



# HYRUP

Thesis submitted as a partial fulfillment of the requirements for the degree of  
Bachelor in Business Information Systems

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## Abstract

The massive exertion in moment's labor request makes it a truly significant task to link employers with the right pool while at the same time diving the issues they are facing. Our design" **HYRUP**" is an online job tool that can help in this communication by means of modern installations on one hand, or by satisfying the conditions of both job contenders and hiring directors.

The system characterizes the two main sections, by having one section concentrating on inferior and undergraduate scholars for their externships and career guidance, and one for the rest of the job contenders, ranging from mid-position to advanced positions.

The platform is enabled with the following features chops assessment, mentorship programs, renew erecting, and job simulation paths so that the workers are involved in making themselves exploitable.

On the other hand, the platform also serves the employers and factory in favor of recovery, doing that through the job announcement of an advanced position, the shadowing of the applicants, the collecting of the on- the- job information, and by the analysis of the collected data being the base of the decision- timber. **HYRUP** is endowed with scalability, security, and inclusiveness in the sense that it can suffer growth without terms, the data is defended from unauthorized access and discrimination is n't part of it in order to have a truly smooth and enjoyable experience through compartmented and flexible modular architecture. Given these features analogous as data sources in one region, being user-centric, and equipping the community with continuous knowledge, this design does n't just keep pace with the ceaseless changes that are passing in the world of labor request. likewise, it's in concert with various sociopolitical pretensions, for case, creating farther jobs which, in turn, leads to professional growth in that original area.

**HYRUP** is n't only a mecca for the integration of new gift and new job openings but also it redefines the morals for online job platforms.

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## **Abbreviations**

- 1- MVP - Minimum Viable Product
- 2- UI – User Interface
- 3- UX – User Experience
- 4- API – Application Programming Interface
- 5- ERD – Entity-Relationship Diagram
- 6- DFD – Data Flow Diagram
- 7- ATS – Applicant Tracking System
- 8-RBAC – Role-Bases Access Control
- 9-NFR – Non-Functional Requirements
- 10- WBS – Work Breakdown Structure
- 11- SRS – Software Requirements Specification
- 12- DBMS – Database Management System
- 13- KPI – Key Performance Indicator
- 14- DEI – Diversity , Equity , and Inclusion

# **Chapter 1**

## **Project Proposal**

## Introduction

Finding and hiring the proper personnel or landing a decent work opportunity is becoming more and more difficult in today's digital age. Traditional job boards provide a simple listing of positions, but they typically don't have the resources needed to properly train candidates and expedite the hiring process. Among the difficulties faced by job seekers are difficulties in preparing for interviews, a lack of knowledge about the skills needed for particular positions, and a lack of skills to demonstrate one's ability. Employers, on the other hand, are looking for competent individuals who are technically proficient and prepared for the demands of the job.

This project creates the technology to connect potential job seekers with the jobs available and provides them with the best tools needed to prepare for the job hunt. This one's a total job-hunting stop, filled with skill quizzes, resume builders, interview tips to make the whole thing work more geez, land a gig in much smoother fashion. It allows applicants to stand out by matching their skills with what employers really need – hence closing that talent versus opportunity gap.

### 1.1 Project Overview

**Project Title:**

Web-based Online Job Platform for Job  
Seekers & Employers (**HYRUP**)

**Objective:**

The objective of the project is to develop a highly efficient online labor exchange system for job seekers. The platform will help in the matching of workers with employers and will also offer the platform users such services as skills/competence assessment, resume writing, and interview preparation for job search that all help to raise the employability of the candidates.

**Project Scope:**

Web Development, Database Management, and Business Process Optimization'

## 1.2 Product Definition

### **Description of the Platform:**

The job portal is designed to address the needs of candidates and companies that go beyond the basic features of a traditional job board. Using this website, one can not only explore available jobs but also add one and at the same time, obtain complementary skills test tools and résumé templates, as well as materials for the interview preparation process.

### **Key Features:**

**Job Posting & Search:** The platform is a one-stop destination for job seekers that facilitates their task of finding and comparing job openings, and at the same time, it is possible for the employers to filter job positions per their requirement to publish the ad.

### **Key Areas of Attention:**

The primary function of web development is to create flexible websites that not only are user-friendly but give a great user experience.

**Database maintenance:** One of the tasks in database management is to provide secure and easy-to-retrieve storage solutions for user profiles as well as the job ads and evaluation data.

### **Improving Business Process:**

We can improve business procedures by optimizing the performance of our website, increasing user satisfaction, and at the same time, exerting fewer resources in operation.

## 1.3 Project Scope

### Who Are the Primary Targets?

Professionals at all situations looking for career development and job openings.

This is one of the numerous cases that are represented by job campaigners who are in every experience position, seeking employment and thingamabob for particular growth and skill development.

Businesses, those hunting for top gift and the bones who are seeking for fast and easy hiring styles.

### Main Features

operation of stoner Accounts Creating safe accounts that would be covered and controlled to suit druggies( company representatives and job campaigners) needs only.

### Job Matching Algorithm

The technology that helps in chancing work for aspirants i.e. in pairing with companies in a compatible manner

### Chops Assessment Integration

Application Programming to increase and corroborate implicit workers' chops.

Writing the capsule and preparing for an interview using templates, advice, educational material, links to career development coffers are some of the coffers the pollee can use to learn about the job and write the capsule.

Employers who are in need of competent and well- mannered individualities and effective recruiting procedures.

### Database Architecture

The choice of MySQL or MongoDB should be in favor for storing and organizing the assessment data, job advertisements, and stoner biographies successfully. also, the scaling of the database should be at high position as well.

## 1.4 Business Goals

### **Short-term Goals:**

- Develop a Minimum Viable Product (MVP) with essential features: job search and job posting.
- Collect user feedback for an improved and refined feature set.

### **Goals for the Long Term:**

- Make the platform a pioneering job board allowing not only the search for work opportunities but also the receiving of additional services, such as personalized preparation materials, and of skill development tools.
- Develop a strategy through the national job targets that is in complete harmony with the platform by addressing the skill shortage, and connecting with Vision 2030 to decrease unemployment.

### **Value Offer:**

- The platform is going to be unique from the other job websites and it will be able to bring the users who will be offered a high variety of very unique from the traditional talent assessment and career preparation resources to extremely participate in the job readiness task.

## 1.5 Anticipated Challenges

### **Market Competition:**

To come on top of a jam-packed job board market with the well-established players means product features not only unique but also in line with the demand of the users have to be created.

### **Data Privacy & Security:**

Data security regulations need to be respected, and some applicable laws following data privacy regulations should be well executed to build up trust with the users.

### **Database Scalability:**

It calls for a flexible and elastic database to be built which is able to handle an immense number of transactions and some pile of data.

## 1.6 Process Models

1. **User Registration and Login:** Job seekers are able to apply for an account or get in through their account to use the personalized functions such as the creation of a profile and the tracking of job applications.
2. **Profile Creation and CV Upload:** Users can go on with the detailed creation of profiles, add their CV, and share their educational and professional hijack after they log in.
3. **Job Search & Filtering:** By picking a category, a location, or the necessary skill levels, one can access the list of jobs and the potential candidates. This promotes targeted searching as well as lightning-fast browsing.
4. **Job Application:** Subscribers can take advantage of the system by not only submitting applications but also putting their skills in front of recruiters. Their CVs and applications are sent to recruiters for evaluation.
5. **Job Management & Admin Panel:** Managers hold the privilege to regulate posted jobs, estimate applications, and whether accept or not the listings. Moreover, by employing a secure offline platform, they could easily perform database control, view user activities and so on.
6. **Notifications and Feedback:** Users will get notifications regarding job positions, interviews, or successful applications. In addition, they can render the job application the best they can

## 1.7 Development Methodology

The Agile method of software development, that is characterized by incremental development, teamwork, and flexibility, was the mode of operation of the entire initiative. Agile itself means continuous feedback and modifications at every stage of the development process.

- As a noun, a sprint uses sprints in software faster disposable stages and thus getting a product ready is less time-consuming as a result. (0,1, Do not remove the HTML tags and the checkboxes on the left!)
- Daily or weekly big meetings were held to make sure work was going on well and to remove any hindrance that may arise.
- Sometimes, user feedback, e.g., for the calendar, booking, and the user interface, was extensively utilized to refine the service.

## 1.8 Technology Stack

### • Frontend:

HTML5, CSS3, JavaScript

The above-mentioned technologies were the ones that were helpful in the building of the front end of the project. The interface was implemented in responsive design so that it is compatible with both PCs and mobiles and, in addition, user friendly.

### • Backend:

Python (Flask Framework)

Flask was a cost-effective, fast, and easy-to-use way that was used to release web services in the project. RESTful APIs can be developed through this framework, which is also lightweight and supports rapid development, thereby, it is highly suitable for this project.

### • Database:

MongoDB Atlas (Cloud-based)

The decision to use MongoDB was based on its NoSQL property, which allows the system to deal with data that is both dynamic



## 1.9 Project Planning

### 1. WBS:

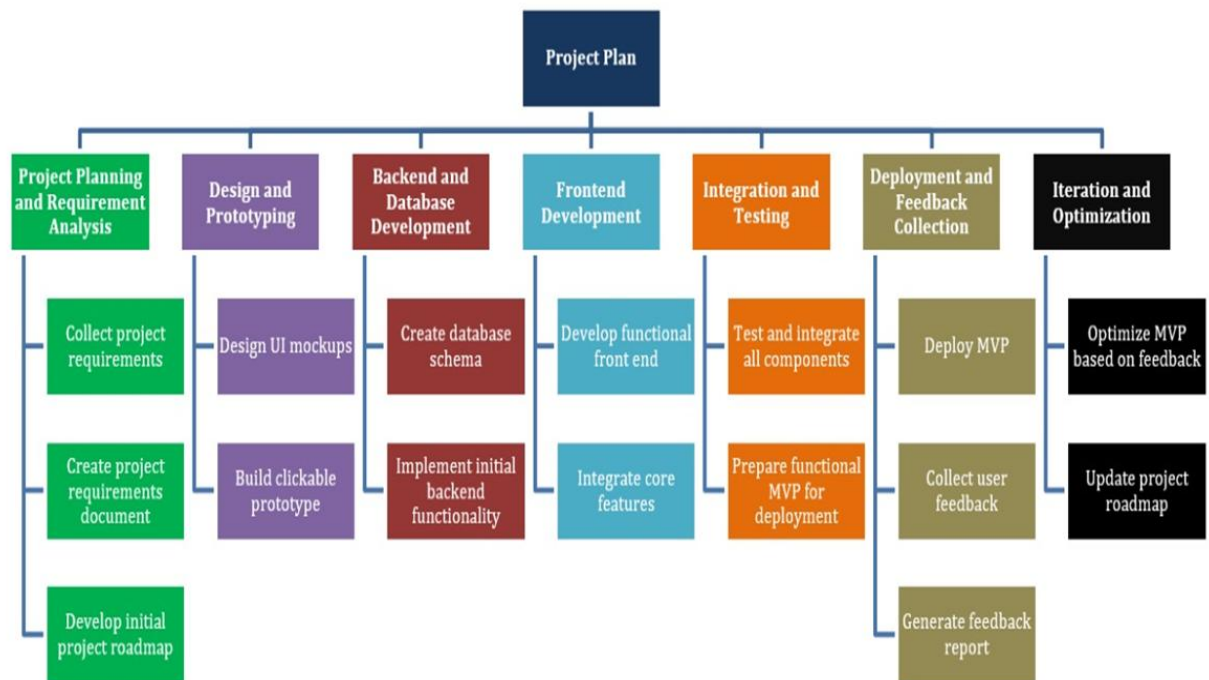


Figure 1 Work breakdown structure (WBS)

## 2. Gantt Chart:

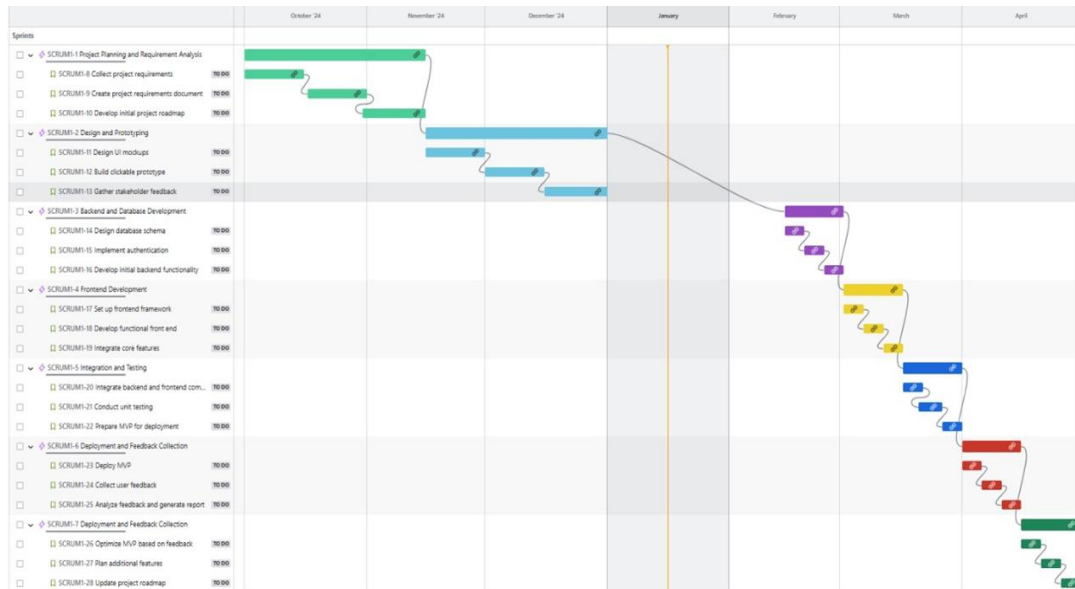


Figure 2: Gantt Chart

# **Chapter 2**

## **Literature Review**

## 2.1 Literature review

**What are the main difficulties in a job seekers' path to find a satisfactory job, and to what extent can a digital platform tackle these issues?**

An ideal and perfectly competitive labor market would allow full and free communication between job seekers and employers. However, the reality is quite different, as a lot of hitches and obstacles such as the existence of search frictions in the labour market, on both sides of the market, are the employers and employees who feel that they should spend time and money. It is reported in his findings that data on unemployed individuals and vacant jobs, which is a very important public good, is mostly lacking. The data intermediaries have it available for workers and employers and it can be used for the matching process.

This was also confirmed by Autor (2001), who argued that market data is not only a very expensive commodity but also is distributed unevenly. The difference between available jobs and job seekers is so prevalent that virtually no match can be found. The imbalances in the employer-workers relationship are generally the results of the following actions: the employer, not having the resources to evaluate objectively all applicants, and the workers, not knowing about the available opportunities. Still, through the Internet, most of the issues can be eliminated.

Many researches have given evidence that the internet can diffuse the information from the labor market in a far broader and speedier way. Kuhn (2014) gave the example showing that the internet had reduced unemployment by about 25% for the employment that did not involve the internet in 2011. This shows the progress the internet has had on the labor market. By 2011, 25% of the unemployed internet job seekers were recruited at a higher rate (Kuhn Mansour, 2011; Kuhn & Skuterud, 2004), which was confirmed by a separate study conducted by Nakamura et al. (2007) and Stevenson (2209).

Kuhn (2014) also mentioned that the internet helps people save on searching for jobs and offers current information about the labor market to those about to make decisions. He pointed out that today, employers can use social networks to review candidates' skills, excitement for the job and compatibility through sites such as Facebook and LinkedIn. Unlike previous online instruments, social media gives us access to useful data that helps reduce difficulty in the labor market (Autor, 2001).

Using social networks such as Facebook, Instagram and LinkedIn, many are now finding career prospects and filling jobs. Individuals searching for jobs have a space to reveal how well they can do the job and employers have time to review applicants. Out of 70 Malaysian employers and 120 graduating students, 89.2% of students knew about monitoring SNS profiles and 61.5% of employers admitted to doing the same (Kaur et al., 2021). Recruiters often want to look into what candidates know, if they have any drug problems and how they see their past jobs. Although a number of people have legal problems with it, companies say that checking SNS profiles saves them time and money, resulting in more careful management of online profiles by applicants.

In short, the difficulties in the labor market—e.g., high job hunting expenses, lack of information and mismatching supply and demand—make it hard to hire suitable candidates. Conventional recruitment processes can take a lot of time, cost a great deal of money and are inefficient. At the same time, online job search has helped make things easier, especially for people who can't afford expensive services. They help boost the matching process by giving a lot of important information about candidates. [\[1\]](#)

## **What features are most effective in connecting job seekers with employers on online platforms?**

Online employment sites have grown essential in bringing job seekers and possible employers together in today's digital environment. The features offered by these platforms significantly influence their efficiency and efficacy. A well-designed job site should include a variety of features to make interactions easier, improve the user experience, and improve the likelihood that employers and job seekers will find the perfect match. In bridging the gap between employers and job candidates, this study investigates the most important elements that increase the efficacy of job portals.

A job site needs a variety of tools that meet the demands of both businesses and job seekers in order to make the job search process better. Centralized access for all parties involved is one of the most important prerequisites for a successful job portal. This guarantees that all users, including employers, job searchers, and administrators, may readily access the resources and data they need. Furthermore, artificial intelligence (AI) is essential to job search engines since it provides job seekers with customized recommendations and matches candidates to job postings according to their preferences.

The admin dashboard, which acts as the central hub for controlling all of the portal's functions, is a crucial component of any employment portal. With this dashboard, managers may control alerts, keep track of user interactions, and keep an eye on business operations. In addition, employers may more easily sort through a large number of applications and locate the most competent candidates thanks to sophisticated recruiting techniques like resume parsing, which automatically pulls out valuable data from resumes.

candidates fast. By transforming unstructured resume information into a structured style, the resume parser aids companies in identifying candidates with the necessary abilities and experience, which ultimately expedites the hiring procedure.

In addition, there are several resources available to job searchers to help them locate suitable employment openings. For instance, a sophisticated search bar enables job candidates to narrow down job listings by a variety of criteria, including job category, location, and compensation range. Furthermore, candidates may save searches and create job alerts to be notified when fresh job postings that meet their criteria are published. Candidates are kept active on the job portal by this feature, which also makes sure they don't overlook any potential possibilities.

Employers also have access to sophisticated capabilities that make the recruiting process easier. Features like resume search, candidate matching, and automated assessment tools, combined with the ability to post job vacancies fast and effectively, ensure that companies may identify and assess the best individuals. Companies may narrow down their talent search with the help of the intelligent talent search, which enables employers to filter prospects according to experience, skills, geography, and other factors. their pool of candidates and make wiser hiring choices. Furthermore, features like resume alerts and social media job postings enable businesses to reach a larger pool of potential applicants and attract more talented individuals.

The application monitoring system (ATS) is another essential component that makes recruiting go smoothly. Employers can monitor candidates during the hiring process with this system, from the time they apply until the interview and last decision are made. Additionally, by offering a single picture of all job applications and simplifying the selection procedure, it allows employers to assess candidates' potential more accurately. Instant messaging programs improve communication even more. creating a fast and effective means for recruiters to engage with candidates between employers and candidates.

Furthermore, employment websites should have a simple registration procedure that makes it easy for recruiters and candidates to establish profiles. Social media integrations, like those with LinkedIn and Facebook, enable candidates and employers to quickly complete their profiles and increase visibility.

Candidate registration, rapid job applications, and user interfaces that are simple to navigate are all examples of features. make sure that users can use the platform with ease, which will boost interaction overall.

In conclusion, the effectiveness of a job portal in connecting job seekers with employers relies heavily on the integration of key features that enhance user experience and streamline the recruitment process. By offering a range of advanced tools such as AI-driven job matching, resume parsing, automated candidate assessment, and user-friendly interfaces, job platforms can create an efficient, seamless experience for all users. Features like smart search options, job alerts, and streamlined application processes further ensure that both job seekers and employers can find the best possible matches, making the hiring process more effective and efficient for everyone involved... [\[2\]](#)

## **How do employers benefit from online job platforms, and what tools do they need to identify the right candidates?**

Recruiting in 2024? It's less "suit and tie in a stuffy office" and more "swipe right on your next software engineer." Seriously, it's a whole digital circus out there. You've got job boards popping up like mushrooms after rain, algorithms playing matchmaker, and a never-ending flood of resumes—some from people who maybe, probably, definitely lied about knowing Python.

Honestly, tech has kicked the doors wide open. You want a candidate on the other side of the planet? Easy. Want to blast your job posting to thousands of people before your coffee goes cold? Done. But it's not all smooth sailing. There's so much noise, and the risk of turning your hiring process into a soulless robot conveyor belt is real. Where's the spark, the gut feeling, the "aha, this person gets it" moment?

Here's the twist: the companies winning the talent game? They're not just worshipping at the altar of automation. Nah, they're blending the shiny new toys (AI, ATS, all those buzzwords) with solid, classic human judgment—kind of like mixing vintage vinyl with Spotify playlists. That's where you actually find the gems without losing your mind.

1. So, why's everyone obsessed with tech in recruiting? Well, yeah, it saves money and time, but it's also about flexing. Companies want to look sharp, professional, and just a little bit cooler than their competition. The right branding and employer vibes can make even the most jaded developer stop scrolling and click "apply." And the bigger your (digital) fishing net, the weirder and better your catches get.

2. The hustle to find talent is a whole art form now. It's not just "post a job, hope for the best." We're talking AI bots scanning resumes, recruiters creeping LinkedIn profiles at 2am, even the occasional handshake at networking mixers—because, hey, some traditions die hard. Still, let's not let the robots run the whole show. When you forget to add that personal touch, you risk missing out on real genius—or worse, hiring a team of clones. So yeah, keep the tech, but don't forget the human. That's where the magic (and the best hires) happen.[\[3\]](#)

ATS—those applicant tracking systems—basically keep the chaos under control. They handle all the boring bits: sorting resumes, kicking out the obvious no's, and even remembering who ghosted you last time. It's like having a digital bouncer for your hiring party.



