HR System for Hiring

Final Year Project Report

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Certificate of Approval

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This project "**HR System for Hiring**" is presented by Muhammad Hassan, Ramiz Shahnawaz, Shayan Yar Khan under the supervision of their project advisor and approved by the project examination committee, and acknowledged by the Hamdard Institute of Engineering and Technology, in the fulfillment of the requirements for the Bachelor degree of Software Engineering.

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Authors' Declaration

We declare that this project report was carried out in accordance with the rules and regulations of Hamdard University. The work is original except were indicated by special references in the text and no part of the report has been submitted for any other degree. The report has not been presented to any other University for examination.

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Plagiarism Undertaking

We, Muhammad Hassan, Ramiz Shahnawaz, and Shayan Yar Khan, solemnly declare that the work presented in the Final Year Project Report titled **HR System for Hiring** has been carried out solely by ourselves with no significant help from any other person except few of those which are duly acknowledged. We confirm that no portion of our report has been plagiarized and any material used in the report from other sources is properly referenced.

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Acknowledgments

As the team behind the development of the **HR System for Hiring** – Web-Based Hiring System, consider it our ultimate pleasure to sincerely thank everyone who helped us in finishing this project successfully.

First and foremost, we are incredibly grateful to Almighty Allah for providing us with the confidence, wisdom, and determination required to complete this project. All of this would not have been possible without His guidance and grace.

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Definition of Terms, Acronyms, and Abbreviations

This section should provide the definitions of all terms, acronyms, and abbreviations required to interpret the terms used in the document properly.

Table 2: Definition of Terms, Acronyms, and Abbreviations

Abstract

The hiring practices followed by organizations in today's date are often a time-consuming and labor-intensive task, involving hiring procedures that require a lot of manual labors from collecting resumes to shortlisting applicants, and setting up interviews. These inefficiencies may result in higher expenses, longer hiring periods, and a less-than-ideal hiring procedure for all parties involved. This project is a web-based hiring system designed to address these challenges by simplifying important steps in the hiring procedure. The system offers three different interfaces for candidates, HR professionals, and organizations, thereby allowing smooth communication and effective hiring processes.

Candidates can submit their resumes and take part in scenario-based assessments and interviews, While HR will handle shortlisting, scheduling, and conducting tests. Organizations can hire HR professionals on a short-term basis for managing hiring needs. The automation features of the platform, such as test scheduling and CV filtering according to job criteria, significantly reduce the time and effort required for hiring.

Additionally, the system aims to increase candidate exposure, HR Professionals productivity, and lets an organization to successfully pick up top talent. To provide scalability, security, and a user-friendly experience, the project makes use of modern web development technologies. The system aims to completely change the way hiring processes are handled in modern workplaces by tackling the inefficiencies associated with traditional hiring techniques. This will ultimately provide a strong basis for future development into a startup solution.

Keywords:

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CHAPTER 1

INTRODUCTION

1.1 Motivation

The traditional hiring process is inefficient, demanding a lot of manual work to collect resumes, process them, shortlist candidates, and set up interviews. Job postings, resume filtering, making offers are some of those time-consuming tasks that slow down the hiring process, leading to cost additions and lost opportunities for organizations and candidates.

For HR professionals, the high number of applications for open positions means less time managing important tasks, whereas for the candidates, it is a constant battle between not having enough visibility into job opportunities and not having the proper feedback structure. Recognizing these challenges, the motivation behind HR system is to counter these challenges by implementing a web-based application that will simplifies and optimizes these processes while providing a quicker, more efficient, and transparent hiring process for everyone involved.

1.2 Problem Statement

The hiring practices followed in today's workplaces includes gathering resumes, shortlisting candidates and scheduling interviews, which typically demands a vast amount of manual labor and time. This lengthy practice might result in increased cost, longer hiring period and inefficiencies.
Organizations usually waste time and man power in finding the best fit for the open position and HR professionals find it difficult to go through numerous resumes. Companies lack the resources to effectively hire top talent, HR personnel are left with little time to focus on other tasks, and Candidates often struggle with the lack of visibility and opportunities.

1.3 Goals and Objectives

The primary goal to design an efficient, system that connects candidates with job opportunities, facilitates HR tasks, simplify the hiring process for organizations and improve candidate management efficiency. Specific objectives include:

Simplifying Hiring Workflows

- Automate the submission, shortlisting, and evaluation of candidate's CVs based on predefined parameters.

Facilitate Candidate Assessment

- Organizations and HR professionals to efficiently conduct scenario-based tests and schedule online interviews.

Enhance Visibility for Candidates

- Give candidates a user-friendly interface where they can search and apply for jobs and track the status of their applications.

Enable Flexible HR Hiring

- Organizations can hire HR professionals temporarily to handle hiring for positions.

Support Decision-Making with Automation

- Use automated candidate shortlisting tools to increase efficiency and save time in hiring decisions.

Create a Scalable and Secure Platform

- Develop a platform that is user-friendly, scalable, and secure for long-term use and future improvements.

These objectives collectively aim to develop a user-centric web application that improves hiring processes, simplifies hiring operations, and increases efficiency for organizations, candidates, and HR professionals

1.4 Project Scope

The following significant elements will be a part of the project.

1. Improving the overall efficiency of HR processes and procedures.
2. Simplifying and optimizing hiring processes.
3. Provide organization to manage job openings, hire HR professionals, and automate shortlisting.
4. Allow HR professionals and Organizations to conduct assessments and schedule interviews.
5. Allow candidates to apply for jobs, give assessment, and attend interviews.

Out of Scope:

1. Payment agreement between HR professionals and companies.
2. Candidate evaluation based on non-quantifiable criteria (such as cultural fit).
3. Enhanced AI-powered hiring techniques beyond defined requirements.

CHAPTER 2

RELEVANT BACKGROUND & DEFINITIONS

The foundation of any successful organization has always been hiring. A well-run hiring procedure ensures that organizations get people who are capable of growth, creativity, and sustainability. However, the traditional approaches of hiring which involve manually collecting resumes, shortlisting candidates, and doing interviews, are becoming very unsustainable for today's fast-paced competitive world. They often require significant time, effort, and resources, resulting in inefficiencies and higher costs.

The hiring procedure is now automated and digitalized thanks to recent technological developments. The way that candidates and employers communicate has been changed by websites like Glassdoor, LinkedIn, and enterprise-level applicant tracking systems (ATS). Despite their helpful features, these technologies usually fall short of meeting the demands of all stakeholders. HR professionals are faced with the challenging task of analyzing numerous resumes and performing other hiring-related tasks, while candidates frequently have limited choices for opportunities that meet their needs. The gap in hiring effectiveness gets worse by the fact that smaller businesses usually lack the funding necessary to set up complex applicant tracking systems.

Another critical challenge is the disorganized structure of current systems. Most platforms only focus on resume databases and job postings, allowing important components of hiring, such scheduling interviews, candidates assessment, and HR collaboration, to be done by hand or with the use of different technologies. For organizations and job candidates, this division leads to missed chances, higher costs, and delays.

The system is designed as an integrated solution to address these gaps by combining the requirements of organizations, HR professionals, and candidates into a single web-based platform. The system addresses the limitations of traditional hiring processes by simplifying the shortlisting of resumes, providing scenario-based testing, and simplifying the process of scheduling interviews. Additionally, the platform provides a new function of temporary HR hiring, which enables organizations to hire outside HR professionals for any hiring-related activity on a requirement basis.

While taking ideas from present systems, the project aims to fill in the gaps through scalability, accessibility, and user-friendliness. By utilizing modern web technologies, the system is not only simplifying the hiring process but makes sure candidates are evaluated based on merit and that organizations are able to find top talent while also providing a simplified hiring process that promotes fairness and honesty.

As hiring practices continue to evolve, the system becomes the transformation tool, that meets the demands of modern workplaces. The system aims to redefine the job market through addressing inefficiencies in the current processes while providing a solid base for future growth and scalability.

CHAPTER 3

LITERATURE REVIEW & RELATED WORK

Literature Review

The hiring industry has long been the subject of research due to its crucial role in organizational success. Studies show that traditional hiring practices often lead to inefficiencies and delays. For instance, manual resume shortlisting has been identified as a major hiring bottleneck, consuming up to 23% of the total hiring time, in addition, the absence of organized assessment tools frequently leads to biased decision-making, further complicating the hiring process.

There has been promise in solving these issues by integrating automation and technology into the hiring process with automated systems for CV screening and candidate ranking which reduces hiring timelines on average by 40%. However, the challenge here is creating platforms that is complete yet user-friendly for different users.

Related Work

The tools HR professionals need to manage hiring jobs effectively are not available on current platforms like Glassdoor and LinkedIn, even though they provide helpful networking and job search functions. While offering advanced functionality, enterprise-level ATS like Workday and Taleo are usually too expensive and complicated for smaller organizations to use.

Furthermore, some platforms simplify certain hiring procedures, such online exams, but they don't include these functions into a smooth workflow. This creates inefficiencies as organizations must rely on different tools at different stages of the hiring process.

Gap Analysis

The main gap in the current systems is the absence of a single platform that includes the features required by everybody involved in hiring is the main weakness found in the current approaches. Existing solutions frequently focus on specific aspects of hiring, such as job postings or resume screening, but fails in providing a complete approach.
HR system addresses this gap by offering:

1. **Unified Interfaces:** Separate interfaces for organizations, candidates, and HR professionals to provide personalized functionality for every user group.
2. **Automation:** Complete end-to-end automation, which includes CV shortlisting, scenario-based testing, and interview scheduling.
3. **Flexibility:** The option for organizations of hiring HR professionals on a temporary basis to handle hiring work for organizations.

The system aims to transform hiring procedures by integrating all these components into a single platform, making them more effective, transparent, and scalable for organizations of all sizes.

CHAPTER 4
PROJECT DISCUSSION

1. Software Engineering Methodology

The Evolutionary Prototyping methodology has been used for this project. With incremental refinement based on continuous feedback, this method encourages iterative development. This method keeps the system dynamically changing to meet user requirements without losing core capabilities.

Key Characteristics of Evolutionary Prototyping:

1. **Iterative Development:**

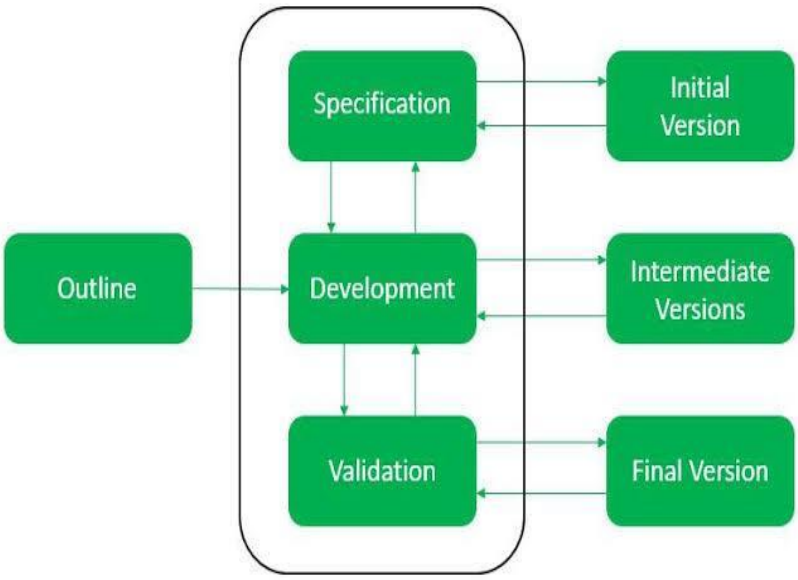
- Prototypes are built iteratively, with each cycle of prototype development improves functionality (e.g., AI-based CV sorting, interview scheduling).
- Feedback from users will be included into later versions.

2. **Incremental Delivery:**

- **Phase 1 (FYP-1):** Delivered main interfaces (candidate, HR, and company dashboards) and basic job application flow.
- **Phase 2 (FYP-2):** Improved prototypes with AI-based CV ranking, automated tests, and interview scheduling modules.

3. **User-Centric Validation:**

- Figma (UI/UX) and Postman (API testing) tools ensure compliance with requirements.



2. Project Methodology

The system was developed in phases using a feedback-driven methodology:

Initial Prototype: The development and testing of basic functions such as registration, login, and CV upload.

Iterative Improvements: Features including job posting, HR selection, and candidate shortlisting were gradually integrated.

Finalization: Scenario-based tests and interview scheduling were added to complete the hiring workflow.

This process allowed real-time feedback as well as user expectations alignment during development.

3. Phases of Project

Requirement Gathering: Understanding the needs of companies, HRs, and candidates.

Initial Prototype Development: The initial UI and CV submission functionalities were created.

Interface Integration: Interfaces for the company, HR, and candidates were created and integrated.

Feature Expansion: Job creation, HR selection, shortlisting algorithm, and test management features were added.

Testing and Feedback: Usability was improved, errors were fixed, and user testing was carried out.

Final Deployment: A stable copy of the platform was hosted for presentation.

4. Software/Tools that Used in Project

- **Frontend**: React.js
- **Backend**: Node.js & Express.js
- **Database**: MongoDB
- **Version Control**: Git & GitHub
- **Development Tools**: Visual Studio Code, Postman
- **Design Tools**: Figma

5. Hardware that Used in Project

This project was developed and carried out without the use of any external gear. The system operates in a cloud-hosted environment and is fully web-based.

Chapter 5
IMPLEMENTATION

5.1 Proposed System Architecture/Design

High-Level Architecture:

1. **Frontend Layer:**
   - Candidate Dashboard: Job search, application tracking, test/interview interfaces.
   - HR Dashboard: AI shortlisting, CV management, assessment creation.
   - Company Dashboard: Job posting, HR hiring dashboard, analytics.
2. **Backend Layer:**
   - REST APIs (Node.js) for user authentication, job management, and AI integration.
3. **AI Layer:**
   - CV Parser: Extracts skills/experience using NLP (spaCy).
   - Assessment Engine: Generates role-specific tests (Python + OpenAI API).

For maintainability and scalability, the frontend, backend, and database layers were divided using a modular design (MERN stack).

5.2 Functional Specifications

The functional specifications contain the outline of the essential features and functionalities that the system will supply. Here's a list of the functional specifications for the project:

1. **User Registration and Authentication**

   - **Account Creation:** Users can make accounts on the platform by providing the proper information of email, username, and password.
   - **Role-Based Login:** JWT authentication for candidates, HR professionals, and companies.
   - **Secure Login:** Users can log in securely with the help of their username and password.
   - **Password Recovery:** The system provides the options for password recovery using email if the users forget their passwords.

2. **Organization Portal**

   - **Job Posting Management**: Organizations can add, modify, publish, and unpublish job announcements, indicating job titles, descriptions, qualifications, and benefits.
   - **Candidate Application Review:** Organizations can see all the applications including resumes and candidate profiles, for their job openings.
   - **HR Professional Hiring:** Organizations can look through the profiles of available HR professionals, view their profiles, and temporarily hire them to handle individuals hiring tasks or projects.

