BUTWAL MULTIPLE CAMPUS

INSTITUTE OF SCIENCE AND TECHNOLOGY

TRIBHUVAN UNIVERSITY

A FINAL YEAR PROJECT REPORT

On

"The Professional Hire"

Submitted By:

Saurav Khanal [T.U Exam Roll no.: 25166/076]

Yamlal Gaire [T.U Exam Roll no.: 25174/076]

Submitted To:

Department of Computer Science and Information Technology

BUTWAL MULTIPLE CAMPUS

In Partial Fulfillment of the Requirements for the Bachelor's Degree of

COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

Supervisor Recommendation

I hereby recommend that this project report under my supervision by **Mr.** Y**amlal Gaire** and **Mr. Saurav Khanal** entitled **"The Professional Hire"** in partial fulfillment of the requirement for Bachelor's Degree in Computer Science and Information Technology of Tribhuvan University be processed for the evaluation.

……

Mr. Taranath Jaishy

(Project Supervisor)

Department Of Computer Science

Butwal Multiple Campus

Butwal, Rupandehi, Nepal

Date:

Letter of Approval

This is to certify that this project prepared by **Mr. Yamlal Gaire** and **Mr. Saurav Khanal** of BSc. CSIT students 2076 Batch, Butwal Multiple Campus entitled "**The Professional Hire**" is a web application designed to facilitate profile management. It is an original project carried out under our guidance and supervision towards the partial fulfillment of Bachelor's degree of Computer Science and Information Technology.

…… **Mr. Sunil Kumar Yadav** Program Coordinator Butwal Multiple Campus	…… **Dr. Khimananda Neupane** Campus Chief Butwal Multiple Campus
…… **Mr. Taranath Jaishy** Supervisor Butwal Multiple Campus	…… **Mr.**……. External Examiner Tribhuvan University

Student's Declaration

We, the final year B.Sc. CSIT students (7th semester) of Butwal Multiple Campus, hereby declare that the project report entitled "**The Professional Hire**", is submitted in partial fulfillment of the requirements for a Bachelor's Degree in Computer Science and Information Technology at Tribhuvan University. This project was carried out under the guidance and supervision of **Mr.Taranath Jaishy**, faculty member at Butwal Multiple Campus. We assure that this project is our original work and has not been submitted for the award of any other degree, diploma, fellowship, or similar title or prize.

…….	…….
Mr. Yamlal Gaire	**Mr. Saurav Khanal**
(25174/076)	**(25166/076)**

Acknowledgement

The success and final outcome of this project required significant guidance and assistance from many individuals, and we feel extremely fortunate to have received such support throughout the completion of our final year project. We are deeply grateful to all those who contributed, and we would like to express our heartfelt appreciation to each of them.

We are particularly indebted to **Butwal Multiple Campus** for providing us with academic support, as well as opportunities to engage in Information Communication Technology-related activities and extracurricular endeavors. The college provided us with a nurturing environment akin to a family, which greatly aided our project. We would like to extend our sincere gratitude to our supervisor, **Mr. Taranath Jaishy**, for his exemplary guidance, constant monitoring, and unwavering encouragement throughout the duration of this project. His mentorship played a pivotal role in our success.

Additionally, we express our profound thanks to **Mr. Sunil Kumar Yadav**, the coordinator, for his cordial support, invaluable insights, and guidance, which proved instrumental in navigating through various stages of this project. Lastly, but certainly not least, we would like to acknowledge our friends and colleagues for their unwavering support and constructive feedback throughout this endeavor. We are grateful for their encouragement and assistance to everyone who has contributed to this project in any capacity, we extend our heartfelt thanks. Your support has been invaluable, and we truly appreciate it. Thank you all.

ABSTRACT

"**The Professional Hire**" is a web application designed to streamline the process of hiring professionals for various projects and tasks. In the past, managing such hiring efforts has been challenging due to the complexity of organizing teams, events, and other logistical aspects. This platform serves as a solution to this problem by providing a centralized hub where companies, hirers, and individuals can easily gather information about available professionals for hire. The platform aims to simplify the process of finding and hiring professionals by bringing together a diverse range of skilled individuals in one location. By utilizing this platform, companies and individuals can easily search for professionals based on their specific requirements and preferences.

Key features of "**The Professional Hire**" include comprehensive profiles of professionals, allowing hirers to assess skills, experience, and availability. Additionally, the platform facilitates communication between hirers and professionals, enabling seamless collaboration throughout the hiring process. It is built using a robust stack of technologies including HTML, CSS, JavaScript, React, Node.js, Express, MongoDB, and Mongoose, this web application offers a user-friendly interface and efficient functionality.

Keywords: Web Application, Contract Work, On-call Work, Professional Hiring.

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List of Abbreviation

Abbreviations	Description
BIT:	Binary Digit
CSS:	Cascading Style Sheet
DB:	Database
DFD:	Data Flow Diagram
ER:	Entity Relationship
GB:	Giga Byte
GUI:	Graphical User Interface
HTML:	Hyper Text Markup Language
ICT:	Information and Communication Technology
IDE:	Integrated Development Environment
RAM:	Random Access Memory
SDLC:	Software Development Life Cycle
JS:	JavaScript

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Chapter 1: Introduction

1.1 Introduction

In today's dynamic business landscape, the need for skilled professionals to undertake contract work or on-call tasks has become increasingly prevalent. However, navigating the process of hiring professionals can often be daunting and time-consuming for companies, hirers, and individual employers alike. Recognizing this challenge, "The Professional Hire" will emerges as a comprehensive web application aimed at facilitating the hiring process for professionals across various industries. Historically, managing the hiring of professionals has been marked by inefficiencies and complexities. Companies and individuals often struggle to identify suitable candidates, assess their qualifications and availability, and facilitate effective communication throughout the hiring process. Consequently, projects may be delayed, resources may be underutilized, and overall productivity may suffer.

"The Professional Hire" addresses these challenges by providing a centralized platform where companies, hirers, and individuals can seamlessly connect with skilled professionals for contract work and on-call tasks. By leveraging advanced technologies and intuitive user interfaces, the platform streamlines the process of finding, evaluating, and hiring professionals tailored to specific project requirements

Keywords: Web Application, Contract Work, On-call Work, Professional Hiring.

1.2 Problem Statement

In the contemporary landscape of professional services, the traditional paradigms of finding and engaging skilled professionals have become increasingly outdated and inefficient. Individuals and businesses alike encounter significant obstacles in their quest to secure the right talent for their needs. One of the primary challenges lies in the lack of a centralized platform that effectively showcases the diverse array of skills and expertise possessed by professionals across various fields. This fragmentation results in a dearth of visibility for many talented individuals, impeding their ability to connect with potential clients and secure employment opportunities. Concurrently, clients seeking specific skill sets face the arduous task of navigating through disparate channels to identify suitable candidates, often leading to frustration and wasted resources. Moreover, concerns

surrounding privacy, data security, and trust exacerbate these challenges, as existing platforms often fall short in providing robust mechanisms to address these critical issues. The absence of features that facilitate user engagement, such as transparent feedback mechanisms and interactive communication channels, further compounds the inefficiencies inherent in the current hiring process. Recognizing the pressing need for innovation in this domain,

"**The Professional Hire**" endeavors to redefine the landscape of professional engagement through its comprehensive and user-centric platform. By centralizing access to a diverse pool of skilled professionals, fostering transparent communication channels, and prioritizing privacy and trust, "**The Professional Hire**" seeks to streamline the hiring process, empower professionals to showcase their talents, and enable clients to find the perfect match for their requirements. Through these concerted efforts, "**The Professional Hire**" aims to revolutionize the paradigm of professional engagement, driving efficiency, transparency, and mutual prosperity in the dynamic marketplace of professional services.