But, real talk—employee referrals? Still gold. People trust their friends not to bring in weirdos, so you get folks who already vibe with your company. Plus, you get to bug your employees to do half your recruiting for you. Not bad, right? Companies also hit up job fairs, webinars, and all those networking events, just to keep a steady stream of possible hires in the pipeline. Gotta keep those options open.

3. Now, let's not pretend it's all sunshine. Tech makes things slicker, sure, but it's also a double-edged sword. You toss up a job online and—boom—suddenly you're knee-deep in spammy resumes from people who think “Java” is just coffee. And those fancy automated systems? They're cool, but sometimes you miss out on that gut feeling you get from actually talking to someone in person. Oh, and don't get me started on online tests—cheaters gonna cheat, and it's not like you can peek over their shoulder from your kitchen table. So yeah, tech helps, but it brings its own mess.. [\[4\]](#) technology, as much as everyone loves to hype it up, can really mess things up when you're not paying attention. Like, those supposedly neutral algorithms? Sometimes they've got hidden biases baked in, so diverse candidates might get the boot before anyone even notices. Or maybe people don't even get a fair shot if they don't have the same tech access—think about all the folks who don't have high-speed internet or fancy gadgets. So, if companies actually care about building a team with different backgrounds and perspectives, they can't just throw tech at the problem and call it a day. They seriously need to weave in real inclusive practices—actually look at who's getting left out, and do something about it. Tech's a tool, not a magic fix.

4. Now, jumping to employer branding and value proposition—this stuff's not just for big corporates with flashy websites. If a company wants to pull in the right people, they gotta spell out who they are and what they stand for, loud and clear. People aren't just hunting for a paycheck; they're looking for a place that gets them, somewhere their work actually means something. So yeah, showing off your values, your work culture, your benefits—it's not optional anymore.

5. It's what separates you from the sea of lookalike companies. The best candidates, the ones you actually want, they're scoping all that out. If you're not being upfront about what sets you apart, you're basically invisible. [\[5\]](#) time to stretch things out a bit—let's dig deeper. So, you've got these younger candidates, right? They're not just clocking in for a paycheck; they want flexibility, real chances to level up in their careers, and, honestly, a little transparency about what's going on behind the scenes (nobody likes

cryptic job descriptions). Meanwhile, the seasoned pros—think late-career folks who’ve seen a layoff or two—they’re usually focused on locking down stability and making sure their health insurance won’t ghost them when they need it. It’s a whole generational thing, and if employers keep pretending everyone wants the same stuff, they’re just gonna keep missing out on the best people. Seriously, crafting job postings that actually speak to each group? It’s not rocket science, it’s just smart.

6. Now, hiring itself—man, it’s changed. Forget the stacks of paper resumes and endless phone screenings. These days, companies are rolling out AI and automation like it’s the only way forward. We’re talking bots scanning resumes, picking up on key words faster than any human ever could, and even handling those awkward first-round interviews (yes, the robot might not laugh at your jokes, sorry). This isn’t just about moving faster, though. There’s a real push to make things fairer—standardizing assessments so it’s not just about who went to the fanciest school or had the shiniest resume layout. And, get this, some companies are even using voice bots to prescreen people, or throwing candidates into VR scenarios to see how they actually handle the job. Growing companies especially are pouring cash into custom digital tools that can actually grow with them. It’s all about speed, efficiency, and, let’s face it, outmaneuvering their rivals when it comes to snapping up the best talent. The days of manual HR grunt work? [\[6\]](#) So, planning and actually making sure all this shiny new tech plays nicely together? That’s not just a box to tick. If companies don’t get their act together up front, things get messy real quick. And for the big dogs—the Fortune 500 types—oh man, it’s a whole circus. Integrating new systems means endless training, old-school managers grumbling about “the good old days,” and, let’s be real, someone always forgets their password. It’s basically chaos unless you put in serious effort.

Now, about those online platforms and HR tech—absolute lifesavers if you use ‘em right. You get to blast your job posts out to the universe, fill positions before your coffee gets cold, and really flex your company’s personality. It’s not just about hiring faster; it’s about showing off what makes you special so the best people actually want in. But, and it’s a big but, you can’t just go full robot mode. Rely too much on algorithms and screens? Next thing you know, your interviews feel like talking to a brick wall and you accidentally filter out great people just because the AI didn’t like their resume font. Not cool.

So, what’s the real trick here? It’s all about balance. You want the speed and reach of tech, but you gotta anchor it with some good old-fashioned human instincts. Build a brand that actually means something, get creative with your

EVP (that's Employee Value Proposition, in case you missed the memo), and don't forget to make everyone feel welcome—not just the folks who tick the “standard” boxes. And with tech evolving faster than memes go out of style, companies gotta stay on their toes. Keep learning, keep investing, but never let the gadgets take over the whole show. In the end, all these tools should be sidekicks, not the main character. That's how you win at hiring these days. [\[7\]](#)

## **What are the existing gaps or limitations in current job platforms, and how can they be addressed?**

Despite the quick growth of job platforms, there are still a number of obstacles to successful recruiting and talent acquisition. These gaps include difficulties in attracting qualified individuals, utilizing data-driven recruitment, and developing a robust employer brand.

Additionally, the employment market is being impacted by wider socioeconomic trends in 2024, such as economic fluctuations, technological progress, diversity and inclusion (DEI) activities, sustainability issues, shifting workforce demographics, talent shortages, and changing workplace dynamics. Overcoming these obstacles necessitates strategic, flexible approaches that address the shifting demands of employers and job candidates alike.

Getting the right people to apply is one of the main challenges in recruiting. Because the pool of candidates available to recruiters often lacks adequately qualified individuals, the quality of recruiting suffers. Job postings must be specific about job requirements in order to raise the quality of candidates, and screening techniques, such as knockout questions, should be utilized to weed out unqualified candidates during the early stages of the hiring process.

Data-driven recruiting also has its difficulties since many businesses have trouble gathering and analyzing data. Traditional methods like spreadsheets are susceptible to human mistakes, but tracking recruitment metrics may help improve hiring procedures. Recruitment marketing software or applicant tracking systems (ATS) are examples of sophisticated technologies that may simplify data management and allow recruiters to concentrate on metrics that support business objectives.

A great employer brand is essential for bringing in the best people. A collective effort is necessary for companies that invest in employer branding to report better hires., [\[8\]](#) from responding to online reviews to engaging employees in sharing their positive experiences at work. Continuous engagement with past candidates and maintaining a talent pipeline further enhance recruitment efficiency by ensuring a pre-screened pool of candidates.

Additionally, job boards struggle to meet more general hiring needs that are brought about by changes in the economy, technology, and society. Recruitment demand and salary expectations are influenced by economic conditions such as inflation and unemployment, while technological breakthroughs in data analytics, cybersecurity, and AI have created a demand for specific digital skills. Additionally, firms struggle to recruit individuals with skills in environmental science, compliance, and inclusion practices as they place more emphasis on DEI and sustainability. The challenges are made even worse by shifts in the demographics of the workforce, since businesses have to adjust to the changing demands of an aging workforce and new members of Gen Z. Lastly, changes in the workplace brought about by flexible work expectations and employee engagement necessitate a rethinking of management and leadership abilities.

In order to overcome these constraints, hiring teams and job platforms must employ a multifaceted strategy that integrates data-driven procedures, a robust employer brand, and transparent communication of job expectations. Recruiting results may be improved by data management tools, strategic talent pipelines, and quick reaction to shifts in the economy and technology. As 2024 moves forward, businesses that successfully integrate these solutions into their hiring practices will benefit.

by aligning their hiring practices with an ever-evolving workforce landscape, practices will be in a better position to recruit, engage, and retain the best personnel.. [\[9\]](#)

## **How can online job platforms support continuous learning and upskilling for users?**

Online job marketplaces—think Upwork, Fiverr, LinkedIn Learning—are honestly becoming the Swiss Army knife for anyone trying to keep their career alive and kicking. Not just for job hunting anymore, right? These days, they're handing out bite-sized courses, skill assessments, and even AI-driven recommendations telling you, "Hey, you're lacking in data analytics, maybe give this a go." It's kind of wild how far we've come from those clunky job boards of the early 2000s. The whole point now is to keep people in the loop, skills-wise, since tech and business are sprinting ahead at breakneck speed. Miss a step and you're practically a dinosaur.

When you think about platform-led upskilling—the idea that these sites are taking charge of teaching people new tricks—it's not as simple as it sounds. If we really want to judge how well this works, we can't just peek at one country or industry. What's happening in the US or India might be totally

different from what's working in Brazil or Nigeria. Some platforms might focus on IT skills, others on soft skills, and the difference in training materials and teaching styles? Massive. It'd be smart to compare these approaches, see who's doing what, and figure out why some platforms seem to produce real results while others just churn out certificates nobody cares about.

Now, about the people and small businesses actually using these platforms—it's kind of a black box. There isn't a ton of solid data that says, "Yep, these upskilling courses turned this guy's side hustle into a full-blown business," or, "This training landed her a better job." ROI, or return on investment, is a tricky beast here. Some platforms toss a lot of cash into talent development, but are they actually getting their money's worth? Or is it just a PR move? If we had more research, more case studies, we could pin down which tactics actually work—like, do short video lessons stick better than long-winded e-books? Which ones actually land people better gigs? It's all still pretty murky.

Then there's the million-dollar question: are these new skills portable? Like, say you become a whiz at project management on one platform—can you use that skill at your next job, maybe in a totally different field? Or do these platforms just train you for their own little ecosystem, leaving you stranded if you ever want to switch things up? The best upskilling programs would hand you tools you can use anywhere, not just in one narrow corner of the job market. We really need more studies on what kind of training actually sticks with people—and whether it can help them jump from, say, retail to tech, or from customer service to marketing.

Inclusivity is another can of worms. These platforms love to say they're for everyone, but let's be real—there are still a ton of barriers. Maybe the platform's only in English, maybe you need a fast internet connection, or you're just not comfortable with technology in the first place. Age, gender, geography, even confidence with digital stuff—it all matters. If platforms aren't careful, they could end up making things worse for people already at a disadvantage. We have to ask, are these platforms really leveling the playing field, or just making it harder for some folks to catch up? The goal should be to close gaps, not widen them.

So, where does that leave us? Online job platforms have a ton of potential to keep people learning and growing long after they've left school. For individuals and companies, they can fill in those gaps with targeted, up-to-date training you can do in your pajamas. But if we're being honest, there's still a lot we don't know. We need more research—on what works, what

doesn't, whether the skills actually transfer, and if everyone can really access what they need. If platforms can figure that out, they could totally reshape how we learn and work in the digital age. Until then, it's kind of a work in progress—full of promise, but still with a lot of rough edges.[\[10\]](#) [\[11\]](#)

## **2.2 Status quo of similar applications:**

### **1. LinkedIn**

LinkedIn is widely used worldwide, particularly in the MENA area, among professionals in metropolitan areas. It provides thorough job search capabilities, job recommendations based on user profiles, and a strong network. But LinkedIn does not have particular features designed for the MENA area's local employment market, such as in-depth interview preparation resources and area-specific talent assessments that address regional job needs.

### **2. Actually**

With a sizable footprint in the MENA area, Indeed is a well-known job site around the world. Indeed is renowned for its comprehensive list of employment opportunities and offers a user-friendly interface along with the ability to upload resumes, monitor applications, and get job alerts. However, its features are geared toward the worldwide market and lack region-specific resources that would be useful to MENA job searchers and employers. Additionally, it doesn't provide career preparation tools or skill evaluations.

### **3. Glassdoor**

Glassdoor is well-known for its business reviews, salary information, and overall job postings. By enabling users to assess firms based on employee input, it helps people make educated choices about their careers. But, as with Indeed, Glassdoor does not offer features designed to help with career advancement, such as interactive skill evaluations or interview training.

### **4. ZipRecruiter**

ZipRecruiter is well-known for its AI-driven job matching technology, which offers tailored job suggestions and a simple application procedure. Furthermore, its interface is simple and easy to use. ZipRecruiter, on the other hand, lacks integrated features for skill evaluation, resume creation, and organized interview preparation. Although it's a useful job-matching tool, it doesn't have a complete set of career readiness resources, particularly for the labor markets of the Middle East and North Africa.

### **5. Bayt. com**

Targeting job ads, CV-building resources, and business profiles specific to the local job market, Bayt. com is one of the top employment websites in the Middle East and North Africa. Bayt. com offers local employment insights in both Arabic and English, but it lacks sophisticated features like skill testing or interview

preparation materials. Its functions are mostly geared towards employment applications as opposed to job development and candidate preparation.

## **6. Wuzzuf**

Egypt's top online recruiting site, Wuzzuf, is designed exclusively for the Egyptian employment market. It provides simple job suggestions depending on user preferences, CV creation tools, and job searching capabilities. Wuzzuf is widely used by Egyptian job seekers, but its usefulness as a complete career development platform is limited by the fact that it lacks integrated skill validation, interview preparation resources, and other sophisticated features.

## **7. Forasna**

Forasna is a sister platform to Wuzzuf that focuses on candidates in Egypt looking for entry-level and blue-collar positions. It is available in Arabic and offers basic job ads that appeal to a diverse audience.

But the capabilities of Forasna are mainly restricted to job searching, and it lacks sophisticated features.

because it emphasizes accessibility for local job seekers through tools like skill assessments, resume creation, and interview preparation.

## **8. GulfTalent**

GulfTalent is focused on the Gulf area and provides industry-specific job postings, particularly in high-demand industries such as oil and gas, construction, and finance. Although it offers career tools and CV services, it doesn't include thorough interview preparation or interactive skill evaluations. Although the site primarily links job seekers with employers, it lacks resources to help applicants prepare for particular positions.

## 2.3 What we can make to be differential:

Table 1

Feature	HYRUP	LinkedIn	Wuzzuf	Indeed	Glassdoor	ZipRecruiter	GulfTalent	Bayt	Forasna
Interactive Job Market Insights	✓	✓	✗	✓	✓	✗	✗	✗	✗
Freelancer Focus	✗	✓	✗	✗	✗	✗	✓	✗	✗
Career Path Simulator	✓	✗	✗	✗	✗	✗	✗	✗	✗
Employer Branding & Job Readiness	✓	✗	✓	✗	✓	✗	✓	✗	✗
Focus on Blue-Collar and Entry-Level Jobs	✓	✗	✗	✗	✗	✓	✓	✓	✓
Localized Job Listings & Regional Industry Focus	✓	✓	✓	✓	✓	✓	✓	✓	✓



# **Chapter 3**

## **System Specifications**

## 3.1 Introduction

### Purpose

The purpose of this document is to define the requirements for an online job platform that provides two tailored sections:

**1.Juniors and Undergraduates Section:** Designed for fresh graduates and current students seeking internships, entry-level roles, and career guidance.

**2.General Section:** Aimed at experienced professionals seeking broader opportunities, mid- career changes, or advanced roles.

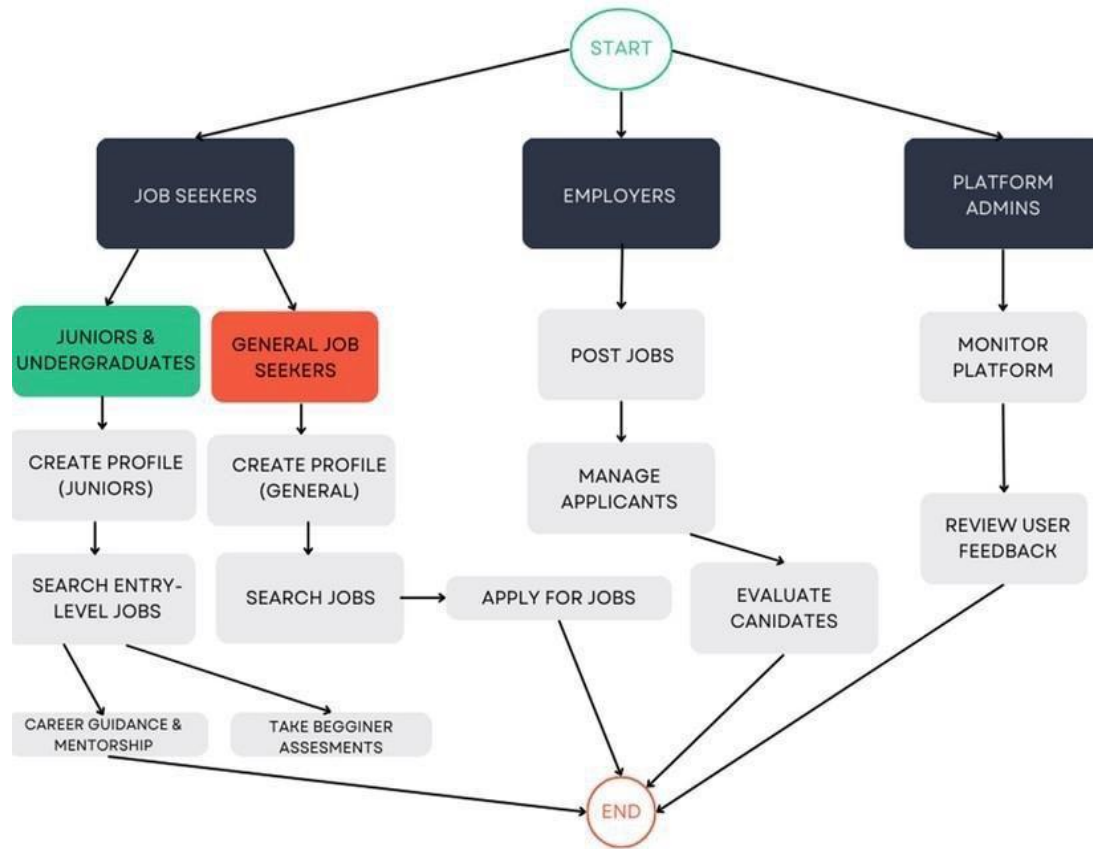
This structure ensures the platform addresses the needs of diverse user groups while maintaining a seamless experience.

### Scope

The platform facilitates job search and matching for job seekers and employers. It integrates advanced features like skills assessments, Job matching and interview preparation. The distinct sections ensure that junior seekers and undergraduates receive specialized resources, while the general section offers comprehensive tools for professional growth.

### 3.2 Product Features

Platform Process that outlines the steps or activities within the system:



*Figure 3: Platform Process illustrating the interactions between job seekers, employers, and platform administrators within the job portal ecosystem.*

### **Junior & Undergraduate Section:**

- **Entry-level Job Listings:** Focused on internships and beginner roles.
- **Skill Gap Analysis:** Tools to highlight missing skills for chosen career paths.
- **Interactive Learning Modules:** Tutorials on workplace readiness, communication, and time management.
- **Mentorship Program:** Matching junior seekers with mentors in their field.
- **Career Path Simulator:** Visual guides for planning career progress based on current skills and goals.

### **General Section:**

- **Comprehensive Job Filters:** Location, salary, experience level, and industry-specific roles.
- **Interview Preparation Tools:** Mock interview setups and practice sessions.
- **Skill Certifications:** Links to professional certifications relevant to high-demand roles.

## **3.3 User Classes and Characteristics**

- **Juniors & Undergraduates:**  
**Characteristics:** Students and recent graduates with little to no experience. **Needs:** Entry-level opportunities, skill development, and career guidance.
- **General Job Seekers:**  
**Characteristics:** Professionals with varied levels of experience.  
**Needs:** Career advancement opportunities and tools to refine professional profiles.
- **Employers:**  
**Characteristics:** Businesses seeking talent across all experience levels.  
**Needs:** Simplified hiring processes and access to diverse candidate pools.

### 3.4 Operating Environment

**Web Application:** Compatible with modern browsers (Chrome, Firefox, Safari).

**Devices Supported:** Desktop, tablet, and mobile devices (responsive design).

**Hosting:** Cloud-based with robust security protocols.

### 3.5 Functional Requirements

Users create their own accounts (employer or job seeker roles)

Authentication is role based to preserve system integrity and security

- Integrated advanced search & filters for organizations and candidates that makes recruitment & job search easier.

- Security and external well recognised certifications are provide with Integration to external API for validated skill assessment/s of your users.

#### **Special Features For Undergraduate and Junior Professionals**

- Highlight all internships and entry level job postings to directly target junior users on their way up.

Products off gap analysis and skill development for new workers, meeting the many needs of this user persona.

Extensive career counseling tools are available to provide sector relevant help and support.

- Mentoring: An active forum to exchange knowledge amongst journeymen and experienced people

#### **Specifications for the Common User Part**

Best job search filtering options for hiring managers and passive candidates — to ensure more specific matches between candidate fro the job.

Automated resume parsing and candidate specific recommendations that make sure your applications look great.

Career advancement and professional certification paths are well codified, supporting new career.

## 3.6 Design and Implementation Constraints

### **Hardware, and performance**

The platform only cloudscales in the cloud (when traffic deviates rapidly — you know, that big launch or viral moment)

### **Third-Party Plugins and Connections**

— The APIs for other services need to be really tight and never down. Never mind the downtime, of course:

- Skill checks
- Certificates
- Payment processing

So basically any one of these integrations failing leads to a lot of complains RipGuard, it's gonna work reliably.

## 3.7 Assumptions and Dependencies

Online Connectivity for users so that the operation running on platform is seamless. Employers will update listings often, in order to ensure that the postings are relevant.

