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Final Year Project Proposal on

HamroCareer

An Online Job Portal site

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1. Introduction

Job portal sites are websites that help job seekers find and apply for jobs in various industries and locations. They offer features such as resume uploading, job alerts, company reviews, salary information, and career advice. Job portal sites have a long history of development and innovation, both in Nepal and internationally.

In Nepal, job portal sites have also grown in popularity and diversity over the years. Some of the best job portal sites in Nepal are Jobeeje, Kumari Job, Mero Job, and Ramro Job. They offer features and services such as application status, job recommendation, bookmarked jobs, employment index, recruitment, outsourcing, HR consulting, training, resume writing, career guidance, online courses, resume highlighter, career assessment, interview tips, and free job posting service to employers. [1]

The proposed project, HamroCareer is an online job portal site that provides a platform for job seekers to find and apply for available job vacancies. The system allows the admin to add jobs from various companies around Nepal, making it easier for job seekers to find suitable employment opportunities. Users can search and apply for jobs directly from the site, making the process of finding employment more efficient and streamlined.

The site will also feature a resume generator that enables users to create professional resumes that can be used to apply for jobs directly from the site. We can choose from a variety of templates and customize our resume to our specific needs. We can add skills, experience, education, and other relevant information to our resume and it greatly improves the effectiveness of our resume. It also offers a number of features that make it easier to share our resume with potential employers, such as the ability to PDF our resume or create a link from the website and share it directly.

Overall, the proposed project, HamroCareer is going to be an excellent resource for job seekers in Nepal, providing a comprehensive platform for finding employment opportunities and creating professional resumes. The site's user-friendly interface and intuitive design will make it easy to navigate, while its extensive database of job listings ensures that users have access to a wide range of employment opportunities.

2. Problem Statement

In Nepal, the job market offers numerous employment opportunities. However, job seekers often encounter difficulties in finding suitable employment due to a lack of centralized information. Additionally, employers face challenges in identifying eligible candidates for their job vacancies. It is true that many job portal sites in Nepal lack a proper built-in resume generator feature. This absence makes it challenging for job seekers to create professional resumes that can be utilized to apply for jobs directly from the site.

Furthermore, developing a well-structured and compelling resume requires familiarity with industry standards and best practices. Without guidance or access to professional resume-building resources, job seekers may struggle to present themselves effectively to potential employers.

3. Objectives

The project aims to make the job search and recruitment process more efficient and convenient for both job seekers and recruiters in Nepal. With a built in resume generator feature, it aims to provide a centralized platform for the users to build the resume as well as apply for the jobs with the same resume.

The major objectives of the HamroCareer project are as follows:

1. To provide a centralized platform for job seekers to apply for jobs as well as create resume.
2. To streamline the job application process by allowing users to search and apply for jobs directly from the site.
3. To facilitate the recruitment process by allowing recruiters to post job openings on the site.
4. To provide a resume generator feature that allows users to create professional-looking resumes that can be used to apply for jobs.
5. To promote transparency in the recruitment process by providing detailed information about job openings and requirements.

4. Scope and Limitations

4.1 Scope

The possible project scope includes:

1. **Platform:** The system will be accessible via a web application, allowing users to log in from any internet-connected device.
2. **Users:** The system will have two user roles: Admin and Employee. Admins will have the opportunity to manage to-do lists, while employees will have access to search and request tasks.
3. **Resume Generator:** The system will provide a built in resume generator feature, which will enable users to create professional resumes within the same platform.
4. **Searching:** The system will allow users to search for services based on criteria such as job title, location, and company name.
5. **Jobs Submission:** Users can apply for jobs directly from the website by uploading their resume or by creating a resume through our system.
6. **Admin access rights:** Admin will have the ability to post job openings on the site. They will be able to provide detailed information about job requirements, responsibilities and application process, which will attract potential candidates.
7. **Job alerts:** Users will have the option to set up job alerts based on their preferences, and receive notifications when new jobs are posted on the site that meet their criteria.
8. **Manage profile:** Users will have the ability to create and manage their own profiles, including personal information, work experience, education and skills. This gives detailed information about the candidates.
9. **Communication:** The system will facilitate communication between admins and job seekers, resulting in direct message or email notifications of updates and queries.

