult to judge other features of the websites.

Mjobs.net

After you use it for sometimes the website crashes and it has poor response time, we have waited a lot to just register as a jobseeker and still an error response.



Ethiotransaltion.com

it is a website in which it enables a Jobseeker to login to his/her facebook account and have an opportunity to see posted jobs, and this website is only for jobseekers, an employer cannot post jobs by itself only the admin posts the selected jobs

- There is no application to fill for the jobs
- You can't upload CV.
- Jobseekers only like, share and view Jobs.

Ethiojobs.com

This website is way better than the website that are listed above but it has a problem too,

1. after you register as an employer it took long for the admin to apporove the request to be an approved Employer(it's been like a weak since we requested to be an Employer but still has no response), we don't know for how long we have to wait.
2. When you try to sign in with a wrong Username it takes you to the jobseeker page without showing you where the problem is. This causes an ambiguity to the user

Generally, the current system has the following problems

- Has no exam date announcement
- Has no Exam result announcement
- Can't schedule an interview.
- Selected candidate announcer(since anyone can apply to a job but not everyone take the exam or anyone cannot take an interview so that selected applicant are going to compete for a certain job and based on data availability online then the best candidate can be brought to competition and provided with sort based on their CGPA and duration of work Experience.)

1.5 Objective of the project

1.5.1 General Objective

The general objective of job portal System is To providing web-based and centralized Recruitment Processing System that is time and effort effective system for Job Seekers and job providers.

1.5.2 Specific objectives

In order to achieve the general objective of the project, the following Specific objective of the project should be addressed.

- Gathering data or requirement through observation and interview from end user and client.
- Analyzing the data or requirement (functional and nonfunctional requirement) to satisfy the client or end user need.
- If it is, we design the system otherwise the requirement must be reanalyzed.
- The design of the system must depend on the requirement of the system.
- Testing the system designed if it is the just the system we want.
- After the design tested and satisfy the requirement, system implementation will be accomplished.
- Designing database for the system.
- Each activities of the project is tested before the next process start. Finally the system will be deployed.
- Implement and testing the proposed system.

- Evaluating the alternative solution.

1.6 Feasibility Analysis

1.6.1 Operational feasibility

The operational feasibility is concerned with the operability of the system after it has been installed. The new system can provide sufficient service for the job seekers and employers, there was bulky process in giving service in manual processing or in the existing online system. This implies that the jobseekers or employers cannot be satisfied for the service they get. But this proposed system is automated consequently the both can get sufficient service.

Therefore, the proposed system or the new system is operationally feasible because it can fulfill the following requirements: -

- ❖ Satisfy the customer needs or requirements
- ❖ Provides the end users with timely, accurate, reliable, flexible and useful information.
- ❖ We believed that our project would be workable and user friendly. Then our newly proposed project is operationally feasible.

1.6.2 Technical feasibility

Technical feasibility is a study of resource availability that may affects the ability to achieve an acceptable system. This evaluation determines whether the technology needed for the proposed system is available or not.

When we say our new system is technically feasible the proposed system needs easily maintain and fix without requiring high experts because the system will be developed by familiar programming language the project team members have learned programming languages that required for the successful completion of the project such as java script, CSS, HTML, PHP, and MySQL. Our new system can run on the existing computer system and hardware

The aspects of our study included the following factors.

- ❖ It must have a graphical user interface that assists customers that are not from IT back ground.
- ❖ Platform independent.
- ❖ Easy to debug and maintain.

- ❖ inherent features for security Efficient data retrieval and maintenance
- ❖ The system is operationally feasible as it very easy for the End users to operate it. It only needs basic information about Windows platform.

1.6.3 Economic feasibility

Since the system is 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.

Tangible benefits

A benefit that we get from using this web-based application can easily measure in the following manner.

- Reduces the occurrence of errors.
- Cost reduction and avoidance.
- Reduce the response time of activities
- Information processing efficiency

Intangible benefits

In this case we can see the benefits of using this web-based application that are not easy to measure in terms of money.

- Increase information accuracy.
- Increasing user's motivation.
- Increase security
- Increase efficiency

Tangible cost

To get accurate information about materials the project team observes the market directly. From our project point of view the following items are considered as tangible. Because our team can easily measure them in terms of money.

These costs include:

- Hardware cost
- Software cost
- Development cost
- Operational cost

Hardware cost include the cost to buy a computer and scanner, in our case there is no cost for the software because we are using open source software(jdk,eclips), the development cost includes the cost needed for programmer, manager etc... and operational cost is the cost required to operate the system in the development phase.

Cost of the project

➤ Hardware cost

No	Material	Amount	Price per unit	Total price
1	Pen	6	9 Birr	54Birr
2	Flash disk	2	220 Birr	440Birr
3	For Print	85 sheets	2 Birr	170Birr
4	A4 size paper	1 Desta	150	150
Total		814 birr		

Table 2 Hardware cost

➤ Software cost

No	Material	Price per unit
1	XAMPP Server	Free
2	Microsoft office 2016	Free
3	Micro soft Visio 2010	Free
4	E-draw	Free
5	MYSQL	Free
7	Google Chrome	Free

Total	0.00
-------	------

Table 3 Software costs

1.6.4 Behavioral Feasibility

Our system is behaviorally feasible, because we could say almost all job seekers are familiar with how technology could simplify their work or their life, so in the sense of this both employers and jobseekers are open minded towards the acceptance of this new system, and there is no specialized training needed for the users. Disregarding the initial expenses, the candidate system was assessed to be feasible in all ways. Our system is free from any political and environments difficulty.

1.6.5 Schedule Feasibility

All the team members expect that the project will be completed within the time frame stated, so that the system will be feasible regarding schedule

Activities	Schedule													
	5 week s	6-8 Weeks			9-13 Weeks			14-20 Weeks				21-22 Weeks		
Project Proposal	<div></div>													
Requirement Analysis		<div></div>												
System and Object Design					<div></div>									
Implementation								<div></div>						
Documentation and Submission												<div></div>		

Table 4 Schedule Feasibility

1.7 Scope and significance of the project

1.7.1 Scope of the project

Job portal System enables the users to have the typical recruitment facilities and features at their disposal. The system makes it simpler to share and manage organization's human resource requirements with higher efficiency of easiness. This kind of systems is specifically designed for organization to help in solving staffing problems and managing human resource department activities.

The scope of system will include: -

- Maintain Job seeker and Employer records
- Job Application: In this new system, users are able to apply the job via internet by filled in the required forms.
- Provide Job Postings with details.
- Provide a way to upload resume.
- Provide Easy information retrieval
- Provide Job searching
- Disallowing unauthorized access.
- Scheduling an interview
- CV Verification
- Interview announcement
- Exam date announcement
- Exam result announcement
- Selected candidate announcer
- Providing a way to print the CV.

1.7.2 Significance of the project

The main purpose of this project is to develop application 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 anywhere at any time. The new system helps handling the important task of employee recruitment process. Users which are applicant can access the system using any computer at any place. They can apply for the job vacancies via internet and check their application status easily. Applicant's data are kept in the database system that is more secure as the paper files are not only wasting. The system enables the process like update, edit and add new data to be easier and faster.

1.8 Target beneficiaries of the system

There are different bodies that will be benefited from the new proposed system. The main beneficiaries of this system are both Employers and Jobseekers. Here we have described the benefits that are expected to gain after the development of this system.

To the team members: -

- Having knowledge how a real-life (a real-world information system development) problem should be solved.

To the Employer: -

- Employers can post a job immediately
- Receive applicant CVs immediately as job seekers come across it
- Costs of posting jobs and/or searching for candidates can be lower than the costs of using traditional search firms and/or advertising methods.
- The system is cost-effective

To the Jobseeker: -

- Jobseeker benefit immensely from the wider scope they gain through online
- By posting their CV's Online they can be contacted by employers/recruiters directly for opportunities that may not even be advertised.

- Jobseekers can post their CVs online while keeping their names and present employer's name confidential.

1.9 Methodology

Methodology is the system of methods how to perform gathering information, analyze and design the system, implement, test and evaluate using different ways. Most used methodologies are prototyping, iterative, incremental, waterfall, agile, etc. Among them we select iterative development methodology for our system. The requirements for iterative development are requirement gathering, analysis and design, coding, testing and acceptance. The advantage of iterative development method is incremental (multiple releases), cooperative (a strong cooperation between developer and client), straightforward (easy to understand and modify) and adaptive (allowing for frequent changes).

1.9.1 Data source

In this section, the current, existing system can be a source of data to produce the newly built system. With this, various approaches to the system of past researches, readings case studies or findings related to the current development of the system. Also we will use primary and secondary data collection methods

1.9.2 Fact finding techniques

We gather data from those who were suffered with finding job and to those who have an idea how this portal could solve this problem. To gather data from the staffs and employees the team will use the following techniques.

Those are:

- A. Interview:** -to get the basic information about the existing Employee Recruitment system, the team will interview the staffs and employees in Hawassa University about the services that are given to them, and the problems associated with that environment.
- B. Questioner:** after we finish the interview, we will also use the other methodology of data collection that is a questioner. During this time, we will prepare a questioner and distribute it to employees and staffs who are served to find information on activities and the limitations and strength too.

C. Observation: This is another type of method for collecting data and information in which we could witness the actual events which will happen in the organizations. In this method all we have to do is observation and note down the events what we observed.

1.9.3 System analysis and design methodology

Analysis and design the system using object-oriented approach. We need a method for analyzing a problem to be solved, a plan for the design of the solution and a construction method that minimizes the risk of error. We have chosen the object-oriented approach (OO) to follow for our proposed system. Object-oriented programming (OOP) is an approach to designing modular reusable software systems. A module is a component of a larger system that interacts with the rest of the system in a simple and well-defined manner. The object-oriented approach is a logical extension of structured programming, a module containing data and subroutines. An object is a kind of self-sufficient entity that has an internal state (the data it contains) and that can respond to messages (call to its subroutines).

Object-oriented design methodology has two phases: -

Object-Oriented Analysis (OOA): During this phase, the team will look at the problem domain and with the aim of producing a conceptual model of the information that exists in the area which will be analyzed. And this model the functions of the system (use case modeling), identifying the business objects, organize the objects and also the relationship between them and finally model the behavior of the objects.

Object-Oriented Design (OOD): During this phase the model interactions and behaviors that support the use case scenario, and finally update the object model to reflect the implementation environment. And also transforms the conceptual model produced in object-oriented analysis to take account of the constraints imposed on our system format, so that we will use this phase to refine the use case model to reflect the implementation environment.

1.9.4 Development tools

The development tools that will be used to develop the system are listed in the table below: -

Activities	Tools/ Programs
Client-side coding	HTML
Client-side scripting	JavaScript
Platform	MS Windows
Database server	Mysql
Web server	Apache
Server-side scripting	Php
Browsers	Mozilla Firefox 3.0.
Editors	Macromedia Dreamweaver
Documentation	MS Word and Latex
Presentation document	MS-Power point
Scheduling	MS-Word
To design system diagrams	E-draw max 7.9

Table 5: Development Tool

1.9.5 Required

resources with Costs

Table 6: Resource Cost

Item	Quantity	unit price	total price
stationary materials	3 pen, 1 desta paper	For pen =27 birr For paper=150 birr	177
CD Rom disk	3	15 birr	45
flash disk	8Gb	200 birr	200
print cost	-	300 birr	300
Miscellaneous cost	-	1000	1000
total cost	-	-	1722 birr

Chapter Two

Description of the Existing System

2 Introduction of Existing System

The existing recruitment system in Ethiopia is happening in two ways the most used way is that Jobseekers viewing available jobs, or applying for the job at the agency can be done for which job seekers has to go the agency and check the available jobs at the agency by reading different Newspapers, job announcements posts on notice board and applying by physically being there. Second, by using some online web applications for the job portal like Ezega.com, MJobs.net , Ethiojobs and ethio translation, this websites has their own drawback from satisfiying the user.

2.1 Strength of Extisting System

As we know there are anumber of available online job portal system websites in which we can see available posted jobs and we can apply for thoe jobs and by using the websites user can create their account as job seeker so that they can upload different educational details and it provides fascilities for uploading CV and as well as they enable us to apply for jobs online.

Generally

- The existing system has strength of displaying available jobs using a web-based system,
- This website has a very simple and good interface.
- Job seekers can apply to the available jobs.
- Some websites provide a way to upload a CV.
- They sent you an email notification.

2.2 Weakness of Existing System

In this world any system, as it has strength on one hand, it also has a weakness on the other hand.

In our case, the weakness of the existing system is described below.

- Accuracy: The existing system mostly characterized by prone to error.
- Some websites don't let you to upload CV while providing some good features than other website and vice versa.
- The website's crashes after we use it for sometimes(especially Mjobs.com)
- Performance: Some websites have very poor response time.
- Has no exam date announcement
- Has no Exam result announcement
- Can't schedule an interview.
- Selected candidate announcer(since anyone can apply to a job but not everyone take the exam or anyone cannot take an interview so that selected applicant are going to compete for a certain job and based on data availability online then the best candidate can be brought to competition and provided with sort based on their CGPA and duration of work Experience.)
- There is no way to show interest to join a volunteer jobs

Generally it is difficult to get a website that Qualifies all features that the user desire form the system.

2.2 Proposed System

The proposed system can solve the problem existing system and operate easily, our proposed system will have the following features on top of the basic job portal feature.

- Provides a way If the job seeker is selected as a candidate he recieves a notification.
- An interview announcement - when after a jobseeker is selected he will receive a notification about the date of the interview
- Provides a way to show interest on the available volunteer jobs.
- Making the employer to be a part of the system.
- If the jobseeker is selected as a candidate and take the companies exam he can see his result through the portal.
- Provides a way for the jobseeker to deactivate his/her account.
- Provides a way to print his CV from the account.

- Admin approves the Employer

2.3 Players in the existing system

An existing system compromises different players (actors) to carry out the job. Among those different actors (players), the most commons are: -

Jobseeker: a person who is actively looking for employment.

Employer:-refers to the overall process of attracting, selecting, posting job advertise in the existing system and appointing suitable candidates for jobs (either permanent or temporary) within an organization.

2.4 Major functions/activities in the existing system like inputs, Processes & outputs

If the existing system is performing its activities manually, it has different major functions

- **Posting job:** employers can post available jobs in notice boards or newspapers.
- **Targeting job and industry:** jobseeker can view available jobs and choose job title and industry that is best suited to him/her based on what he/she learned.
- **Registration:** jobseeker can submit his/her resumes to the company and registered by employers.