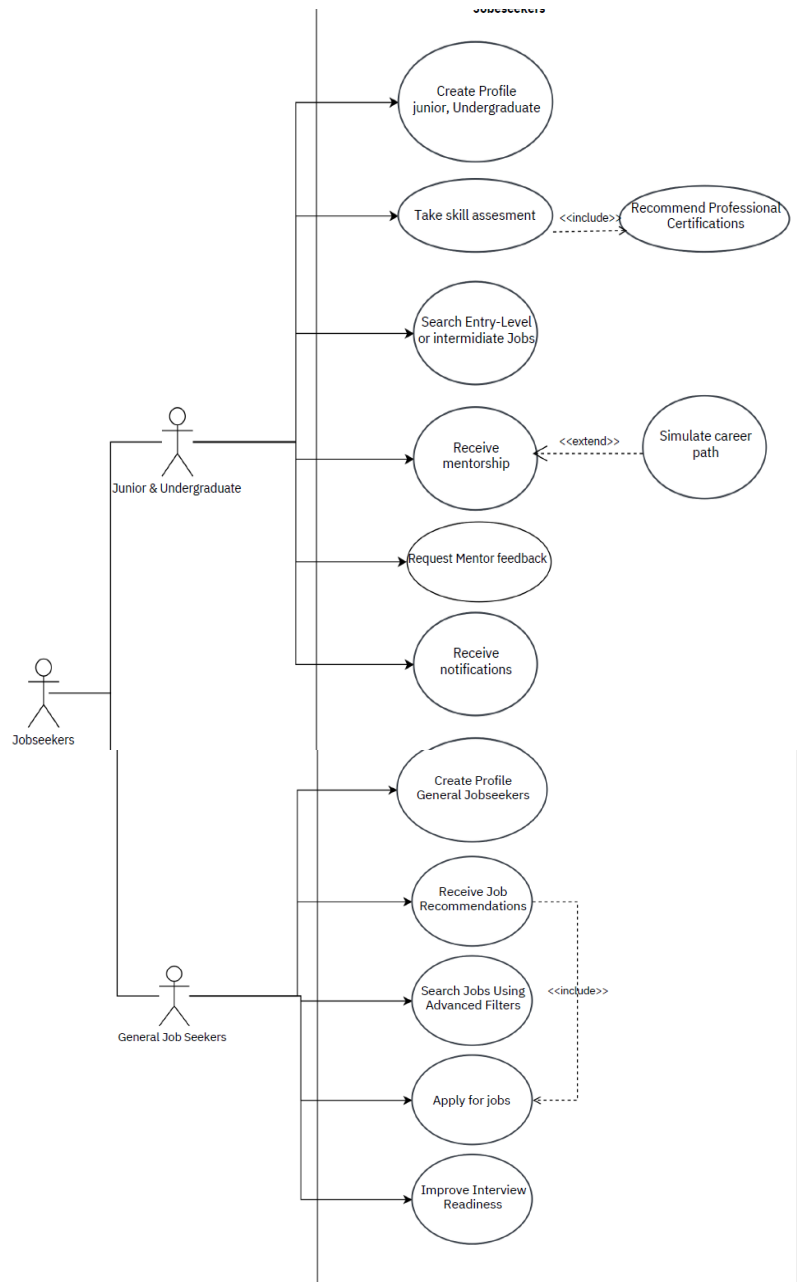
Skill assessment APIs will provide an honest and calibrated measurement  
Feedback is needed as feedback will be monitored constantly for continuous improvements on features

# **Chapter 4**

## **System Analysis and Design**

## 4.1 Use Case

Figure 4: Use case diagram for an online jobseeker platform,





## **Actors:**

### **1. Junior & Undergraduate**

This actor represents students or individuals early in their careers (junior jobseekers or undergraduates)

They utilize specific features tailored to their early-stage career needs.

### **2. General Job Seekers**

This actor represents experienced or general jobseekers looking for career opportunities. They interact with functionalities relevant to their job search and career development.

### **3. Jobseekers (Generalized)**

This overarching actor includes Junior & Undergraduate and General Job Seekers as subcategories. It represents jobseekers of all types.

## **Use Cases and Descriptions:**

### **1. Create Profile (Junior, Undergraduate)**

**Actor:** Junior & Undergraduate

This use case allows junior and undergraduate jobseekers to create their profiles on the platform, making it easier to search for opportunities.

### **2. Take Skill Assessment**

**Actor:** Junior & Undergraduate

#### **•Relation:**

Includes → Recommend Professional Certifications:

After taking the skill assessment, the system may recommend relevant professional certifications to improve jobseekers' skills.

### **3. Search Entry-Level or Intermediate Jobs**

**Actor:** Junior & Undergraduate

Allows junior jobseekers to search for jobs appropriate to their experience level.

### **4. Receive Mentorship**

**Actor:** Junior & Undergraduate

Jobseekers can connect with mentors to receive guidance and advice.

#### **Relation:**

Extends → Simulate Career Path:

Receiving mentorship may optionally include simulating a career path to help mentees understand potential professional trajectories.

### **5. Request Mentor Feedback**

**Actor:** Junior & Undergraduate

Junior users can request specific feedback from mentors, enhancing their learning and growth.

## **6. Receive Notifications**

**Actor:** Junior & Undergraduate

The platform sends notifications to users for updates, job recommendations, or mentorship sessions.

## **7. Create Profile (General Jobseekers)**

**Actor:** General Job Seekers

General jobseekers can create detailed profiles to showcase their skills, experience, and interests.

## **8. Receive Job Recommendations**

**Actor:** General Job Seekers

The platform provides personalized job recommendations based on users' profiles and search history.

## **9. Search Jobs Using Advanced Filters**

**Actor:** General Job Seekers

Jobseekers can search for jobs using advanced filters like location, job type, or salary.

**Relation:**

Includes → Search Jobs Using Advanced Filters is a reusable process that enhances precision during the job search.

## **10. Apply for Jobs**

**Actor:** General Job Seekers

## **11. Improve Interview Readiness**

**Actor:** General Job Seekers

This use case helps jobseekers prepare for interviews by offering resources like mock interviews, tips, or guidance

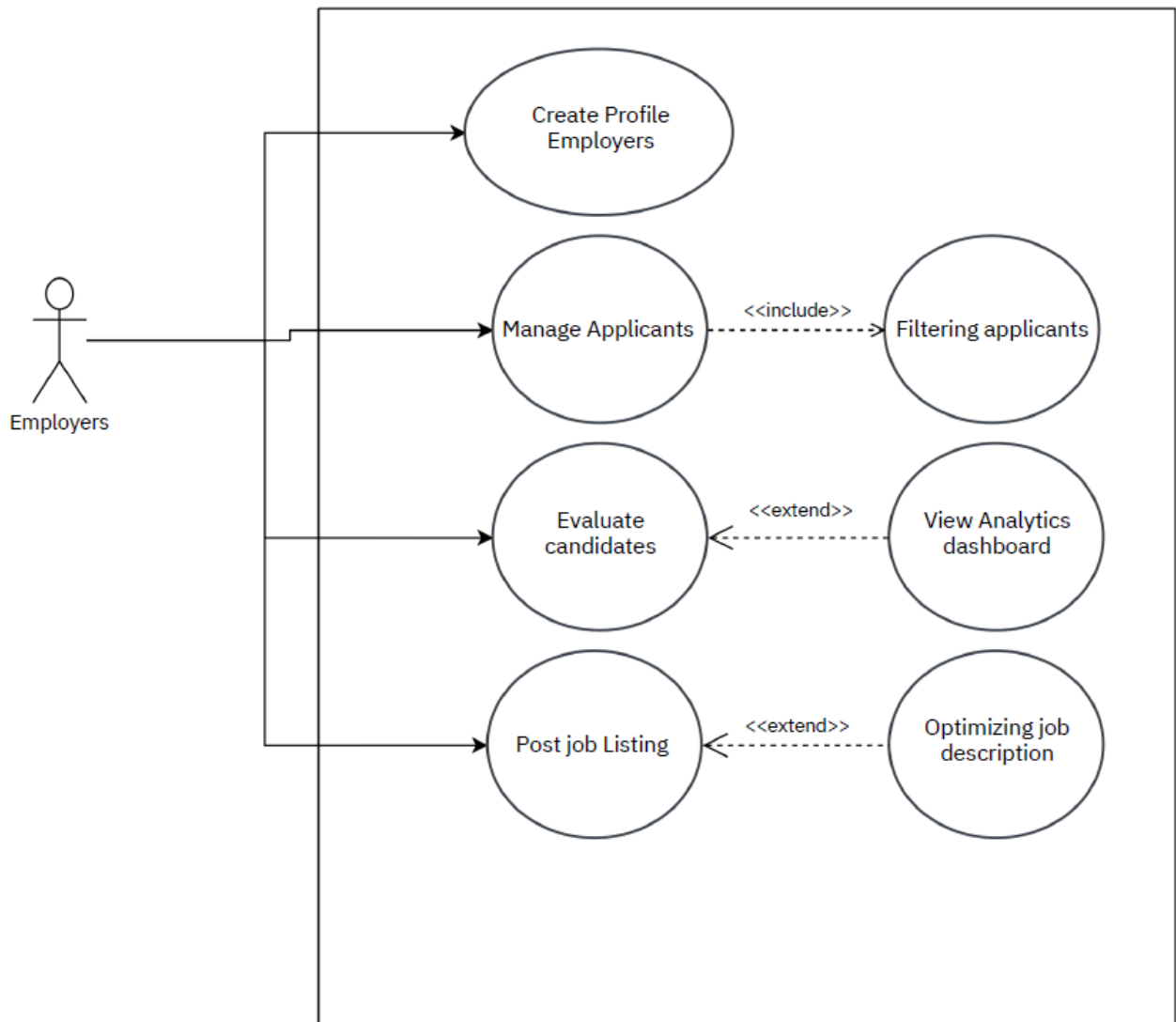


Figure 5: Use case diagram for employers

### **Employers:**

Employers symbolize the people or businesses that utilize the platform to locate and hire candidates. Employers have the ability to build profiles, administer applications, assess applicants, and improve processes related to their jobs.

## Use Cases and Descriptions:

### 1. Create Profile - Employers

**Actor:** Employers

This use case allows employers to create and manage their profiles on the platform.

Profiles may include company details, hiring preferences, and relevant contact information.

### 2. Manage Applicants

**Actor:** Employers

Employers can oversee the pool of applicants who have applied for their job listings.

**Includes:**

- Filtering Applicants
- The system includes functionality to filter applicants based on specific criteria, such as experience, skills, and qualifications.
- This helps streamline the hiring process by narrowing down potential candidates.

### 3. Evaluate Candidates

• **Actor:** Employers

Employers can evaluate candidates to determine their suitability for a given position.

**Extends:**

- View Analytics Dashboard
- Employers can use the analytics dashboard to view insights and data related to candidate performance, profiles, and applications.

### 4. Post Job Listing

**Actor:** Employers

Employers can create and publish job listings to attract potential candidates.

**Extends:**

Optimizing Job

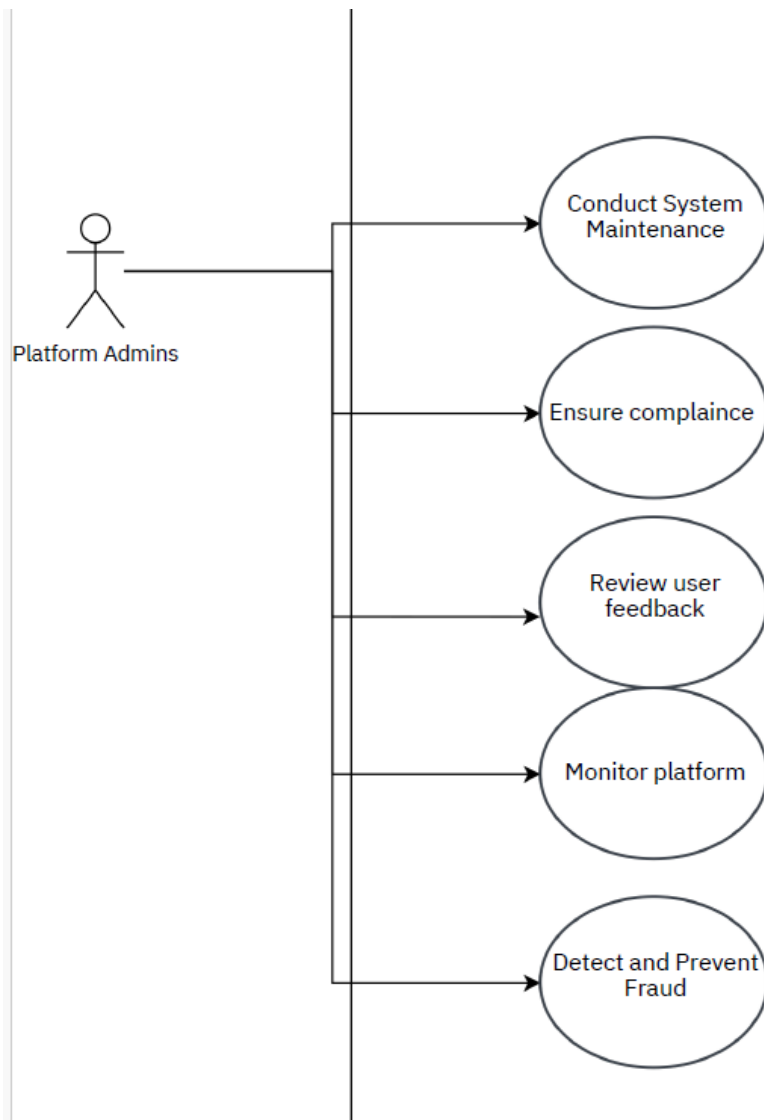


Figure 6: Use case diagram for platform administrators,.

**Actor:****Platform Admins**

The Platform Admins represent the individuals responsible for overseeing the platform's health, security, and compliance. This actor interacts with the system to ensure smooth operations and address user feedback.

**Use Cases and Relationships:****1. Generate Usage Reports**

- Platform Admins can generate reports that analyze user activity, usage statistics, and trends.
- This enables better monitoring of platform performance and supports strategic decision-making.

**2. Conduct System Maintenance**

- Platform Admins are responsible for performing regular system maintenance.
- This includes updates, bug fixes, and ensuring system stability to provide a seamless experience to users.

**3. Ensure Compliance**

- Admins ensure the platform meets all regulatory, security, and operational guidelines
- This helps avoid legal risks and improves user trust in the platform.

**4. Review User Feedback**

- Platform Admins review feedback submitted by users to identify issues or improvement areas
- This process helps in enhancing user satisfaction and platform usability.

**5. Monitor Platform**

- Admins monitor the platform's real-time activities, system performance, and user behavior.
- Continuous monitoring ensures early identification of issues or irregularities.

**6. Detect and Prevent Fraud**

- Platform Admins are tasked with identifying fraudulent activities, such as fake job postings or misuse of the system.
- Preventive measures are applied to maintain a secure and trustworthy platform for all users.

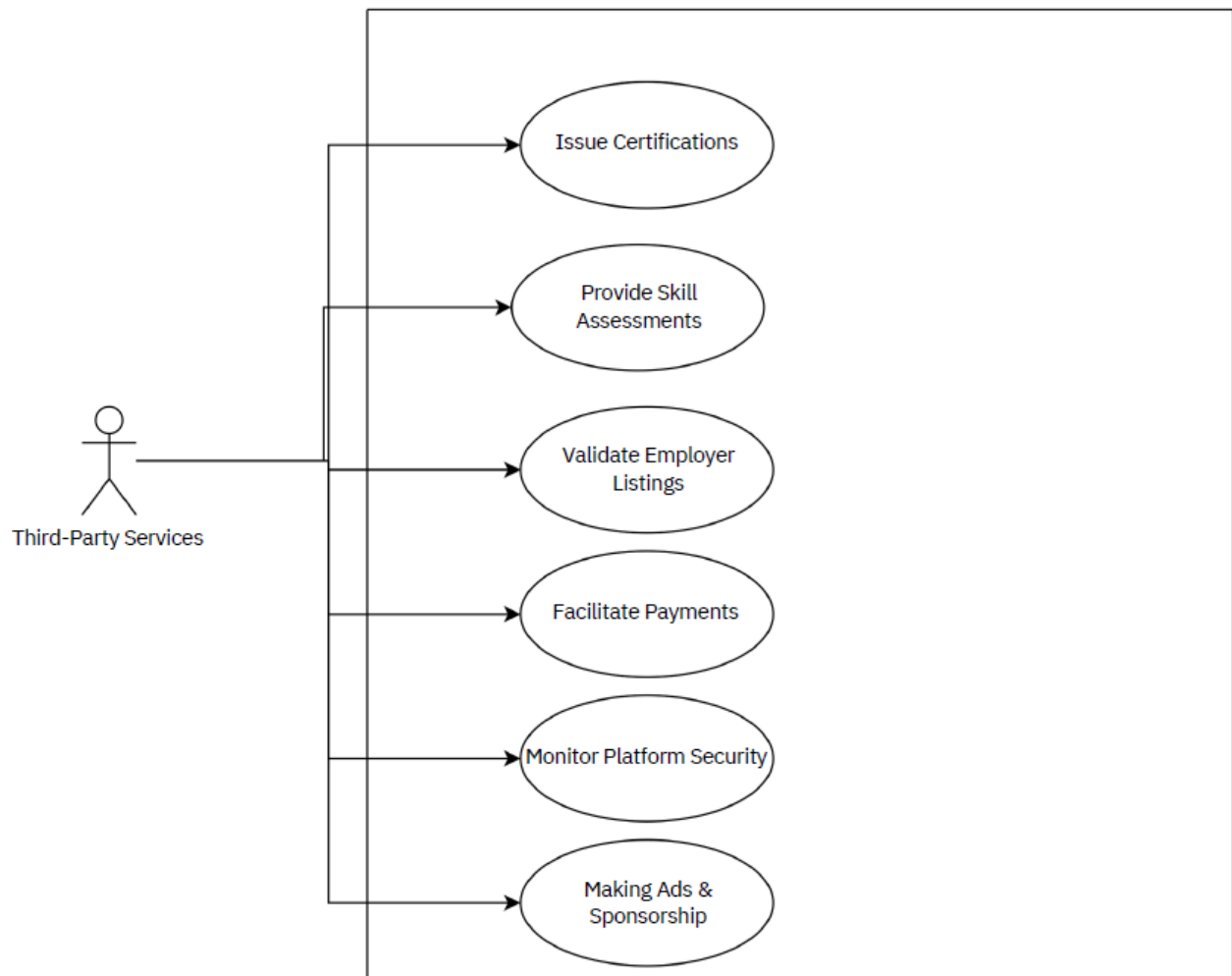


Figure 7: Use case diagram for third-party services,

**Actor:****Third-Party Services**

The Third-Party Services represent external entities or service providers that integrate with the platform to perform specialized functions, ensuring platform efficiency and user satisfaction.

**Use Cases and Relationships:****1. Issue Certifications**

Third-party services provide verified certifications to users upon completion of specific skill-based assessments, courses, or training modules.

This helps users improve their employability and skill recognition.

**2. Provide Skill Assessments**

Third-party providers offer tools and tests to assess users' skills and knowledge.

The assessments enable job seekers to identify gaps and employers to match candidates effectively.

**3. Validate Employer Listings**

External services validate employer information and job postings on the platform.

This ensures the credibility of employers and prevents fraudulent listings.

**4. Facilitate Payments**

Third-party payment gateways are integrated into the system to enable secure financial transactions.

This includes handling payments for premium subscriptions, certifications, or advertisements.

**5. Monitor Platform Security**

Third-party security services help monitor the platform for vulnerabilities, cyber threats, and unauthorized activities.

This ensures a safe and secure experience for all platform users.

**6. Making Ads & Sponsorship**

Third-party services manage advertisements and sponsorships on the platform.

This generates revenue for the platform while providing visibility for advertise



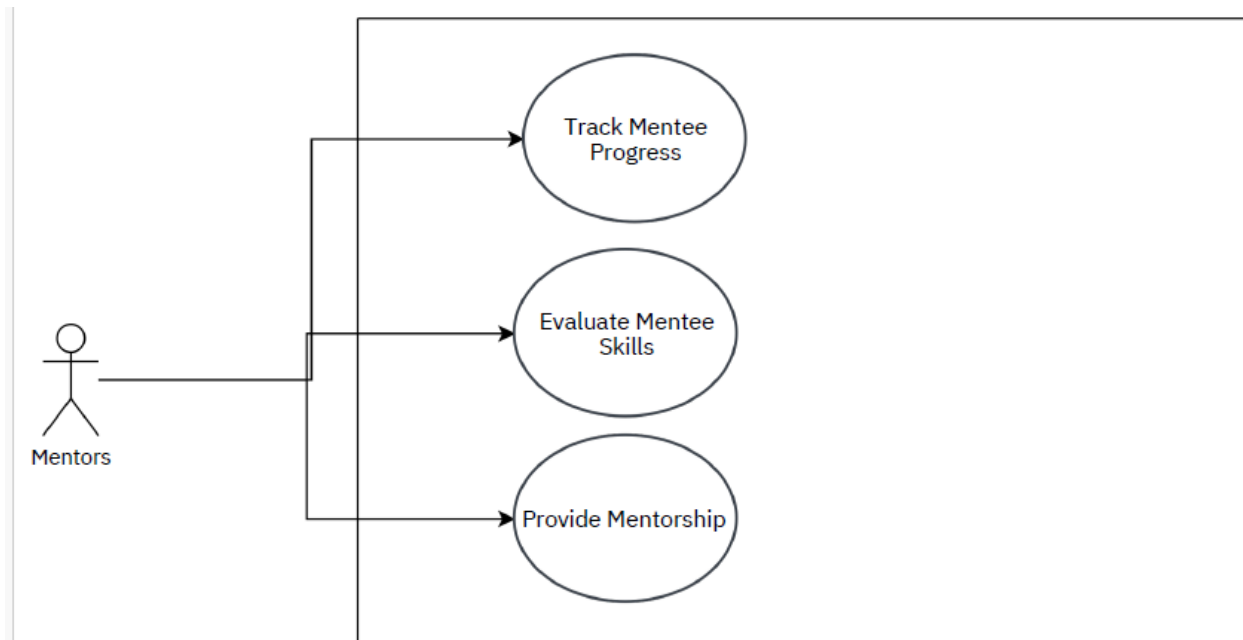


Figure 8: Use case diagram for mentors,

### **Actor:**

#### **Mentors**

The Mentors represent individuals who provide professional guidance, assess mentee performance, and track mentee development within the platform. They interact with the system to carry out the following functionalities:

Use Cases and Descriptions

#### **1. Track Mentee Progress**

**Actor:** Mentors

This use case enables mentors to monitor the progress of their mentees over time.