- **Automated Shortlisting Configuration:** For every job ad, organizations can specify the parameters and requirements for automatic CV shortlisting.
- **Interview Scheduling & Management:** Organizations can plan and coordinate interviews with shortlisted candidates, having HR professionals carry out the work.
- **Reporting & Analytics:** Visibility into basic reports on job posting effectiveness, application volume, and hiring status.

3. **HR Professional Portal**

- **Candidate Shortlisting:** Using automatic shortlisting functionality based on organizational criteria, HR personnel can view and evaluate resumes.
- **Scenario-Based Test Management:** HR personnels can design, manage, and evaluate scenario-based examinations for candidates.
- **Interview Conducting:** HR personnels can use the system to conduct online interviews.
- **Hiring Task Management:** HR personnels can manage the hiring duties that organizations dictated them, keep track of their progress, and communicate with both organizations and candidates.
- **Profile Management:** HR personnels can handle their professional profiles, availability, and display their expertise to organizations.

4. **Candidate Portal**

- **Job Search & Application:** Candidates can search for open job postings by keyword, location, and other criteria and apply instantly via the platform.
- **Profile & Resume Management:** Candidates can upload resumes, manage their application, and build and update their profiles.
- **Application Status Tracking:** Candidates can monitor the status of their applications in real time (e.g., applied, Under Review, shortlisted, interviewed).
- **Online Assessments:** Candidates can complete assigned scenario-based tests right within the platform.

5. **System Automation Features**

- **Automated CV Filtering:** This approach automatically sorts resumes by using keywords and predefined job requirements.
- **Automated Communication:** Notifies users when there are changes to their application status, test results, or interview dates through notifications and email.

6. **Core System Functionalities**

- **Database Management:** Safe storage and retrieval of user information, job postings, application history, and assessment scores.
- **Search & Filtering:** Strong search and filtering features for both candidate profiles and job advertisements.

- **Scalability:** The capacity to handle growing numbers of data and users without compromising performance..

5.3 Non-Functional Specifications

The non-functional specifications for Hr System for Hiring cover the operational, reliability, and user experience part of the system, which is the backbone of the entire complete solution. Here are potential non-functional specifications for the project:

1. **Performance**

   - **Response Time:** The system should direct all its efforts towards being disruptively fast, that the workflows of AI-driven CV sorting, assessment generation, and interview scheduling are finished within seconds without compromising on candidate matching and evaluation accuracy.
   - **Scalability:** The system needs to be able to handle steadily growing user loads in a way that the seamless experience is available during peak usage hours. It keeps many users running at once without sacrificing quality.

2. **Reliability**

   - **Uptime:** The most dependable Hr System service should be available around-the-clock with a minimum uptime rate of 99.9%. This includes a solid infrastructure to handle maintenance and problems that unexpectedly arise with a minimum amount of downtime.
   - **Fault Tolerance:** The system should perform failure recovery in a graceful way that no data is lost even with different types of error situations. This consists of the usage of failover techniques and backup systems to ensure that the operation of the system is always guaranteed.

3. **Security**

   - **Data Encryption:** Use high data encryption with protocols such like TLS/SSL For the protection of the user during sending the data and storing of it. Encryption is the exact method used to make a piece of data unreadable to people who have not got the right permission. In this way data can be protected (encrypted) and unreadable to everyone who is not authorized to access this information.
   - **Access Control:** Give permission to only authorized users to access to items since no one else is allowed to do so. This is achieved by means of RBAC (Role Based Access Control) that is, using different types of access control based on the role the user has which ensures consistent, granular controls at the user level.
   - **Authentication and Authorization:** We need to apply multiple secure measures to the system ensuring that each measure is unique and not one can be missed. Thus, authentication should be carried out with permission by the verification of a password of the user. Moreover, authorization can then be done by a role that satisfies certain conditions of the request.

4. **Usability**

- **User Interface (UI):** Let the sophisticating of the interface be most vivid by utilizing stable UI protocols. This would make it possible for people with varying technical skills to use the product without any issues. At the same time, user interfaces should be as simple as is humanly possible. The user interface on the other hand is meant to increase user engagement by automating tasks, particularly when it comes to simplification.
- **Accessibility:** Understating what it takes is to be a modular platform that is accessible to users with compression capabilities. A flexible and accessible platform will enable accessibility for those attendees who use the assistive devices and meet all the standards necessary to be accessible. This ranges from the like of providing screen readers, keyboard navigation, and adjustable text sizes.

5. **Compatibility**

- **Cross-Browser Compatibility:** Utilize the store's features equally across all browsers, including Google, Apple, Huawei, and others.
- **Device Compatibility:** Be responsive and adaptable to the different technical developments such as iPads, tablets, and smartphones. With the use of various screen sizes and resolutions, the software program should adapt to the users by providing them with high-quality results.

6. **Cost**

- **Cost-Efficiency:** Reduce resource usage according to usage patterns and these may be operational costs that should be kept to a minimum. This might use databases, cloud services, and other IT infrastructure tools to implement green computing techniques.
- **Transparent Billing:** Demonstrate charging details for every subscription package or premium functions. Nobody should be guessing what the price tag on the platform is.

7. **Maintainability**

- **Code Quality:** It is important to introduce good quality of coding, which is summarized by the best practices for separation of code, enhanced reading, and proper communication. This assures that improvements and patches will be simple tasks.
- **Automated Testing:** Set up automatic tests in the visual studio environment during both, the delivery and deployment stages of development (CI/CD). Make sure, the alternatives on the site are trouble-free.
- **Version Control:** Deal with file modification and communication between team members through a file version control system like Git.

8. **Data Privacy and Compliance**

- **Privacy Policy:** To adhere to data privacy regulations and relevant laws, to protect the privacy and data of the user. Clearly communicate the privacy policy to users.
- **Data Anonymization:** Have the implementation of data anonymization techniques to protect the user identities in data analytic and machine learning processes.

5.4 Testing

Testing was conducted in several stages to validate system integrity.

- **Unit Testing:** Tested individual components (upload handling, API integration, database operation).
- **Integration Testing:** Verified that the APIs worked together perfectly.
- **System Testing:** Simulated real user workflows end to end.
- **Acceptance Testing:** Collected feedback from user to ensure usability and accuracy.
- **Regression Testing:** Ensured that new features did not break existing functionality.

5.5 Purpose of Testing

The phase of testing in the development of Hr System for Hiring is the most important - it plays the roles of quality assurance, reliability malefactor, and satisfaction guider. Below are the main objectives of testing in this project:

1. **Ensuring Functionality**

- **Verification of Features:** The test ensures that every one of the functionalities and features of Hr System perform as required. They include registration and authentication, job posting, CV submission, shortlisting of candidates, HR hiring, scenario-based assessment, and scheduling interviews.
- **Requirement Compliance:** Function testing ensures that the platform satisfies requirements by carrying out its duties correctly and providing reliable outcomes in candidate screening, assessment management, and collaboration of HR.

2. **Detecting and Fixing Bugs**

- **Identification of Defects:** While testing, defects, errors, or bugs would be identified. It is crucial for the software' s integrity to do this.
- **Early Detection and Resolution:** The timely incipiency of issues allows the developers to address and fix them before the final release, which in turn reduces the chances of running into critical problems in the production stage and improves the quality of the software application.

3. **Improving Performance**

- **Performance Assessment:** Performance testing examines the system's performance in various conditions including load variations and stress.

- **Efficiency Evaluation:** It is necessary to be sure that the platform stands the heavy traffic and huge amounts of data. However, it should not slow down, or it should be fast enough to respond to the user, ensuring a smooth user experience during peak hours.

4. **Enhancing Security**

- **Security Vulnerability Identification:** The procedure of security testing identifies vulnerabilities and ensures protection from threats and potential attacks on the platform.
- **Data Protection:** We conduct data breach testing, unauthorized access to user information, and other security risks to secure user data and build trust in the platform.

5. **Validating User Experience**

- **Usability Testing:** Usability testing is all about the usability of an interface and the user experience in general.
- **User Satisfaction:** It makes sure that the platform is intuitive, easy to navigate, and the users' needs are met, a positive user experience, which is crucial for the adoption and success of Hr System.

6. **Ensuring Compatibility**

- **Cross-Platform Compatibility:** Testing includes making sure that Hr System is compatible with any known devices and browsers.
- **Consistent User Experience:** It is necessary to be user-friendly and easy to navigate for everyone, irrelevant of the way they access the platform i.e. by whatever means of device they use. The main point of this is to guarantee that the project is available to all users and is user-friendly for a wide audience.

7. **Compliance with Standards**

- **Industry Standards Compliance:** Testing is done to make sure that the platform adheres to the numerous standards, regulations, and best practices set by the industry.
- **Regulatory Adherence:** Accessibility requires standards, data protection regulations, and coding standards meaning that Hr System for Hiring is legally compliant and ethically sound.

8. **Facilitating Maintenance and Scalability**

- **Codebase Robustness:** Untested software is difficult to maintain and scale. Implementing, for example, test suites contribute to strengthening the codebase and adapting it to changing environments.
- **Future Enhancements:** It conjures such improvements, updates, and scalability that don't sway Hr System to create additional problems, instead ensuring that it can advance to keep pace with changing user needs, hence it's technological

5.6 Test Cases

S.No	Description	Test Engineer	Start Date	End Date
1	Candidate Login Screen	Muhammad Hassan	15-Nov-2024	15-Nov-2024
2	Candidate Dashboard	Muhammad Hassan	2-DEC-2024	2-DEC-2024
3	Job Application Screen	Muhammad Hassan	5-DEC-2024	5-DEC-2024
4	HR Login Screen	Muhammad Hassan	15-Nov-2024	15-Nov-2024
5	HR Dashboard (CV Sorting)	Muhammad Hassan	19-Mar-2025	19-Mar-2025
6	Assessment Creation	Muhammad Hassan	3-Apr-2025	3-Apr-2025
7	Company Login Screen	Muhammad Hassan	15-Nov-2024	15-Nov-2024
8	Job Posting Screen	Muhammad Hassan	29-Nov-2024	29-Nov-2024
9	AI Shortlisting Report	Muhammad Hassan	27-May-2025	27-May-2025

Chapter 6
EXPERIMENTAL EVALUATIONS & RESULTS

Evaluation Testbed

The testbed for Hr system for Hiring that we use for evaluation includes several components having the goal of testing the performance, reliability, and usability. The testbed consists of the following elements:

1. **Performance Metrics**

   - **Performance Evaluation:** Aggregate the platform's performance using metrics like response time, throughput, and resource utilization.
   - **Scalability Testing:** Adaptation to the increasing number of users and the efficient use of the available resources are the major features that the producers have developed to make the platform the perfect choice out of the existing alternatives.
   - **Stress Testing:** By applying high levels of the traffic load, we want to be able to find performance bottlenecks as well as check the system resistance under stress.

2. **Functional Testing**

   - **Adherence to Requirements:** Verification through functional testing that Hr system for Hiring is meeting all the specified functional requirements.
   - **Feature Validation:** Test cases include like registration and authentication, job posting, CV submission, shortlisting of candidates, HR hiring, scenario-based assessment, and scheduling interviews.

3. **Usability Testing**

   - **User Interface Evaluation:** Usability testing, in terms of user interface, looks at the interface design, the navigation of objects, and how easy the system is to understand.
   - **Task Performance:** Participants in the task explore different functions of the Hr system and express opinions on their perception of the system by the help of the mentioned tasks.

4. **Security Testing**

   - **Vulnerability Assessment:** Security testing helps identify potential vulnerabilities and threats that a system may be exposed to before exploitation.
   - **Data Protection:** Try them out- using data encryption, secure authentication methods, authorization controls, and by gaining protection against standard security risks (e.g., SQL injection, XSS) to secure the user’s data.

5. **Compatibility Testing**

   - **Cross-Platform Validation:** Verify whether Hr system works in a stable and

precise way on mobile devices (smartphones, tablets), as well as with the operating systems of iOS and Android.
- **Responsive Design:** Flawlessly cater to different screen display sizes and resolutions to make sure users have a similar experience no matter which device they use.

6. **Accessibility Testing**

- **Accessibility Standards Compliance:** Review Hr system regarding the accessibility standards to ascertain that the software is adoptable to persons with disabilities.
- **Accessibility Features:** Examine elements such as keyboard navigation, screen reader compatibility, and so on to make some changes for a better user experience for all possible users.

7. **Load and Stress Testing**

- **Load Simulation:** Find out whether the system will provide quick response time and that it will not fail during peak loads by executing tests under normal and peak load conditions to know the platform's performance.
- **Scalability Assessment:** Spot the bottlenecks, clearance brigade, and the perfect moment for optimization to guarantee Hr system perfect functioning in the time of high demand.

8. **End-to-End Testing**

- **Workflow Validation:** It is the validation of the entire user workflow of HR system, for example, creating an account and sending a CV to delivering shortlisted candidates, scenario-based testing, scheduling interviews, and the recruitment results detailed are the precise one required.
- **Integration Testing:** The smoothness of the integration of all subassemblies is a must, both the frontend and the backend, interactions with the database, and any third-party API integrations.

Results and Discussion

The testbed is where the information gathered proves to be valuable about the application's functionality, features, ease of use, security, dependability, and scalability. These results are discussed in detail below:

1. **Performance**

- **Robust Performance:** Small Time requirements and data rates that are high at each point of operating under different loads which can be guaranteed.
- **Efficient Resource Utilization:** Convenience of resources has been within the ultimate limits of the system, which guarantees quality customer services even at the highest times of server usage. In this view, the application of Hr system for Hiring seems to be capable to tolerate a large user load without killing the performance drastically.

2. **Functionality**

- **Requirement Fulfillment:** Technical testing of the platform revealed that it successfully maintained the key aspects of the product, including precise CV shortlisting, seamless API integration, and smooth communication between various user roles, including organizations, HR specialists, and candidates.
- **Issue Resolution:** The problems were quickly dealt with iteratively, i.e. through multiple development and testing cycles, which means that it not only dealt with issues but also it consistently meets its functional specifications.

3. **Usability**

- **Positive User Feedback:** User interface testing resulted in positive feedback from users as the user interface was one of the platforms provided to them and supported this.
- **Intuitive Navigation:** The UI proved to be user-friendly, intuitive, and helpful for effectively completing tasks including applying for jobs, submitting resumes, taking scenario-based tests, and showing up for planned interviews.

4. **Security**

- **Vulnerability Mitigation:** Security testing identified and mitigated potential vulnerabilities, ensuring robust protection of user data and system integrity.
- **Security Measures:** The mechanisms available included the transformation of the encrypted data, the two-factor authentication, and the permission system that was devised to protect the data. Furthermore, these security measures paved the way for a more secured and secretive transmission of the data.