2.5 Business rules

The existing business rule of the 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 a job posted by the company. The rules are: -

- The job seeker must be free from charges
- The job seeker also needs to be between 18 and 65
- The company should be legally licensed
- The job seeker must have a valid resume
- The job applier must be qualified for the task he/she selected

2.6 Bottlenecks of the existing system (using for example PIECES frame Work)

The manual system is prone to various problems. These problems can be seen from the following perspectives like performance, information, economic, control, efficiency and services given by the existing system to the users, by using the PIECES framework as follows

2.6.1 Performance (Response time)

The current system's performance is weak. This is due to the following reasons: -

- First, the acceptable throughput rate is relatively high i.e. the time required from initiation to completion of a particular task is relatively high.
- Second is the acceptable response time for a particular task is large.

2.6.2 Input (Inaccurate/redundant/flexible) and Output (Inaccurate)

In put

- Receive the incorrect/redundant list of jobseekers at the time of registration.

2.6.3 Security and Controls

Since all the records associated with the manual system are recorded and stored manually, the security that the system provides for the privacy of this records is not good. The system shouldn't provide sufficient protection for access and manipulation of the records associated with the system. So, it is not easily protected and used properly the resource.

2.6.4 Efficiency

In manual operation, most of the activities are prone to wastage of resources like papers, manpower, time etc. to produce the corresponding outputs. This makes the current system inefficient while utilizing resources. There should be a mechanism that reduces wastage of resources and that makes the system to be efficient.

2.7 Practices to be preserved

The main activities that are performed in the manual management system will be sealed by designing the corresponding simulation of those activities. That is each activity that is pertinent to the system is designed and automated to achieve the best functionality.

2.8 Requirements of the Proposed System

2.8.1 Functional Requirements

Functional Requirements are those that refer to the functionality of the system, i.e. what services it will provide to the user. Statements of services the system should provide how the system should react to particular inputs and how the system should behave in particular situations.

- Secure registration and Login facilities for Administrator, Job Seeker as well as Employer.
- A search engine for the Employer to search for Job Seekers with a particular Qualification/Experience in a certain Field.
- Employers should be notified of any job seeker has shown interest in their vacancy.
- The Employer should have an option for downloading the C.V. of the Job Seeker.
- The Job Seeker should have the option of updating and posting his C.V.
- The administrator has to approve and reject the Employer before he can put the vacancies.
- The administrator has to view employer and jobseeker detail.
- The employer to select an applicant, view applicant detail, view resume, and view resume.
- The job seeker should have an option to search job, view job detail, apply for job, view jobs based on their category.
- The employer has to post, edit and delete a job.
- The job seeker can also Schedule interviews if there is one.

2.8.2 Non -Functional requirements

Nonfunctional (supplementary) requirements are relevant to other information needed to produce the correct system and are detailed separately.

- **User-friendly interface:** The system should have an easily understandable interface (users can interact with the system through the user interface easily)
- **Accuracy:** The system should give only a valid result if no data is found with the specified criteria the system should not give an invalid response.
- **Maintainability:** The system will develop using an object-oriented software development technique that makes the software highly maintainable. If there are any additional requirements the system is flexible to change.
- **Security:** Security becomes a crucial issue in the proposed system. 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: Admin and Limited users (job seekers and employers). The Admin user has the full privilege to perform on the system. Limited users can only perform limited operations based on the privilege given by the administrator.
- **Ease accessibility:** our proposed system is easily accessible. The system will put Job seekers important, searching details easily in their hands wherever they want.
- **Performance:** our system is going to use efficient algorithms for each task which will make it fast and require less storage.
- **System portability:** - the ability to move the software on different operating systems. Since our proposed system is a website, it is portable to any operating system so this system is portable to any device and operating system.
- **Error Handling:** - The system will check user inputs to the system to handle the error. It handles and shows error by showing the message” invalid input” when the user enters invalid input.
- **Extensibility:** The system can be easily extensible to add new features at a later stage.

Chapter Three

System Analysis

3.1 Introduction

In this project, the team used an object-oriented system development methodology that incorporates two principal phases. These principal phases are Object-Oriented Analysis and Object-oriented Design. In this phase, the team will do is the object-oriented analysis (OOA). During Object-Oriented Analysis the following major activities are performed. System Requirement Specifications (SRS), Use case diagrams, use case documentation (for each use case identified), and Sequence diagram, Activity Diagram, User Interface Prototyping, and Supplementary specifications.

3.2 System Requirement Specifications (SRS)

In this system, we can specify the requirements of hardware and software.

Hardware Requirements

- Computer
- Printer
- Pen Drive

Software Requirements

- Notepad++
- E-draw
- Apache server
- Window XP
- MySQL server
- Microsoft-Office

Functional Requirements

A function is described as a set of inputs, the behaviour and outputs. Functional requirements define the functions of a system or its components. It also describes the services that a system is expected or can provide. The following are some of the functionalities the system will provide;

Job seeker	Employer	Admin
Registration	Registration	Login
Login	Login	Manage Job seeker
Forgot password	Forgot password	Manage employer
Search job	Update profile	Post notification
Search company	View approval	Manage posted jobs
Apply for job	Select applicant	
Search company	Post notification	
Update profile	Post job	
Upload CV	Download CV	
View approval	View notification	
View exam result	Logout	
Log out		

3.3 Use Case Diagram

The use case diagram describes a function provided by the system as a set of events that yield a visible result for the actors. It is a list of steps, typically defining interactions between an actor and a system, to achieve a goal. There are three actors in our proposed system.

Administrator: A person who manages the entire system

Employer: A company that posts a job and hire professionals (job seekers).

Job Seeker: a person who find a job.

3.4 Potential Actors and Use Cases

Actors	Use Cases
Administrator	Register
	Login
	Job
Job Seeker	Apply for Job
Employer	Manage Resume
	Manage Profile
	Post Job

	Add job Approve Employer Select Applicant View Notification View job detail View job by category View job by location View result
--	--

Table 7 Actors and Use Cases

3.5 Use case documentation

Use Case Name	Register	
Use case ID	UC1	
Actors	Job Seeker, Employer	
Purpose	Enable Job Seeker or/ <i>and</i> Employer to register	
Overview	The Job Seeker or/ <i>and</i> the Employer registers his/her personal information	
Pre-condition	Open application The system displays Home page	
Main Course of Action		
Actor Action		System Action

1. Click Register Button 3. Enters personal information 4. Click Save Button 7. Use Case Ends	2. Display registration form 5. Verify all inputs 6. Done
Alternative Course of Action	
1, If the user enters invalid input, the system displays error message and goes back to step#2 or if the user registered before, the the system displays “you are already register”.	
Post-condition	The system registers the Job Seeker or Employer

Table 8 System Use Case description for register

Use Case Name	Login
Use case ID	UC2
Actors	Job Seeker, Employer, Administrator
Purpose	To Authenticate
Overview	The actors enter the required information and the system will authenticate
Pre –condition	Actors must have user name and password registered in the database
Main Course of Action	
Actor Action	System Action

1. Actors launches the system. 2. Actors click the login button. 4. Actors fill user name and password.	3. System display login form. 5. System validate user name and password is correct. 6. Use case ends.
Alternative Course of Action	
1. If the actors insert incorrect username or/and password, the system displays message “you are entered incorrect password or username” and system back to basic course of action 4. 2 Use case ends.	
Post-condition	The system display home page

Table 9 System Use Case description for Login

Use Case Name	Search Job
Use case ID	UC3
Actor	Job Seeker
Purpose	To search a Job from database
Overview	The Actor enter the name of the Job and the system will display the Job
Pre-condition	Open application
Main Course of Action	
Actor Action	System Action
1. Click Search Job Button 3. Enter Search Criteria 4. Click Search Button	2.Display Search Job form 5. Retrieve the Job from the Database 6. Display the Job

6. Use Case End	
1 Alternative Course of Action	
<p>1, if the actor try to search with an empty field the system The system displays “Please Fill the Criteria ” message and system back to basic course of action 4.</p> <p>2 use case ends</p>	
2 Alternative Course of Action	
<p>1 if the system try to retrieve ajob from the database and no job found The system displays “No Job Found ” message and system back to basic course of action 4.</p> <p>2 use case ends</p>	
Post-condition	Results of Searched Job display to the Job Seeker

Table 10 System Use Case description for Search Job

Use Case Name	View Job Detail
Use case ID	UC4
Actor	Job Seeker
Purpose	To view detail information about the Job
Overview	The actor enters 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
Main Course of Action	
Actor Action	System Action
1. Click View Job Detail Button	<p>2. Retrieve Job Detail from the database</p> <p>3. Display Job Detail</p>

4. Use Case End	
Alternative Course of Action	
1 Click on Back Button	
Post-condition	The Job Seeker will view Job detail

Table 11 System Use Case Description for View Detail

Use Case Name	UPLOAD CV	
Use Case ID	UC 5	
Actors	Jobseeker	
Description	Enables the Actor to add educational detail and upload cv file	
Pre-condition	Actors must login to the system.	
Post condition	Actor upload cv and required educational details	
main course of action		
	Actors action	System action
	1. Actors launch the system. 2. Actors Login to a system. 3. Actors click on upload cv button. 5. The actor select file from its disk 6. The actor fills the fields and click upload button.	4. The system displays a form with required field type selection menu. 7. The system will upload and store on the database 8. Use case ends.

Alternative course of action	<ol style="list-style-type: none">1. If the actor tries to upload empty field, the system will displays message “please select file to upload” and system back to basic course of action 3.2. Use case ends.
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Use Case Name	Apply for Job	
Use case ID	UC6	
Actor	Job Seeker	
Purpose	Enable Job Seeker to Apply for the Job	
Overview	The Job Seeker search for available Jobs to apply that matches with his/her qualification	
Pre-condition	Open application There should exist available job offers	
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.Retrieve and display list of jobs that are available 4.Displays detail Information about the Job 6. Done	
Alternative Course of Action		
1. if the actor changed his mind to cancel the application user can click cancel button		
Post-condition		Successfully applied

--	--

Table 12 System Use Case description applying for a job

Use Case Name	Manage resume
Use case ID	UC7
Actor	Job Seeker
Purpose	Enable Jobseeker to post his/her Resume
Overview	The Jobseeker can update and Post his/her resume
Pre-condition	Login to the system View his/her resume
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	
6a. The system displays “Please Select your Resume” message	
Post-condition	Resume of Jobseeker is posted

Table 13 System Use Case Description for Manage resumes

Use Case Name	Manage account
Use case ID	UC8
Actor	Administrator

Purpose	The Administrator can view and delete profile	
Overview	The Administrator can manage account	
Pre-condition	Login to the system View profile	
Main Course of Action		
Actor Action		System Action
1. Click on update account Button 3.the actor click on delete account button 5 the user click on the yes button to delete		2.Retrive and display the account 4.the system display dialogue “are you sure to delete this account ?” 6.display profile successfully updated 7 use case ends
Alternative Course of Action		
1,if the user click on no button on the dialogue then the action will be aborted and the system back to basic course of action 1 2, use case ends		
Post-condition	Manage account	

Table 14 System Use Case description for managing an Account

Use Case Name	Approve Employer	
Use case ID	UC9	
Actor	Administrator	
Purpose	To approve the employer	
Overview	The administrator view registered employers and approve them	
Pre-condition	Employers must be on Pending State	
Main Course of Action		
Actor Action		System Action
1. Click on Approve Button		

3.Click on a specific Employer	2. Retrieve and display list of employers which are on pending state
5.Click on Save Button	4.Display employer detail
7.Use Case End	6.Approved
Alternative Course of Action	
1, if there are no employers in pending state in the database the system displays “No Pending Employer” message and the system back to basic course of action 1 2 use case ends	
Post-condition	Employers are approved

Table 15 System Use Case description for approve

Use Case Name	Post Job
Use case ID	UC10
Actor	Employer
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
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	2. Displays Post Job page 5.Checks all inputs 6.Done

7.Use Case Ends	
Alternative Course of Action	
1.if all required fields are not filled by the employer the system displays “Please fill all required fields” message and the system back to basic course of action 3	
2 use case ends	
Post-condition	Job is successfully Posted

Table 16 System Use Case description for posting a job

Use Case Name	Select Applicants	
Use case ID	UC11	
Actor	Employer	
Purpose	Enable the Employer to select applicants from the system	
Overview	The Employers can select applicants that fulfills their own company criteria	
Pre-condition	The system should shortlist applicants	
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 approve Button 6. Use case end		2. Retrieves list of notified applicants from database 3. Display list of eligible applicants
Alternative Course of Action		
1. if the number of applicants are lower than expected or there is no notified applicant The system displays “Minimum number of applicants” message and the system back to basic course of action 1 2 use case ends		

Post-condition	Applicants are selected by Employers
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Table 17 System Use Case description for select applicants

Use Case Name	View Notification		
Use case ID	UC12		
Actor	Job seeker		
Purpose	To enable the job seekers to apply for a job		
Overview	<p>The System evaluates applicant data based on employers’ criteria</p> <p>The System compares applied applicants based on their resume</p> <p>The System generates list of eligible applicants and send it to the employers for approval.</p> <p>The employers check validity of eligible applicants resumes to verify</p> <p>The System generates an announcement notification for those applicants that they got the job.</p>		
Pre-condition	The system must be generating notification		
Main Course of Action			
Actor Action		System Action	
1.click on view notification button		2.retrieves generated notification from database	
4.use case end		3.display notification	
Alternative Course of Action			

1 if the system couldn't find any new notification from the database the system generates and displays "no new notification found" message and back to basic course of action 1	
2 ,use case ends	
Post-condition	The Job seeker apply or reject for a job

Table 18 System Use Case description for view notification

Use Case Name	View exam result	
Use case ID	UC13	
Actor	Jobseeker	
Purpose	Enable jobseeker to view exam result	
Pre-condition	The user of the system has already activated authenticate user functionality	
Overview	Jobseeker can view his/her exam result online	
Main Course of Action		
Actor Action		System Action
1. Click on view exam result button		2.system displays the exam result page
		3. Checks whether the user has taken the exam before or not taken and display the exam result
6. Use case end		
Post-condition		The result of the exam is stored in the database

Table 19: System Use Case description for the view exam result

3.6 Sequence Diagram

A sequence diagram is an interaction diagram that shows how processes operate with one another and in what order.

The boxes across the top of the diagram represent classifiers or their instances; typically use cases, objects, classes or actors.