- Mentors can access performance metrics, milestones, or achievements to evaluate how mentees are advancing toward their goals.

#### **2. Evaluate Mentee Skills**

**Actor:** Mentors

The platform allows mentors to assess the mentees' current skill levels.

Mentors can provide evaluations based on tasks completed, submitted work, or skill assessments available within the platform.

### 3. Provide Mentorship

#### Actor: Mentors

This use case allows mentors to directly provide guidance, knowledge, and professional support to mentees.

Mentorship can take the form of one-on-one sessions, feedback sharing, or career advice

## 4.2 ERD

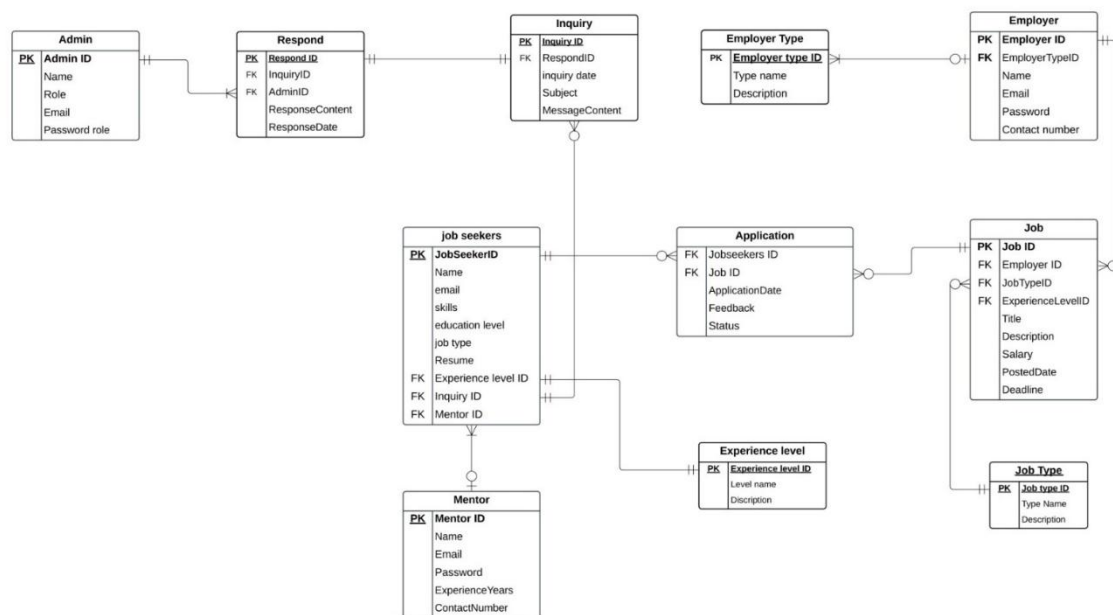


Figure 9 Entity-Relationship-Diagram (ERD)

**Entities:****1.Admin**

o Supervises the entire system monitoring process, oversees operations, and handles questions.

**2. Job Seekers**

o. Represents users seeking mentorship and employment.

**3. Employer**

o. Represents businesses that advertise job openings.

**4. Work**

o Represents job postings submitted by companies.

**5. Mentor**

o Professionals who advise those seeking employment are represented.

**6. Application**

o This represents job applications submitted by those looking for work.

**7. Experience level**

o. Signifies different skill levels, such as Entry, Midlevel, and Senior.

**8. Employer type**

o The categorization of employers according to industry, such as healthcare or IT.

**9. job type**

o Describes various types of employment prospects, such as Fulltime and Parttime.

**10. inquiry**

o Queries from employers or job seekers are represented by it.

o Describes the administrator's response to questions.

## **Entities and Attributes:**

### **1. Admin**

- AdminID (PK)
- Name
- Role
- Email
- Password

### **2. Job Seekers**

- JobSeekerID (PK)
- Name
- Email
- Skills
- Education Level
- Job Type Preference
- Resume
- ExperienceLevelID (FK)
- InquiryID (FK)
- MentorID (FK)

### **3. Employer**

- EmployerID (PK)
- EmployerTypeID (FK)
- Name
- Email
- Password
- ContactNumber

### **4. Job**

- JobID (PK)
- EmployerID (FK)
- JobTypeID (FK)
- ExperienceLevelID (FK)
- Title
- Description
- Salary
- PostedDate
- Deadline

### **5. Mentor**

- MentorID (PK)
- Name
- Email

- Password
- ExperienceYears
- ContactNumber

#### **6. Application**

- JobSeekerID (FK)
- JobID (FK)
- ApplicationDate
- Feedback
- Status

#### **7. Experience Level**

- ExperienceLevelID (PK)
- Level Name
- Description

#### **8. Employer Type**

- EmployerTypeID (PK)
- Type Name
- Description

#### **9. Job Type**

- JobTypeID (PK)
- Type Name
- Description

#### **10. Inquiry**

- InquiryID (PK)
- RespondID (FK)
- InquiryDate
- Subject
- MessageContent

#### **11. Respond**

- RespondID (PK)
- InquiryID (FK)
- AdminID (FK)
- ResponseContent
- ResponseDate

## **Relationships:**

### **1. Admin and Respond:**

- The Admin is responsible for managing responses to inquiries submitted by job seekers or employers.
- **Relationship:** Each admin can write multiple responses (**1:N relationship**). However, each response is handled by only one admin.

### **2. Inquiry and Respond:**

- An Inquiry is submitted by a job seeker or an employer and receives a response from an admin.
- **Relationship:** Each inquiry is tied to exactly one response (**1:1 relationship**).

### **3. Job Seekers and Inquiry:**

- A Job Seeker can submit inquiries to the system to clarify issues or seek guidance.
- **Relationship:** One job seeker can submit multiple inquiries, but each inquiry belongs to one job seeker (**1:N relationship**).

### **4. Job Seekers and Mentor:**

- A Job Seeker may be assigned a Mentor for career guidance.
- **Relationship:** Each job seeker is assigned to one mentor, while a mentor can guide multiple job seekers (**1:N relationship**).

### **5. Job Seekers and Application:**

- A Job Seeker can apply to multiple job opportunities posted by employers.
- **Relationship:** Each job seeker can submit multiple applications, but each application is unique to one job seeker (**1:N relationship**).

### **6. Employer and Job:**

- An Employer can post multiple job listings, each targeting specific roles, skills, and experience levels.
- **Relationship:** One employer can post many jobs, but each job is associated with one employer (**1:N relationship**).

### **7. Jobs and Applications:**

- A Job listing can receive multiple applications from job seekers interested in the role.

- **Relationship:** Each job can receive multiple applications, and each application is tied to one job (**1:N relationship**).

#### 8. Experience Level and Job Seekers:

- Each Job Seeker specifies a required Experience Level to ensure that only qualified candidates apply.
- **Relationship:** A single experience level can apply to a single job seeker, but each job seeker is linked to only one experience level (**1:1 relationship**).

#### 9. Job Type and Job:

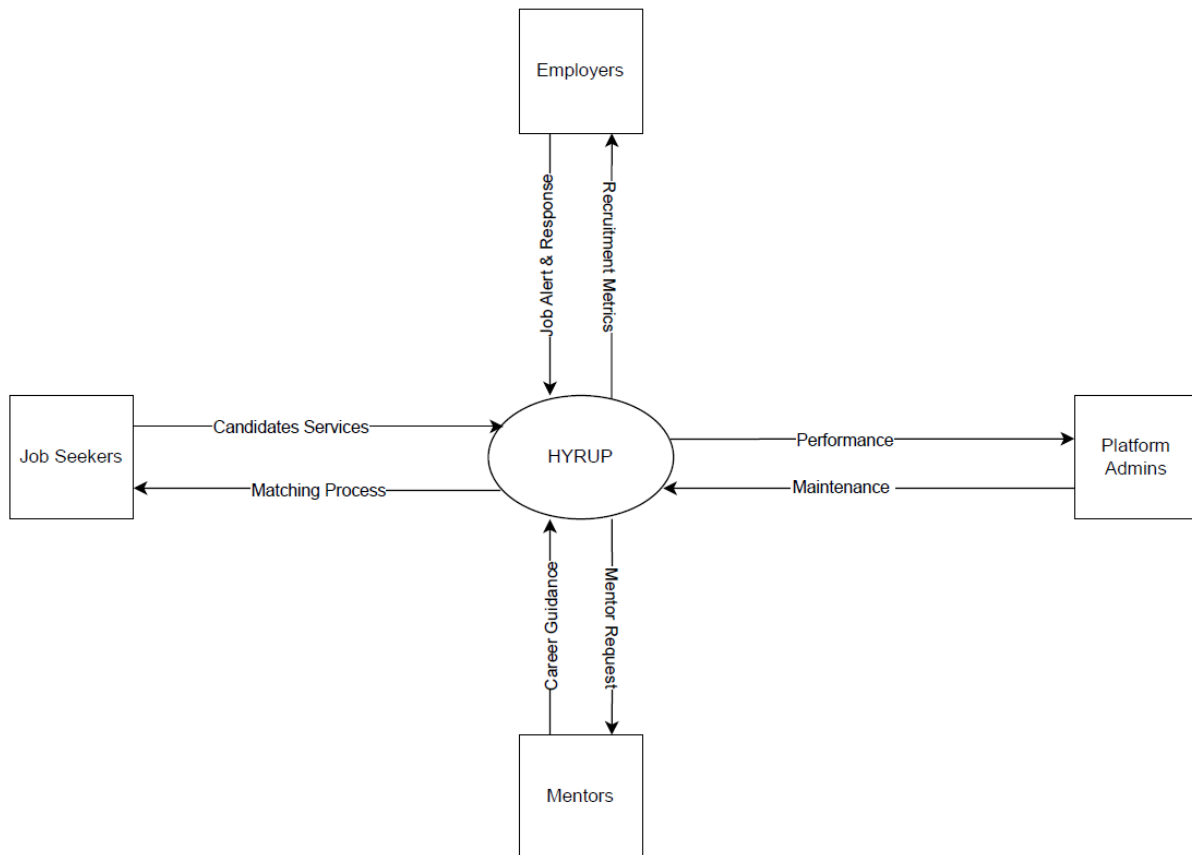
- Each Job is categorized by a specific Job Type (e.g., Full-Time, Part-Time).
- **Relationship:** One job type can include multiple jobs, and each job belongs to one job type (**1:N relationship**).

#### 10. Employer Type and Employer

- Each Employer is classified under an Employer Type.
- **Relationship:** One employer type can include many employers, but each employer belongs to only one type (**1:N relationship**).

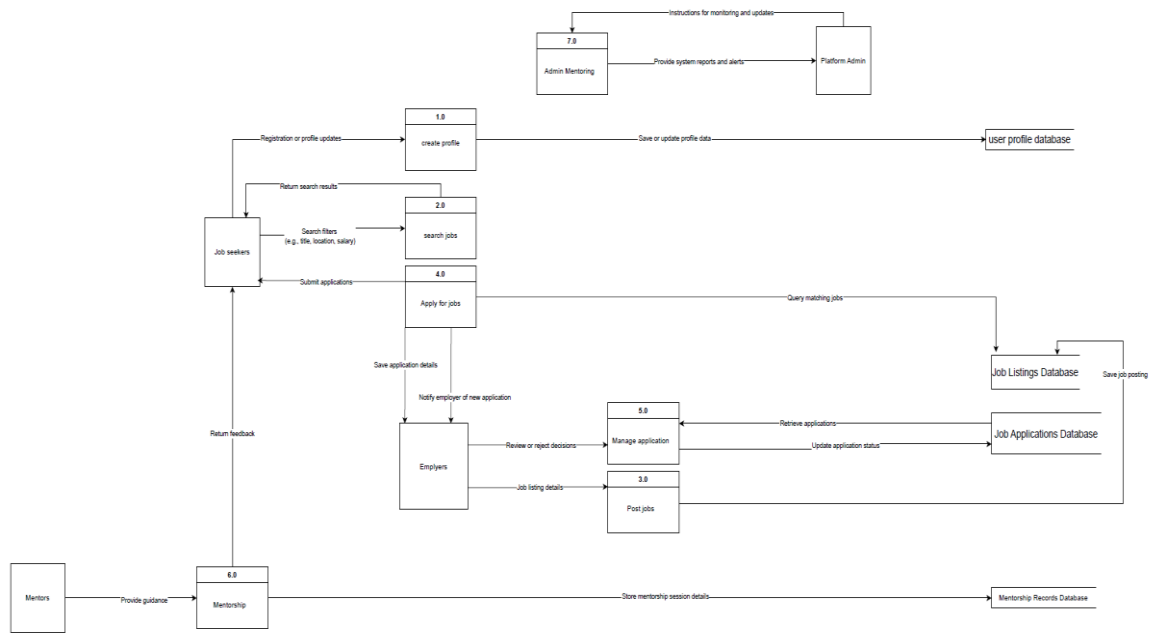
## 4.3 DFD

### DFD L 0 Content Diagram



*Figure 10 DFD L 0*





## DFD L 1 Major Processes

*Figure 11 DFD L 1*

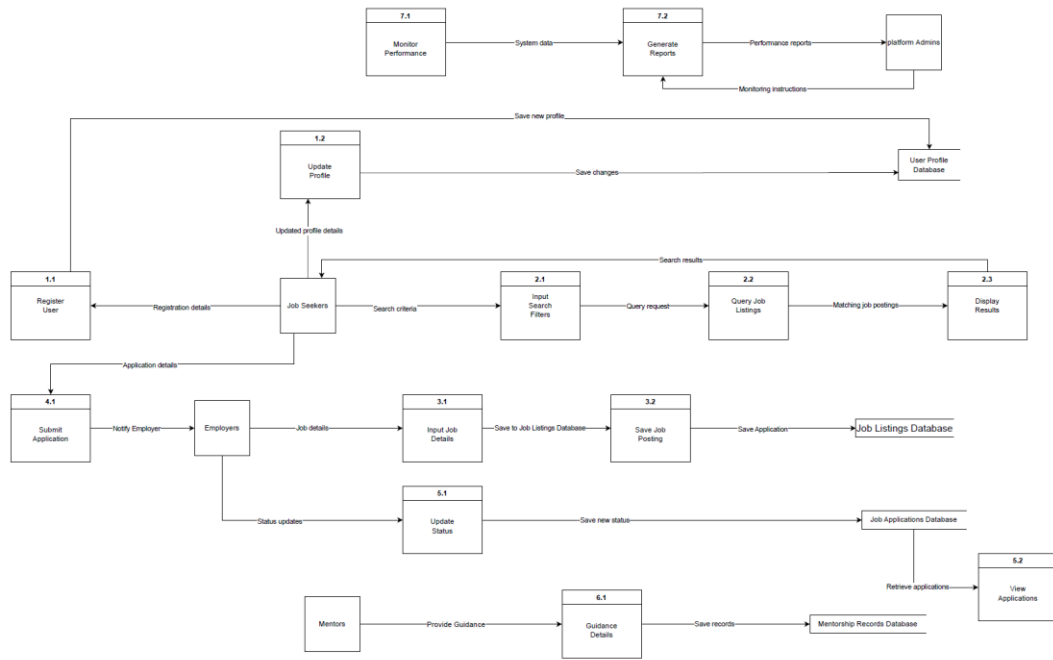
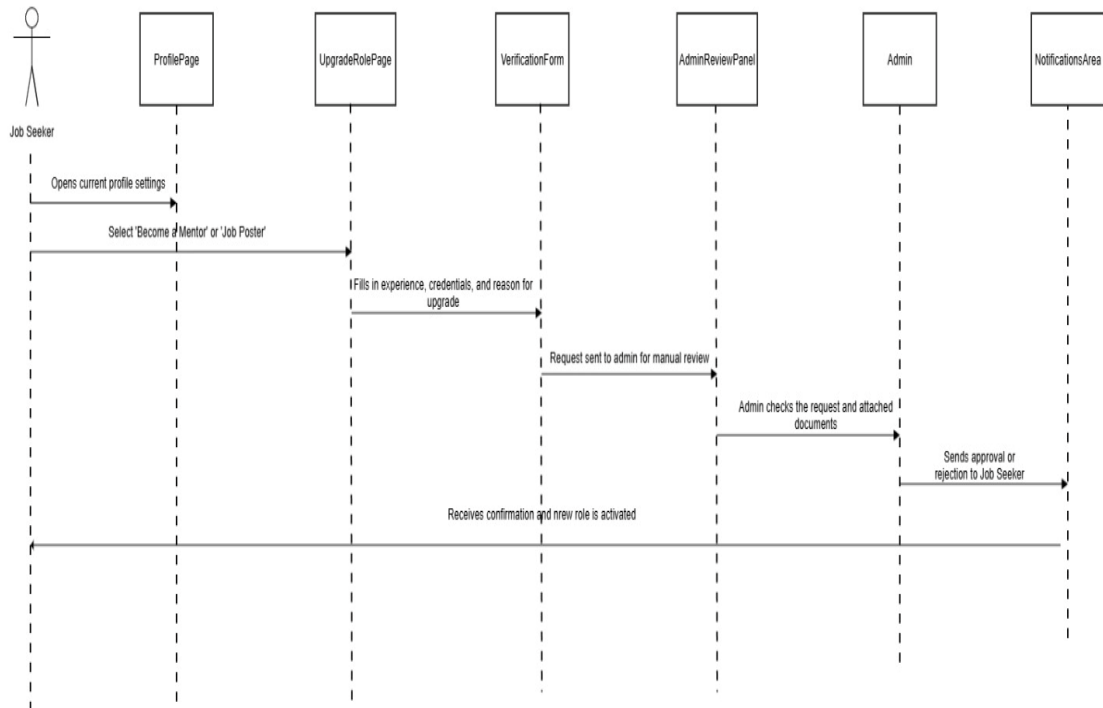


Figure 12 DFD L 2

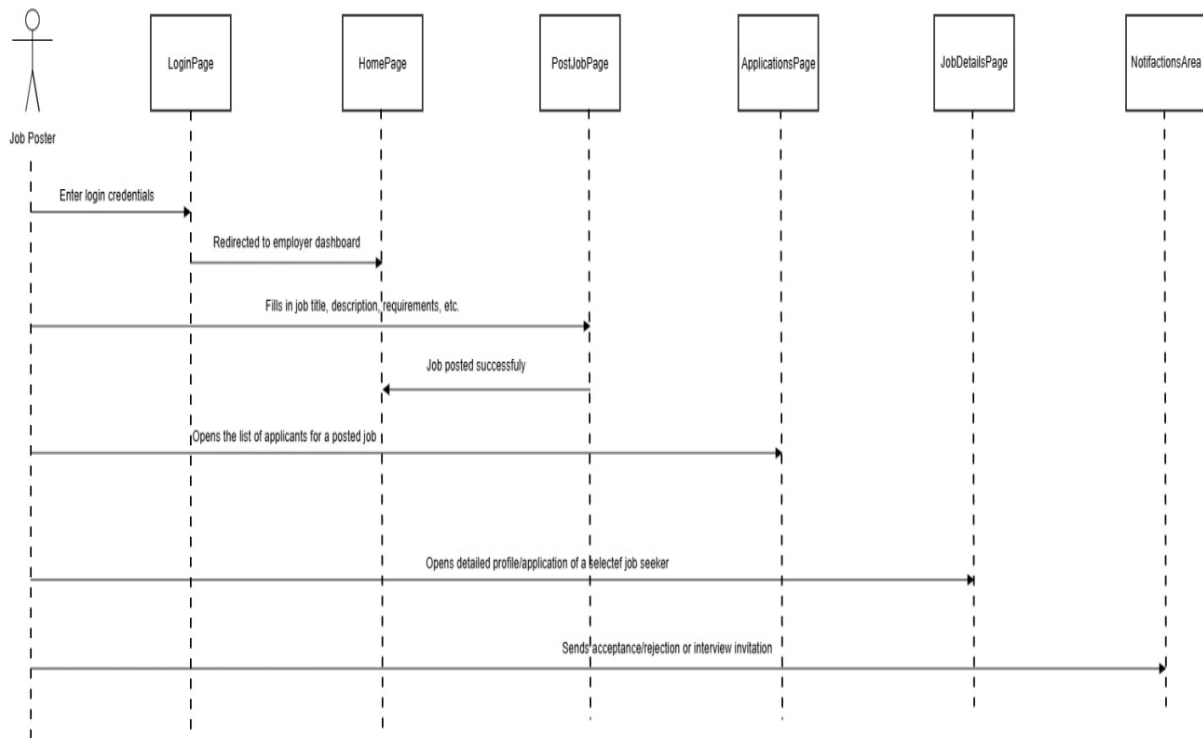
## DFD L 2 Sub-Processes

## 4.4 Sequence Diagram

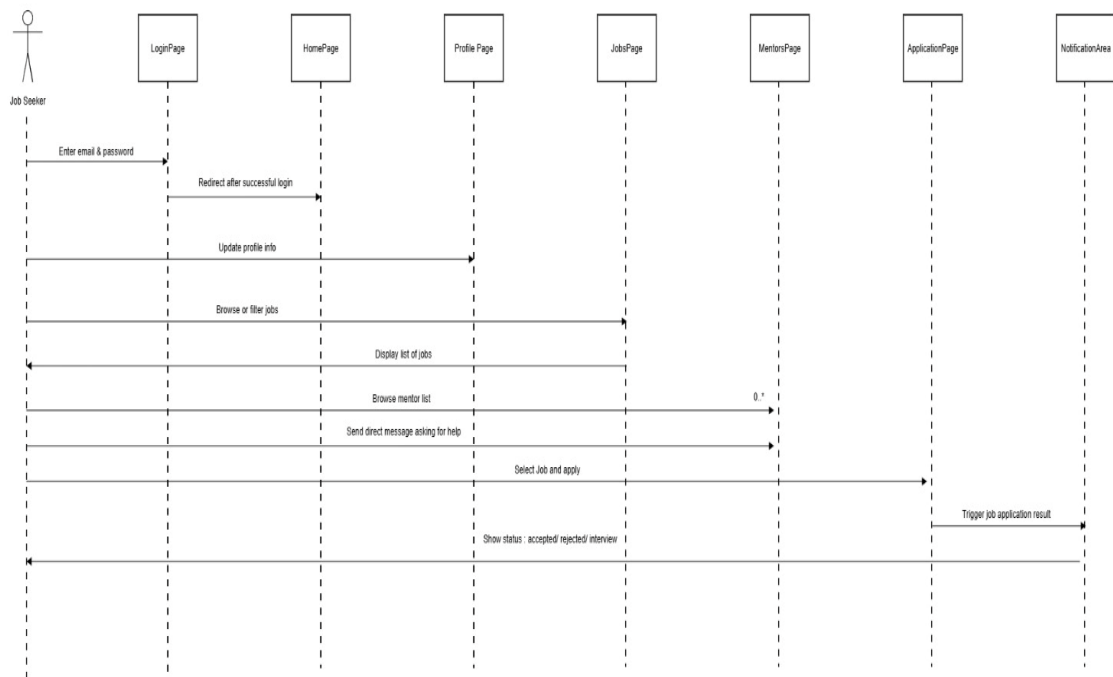
### Sequence Diagram



*Figure 13 Sequence Diagram Jobseeker application*



*Figure 14 Job seeker change rule*



*Figure 15 Job posting*

# **Chapter 5**

## **System Development and Prototype**

## 5.1 Non-Functional Requirements:

The methods of implementing the functionality of the system are decided by the NFRs. The requirements can be performance-oriented, usability-oriented, reliability-oriented, scalability-oriented, and security-oriented. The NFRs are viewed in groups, some of which are provided below, in light of our graduation project, an "online platform for job seekers, mentors, and employers". Our project is viewed below in detail:

### 1. Performance Criteria:

- Time for System Response:

Pages, in normal circumstances such as those for job postings or creating a profile, should load in two seconds.

