



# University Recruitment & Onboarding Management System

## **Progress Report #3 ( Final ) Senior Project**

Development of a Web-Based Faculty Recruitment and Onboarding System

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# Chapter 1

## Introduction

The University Recruitment and Onboarding Management system is an elaborate web-based system that aims at facilitating the part of hiring of faculty members, application handling, and staff orientation in the university setup. Modern universities have to work with hundreds of applications, various departments, processing of evaluations, and submission of documents, that is why automated system is necessary to reduce the number of errors by hands, get rid of paperwork, and provide full alignment of all stakeholders. This system unifies database-based backend infrastructure, safe document management, applicant portals, HR dashboard, and onboarding modules that will be part of one digital experience. This project folder is full of the implementation: frontend pages, back-end APIs, SQL schema, test files and troubleshooting logs, deployment instructions and system documentation. This report is an analysis of the system based on well-constructed academic assessment criteria, giving a detailed description of the project plan, design rationale, architecture, technological integration, user testing, and quality in general.

## Background of the Study

Two of the most essential processes in institutions of higher learning are recruitment and onboarding. Universities keep recruiting new faculty, administrative, and research assistants, and technical employees to serve academic, operational, and strategic requirements. More conventionally, these are done manually with paper-based forms, email correspondence and informal scheduling. The complexity of universities increases by size, making such manual work flows slow, prone to errors, inconsistent. Lack of a single recruitment system usually leads to duplication of work, delay in communications, loss of documents, and lack of visibility among applicants as well as HR employees. Automated recruitment platforms are being embraced by organizations across the world in the current digital age, as a way of enhancing efficiency, transparency and accuracy of data. Digital transformation, as applied to human resource, is no longer a choice but a necessary factor in the competitiveness of an institution, as well as its operational efficiency. A properly built recruitment system would help to have the applicants add profiles at ease, the applicants review information in systematic way and the

administrators who have analytical knowledge would receive a chance to make evidenced-based hiring decisions. In the case with universities, such systems guarantee equity, efficiency in document management and a professional branding perception among a potential faculty recruit. This project is hence based on design and development of a University Recruitment and Onboarding Management System; it is a web-based application that includes all the hiring phases into one platform. Using the concept of full-stack web development, relational database design, and modelling the workflow, the system makes sure that all stakeholders, including applicants and HR administrators, will enjoy the native and integrated workflow and structure of the recruitment process.

## Problem Statement

However, with the progress of digital solutions, numerous universities still stick to disjointed and old fashioned ways of recruitment. The multiple documents are frequently sent via email; the applications are not always based on standardized tools due to ensuring their review by the HR staff manually, and the onboarding checklists are shared informally. These matters pose huge challenges:

1. Poor data management: The information of applicants is not centralized in emails, spreadsheet, and print.
2. Ineffective communication: Applicants do not get status updates in time, HR departments find it difficult to follow-up.
3. Manual review processes: Shortlisting and evaluation require significant time doing manual sorting and thus, there are high chances of errors or oversight of applications.
4. None of the integrated onboarding workflows: Once hired, an institution might experience delays in getting ready to inducement material, documents or even pre-joining processes.
5. Lack of transparency: No clear visibility of the process of the applicants is providing them with satisfaction and the desire to ask questions repeatedly.

The mentioned challenges will illuminate the necessity of a unified, computer-assisted system having the capacity to simplify the recruitment and onboarding cycle, make it more accurate, efficient, and secure with data and enhanced user-friendly experience.

# Purpose of the Study

This is mainly meant to design and come up with the complete recruitment and onboarding system that fits well in universities. The system aims to: Individuals can automate the whole recruitment process where applications are made up to the point of hiring.

- Use self-service portal to enable applicants to use self-service portal to maintain their profile, submit document and see their application status.
- Allow the HR personnel to screen applications in an orderly manner, shortlist candidates, interview feedback and onboarding.
- Provide administrators with the means of the development of vacancies, managing system users, and controlling every recruitment cycle.
- Enhance openness and interaction between candidates and human resource departments.
- Increase the efficiency of the operations through removal of redundant and manual work.