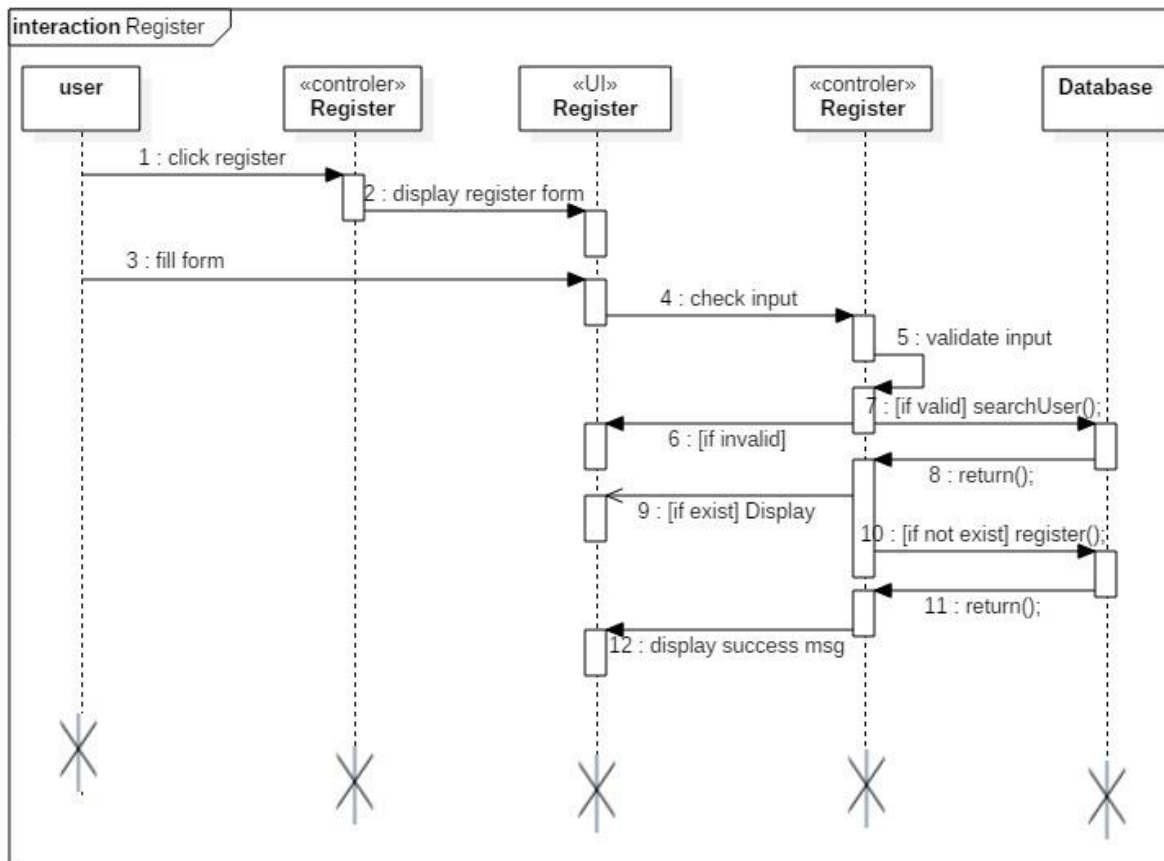


Figure 2 Sequence Diagram for Register

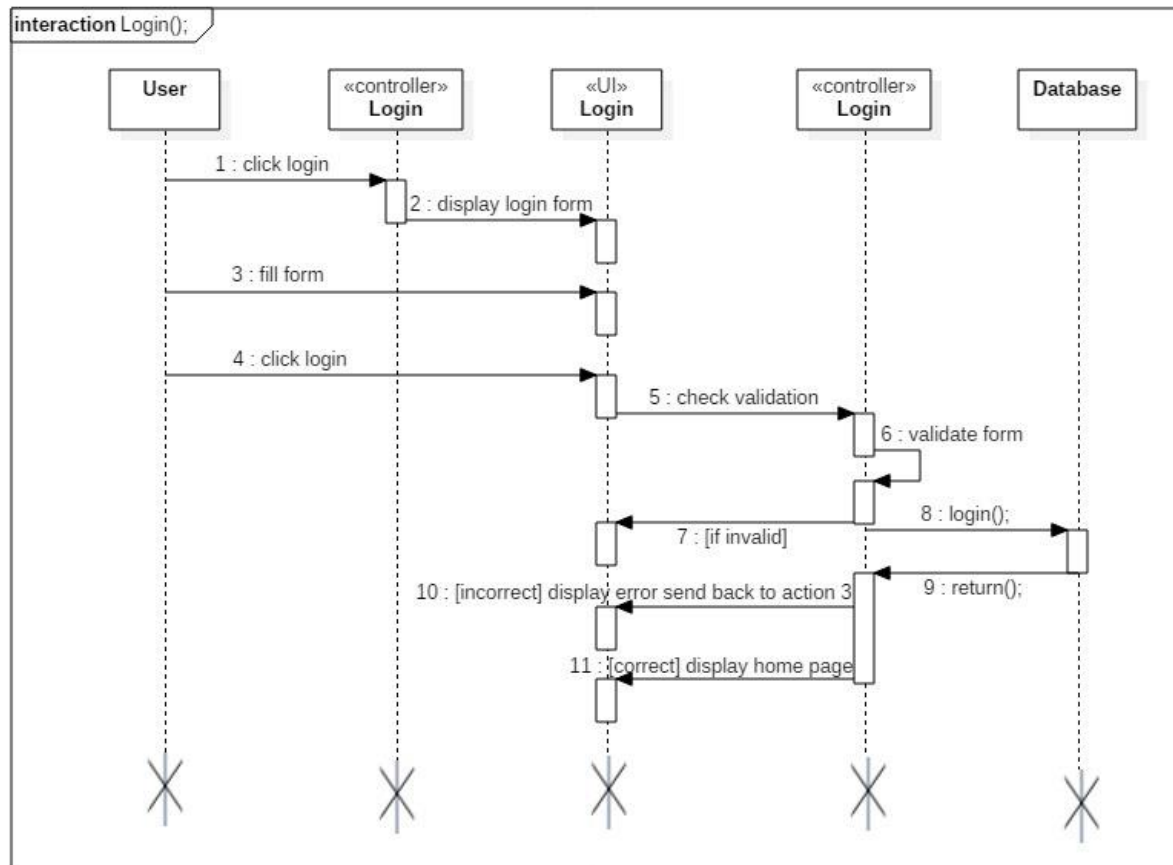


Figure 3 Sequence diagram for login



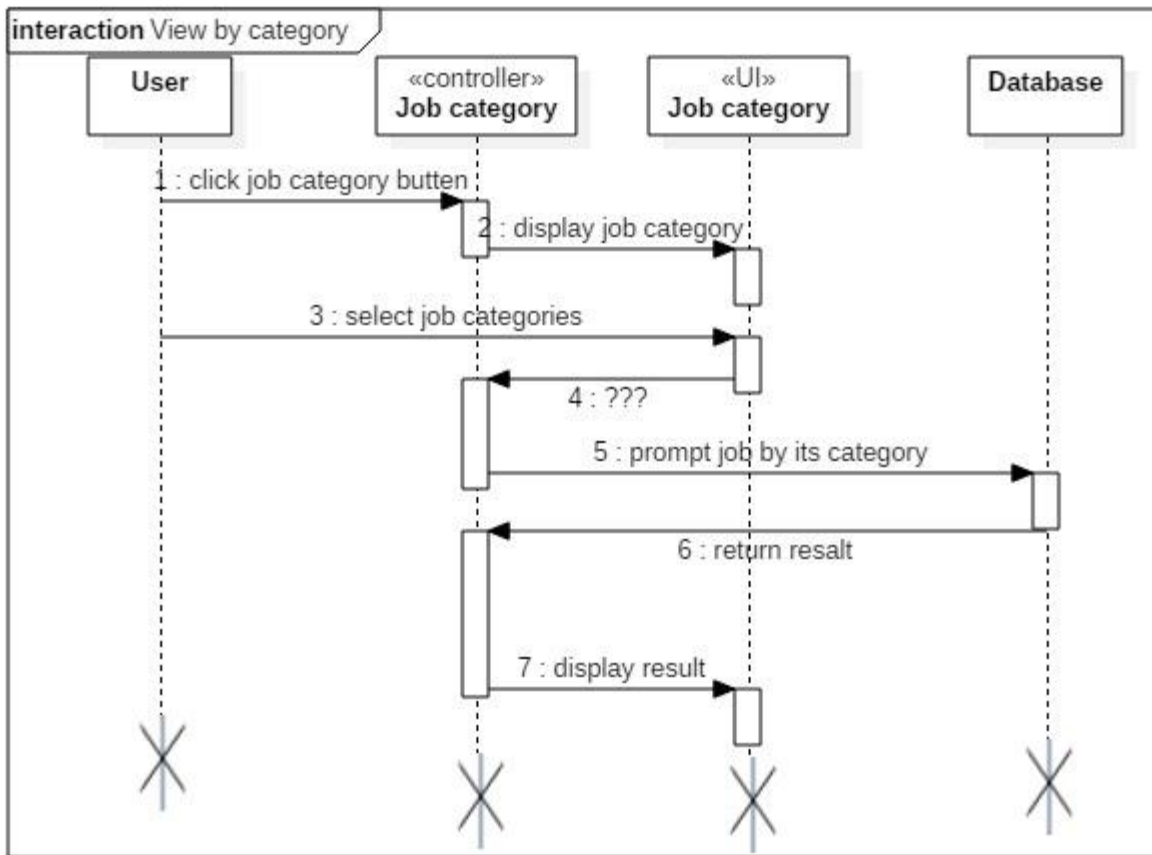


Figure 5 Sequence Diagram for View Job by category

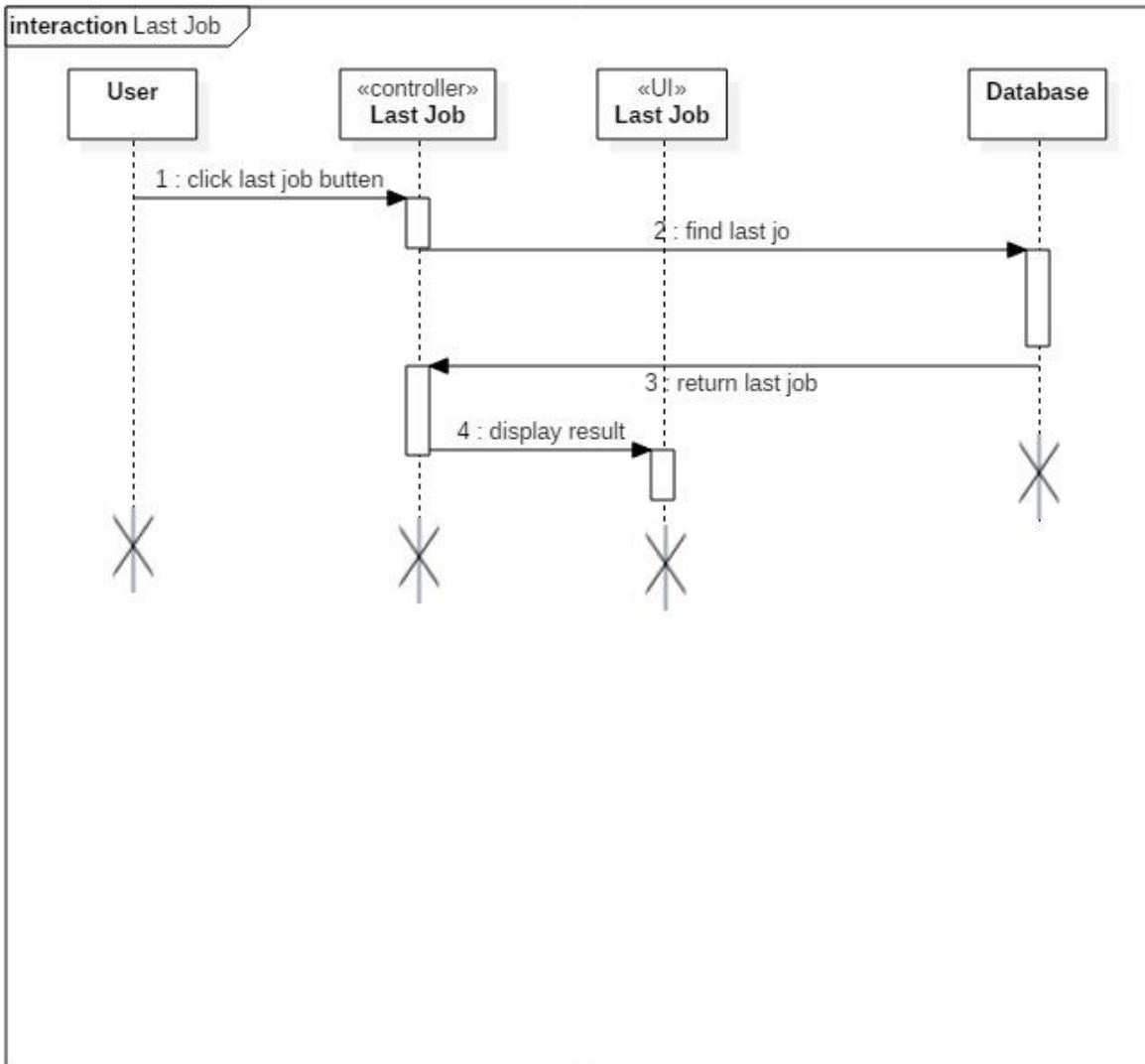


Figure 6 Sequence Diagram for View Latest Job

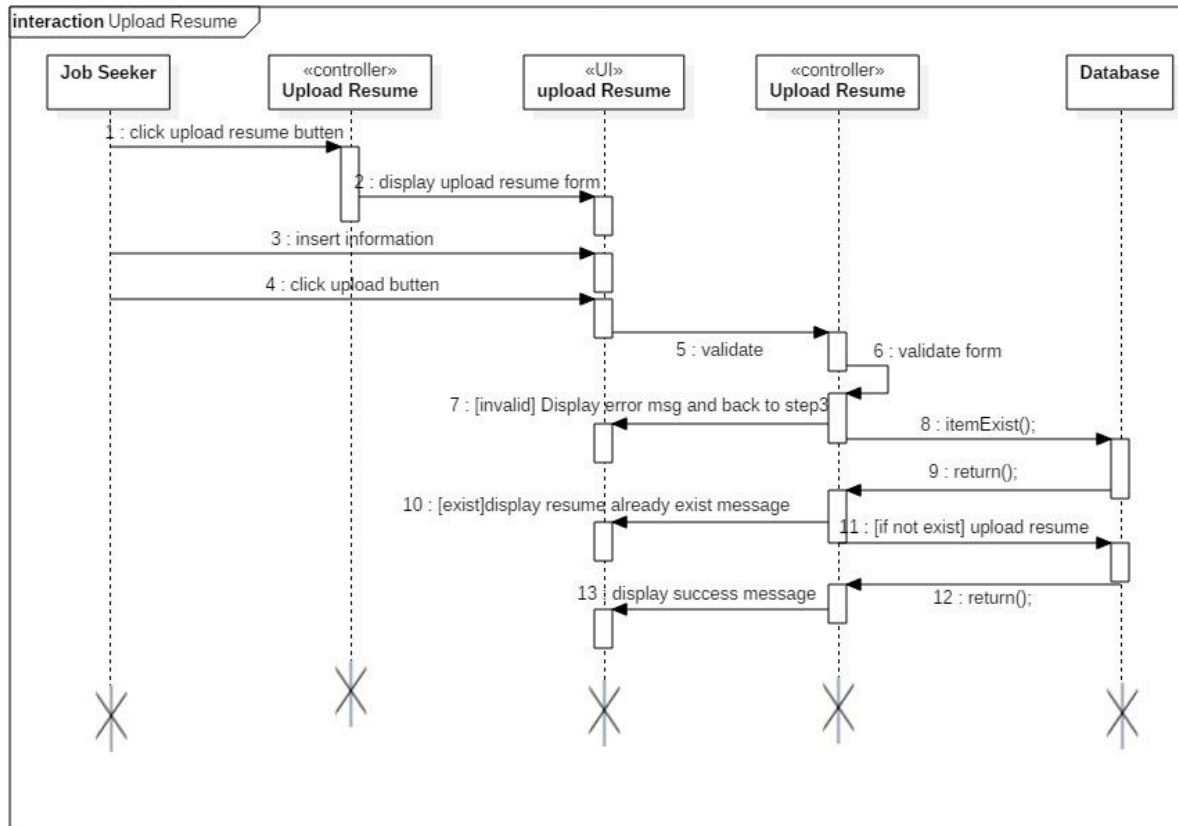


Figure 7 Sequence Diagram for upload Resume

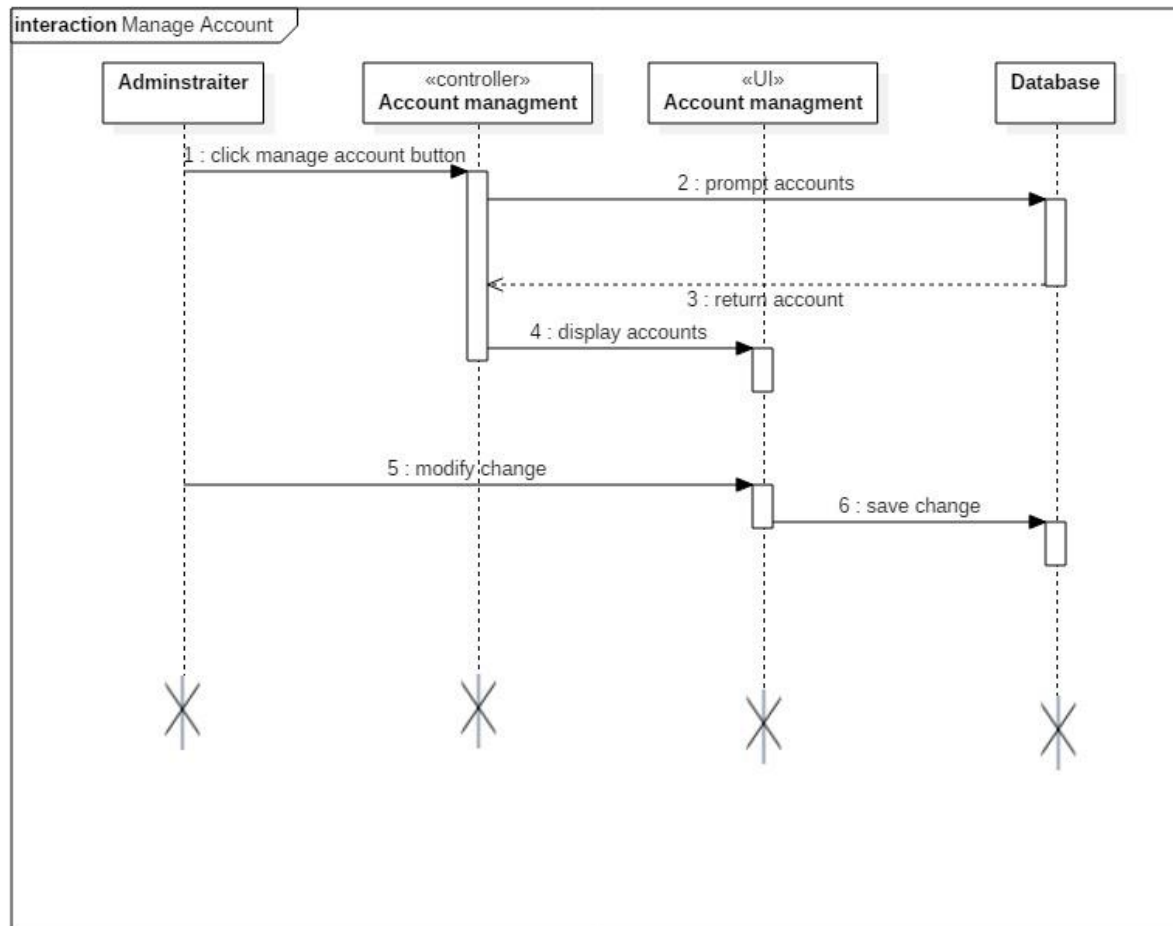


Figure 8 Sequence Diagram for manage account

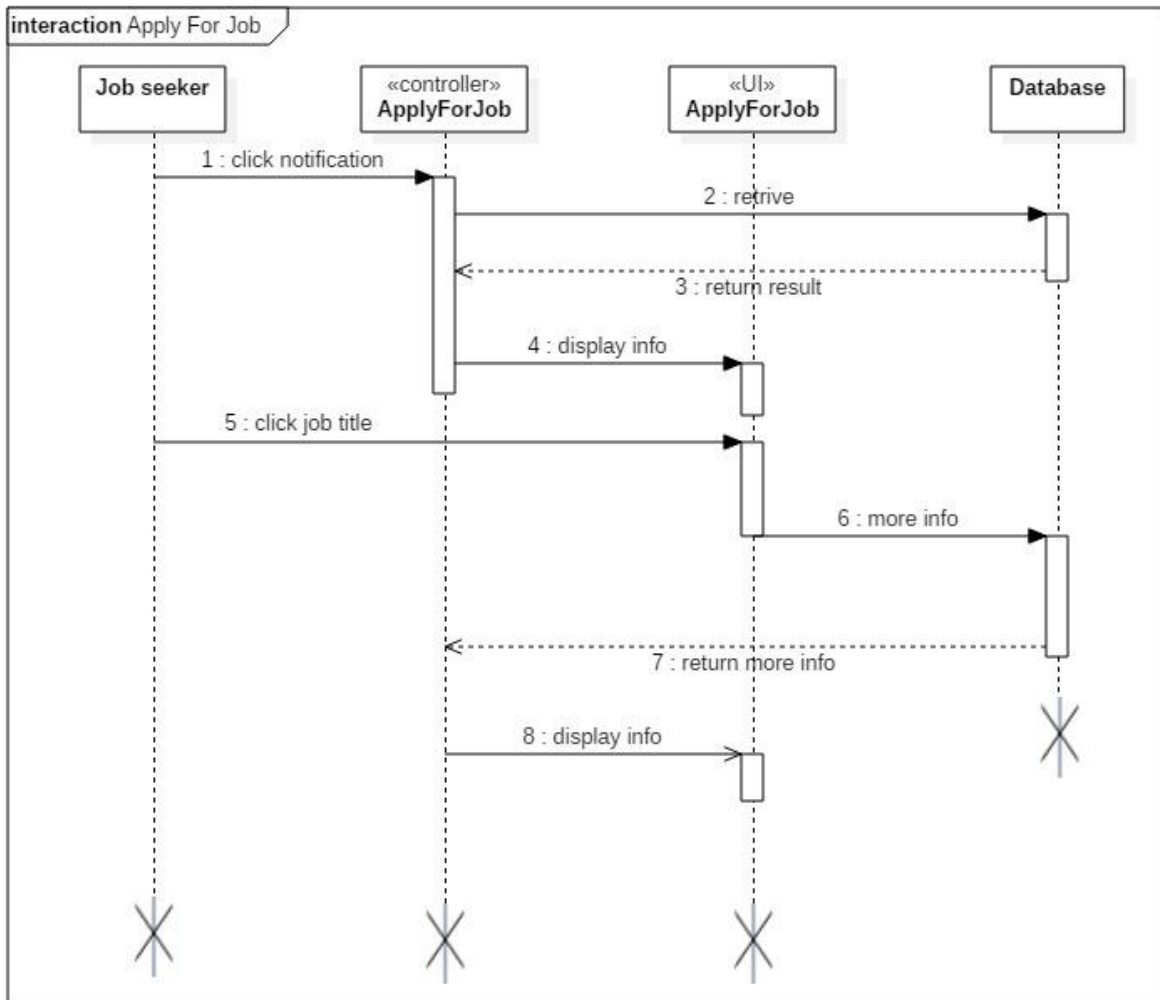