With sophisticated filter searches, the results should be retrieved within under three seconds.

- Simultaneous Users Online:

Off the shelf, the platform should be able to handle at least 500 concurrent users, with the ability to scale to handle over 10,000 as the platform expands.

- All the data:

At full capacity, the system needs to be capable of handling as many as 100 read/write database transactions every second.

### 2. Usability requirements: easy to use

In order to accommodate users of differing technical backgrounds—job seekers, mentors, and employers—the user interface needs to be easy to use, intuitive. Onboarding activities like profile creation must not require more than five minutes from users.

- Access:

The site must be WCAG (Web Content Accessibility Guidelines) compliant. 2.1 for use by individuals with disabilities. • Multilingual Support: Firstly, the system must be capable of supporting a minimum of two languages, i.e., English and Arabic, with provision for adding other languages in the future.

### 3. System Up Time Requirements for Reliability:

we're talking at least 99.9% uptime over the whole year. That's about 8.76 hours max of downtime annually—basically, the system can take a nap, but it better be a power nap. Not a weekend snooze.

**Error Management:**

The platform should actually say something useful about what went wrong, not just throw up a “404” and call it a day. Give people clear error messages, maybe even a hint or two about how to fix things. Like, “Lost connection? Try refreshing!” or “Invalid input—check your email address.” Recovery options are a must

**Backup and Recovery:**

This is non-negotiable. Every single day, all user-related data—profiles, job posts, mentorship convos—needs to be backed up somewhere safe. If something explodes and data vanishes, we should be able to get it all back, fast, like within an hour. No more horror stories of lost profiles or missing job listings. A good backup is like insurance, but way less boring.

**4. Scalability Requirements — Horizontal Scalability:**

If things go viral (fingers crossed), the platform should handle a massive wave of users without breaking a sweat. That means scaling out—just add more servers to keep things smooth. Don’t try to cram everyone onto one server like a clown car.

**Database Scalability:**

You know how closets get cramped if you keep shoving stuff in? Same with databases. When there’s a flood of user profiles or job ads, partition that data—split it up, shard it, whatever you want to call it. That way, the database isn’t gasping for air, and things stay snappy for everyone.

**Integration with the Cloud:**

If you’re not using the cloud in 2024, what are you even doing? With AWS or Azure, you can flex resources up or down depending on traffic. Big day? Scale up. Slow Tuesday? Scale down and save some cash. Cloud lets you play it smart, not just hard.

**5. Verification and Approval of Security Needs:****User Authentication:**

Don’t let just anyone stroll in. Use secure stuff like OAuth2 or two-factor authentication—make sure users are who they say they are. And, not everyone should get the same keys to the castle. Use RBAC (Role-Based Access Control) so, for example, only employers can filter job seekers. No random folks poking around where they shouldn’t.



**Data Encryption:**

Sensitive info—passwords, user profiles, all that jazz—shouldn't be floating around in plain text. And if you're still sending stuff over HTTP instead of HTTPS with SSL/TLS Encrypt everything in transit.

**Data Security & Compliance:**

The platform should support these policies. Give users the right to delete their data or grab a copy of it, no drama. People care about privacy, and if you don't respect that, they'll bounce.

**6. Maintainability Requirements Modular Code Base:**

To enable maintenance and updates, the system should be based on a modular architecture.

The code must be properly documented and follow industry standard conventions.

- Automated Testing:

In order to minimize the chance to add bugs while updating, system, integration, and unit tests must be automated.

- Observation:

To check for performance bottlenecks and errors in real time, system monitoring tools such as New Relic and Datadog need to be utilized.

**7. Redundancy of Availability Requirements:**

To minimize downtime in the event of failure, the system ought to have redundant servers and databases.

- Disaster Recovery:

In case of a disaster failure, the recovery strategy must bring back the service in 30 minutes.

- Global Availability:

To reduce latency for customers elsewhere, the platform must be accessible globally via a Content Delivery Network.

**8. Browser compatibility and compatibility requirements:**

The website should be compatible with modern browsers such as Chrome, Firefox, Safari, and Edge with two previous versions' backward compatibility.

- Compatibility of the device:

The system must be completely responsive and ideally suited for access on desktops, tablets, and mobile phones.

- Integration of APIs:

It should also be capable of integrating third-party APIs, for example, LinkedIn to fetch profiles and job boards to post.

### **9. Bias-Free Ethical and Legal Requirements Algorithms:**

All algorithms, including those used for job recommendations or candidate filtering, must be designed in such a way that there is no discrimination based on gender, race, or any other protected characteristic.

- Approval for Data Usage:

The customers reserve the right to choose whether to share their information or not, as stated in the terms of the policy.

### **10. Energy Efficiency in Sustainability Criteria:**

Optimize the usage of the server while promoting sustainability and lowering power consumption.

- Maximization of Resources: The website must not consume too many resources, e.g., unnecessary database queries or server-side calculations.

### **11. The NFRs are mapped as below when our project is examined according to its goals:**

- Deliver rapid job search, mentor feedback, and profile creation features at the time of performance.
- Usability: Prioritize accessibility and usability for a broad range of users, especially students and individuals looking for their first employment.
- Scalability: Ensure that the site is scalable to handle increasing user demand when more individuals use it.
- Security: Highlight the safe handling of sensitive data, for instance, resumes, job offers, and mentorship feedback.
- Reliability: The service must be kept in a reliable state, especially in such critical areas as job seeking and mentorship tracking. Furthermore, including these in our project report and carrying them out will help support the validity and overall knowledge of our work in the areas of technical, user, and operational requirements.

5.2 Storyboard

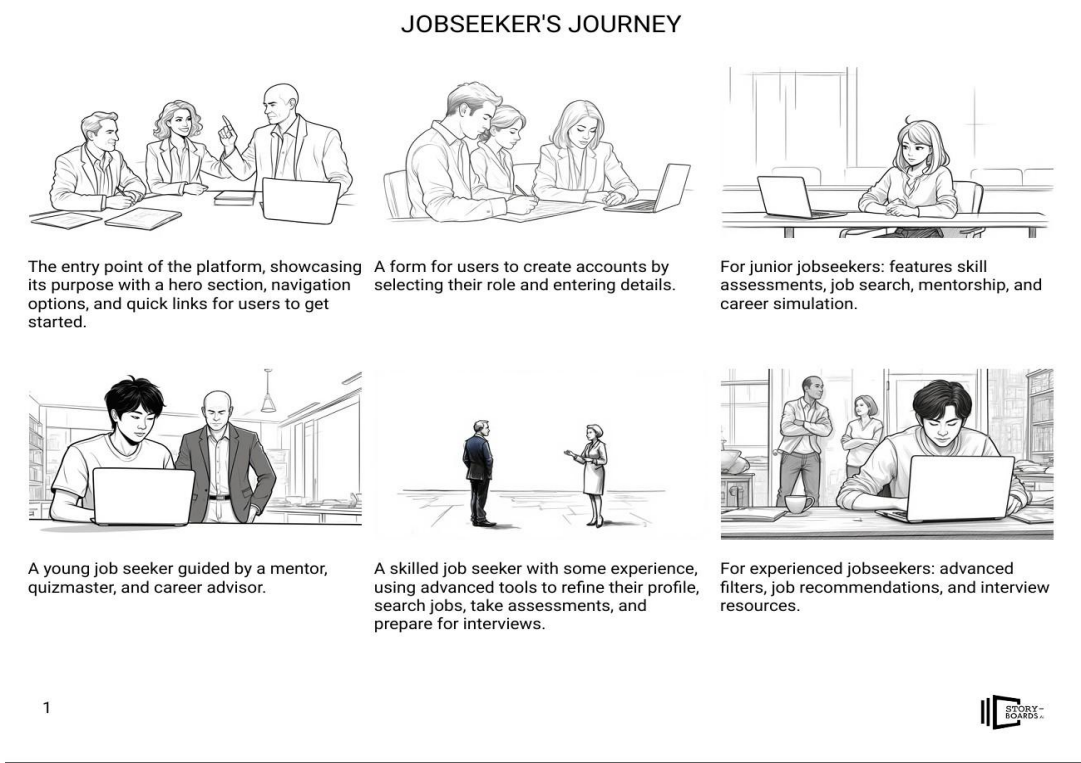


Figure 16 Job Seeker Journey 1

## JOBSEEKER'S JOURNEY



An experienced professional seeking senior roles, leveraging tailored job searches, career coaching, and application tracking tools.



An experienced freelancer searching for projects, submitting tailored proposals, and connecting with mentors for guidance.



A beginner seeking internship opportunities, building a profile, taking assessments, applying for positions, and receiving mentorship support.



Employers manage postings, view applicants, and track performance with analytics tools.



Mentors track mentees, evaluate skills, and schedule mentorship sessions. Mentors track mentees, evaluate skills, and schedule mento



Admins oversee system performance, review feedback, and handle fraud detection.

Figure 17 Job Seeker Journey 2

## JOBSEEKER'S JOURNEY



Jobseekers browse and apply for jobs using filters and recommendations.



Users edit personal details, upload resumes, and update preferences.



Displays job updates, mentorship alerts, and system notifications.

*Figure 18 Job Seeker Journey 3*

## 5.3 Wireframe

### Wireframe

Figure 16 Wireframe

The figure displays four wireframe diagrams arranged in a 2x2 grid, illustrating the iterative design of a user interface.

- Top Left Wireframe:** A simple login/signup screen. It features a "Logo" in the top left corner. In the center, there are two buttons labeled "SIGN IN" and "SIGN UP".
- Top Right Wireframe:** A more detailed login screen. It includes a "Logo" in the top left, a "Sign in" button in the top right, and two input fields labeled "Email" and "Paasword" (sic) below them. A "Sign in" link is located in the bottom right corner.
- Bottom Left Wireframe:** A complex dashboard layout. It features a "Logo" in the top left, a navigation bar with a "Juniors" tab, and three main content sections, each with a header and a list of items.
- Bottom Right Wireframe:** A complex dashboard layout similar to the bottom left one, but with a "General" tab in the navigation bar and a different arrangement of content sections.

Logo

Sign up

Name

Email

Password

Confirm Password

Create account

Logo

Home page

Logo

Explore-HP

Junior

General

Post Job

Mentor

Application

Saved

Contact us

About us

Logo

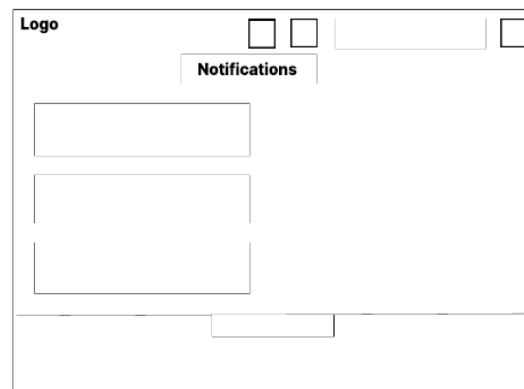
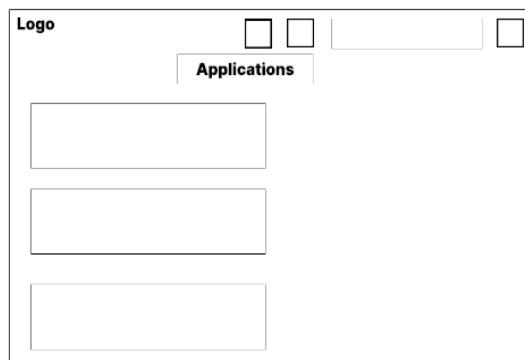
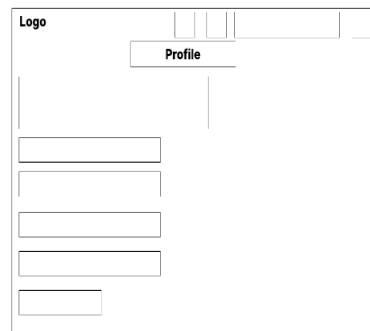
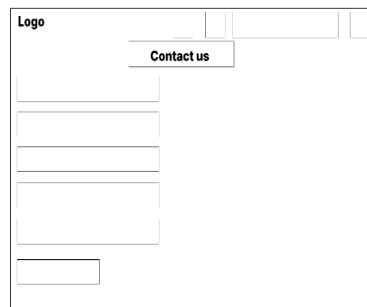
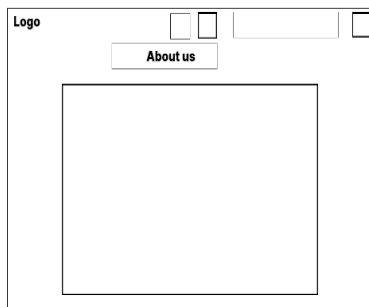
Post Job

Logo

Mentor

Logo

Saved

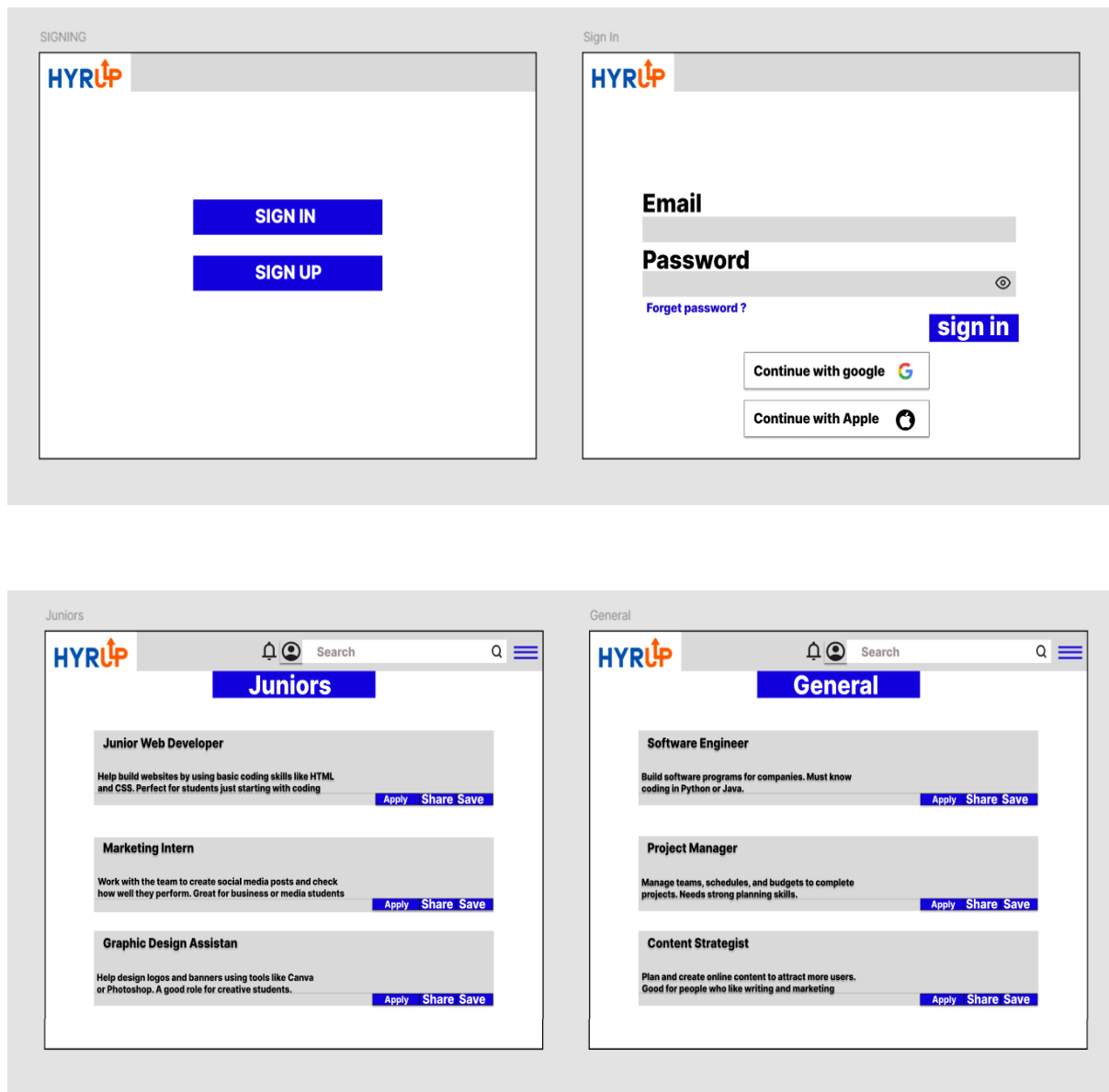




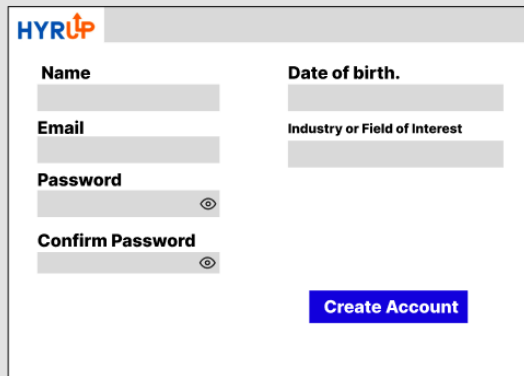
## 5.4 MockUps

### Mockups

Figure 22 Mockups



Sign Up



HYRUP

**Name**

**Date of birth.**

**Email**

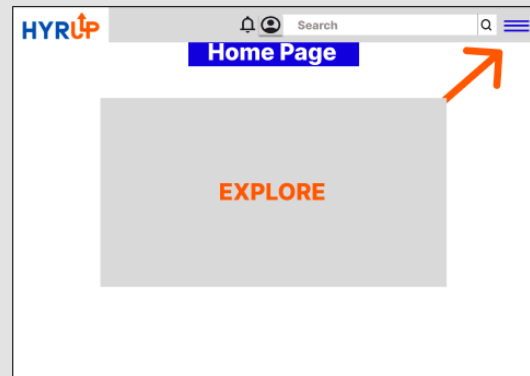
**Industry or Field of Interest**

**Password**

**Confirm Password**

**Create Account**

HomePage



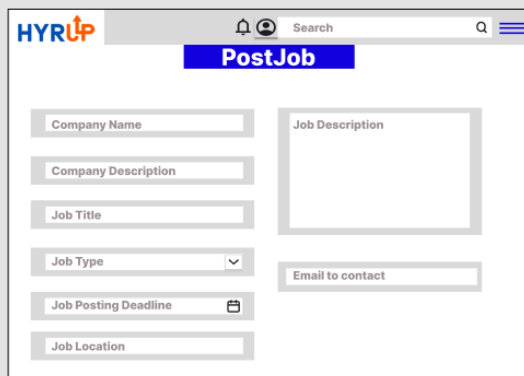
HYRUP

Search

**Home Page**

**EXPLORE**

PostJob



HYRUP

Search

**PostJob**

**Company Name**

**Company Description**

**Job Title**

**Job Type**

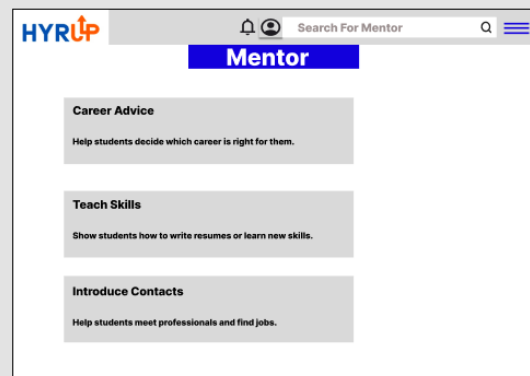
**Job Posting Deadline**

**Job Location**

**Job Description**

**Email to contact**

Mentor



HYRUP

Search For Mentor

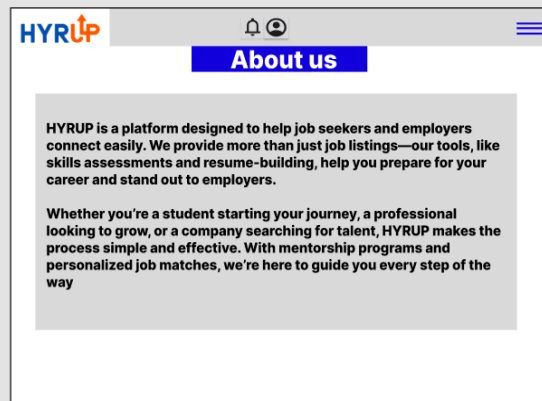
**Mentor**

**Career Advice**  
Help students decide which career is right for them.

**Teach Skills**  
Show students how to write resumes or learn new skills.

**Introduce Contacts**  
Help students meet professionals and find jobs.

About us



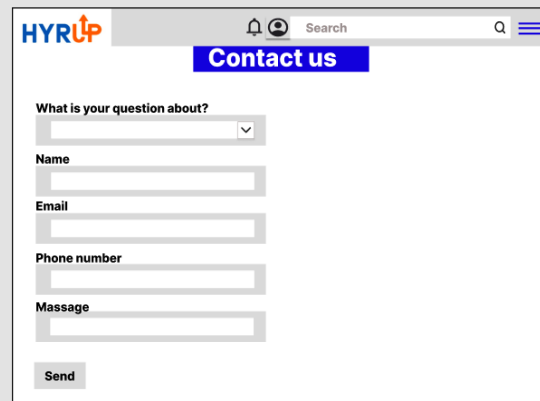
HYRUP

**About us**

HYRUP is a platform designed to help job seekers and employers connect easily. We provide more than just job listings—our tools, like skills assessments and resume-building, help you prepare for your career and stand out to employers.