4.2 Limitations

Here are the possible limitations of the project:

1. The system will be based on web only and there will be no dedicated Android or iOS applications. Users will need to access the system through a web browser on their devices.
2. The program will initially focus on employment opportunities within Nepal. An international system will not be readily available.
3. The system may favor English primarily, potentially hindering individuals who are more comfortable with other languages commonly spoken in Nepal, such as Nepali.

5. Methodology

For our project, we have selected the Prototyping model as it allows us to develop our work in a repeatable manner, allowing us to continuously improve. Each new version of the prototype brings new and improved features and functionality.

The prototyping model methodology involves building an initial prototype with basic functionality. This model helps to visualize the representation of the final product. By collecting feedback from users (project supervisor in our case), we can identify potential improvements and address any issues or concerns. Based on the feedback, further iterations of the model will be developed, including additional features, enhancements to the user interface. This iterative process ensures that the final product meets the needs and expectations of our users and allows flexibility throughout the development process.

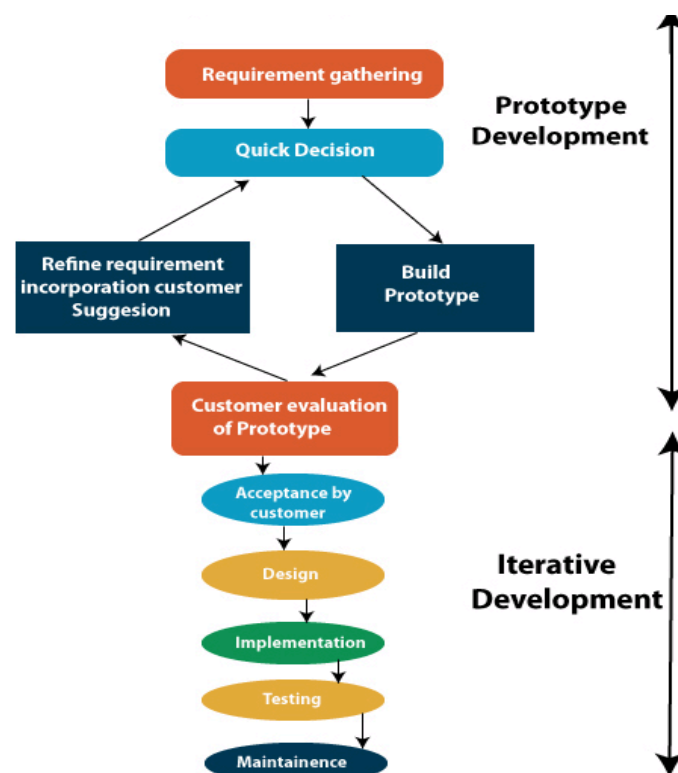


Fig.1. Prototyping Model [2]

5.1 Requirement Identification

5.1.1 Literature Review

The days of searching the newspaper for job openings are long gone. Online job portals are an essential tool for any job seeker. They enable you to find the ideal job and ensure that you do not miss out on a good opportunity. There are numerous Job Portals in Nepal these days that provide comprehensive information about jobs, including vacancy notifications and employment opportunities. They make it simple to search for jobs, upload your resume, and apply for them.

Now-a-days the job market is so extensive that a variety of industries and companies are searching for the right candidates and the prospective candidates are searching for the right companies for growth opportunities. This purpose is served by most of the job portals online. The intention of Job Portal is to facilitate both the candidates seeking jobs as well as the employers looking for employees for their companies. 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 online. Employers can advertise the vacancies by taking the membership, logging in and posting the job information with the eligibility criteria for the jobs. [3]

One of the approaches to enhance work portability is to give online job offer administrations. Online job portals can help jobseekers as they contain all required data about accessible openings in a solitary point. Such portals upgrade effectiveness in job recruitment as candidates can coordinate their capabilities and skills to the prerequisites of bosses. [4]

In India, the rate of unemployment has been increasing rapidly since the 2000s. Dorn and Naz [5] mentioned that one reason for this problem is the unfair distribution or absence of information on job openings, so people cannot know the latest job vacancies. It means that there are jobs available, but job-seekers do not have access to that data. An effective search of the internet might help job seekers in their job hunt. Some web portals provide an efficient way to search the web for online information on job vacancies for job-seekers [6].