Figure 9 Sequence Diagram for apply job

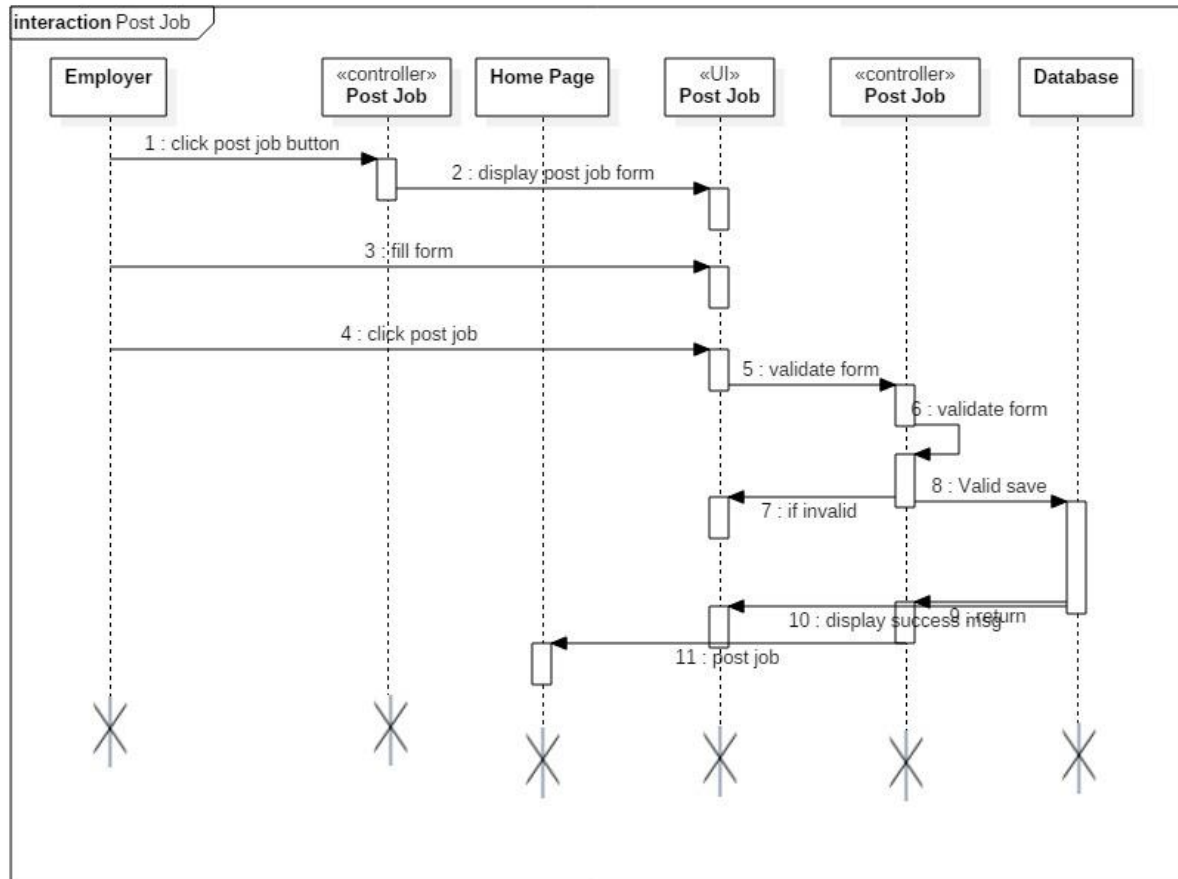


Figure 10 Sequence Diagram for post Job

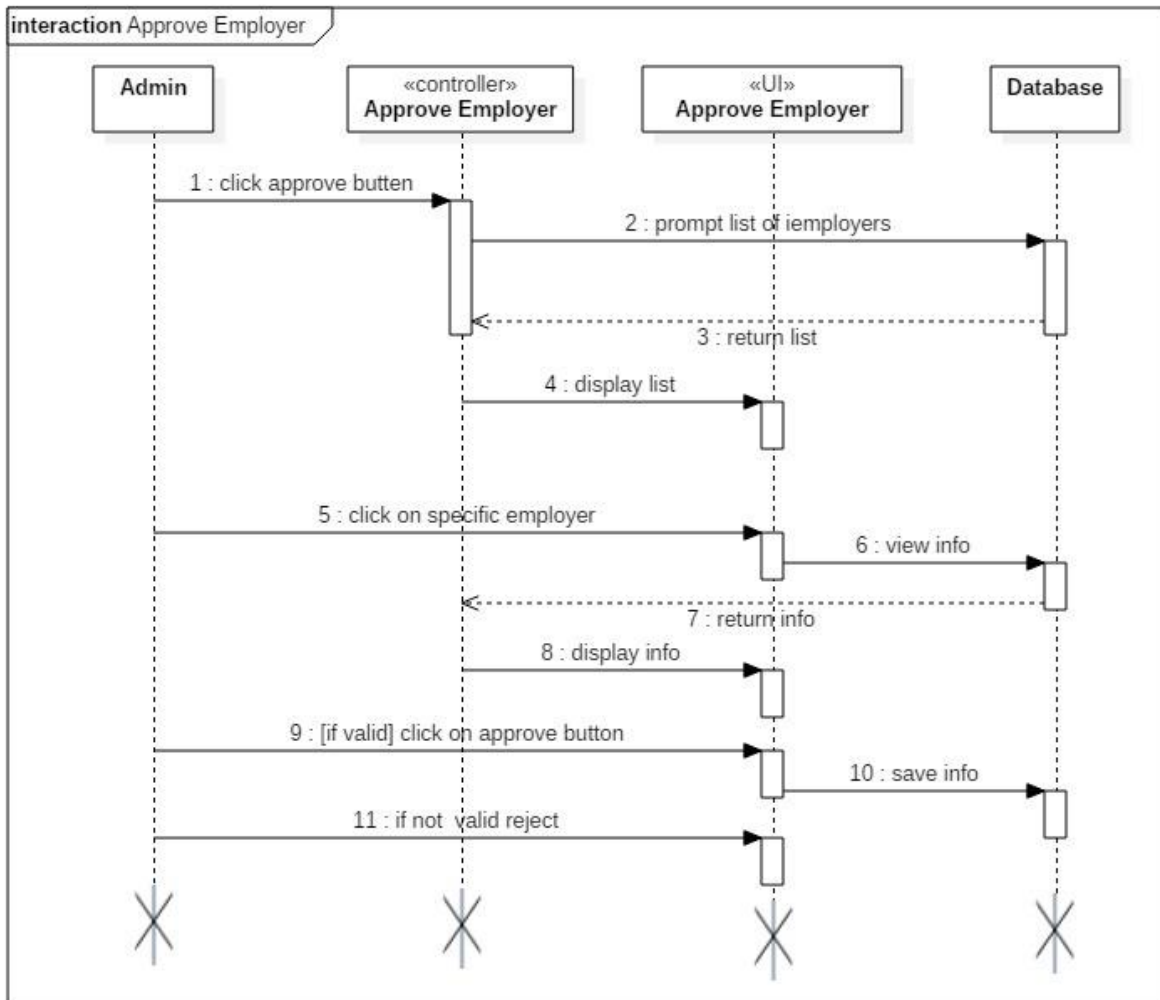


Figure 11: Sequence Diagram for Approve Employer

3.7 Activity diagram

The activity diagram specifies the sequence of activities to go through during its lifetime in response to events, together with responses to those events. They have initial and final states. An initial state shows the beginning of work flow on an activity diagram. Final state shows the end of work flow on an activity diagram