5. **Compatibility**

- **Cross-Platform Consistency:** Compatibility testing establishes the certainty of the platform working uniformly across various devices.
- **Seamless Access:** Users can get to the platform and use it wherever they want regardless of their choice of device or where they are, which ensures a constant and reliable user experience.

6. **Load and Stress Handling**

- **High Traffic Handling:** It was found through load and stress testing that the platform's capability to manage high traffic and heavy workload situations without onerous performance loss or system crashes is the best.
- **Scalability Measures:** Measures of scalability like utilizing speed capacity have guaranteed uninterrupted functioning in case if the demands are surging thus affirming Hr System ability to ensure that the user requests are met.

7. **End-to-End Functionality**

- **Seamless Integration:** The integrated system was subjected to end-to-end testing

that validated the seamless integration and operation of all the systems across the entire user workflow.

- **Cohesive Functionality:** The platform's primary features and services user registration, CV submission, job posting, HR hiring, test creation, shortlisting, and interview scheduling, all collectively worked together to fulfill the needs of users, which is an appropriate and comfortable solution for today's hiring management.

Overall Conclusion

The outcomes indicate that the Hr system for Hiring is dependable, effective, and highly user-friendly tool for speeding hiring procedures, as seen by the findings, which show that it is up to standard and capable of satisfying user expectations. Continuous monitoring and improvement will guarantee that the platform is optimized to meet evolving user wants and technical advancements, maintaining its significance and efficiency in transforming and assisting with hiring workflows.

CHAPTER 7
CONCLUSION AND DISCUSSION

7.1 Strength of this Project

For organizations of all sizes, the HR System for Hiring project offers a powerful web-based platform that will significantly simplify the hiring process. The following are this system's main advantages:

- **Unified Interfaces:** For companies, HR professionals, and candidates, the system offers unique and customized interfaces, providing an individual and user-friendly experience for each group. A smooth workflow is provided by this integration, which eliminates the necessity for numerous different tools.
- **Comprehensive Automation:** The application automates numbers of time-consuming hiring processes, such as interview scheduling, scenario-based testing, and CV shortlisting based on specified requirements. This automation significantly eliminates manual effort, saves time, and reduces human error, which result in an efficient hiring process.
- **Enhanced Flexibility:** What makes this system unique is the provision of allowing organizations to temporarily hire HR professionals to take care of their hiring needs. Scalable human resource management is a plus, especially for small organizations or organizations with changing hiring requirements.
- **Improved Visibility and Candidate Experience:** An intuitive interface is offered to candidates so they can look for and apply for job opportunities, attend tests, and monitor the progress of their applications. By resolving typical difficulties in traditional job applications, this transparency improves the candidate experience.
- **Scalability and Security:** The system is developed with the help of modern web technologies and is secure and scalable, offering a solid basis for long-term use and future improvements.

7.2 Limitations and Future Work

Although the "HR System for Hiring" project greatly enhances the efficiency and transparency of hiring, it has some limitations that opens possibilities for further improvements.

7.2.1 Limitations

- **Non-Quantifiable Criteria:** Cultural fit is one example of a non-quantifiable criterion that is not currently considered when evaluating applicants, even though it frequently plays a significant impact in hiring decisions.
- **Payment Agreement Management:** The system does not handle payment agreements or transactions between organizations and the contracted HR professionals.
- **Advanced AI Integration:** Although automation exists, advanced AI-powered hiring practices that go beyond set limits are now outside of the scope of this project.

7.2.2 Constraints

- **Data Privacy Regulations:** Maintaining strict compliance with changing data

privacy law and data security protocols for confidential applicant data continues to be an ongoing limitation and area of emphasis.

- **Integration with External Systems:** Compatibility and data synchronization issues may arise when integrating with current enterprise-level payroll or HR systems.

7.2.3 Future Work

To provide an even more complete solution, future development of the "HR System for Hiring" can concentrate on resolving the noted constraints and enhancing its functionality.

- Placing advanced AI algorithms to evaluate candidate soft skills and cultural alignment using video interview or written answer analysis.
- Including a secure payment gateway for smooth transactions between organizations and freelance HR experts.
- creating more advanced analytics dashboards for organizations to better understand their hiring pipeline, candidate performance, and HR professional productivity.

7.3 Reasons for Failure – If Any

So far, there have been no notable failures. Assuring data protection and handling the difficulties of integrating several hiring features, such interview scheduling, scenario-based testing, HR management, and CV shortlisting, into a seamless and secure workflow.

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[4] Git SCM. (2025). Git documentation. Retrieved February 2025, from https://git-scm.com/docs

APPENDICES

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Copy of Evaluation Comments by Jury for Project – I End Semester Evaluation
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Copy of Evaluation Comments by Jury for Project – II Mid Semester Evaluation
Copy of Evaluation Comments by Jury for Project – II End Semester Evaluation
A7. Meetings' Minutes
A8. Research Paper
A10. Any other

A0. COPY OF PROJECT REGISTRATION FORM

FYP -PSF-2024

Hamdard University
Faculty of Engineering Sciences and Technology

Department of Computing

FINAL YEAR PROJECT - PROPOSAL SUBMISSION FORM

Project Details: (to be filled-in by student)

Project Title: HR System for hiring

Project Track: ☑ Product ☐ Service ☐ Research

Program of Study: BSSE **Session:** Fall, 24

Expected Completion Date: June, 25 **Date:** 03, July, 24

Project Member(s): (to be filled-in by student; student #1 is the team lead)

S#	Name	CMS ID	Roll #	Cell #	E-mail ID	Signature
1	Muhammad Hassan	1669-2021		03472722296	hasanshaikh12@gmail.com	
2	Shayan yar Khan	1889-2021		03363691475	shayanyarkhan08@gmail.com	
3	Ramiz Shahnawaz	1678-2021		03089013362	ramizshahnawaz70@gmail.com	

Supervisor Recommendation: (to be filled-in by the supervisor and co-supervisor, if any)

Any extra project-domain-specific course requirement: _____

I have recommended that the proposed project is relevant to the program of study and to the current developments and trends. The project will be beneficial for the students and can be completed within the given time and with mentioned resources. I furthermore verify that students have cleared all the pre-requisite courses and attained sufficient CGPA to be eligible for FYP. All the above students have completed at least 75 credit hours in their respective programs. Transcript, verified CGPA of each student & proposal report document of group are attached with this form.

Supervisor Name: Aamir Hussain **Signature:** _____

Designation: Senior Lecturer **Organization:** Hamdard University (D.C)

Co-Supervisor Name: Maaz Ahmed **Signature:** _____

Designation: Lab Instructor **Organization:** Hamdard University

(For Office Use)

Convener FYP Committee:

☑ Approved ☐ Not Approved

Name: Sulaiman Ahmad Naz

Signature: _____ 09/07/24

Comments: _____

Advisor FYP Committee:

☑ Approved ☐ Not Approved

Name: Jinsar R. Khan

Signature: _____

Comments: _____

A1A. PROJECT PROPOSAL AND VISION DOCUMENT

HR System for Hiring

Project Proposal

Supervisor
Aamir Hussain

Co-Supervisor
Maaz Ahmed

Submitted by

Muhammad Hasssan
{1669-2021}

Ramiz Shahnawaz
{1678-2021 }

Shayan Yar Khan
{1889-2021 }

Department of Computer Science,
Hamdard University, Karachi.
[02-July-2024]

INTRODUCTION:

The HR System will serve as a platform that simplifies the hiring process providing a seamless experience for candidates, HR personnel, and companies, ensuring the right fit for each position. Our goal is to minimize the gap between hiring managers and job applicants by developing an easy-to-use virtual platform with advanced features that help HR personnel in receiving and assessing resumes and applications, scheduling interviews, conducting tests, and shortlisting applicants based on job requirements.

OBJECTIVE:

To design an efficient, system that connects candidates with job opportunities, facilitates HR tasks, simplify the hiring process for organizations and improve candidate management efficiency.

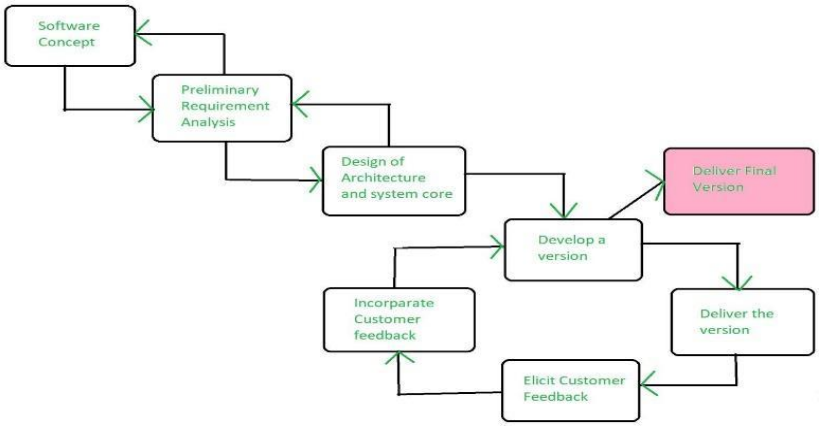
PROBLEM DESCRIPTION

The Hiring processes used today are frequently complex, challenging, time consuming and ineffective. If we follow a common hiring method it can take up to two months to fill a position, which can be costly for companies. Additionally, it is often difficult for HR professionals of companies to go through numerous CVs one by one and find the right candidate for their open position. This is where our HR system comes in handy.

Our system provides all HR professionals, companies and candidates with an efficient and user-friendly platform that not only simplifies the hiring process but also ensures candidates receive suitable job offers, even if they don't match the initial company they applied to, which maximizes job openings and using resources. Candidates can easily submit their CV and application, and complete a scenario-based test. HR professionals can receive and review shortlisted candidates CVs based on their requirements, conduct a test and schedule an interview. Company HR can avoid losing focus, strength, and resources on hiring candidates, allowing them to concentrate on other important tasks that drive the company to success.

METHODOLOGY

Evolutionary prototype is the best fit for hiring systems because it focuses on building an initial version of the system and then continuously refining and improving it based on feedback and new requirements. It focuses on user involvement, responsiveness, improved usability, and enhanced communication.
By using evolutionary prototyping in our project, we can create a system that meets the needs of HR professionals, Organizations/Companies and candidates, and that is responsive to user feedback and makes continuous improvement ensuring that the final product is effective, user-friendly and capable of simplifying the hiring process.



SCOPE

The following significant elements will be a part of the project.

6. Improving the overall efficiency of HR processes and procedures.
7. Simplifying and streamlining recruitment processes.
8. Enhancing the management of candidate data and interactions.
9. Automating routine tasks and reducing manual errors.
10. Providing real-time insights and analytics for data-driven decision-making.
11. Enhancing employee experience and engagement through self-service portals.
12. Ensuring compliance with regulatory requirements and industry standards.

FEASIBILITY STUDY

I. Risks Involved:

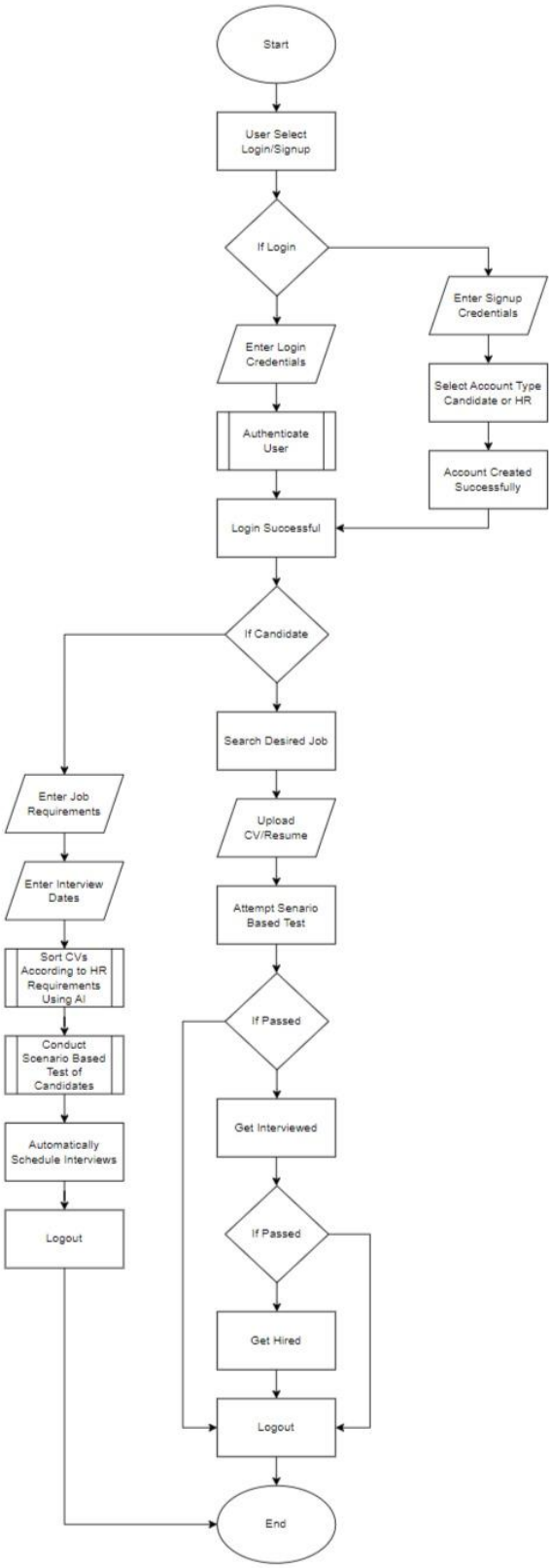
- Integration of various modules and ensuring seamless data flow. Minimized by iterative development and extensive testing.
- Ensuring the system is user-friendly. Reduced by usability testing and user input.
- A module for administering and evaluating scenario-based tests will be developed, providing a standardized method for assessing candidate suitability.
- Protecting sensitive data of candidates and HR. Reduced by using encryption and strong security mechanisms.
- If the user does not like the design, By continuously involving the user from the very beginning and collecting their feedback, we can ensure that their expectations are met.
- An AI-based shortlisting feature will filter candidates based on HR-defined criteria, improving efficiency and accuracy in candidate selection.
- The system will include a calendar integration for scheduling interviews, ensuring efficient time management for HR professionals and candidates

II. Resource Requirement:

- **Computing Resources:** Laptops for development, a server for deployment.

- **Software:** Development tools (IDE, version control), MongoDB, Express.js, React.js, Node.js.

FLOWCHART



SOLUTION APPLICATION AREAS

The HR System holds significant value especially for those industries like IT, healthcare, finance, and education. Organizations can reduce administrative expenses, improve candidate experience, and make better hiring decisions by simplifying the recruitment process. This will lead to better recruitment and will result in success for the organization.