Whether you're a student starting your journey, a professional looking to grow, or a company searching for talent, HYRUP makes the process simple and effective. With mentorship programs and personalized job matches, we're here to guide you every step of the way

Contact us



HYRUP

Search

**Contact us**

**What is your question about?**

**Name**

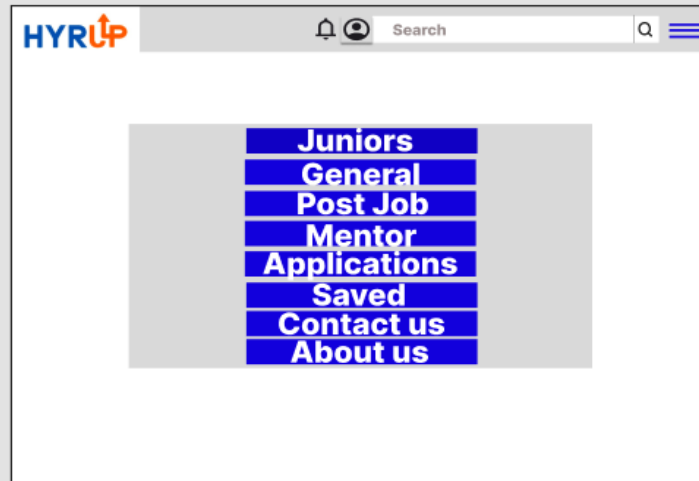
**Email**

**Phone number**

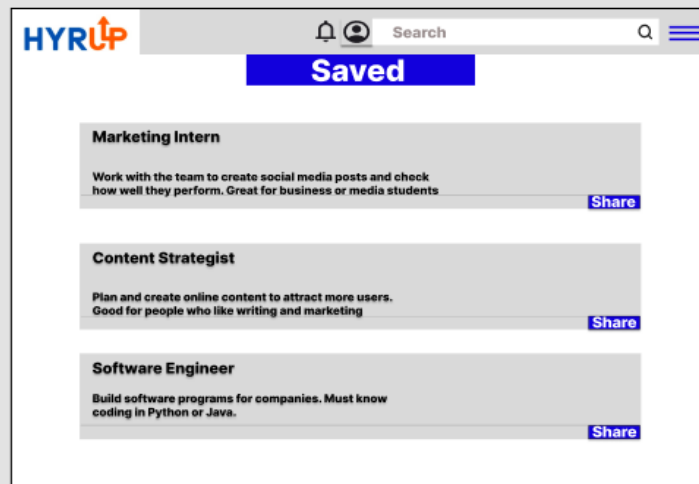
**Message**

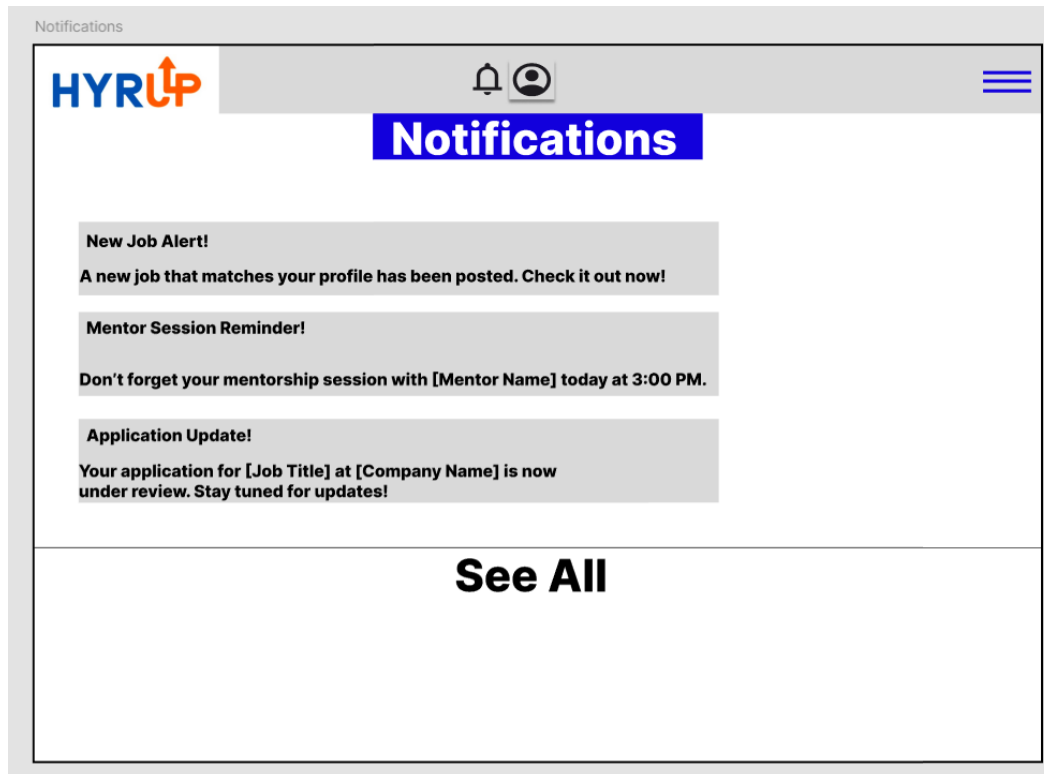
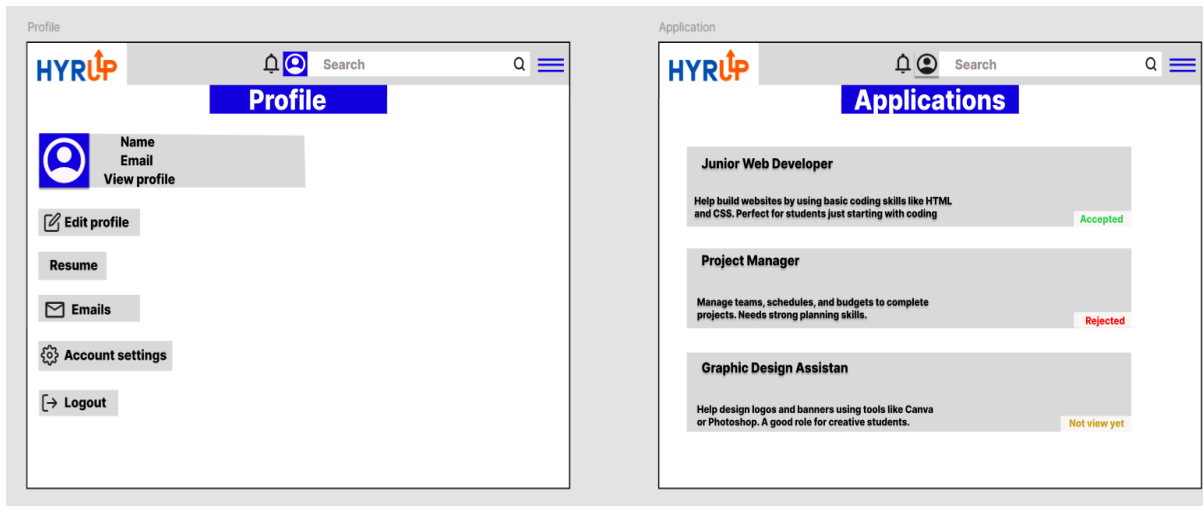
**Send**

Explore



Saved





## 5.5 Prototype

### Prototype



*Figure 23 Prototype*

## 5.6 Frontend

### • Overview

HTML5, CSS3 were used to build the HYRUP platform's front end for responsiveness. Through well-organized forms, dashboard views, and educational pages, it manages user interaction for job seekers, mentors, and companies. Jinja2 templating in Flask is used to control front-end templates.

### Important characteristics

- Separate login and registration sites for various user categories
- At your fingertips: resume uploads, skill input, and dynamic forms for questions
- Role-based dashboards provide various perspectives for recruiters, mentors, and job candidates.
- UI for error management: simple warnings for form validation or submission problems

```
<form method="POST" action="{{ url_for('register_job_seekers') }}" onsubmit="validateForm(event)">
  <div class="form-group">
    <label for="Name">Full Name</label>
    <input type="text" id="Name" name="Name" value="{{ form_data.Name | default('') }}" placeholder="Enter your full name" required>
    {% if errors.Name %}
      <span class="error">{{ errors.Name }}</span>
    {% endif %}
  </div>

  <div class="form-group">
    <label for="Email">Email</label>
    <input type="email" id="Email" name="Email" value="{{ form_data.Email | default('') }}" placeholder="Enter your email" required>
    {% if errors.Email %}
      <span class="error">{{ errors.Email }}</span>
    {% endif %}
  </div>
```

*Figure 24 Code Snippet (Registration Form)*

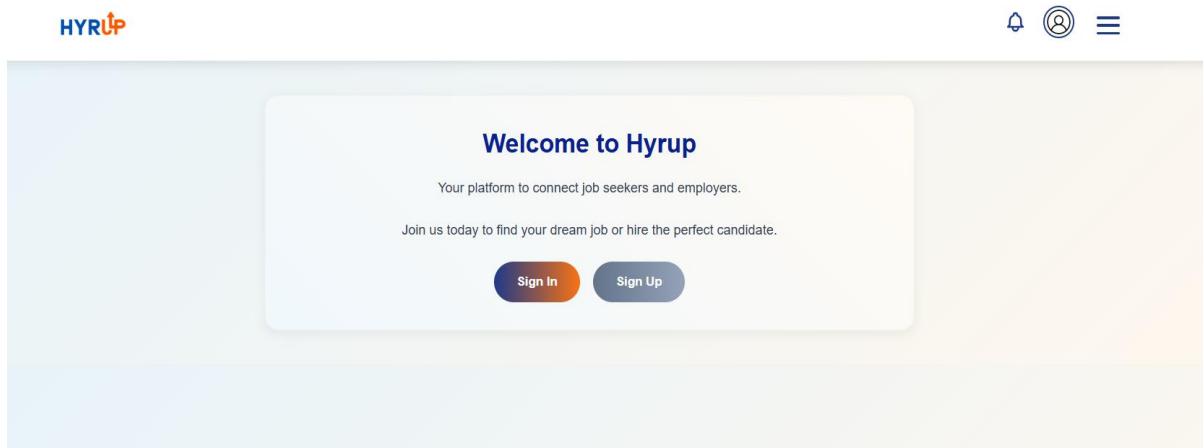
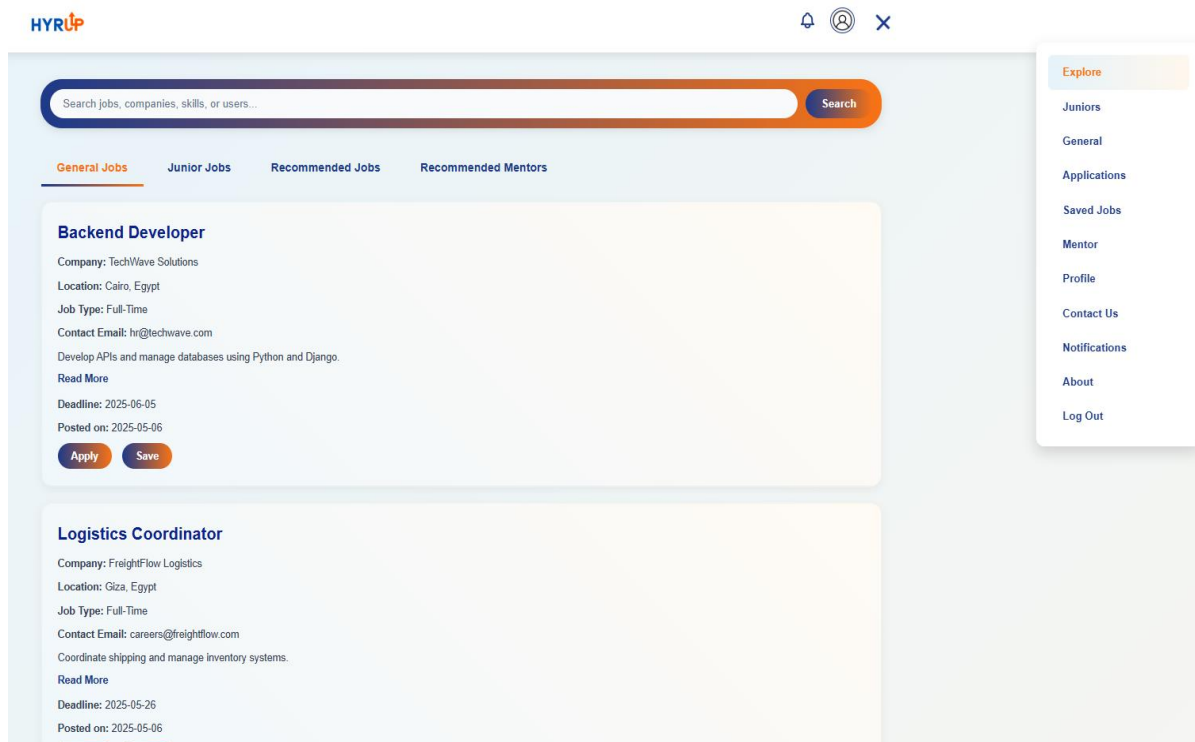


Figure 25 Landing page

Figure 26 Signup Form

The sign-up form is presented as a vertical stack of input fields within a white box on a light blue and yellow gradient background. The title 'Sign Up for Hyrup' is at the top in bold dark blue. The fields are: 'Full Name' with placeholder 'Enter your full name'; 'Email' with placeholder 'Enter your email'; 'Password' with placeholder 'Enter your password' and a toggle icon; 'Role' with a dropdown menu 'Select your role'; 'Skills' with placeholder 'Enter your skills (e.g., Python, JavaScript)'; 'Education Level' with a dropdown menu 'Select education level'; 'Resume Link' with placeholder 'Enter your resume link (e.g., LinkedIn, Google Drive)'; and 'Experience Level (1-5) "Optional"' with placeholder 'Enter experience level (1-5)'. A large, rounded 'Sign Up' button in orange and dark blue is at the bottom.



*Figure 27 Explore Page (for job seeker)*



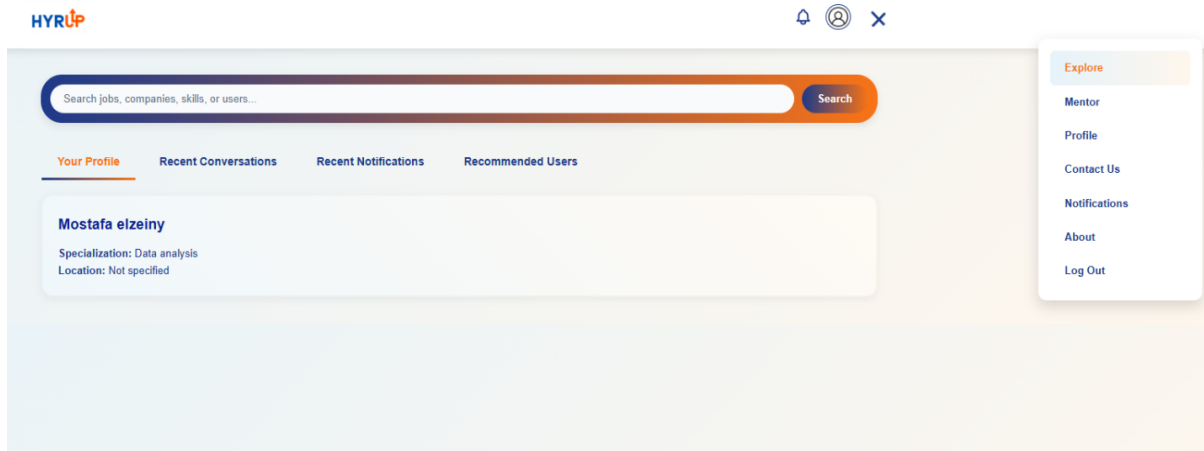


Figure 28 Explore Page (Mentor)

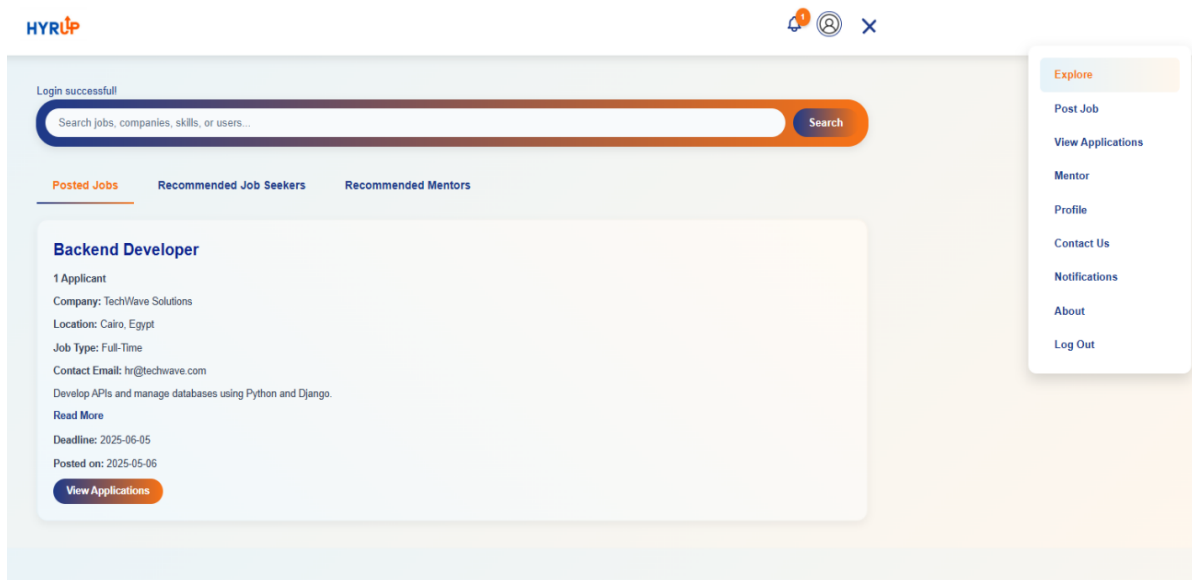


Figure 29 Explore Page (job poster)

## 5.7 Backend

- **Explanation**

Flask is used to create the backend, and the routes manage the logic for file uploads, application submission, registration, and login. Using pymongo, the program employs MongoDB to store user data, job postings, and mentor queries in a NoSQL format.