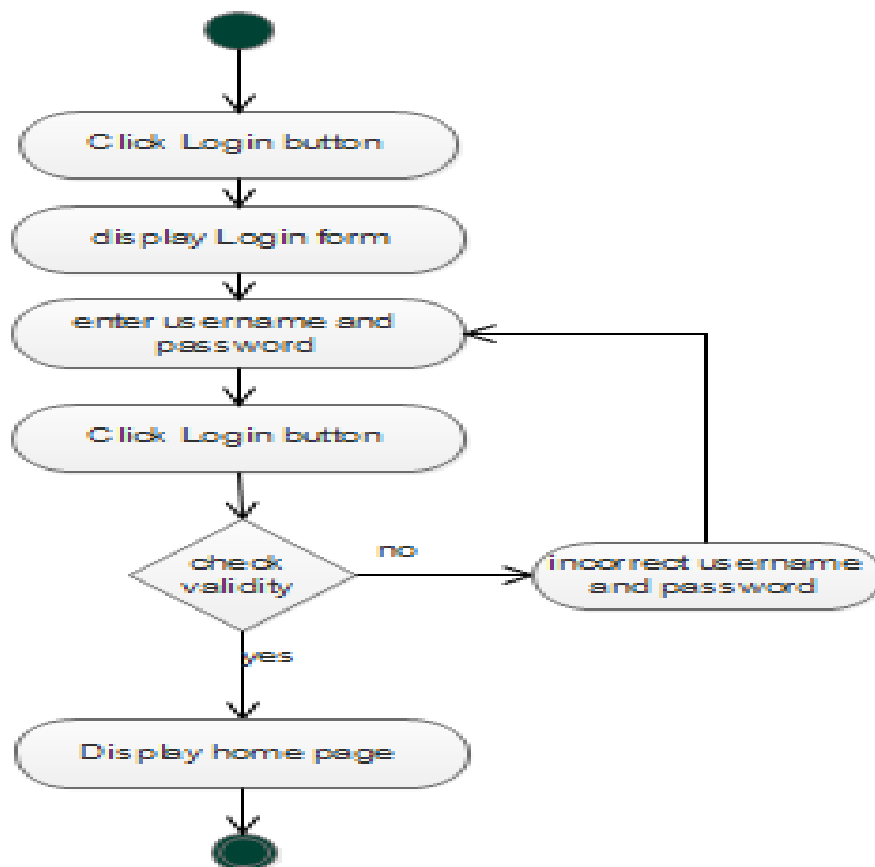


Figure 12 Activity Diagram for login

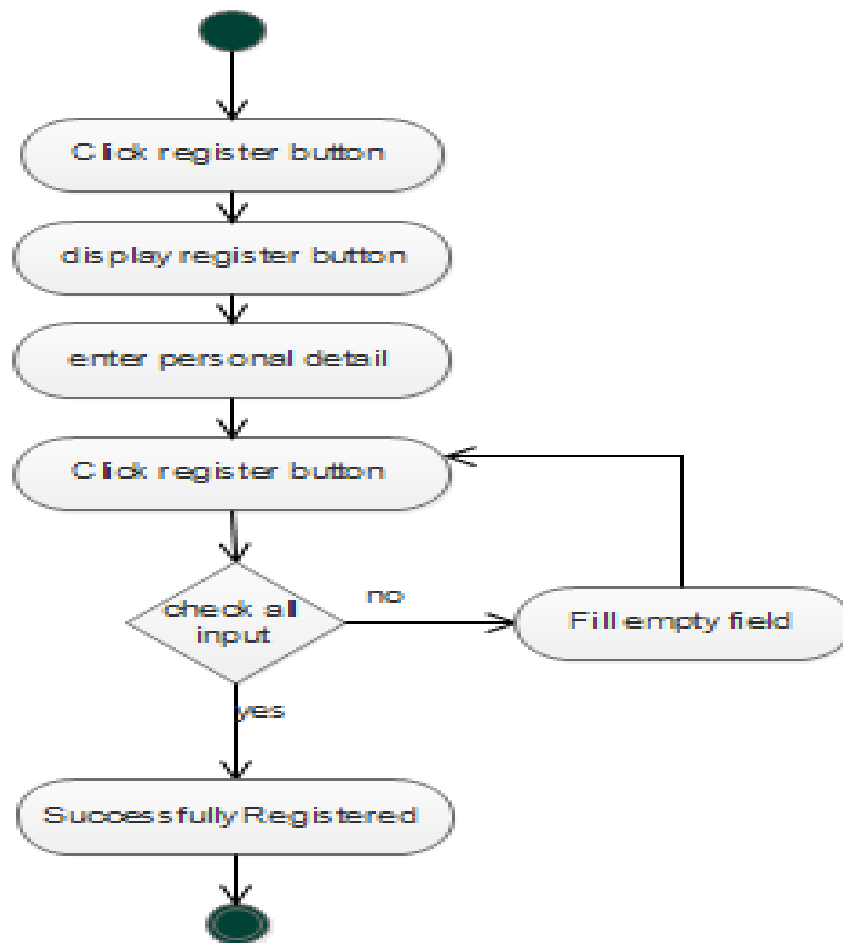


Figure 13 Activity Diagram for register

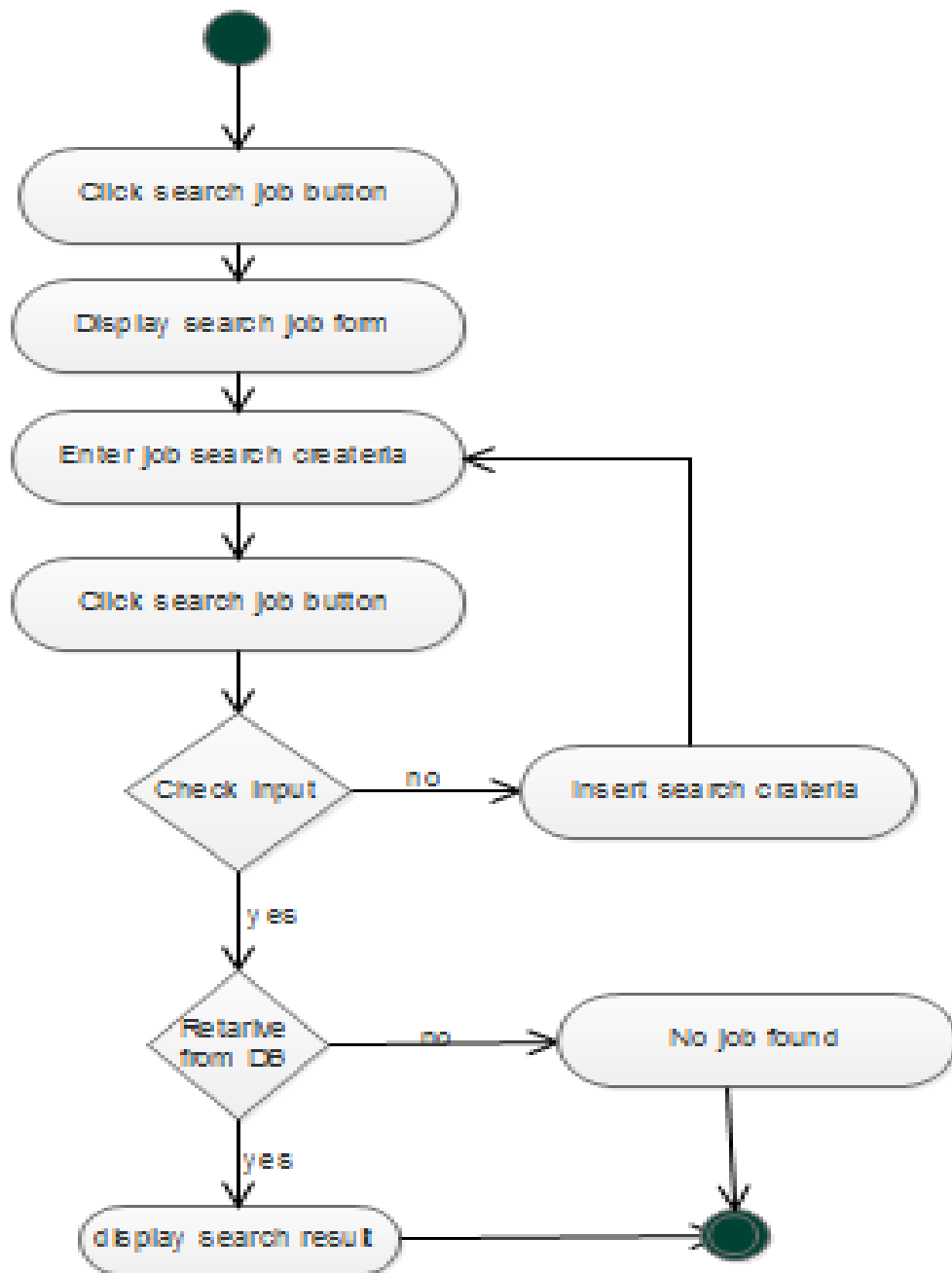


Figure 14 Activity Diagram for Search Job

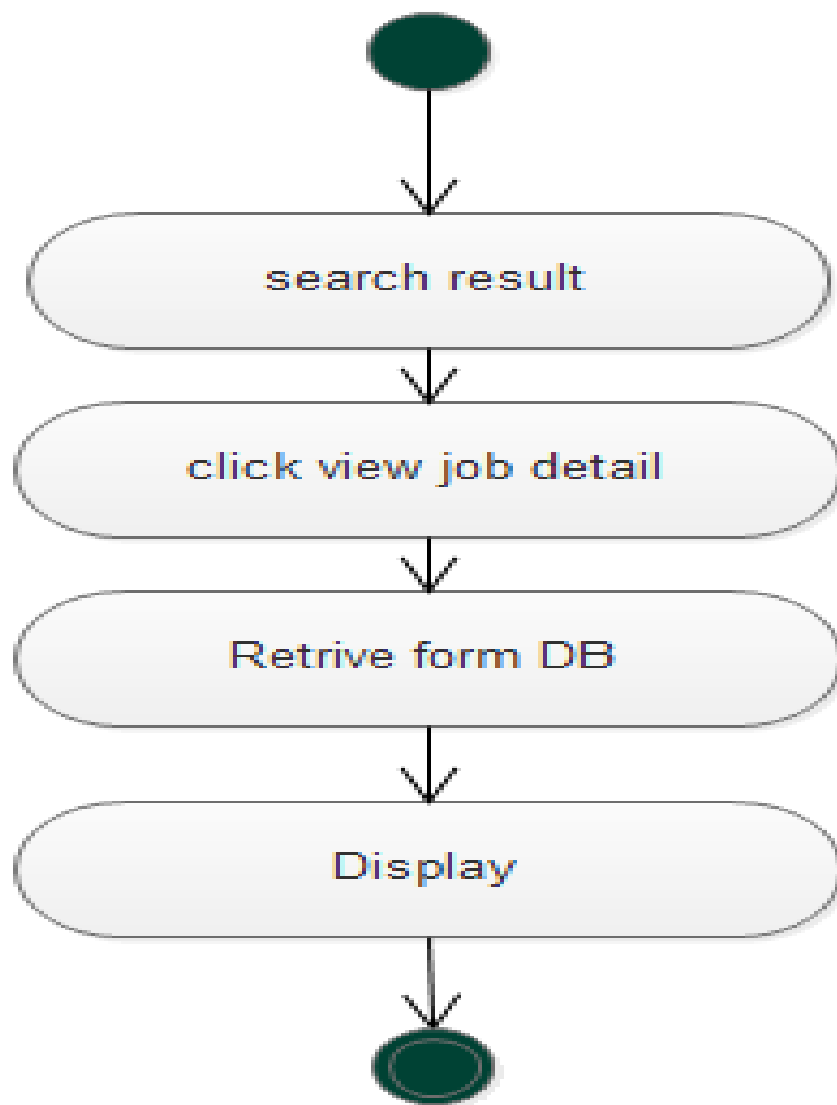


Figure 15 Activity Diagram for View Job Detail

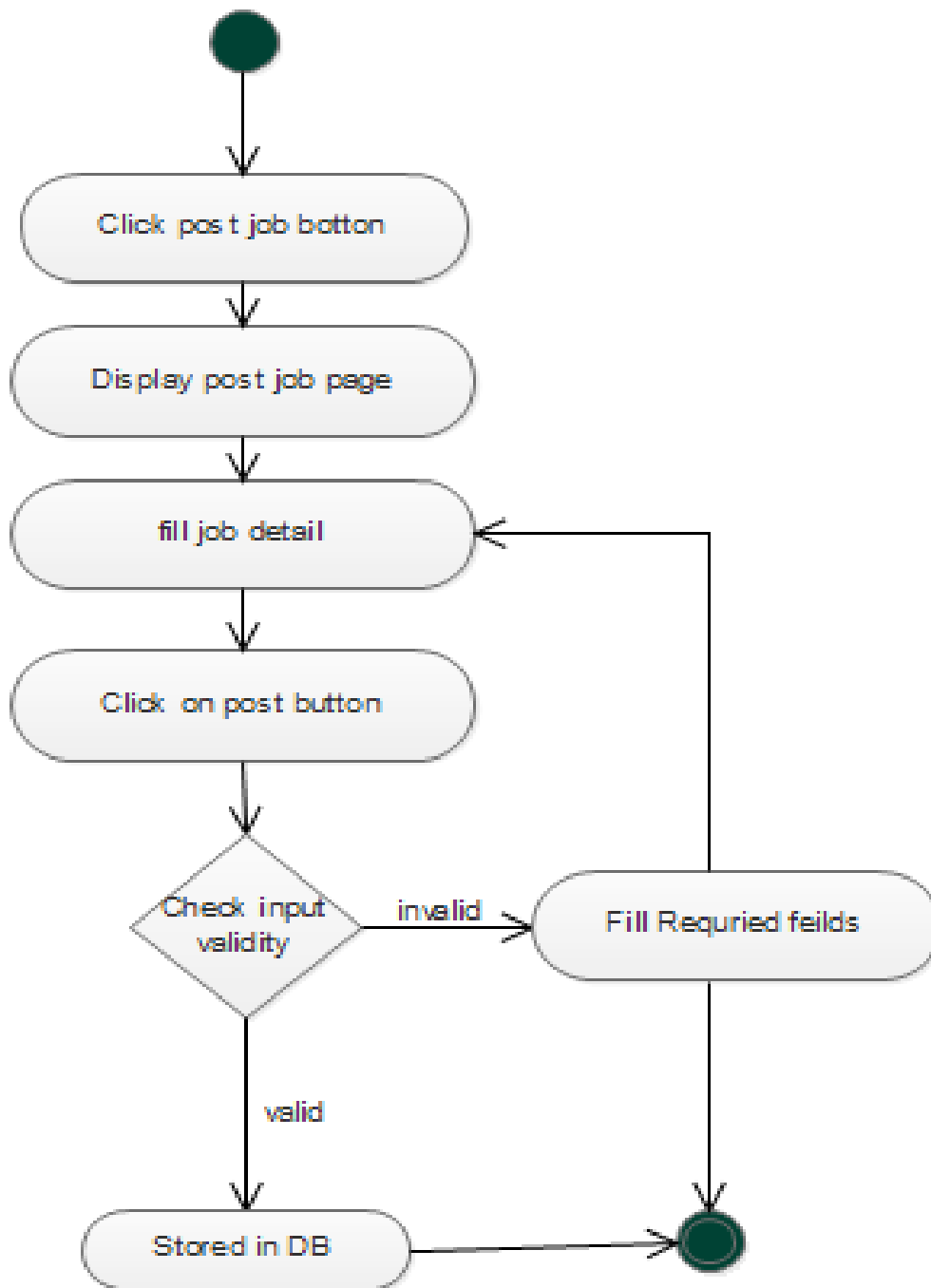


Figure 16 Activity Diagram for Post Job

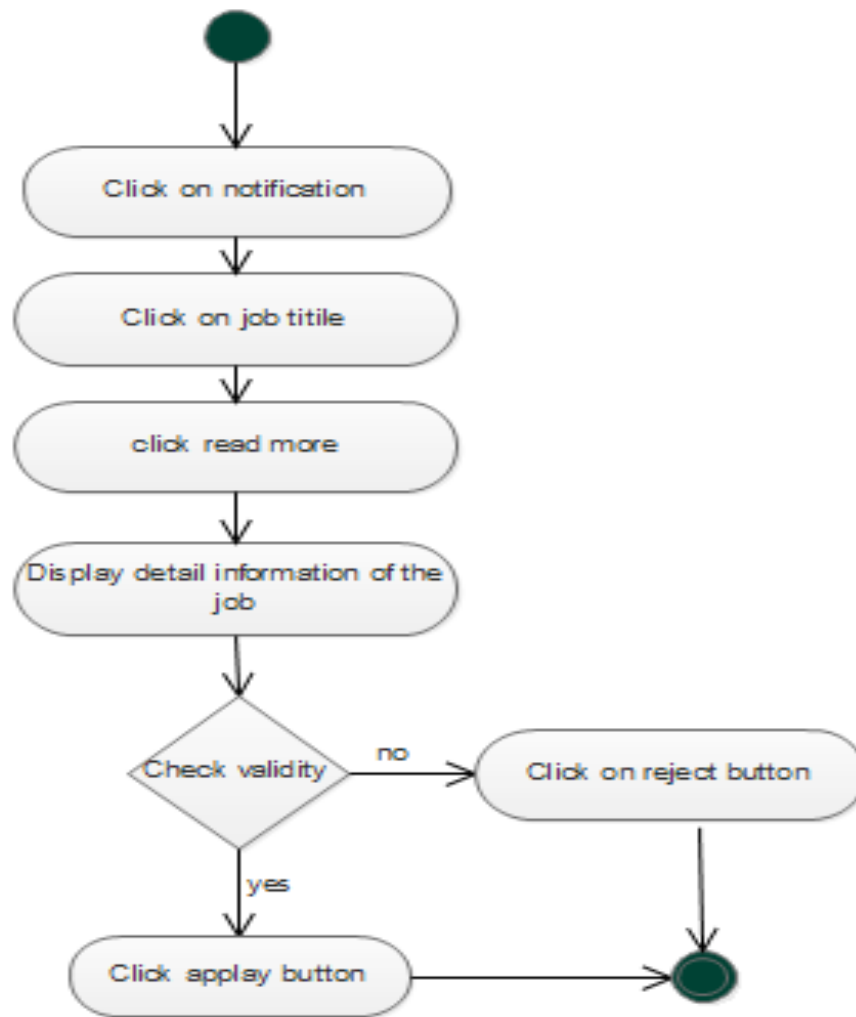


Figure 17 Activity Diagram for View eligible Applicant