5.1.2 Study of existing systems

Some of the existing job portal sites in Nepal are:

- **Jobeej:** This is the fastest-growing job portal in Nepal, with over 200 thousand registered users and 4,000+ jobs posted every month. It offers features such as resume generator, application status, job recommendation, and bookmarked jobs. It also provides an employment index that shows the demand and supply of jobs in various sectors. [7]
- **Kumari Job:** This is one of the top job portals in Nepal, with over 500,000+ registered users and 500+ jobs posted every month. It offers services such as recruitment, outsourcing, HR consulting, and training. It also has a dedicated section for women, veterans, and differently-abled job seekers. Kumari Job also provides free counseling to fresh graduates. [8]
- **Mero Job:** This is one of the most popular and trusted job portals in Nepal, with over 1 million plus registered users, 50000+ employers and 200+ jobs posted every day [9]. It caters to all kinds of job seekers, from freshers to experienced professionals, and offers services such as resume writing, career guidance, and online courses.[10]

After examining the current systems available, we found out that that none of them included an effective built-in resume generator. While a few systems claimed to offer this feature, users were not given the flexibility to select from a variety of templates. Additionally, the resumes produced were overly basic and lacked a professional touch. This situation presents an opportunity for us, as we intend to address these user challenges by providing a solution that is more flexible and user-friendly.

5.1.3 Requirement Analysis

The following are the functional and non-functional requirements of the system:

Functional Requirements:

User Roles:

1. Job Seeker/ User:

- Create and manage user profile.
- Upload and update resume.
- Search and view job openings.
- Apply for jobs.
- Receive notifications for new job openings matching their profile.
- Use the built-in resume generator to create and edit resumes.
- Manage Applied Jobs

2. Admin:

- Log in to the admin panel securely.
- Post, edit, and remove job vacancies and job categories.
- Manage employer companies/clients.
- Monitor and manage user accounts.
- View application details submitted by job seekers.
- Generate reports on job postings and user activities.
- Communicate with users.

System Roles:

- Generate Resume.
- Recommend Jobs, resume templates and resume contents.
- Send notifications to user.

Job Search and Application:

1. Job Search:

- Filter job openings based on categories, location, salary, etc.
- View detailed job descriptions, requirements, and application instructions.

2. Application Process:

- Apply for jobs easily.
- Receive confirmation emails upon successful application submission.

3. Resume Generator:

- Input personal details, education, work experience, skills, etc.
- Choose from various resume templates.
- Edit, preview, download and share generated resumes in different formats like PDF, Word, Links, etc.

Notifications and Communication:

1. Notifications:

- Receive email notifications for job matches, application status updates, and new job postings.

2. Communication:

- Communicate with the admin/support through the messaging system for queries and support.