TOOLS

SOFTWARE:

- VS Code
- MongoDB Compass
- Insomnia
- Thunder Client
- Git Bash
- Github Desktop

HARDWARE:

- **PROCESSOR:** CORE i7 4th Generation or higher
- **RAM:** 8GB or higher
- **INTERNET:** 12MB connection or FIBER OPTICS

RESPONSIBILITIES OF TEAM MEMBER

Project Deliverable Activity	Co-Supervisor	Supervisor	Muhammad Hassan	Ramiz Shahnawaz	Shayan Yar Khan
Project Planning	C, I	C, I	R	R	R
Project Analysis	C, I	C, I	A, I	R	R
Project Design	C, I	C, I	R	R	R
Project Implementation	C, I	C, I	A	A	R
Project Documentation	C, I	C, I	R, A	R, A	R, A
Finalize and Deployment	C, I	C, I	R, A	R, A	R, A

PLANNING

REFERENCES

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[2] "Talent Acquisition and Recruiting Software". " https://www.workday.com › products › talent-management". (accessed Jun. 26, 2024).

A1B. COPY OF PROPOSAL EVALUATION COMMENTS BY JURY

Hamdard University
Faculty of Engineering Sciences and Technology

FYP -PE-2024

Department of Computing

FINAL YEAR PROJECT - PROPOSAL EVALUATION

Project Title: HR System for hiring.

Project ID: ______ Project Track: ______

Project Domain: AI Evaluation Date: 09/July/2024

Supervisor Name: Mr Aamir Hussain Co-Supervisor Name: Mr. Maaz Ahmed

Project Member(s):

S. No.	Name	CMS ID
1.	Muhammad Hassan	1669-2021
2.	Ramiz Shahnawaz	1678-2021
3.	Shayan Yar Khan	1889-2021
4.		

For Evaluators only:

Please select the appropriate option
E: Excellent G: Good S: Just Satisfactory N: Not Satisfactory

Evaluation Parameters	Evaluator #1	Evaluator #2	Evaluator #3	Evaluator #4
Subject Knowledge	E	G	G	G
Problem Statement	E	E	G	G
Organization & Content of Presentation	E	G	S	G
Project Scope Defended	E	G	G	G
Methodology	E	G	S	S
Language & Grammar	E	E	G	G
Attire, Delivery and Presentation Skills	E	E	G	E
Work Division	E	E	G	E
Name & Sign of Evaluator:	Faraz [signature]	Osama Ahmed Khan [signature]	Saad Akbar [signature]	[signature]

Suggestions of evaluators:

1. Methodology needs to ~~have~~ be clear as to (i) how CVs will be sorted according to keywords (ii) how scenario-based test will be developed (iii) how suitable interviewed candidates will be matched with relevant companies.

For FYP Committee only: Result Summary

On basis of evaluations, recommended action decided in FYP committee meeting:

☑ Approved ☐ Approved (with Revision) ☐ Re-Evaluate

Date: ______ Name and Sign of Convener FYP Committee: ______

A2. REQUIREMENT SPECIFICATIONS

Hamdard University
Department of Computing
Final Year Project

HR System for Hiring
(FYP-018/FL24)
Software Requirements Specifications

Submitted by
Muhammad Hassan (1669-2021)
Ramiz Shahnawaz (1678-2021)
Shayan Yar Khan (1889-2021)

Supervisor(s)
Aamir Hussain
Maaz Ahmed

Fall 2021

Document Sign off Sheet

Document Information

Project Title	HR System for Hiring
Project Code	FYP-018/FL24
Document Name	Software Requirements Specifications
Document Version	<1.0>
Document Identifier	FYP-018/FL24-SRS
Document Status	Draft
Author(s)	Muhammad Hassan, Ramiz Shahnawaz, Shayan Yar Khan
Approver(s)	Aamir Hussain, Maaz Ahmed
Issue Date	16-01-2021

Name	Role	Signature	Date
Muhammad Hassan	Team Lead		16-01-2025
Ramiz Shahnawaz	Team Member 2		16-01-2025
Shayan Yar Khan	Team Member 3		16-01-2025
Aamir Hussain	Supervisor		16-01-2025
Maaz Ahmed	Co-Supervisor		16-01-2025
	Project Coordinator		

Revision History

Date	Version	Description	Author
16-01-2025	1.0	First Draft	Ramiz Shahnawaz, Shayan Yar Khan

Definition of Terms, Acronyms, and Abbreviations

Term	Description
HR	Human Resources
CV	Curriculum Vitae
GHz	Gigahertz
GB	Gigabyte
SSD	Solid-State Drives
HTTPS	Hypertext Transfer Protocol Secure
API	Application Programming Interface
PDF	Portable Document Format
DOC	Document
SHA-256	Secure Hash Algorithm (256-bit)

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1. Introduction

The HR System will serve as a platform that simplifies the hiring process providing a seamless experience for candidates, HR personnel, and companies, ensuring the right fit for each position. Our goal is to minimize the gap between organizations, HR professionals and job applicants by developing an easy-to-use virtual platform with advanced features that help organizations, HR personnels in receiving and assessing resumes and applications, scheduling interviews, conducting tests, and shortlisting applicants based on job requirements and for Organization by finding the right fit for their open position without spending vast amount of cost and manpower.

1.1 Purpose of Document

This document outlines the requirements, functionalities, and design constraints for the development of HR System. It serves as a guide for developers, testers, and stakeholders to understand the system specifications and ensure a successful implementation.

1.2 Intended Audience

The hiring practices followed today requires a vast amount of manual labor and time for gathering resumes, shortlisting candidates, and scheduling interviews, leading to inefficiencies, higher expenses, and longer hiring periods. Organizations struggle to find top talents, HRs are stressed out, and candidates aren't given enough opportunity during the hiring process.

- Project Team
- Supervisors
- End-users (Companies, HRs, Candidates

2. Overall System Description

2.1 Project Background

The hiring approach in today's workplace is time-consuming and demands a lot of resources. our goal is to simplifies these processes by bringing organizations, HR personnels and candidates on one platform.

2.2 Problem Statement

The hiring practices followed in today's workplaces includes gathering resumes, shortlisting candidates and scheduling interviews, which typically demands a vast amount of manual labor and time. This lengthy practice might result in increased cost, longer hiring period and inefficiencies.
Organizations usually waste time and man power in finding the best fit for the open position and HR personnel find it difficult to go through numerous resumes. Companies lack the resources to effectively hire top talent, HR personnel are left with little time to focus on other tasks, and Candidates often struggle with the lack of visibility and opportunities.

2.3 Project Scope

The following significant elements will be a part of the project.

13. Improving the overall efficiency of HR processes and procedures.

14. Simplifying and optimizing hiring processes.

15. Provide organization to manage job openings, hire HR professionals, and automate shortlisting.

16. Allow HR professionals and Organizations to conduct assessments and schedule interviews.

17. Allow candidates to apply for jobs, give assessment, and attend interviews.

2.4 Not In Scope

4. Salary negotiations between HR and companies.
5. Candidate evaluation based on non-quantifiable criteria (e.g., cultural fit).

2.5 Project Objectives

To design an efficient, system that connects candidates with job opportunities, facilitates HR tasks, simplify the hiring process for organizations and improve candidate management efficiency.

2.6 Stakeholders & Affected Groups

❖ **Primary Stakeholders**:

- Companies.
- HR professionals.
- Job candidates.

❖ **Secondary Stakeholders**:

- Developers and project team.

2.7 Operating Environment

The system will operate in a browser-based environment and should support the following:

- **Browsers:** Chrome, Firefox, Safari.
- **Devices:** Desktop, laptop, tablet, and smartphone.

2.8 System Constraints

- Must operate within a web browser without requiring additional software.
- Support for up to 500 concurrent users.
- Limited initial budget and resources
- Tight development timeline for MVP launch
- Potential challenges in scaling the platform quickly

2.9 Assumptions & Dependencies

- Availability of qualified interviewers
- Reliable video conferencing and recording capabilities
- Timely feedback and cooperation from clients and candidates

3. External Interface Requirements

3.1 Hardware Interfaces

- **Server Requirement**
- Processor: 2 GHz or higher.
- RAM: 8 GB minimum.
- Storage: 100 GB SSD.
- **Client Requirement**
- Any modern device that supports web browser.

3.2 Software Interfaces

- **Server Requirement**
- **Backend**: Node.js, Express.js
- **Database**: MongoDB (Mongoose for connection)
- **Frontend**: React.js

3.3 Communications Interfaces

- Communication over HTTPS.
- APIs for assessment tools and scheduling services (if applicable).

4. System Functions / Functional Requirements

4.1 System Functions

Ref #	Functions	Category	Attribute	Details & Boundary Constraints
R1.1	User registration and login for candidates, HRs, and organizations	Evident	Response time	User registration should complete within 5 seconds
R1.2	CV submission by candidates	Evident	Data storage	System should allow CV uploads in standard formats (PDF, DOC)
R1.3	Job posting and management by organizations	Evident	System availability	Accessible 24/7
R1.4	Shortlisting of CVs by HRs based on job criteria	Hidden	System processing	CV shortlisting to complete within 10 seconds for 100 resumes
R1.5	Scheduling and conducting assessments/interviews	Evident	Integration support	Supports integration with online assessment tools
R1.6	Hiring HRs temporarily for recruitment tasks	Hidden	User load	Supports concurrent access by at least 50 users

4.2 Use Cases

4.2.1 List of Actors

The following are the key actors in the system

Candidates: Individuals who apply for jobs by sending in their resumes and taking part in assessments and interviews.

HRs: Human resource experts in managing recruitment, interviewing candidates, and shortlisting applications.

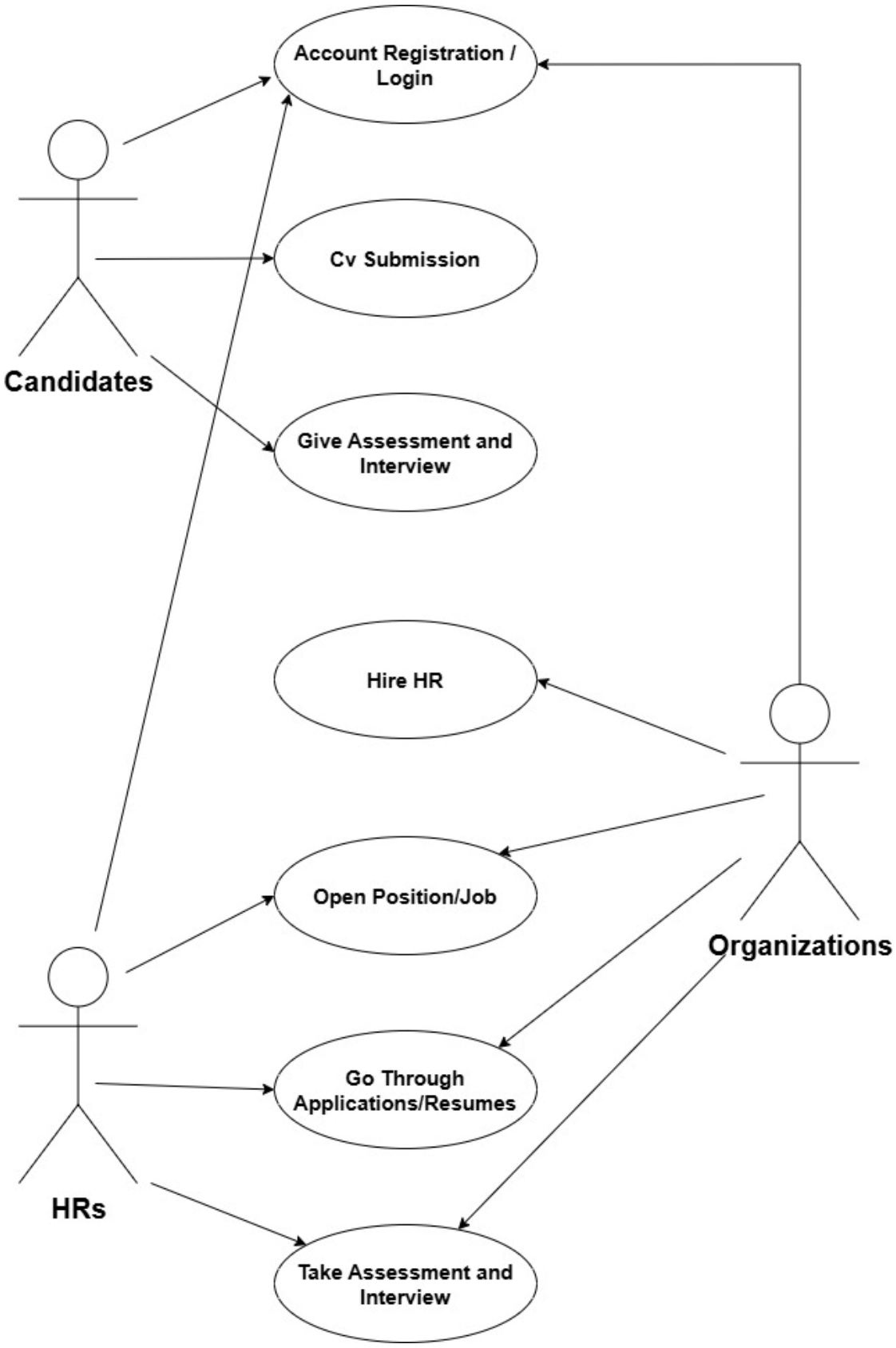
Organizations: Companies that post job openings, hire HR personnel, and manage the recruitment process.

4.2.2 List of Use Cases

The system supports the following use cases:

Use Case #	Name	Brief Description
UC1	Account Registration / Login	Allows organizations, HRs, and candidates to register or login to their accounts.
UC2	CV Submission	Candidates can upload their CVs in standard formats for job applications.
UC3	Open Position / Job	Organizations and HR personnels can post new job openings for candidates to apply.
UC4	Go Through Applications / Resumes	Organizations and HR personnels can review resumes based on job requirements.
UC5	Take Assessment and Interview	Organizations and HR personnels can schedule assessments and interviews for candidates.
UC6	Hire HR	Organizations can hire HRs temporarily to handle specific recruitment tasks.

4.2.3 Use Case Diagram



4.2.4 Description of Use Cases

Section: Main	
Name:	**Account Registration / Login**
Actors:	Candidates, HRs, Organizations
Purpose:	To allow users with a secure account to access the system.
Description:	Users can create an account or log in using valid credentials.
Cross References:	Functions: R1.1
Pre-Conditions	User must have valid email and password for login or registration information.
Successful post-conditions	Upon a successful login, the user is taken to their dashboard.
Failure post-conditions	Login fails and error message is displayed.

Typical Course of Events			
Actor Action			**System Response**
1	User enters registration details or login credentials.		System verifies the credentials and redirects to the appropriate dashboard.
2	Incorrect credentials are provided.		System displays an error message and asks the user to retry or reset password.