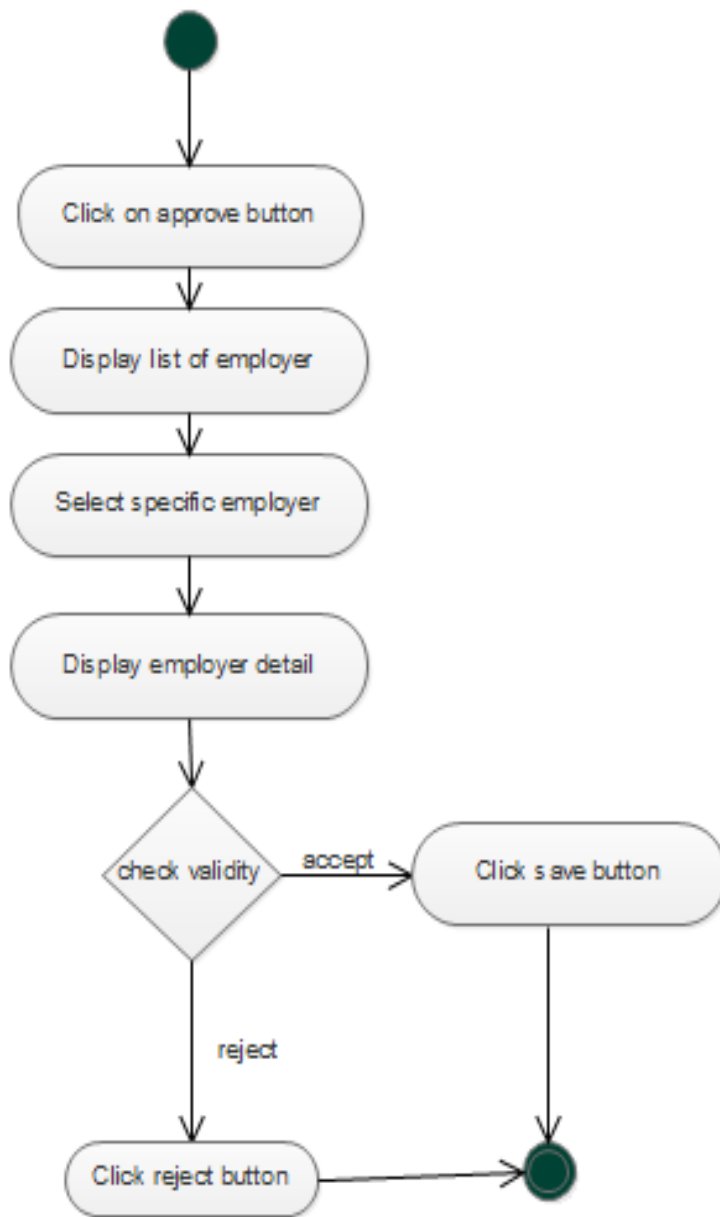


Figure 18 Activity Diagram for Approve Employer

3.8 Analysis level class diagram (conceptual modeling)

The class diagram describes the relationship between objects and class. It shows the attributes and operations of each class.

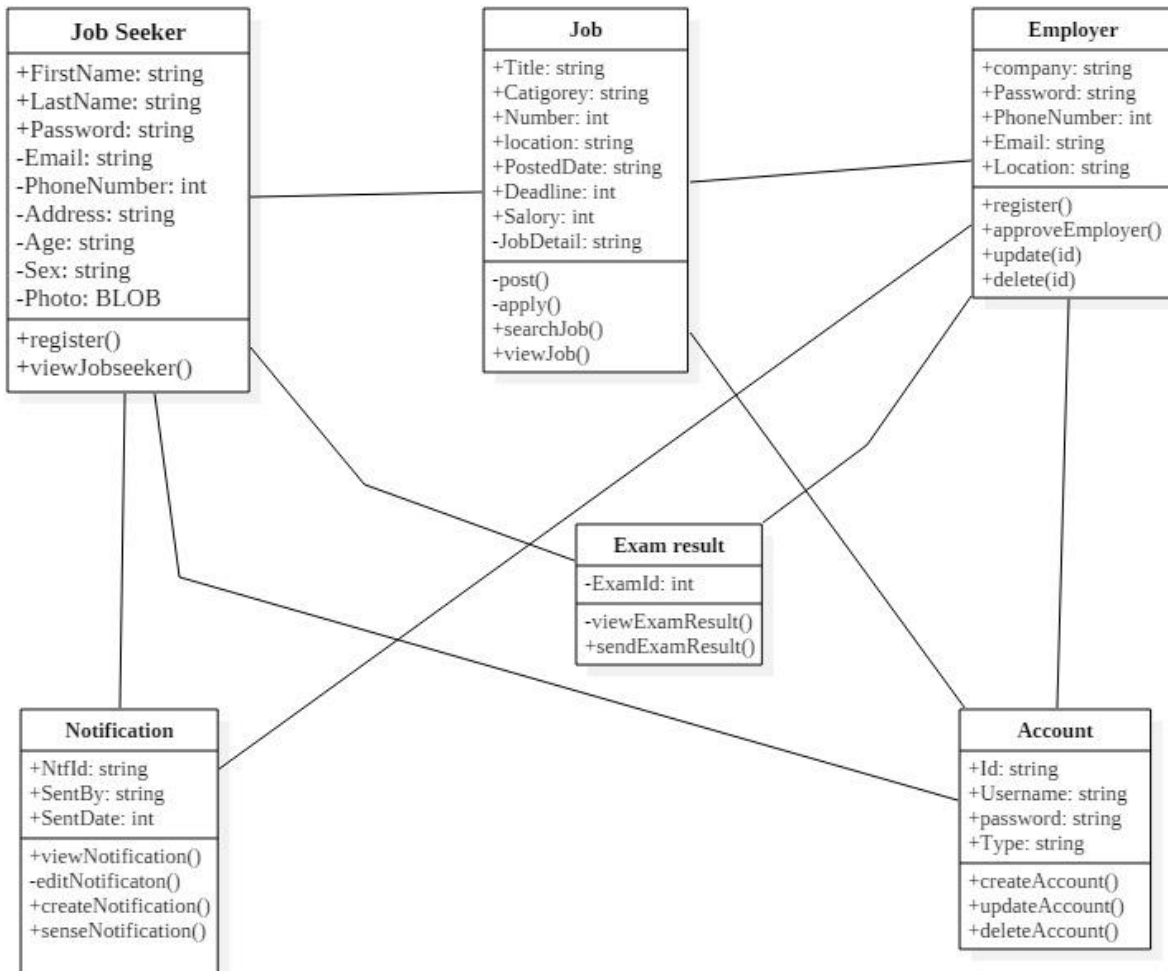


Figure 19 System class diagram

3.9 User Interface Prototyping

The application we are going to develop has user-friendly interfaces for Job seekers, Employers, and Administrators for ease interaction and understanding to use the system.