# Objectives of the Study

## General Objective

To create a complete web-based system to facilitate the automation of the recruitment and onboarding of university level employees.

## Specific Objectives

1. The design will be to create a centralized database that constitutes the details of the applicants, the vacancy, applications, the documents, interview feedback as well as the tasks that are performed during the onboarding process.
2. In order to develop an applicant portal, which would facilitate the creation of the profile, the application and the statuses.
3. To create HR dashboards that will allow organization of the reviews of the applications and analyze candidates.
4. To establish workflow of scheduling interviews, recording feedback and decision making.

5. To develop an onboarding module that will be used to handle checklists prior to joining and verify documents.
6. To have role-based authentication to secure access to system features.
7. In order to generate system documentation, UML and process models, and architecture designs to improve maintainability and scalability.

## Scope of the Project

The entire project encompasses the entire digital recruitment and onboarding processes in the university level. It includes: These include web based interfaces to applicants, HR personnel and the administrators.

- Authentication, application management services and document management and onboarding services are Backend API services. A relational database that would hold structured information in order to maintain consistency across modules.
- Electronic storage systems of uploading and retrieving applicant documents.
- Artifacts of system analysis and design which include use-case diagrams, class diagrams, ER diagrams and system architecture.
- Functional modules testing and validation. Nevertheless, the project is not incorporated with external HRISs, automated email notifications, automated shortlisting using AI, a cloud deployment, which is, however, suggested as its future improvement.

## Significance of the Study

The project is of great importance to a number of stakeholders:

### For Applicants:

- A seamless, user-friendly application process.
- Real-time tracking of application status.
- Secure and organized document submission.

### For HR Departments:

- Centralized access to all applicant records.

- Standardized evaluation workflows.
- Improved decision-making efficiency.

#### **For Administrators:**

- Enhanced oversight of recruitment cycles.
- Better control of vacancies and user roles.
- Reduced administrative workload.

#### **For the University:**

- Improved institutional professionalism.
- Higher transparency and fairness in hiring.
- Long-term adaptability for digital transformation.

## Project Deliverables

The major outputs of this project include:

- A fully functional, web-based recruitment and onboarding system.
- Database schema and ER diagrams.
- System architecture and design documentation.
- Screenshots of all interfaces and system workflows.
- UML diagrams including use case, class, sequence, and component diagrams.
- Functional and non-functional requirements documentation.
- Testing documentation.
- Final written report of more than 30 pages.

## Organization of the Report

This report is structured into several chapters:

- **Chapter 1 – Introduction:** Provides background, problem statement, objectives, and significance.
- **Chapter 2 – Literature Review:** Evaluates existing recruitment systems and related technologies.
- **Chapter 3 – System Analysis:** Describes requirements, process flows, and analysis diagrams.
- **Chapter 4 – System Design:** Presents architecture, database design, diagrams, and UI layout.
- **Chapter 5 – Implementation:** Details system development, user interface screens, and functionalities.
- **Chapter 6 – Testing:** Includes system validation, error detection, and test results.
- **Chapter 7 – Conclusion & Future Work:** Summarizes achievements and recommends next steps.

# Chapter -2 Literature Review

## Introduction

This chapter is a critical analysis of the theoretical, empirical, and technological underpinnings of the recruitment and onboarding systems in an academic and an institutional setting. It summarizes the research trends in the human resource management, digital recruitment platforms, onboarding structures, organizational socialization, automation in personnel systems. The review is thematically structured and makes a strong use of peer-reviewed articles obtained in your uploaded sources, which is to guarantee that it matches the current practices and academic opinions. The chapter is finished by the set inclusion and exclusion criteria, which determine the scope of the literature review.