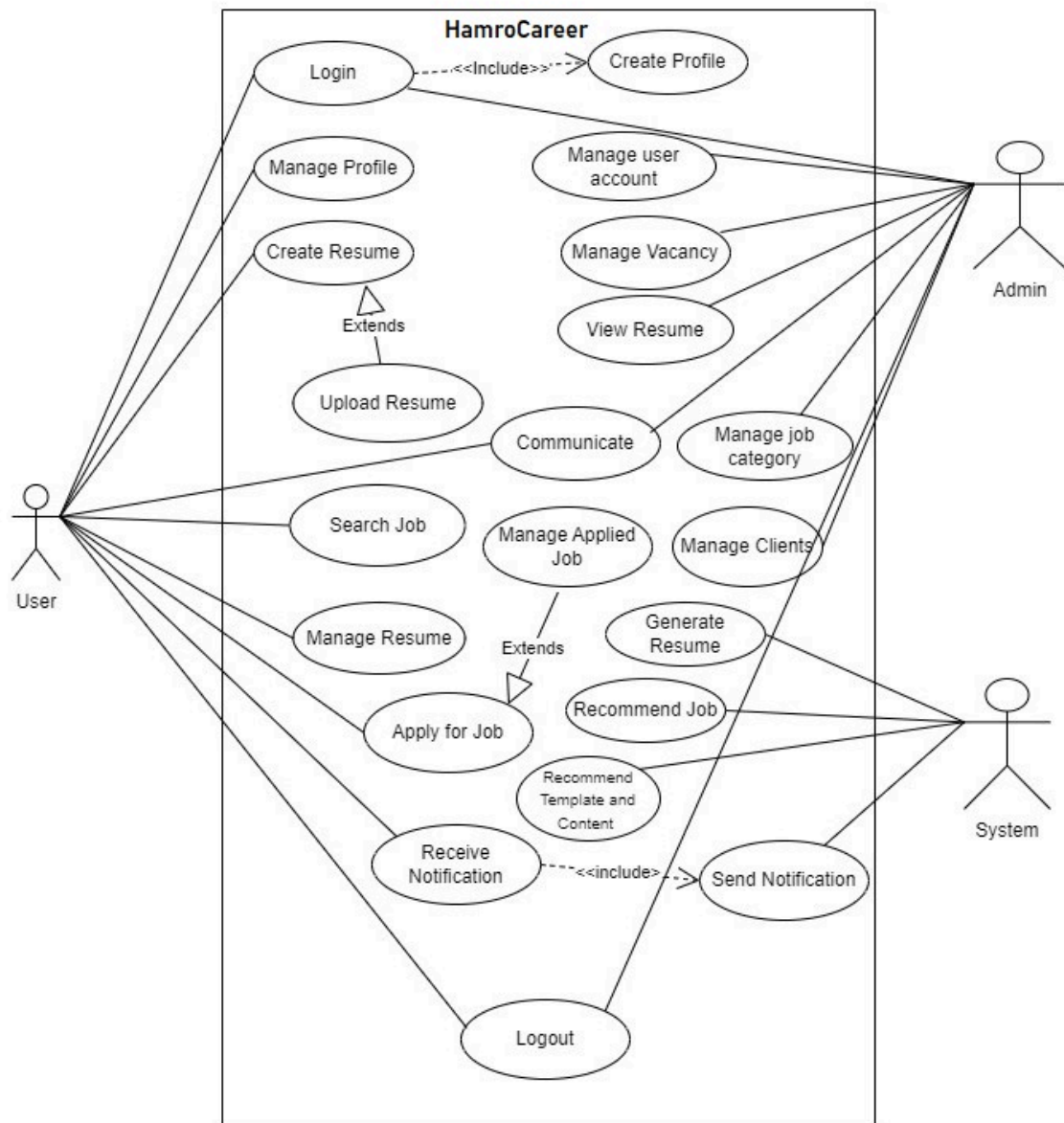


Fig.2. Use case Diagram

The figure above is the use case diagram of our proposed project, HamroCareer. There are three actors: user, admin and system along with their respective use cases.

Non-Functional Requirements:

Performance:

1. Responsiveness:

- The system should properly respond for search queries and page loading.
- Resume generation should be fast enough.

2. Scalability: The system should handle multiple users without significant performance degradation.

Security:

1. Data Security:

- All user data, including personal and application details, should be encrypted and securely stored.
- Regular data backups and recovery processes should be in place.

2. Authentication and Authorization:

- Use secure authentication methods to protect user and admin logins.
- Admin privileges should be tightly controlled, allowing only authorized personnel to post job openings.

Reliability:

1. System Uptime:

- The system should aim for 99.9% uptime, allowing for scheduled maintenance.

2. Error Handling:

- User-friendly error messages should be displayed for failed operations.
- Critical errors should be logged and reported to the admin for immediate resolution.

Usability:**1. Intuitive Interface:**

- The user interface should be intuitive and user-friendly for both job seekers and the admin.

These requirements provide a comprehensive overview of what the HamroCareer online job portal system should offer to its users and administrators, ensuring functionality, performance, security, reliability, usability, and compliance with legal standards.

5.2 Feasibility Study

Feasibility study is the first step in designing any project. It involves gathering information to determine whether a project is possible or not. The study compares the estimated costs with available resources and conducts a cost-benefit analysis of the system. The main objective of a feasibility study is to determine whether the project would be feasible in terms of economic, legal, technical, and operational feasibility or not.

5.2.1 Technical Feasibility

Technical feasibility refers to the evaluation of whether a software project can be implemented successfully based on available resources and technology. Our project “HamroCareer” is a technically feasible system as the tools and technology we are using (HTML, CSS, Javascript, JQuery, PHP, Mysql) for the development of the project are easily available online with proper documentation and support. Although the technology we are using is old and mostly core, it gets the work done.