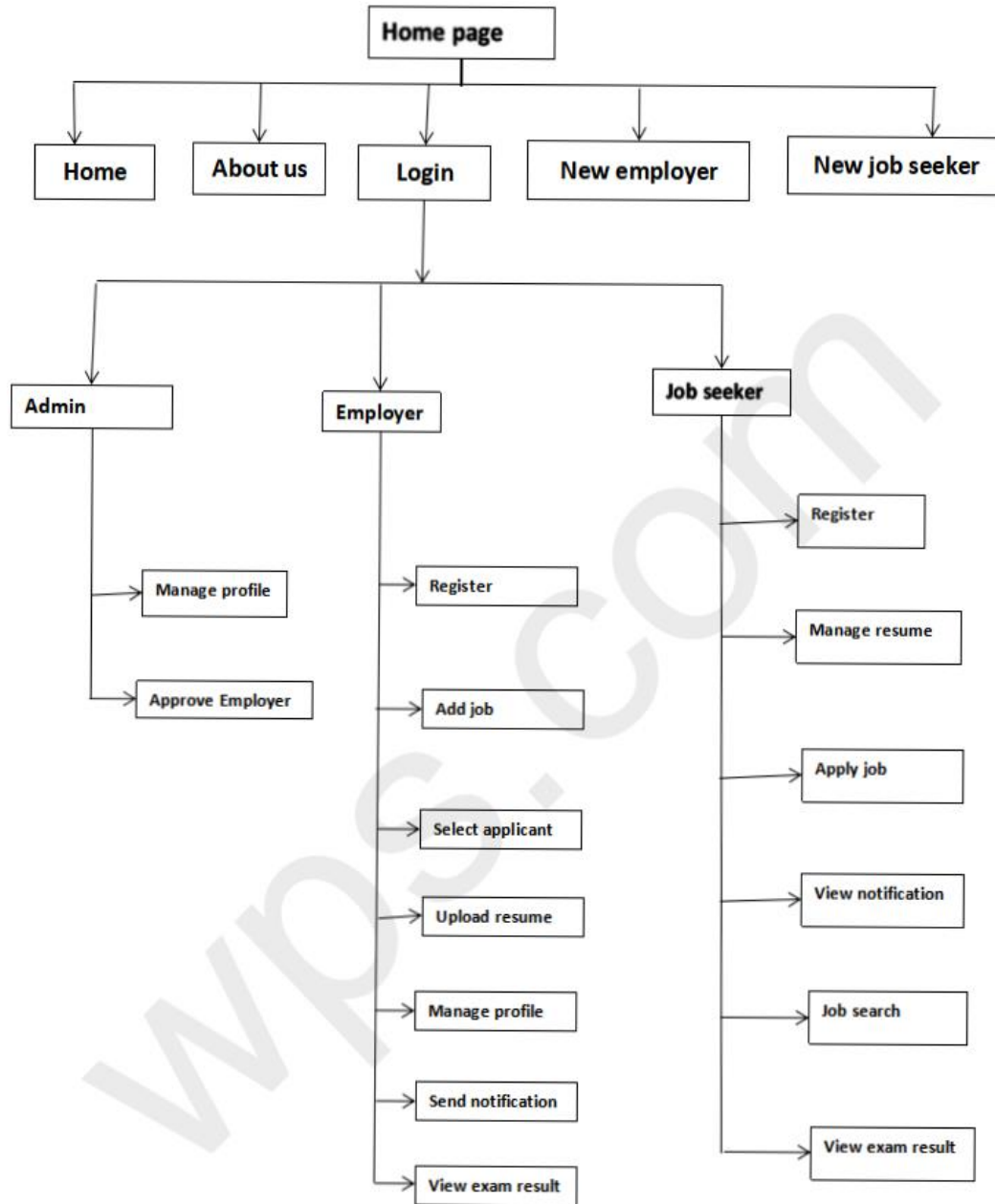


Figure 20: User interface prototype

3.10 Supplementary specifications

The Supplementary Specifications capture the system requirements that are not readily captured in the use cases of the use-case model. Such requirements include: -

- Legal and regulatory requirements and application standards.
- Quality attributes of the system to be built, including usability, reliability, performance, and supportability requirements.
- Other requirements such as operating systems and environments, compatibility requirements, and design constraints.
- The other Supplementary specifications are the business rules. The business rules are a principle or a policy in which the proposed system operates accordingly. It deals with the access control issue.

Chapter Four

4. System Design

4.1 Introduction

This chapter contains the design goal, system decomposition, system architecture, deployment diagram, persistence data management, access control and security and user interface of the system.

4.1.1 Purpose of the System Design Document (SDD)

The purpose of the system design document is to provide a solution for problems that are listed in the analysis phase. Design goals are specification which the system needs to achieve. The following are the purposes of our project design.

Good response time: this online job portal will be implemented by PHP programming language, which is in general easier to readable for all browsers. The interfaces are designed such that information can be propagated efficiently. It's avoided a user waiting time for wherever possible. It minimizes a lot of time for a job seeker by seeing the available jobs and for the employer by recruiting the best candidate.

Low cost: This proposed system will minimize cost, which is the cost, spent on papers and other materials.

Accessibility: The users can View their resume at any time.

4.2 Architectural Design

Architectural design is the process of defining a structured solution that meets all of the technical and operational requirements while optimizing common quality attributes such as performance, security, and manageability. The architecture of a system is one of the major issues that should be given more importance. The architecture plays a main role in modularizing the different components of a system.

The architecture used for the system is a 3 tier Client/Server Architecture.

- ✓ **The presentation layer** is the topmost level of the application. It is the one the clients directly interacted with. It provides GUI to allow the client gaining access to the system.
- ✓ **Application layer/ Logical tier/ middle tier:** It accepts inputs from the client and performs detailed processing in the database. It also acts as a bridge between the data access tier and the presentation tier.
- ✓ **Data layer/ Data access tier:** provides data persistence mechanism and storage to the data. It consists of a mechanism to access the database without installing database dependent drivers and libraries on the client device.

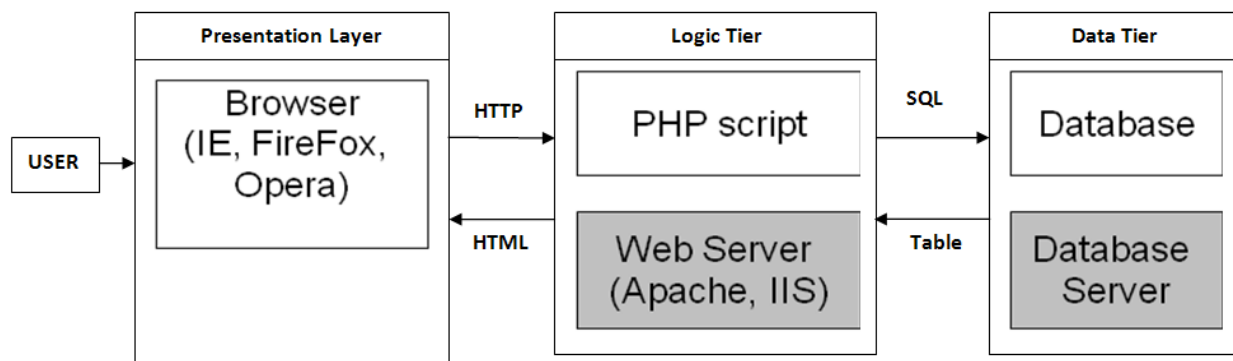


Figure 21: Architecture design of the system

4.3 Deployment Diagram

Deployment diagram is used to visualize hardware components of the system, where the system components are deployed. It is used to describe the static deployment view of the system. It consists of nodes and their relationship.

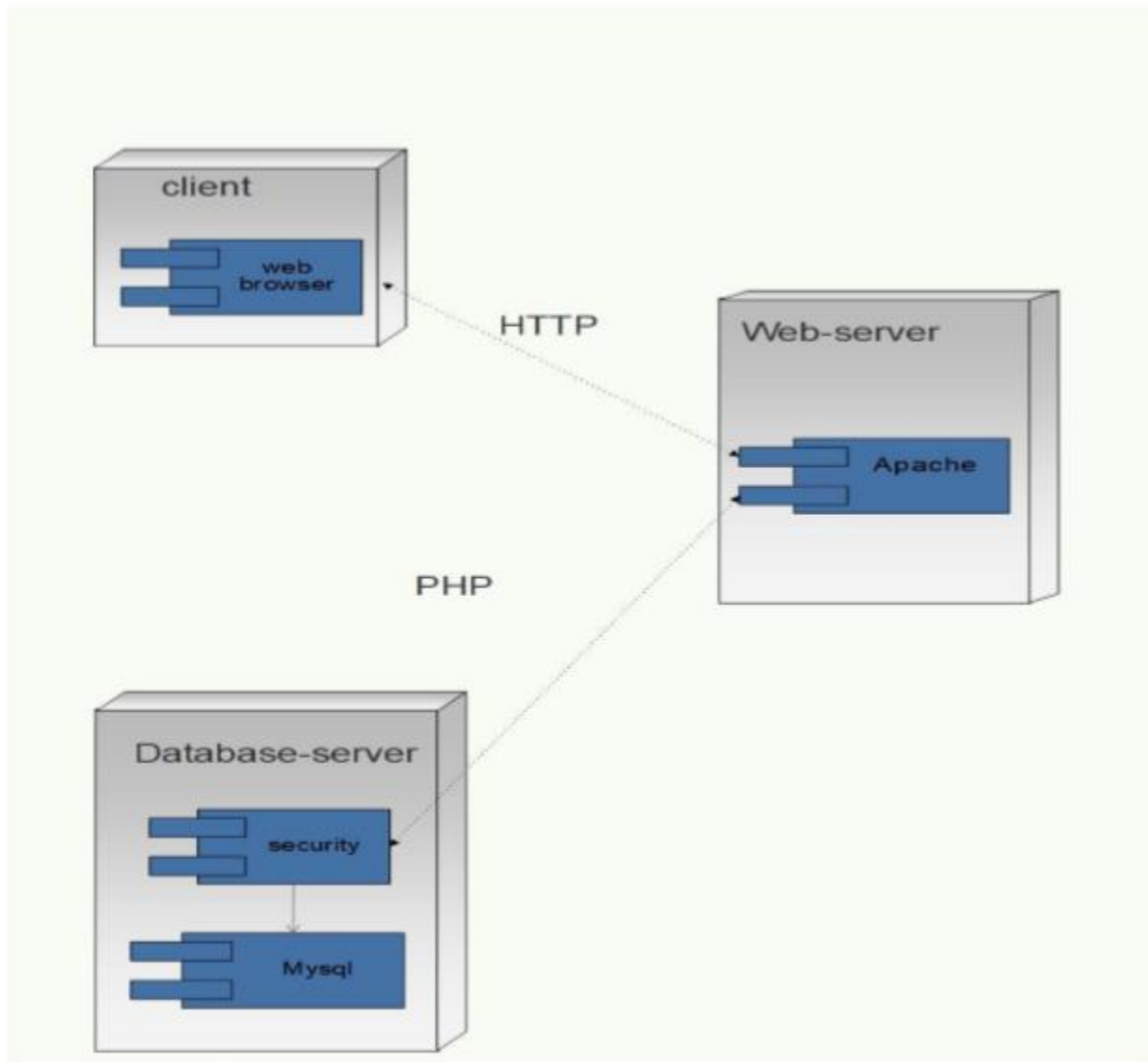


Figure 22: Deployment diagram design

4.4 Database Design

Database design is the process of producing a detailed data model of a database. This model contains all the entity-relationship and table, column and key design tools required to create a design that defines detailed attributes for every entity.

A database is simply an organized collection of related data, mostly stored on disks, The database Management System (DBMS) creates and maintain the database, Example of DBMS software available today are; Microsoft access. Oracle Database, MYSQL, Microsoft SQL Server, PostgreSQL, IBM Db2, FileMaker and so on.

For the development of this system, The DBMS used is MYSQL. MYSQL is developed distributed and supported by Oracle Corporation, It is a database system used on the web. MYSQL was chosen because it is very fast, reliable and easy to use and it is ideal for both small and large applications.

What Do People Expect From an Online Job Portal?

Both employers and job seekers expect the following functionalities from an online job site:

- People can register as job seekers, build their profiles, and look for jobs matching their skill sets.
- Users can upload their existing resumes. If they do not have one, they should be able to fill out a form and have a resume built for them.
- People can apply directly to posted jobs.
- Companies can register, post jobs, and search job seeker profiles.
- Multiple representatives from a company should be able to register and post jobs.
- Company representatives can view a list of job applicants and can contact them, initiate an interview, or perform some other activity related to their post.
- Registered users should be able to search for jobs and filter the results based on location, required skills, salary, experience level, etc.

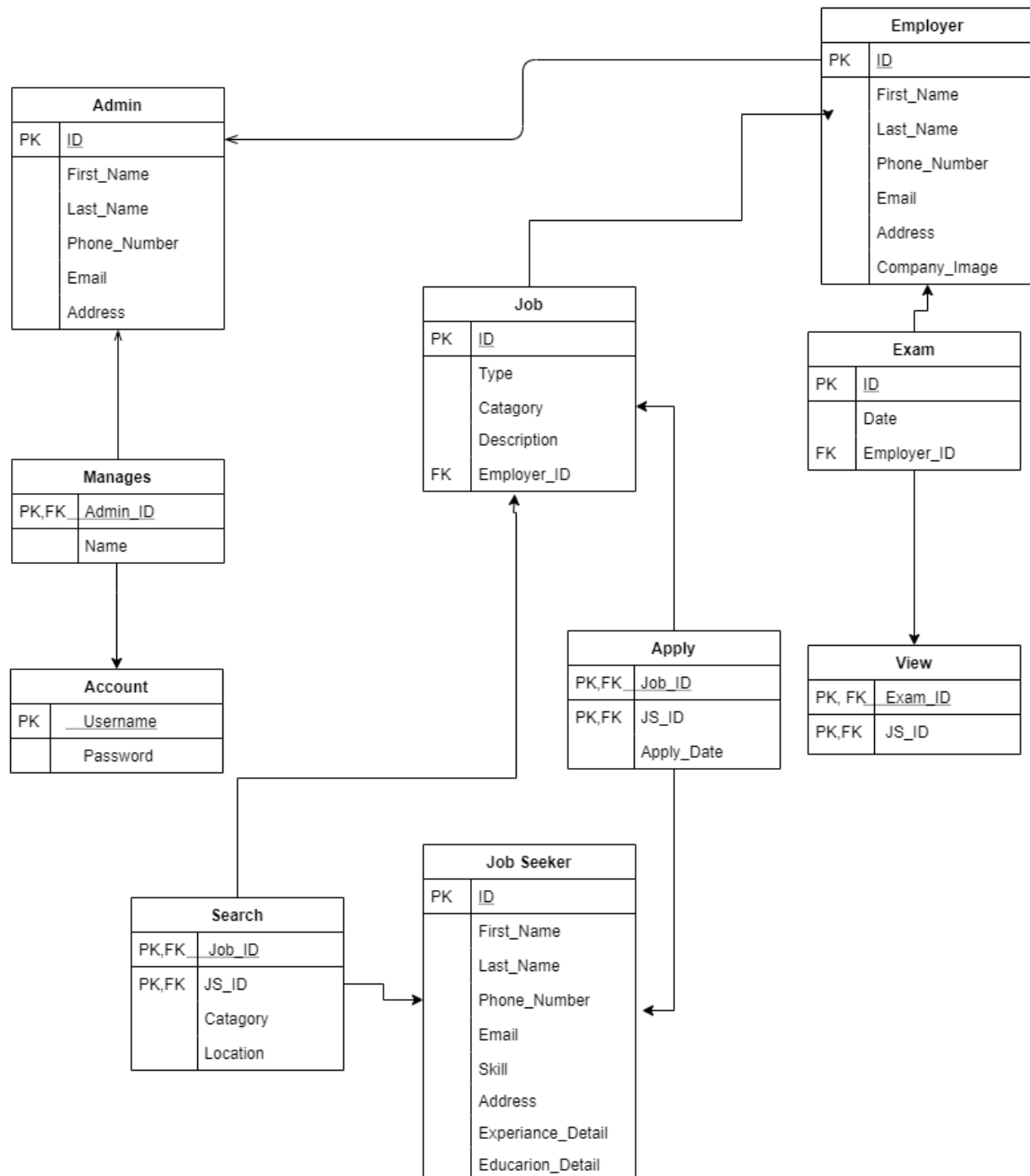
4.4.1 ER-Diagram

Entity-Relationship (ER) model is a popular high level conceptual data model. This model and its variations are frequently used for the conceptual design of database applications. Object modeling methodologies such as UML (Universal Modeling Language) are becoming increasingly popular in software design and engineering. These methodologies go beyond database design to specify detailed design of software modules and their interactions using various types of diagrams. An important part of these methodologies namely, class diagrams are similar in many ways to the ER diagrams. In class diagrams, operations on objects are specified, in addition to specifying the database schema structure. Operations can be used to specify the functional requirements during database design.