## Human Resource Management and the Evolution of Recruitment

The digital era has greatly changed the nature of Human Resource Management (HRM) as it can no longer be considered as a record-keeping administration but an organizational strategy of talents. In modern HRM it is stressed that performance in organizations, talent acquisition, engagement of employees and institutional culture reinforcement is prioritized (Boselie et al., 2021; Bassey and Umoh, 2023). Some of its pillars, including recruitment, is understood as a multi-stage procedure, and includes job analysis, advertisement, candidate screening, interviews, selection, and finally onboarding. Anthony and Akpan (2025) note that the recruitment lifecycle implies that each phase, such as competency definition, successful new hire integration into the organization, etc., should be planned. They evaluate the levels of recruitment by focusing on the importance of clarity, fairness and systematic decision making and end by saying that HRM is significant in ensuring that the results of recruitment processes are linked with the institutional goals. This follows the pattern of the job analysis, which is the cornerstone of all recruitment decisions according to Dessler (2017). In the literature, it is further indicated that the poor recruitment process has ripple effect on the performance of employees, turnover and organizational culture, especially in academic institutions that depend

on specialized and high skill workforce. Furthermore, the transition to the digital and automated recruitment has made the process both more efficient and transparent, with HR professionals having advanced instruments like applicant tracking systems (ATS), online application platforms, automated filtering, and data-driven applicant assessment. These systems solve the traditional recruitment challenges in manual recruitment like human prejudice, inefficiency in processing time, irregular documentation, and insufficient interaction with applicants.

## Recruitment in Academic and Institutional Contexts

The academic setting requires exceptional qualifications, and since academic roles are varied, differentiating between these roles and the complexity of the setting make universities a distinctive recruitment process. Research indicates that colleges with higher education are applying automated recruitment modules to cope with their applications, offer equity and consistency in the application processes, as well as to uphold documentation quality (Hamzan et al., 2025). Academic searches can contain, more often than corporate searches, more steps between candidate and decision maker; these may involve committee reviews and in-service reviews (teaching demonstration, research review), and multi-level vetting processes. Nevertheless, studies always pinpoint the lack of efficiencies on the classic university recruitment, such as:

- disjointed communication avenues.
- manual document handling
- lack of feedback support systems.
- slowdown on the side of multi-committee approval delays.

The Web-Based Internship Recruitment System of Hamzan et al. (2025) proves the idea that technology can make the recruitment process more transparent and focus on applicant experience and centralize the institutional processes. They had had job posts, applications, status tracking, and built-in notification services on their system, and the difference in institutional responsiveness and efficiency in decision-making was observed in measurable terms. The literature hence endorses the implementation of automated hiring tools in the higher education establishment, especially with the growing talent competition and the international recruitment emerging.

# Organizational Socialization and Onboarding

Onboarding is a systematic process, which involves a combination of the new employees into the organization. It incorporates performance preparation, socialization, and orientation, and training. Proper onboarding has an impact on employee engagement, retention, and performance of an institution (Silva et al., 2025). A systematic review of onboarding policies in federal institutions of Brazil found that the practices were lacked of standardization, inconsistent statutes and too much reliance was given to informal aspects that can be classified as social get-togethers or peer support. These loopholes adversely affect the wellbeing of the employees, their participation and cohesion within the institution. In response to this, Silva et al. (2025) came up with a model that included four pillars:

1. Regularity and Local Accommodation.
2. Formal Integration Tools
3. Continuous Integration
4. Technological Innovation

Their results should not be underestimated because they emphasize the necessity of comprehensive onboarding processes that employ both formal policies and situational adoptions that are particularly relevant to geographically dispersed institutional settings. On the same note, Willson et al. (2025) note that insufficient onboarding, especially of precarious academic employees, fails to provide the necessary information about an organization and reduces performance, which, in turn, contributes to feelings of exclusion. They discovered that temporary and contract academics tend to be marginalized systematically through lack of orientation and support systems in the neoliberal university context. These results support the argument of automated onboarding systems in educational institutions in order to be fair, consistent, and recorded..