5.2.2 Economical Feasibility

An economical feasibility study is an analysis of the costs and revenues of a project to determine whether it is logical and possible to complete it. It is a type of cost-benefit analysis that evaluates whether it is possible to implement the project. Our project is economically feasible as we are using freely available tools and software to build the project. Furthermore, after our project is successfully developed, collaborations with recruiters and educational institutions further enhance revenue opportunities through strategic partnerships and targeted advertising.

5.2.3 Legal Feasibility

Legal feasibility refers to the evaluation of whether a software project can be implemented successfully based on legal and ethical requirements. It involves analyzing the barriers to legal implementation of the project, data protection or social media laws, project certificates, licenses, copyrights, etc. The project that we are developing is legally feasible as it does not break any legal rules.

5.2.4 Operational Feasibility

Operational feasibility refers to the degree of providing service to requirements and how easy the product will be to operate and maintain after deployment. It also determines the usability of the product and whether the suggested solution by the software development team is acceptable or not.

5.2.5 Schedule Feasibility

Schedule feasibility is a type of feasibility study that assesses whether a project can be completed within a given timeframe. It examines the time required to complete each task and determines whether it is feasible to complete the project within the given schedule. To assess schedule feasibility, project managers use various tools such as Gantt charts, PERT charts, and the Critical Path Method (CPM). For our project, we are using Gantt Chart. Given below is a Gantt Chart describing the schedule for HamroCareer Project :

Key activities	Duration (in weeks) Week starts from October											
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Planning												
Analysis & design												
Coding												
Testing												
Evaluation												
Documentation												
Deployment												
Presentation												