Section: Main	
Name:	**CV Submission**
Actors:	Candidates
Purpose:	To allow candidates to upload their CVs.
Description:	Candidates can upload CVs in standard file formats for job applications.
Cross References:	Functions: R1.2

Pre-Conditions	User must be logged into their account.
Successful post-Conditions	CV is successfully uploaded and stored in the system.
Failure post-Conditions	Error message is displayed if the file format is invalid or upload fails.

Typical Course of Events			
Actor Action			**System Response**
1	Candidate selects a CV file and clicks upload.		System validates the file format and stores the CV in the database.
2	Invalid file format is selected.		System displays an error message and asks the candidate to re-upload.

Section: Main	
Name:	**Open Position / Job**
Actors:	HRs, Organizations
Purpose:	To allow organizations and HRs to post job openings.
Description:	Organizations and HR personnels can create job postings, including details such as job title, description, qualifications, and salary.
Cross References:	Functions: R1.3
Pre-Conditions	The organization and HR must be logged into their account.
Successful post-conditions	Job posting is successfully created and made visible to candidates.
Failure post-conditions	Error message is displayed if required fields are missing or the system encounters an issue.

Typical Course of Events			
Actor Action			**System Response**
1	Organization enters job details and clicks “Post.”		System validates the information and publishes the job posting.
2	Required fields are not filled.		System displays an error message and asks the organization pr HR to complete missing fields.

Section: Main	
Name:	**Go Through Applications / Resumes**
Actors:	HRs, Organizations
Purpose:	To enable HRs and Organizations to review applications/resumes for job openings.
Description:	Organizations and HRs can review applications based on qualifications, skills, and job requirements.
Cross References:	Functions: R1.4
Pre-Conditions	Organization and HR must be logged into their account and connected with a job posting.
Successful post-conditions	Resumes are shortlisted, and candidates are notified of the next steps.
Failure post-conditions	Error message is displayed if filtering criteria are not valid or system processing fails.

Typical Course of Events			
Actor Action			**System Response**
1	Organization and HR selects a job posting to review applications.		System retrieves and displays all resumes submitted for the job.
2	Organization and HR applies filters to narrow down the list.		System displays a filtered list of candidates matching the criteria.

Section: Main	
Name:	**Take Assessment and Interview**
Actors:	HRs, Organizations
Purpose:	To allow Organizations and HRs to schedule and conduct assessments and interviews for candidates.
Description:	Organizations and HRs can set up online assessments or schedule interviews for shortlisted candidates.
Cross References:	Functions: R1.5

Pre-Conditions	Organization and HR must have shortlisted candidates for a job posting.
Successful post-conditions	Assessments or interviews are scheduled, and candidates are notified.
Failure post-conditions	Error message is displayed if scheduling conflicts or system errors occur.

Typical Course of Events			
Actor Action			**System Response**
1	Organization and HR selects a candidate and schedules an assessment or interview.		System saves the schedule and notifies the candidate.
2	Organization and HR conducts an online assessment.		System records the candidate's performance and saves the results.

Section: Main	
Name:	**Hire HR**
Actors:	Organizations
Purpose:	To enable organizations to hire HRs temporarily for recruitment tasks.
Description:	Organizations can browse available HR profiles, negotiate terms, and hire them for specific recruitment needs.
Cross References:	Functions: R1.6
Pre-Conditions	Organization must be logged into their account.
Successful post-conditions	HR is successfully hired, and their tasks are assigned.
Failure post-conditions	Error message is displayed if the HR profile is unavailable or terms are not agreed upon.

Typical Course of Events			
Actor Action			**System Response**
1	Organization browses available HR profiles.		System displays a list of HRs with their expertise and availability.
2	Organization selects an HR and negotiates terms.		System finalizes the agreement and assigns tasks to the hired HR.

5. Non - Functional Requirements

5.1 Performance Requirements

- Every operation should have a response time of less than two seconds.

5.2 Safety Requirements

- All data transmission over HTTPS.
- Passwords encrypted using SHA-256.

5.3 Security Requirements

- All user data (e.g., CVs, job postings, candidate test results) must be stored securely and protected from unauthorized access.
- Require two-factor authentication.

5.4 Reliability Requirements

- System uptime: 99.5%

5.5 Usability Requirements

- Simple and interactive user interfaces for all users.

5.6 Supportability Requirements

- The system must be scalable to handle a growing user base without significant performance degradation.
- Incorporate cloud-based solutions for dynamic resource allocation.
- The system must adapt to different screen sizes (responsive design) for mobile and desktop users.
- Use version control systems (e.g., Git) to manage source code and track changes.

5.7 User Documentation

Candidates:

- Guide on creating an account and submitting CVs.
- Instructions for participating in scenario-based tests and attending interviews.

HR Professionals:

- Overview of dashboard functionalities for shortlisting candidates, scheduling tests, and interviews.
- Steps for defining job requirements and managing candidate data.

Companies:

- Instructions for hiring HR professionals, posting jobs, and managing recruitment processes.

Answers to common questions (e.g., "How do I reset my password?").

- Troubleshooting steps for common issues like login problems or file upload errors.

Help Desk Support:

- Contact details for technical support.
- Support hours and escalation procedures for unresolved issues.

A3. DESIGN SPECIFICATIONS

Hamdard University
Department of Computing
Final Year Project

HR System for Hiring
FYP-018/FL24

Software Design Specifications

Submitted by
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Shayan Yar Khan (1889-2021)

Supervisor(s)
Aamir Hussain
Maaz Ahmed

Fall 2021

Document Sign off Sheet

Document Information

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Document Name	Software Design Specifications
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Document Identifier	FYP-018/FL24-SDS
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Author(s)	Muhammad Hassan, Ramiz Shahnawaz, Shayan Yar Khan
Approver(s)	Aamir Hussain, Maaz Ahmed
Issue Date	16-01-2025

Name	Role	Signature	Date
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Ramiz Shahnawaz	Team Member 2		16-01-2025
Shayan Yar Khan	Team Member 3		16-01-2025
Aamir Hussain	Supervisor		16-01-2025
Maaz Ahmed	Co-Supervisor		16-01-2025
	Project Coordinator		

Revision History

Date	Version	Description	Author
16-01-2025	1.0	First Draft	Ramiz Shahnawaz, Shayan Yar Khan

Definition of Terms, Acronyms, and Abbreviations

Term	Description
HR	Human Resources
CV	Curriculum Vitae
SRS	Software Requirement Specification
API	Application Programming Interface

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3. Introduction

The HR System will serve as a platform that simplifies the hiring process providing a seamless experience for candidates, HR personnel, and companies, ensuring the right fit for each position. Our goal is to minimize the gap between organizations, HR professionals and job applicants by developing an easy-to-use virtual platform with advanced features that help organizations, HR personnels in receiving and assessing resumes and applications, scheduling interviews, conducting tests, and shortlisting applicants based on job requirements and for Organization by finding the right fit for their open position without spending vast amount of cost and manpower.

3.1 Purpose of Document

This Software Design Specification (SDS) document details the architectural design and component details of the proposed HR System for Hiring. It helps the team to meet SRS compliance and contains technical descriptions that define how the development team will operate.

3.2 Intended Audience

The hiring practices followed today requires a vast amount of manual labor and time for gathering resumes, shortlisting candidates, and scheduling interviews, leading to inefficiencies, higher expenses, and longer hiring periods. Organizations struggle to find top talents, HRs are stressed out, and candidates aren't given enough opportunity during the hiring process.

- Project Team
- Supervisors and Evaluators
- End-users (Companies, HRs, Candidates

3.3 Document Convention

This document is prepared in Times New Roman 12pt font for the text and Arial 14pt bold for section headers and 16 for main heading.

3.4 Project Overview

The HR System will serve as a platform that simplifies the hiring process, providing a seamless experience for candidates, HR personnel, and companies, ensuring the right fit for each position. Our goal is to minimize the gap between organizations, HR professionals, and job applicants by developing an easy-to-use virtual platform with advanced features that help organizations and HR personnel in receiving and assessing resumes and applications, scheduling interviews, conducting tests, and shortlisting applicants based on job requirements, and for organizations to find the right fit for their open positions without spending vast amounts of cost and manpower.

3.5 Scope

The following significant elements will be a part of the project.

18. Improving the overall efficiency of HR processes and procedures.
19. Simplifying and optimizing hiring processes.
20. Provide organization to manage job openings, hire HR professionals, and automate shortlisting.
21. Allow HR professionals and Organizations to conduct assessments and schedule interviews.
22. Allow candidates to apply for jobs, give assessment, and attend interviews.

Not In Scope

6. Salary negotiations between HR and companies.
7. Candidate evaluation based on non-quantifiable criteria (e.g., cultural fit).

4. Design Considerations

ensuring a modular, scalable, and effective system while managing potential risks and dependencies is the main goal of HR System design considerations.

4.1 Assumptions and Dependencies

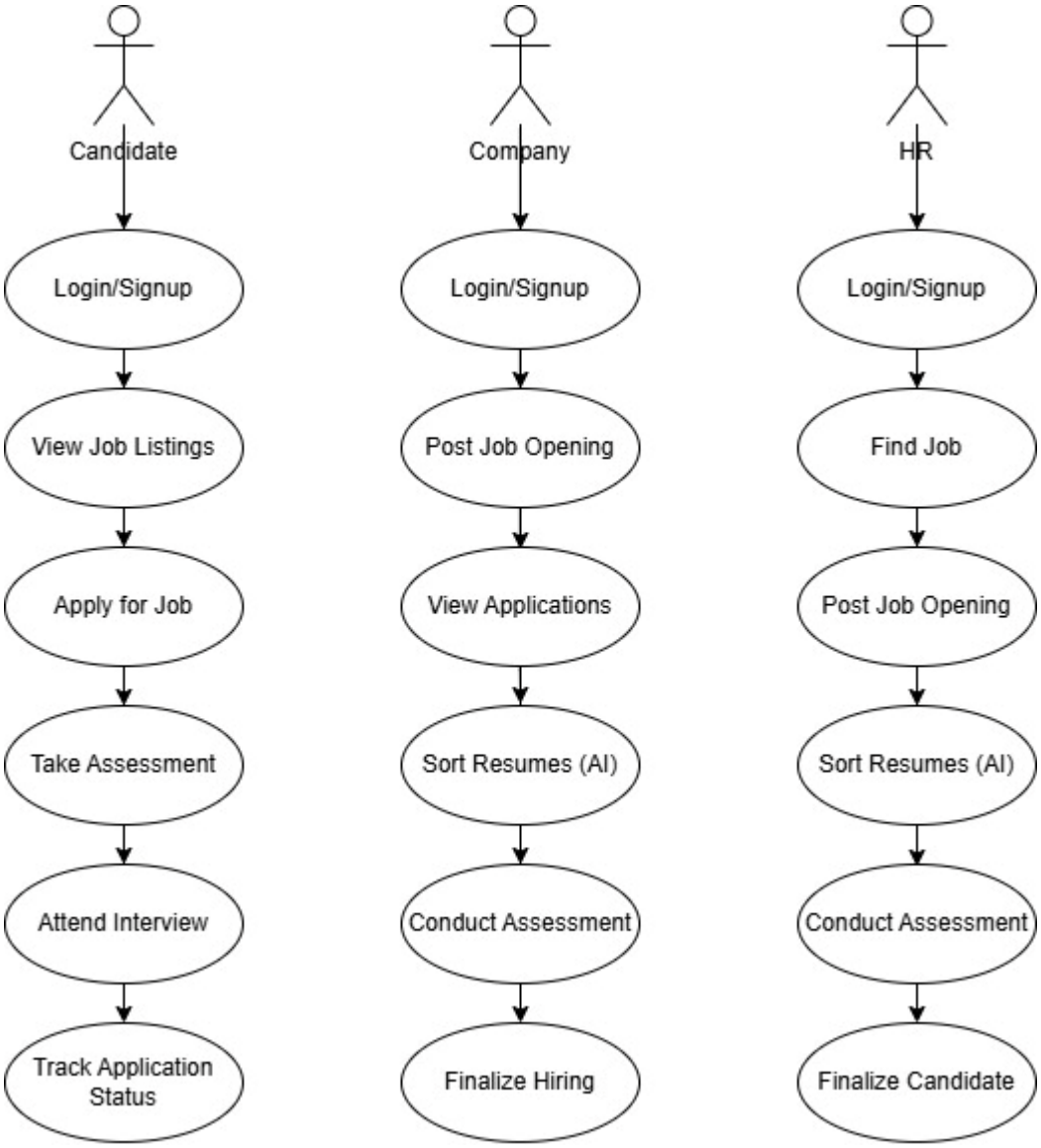
- The system makes assumptions that users—companies, human resources staff, and applicants—will have access to modern web browsers and stable internet connections.
- The system mostly relies on third-party APIs to provide necessary functions like real-time communication and email notifications.
- Scalability must be supported by the database infrastructure as the number of jobs and users grows over time.
- HR professionals who use the system are expected to be familiar with the basic understanding of online hiring procedures.

4.2 Risks and Volatile Areas

- Technology Risks: Relying on third-party APIs raises the possibility of problems if those services stop working or modify their privacy policies.
- User Adoption: Slower adoption rates or the need for more training may arise because of users limited technical knowledge.
- Scalability: During periods of high hiring demand, the system may have trouble managing an unexpected increase in users.
- Data privacy: To prevent legal problems, it is essential to make sure that data protection laws, such as the GDPR, are followed.
- Contingency Plans: Develop the system so that new features may be added and upgrades can be made in phases without affecting existing functionality.
- Setup backup plans for third-party services, including local storage for crucial tasks or alternative APIs.
- Test the system frequently under high-load situations to spot and fix scalability problems early.

5 System Architecture

5.1 System Level Architecture



5.2 Software Architecture

The software architecture follows a layered approach with separation of concerns and ease in maintenance.

User Interface Layer:

- Built with React.js to create responsive and dynamic interfaces.
- User-friendly portals for each role.

Middle Tier (Business Logic):

- Developed in Node.js using the Express.js framework.
- Core functionalities of job creation, candidate shortlisting, and interview scheduling.

Data Access Layer:

- Utilizes MongoDB to provide flexible and scalable data storage.
- There is an abstraction layer to ensure safe and efficient interaction with the database.

6 Design Strategy

The system design approach follows best practices for web application development while aiming for modularity, scalability, and reusability.

Future System Extension: The modular design makes it possible to add new capabilities without interfering with current operation, including advanced analytics or integration with new APIs.

System Reuse: Elements like the assessment tools and CV parser are made to be used across different modules.

User Interface Paradigms: To improve the user experience on all devices, a responsive, user-friendly design is used.

Data Administration: MongoDB is used to store data, providing high scalability and flexibility.