### **Important Features**

- Flask app that handles routes for every user activity, such as login, registration, and so on.
- MongoDB is used for versatile and expandable storage.
- Secure resume processing with serverside file validation
- Utilizing sessions for authentication

```

from flask import Flask, render_template, request, redirect, flash, session, url_for, jsonify
from pymongo import MongoClient
from bson import ObjectId
from dotenv import load_dotenv
import os
from flask_bcrypt import Bcrypt
from datetime import datetime, timedelta
import urllib.parse
import certifi
from flask_mail import Mail, Message
import secrets
import re
from markupsafe import Markup
import logging
import boto3

# Add AWS Cognito Configuration after loading environment variables
AWS_REGION = os.getenv('AWS_REGION', 'us-east-1')
COGNITO_USER_POOL_ID = os.getenv('COGNITO_USER_POOL_ID')
COGNITO_CLIENT_ID = os.getenv('COGNITO_CLIENT_ID')

cognito_client = boto3.client('cognito-idp', region_name=AWS_REGION)

# Configure logging
logging.basicConfig(level=logging.DEBUG)
logger = logging.getLogger(__name__)

# Initialize Flask app
app = Flask(__name__)
app.secret_key = 'hyrup_secret'
bcrypt = Bcrypt(app)

# Load environment variables from .env file
load_dotenv()

# Define pluralize filter for Jinja2
def pluralize(count):
    return 's' if count != 1 else ''

app.jinja_env.filters['pluralize'] = pluralize

# Configure Flask-Mail for email functionality (used in forgot password)
app.config['MAIL_SERVER'] = 'smtp.gmail.com'
app.config['MAIL_PORT'] = 587
app.config['MAIL_USE_TLS'] = True
app.config['MAIL_USERNAME'] = os.getenv('MAIL_USERNAME')
app.config['MAIL_PASSWORD'] = os.getenv('MAIL_PASSWORD')
app.config['MAIL_DEFAULT_SENDER'] = os.getenv('MAIL_USERNAME')

mail = Mail(app)

```

*Figure 30 Libraries & Configurations*

```

# Home route
@app.route('/')
def home():
    unread_notifications = 0
    if 'user_id' in session:
        unread_notifications = get_unread_notifications_count(session['user_id'])
    return render_template('hyrup.html', unread_notifications=unread_notifications)

# Sign Up route
# Replace the existing /register_job_seekers route with this
@app.route('/register_job_seekers', methods=['GET', 'POST'])
def register_job_seekers():
    if db is None:
        flash('Database connection failed. Please try again later.', 'error')
        return render_template('signup.html', form_data={}, errors={})

    users_collection = db['users']

    education_levels = [
        {'value': 'high_school', 'label': 'High School'},
        {'value': 'bachelor', 'label': "Bachelor's Degree"},
        {'value': 'master', 'label': "Master's Degree"},
        {'value': 'phd', 'label': 'PhD'}
    ]

    job_types = [
        {'value': 'full-time', 'label': 'Full-time'},
        {'value': 'part-time', 'label': 'Part-time'},
        {'value': 'contract', 'label': 'Contract'},
        {'value': 'internship', 'label': 'Internship'},
        {'value': 'remote', 'label': 'Remote'}
    ]

    roles = [
        {'value': 'job_seeker', 'label': 'Job Seeker'},
        {'value': 'job_poster', 'label': 'Job Poster'},
        {'value': 'mentor', 'label': 'Mentor'}
    ]

    if request.method == 'POST':
        form_data = {
            'Name': request.form.get('Name', ''),
            'Email': request.form.get('Email', ''),
            'Skills': request.form.get('Skills', ''),
            'Education_level': request.form.get('Education_level', ''),
            'Job_type': request.form.get('Job_type', ''),
            'Resume': request.form.get('Resume', ''),
            'Experience_levelID': request.form.get('Experience_levelID', ''),
            'Specialization': request.form.get('Specialization', ''),
            'Role': request.form.get('Role', ''),
            'Company_name': request.form.get('Company_name', '') if request.form.get('Role') == 'job_poster' else ''
        }
        password = request.form.get('password', '')
        errors = {}

```

Figure 31 Code Snippet (Register Route) 1

```

# Validate common mandatory fields
if not form_data['Name']:
    errors['Name'] = 'Full name is required'
if not form_data['Email']:
    errors['Email'] = 'Email is required'
else:
    email_pattern = re.compile(r'^[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}$')
    if not email_pattern.match(form_data['Email']):
        errors['Email'] = 'Invalid email format'
if not password:
    errors['password'] = 'Password is required'
if not form_data['Role']:
    errors['Role'] = 'Role is required'

# Role-specific validations
if form_data['Role'] == 'job_seeker':
    if not form_data['Job_type']:
        errors['Job_type'] = 'Preferred job type is required for job seekers'
    if not form_data['Resume']:
        errors['Resume'] = 'Resume link is required for job seekers'
elif form_data['Role'] == 'job_poster':
    if not form_data['Company_name']:
        errors['Company_name'] = 'Company name is required for job posters'
    if not form_data['Resume']:
        errors['Resume'] = 'Resume link is required for job posters'
elif form_data['Role'] == 'mentor':
    if not form_data['Specialization']:
        errors['Specialization'] = 'Specialization is required for mentors'
    if not form_data['Resume']:
        errors['Resume'] = 'Resume link is required for mentors'

# Validate experience level
if form_data['Experience_levelID']:
    if not validate_experience_level(form_data['Experience_levelID']):
        errors['Experience_levelID'] = 'Experience level must be between 1 and 5'
    else:
        form_data['Experience_levelID'] = int(form_data['Experience_levelID'])

if errors:
    flash('Please correct the errors in the form', 'error')
    return render_template('signup.html', form_data=form_data, errors=errors,
                           education_levels=education_levels, job_types=job_types, roles=roles)

# Check if email already exists in Cognito
try:
    cognito_client.admin_get_user(
        UserPoolId=COGNITO_USER_POOL_ID,
        Username=form_data['Email'].lower()
    )
    errors['Email'] = 'Email already registered'
    flash('Email already registered!', 'error')
    return render_template('signup.html', form_data=form_data, errors=errors,
                           education_levels=education_levels, job_types=job_types, roles=roles)
except cognito_client.exceptions.UserNotFoundException:

```

Figure 32 Code Snippet (Register Route) 2

```

except cognito_client.exceptions.UserNotFoundException:
    pass # Email not registered, proceed with signup
except Exception as e:
    logger.error(f"Error checking Cognito user: {e}")
    flash('An error occurred. Please try again later.', 'error')
    return render_template('signup.html', form_data=form_data, errors=errors,
                           education_levels=education_levels, job_types=job_types, roles=roles)

# Register user in Cognito
try:
    response = cognito_client.sign_up(
        ClientId=COGNITO_CLIENT_ID,
        Username=form_data['Email'].lower(),
        Password=password,
        UserAttributes=[
            {'Name': 'name', 'Value': form_data['Name']},
            {'Name': 'email', 'Value': form_data['Email'].lower()},
            {'Name': 'custom:role', 'Value': form_data['Role']},
            {'Name': 'custom:skills', 'Value': form_data['Skills'] or ''},
            {'Name': 'custom:education_level', 'Value': form_data['Education_level'] or ''},
            {'Name': 'custom:job_type', 'Value': form_data['Job_type'] or ''},
            {'Name': 'custom:resume', 'Value': form_data['Resume']},
            {'Name': 'custom:experience_level', 'Value': str(form_data['Experience_levelID']) if form_data['Experience_levelID'] else ''},
            {'Name': 'custom:specialization', 'Value': form_data['Specialization'] or ''},
            {'Name': 'custom:company_name', 'Value': form_data['Company_name'] or ''}
        ]
    )
    logger.info(f"Cognito signup successful for {form_data['Email']}")
except cognito_client.exceptions.UsernameExistsException:
    errors['Email'] = 'Email already registered'
    flash('Email already registered!', 'error')
    return render_template('signup.html', form_data=form_data, errors=errors,
                           education_levels=education_levels, job_types=job_types, roles=roles)
except cognito_client.exceptions.InvalidPasswordException:
    errors['password'] = 'Password does not meet requirements'
    flash('Password does not meet requirements. It must be at least 8 characters long and include uppercase, lowercase, numbers, and special characters.', 'error')
    return render_template('signup.html', form_data=form_data, errors=errors,
                           education_levels=education_levels, job_types=job_types, roles=roles)
except Exception as e:
    logger.error(f"Cognito signup error: {e}")
    flash('An error occurred during signup. Please try again.', 'error')
    return render_template('signup.html', form_data=form_data, errors=errors,
                           education_levels=education_levels, job_types=job_types, roles=roles)

# Store user in MongoDB
user = {
    'cognito_user_id': response['UserSub'], # Store Cognito Sub ID
    'name': form_data['Name'],
    'email': form_data['Email'].lower(),
    'role': form_data['Role'],
    'skills': form_data['Skills'] or None,
    'education_level': form_data['Education_level'] or None,
    'job_type': form_data['Job_type'] or None,
    'resume': form_data['Resume'],
    'experience_level': str(form_data['Experience_levelID']) if form_data['Experience_levelID'] else None
}

```

*Figure 33 Code Snippet (Register Route) 3*

```

# Store user in MongoDB
user = {
    'cognito_user_id': response['UserSub'], # Store Cognito Sub ID
    'name': form_data['Name'],
    'email': form_data['Email'].lower(),
    'role': form_data['Role'],
    'skills': form_data['Skills'] or None,
    'education_level': form_data['Education_level'] or None,
    'job_type': form_data['Job_type'] or None,
    'resume': form_data['Resume'],
    'experience_level': form_data['Experience_levelID'] if form_data['Experience_levelID'] else None,
    'specialization': form_data['Specialization'] or None,
    'company_name': form_data['Company_name'] if form_data['Role'] == 'job_poster' else None,
    'created_at': datetime.utcnow(),
    'saved_jobs': [] if form_data['Role'] == 'job_seeker' else []
}

try:
    users_collection.insert_one(user)
    logger.info(f"User {form_data['Email']} stored in MongoDB")
except Exception as e:
    logger.error(f"MongoDB insert error: {e}")
    # Optional: Delete Cognito user if MongoDB insert fails
    try:
        cognito_client.admin_delete_user(
            UserPoolId=COGNITO_USER_POOL_ID,
            Username=form_data['Email'].lower()
        )
    except Exception as delete_error:
        logger.error(f"Failed to delete Cognito user after MongoDB error: {delete_error}")
    flash('An error occurred while saving user data. Please try again.', 'error')
    return render_template('signup.html', form_data=form_data, errors=errors,
                           education_levels=education_levels, job_types=job_types, roles=roles)

flash('Registration successful! Please check your email to verify your account.', 'success')
return redirect(url_for('verify_email', email=form_data['Email'].lower()))

return render_template('signup.html', form_data={}, errors={},
                       education_levels=education_levels, job_types=job_types, roles=roles)

```

Figure 34 Code Snippet (Register Route) 4

```

# Explore route with recommendations
@app.route('/explore')
def explore():
    if 'user_id' not in session:
        return redirect(url_for('signin'))

    if db is None:
        logger.error("Database connection failed")
        flash('Database connection failed. Please try again later.', 'error')
        return render_template('Explor.html', role=None, general_jobs=[], junior_jobs=[], posted_jobs=[],
                                recommended_job_seekers=[], recommended_jobs=[], recommended_mentors=[],
                                recommended_users=[], unread_notifications=0, search_query='')

    users_collection = db['users']
    jobs_collection = db['jobs']
    applications_collection = db['applications']
    messages_collection = db['messages']
    notifications_collection = db['notifications']

    user = users_collection.find_one({'_id': ObjectId(session['user_id'])})
    if not user:
        logger.error(f"User not found for ID: {session['user_id']}")
        flash('User not found.', 'error')
        return redirect(url_for('signin'))

    search_query = request.args.get('search', '').strip()
    role = user['role']
    general_jobs = []
    junior_jobs = []
    posted_jobs = []
    conversations = []
    suggested_users = []
    recent_message_notifications = []
    mentor_profile = None
    recommended_job_seekers = []
    recommended_jobs = []
    recommended_mentors = []
    recommended_users = []
    unread_notifications = get_unread_notifications_count(session['user_id'])

```

*Figure 35 Explore Route (1)*



```

if role == 'job_seeker':
    # Job Seeker: Fetch general and junior jobs
    search_filter = {}
    if search_query:
        search_filter = {
            '$or': [
                {'job_title': {'$regex': search_query, '$options': 'i'}},
                {'company_name': {'$regex': search_query, '$options': 'i'}},
                {'location': {'$regex': search_query, '$options': 'i'}},
                {'description': {'$regex': search_query, '$options': 'i'}}
            ]
        }

    # General Jobs
    general_query = {'category': {'$in': ['general']}}
    if search_filter:
        general_query.update(search_filter)
    general_jobs_cursor = jobs_collection.find(general_query)
    general_jobs = [
        {
            '_id': str(job['_id']),
            'job_title': job['job_title'],
            'company_name': job.get('company_name', 'Not specified'),
            'location': job.get('location', 'Not specified'),
            'job_type': job.get('job_type', 'Not specified'),
            'description': job['description'],
            'contact_email': job.get('contact_email', 'Not specified'),
            'deadline': job['deadline'].strftime('%Y-%m-%d') if job.get('deadline') else 'Not specified',
            'created_at': job['created_at'].strftime('%Y-%m-%d') if job.get('created_at') else 'Not specified'
        } for job in general_jobs_cursor
    ]
    logger.debug(f"General jobs found: {len(general_jobs)}")

    # Junior Jobs
    junior_query = {'category': {'$in': ['juniors']}}
    if search_filter:
        junior_query.update(search_filter)
    junior_jobs_cursor = jobs_collection.find(junior_query)
    junior_jobs = [
        {

```

Figure 36 Explore Route (2)

```

try:
    exp_level = map_experience_level(user['experience_level'])
    logger.debug(f"Filtering recommended jobs for experience_level: {exp_level}")
    recommended_jobs_query['experience_level'] = {
        '$gte': exp_level - 1,
        '$lte': exp_level + 1
    }
except Exception as e:
    logger.error(f"Error processing experience_level for {user['email']}: {e}")
    # Fallback to no experience_level filter
recommended_jobs_cursor = jobs_collection.find(recommended_jobs_query).limit(5)
recommended_jobs = [
    {
        '_id': str(job['_id']),
        'job_title': job['job_title'],
        'company_name': job.get('company_name', 'Not specified'),
        'location': job.get('location', 'Not specified'),
        'job_type': job.get('job_type', 'Not specified'),
        'description': job['description'][:200] + '...' if len(job['description']) > 200 else job['description'],
        'contact_email': job.get('contact_email', 'Not specified'),
        'deadline': job['deadline'].strftime('%Y-%m-%d') if job.get('deadline') else 'Not specified',
        'created_at': job['created_at'].strftime('%Y-%m-%d') if job.get('created_at') else 'Not specified'
    } for job in recommended_jobs_cursor
]
logger.debug(f"Recommended jobs found: {len(recommended_jobs)}")

# Recommended Mentors
if user_skills:
    recommended_mentors_query = {
        'role': 'mentor',
        'specialization': {'$regex': skills_regex, '$options': 'i'},
        '_id': {'$ne': ObjectId(session['user_id'])}
    }
    recommended_mentors_cursor = users_collection.find(recommended_mentors_query).limit(3)
    recommended_mentors = [
        {
            'id': str(mentor['_id']),
            'name': mentor['name'],
            'specialization': mentor.get('specialization', 'Not specified')
        } for mentor in recommended_mentors_cursor
    ]
    logger.debug(f"Recommended mentors found: {len(recommended_mentors)}")

```

Figure 37 Explore Route (3)

```

elif role == 'job_poster':
    # Job Poster: Fetch posted jobs
    search_filter = {}
    if search_query:
        search_filter = {
            '$or': [
                {'job_title': {'$regex': search_query, '$options': 'i'}},
                {'company_name': {'$regex': search_query, '$options': 'i'}},
                {'location': {'$regex': search_query, '$options': 'i'}},
                {'description': {'$regex': search_query, '$options': 'i'}}
            ]
        }

    posted_jobs_query = {'posted_by': ObjectId(session['user_id'])}
    if search_filter:
        posted_jobs_query.update(search_filter)
    posted_jobs_cursor = jobs_collection.find(posted_jobs_query)
    posted_jobs = []
    for job in posted_jobs_cursor:
        application_count = applications_collection.count_documents({'job_id': job['_id']})
        posted_jobs.append({
            '_id': str(job['_id']),
            'job_title': job['job_title'],
            'company_name': job.get('company_name', 'Not specified'),
            'location': job.get('location', 'Not specified'),
            'job_type': job.get('job_type', 'Not specified'),
            'description': job['description'],
            'contact_email': job.get('contact_email', 'Not specified'),
            'deadline': job['deadline'].strftime('%Y-%m-%d') if job.get('deadline') else 'Not specified',
            'created_at': job['created_at'].strftime('%Y-%m-%d') if job.get('created_at') else 'Not specified',
            'application_count': application_count
        })
    logger.debug(f"Posted jobs found for user {session['user_id']}: {len(posted_jobs)}")

    # Recommended Job Seekers
    posted_jobs_cursor = jobs_collection.find({'posted_by': ObjectId(session['user_id'])})
    job_descriptions = ' '.join([job['description'].lower() + ' ' + job['job_title'].lower() for job in posted_jobs_cursor])
    job_keywords = set(job_descriptions.split()) - set(['and', 'or', 'the', 'a', 'an', 'in', 'to', 'for'])
    keywords_regex = '|'.join([re.escape(keyword) for keyword in job_keywords if len(keyword) > 3])
    if keywords_regex:
        recommended_seekers_query = {
            'role': 'job_seeker',
            'skills': {'$regex': keywords_regex, '$options': 'i'},

```

Figure 38 Explore Route (4)

```

        {
            'id': str(seeker['_id']),
            'name': seeker['name'],
            'skills': seeker.get('skills', 'Not specified'),
            'experience_level': map_experience_level(seeker.get('experience_level', 1))
        } for seeker in recommended_seekers_cursor
    ]
    logger.debug(f"Recommended job seekers found: {len(recommended_job_seekers)}")

# Recommended Mentors
if keywords_regex:
    recommended_mentors_query = {
        'role': 'mentor',
        'specialization': {'$regex': keywords_regex, '$options': 'i'},
        '_id': {'$ne': ObjectId(session['user_id'])}
    }
    recommended_mentors_cursor = users_collection.find(recommended_mentors_query).limit(3)
    recommended_mentors = [
        {
            'id': str(mentor['_id']),
            'name': mentor['name'],
            'specialization': mentor.get('specialization', 'Not specified')
        } for mentor in recommended_mentors_cursor
    ]
    logger.debug(f"Recommended mentors found: {len(recommended_mentors)}")

role == 'mentor':
# Mentor: Fetch conversations and suggested users
mentor_profile = {
    'name': user['name'],
    'specialization': user.get('specialization', 'Not specified')
}

received_messages = messages_collection.distinct('sender_id', {'receiver_id': ObjectId(session['user_id'])})
for user_id in received_messages:
    contact = users_collection.find_one({'_id': user_id})
    if contact:
        recent_message = messages_collection.find_one(
            {
                '$or': [
                    {'sender_id': ObjectId(session['user_id']), 'receiver_id': user_id},

```

Figure 39 Explore Route (5)

```

        {'sender_id': user_id, 'receiver_id': ObjectId(session['user_id'])}
    ]
    },
    sort=[('timestamp', -1)]
)
message_snippet = recent_message['message'][:50] + '...' if recent_message and len(recent_message['message']) > 50 else recent_message['message'] if recent_message else ''
conversations.append({
    'id': str(contact['_id']),
    'name': contact['name'],
    'role': contact['role'],
    'message_snippet': message_snippet,
    'timestamp': recent_message['timestamp'] if recent_message else None
})

search_filter = {}
if search_query:
    search_filter = {
        '$or': [
            {'name': {'$regex': search_query, '$options': 'i'}},
            {'skills': {'$regex': search_query, '$options': 'i'}},
            {'company_name': {'$regex': search_query, '$options': 'i'}}
        ]
    }

if search_query:
    conversations = [
        convo for convo in conversations
        if search_query.lower() in convo['name'].lower() or
        (convo['role'] == 'job_seeker' and search_query.lower() in users_collection.find_one({'_id': ObjectId(convo['id'])}).get('skills', '')).lower()
    ]

contacted_user_ids = [ObjectId(user['_id']) for user in conversations]
suggested_query = {
    'role': {'$in': ['job_seeker', 'job_poster']},
    '_id': {'$nin': contacted_user_ids + [ObjectId(session['user_id'])]}
}
if mentor_profile['specialization']:
    suggested_query['$or'] = [
        {'skills': {'$regex': mentor_profile['specialization'], '$options': 'i'}},
        {'specialization': {'$regex': mentor_profile['specialization'], '$options': 'i'}}
    ]
suggested_users_cursor = users_collection.find(suggested_query).limit(5)
for suggested_user in suggested_users_cursor:

```

*Figure 40 Explore Route (6)*

```

        'read': False
    }).sort('created_at', -1).limit(3)
    recent_message_notifications = [
        {
            'message': notification['message'],
            'contact_id': str(notification['contact_id']),
            'created_at': notification['created_at']
        }
        for notification in recent_notifications
    ]

    # Recommended Users
    specialization = user.get('specialization', '').lower()
    if specialization:
        recommended_users_query = {
            'role': {'$in': ['job_seeker', 'job_poster']},
            '$or': [
                {'skills': {'$regex': specialization, '$options': 'i'}},
                {'job_type': {'$regex': specialization, '$options': 'i'}}
            ],
            '_id': {'$nin': contacted_user_ids + [ObjectId(session['user_id'])]}
        }
        recommended_users_cursor = users_collection.find(recommended_users_query).limit(5)
        recommended_users = [
            {
                'id': str(u['_id']),
                'name': u['name'],
                'role': u['role'],
                'skills': u.get('skills', 'Not specified') if u['role'] == 'job_seeker' else None,
                'job_type': u.get('job_type', 'Not specified') if u['role'] == 'job_seeker' else None
            } for u in recommended_users_cursor
        ]
        logger.debug(f"Recommended users found for mentor: {len(recommended_users)}")

    return render_template('Explor.html', role=role, general_jobs=general_jobs, junior_jobs=junior_jobs,
        posted_jobs=posted_jobs, conversations=conversations, suggested_users=suggested_users,
        recent_message_notifications=recent_message_notifications, mentor_profile=mentor_profile,
        recommended_job_seekers=recommended_job_seekers, recommended_jobs=recommended_jobs,
        recommended_mentors=recommended_mentors, recommended_users=recommended_users,
        unread_notifications=unread_notifications, search_query=search_query)

```

Figure 41 Explore Route (7)

# **Chapter 6**

## **Business Plan**

## 6.1 Executive Summary:

HYRUP is a next-generation internet job market that provides a full set of resources and services to close the gap between employers and job seekers. With the incorporation of next-generation functionalities like skill tests, mentorship programs, resume building tools, and career simulation maps, the website is more than a typical job board. It has two primary user segments: juniors and undergrads seeking career guidance and internships, and traditional job seekers seeking entry or more senior positions. Employers are aided by HYRUP's streamlined recruitment process through advanced job posting, ATS, and data-informed decision-making software. Through its focus on skills building, career readiness, and local expertise, the platform ensures addressing the evolving demands of the job market and facilitating professional growth.

### **Purpose of the Market:**

mainly serves employers seeking quality recruitment services, in addition to candidates of all experience levels, from students and recent graduates to experienced professionals. The website is targeting the Middle East and North Africa (MENA) region with a particular emphasis on Egypt, where there is a significant demand for local job matching services. HYRUP aims to address the particular needs of the local labour market, including unemployment reduction and addressing national agendas like Vision2030, through the promotion of the Arabic and English languages and the meeting of knowledge from different locations.

### **The company's creators**

Four Galala University Business Information Systems Program students—**Mostafa Mohamed Elzeiny, Mohamed Ehab Mohamed Abdelhamid, Kareem Ahmed Kadouma, and Reem Walid Essam Azzam**—are the masterminds behind the HYRUP project. Armed with their academic knowledge in administrative sciences and their technical expertise in web development, database management, and business process optimization, the team is developing this platform under the supervision of **Dr. Dina Ezzat and Eng. Mohamed Noaman**.