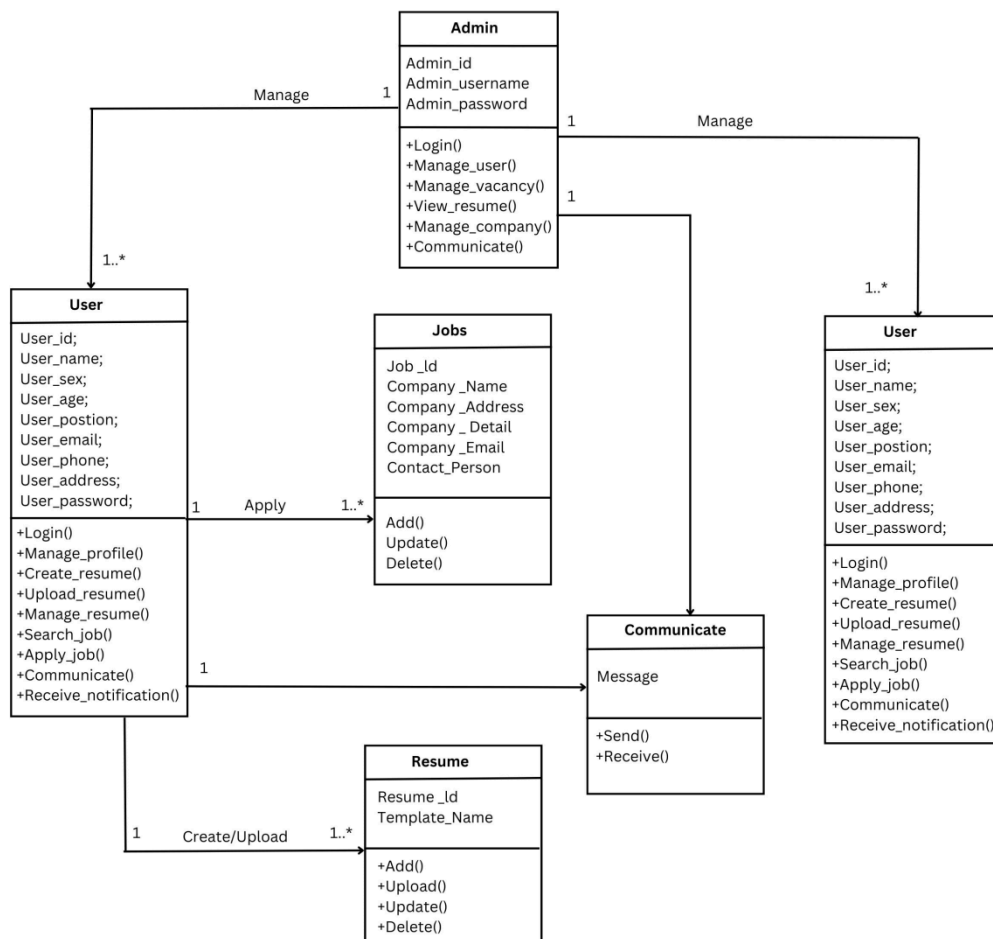
Fig.3. Gantt chart of work schedule

5.3 High Level Design

5.3.1 Class Diagram

A class diagram is a specific kind of UML (Unified Modeling Language) diagram that is used to show how a system or software application is organized. It provides a visual representation of a system's classes, interfaces, and objects, as well as their relationships, characteristics, methods, and activities [11].

In terms of HamroCareer project, a class diagram can be used to model the different entities involved in the system, such as users, jobs, resumes, admin, etc. It can also show how these entities interact with each other and what attributes and operations they have.



HamroCareer

fig.4. Class Diagram for HamroCareer

5.3.2 Activity Diagram

An activity diagram is a type of UML (Unified Modeling Language) diagram that shows the flow of actions and events in a system or process. It can be used to model the dynamic behavior of a system, such as the interactions between actors, objects, and components [12].

An activity diagram HamroCareer project can be used to illustrate how the system works from the perspective of different users, such as job seekers, and administrators. It can show the steps involved in various scenarios, such as registering, logging in, searching for jobs, applying for jobs, posting jobs, managing jobs, etc. It can also show the conditions and decisions that affect the flow of actions, such as validation, verification, authorization, etc.