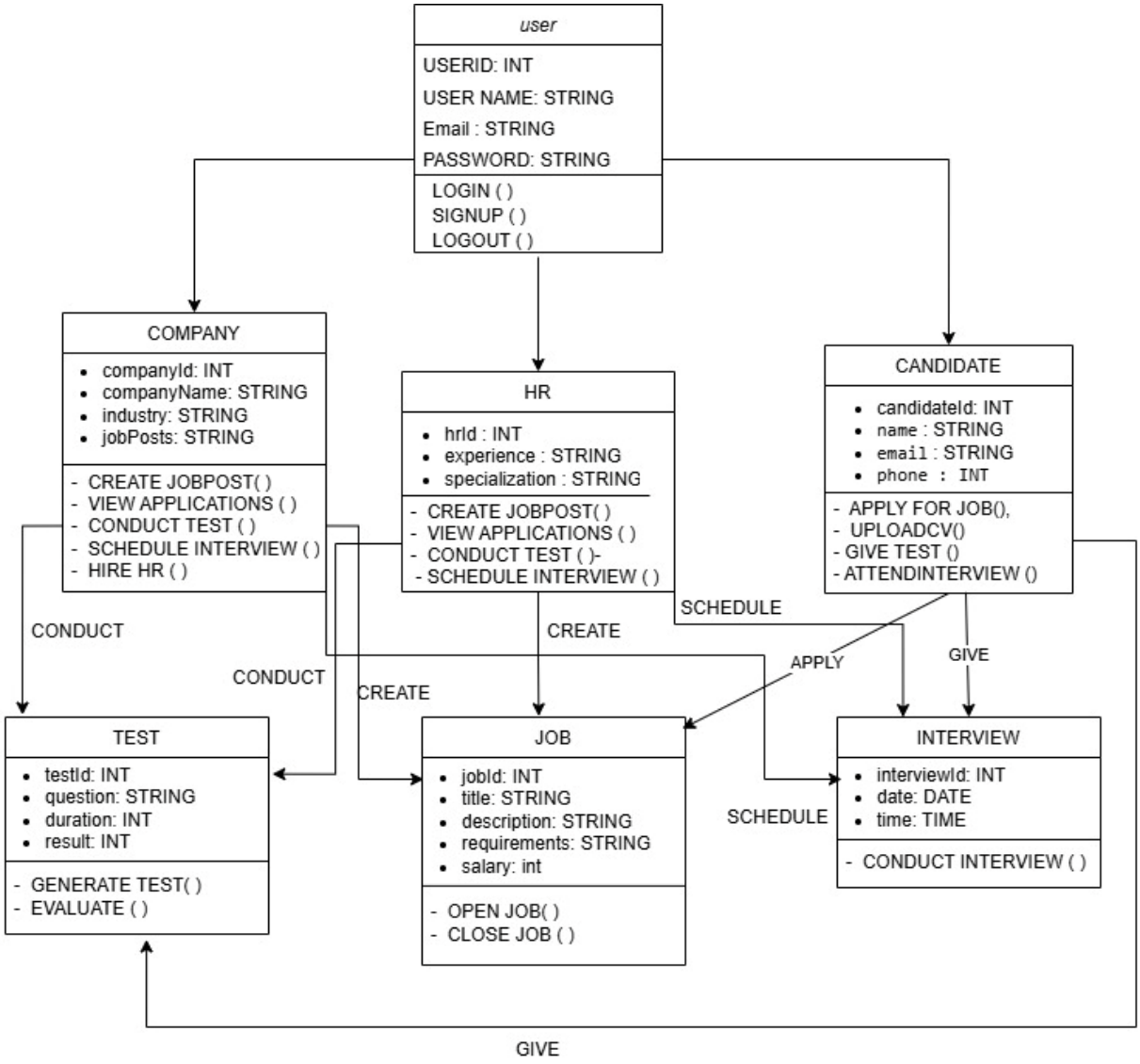
Synchronization and Concurrency:

- APIs are designed to manage several requests at once without experiencing any performance issues.

This approach ensures that the system will continue to be reliable, easy to use, and flexible enough to meet changing requirements.

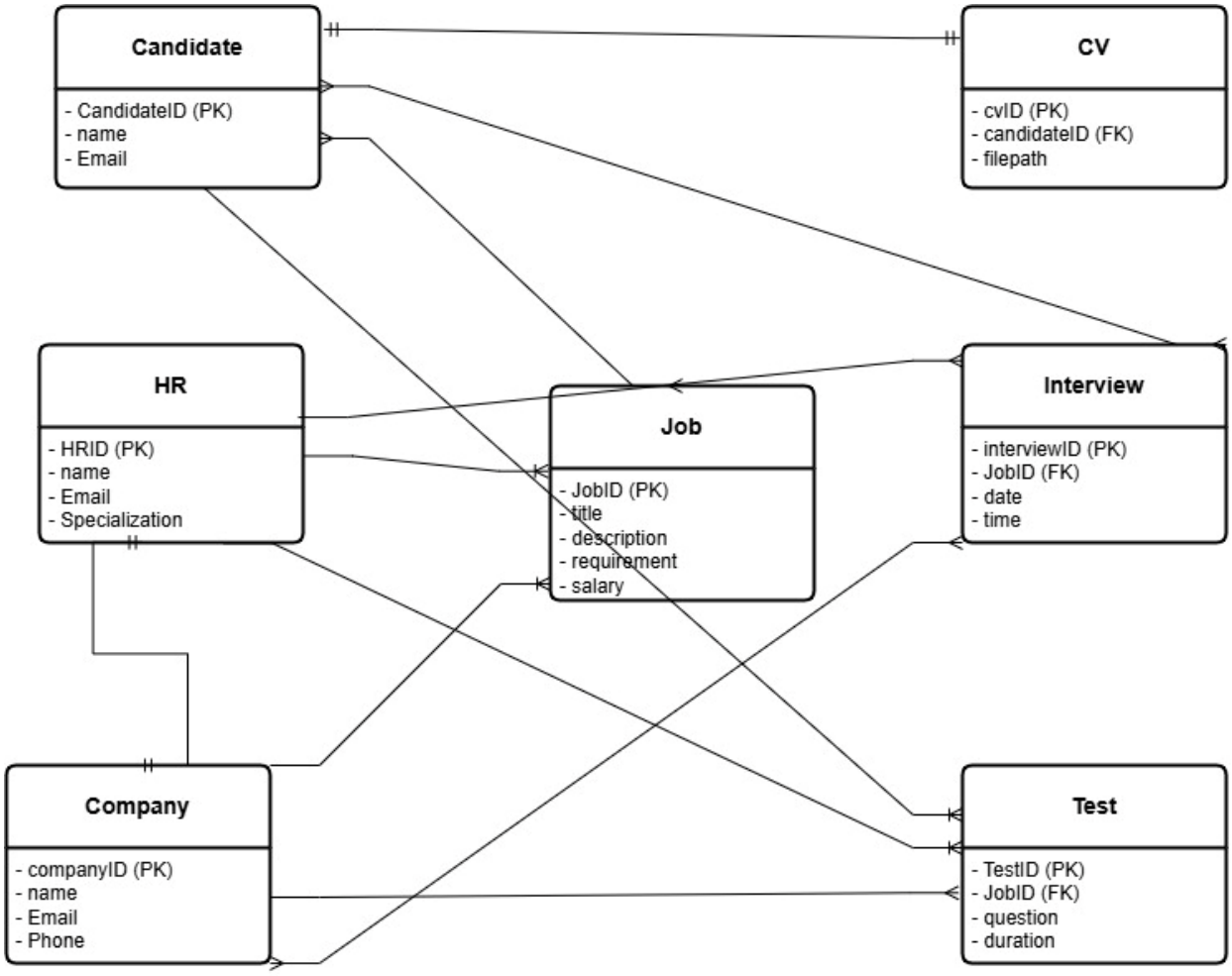
7 Detailed System Design

7.1 Design Class Diagram



7.2 Database Design

7.2.1 ER Diagram



7.2.2 Data Dictionary

Data 1: Company

Name	Company
Alias	Organization
Where-used/how-used	Used to store information about companies creating job postings and managing recruitment.
Content description	Stores details like company name, contact information, and location.

Column Name	Description	Type	Length	Nullable	Default Value	Key Type
companyID	Unique identifier for the company	INT	11	NO	NULL	PK
name	Name of the company	VARCHAR	255	NO	NULL	
email	Contact email of the company	VARCHAR	255	NO	NULL	

phone	Contact number of the company	VARCHAR	15	YES	NULL	

Data 2: HR

Name	HR
Alias	Human Resource Personnel
Where-used/how-used	Stores data for HR managing job posts, shortlisting candidates, and conducting tests.
Content description	Contains HR details, their specialization, and payment rates.

Column Name	Description	Type	Length	Nullable	Default Value	Key Type
hrID	Unique identifier for HR	INT	11	NO	NULL	PK
name	Name of the HR personnel	VARCHAR	255	NO	NULL	
email	Email of HR	VARCHAR	255	NO	NULL	
specialization	Area of expertise	VARCHAR	255	YES	NULL	

Data 3: Candidate

Name	Candidate
Alias	Job Seeker
Where-used/how-used	Used for storing candidate details such as applications and CVs for various jobs.
Content description	Holds information like candidate name, email, phone number, and CV file path.

Column Name	Description	Type	Length	Nullable	Default Value	Key Type
candidateID	Unique identifier for the candidate	INT	11	NO	NULL	PK
name	Name of the candidate	VARCHAR	255	NO	NULL	
email	Email address of the candidate	VARCHAR	255	NO	NULL	

Data 4: Job

Name	Job
Alias	Job Posting
Where-used/how-used	Represents open positions posted by companies and their related information.
Content description	Contains job details such as title, description, requirements, and salary information.

Column Name	Description	Type	Length	Nullable	Default Value	Key Type
jobID	Unique identifier for the job	INT	11	NO	NULL	PK

title	Job title	VARCHAR	255	NO	NULL	
description	Description of the job	TEXT	-	YES	NULL	
requirements	Requirements for the job	TEXT	-	YES	NULL	
salary	Salary offered for the job	FLOAT	8,2	YES	NULL	

Data 5: CV

Name	**CV**
Alias	Resume
Where-used/how-used	Stores information related to candidate resumes uploaded for job applications.
Content description	Contains the file path to the candidate's resume, linked to their profile.

Column Name	**Description**	**Type**	**Length**	**Nullable**	**Default Value**	**Key Type**
cvID	Unique identifier for the CV	INT	11	NO	NULL	PK
candidateID	Candidate associated with the CV	INT	11	NO	NULL	FK
filePath	Path to the uploaded CV file	VARCHAR	255	NO	NULL	

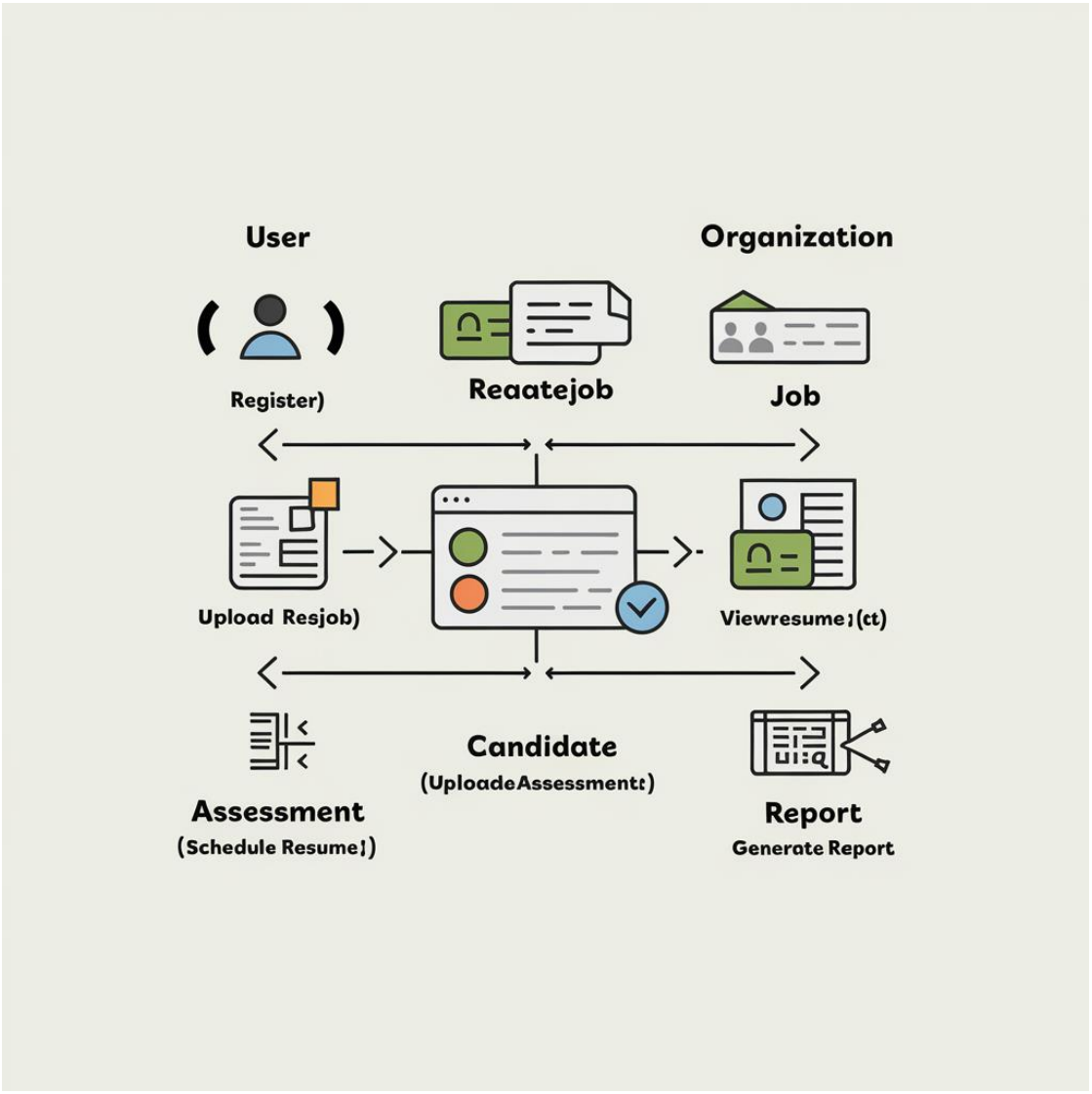
Data 6: Interview

Name	**Interview**
Alias	Meeting
Where-used/how-used	Represents the scheduled interviews for candidates for specific job positions.
Content description	Holds details about the interview date, time, location, and associated job and HR.