1.3 Objective

The general objective is to develop a "The Professional Hire" that will be implemented at the National level where we can create a profile for skilled person and employer can see the profile and give response via our web portal. The specific objectives of proposed system are mentioned as below:

- Intelligent search matches users with relevant professionals using various filters.
- Professionals create detailed profiles; users maintain accounts for interaction.
- Secure messaging ensures privacy in discussing job requirements and availability.
- Ratings build trust by showcasing professionals' credibility.
- Admin panel manages accounts, monitors activities, and enforces guidelines.

1.4 Scope and Limitation

1.4.1 Scope

"**The Professional Hire**" is designed to meet the needs of companies, hirers, and individual employers seeking to hire professionals for contract work or on-call tasks across various industries. The platform encompasses:

i. Developing a web-based platform that connects skilled professionals with organizations in Nepal.

ii. Providing a wide range of features to help organizations and professionals find each other and connect efficiently.
iii. Building a robust security system and fair practices to ensure the trustworthiness of the platform.
iv. Making the platform accessible to those with limited digital literacy.

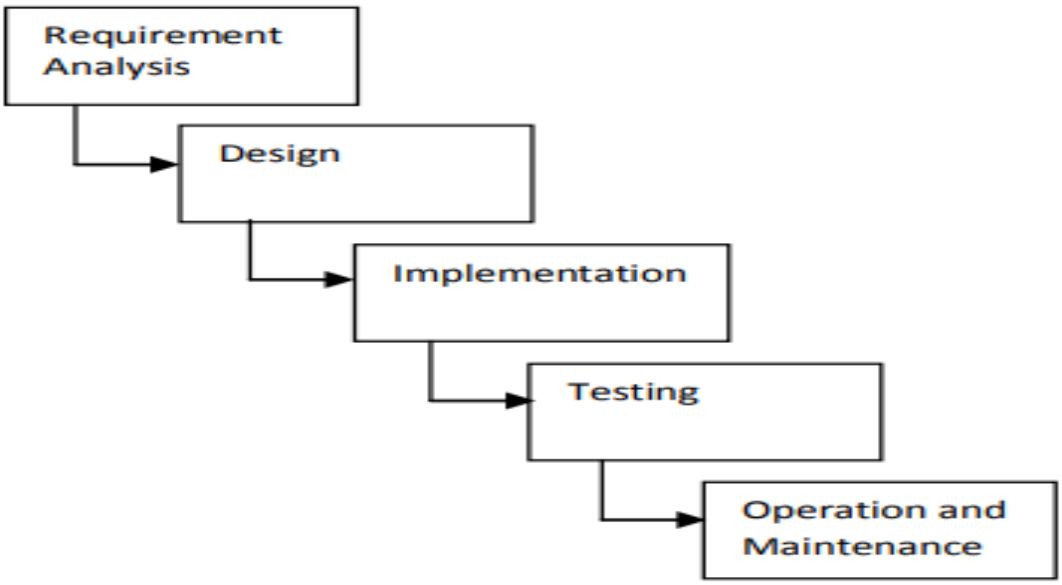
1.4.2 Limitations

While "The Professional Hire" aims to provide a comprehensive solution for hiring professionals, it is essential to acknowledge certain limitations:

i. It will be initially focused on Nepal, with plans to expand to other countries in the future.
ii. It will initially focus on a limited number of professions, with plans to expand to more professions in the future.
iii. It will rely on users to provide accurate and up-to-date information about their skills and experience.
iv. It cannot guarantee that all users on the platform are qualified or trustworthy.

1.5 Development Methodology

To solve actual problems, one must incorporate a development strategy that encompasses the process, methods and tools layers. The strategy is often referred to as a system planning, chosen based on the nature of the project and application, the methods and tools to be used, and the controls and deliverables that are required. We made a systematic plan for proper work flow of project considering different procedures and steps before initializing project development. We use Waterfall model as a software development model. As in software development process, we perform the development of our system is planned.



1.6 Report Organization

The report is organized into six chapters. Chapter one includes description about "**The Professional Hire"**; problem statements, objectives, scopes and limitations. Chapter two contains literature review about the previous work done in related fields. Chapter three comprises of requirement analysis, feasibility analysis of the system. The requirements analysis further consists of functional and non-functional requirements. Economic, technical and operational feasibilities are listed. Chapter four consists of system design which includes use UML diagram, and consists of methodology that consist of system architecture and algorithm used to build the system. Chapter five includes implementation and testing of the system. Testing further comprises of unit testing, system testing. And Chapter six includes conclusion and future enhancement.

Chapter 2: Background Study and Literature Review

2.1 Background Study

The landscape of professional hiring has undergone a significant evolution in recent years, primarily driven by technological advancements and changing workforce dynamics. Traditional hiring methods, such as word-of-mouth referrals and recruitment agencies, have given way to the emergence of digital platforms [1]. Online job boards, freelance marketplaces, and social networking platforms have become instrumental in connecting professionals with clients, reflecting a broader trend towards digitization and globalization in the labor market [2]. This shift has opened up opportunities for professionals to work remotely and for clients to access a diverse pool of talent from around the world [3].

However, alongside these opportunities, the rise of digital platforms presents challenges such as ensuring quality control, building trust, and establishing fair compensation mechanisms [4]. The gig economy, characterized by short-term contracts and freelance work, has disrupted traditional employment models, raising concerns about job security and benefits for professionals [5]. Additionally, the proliferation of online platforms has intensified competition among professionals, necessitating strategic positioning and branding to stand out in a crowded marketplace [6]. Despite these challenges, a nuanced understanding of the evolving landscape, as outlined in various studies [1-6], can inform the development of effective solutions and strategies to address the needs of professionals and clients alike.

2.2 Literature Review

While several existing systems aim to connect businesses with professionals for temporary work, they often fall short of addressing all the critical aspects:

- **Freelance Marketplaces:** Platforms like Upwork and Fiverr offer opportunities for contract work, but their focus is often on individual tasks or short-term projects rather than providing a comprehensive platform for professional hiring. Additionally, they may lack robust features like skills verification, secure payment processing, and project management tools [4]

- **Professional Networking Sites:** Platforms like LinkedIn primarily focus on building professional connections and showcasing individual expertise. While they can be valuable for networking and building relationships, they are not specifically designed to facilitate direct, project-based hiring or offer tools for managing the complete hiring process [5]

These existing systems often lack the following key functionalities:

- **Centralized Platform:** A single, unified platform specifically designed for contract and on-call hiring, bringing together businesses and professionals in a dedicated environment. This centralization reduces the need to navigate multiple platforms and allows for a more streamlined user experience.
- **Advanced Search and Matching:** Robust search functionalities utilizing sophisticated algorithms that connect employers with professionals based on specific project requirements and verified skill sets. This ensures a high degree of accuracy and relevance in matching professionals with the right opportunities.
- **Integrated Communications and Collaborations Tools:** Secure communication channels, project management functionalities, and document sharing capabilities facilitate seamless collaboration and coordination between businesses and professionals throughout the engagement. This eliminates the need for external tools and streamlines project execution.
- **Reputation Management and Feedback System:** A system that allows both businesses and professionals to provide feedback and build their reputation within the platform. This fosters trust and transparency, allowing both parties to make informed decisions based on past experiences and performance reviews.
- **Online Communities and Forums:** Various online communities and forums, such as Reddit or specialized industry forums, serve as informal platforms for connecting businesses with professionals for temporary work opportunities. While these platforms may offer networking and referral opportunities, they often lack structured processes for professional hiring and may not provide adequate support for managing complex projects.