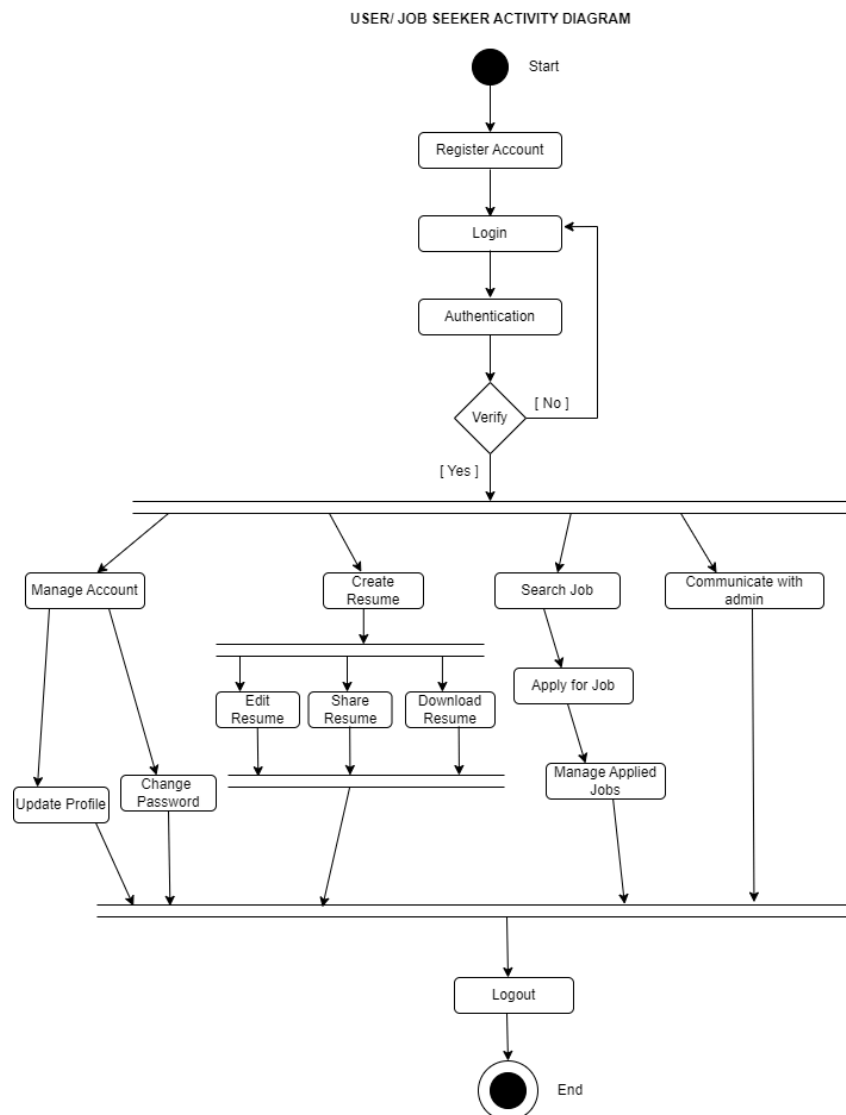


Fig.5. Activity diagram for user/job seeker

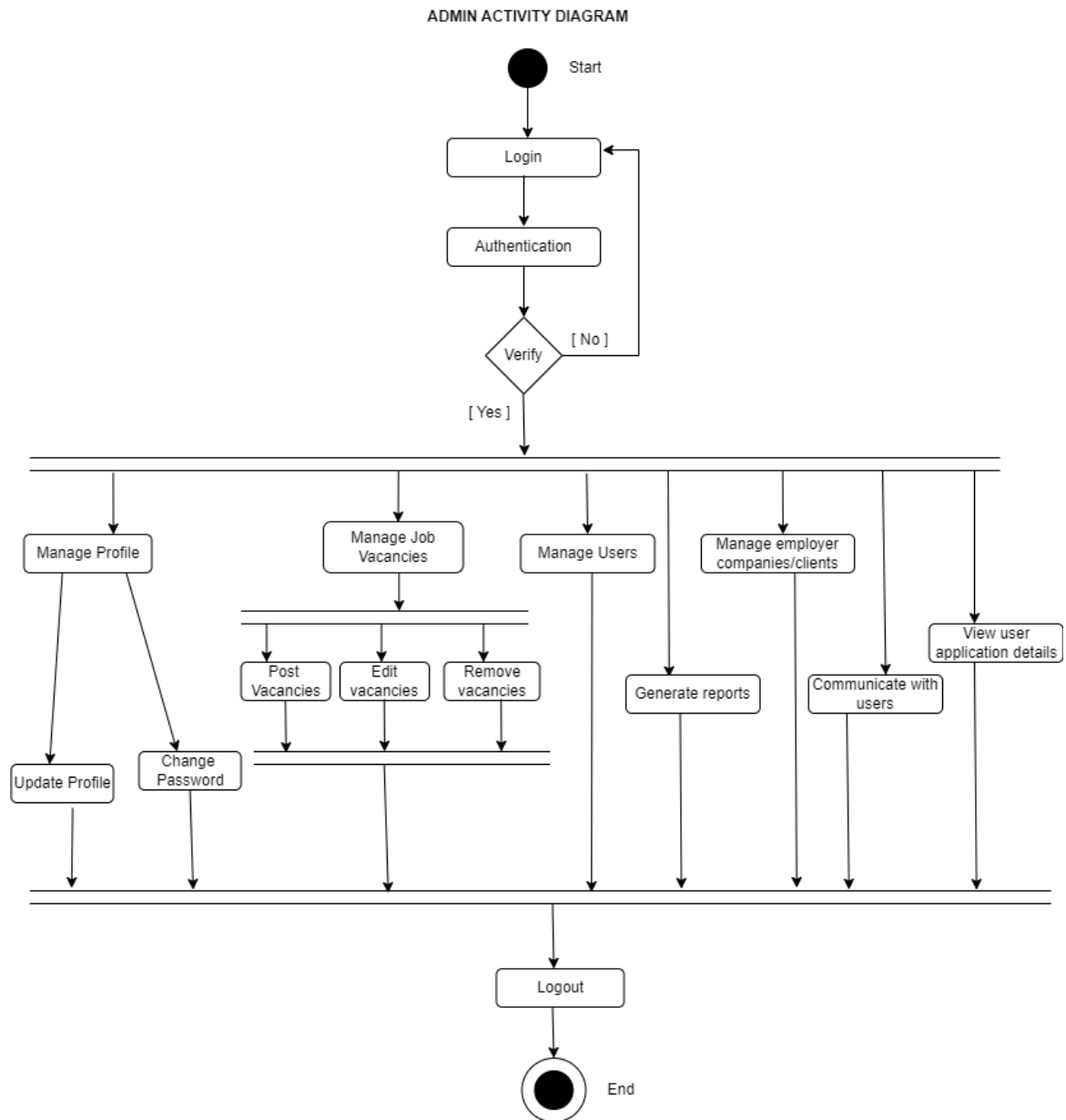


Fig.6. Activity diagram for admin

5.4 Description of Algorithms

For our proposed project, we are going to use a recommendation algorithm. A recommendation algorithm is a type of algorithm used in recommendation systems. It is designed to predict the preferences of a user and recommend items that they might like.