Entity Relationship diagram for our system as follows :-



4.4.2 Relational Schema



4.4.3 Database Normalization

The database normalization is the process of the reducing the redundancy of data or tuples in database. This is performed by decomposing a relation into more relation using different set of rules provided by normal form.

Before going to the normalization we should have to identify the functional dependency among the data stored on the table.

1. Table: Admin

ID	First_Name	Last_Name	Phone_Number	Address
PK				

From this table:

- ID can determine -> First_Name, Last_Name, Phone_Number and Address.
- Phone_Number is a multivalued attribute.
- Address is a composite attribute.

2. Table: Employer

ID	User_name	Password	Company_Name	Email	Address	Phone	Logo
PK							

From this table:

- ID can determine -> User_name, Password, Company_name, Email Address, Phone, and Logo.
- Phone_Number is a multivalued attribute.
- Address is a composite attribute.

3. Table: Job seeker

ID	First_Name	Last_Name	Phone_Number	Email	Skill	Address	Experience_Detail	Education_detail
PK								

From this table:

- ID can determine -> First_name, Last_name, Phone_number, Email, Skill. Address, Experience_detail, Education_detail.
- Phone_Number is a multivalued attribute.
- Address is a composite attribute.

4. Table: Job

ID	Type	category	Description	Employer_ID
PK				FK

From this table:

- ID can determine -> Type, Category, Description, Employer_ID.

- Employer_ID is a foreign key comes from Employer table

5. Table: Manage

Admin_ID	Name
FK	

From this table:

- Manage is a relation between entity called Admin and Account.
- Admin_ID can determine -> the name of the account that the admin Manages
- Admin_ID is a foreign key comes from Admin table

6. Table: Search

Job_ID	Jobseeker_ID	Category	Location
FK	FK		

From this table:

- Search is a relation between entity called Job and Job seeker.
- Job_ID and Jobseeker_ID determine -> Category and Location
- Both Job_ID and Jobseeker_ID are foreign keys comes from the job and Jobseeker table respectively.

7. Table: Apply

Job_ID	Jobseeker_ID	Apply_date
FK	FK	

From this table:

- Apply is a relation between entity called Job and Job seeker.
- Job_ID and Jobseeker_ID determine -> Apply_date
- Both Job_ID and Jobseeker_ID are foreign keys comes from the job and Jobseeker table respectively.

8. Table: Exam

ID	Date	Employer_ID
PK		FK

From this table:

- ID determine -> Date and Employer_ID
- Employer_ID is a foreign key comes from the Employer table.

9. Table: View

Exam_ID	Jobseeker_ID
FK	FK

From this table:

- View is a relation between entity called Exam and Job seeker.
- Both Exam_ID and Jobseeker_ID are foreign keys comes from the Exam and Jobseeker table respectively.

First Normal Form (1NF)

As we have seen from the above tables we have Nine database tables we declare to store the data on the database. It is not normalized to reduce the redundancy and inconsistency of the data on the database. To reduce such anomalies from the database we have to normalize it through different steps.

In this normal form all the redundant tuple will be listed on the table having the redundant tuples will be expanded to store the data in single cell. Therefore if relation schema does not contain any multiple attribute.

From the above listed tables, some are in the **first normal form (1NF)**. **Table 4,5,6,7,8 and 9** are in a 1NF.

4. Table: Job

ID	Type	category	Description	Employer_ID
PK				FK

5. Table: Manage

Admin_ID	Name
FK	

6. Table: Search

Job_ID	Jobseeker_ID	Category	Location
FK	FK		

7. Table: Apply

Job_ID	Jobseeker_ID	Apply_date
FK	FK	

8. Table: Exam

ID	Date	Employer_ID
PK		FK

9. Table: View

Exam_ID	Jobseeker_ID
FK	FK

The rest of tables from the above listed are not in the first form of database. Therefore it need normalization as each of them are explained below.

1. 1NF of the Admin data schema**Table: Admin**

ID	First_Name	Last_Name	Phone_Number	Email
----	------------	-----------	--------------	-------

- In this table Phone number and email are multivalued attribute.

Table: Admin

ID	FN	LN	Phone	Email
01	Bruk	Admasu	0923232323 0922090909	b@gmail.com B1@gmail.com

When we expand it, it look the following

1NF Table: Admin

ID	First_Name	Last_Name	P_ID	Phone	E_ID	Email
01	Bruk	Admasu	p101	0923232323	E101	b@gmail.com
01	Bruk	Admasu	p202	0922090909	E202	B1@gmail.com

- From the above table we see that there is no repeated value in a cell for the same attribute.
- Therefore, it is in the 1NF.

2. 1NF of the Employer data schema

Table: Employer

ID	User_name	Password	Company_Name	Email	Address	Phone	Logo
PK							

- In this table email and Phone number are multivalued attribute.
- Address is a composite attribute

Table: Employer

ID	User_name	Password	Company_Name	Email	Address	Phone	Logo
01	HwOMO	123123	OMO	omo@gmail.com omm@gmail.com	Hawassa	0923232323 0922090909	

When we expand it, it look the following?

1NF Table: Employer

ID	User_name	Password	Company_Name	E_id	Email	Address	P_ID	Phone	Logo	Location	State
01	HwOMO	123123	OMO	001	omo@gmail.com	Hawassa	101	0923232323		Hawassa	Debub
01	HwOMO	123123	OMO	002	omm@gmail.com	Hawassa	102	0922090909		Hawassa	Debub

- From the above table we see that there is no repeated value in a cell for the same attribute.
- Therefore, it is in the 1NF.

3. 1NF of the Jobseeker data schema

Table: Jobseeker

ID	First_Name	Last_Name	Phone_Number	Email	Skill	Address	Experience_Detail	Education_detail
PK								

- In this table email, skill and Phone number are multivalued attribute.
- Address and Education detail are a composite attribute

ID	First_Name	Last_Name	Phone_Number	Email	Skill	Address	Experience_Detail	Education_detail
01	Abebe	Kebede	0911122334 0932341223	Abe@gmail.com Kebe@gmail.com	Typing Multiple language	0923232323 0922090909		

1NF Table: Jobseeker

ID	First_Name	Last_Name	P_ID	Phone_Number	E_ID	Email	Skill_ID	Skill	Address
01	Abebe	Kebede	101	0911122334	111	Abe@gmail.com	01	Typing	0923232323
01	Abebe	Kebede	102	0932341223	222	Kebe@gmail.com	02	Multiple language	0922090909

Org_Name	Year	Resume	CGPA	Education_Lvl	CV
HawassaUniv	2009	....	3.9	Masters	....
HawassaUniv	2009	.....	3.9	Masters	....

4. From the above table we see that there is no repeated value in a cell for the same attribute.
5. Therefore, it is in the 1NF.

Second Normal Form (2NF)

In any relational data normalized to a second normal form, there is no multivalued attributes and if there is partial dependence among the data in the database, it normalized by the second normal form. That mean to normalize the database into the 2NF, we must identify the functional dependence between the key attributes and non-key attributes. In our relational case let us see in the following tables. Some of the tables are in the second normal form because of they have no partial dependence between the primary key and non-primary key attributes. For example tables **4, 5, 6, 7,8 and 9** are in a 2NF.

4. Table: Job

ID	Type	category	Description	Employer_ID
PK				FK

5. Table: Manage

Admin_ID	Name
FK	

6. Table: Search

Job_ID	Jobseeker_ID	Category	Location
FK	FK		

7. Table: Apply

Job_ID	Jobseeker_ID	Apply_date
FK	FK	

8. Table: Exam

ID	Date	Employer_ID
PK		FK

9. Table: View

Exam_ID	Jobseeker_ID
FK	FK

✓ The following table are not in the second normal form. It needs to drop out the partial dependency in separate table.

1. 2NF of the Admin Data schema**Table: Admin**

ID	First_Name	Last_Name	P_ID	Phone	E_ID	Email
01	Bruk	Admasu	p101	0923232323	E101	b@gmail.com
01	Bruk	Admasu	p202	0922090909	E202	B1@gmail.com

- It is in the first normal form.
- From the above table we have for primary key. These are: ID, E_ID, and P_ID.
- It has partially dependent attributes in the data table.
- Therefore, it will be normalized to the following data table.

Table: Admin

ID	First_Name	Last_Name	E_ID	P_ID
----	------------	-----------	------	------

Table:PhoneNo

P_ID	Phone_Number

Table:Email

EID	Email

- It is in the first normal form.
- There is no partial dependence in this table of data.
- All the attributes are determined by one key attribute

2. 2NF of the Employer Data schema

Table: Employer

ID	User_name	Password	Company_Name	E_id	Email	Address	P_ID	Phone	Logo	Location	State
01	HwOMO	123123	OMO	001	omo@gmail.com	Hawassa	101	0923232323		Hawassa	Debub
01	HwOMO	123123	OMO	002	omm@gmail.com	Hawassa	102	0922090909		Hawassa	Debub

As we see from the above the tables:

- It is in the first normal form.
- From the above table we have for primary key. These are: ID, E_ID, and P_ID.
- There is a partial dependence in this table of the data.
- It is normalized to the following table of data.

Table: Employer

ID	First_Name	Last_Name	P_ID	E_ID	Address
----	------------	-----------	------	------	---------

Table:PhoneNo

P_ID	Phone_Number

Table:Email

EID	Email

- It is in the first normal form.
- There is no partial dependence in this table of data.
- All the attributes are determined by one key attribute

3. 2NF of the Job seeker Data schema

ID	First_Name	Last_Name	P_ID	Phone_Number	E_ID	Email	Skill_ID	Skill	Address
01	Abebe	Kebede	101	0911122334	111	Abe@gmail.com	01	Typing	0923232323
01	Abebe	Kebede	102	0932341223	222	Kebe@gmail.com	02	Multiple language	0922090909

Org_Name	Year	Resume	CGPA	Education_Lvl	CV
HawassaUniv	2009	....	3.9	Masters	....
HawassaUniv	2009	.....	3.9	Masters	....

As we see from the above the tables:

- It is in the first normal form.
- From the above table we have for primary key. These are: ID, E_ID, and P_ID.
- There is a partial dependence in this table of the data.
- It is normalized to the following table of data.

Table: Job seeker

JS_ID	First_Name	Last_Name	P_ID	E_ID	Skill_ID	Address	Experience_ID	Educationdetail_ID

Table:PhoneNo

P_ID	Phone_Number

Table:Email

E_ID	Email

Table: Experience

Experience_ID	Phone_Number	Org_Name	Year	Resume

Table: Education_Detail

Educationdetail_ID	CGPA	Education_Lvl	CV

- It is in the first normal form.
- There is no partial dependence in this table of data.
- All the attributes are determined by one key attribute

Chapter Five

5 Conclusion and Recommendation

It has been a used pleasure for us to work on this exciting and challenging project. This project proved good for our team as it provided a practical knowledge of not only programming in PHP and JavaScript. It also provides knowledge about the latest technology used in developing web-enabled applications and client-server technology that will be great demand in the future. This will provide better opportunities and guidance in the future in developing projects independently.

BENEFITS:

The project is identified by the merits of the system offered to the user. The merits of this project are as follows: -

- It's a web-enabled project.
- This project offers the user to enter the data through simple and interactive forms. This is very helpful for the client to enter the desired information through so much simplicity.
- The user is mainly more concerned about the validity of the data, whatever he is entering. There are checks on every stage of any new creation, data entry or update so that the user cannot enter the invalid data, which can create problems at later date.
- Sometimes the user finds in the later stages of using a project that he needs to update some of the information that he entered earlier. There are options for him by which he can update the records. Moreover, there is a restriction for him that he cannot change the primary data field. This keeps the validity of the data to a longer extent.
- The user is provided the option of monitoring the records he entered earlier. He can see the desired records with a variety of options provided by him.
- From every part of the project, the user is provided with the links through framing so that he can go from one option of the project to another as per the requirement. This is bound to be simple and very friendly as per the user is concerned. That is, we can sit that the project is user-friendly which is one of the primary concerns of any good project.

- Data storage and retrieval will become faster and easier to maintain because data is stored in a systematic manner.
- The decision-making process would be greatly enhanced because of the faster processing of information since data collection from information available on the computer takes much less time than the manual system.
- Allocating of sample results becomes much faster because at a time the user can see the records of last years.
- Through these features, it will increase the efficiency, accuracy, and transparency,

LIMITATIONS:

- The size of the database increases day-by-day, increasing the load on the database back up and data maintenance activity.
- Training for simple computer operations is necessary for users working on the system.





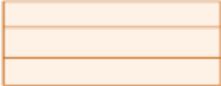





5.1 Recommendation

According to scope of this project the team develops web based system. Because of the time constraint we may have limitation which should be consider in, but in the feature the team believes that this system should be fully operationally by adding some functionality that are not included in the proposed system, and our suggestion go thus

- ❖ It is good if other languages are integrated with this system, if other languages are integrated to this system, the system became universal any user can use the system simply.
- ❖ This system would start to also take care where appliers can take an interview online
- ❖ Finally, we would add where companies sets up a question and where seeker answers them to be qualified for the company.

5.3 APPENDIX

Symbols used in analysis model

Symbol	Description
	Actor
	System boundary
	Decision
	Use case
	Class
	Object life line
	Deployment diagram
	Message line extends from the lifeline of one object to the lifeline of another object.
	Include, relates to the include use case to indicate inserted behavior
	Create Return Message

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