➢ Chapter 3: System Analysis

3.1 System analysis

This chapter gives a detailed outline of the software development methodology used in this project. The strength and weaknesses of the chosen methodology have been outlined. Further, the functional and non-functional requirements of the system are explained in detail and the use cases which are a list of steps, typically defining interactions between a role and a system, to achieve a goal. Class diagrams have been given to show detailed data modeling of the system which will be translated into code. Systems analysis is the process by which an individual's studies a system such that an information system can be analyzed, modeled and a logical alternative can be chosen. Systems analysis projects are initiated for three reasons: problems, opportunities, and directives. Systems analysis is the process by which an individual's studies a system such that an information system can be analyzed, modeled and a logical alternative can be chosen. Systems analysis projects are initiated for three reasons: problems, opportunities, and directives.

3.1.1 Requirement analysis

In SDLC, requirement analysis is the first step of major importance. The entire concentration is on gathering the functional and the nonfunctional requirements for the product to be developed. Through requirement gathering we ensure that we are setting project goals and objectives much earlier. Complete understanding of the requirements leads to the successful development of the software.

i. Functional Requirements

A Functional Requirement (FR) is a description of the service that the software must offer. A function is nothing but inputs to the software system, its behavior, and outputs. The System must provide following functionalities.

- Accessible via the Internet.
- Allow valid users to login and logout.
- Restrict access to functionality of the system based upon user roles.
- Allow valid users to communicate.
- The user interface should provide appropriate error messages for invalid input.

Figure 3.1 Use Case Diagram

ii. Non-Functional Requirements

Non-functional requirements are a set of specifications that describe the system's operation capabilities and constraints and attempt to improve its functionality. These are basically the requirements that outline how well it will operate including things like speed, security, reliability, data integrity, etc. Non-functional requirements of the project are as follows:

- **Performance**

  Being a web-based system, the performance depends on the server itself, how the

server responses to the request determine the performance of the system. The system is efficient in resource utilization like memory, CPU, storage etc.

- **Scalability**

  The system provides different features for both admin and users. The system is able to serve large number of users as per demand.

- **Reliability**

  The system provides reliable recommendation to the users based on collaborative filtering algorithm.

- **Usability**

  The system can be used by any user by registering to the site.

- **Interoperability**

  The system is built by integrating Node using HTML, CSS, BOOTSTRAP, and JAVASCRIPT. So, they operate together.

3.1.2 Feasibility Analysis

The feasibility analysis analyzes whether the software meets its requirements and whether it can be implemented using the current technology and within specified budget and schedule. It guides the project team in determining whether to proceed with the project and it identifies the important risks associated with the project that must be managed if the project is approved.

i. Technical Feasibility

The chosen technology stack has undergone thorough evaluation and has been identified as one of the most suitable approaches for the project. It is closely aligned with the project's requirements, offering the necessary features and capabilities to achieve the desired functionality seamlessly. Moreover, the software and hardware requirements for developing this web application are minimal, with the majority of resources readily available as free and open-source. This ensures that the project can be implemented without significant financial investment in proprietary software or specialized hardware, making it accessible and feasible for development.

ii. Operational Feasibility

The proposed application addresses a significant challenge encountered by both skilled professionals and employers in the current hiring landscape. By providing a centralized platform for connecting employers with skilled individuals, the application is positioned to streamline the hiring process and alleviate the difficulties associated with finding suitable candidates for temporary positions. Additionally, through the web

application, employers and skilled users can interact directly, fostering a collaborative environment and enhancing the overall user experience. By facilitating seamless communication and collaboration, the application empowers users to efficiently engage with each other and achieve their respective goals, thus ensuring operational feasibility and effectiveness.

iii. Economic Feasibility

Our project is economically viable due to the utilization of open-source tools and resources, minimizing expenses associated with software licensing fees. The paperless nature of the application reduces operational costs related to traditional record-keeping methods. With a development timeline of 3 months, resource allocation is optimized, contributing to the project's overall economic feasibility.

iv. Schedule (Gantt Chart)

Key Activities	Durations (In weeks)											
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Planning												
Analysis & Design												
Coding												
Testing												
Evaluation												
Documentation												
Deployment												
Presentation												

Table 1: Gantt chart showing the project timeline

3.1.3 Analysis

Requirement analysis which is also known as requirement engineering is the process of determining the belief of a user to carry out the process of creating a new or modified application. It involves the process of studying the entire task conducted to identify the needs of different stakeholders with their goals and purposes of creating systems and procedures that will achieve them in an efficient way.

Figure 3.1.3.1 Data Modeling using ER Diagrams

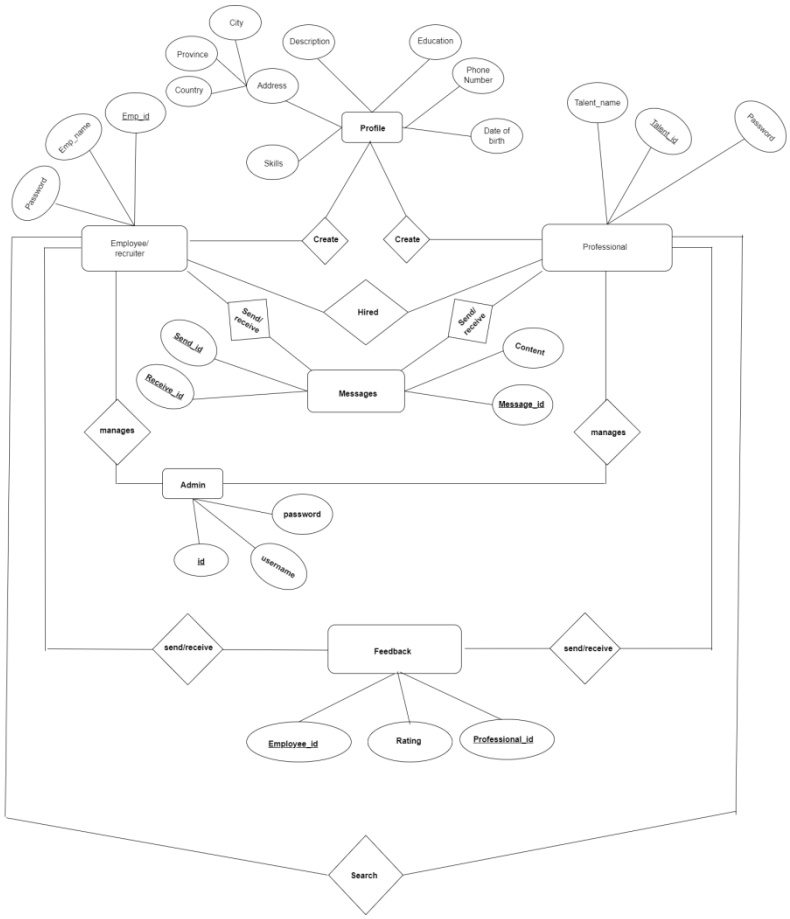
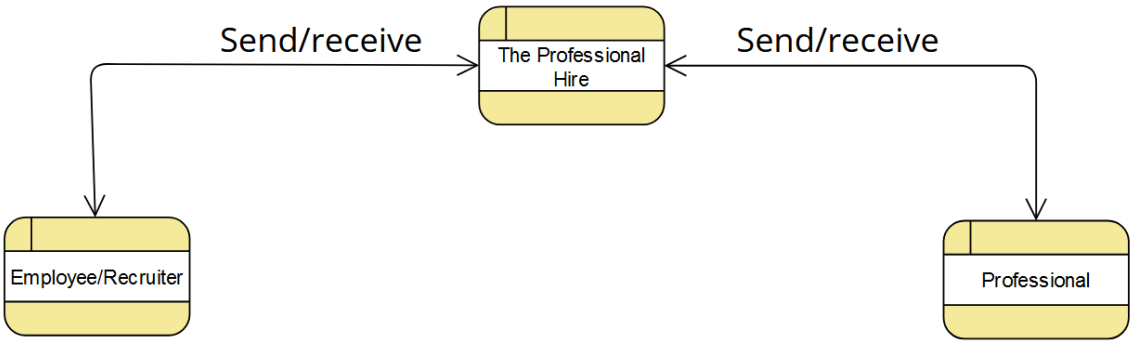
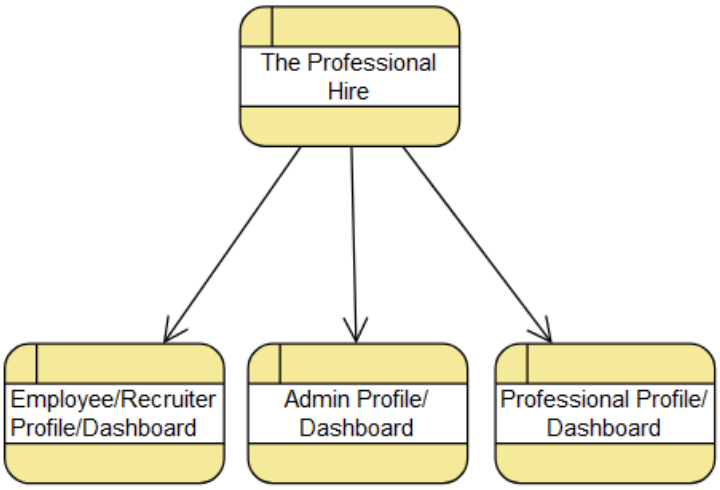