Column Name	**Description**	**Type**	**Length**	**Nullable**	**Default Value**	**Key Type**
interviewID	Unique identifier for the interview	INT	11	NO	NULL	PK
jobID	Job associated with the interview	INT	11	NO	NULL	FK
candidateID	Candidate attending the interview	INT	11	NO	NULL	FK
hrID	HR conducting the interview	INT	11	YES	NULL	FK
date	Scheduled date of the interview	DATE	-	NO	NULL	
time	Scheduled time of the interview	TIME	-	NO	NULL	

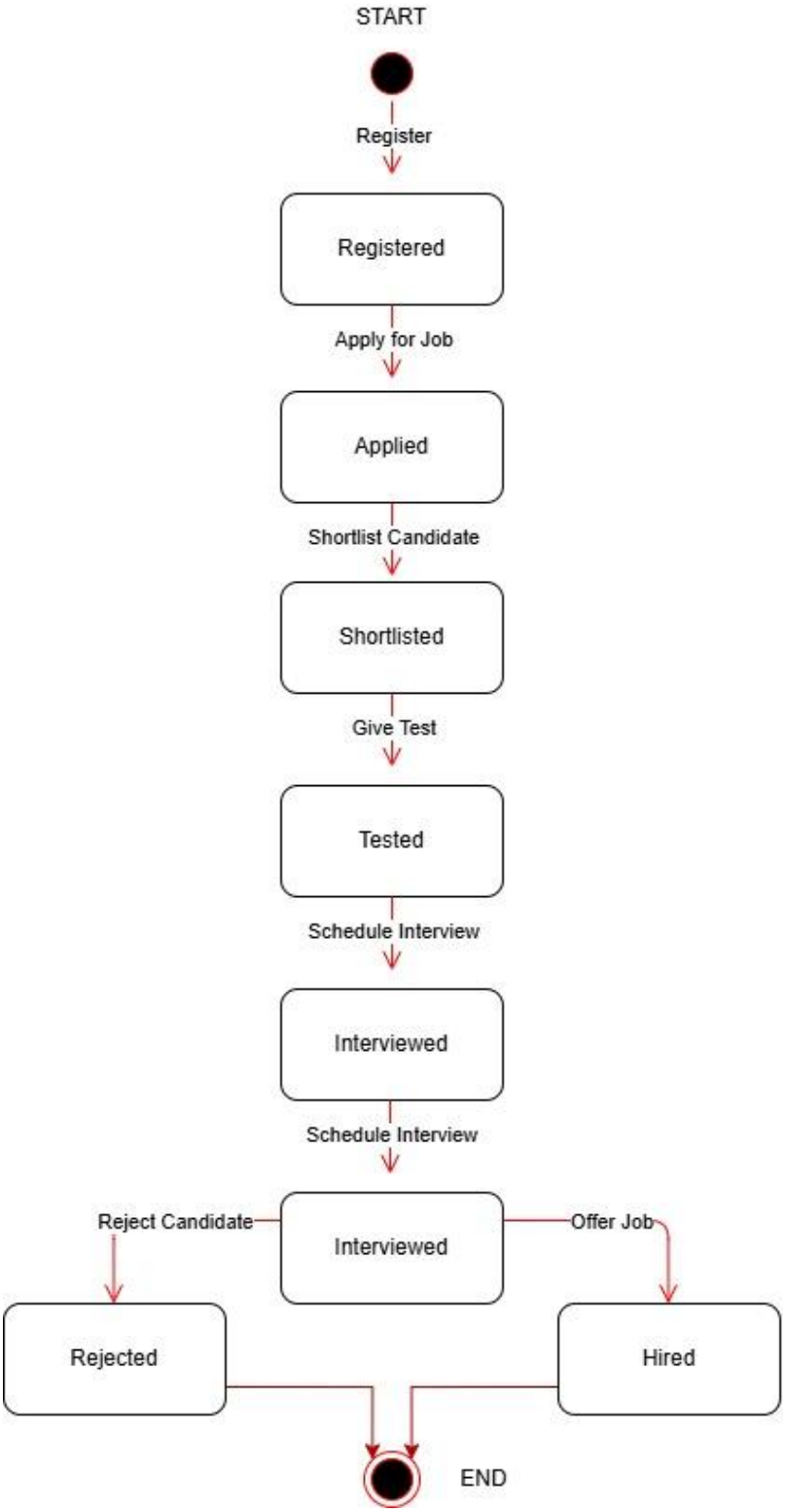
7.3 Application Design

7.3.1 Sequence Diagram

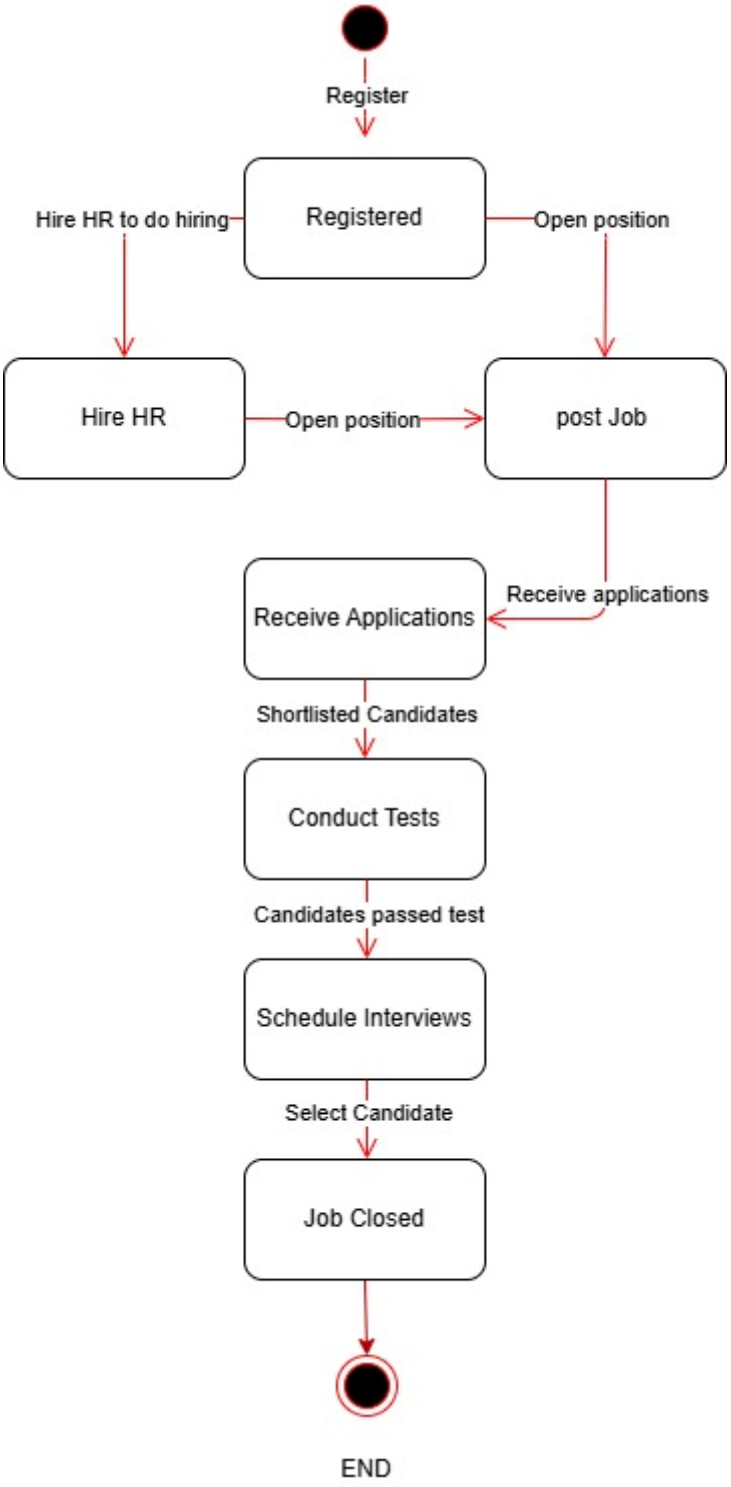


7.3.2 State Diagram

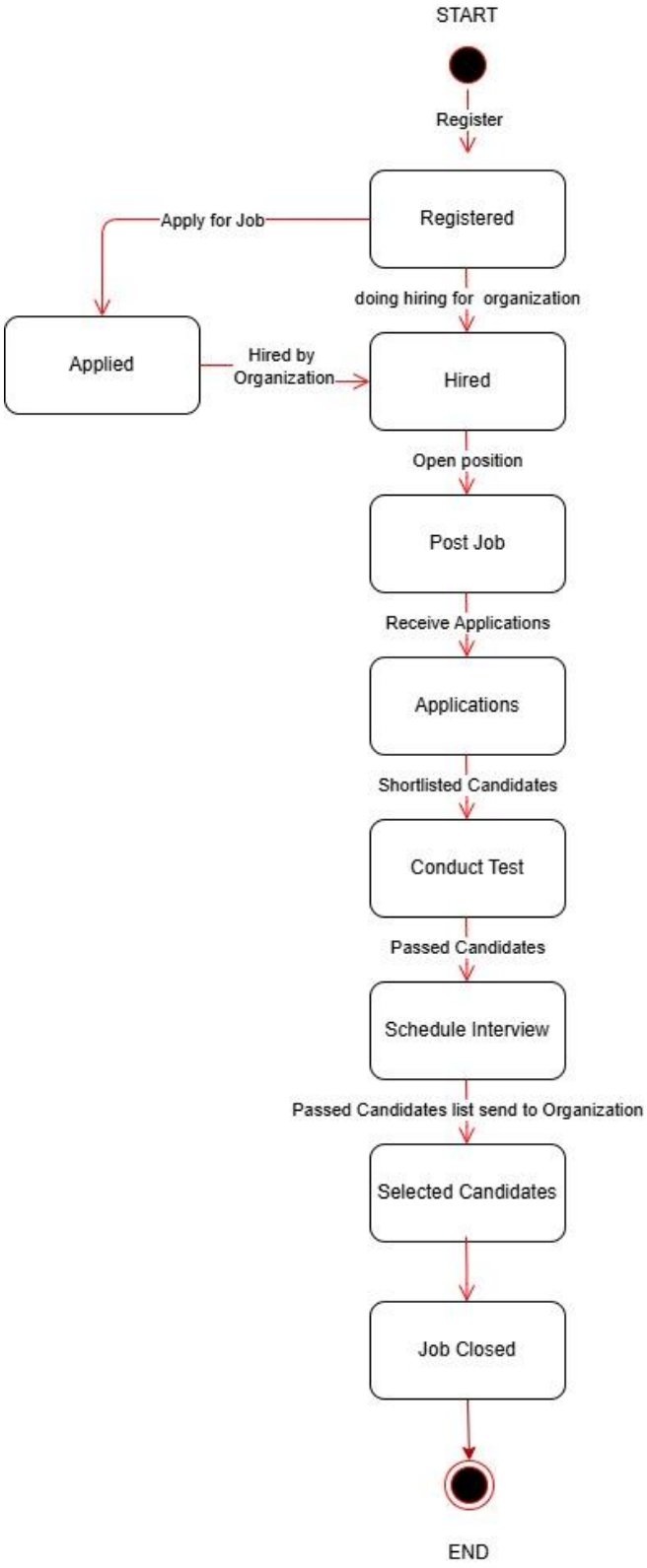
7.3.2.1 Candidate



7.3.2.2 Organization



7.3.2.3 HR


START
Register
Registered
Apply for Job
doing hiring for organization
Applied
Hired by Organization
Hired
Open position
Post Job
Receive Applications
Applications
Shortlisted Candidates
Conduct Test
Passed Candidates
Schedule Interview
Passed Candidates list send to Organization
Selected Candidates
Job Closed
END

A4. OTHER TECHNICAL DETAIL DOCUMENTS

Test Cases Document

Software Test Plan

Test Case # 01

Project Name: HR System for Hiring
Iteration No: 2.0
Module Name: Authentication
Date: 15-Nov-2024
Test Case ID: TC-AUTH-01
Test Engineer: Muhammad Hassan
Test Case Description: Verify candidate login functionality with valid/invalid credentials.

S.No	Steps	Input Data	Expected Result	Actual Result	Pass/Fail
TC-1	Enter Email	hassanshakil112@gmail.com	Field accepts input	Input accepted	Pass
TC-2	Enter Password	Pass123!	Field accepts input	Input accepted	Pass
TC-3	Click Login (Valid)	-	Redirect to Dashboard	Redirected	Pass
TC-4	Click Login (Invalid)	candidate@gmail.com	Error Invalid Credentials	Error displayed	Pass

Test Case # 02

Project Name: HR System for Hiring
Iteration No: 2.0
Module Name: Candidate Dashboard
Date: 2-DEC-2024
Test Case ID: TC-CAND-02
Test Engineer: Muhammad Hassan
Test Case Description: Verify job finding, application tracking, and resume updates.

S.No	**Steps**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
TC-1	Search Jobs	Keyword: Angular	List of Angular jobs displayed	5 jobs listed	Pass
TC-2	View Application Status	-	Status Under Review	Status visible	Pass
TC-3	Upload Updated Resume	PDF resume	Confirmation message	Resume updated	Pass

Test Case # 03

Project Name: HR System for Hiring
Iteration No: 2.0
Module Name: Job Application
Date: 5-DEC-2024
Test Case ID: TC-APP-03
Test Engineer: Muhammad Hassan
Test Case Description: Verify job application submission and validations.

S.No	Steps	Input Data	Expected Result	Actual Result	Pass/Fail
TC-1	Apply without Resume	-	Error Resume required	Display Error	Pass
TC-2	Submit Complete Application	Resume + Cover Letter	Success message	Application saved	Pass

Test Case # 04

Project Name: HR System for Hiring
Iteration No: 2.0
Module Name: Authentication
Date: 15-Nov-2024
Test Case ID: TC-AUTH-04
Test Engineer: Muhammad Hassan
Test Case Description: Verify Hr login functionality with valid/invalid credentials.

S.No	Steps	Input Data	Expected Result	Actual Result	Pass/Fail
TC-1	Enter Email	ramizshahnawaz@gmail.com	Field accepts input	Input accepted	Pass
TC-2	Enter Password	R$12345678	Field accepts input	Input accepted	Pass
TC-3	Click Login (Valid)	-	Redirect to Dashboard	Redirected	Pass
TC-4	Click Login (Invalid)	hr@gmail.com	Error Invalid Credentials	Error displayed	Pass

Test Case # 05

Project Name: HR System for Hiring
Iteration No: 2.0
Module Name: HR Management
Date: 19-Mar-2025
Test Case ID: TC-HR-05
Test Engineer: Muhammad Hassan
Test Case Description: Validate AI-based CV sorting for a job posting.