There are two main types of recommendation algorithms:

- **Content-based filtering** recommends items to users based on their past preferences. It works by analyzing the features of the items that the user has liked in the past and then recommending similar items. For example, if a user has liked action movies in the past, content-based filtering would recommend other action movies to that user. Content-based filtering is good at recommending niche items that are not popular among other users, but it can be limited by the quality of its features. [13]
- **Collaborative filtering**, on the other hand, recommends items to users based on the preferences of other users who have similar tastes. It works by analyzing the behavior of other users who have similar preferences and then recommending items that they have liked. For example, if a user has liked action movies in the past, collaborative filtering would recommend other action movies that other users with similar preferences have liked. Collaborative filtering can provide more accurate recommendations but requires a large amount of data to work effectively. [14]

For our project, we are going to use a content-based filtering recommendation called K-Mean. [15] K-means clustering is a popular unsupervised machine learning algorithm used for clustering (grouping) similar items together. It is often used in recommendation systems to cluster users or items based on their similarities. To implement K-Mean recommendation on our job portal site, we can start by analyzing the features of each job posting. These features could include the job title, job description, required skills, location, and more. Once we have identified these features, we can use them to create a profile for each job posting.

[16] The algorithm works by first randomly selecting a number of cluster centers (also known as centroids). It then assigns each data point to the nearest centroid. After all data points have been assigned, the centroid positions are updated based on the mean of all data points assigned to it. This process is repeated until the centroids no longer move or a maximum number of iterations is reached.

6. Tools

6.1 Implementing Tools

Front End

- 1 **HTML:** HTML5 is the latest web standard with semantic elements, multimedia support, canvas for graphics, and enhanced form features, enhancing web development.
- 2 **CSS3:** CSS, or Cascading Style Sheets, is a language used to style the visual presentation of HTML documents on the web.
- 3 **JavaScript:** JavaScript is a versatile programming language used for web development, enabling interactive and dynamic features, enhancing user experience on websites.
- 4 **JQuery:** jQuery is a fast and concise JavaScript library simplifying HTML document traversing, event handling, animating, and Ajax interactions for rapid and efficient web development.
- 5 **Bootstrap:** Bootstrap is a popular front-end framework that simplifies web design. It provides ready-to-use templates, CSS, and JavaScript for creating responsive, visually appealing websites.

Backend

- 1 **PHP:** PHP is a server-side scripting language commonly used for web development. It enables dynamic content generation, database interactions, and server-side scripting tasks.
- 2 **MySQL:** MySQL is an open-source relational database management system. It uses Structured Query Language (SQL) for managing databases, enabling efficient storage and retrieval of data.

Version Control

- **Git/GitHub:** Version control system for tracking changes in source code and collaborative development

Drawings

- **Draw.io:** For drawing use cases, activity diagram and class diagram.

7. Expected Outcome

The HamroCareer job portal project has the potential to be a valuable resource for both job seekers and employers in Nepal. With its built-in resume generator feature and ability for admins to easily manage job vacancies and review applications, HamroCareer can streamline the hiring process and make it easier for job seekers to find and apply for jobs that match their skills and interests.

In addition to its core features, HamroCareer could also offer a variety of other tools and resources to help job seekers prepare for job applications and interviews. For example, HamroCareer could provide users with access to job search tips, resume writing tips, and interview preparation guides. HamroCareer could also offer a forum where users can connect with each other and share job opportunities or advice.

HamroCareer could provide a cost-effective and efficient way to post job vacancies and review applications. It could also generate reports on job postings, applications, and hires, which could help employers track their hiring trends and make better hiring decisions.

Overall, the HamroCareer job portal project has the potential to make a significant positive impact on the Nepalese economy by helping to connect job seekers with employers and promote job growth.

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