Figure 3.1.3.2 Process Modeling Using DFD

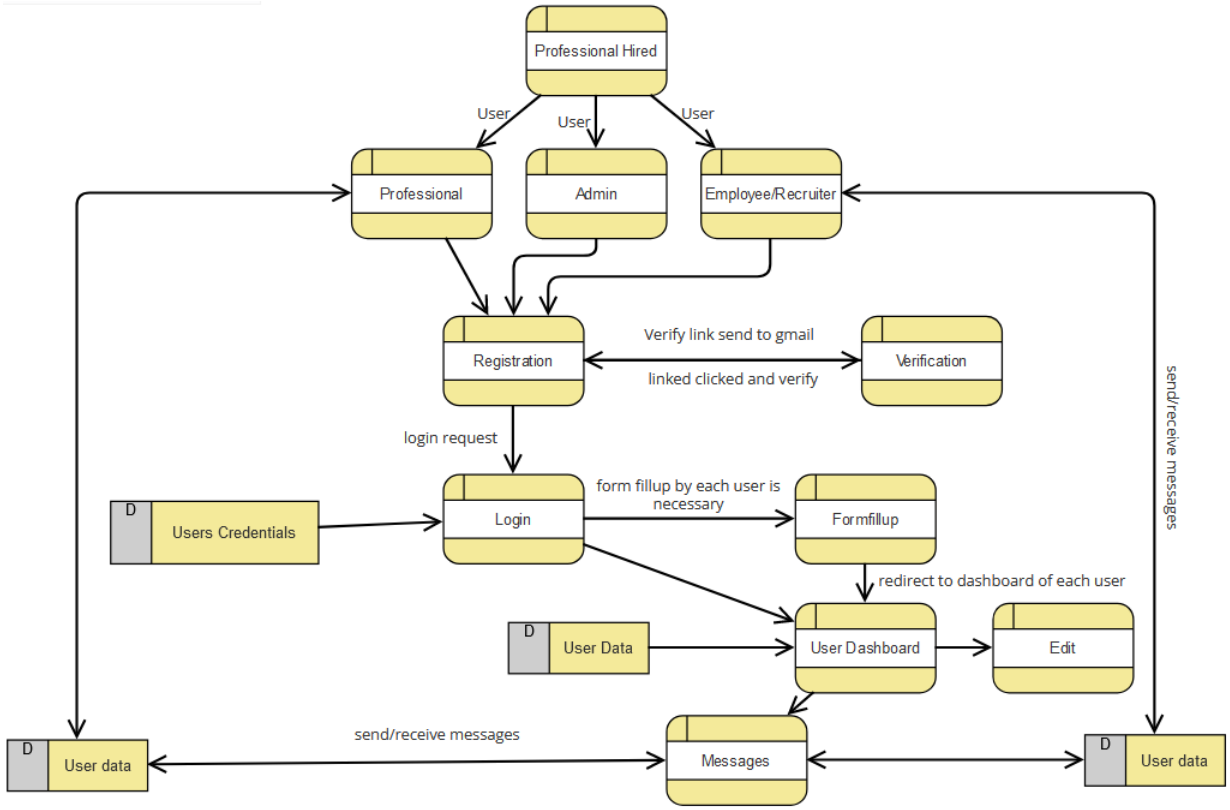
Context Level DFD



Level-1 DFD



Level-2 DFD



Chapter 4: System Design

4.1 Analysis

System design refers to the process of defining the architecture, components, modules, interfaces, and data for a software system. It involves creating a blueprint or plan for the system that specifies how it will be built, how it will function, and how it will meet the requirements of the clients.