## **Advantages in Competition**

By focusing on undergraduates and juniors, HYRUP differs from other career search websites, including LinkedIn, Indeed, and regional competition Wuzzuf and Bayt. com. As opposed to competitors predicated upon job postings for senior professionals, HYRUP offers personalized services such as mentorship schemes, career simulation trajectories, and resume building platforms that are specially adapted to enhance juniors' and undergraduates' employability as entry-level job and internship applicants. Its bilingual nature and localized consciousness also guarantee applicability to the MENA region and Egypt specifically, making it an open and accessible forum for young job applicants.

## **The Future Prospects**

The future for online job portals and HYRUP looks promising, especially in the MENA region, where the demand for skilled manpower is increasing and digitalization is occurring. With HYRUP regularly enhancing what it has to offer, including introducing mock interviews, e-mentorship, and gamification features to increase stickiness for users, it is poised to benefit from these trends, which are undergoing dramatic shifts in workforce composition. As the site is also linked to socioeconomic goals such as reducing unemployment and promoting upskilling, it remains pertinent despite long-term labor market problems. By expanding its membership, introducing additional languages, and enhancing employer functionality with better analysis and branding capabilities, HYRUP aims to be a leading job website in the region.

## **6.2 General Company Description:**

### **Company Profile**

The virtual employment website HYRUP operates at the nexus of human resources technology (HR Tech) and career enhancement. HYRUP's primary function is to connect workers with job providers and equip users with career preparation tools and skills enhancement. HYRUP's online platform simplifies job matching, provides the functionalities of skills assessment, mentoring, and resume building, and streamlines the hiring process for businesses with applicant tracking and analytics functions. English and Arabic bilingual support and localized expertise to enhance employability and reduce unemployment is what HYRUP provides in the way of the local market, with priority placed on the MENA region, particularly Egypt.

### **Aims & Objectives**

The main objectives of HYRUP are to maximize the employability of job seekers, make recruitment easier for employers, and assist in broader socioeconomic objectives. Developing a Minimum Viable Product (MVP) with the main features of job searching, job posting, and skills assessment is one of the short-term objectives, followed by gathering users' opinions in order to enhance the platform. HYRUP's long-term intentions are to become a leading job board in the MENA region by incorporating features such as innovative career development tools and supporting national employment initiatives such as Vision 2030. The users will also be empowered to learn and enhance their skills throughout, keeping them abreast in an evolving labor market.

Company industry HYRUP functions in the HR Tech niche of the online job board marketplace, which is expanding exponentially globally as well as throughout the MENA region. The sector is driven by increasing utilization of digital means to hire, demands for niche talent, and the necessity to solve inefficiencies in the labor marketplace, including asymmetry of information and search cost.

One of the short-term trends is the incorporation of new hiring approaches, and the long-term trends are greater focus on diversity, equity, and inclusion (DEI), sustainability, and adaptable employment models. By ensuring that there is inclusivity through accessibility features and encouraging upskilling programs that work to solve the problems of the shifting workforce, HYRUP will gain from these trends.

The platform addresses shortcomings by global players such as LinkedIn and Indeed since it is bilingual and possesses localised intelligence, rendering it highly relevant to the MENA employment market. Its emphasis on security and compliance (e.g., the GDPR) instills trust in users, while its modular structure promotes flexibility and scalability.

The team has a solid academic background in business information systems, experience with database management, web development, and business process re-engineering, and an interest in solving the issues of the job market. Such competencies make HYRUP capable of providing a simple, safe, and effective platform that is valuable to employers' and job seekers' needs.

### **6.3 Product & Services:**

#### **Product/Service Description**

The mission of the online job portal HYRUP is to bring together employers and workers. It has two parts.

- Junior & Undergraduate Section: Aimed at students and recent graduates seeking internships and graduate jobs.
- General Section: for experienced employees looking to progress in their careers.

#### **Key Features:**

- Job Post & Search: User-friendly interface to search and post job vacancies.

- Skill Assessment Tools: Helps those who are looking for jobs to determine areas of weakness and strength.
- Resume Building & Interview Preparation: Offers mock interviews, advice, and templates.
- Mentoring Program: Juniors are paired with experienced mentors for career guidance.
- Employer Tools: Provides candidate screening, job analysis, and applicant tracking.
- Admin Features: Offers system maintenance, fraud management, and security.

## Advantages and Disadvantages of Competition

### Advantages in Competition:

1. Dual-Targeted Platform: HYRUP, unlike the majority of job boards, caters to both entry-level job seekers (students, recent graduates) and experienced professionals, thereby expanding its user base.
2. Skill Evaluation Tools: In-depth assessments enable users to recognize areas of improvement and skill enhancement, which makes them more employable.
3. Career Path Simulator: A unique tool that helps users chart their career path.
4. Mentoring Program: Young job candidates benefit from receiving individual advice from industry professionals.
5. Employer analysis tools: Offers employers the information they need to make improved hiring choices.
6. Localized Content and Support: Personalized language support, content, and job recommendations for the MENA region.
7. Enhanced Security Features: Customers can rely on fraud prevention, secure payments, and strict data protection policies.

### Competitive Disadvantages:

1. Market competition: More established websites like LinkedIn, Indeed, and Wuzzuf have a greater number of users and better established brand recognition.

2. **Resource-Intensive Features:** Features such as mentorship and career simulation are costly to operate due to the requirements for continuous updates and active involvement.
3. **User Adoption Barrier:** Persuading users to change from known platforms may involve massive marketing.
4. **Potential Problems Concerning Data Privacy:** There is a need for extremely high standards of compliance with privacy law so that personal data can be processed safely.
5. **Technical Maintenance:** In order to keep up the competitive advantage, advanced features like skill tests and analytics may require constant updating.

### Charges, Rates, and the Lease Agreement

To attract both employers and job seekers, HYRUP will employ a dynamic pricing strategy. The framework will be as follows:

#### 1. Free Basic Access:

- It is free for job seekers to create profiles, browse job postings, and apply.
- Employers are allowed to post free jobs to a limited extent.

#### 2. Top-Notch Plans for People Looking for Work:

- **Resume enhancement tools:** professional membership with specialist resume design templates and guidance.
- **Interview Preparation Packages:** Provides mock interviews, sample questions, and feedback.
- **Career Path Simulator:** Offered on pay-per-use or subscription models.

#### 3. Subscription Plans at the Employer:

- **Standard Plan:** Offers basic statistics, candidate tracking, and a set number of job postings.
- **Premium Plan:** It provides detailed analytics reports, filtering options, and unlimited job listings.

#### 4. Fees for the Mentorship Program:

- The candidates applying for the job can take the mentorship services session-wise or on a monthly subscription basis.

## 5. Third-Party Integrations

- Add-on fees for services such as skill certification or high-level job promotions. The variable pricing model provides access to all while providing valuable premium services for those seeking more help.

## BMC

<b>Key Partners</b> <ul style="list-style-type: none"> <li>• <b>Key Partners:</b> Universities, mentorship networks, skill assessors, cloud services, payment gateways, marketing.</li> <li>• <b>Key Suppliers:</b> APIs, IT services, design agencies.</li> <li>• <b>Key Resources:</b> Assessment tools, mentorship, cloud hosting, payments.</li> <li>• <b>Key Activities:</b> Content, mentorship, security, marketing.</li> </ul>	<b>Key Activities</b> <ul style="list-style-type: none"> <li>• <b>Value Proposition:</b> Platform, skill assessments, mentorship, security.</li> <li>• <b>Distribution Channels:</b> Website, social media, university partnerships.</li> <li>• <b>Customer Relationships:</b> Support, mentorship, feedback.</li> <li>• <b>Revenue Streams:</b> Subscriptions, mentorship fees, ads.</li> </ul> <b>Key Resources</b> <ul style="list-style-type: none"> <li>• <b>Value Proposition:</b> Skilled developers, mentorship, assessments, secure database.</li> <li>• <b>Distribution Channels:</b> Website, app, social media.</li> <li>• <b>Customer Relationships:</b> Support, chatbots, feedback.</li> <li>• <b>Revenue Streams:</b> Payments, subscriptions, ads.</li> </ul>	<b>Value Proposition</b> <ul style="list-style-type: none"> <li>• <b>Value Delivered:</b> Connecting job seekers with employers, enhancing employability.</li> <li>• <b>Customer Problems Solved:</b> Job search, guidance, and skill assessments.</li> <li>• <b>Bundles:</b> <ul style="list-style-type: none"> <li>• <b>Job Seekers:</b> Job tools, assessments, resumes, mentorship.</li> <li>• <b>Employers:</b> Job posting, tracking, analytics.</li> </ul> </li> <li>• <b>Needs Satisfied:</b> Career growth, hiring improvement, guidance.</li> </ul>	<b>Customer Relationship</b> <p><b>Expected Relationships:</b></p> <ul style="list-style-type: none"> <li>• <b>Job Seekers:</b> Support, mentorship, guidance.</li> <li>• <b>Employers:</b> Communication, support, recruitment help.</li> </ul> <p><b>Established Relationships:</b> Self-service platform, mentorship, support.</p> <p><b>Integration:</b> Mentorship drives engagement. Support boosts satisfaction.</p> <p><b>Cost:</b> Moderate — needed for success.</p> <b>Channels</b> <ul style="list-style-type: none"> <li>• <b>Preferred Channels:</b> Website, social media, universities, email.</li> <li>• <b>Current Channels:</b> Website, social ads, edu collaborations.</li> <li>• <b>Channel Integration:</b> Direct users to register, search jobs, mentorship.</li> <li>• <b>Best Channels:</b> Website, university partnerships.</li> <li>• <b>Cost-Efficient Channels:</b> Social media, email.</li> <li>• <b>Routine Integration:</b> Updates, alerts, reminders keep users engaged.</li> </ul>	<b>Customer Segement</b> <p><b>For Whom We Are Creating Value:</b></p> <ul style="list-style-type: none"> <li>• <b>Job Seekers:</b> Juniors, undergraduates, professionals.</li> <li>• <b>Employers:</b> Companies hiring qualified candidates.</li> </ul> <p><b>Most Important Customers:</b></p> <ul style="list-style-type: none"> <li>• <b>Job Seekers:</b> Fuel platform growth.</li> <li>• <b>Employers:</b> Drive revenue via postings and premium services.</li> </ul>
<b>Cost Structure</b> <p><b>Most Important Costs:</b> Platform maintenance, Cloud hosting, Marketing.</p> <p><b>Most Expensive Resources:</b> Developers, Cloud infrastructure.</p> <p><b>Most Expensive Activities:</b> Updates, Security, Mentorship.</p>		<b>Revenue Streams</b> <ul style="list-style-type: none"> <li>• <b>What Customers Pay For:</b> Premium job posts, skill assessments, mentorship, and certifications.</li> <li>• <b>Current Payments:</b> Job seekers pay for guidance tools; employers pay for advanced features.</li> <li>• <b>Payment Methods:</b> Credit/debit cards, digital wallets, and bank transfers.</li> <li>• <b>Preferred Payment Methods:</b> Subscriptions, pay-per-service, and one-time fees.</li> <li>• <b>Main Revenue Sources:</b> Employer services (major), mentorship (moderate), and certifications (additional).</li> </ul>		

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## 6.4 Project Milestones

Milestone	Description	Timeline
Project Kickoff	Define project scope, team roles, and research	September (Month 1)
Market Research	Study competitors, gather insights, and validate idea.	October (Month 2)
Wireframes & UI/UX	Design user interface and experience mockups.	November (Month 3)
Core Development Begins	Build essential features like job search & resumes.	December - January (Month 4-5)
Prototype Testing	Test with users, collect feedback, refine UX.	February (Month 6)
Beta Version Launch	Limited release for students & early adopters.	March (Month 7)
Final Enhancements	Fix bugs, optimize features, and improve scalability.	April (Month 8)
Project Presentation & Submission	Prepare documentation, finalize pitch.	May (Month 9)
Official Platform Launch	Public release & marketing push.	June (Month 10)

*Table 2 Project Milestone*

## 6.5 Marketing Plan

### **investigation into the market**

We carried out thorough market research, utilizing both primary and secondary research techniques.

**Primary Research:** This included surveys, interviews, and feedback from potential customers to understand their preferences, pain points, and expectations. A rising interest in creative technology and sustainable solutions is highlighted by the main results.

Data from industry reports, competitive analysis, and market trends was collected through secondary research. According to our research, there is a large market gap that our product/service is intended to fill, with demand expected to increase over the next five years.

### **Overall product size:**

**Total Market Size:** Our analysis shows that the overall market size for our product/service is around [insert specific market value from report], with consistent expansion predicted over the next ten years.

**Market Share Acquisition:** We will use competitive pricing, strategic marketing, and better product quality in the first year to gain [2-5]% of the market share.

We foresee a consistent rise in our market share over the next five years as a result of brand awareness and client loyalty.

**Current Demand:** Market trends show an increase in demand for [specific product/service category] due to drivers such as [key industry drivers like technological advancements, regulatory changes, or consumer behavior shifts]. With an anticipated annual growth rate of [7–10]%, this industry offers our company a significant chance to gain a solid position.

### **possibilities and potential for growth**

Because of these factors, our company has a lot of room for expansion:

- The business plan's scalability for growth in related industries.
- Technological advancements enabling ongoing development and differentiation from rivals.
- Positive market trends that encourage sustainable and affordable solutions



### **Entry barriers**

- Dominant Platforms: LinkedIn, Indeed, Bayt. com, etc.
- Data Security & Compliance: Must comply with data protection laws at the national and international levels.
- User Acquisition: Establishing brand trust and gaining a large user base.
- Technical Development: Creating a feature-rich, AI-driven platform is expensive and complicated.

### **Targeted clients**

- Junior job searchers, ordinary job seekers, and workers seeking career advancement opportunities are among our target clientele.
- Main Segments:
  - Junior Job Seekers: Includes recent graduates and entry-level professionals seeking their first job prospects
  - General Job Seekers: Includes seasoned job searchers and mid-career workers.
- Businesses that employ people come in all sizes and seek out talented individuals.

#### **Population**

- Age: 18-45 years
- Education Level: high school, college, and graduate students
- Work Situation: Freelancers, job seekers, career changers

### **Competitive**

#### **Market Position & Key Competitors:**

- Indeed is a popular job search site that lists job openings and allows users to submit their resumes.
- Glassdoor offers salary information, business evaluations, and employment postings.
- Bayt. com: A job site in the Middle East that provides employer branding and job search tools.
- Wuzzuf: An Egyptian career website that caters to experts in the country

## Competitive matrix

Factor	Hyrup	Linkedin	Wuzzuf	Indeed
Price	Low	High	Moderate	Moderate
Quality	High	High	Moderate	Moderate
Features	8	12	8	8
Speed	Moderate	High	Moderate	Moderate
Customer service	Online chats	Online chats	Online chats	Online chats

*Table 3 Competitive Matrix*

## Competitive Analysis table

	Hyrup	Strengths	Weaknesses	Linkedin	Wuzzuf	Indeed
<b>Product/ service</b>	job-matching platform tailored for junior and general job seekers	User-friendly interface, AI-driven matching, broad employer network	Brand recognition is still developing	Professional networking platform with job listings and employer branding	Egypt-focused job portal specializing in local recruitment	Global job search engine with resume database and employer reviews
<b>Price</b>	Competitive pricing, affordable for job seekers	Cost-effective for users and businesses	Lower marketing budget compared to competitors	Free for basic users, premium subscriptions for job seekers & recruiters	Free for job seekers, employers pay for job postings	Free for job seekers, paid job promotions for employers
<b>Quality</b>	Reliable matching system with advanced filtering	High accuracy in job matching, quick responses	Needs continuous platform optimization	Strong reputation, high-quality services	Focus on Egyptian market, strong employer ties	Massive job database, AI-driven recommendations

*Table 4 Competitive Analysis*

## 6.6 Management Team

### Management Team Members

The HYRUP team is composed of skilled professionals with expertise in technology, business, and marketing, ensuring a strong leadership foundation.

#### **Mostafa EL-Zeiny – Co-Founder & CEO**

Leads overall business strategy, partnerships, and growth. Has a background in business development and entrepreneurship.

#### **Mohamed Ehab – CTO (Chief Technology Officer)**

Oversees platform development, AI integration, and security.

Proficient in software engineering, AI, and cloud computing.

#### **Karim Kadouma – CMO (Chief Marketing Officer)**

Manages branding, customer acquisition, and engagement strategies.

#### **Reem Walid – COO (Chief Operating Officer)**

Handles operations, finance, and customer relations. Specializes in project management and business analytics.

### Management Team Gaps

While the team has strong technical and business expertise, a few key areas require additional specialization.

There is a need for an HR & Recruitment Specialist to focus on talent acquisition, HR compliance, and employer relations. A solution could be partnering with HR professionals or hiring a consultant.

**A Legal & Compliance Advisor is necessary to navigate data privacy laws (such as GDPR), employment regulations, and contract management.**

**Seeking legal counsel or collaborating with a law firm that specializes in tech startups would be beneficial .An Investment & Funding Expert is required to provide guidance on fundraising, investor relations, and financial scaling. Bringing in an advisory board member or a financial mentor could address this**

## 6.7 Financials

### Financial Requirement

Funds will be distributed across essential areas in order to ensure the successful development, release, and expansion of HYRUP.

#### Distribution of Funds:

- Platform Development and Maintenance (\$15,000–\$30,000) includes frontend and backend development, AI job matching, security procedures, server hosting (AWS/GCP), and third-party API integrations.
- Marketing & Customer Acquisition (\$10,000 to \$20,000) Includes SEO optimization, influencer marketing, university partnerships, social media campaigns, and digital advertisements.
- Operating expenses (\$8,000 to \$15,000) include the costs of cloud hosting, administrative expenses, and software tools, as well as the salaries of a small crew of developers, marketers, business developers, and support staff.
- Legal & Compliance (\$3,000–\$7,000): covers local labor law compliance, GDPR compliance, data privacy and security assessments, contracts, and business registration.
- Mentorship and Assessment Features (\$7,000 to \$12,000) includes the development of assessment tools and content, the establishment of mentor partnerships, and the creation of a certification program.
- Estimated Total Funding Needs: Between \$43,000 and \$84,000

### Funding Sources

HYRUP will investigate a number of funding options in order to get the money it needs:

Looking for funding from early-stage tech investors who are interested in job platforms and EdTech. Target: \$30,000 – \$50,000 from venture capital and angel investors. Funding will concentrate on preseed or seed rounds to expand the platform.

Government & Startup Grants (Target: \$5,000 \$15,000) Applying for Egyptian startup grants, incubators, and accelerators. Investigating MENAbased startup finance programs such as ITIDA, Flat6Labs, and 500 Startups MENA.

Revenue Reinvestment & Bootstrapping (Target: \$5,000–\$10,000) Revenue from job postings, mentorship fees, and premium subscriptions will be reinvested to cover operational costs. Additionally, founders may contribute their own money or raise modest sums from family and friends.

## **Risks**

Although HYRUP has the potential for rapid expansion, it is nonetheless severely

These include market risks such as competition from well-established platforms like LinkedIn, Wuzzuf, and Indeed, which control the market. Furthermore, user acceptance is a challenge because it may take a lot of work to persuade employers and job searchers to change from their current solutions.

Financial risks include the uncertainty of revenue generation because it may take time to establish consistent revenue from mentorship services and job postings. Additionally, the significant upfront expenditure necessary for research, promotion, and regulatory compliance is a financial barrier. The operational risks include technological issues associated with maintaining AI-driven job-matching algorithms and enforcing security standards. Talent acquisition is a further issue since the platform's success depends on hiring the appropriate developers, marketers, and HR professionals.

## **Major Assumptions**

The financial projections and growth plans are based on a number of important assumptions. The MENA employment market is predicted to grow at a projected rate of 710% CAGR, with overall market growth anticipated to continue. Additionally, there is an expanding need for mentorship and online job matching services. The revenue forecast predicts that HYRUP will have 25% of the market in its first year. Employer subscriptions, premium job postings, and mentoring fees will fuel revenue growth. Targeted marketing initiatives will be used to attract job seekers and companies, thereby fostering user growth and retention.

## **Conclusion and Future Plan**

## 7.1 Conclusion:

The HYRUP project demonstrates a comprehensive approach to improving job matching and employability. The platform addresses the critical needs of job seekers and employers with innovative features and a user-centric design. Key conclusions include:

1. **Holistic Features:** The platform supports job seekers with skill assessments, mentorship programs, and career preparation tools, while providing employers with streamlined hiring functionalities.
2. **Regional Relevance:** Localized insights, bilingual support, and industry-specific recommendations align with the needs of the regional job market.
3. **Scalability and Innovation:** The modular architecture and AI-driven algorithms ensure adaptability and precision in matching users' needs.
4. **Focus on Security and Compliance:** The platform prioritizes user data protection and adheres to global and local data privacy standards.



## **7.2 Recommendations:**

The following are the most important suggestions for making the platform's impact as great as possible and guaranteeing its long-term viability:

### **1. Improving Accessibility and Localization:**

- o Include more languages and culturally appropriate material to appeal to a broad audience.
- o Make sure the platform complies with international accessibility norms, making it inclusive for users with impairments.

### **2. Increase the Resources for Skill Development:**

- o Include cutting-edge features like virtual mentoring sessions, mock interviews, and AI-driven customized career advice.

### **3. Enhancing User Interaction:**

- o Include gamification features like leaderboards and badges to promote ongoing usage and skill development.
- o Encourage an interactive community by establishing discussion boards where people can share their experiences and get peer support.

### **4. Improving Employers' Capacity:**

- o Provide employer branding options like improved business profiles and analytics dashboards to monitor hiring patterns and improve strategies.

### **5. Make sure data is protected and compliant:**

- o Implement two-factor authentication and other security measures to safeguard user data, and do routine security audits.
- o Keep up with international and local data protection laws to preserve trust and ensure legal compliance.

## **6. Prioritize Ongoing Improvement:**

- o To prioritize feature updates and address changing requirements, routinely collect user feedback via surveys and focus groups.
- o Make sure that new features are functional and reliable before rolling them out completely in stages.

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