S.No	Steps	Input Data	Expected Result	Actual Result	Pass/Fail
TC-1	Upload 10 Resumes	PDF/Word files	All files uploaded successfully	10/10 uploaded	Pass
TC-2	Run AI Shortlisting	Job: Full Stack Developer	Top 5 candidates ranked	Ranked by skills match	Pass
TC-3	Filter by Experience (3+ yrs)	Checkbox selected	List updates to show matches	5 candidates shown	Pass

Test Case # 06

Project Name: HR System for Hiring
Iteration No: 2.0
Module Name: Assessment Engine
Date: 3-Apr-2025
Test Case ID: TC-ASSESS-06
Test Engineer: Muhammad Hassan
Test Case Description: Validate AI-generated assessments and manual edit

S.No	**Steps**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
TC-1	Auto-Generate Test	Job Project Manager	10 questions created	Questions generated	Pass

Test Case # 07

Project Name: HR System for Hiring
Iteration No: 2.0
Module Name: Authentication
Date: 15-Nov-2024
Test Case ID: TC-AUTH-07
Test Engineer: Muhammad Hassan
Test Case Description: Verify Organization login functionality with valid/invalid credentials.

S.No	Steps	Input Data	Expected Result	Actual Result	Pass/Fail
TC-1	Enter Email	craftifytechnologie@gmail.com	Field accepts input	Input accepted	Pass
TC-2	Enter Password	Ct_20022	Field accepts input	Input accepted	Pass
TC-3	Click Login (Valid)	-	Redirect to Dashboard	Redirected	Pass
TC-4	Click Login (Invalid)	organization@gmail.com	Error Invalid Credentials	Error displayed	Pass

Test Case # 08

Project Name: HR System for Hiring
Iteration No: 2.0
Module Name: Job Management
Date: 29-Nov-2024
Test Case ID: TC-COMP-08
Test Engineer: Muhammad Hassan
Test Case Description: Verify job posting creation and validation.

S.No	**Steps**	**Input Data**	**Expected Result**	**Actual Result**	**Pass/Fail**
TC-1	Enter Job Title	UI/UX Designer	Field accepts input	Input accepted	Pass
TC-2	Leave Description Empty	-	Error Field required	Error displayed	Pass
TC-3	Submit Valid Job Post	All fields filled correctly	Job appears in dashboard	Successfully Post created	Pass

Test Case # 09

Project Name: HR System for Hiring
Iteration No: 2.0
Module Name: Assessment Engine
Date: 7-Apr-2025
Test Case ID: TC-AI-06
Test Engineer: Muhammad Hassan
Test Case Description: Verify automated grading of candidate tests.

S.No	Steps	Input Data	Expected Result	Actual Result	Pass/Fail
TC-1	Candidate submits test	Answers 8/10 correct	Score 80%	80% calculated	Pass
TC-2	AI evaluates essay	Essay Explain MVC pattern	Feedback generated	Feedback provided	Pass

Test Case # 10

Project Name: HR System for Hiring
Iteration No: 2.0
Module Name: AI Shortlisting
Date: 27-May-2025
Test Case ID: TC-FLTR-09
Test Engineer: Muhammad Hassan
Test Case Description: Verify filtering.

Steps	Input Data	Expected Result	Actual Result	Pass/Fail	
TC-1	Generate Report	Date Range June 2025	PDF report downloaded	Report generated	Pass
TC-2	Filter by Job Title	Senior Backend Developer	Only relevant candidates	3 candidates listed	Pass

UI/UX Detail Document
Coding Standards Document

Project Policy Document

HR System for Hiring

Project Policy Document

Submitted by

Muhammad Hassan (1669-2021)
Ramiz Shahnawaz (1678-2021)
Shayan Yar Khan (1889-2021)

Supervisor

Aamir Hussain

In partial fulfilment of the requirements for the degree of
Bachelor of Science in Software Engineering
2025

Faculty of Engineering Sciences and Technology

Hamdard Institute of Engineering and Technology

Hamdard University, Main Campus, Karachi, Pakistan

1. Introduction

This document outlines the key policies governing the project HR System for Hiring. These policies ensure effective collaboration, consistent practices, and high-quality deliverables throughout the project lifecycle.

2. Purpose

The purpose of this policy is to:

- Establish clear expectations for all team members.
- Establish procedures for problem-solving, communication, and development.
- Promote accountability and maintain project standards.

3. Scope

This policy applies to:

- Every individual involved in the project, including developers, testers, and stakeholders.
- All task related to design, development, testing, deployment, and maintenance.

4. Communication Policy

- All communication should be professional, clear, and documented.
- Primary channels:
  - Email for formal updates and decisions.
  - Instant messaging for everyday collaboration (e.g., Slack, WhatsApp).
  - Weekly progress review sessions.
- Major decisions need to be documented in shared documents or meeting minutes.

5. Code Management Policy

- The specified Git repository is where all source code must be kept.
- Frequent and descriptive messages should be included in commitments.
- Feature development must occur in separate branches.
- Peer evaluation and approval are necessary for mergers to the main branch.

6. Testing Policy

- Each feature must be tested against defined test cases before marking as complete.
- Unit, integration, and system tests are mandatory.
- Test results must be documented and shared with the team.
- No code is considered complete until it passes all relevant tests.

7. Documentation Policy

- All modules and components must be documented.
- Documentation should be updated when changes occur.
- User guides and technical references must be maintained throughout the project

8. Issue and Risk Management Policy

- All issues and risks should be logged in the issue tracking system.
- Issues must be assigned an owner and priority level.
- Critical issues must be escalated to the project manager immediately.

9. Security and Confidentiality Policy

- Sensitive data such as credentials, personal information, or proprietary files must be securely stored.
- Access to production environments is restricted to authorized personnel.
- Team members must not share confidential project information with external parties.

10. Compliance Review

- All team members are expected to comply with these policies.
- The policies will be reviewed periodically and updated as necessary.
- Non-compliance may result in corrective action or removal from the project team.

User Manual Document

HR System for Hiring

User Manual

Submitted by

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Supervisor

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In partial fulfilment of the requirements for the degree of
Bachelor of Science in Software Engineering
2025

Faculty of Engineering Sciences and Technology

Hamdard Institute of Engineering and Technology

Hamdard University, Main Campus, Karachi, Pakistan

1. Introduction

Welcome to ProCruit, an AI-powered online tool designed and developed to improve and simplify the hiring and recruitment process for organizations, HR professionals, and job candidates. This handbook offers thorough guidance on how to use the platform's main functions across its three separate interfaces: Company, HR, and Candidate.

2. System Requirements

To access and use ProCruit, ensure you have:

- A modern web browser (e.g., Chrome, Firefox, Edge).
- A stable internet connection.
- A valid ProCruit account for your respective user type (Candidate, HR, or Company).

3. Accessing the Application

- Open your web browser.
- Visit the ProCruit URL.
- Log in using your registered email and password.
- If you do not have an account, click Register or Signup and complete the registration form specific to your user type (Candidate, HR, or Company).

4. Dashboard Overview

You will be taken to your customized Dashboard after signing in, which provides instant access to key features and an overview of relevant actions. A search bar, a "Need Help?" option, and the ProCruit logo are the standard navigation components seen in all interfaces.

4.1 Candidate Interface

Candidates can explore opportunities, apply, and monitor the status of their applications using the designated interface.

4.1.1. Dashboard

The Candidate Dashboard displays Recommended Jobs.

- Job Listings: The company, position (e.g., Full Stack Developer), kind of employment (e.g., Full time), necessary skills (e.g., Senior Level Javascript, C++), pay (e.g., $25,000/month), and location (e.g., Karachi, Pakistan) are all listed in the published job openings. A Details button for additional information is included with every item.
- Navigation: Use the top navigation bar to access Find Job, My Application, Tests & Interviews, and FAQ. There is also a search bar and filters.

4.1.2. Job Applications

- Through the portal, job seekers can submit their resumes for consideration.

4.1.3. Assessments and Interviews

- **Taking Assessments:** Candidates have the option to attempt tests that are created and evaluated through an AI algorithm.
- **Interview Participation:** The Tests & Interviews section shows Lined Up Interview for positions like Senior Front-end developer with details such as the interviewer

(Peter Parker) and the time (10:00am-01:00pm).

4.1.4. Application Status Tracking

- The status of their applications (e.g., Applied, Qualified, Passed, Interviewed, Hired) can be tracked by candidates.

4.2 Company Interface

The Company interface provides tools handling the hiring process, from opening positions to finalizing candidates.

4.2.1. Dashboard

The Organization Dashboard offers an overview of key hiring metrics.

- **Total Employees:** Shows the total number of employees (for example, 272).
- **Job Applicants:** Displays the overall number of applicants for positions (for example, 2,729).
- **Open Position:** Lists current open positions (e.g., Hire HR).
- **Interview Schedule:** Tests and interviews that are scheduled are highlighted in a calendar view.
- **Tasks:** Displays Interview Candidate - UI/UX Designer tasks along with links to the meetings.

4.2.2. Hiring HR (Optional)

- Organizations have the choice to hire HR personnel to manage their hiring process.

4.2.3. Opening Positions

- Organizations can use their portal to post job openings.

4.2.4. Application Management

- Application Hub: Review applications for certain positions, arranged according to their status (for example, UI/UX Designer - Fulltime.Pakistan).
- **AI-Powered CV Sorting:** An AI algorithm will be used to sort all submitted resumes based on the specified criteria.

4.2.5. Assessment & Interview

- **Conducting Assessments:** For candidates who have been shortlisted, companies can generate and conduct assessments. AI is used to create and verify these evaluations.
- **Conducting Interviews**: Interview individuals who have successfully completed the tests.
- **Finalization:** After all tests and interviews are finished, select the best applicants.

4.3 HR Interface

The HR interface is designed for HR personnels to manage hiring, whether working independently or hired by a company.

4.3.1. Dashboard

An overview of job statistics and applications is given via the HR Dashboard.

- **Applications Received:** Shows how many applications were received overall.
- **Job Statistics**: Trends in job views and applications are displayed in graphs.
- **Calendar:** Shows upcoming exams and interviews.

4.3.2. Find Jobs

- If they are looking for work, HR professionals can also use the platform to search positions. Available positions are listed in the "Jobs" section.

4.3.3. Opening Positions

- HR can open new positions, often based on requirements provided by Organization.

4.3.4. Application Management

- **Application Hub:** Track the status of applications for different roles.
- **AI-Powered CV Sorting:** An AI system is used to sort resumes according to HR-entered criteria.

4.3.4. Assessment & Interview

- **Conducting Assessments:** For candidates who have been shortlisted, HR can create and administer assessments. These are AI-generated and checked.
- **Conducting Interviews:** HR can conduct interviews with candidates who passed the tests.
- **Finalization:** Select the best applicants and deliver the suggestions to the organization.

5. AI Features

ProCruit leverages AI for enhanced efficiency:

- **AI-Powered CV Sorting:** The system uses an AI algorithm to sort resumes based on job requirements, helping to shortlist the most relevant candidates efficiently.
- **AI-Generated and Checked Assessments:** Assessments for candidates are generated and evaluated by an AI, ensuring standardized and unbiased testing.

A5. FLYER & POSTER DESIGN

A6. COPY OF EVALUATION COMMENTS
COPY OF EVALUATION COMMENTS BY SUPERVISOR FOR PROJECT – I MID SEMESTER EVALUATION

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A7. MEETINGS' MINUTES & Sign-Off Sheet

Original Documents should be placed when submitting document to Project Coordinator. Document should be signed by the supervisor and all other members present in the meeting (wherever possible). (**Note**: Please remove this line when attach copy that is required) Weekly meetings' minutes are required (held with Supervisor and/or with client). Important group discussions can also be included here.

A8. DOCUMENT CHANGE RECORD

Date	Version	Author	Change Details
16-01-2025	1.0	Ramiz Shahnawaz, Shayan yar Khan	First 3 Chapters
4-07-2025	2.0	Ramiz Shahnawaz, Shayan yar Khan	Complete report

A9. PROJECT PROGRESS

FYP I

FYP Fortnightly Sign-Up Sheet

Course: ☑ FYP-1 ☐ FYP-2 Project Code: FYP-018/FL24 Project Name: HR System for hiring

Group Members Names & Reg#: M. Hassan (1669-2021) Ramiz Shahnawaz (1678-2021) Shayan yar Khan (1889-2021)

Supervisor Name: Mr. Aamir Hussain Co-Supervisor's Name: Mr. Maaz Ahmed

Meeting #	Date	Agenda (Brief Statement)	Attended By (Student's Name only)	Supervisor's Sign	Co-supervisor's Sign	FYP Officer's Sign
1	18/7/2024	Discussion on the jury comments	M. Hassan Ramiz Shahnawaz Shayan Yar Khan			
2	12/9/2024	Discussion on the prototype	M. Hassan Ramiz Shahnawaz Shayan Yar Khan			
3	26/9/2024	Algorithm discussion	M Hassan Ramiz Shahnawaz Shayan Yar Khan			
4	10/10/2024	Discussion on database designing	M Hassan Ramiz Shahnawaz Shayan Yar Khan			
5	23/10/2024	Discussion on SRS & SDS	M. Hassan Ramiz Shahnawaz Shayan Yar Khan			
6	7/11/24	Discussion on front-end	M. Hassan Ramiz Shahnawaz Shayan Yar Khan			
7	21/11/24	Discussion on the procen flow	M. Hassan Ramiz Shahnawaz Shayan Yar Khan			
8	5/12/24	Discussion on integration of DB design	M. Hassan Ramiz Shahnawaz Shayan Yar Khan			12/2/24
9						

FYP 2

FYP Fortnightly Sign-Up Sheet

Course: ☐ FYP-1 ☑ FYP-2 Project Code: FYP-018/FL24 Project Name: HR System for hiring

Group Members Names & Reg#: M. Hassan (1669-2021) Ramiz Shahnawaz (1678-2021) Shayan yar Khan (1889-2021)

Supervisor Name: Aamir Hussain Co-Supervisor's Name: Maaz Ahmed

Meeting #	Date	Agenda (Brief Statement)	Attended By (Student's Name only)	Supervisor's Sign	Co-supervisor's Sign	FYP Officer's Sign
1	12/2/2025	Discussion on jury comments	M. Hassan Ramiz Shahnawaz Shayan yar Khan			
2	26/2/2025	Discuss about available dataset	M. Hassan Ramiz Shahnawaz Shayan yar Khan			26/2/25
3	12/3/2025	Discuss about the developed model	M. Hassan Ramiz Shahnawaz Shayan Yar Khan			12/03/25
4	09/04/25	Addressing the struggling accuracy of the model	M. Hassan Ramiz Shahnawaz Shayan Yar Khan			
5	16/04/25	Model for review	M. Hassan Ramiz Shahnawaz Shayan yar Khan			
6	01/05/25	Presented the final model	M. Hassan Ramiz Shahnawaz Shayan yar Khan			
7	14/05/25	Discuss about Documentation	M. Hassan Ramiz Shahnawaz Shayan yar Khan			
8						
9						

A10. RESEARCH PAPER

A11. Plagiarism Test Summary Report

FYP Report.pdf

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