4.1.1 Database Design – Transformation of ER to relations and normalizations

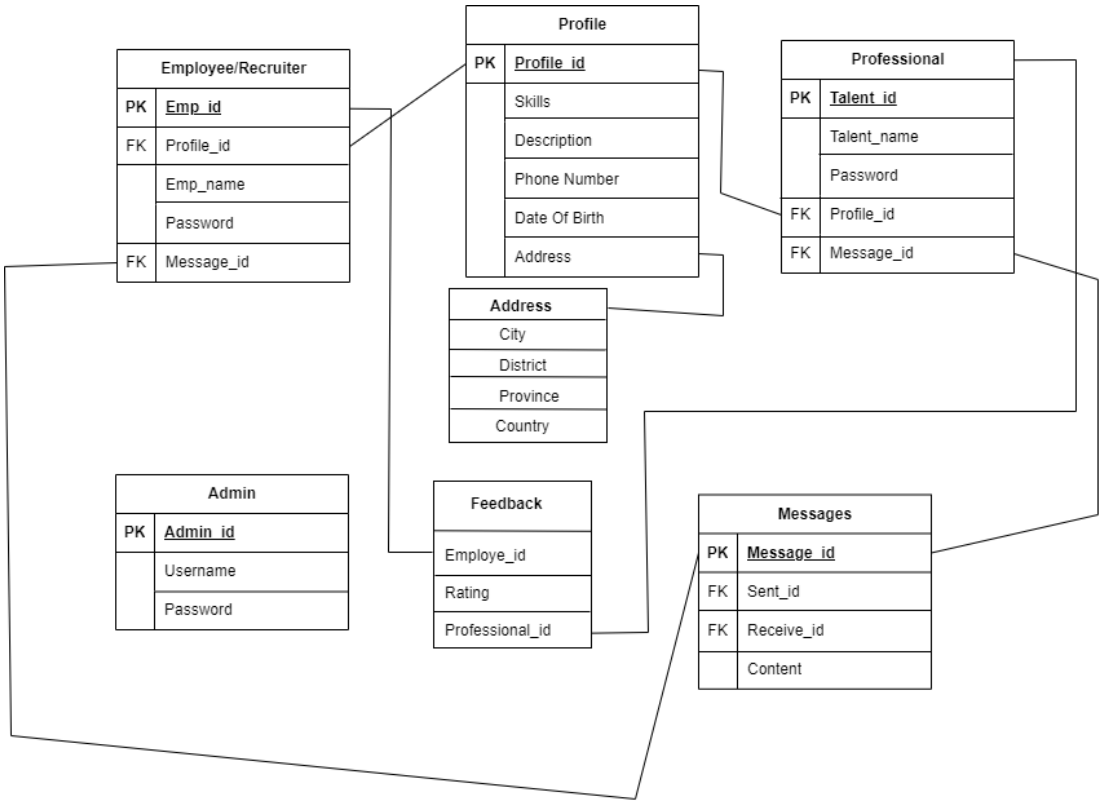
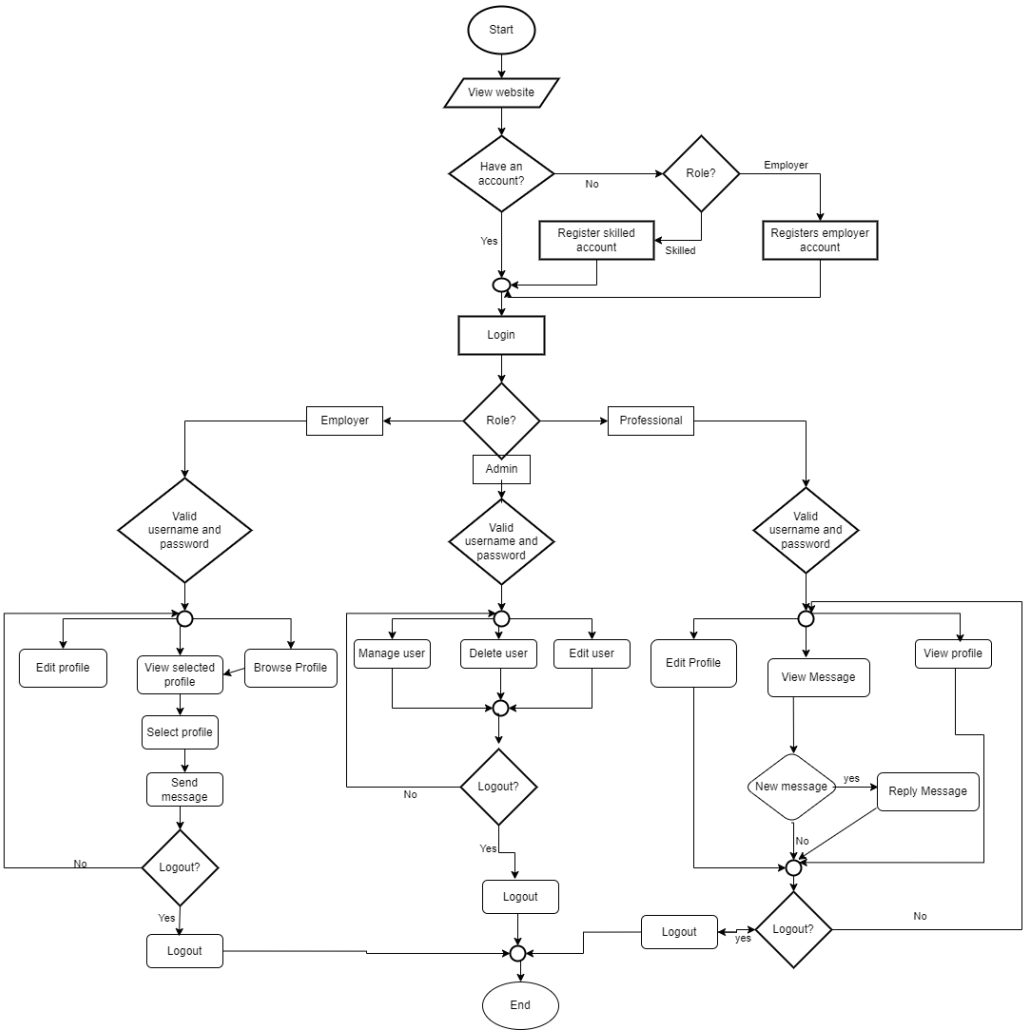


Figure 4.1.1 Database Design – Transformation of ER to relations and normalizations

Complete Project Algorithm



4.2 Algorithm Details

4.2.1 Algorithm Name: Star Rating Renderer

Inputs:

- Value : numerical value representing the rating (e.g., 3.5)
- Color : An optional parameter specifying the color of the stars (default is used if not provided)

Output:

- Renders a visual representation of the rating using star icons

Pseudo Code:

```
function Rating({ value, color }) {
  for (let i = 1; i <= 5; i++) {
```

```
if (value >= i) {
// If the current star value is less than or equal to the rating value,
// render a filled star.
renderFilledStar(color);
} else if (value >= i - 0.5) {
// If the rating value is greater than the current star value minus 0.5,
// render a half-filled star.
renderHalfStar(color);
} else {
// Otherwise, render an empty star.
renderEmptyStar();
}
  }
}

function renderFilledStar(color) {
  // Render a filled star with the specified color.
}

function renderHalfStar(color) {
  // Render a half-filled star with the specified color.
}

function renderEmptyStar() {
  // Render an empty star.
}
```

This algorithm iterates through each star from 1 to 5. For each star, it checks whether the value is greater than or equal to the current star's value. Based on this comparison, it renders a filled star, a half-filled star, or an empty star accordingly. The color parameter is used to determine the color of the stars, with a default color used if not provided.

4.2.2 Algorithm Name: User Authentication and Security

```
// Nodemailer Setup
var transporter = nodemailer.createTransport({
```

```
  service: "gmail",
  auth: {
user: "your_email@gmail.com",
pass: process.env.GOOGLE_APP_PASSWORD,
  },
  tls: {
rejectUnauthorized: false,
  },
});

// JWT Generation
const accessToken = generateAccessToken({ id: user.id });
const refreshToken = generateRefreshToken({ id: user.id });

// User Login
module.exports.userLogin = asyncHandler(async (req, res) => {
  // User login logic
});

// Token Refreshing
module.exports.refreshToken = (req, res) => {
  // Token refreshing logic
};

// User Registration
module.exports.userRegister = asyncHandler(async (req, res) => {
  // User registration logic
});

// Email Verification
module.exports.verifyEmailRegister = asyncHandler(async (req, res) => {
  // Email verification logic
});

// Password Reset
```

```
module.exports.sendOtp = async (req, res) => {
  // Send OTP for password reset logic
};

module.exports.verifyOTP = async (req, res) => {
  // OTP verification logic for password reset
};

// Logout
module.exports.logout = async (req, res) => {
  // User logout logic
};
```

This pseudo code outlines the key functionalities and patterns used in the code for user authentication and security, including JWT generation, password hashing, email verification, OTP handling, and user session management.

4.2.2 Algorithm Name: Content-Based Filtering Algorithm

Content-based filtering is a recommendation system technique that recommends items based on the attributes and features of the items themselves. In the context of talent profiles, content-based filtering could recommend talent profiles to users based on the skills, experience level, category, and other attributes of the talent profiles.

Chapter 5: Implementation and Testing

5.1 Implementation

5.1.1 Tools Used

1. **Analysis and Design Tools**

- *Canvas:* Canvas is a graphic design platform that allows users to create a wide range of visual content, including presentations, posters, social media graphics, and more. It offers a user-friendly interface and a vast library of templates and design elements, making it ideal for creating mockups, wireframes, and other design assets during the analysis and design phases of the project.
- *Figma:* Figma is a collaborative interface design tool that enables teams to create, prototype, and collaborate on designs in real-time. It provides features such as vector-based drawing tools, prototyping capabilities, and version control, allowing designers and developers to work together seamlessly. Figma is used for creating high-fidelity designs, wireframes, and interactive prototypes.

2. **Version Controller**

- *Git*: Git is a distributed version control system that allows developers to track changes to their code base, collaborate with team members, and manage different versions of their projects. It facilitates efficient collaboration and ensures that all team members are working on the most up-to-date version of the codebase.
- *GitHub:* GitHub is a web-based platform that hosts Git repositories and provides additional features for collaboration, code review, and project management. It serves as a central hub for storing, sharing, and managing code, making it easier for teams to work together and track changes over time.

3. **Frontend Tools**

- *HTML*: HTML (Hypertext Markup Language) is the standard markup language used to create the structure of web pages. It defines the elements & layout of a webpage, including headings, paragraphs, images, and links.
- *CSS*: CSS (Cascading Style Sheets) is used to style and format the visual presentation of HTML elements. It enables developers to control aspects such as colors, fonts, & layout, enhancing the appearance & user experience of web pages.

- *JavaScript*: JavaScript is a programming language that adds interactivity and dynamic behavior to web pages. It is used to create interactive features such as animations, form validation, and dynamic content updates, making web applications more engaging and responsive.
- *React*: React is a JavaScript library for building user interfaces, developed by Facebook. It allows developers to create reusable UI components and efficiently manage the state of their applications. React's component-based architecture and virtual DOM (Document Object Model) make it well-suited for building complex and interactive web applications.

4. Backend Tools

- *Node*: Node.js is a server-side JavaScript runtime environment that allows developers to run JavaScript code on the server. It provides a non-blocking, event-driven architecture, making it ideal for building scalable and high-performance web applications.
- *Express*: Express is a minimal and flexible Node.js web application framework that provides a set of robust features for building web servers and APIs. It simplifies the process of handling HTTP requests, routing, middleware integration, and more, enabling developers to create efficient and scalable backend systems.

5. Database Used

- *MongoDB*: MongoDB is a NoSQL database that stores data in flexible, JSON-like documents. It offers high scalability, performance, and flexibility, making it suitable for handling large volumes of unstructured or semi-structured data. MongoDB is used as the primary database for storing and managing the application's data.
- *Mongoose*: Mongoose is an Object Data Modeling (ODM) library for MongoDB and Node.js. It provides a straightforward schema-based solution for modeling application data and defining relationships between different types of data. Mongoose simplifies interactions with MongoDB, making it easier to perform CRUD (Create, Read, Update, Delete) operations and enforce data validation and business logic.

6. **Development & Documentation Tools**

- *Visual Studio Code*: Visual Studio Code is a lightweight and powerful source code editor that provides features such as syntax highlighting, code completion, debugging, and version control integration. It supports a wide range of programming languages and frameworks, making it a popular choice for developers working on web development projects.
- *Microsoft Word*: Microsoft Word is a word-processing software that is commonly used for creating and editing documents, including project documentation, reports, and specifications. It provides a rich set of formatting options, collaboration features, and templates, making it suitable for generating and organizing project-related documents and materials.

5.1.2 Implementation Details of Modules

Modules are the partitions of any project done to ease the task of development. Different modules are designed so that debugging and other development phase gets the easiest implementation. The different pages of the system are:

- *Landing Page*: This page provides an overview of the platform's features and benefits, enticing users to explore further.
- *Signup/Login Page*: This page allows users to create accounts or log in to existing ones, ensuring secure access to the platform's functionalities.
- *OTP Verification Page*: This page is called during the signup process. After users enter their email address or phone number, the system generates a one-time password (OTP) and sends it via email or SMS using Node Mailer. Users are then redirected to the OTP verification page, where they enter the received OTP to verify their identity.
- *Dashboard*: This page offers a personalized overview of relevant information and actions for both professionals and hirers, enhancing user experience and navigation.
- *Message Page*: This page enables secure communication between professionals and hirers, facilitating collaboration and project management.
- *Professional Page*: This page showcases professionals' profiles, including their skills, experience, and ratings, helping hirers make informed hiring decisions.
- *Hirer Page*: This page includes detail of any company or individuals account.

5.2 Testing

5.2.1 Test Cases for Unit Testing

Unit testing is a type of software testing where individual units or components of software are tested. The purpose is to validate that each unit of the software code performs as expected. The following test scenarios were used to test the system after the build is completed.

Test Case for User Login

Test Id	Test Case	Input	Expected Output	Observed Output
1	Successful User Login	Email:yamlalgaire56@gmail.com Password:12345678	Login Successful	User successfully logged In and directed to dashboard page
2	User Login Fail	Email:yamlalgaire56@gmail.com Password:123456789	Login failed	User unable to login to the system

Test Case for Email Verification Link

Test Id	Test Case	Input	Expected Output	Observed Output
1	Successful User email verification link	Clicked: Verify Link	Verification Successful and directed to the login page	User successfully logged In and directed to dashboard

Test Case for Algorithm Module

Test Id	Test Case Description	Expected Output	Observed Output	Status
1	Employee/Recruiter search by filtering different skills, & other components	Desired result of employee	Display of professional according to search from employee	Pass

Test Case for Chat Module

Test Id	Test Case Description	Expected Output	Observed Output	Status
1	Enter message into the field and click on the send button	Receiver should be able to receive the message instantly	Receiver received the message on the real time	Pass

5.2.2 Test Cases for System Testing

System testing is defined as the testing of a complete and fully integrated software product. It encompasses testing conducted on an entire, integrated system to evaluate its compliance with specified requirements. System testing falls within the scope of black box testing, meaning it should require no knowledge of the inner design of the code or logic. Usability testing is one of the types of system testing performed on the system.

Test Case for System Usability Testing

Test Id	**Test Case Description**	**Expected Output**	**Observed Output**	**Status**
1	Click on various links on the system.	Link should take users to another web page according to the on-page URL.	Users were able to get the expected web pages after clicking the links.	Pass

Chapter 6: Conclusion and Future Recommendation

6.1 Conclusion

The system, developed using React, Express, Socket.io, and MongoDB, fully achieves its intended objectives. Operating at a high level of efficiency, it represents a comprehensive solution to the challenges encountered in the process of hiring professionals for contract work and on-call tasks. Through the development of this web application, we have successfully addressed the need for a centralized platform where companies, hirers, and individual employers can easily connect with skilled professionals.

"**The Professional Hire**" streamlines the hiring process, facilitating efficient communication and collaboration between hirers and professionals. The platform's features, including profile creation, search filters, and communication tools, empower users to find and hire professionals tailored to their specific project requirements. With its robust functionality and intuitive design, the platform stands poised to revolutionize the hiring landscape, enhancing productivity and fostering meaningful professional engagements.

6.2 Future Recommendations

While "The Professional Hire" has achieved significant milestones in improving the hiring process, there are several areas for future enhancement and expansion:

i. **Integration with External Platforms:** Exploring opportunities to integrate "The Professional Hire" with external job boards, and professional networking sites to expand the reach and visibility of job listings and profiles.

ii. **Mobile Application Development:** Developing a mobile application version of "The Professional Hire" to cater to users who prefer accessing the platform on their smart phones or tablets, enhancing accessibility and convenience.

iii. **Feedback System:** Implementing a feedback system where employers and job seekers can provide reviews based on their experiences, fostering transparency and accountability within the platform.

iv. **Expanded Services:** Introducing additional services such as online video & audio

call, skill assessments, training resources, and project management tools to further support professional development and collaboration within the platform.

By focusing on these future recommendations, "The Professional Hire" can continue to evolve and meet the evolving needs of the professional hiring landscape, cementing its position as a leading platform for connecting companies and individuals with skilled professionals.

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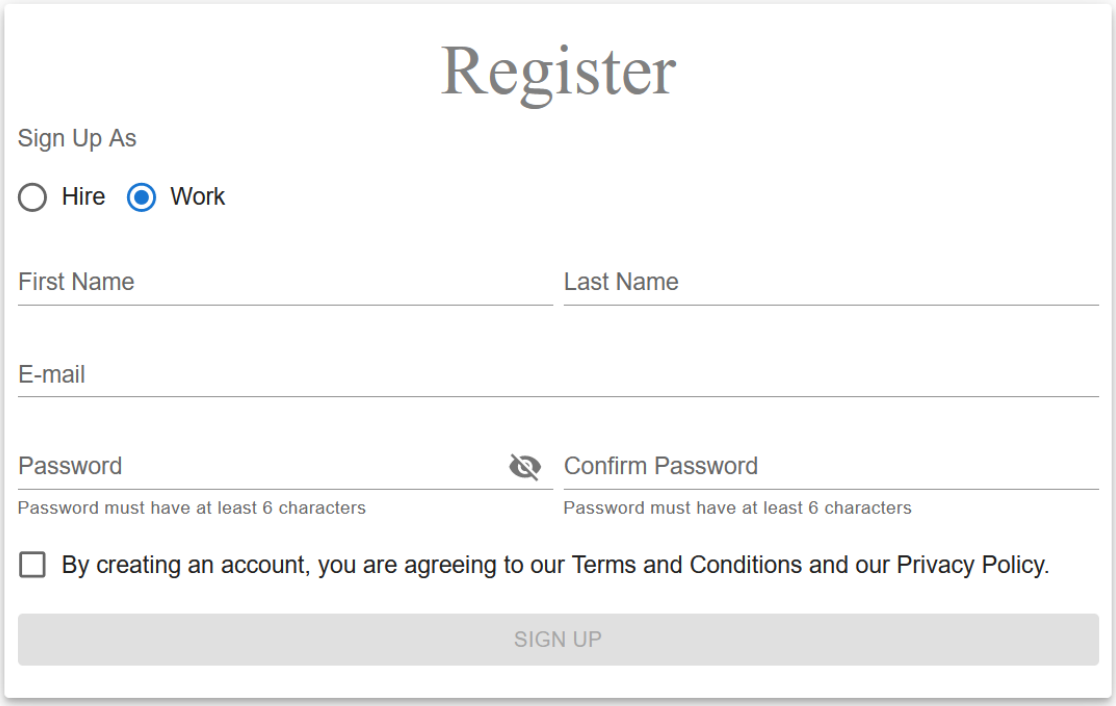
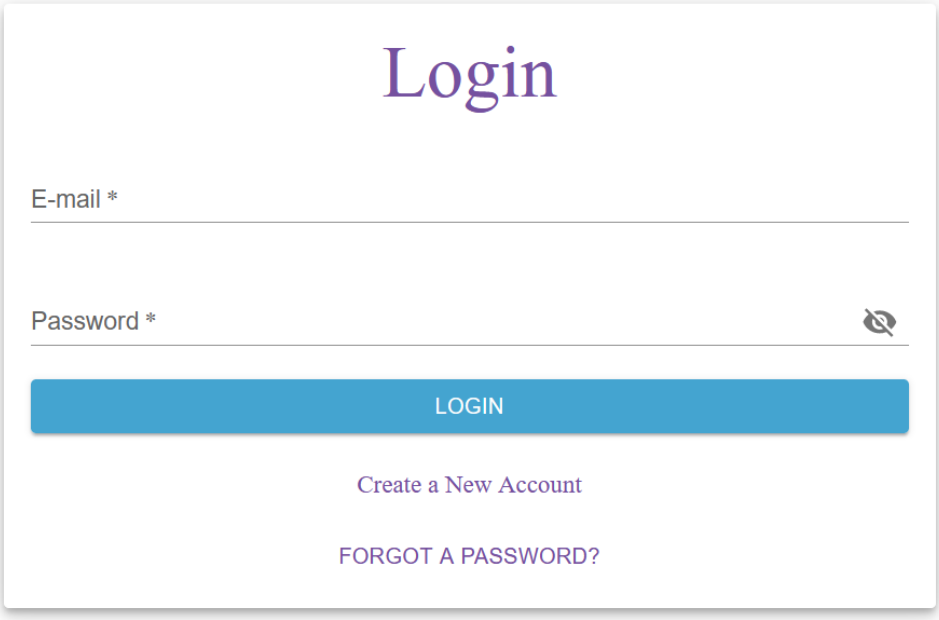
6. PeoplePerHour (https://www.peopleperhour.com/)

Appendices

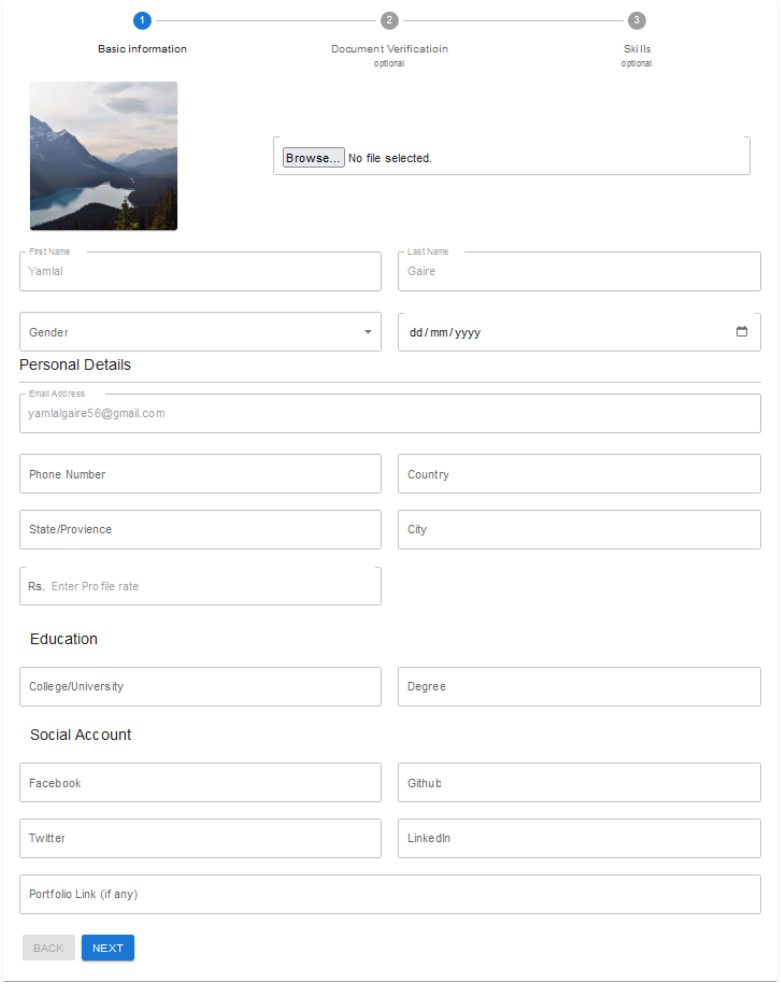
Register Form



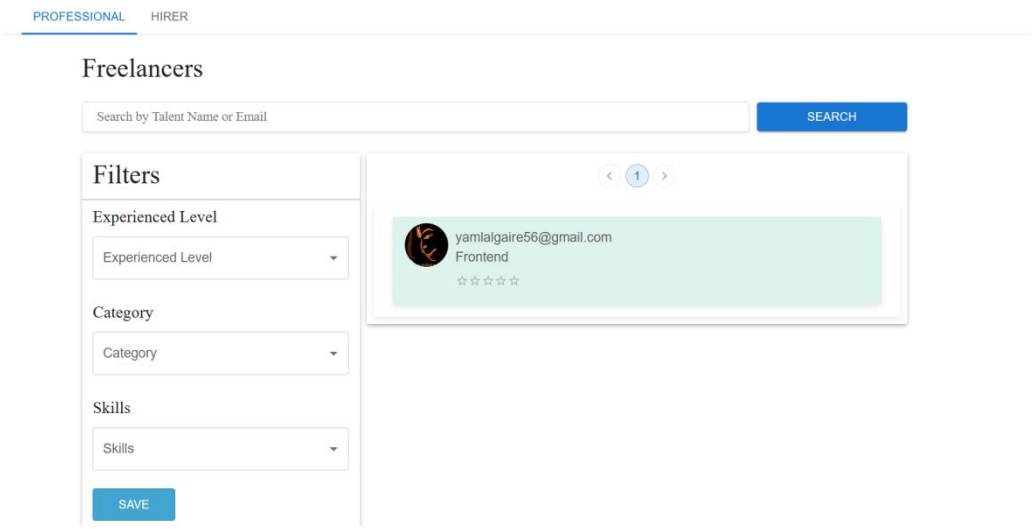
Login Form



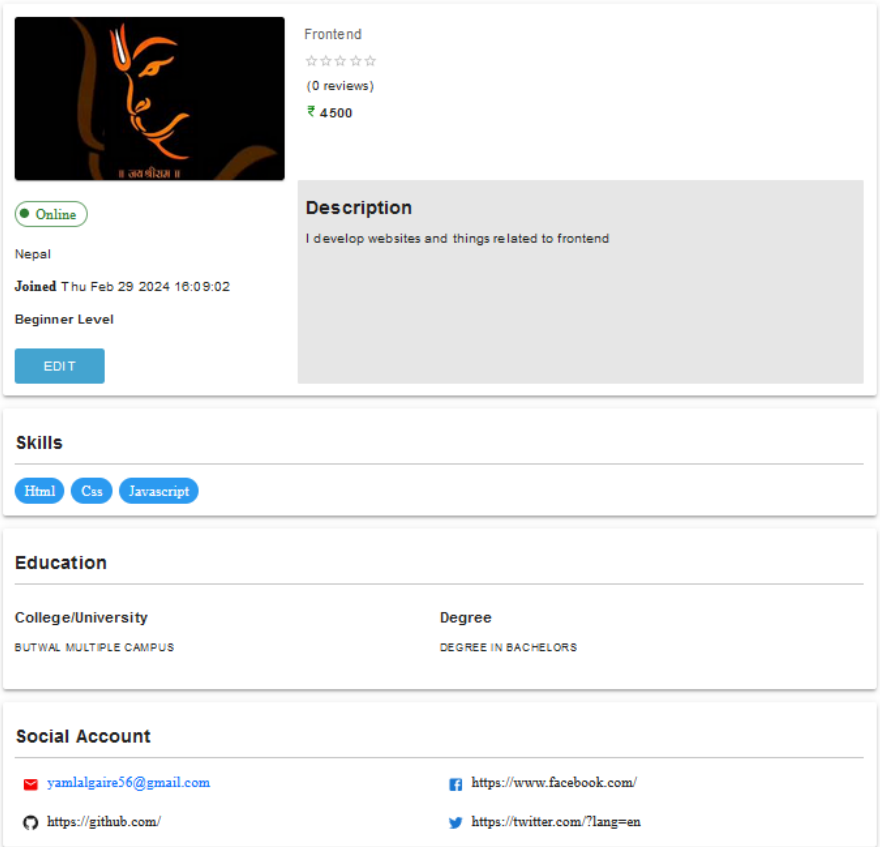
Profile Creation Form

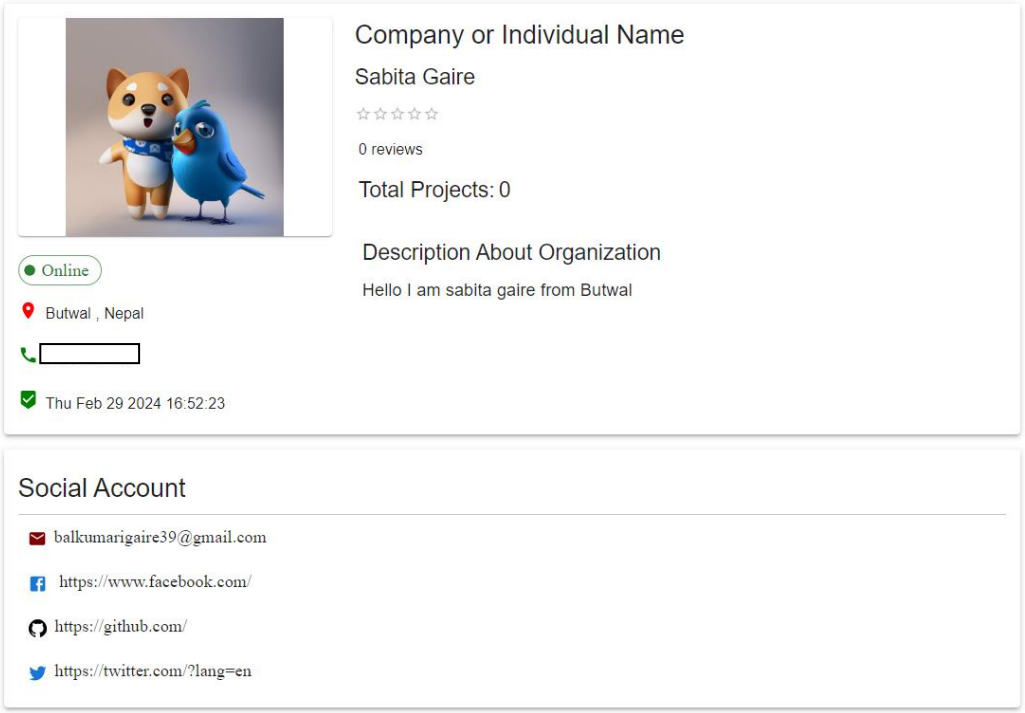


Search Filter Form

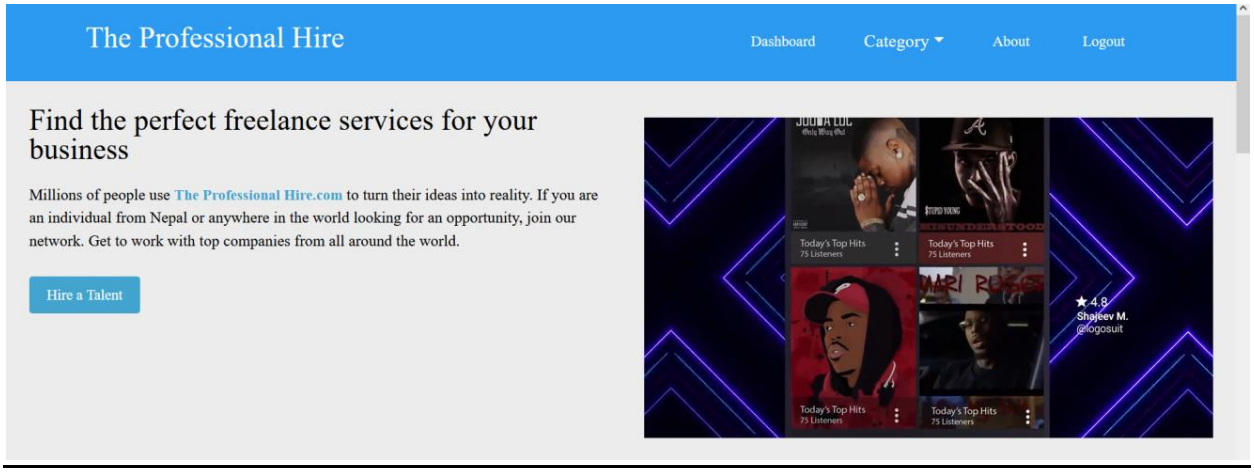


Profile Report





Homepage Interface

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Mobile Development
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3D Modelling
Excel
MS Word
Research Writing
Software Development
Data Processing
Article Writing
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Java
Python
C programming
React
Flutter
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