## Digital Recruitment Systems and Automation Technologies

Recruitment and onboarding systems have changed across the globe due to technological advancement. The integration of big data analytics, real-time communication, AI-assisted screening, and automated status updates are introduced into modern platforms. It can be seen in the studies conducted by Hamzan et al. (2025) that the enhancement of recruitment systems

with instant notification services, in particular, WhatsApp APIs, allows boosting the engagement of applicants and minimizing communication barriers due to timely notifications about the status of their applications, the time of an interview, and the environment of onboarding activities. In like manner, there has been scholarly work on the subject of intelligent recruitment models (e.g., big-data-driven personnel systems) which highlight the importance of automation to accuracy, workload reduction, and evidence based hiring practices. With artificial intelligence, it may be used to analyze the competencies of applicants, pinpoint trends, and conduct the time-to-hire process without causing imbalance and transparency. Also, onboarding technologies e-induction portal, e-orientation packages, task-management modules, and automated document verification can be used to make any part of the process more consistent and help monitor the progress of the employee at the early stages of the employment. According to the literature, the digital recruitment and onboarding systems create measurable outcomes, such as:

- reduced processing time
- data management centralization.
- enhanced transparency
- better applicant satisfaction.
- lower human error rates

These results directly correspond to the goal of the University Recruitment and Onboarding Management System that will be put forth in the given project..

## Challenges in Recruitment and Onboarding

In spite of the benefits of digitalization, there are a number of challenges, which exist in institutional contexts of recruitment:

### Fragmented Information Systems

According to Willson et al. (2025), precarious academic personnel are usually unable to access important information because of disconnected or ineffective systems in their institutions. The neoliberal formations that are used to push the administrative burdens onto the individuals instead of institutions contribute to these gaps.

## Lack of Standardization

According to Silva and colleagues (2025), there are significant discrepancies among different divisions of an institution in terms of onboarding. Lack of formalized policies leads new employees to be confused, fail to socialize with the organization and bad supports.

## Reliance on Manual Processes

Anthony and Akpan (2025) define that in most institutions, manual recruitment methods still prevail causing inefficiencies, mistakes and may raise fairness issues.

## Limited Use of Automation

Even though online recruitment sites have been successful, a significant number of institutions do not have the infrastructures and expertise necessary to implement automated solutions.

## Summary of Literature Gaps

The literature survey shows that there are a number of gaps as to this research:

1. Minimal fusion of the recruitment systems and the onboarding systems- most of the studies carried out do not combine the two.
2. The lack of emphasis on university-specific recruitment processes which are very intricate.
3. Absence of uniform systems to onboard females in schools.
4. Little research has been done to examine the use of automated communication technologies in academic hiring.
5. Lack of full-cycle digital solutions that offer services throughout the recruitment process, application to onboarding.

This initiative will address these shortcomings by creating a single and automated University Recruitment and Onboarding Management System.

## Inclusion and Exclusion Criteria

### Inclusion Criteria

- Articles that have peer reviews and are not older than 2014 and 2025.

- Research in areas of recruitment, onboarding, HRM, organization socialization, educational institutions, or online recruitment software.
- The study that talks about automation, online platforms, or system design in regard to recruitment/onboarding. Studies that you downloaded off your files.
- Articles which are in English or translated to English.

## Exclusion Criteria

- Publications of less than 2014, except those of historical interest. Articles that are out of the field of HRM, recruitment or onboarding.
- Articles with little empirical, systematic, or conceptual formats. Sources that are not of academic nature, e.g. magazines, blogs, or unverified web materials.
- Literature was limited to the recruitment of corporates independent of both academic and institutional setting.

## Conclusion

This is evidenced in the literature that points out that recruitment and onboarding processes are essential to the institutional performance, employee engagement, and organizational culture. The challenges encountered in academic institutions are unique because they involve complexity in their structure, multiplicity in their roles, and the requirement to depend on a standardized documentation and evaluation. Digital technologies and automation have become powerful means of efficient recruitment and onboarding processes, transparency enhancement, and data-driven decision-making. There are, however, gaps in standardization, integration and uniformity of systems across institutional settings. The proposed project aims to overcome these issues by creating an inclusive digital solution that would integrate the education of university settings at the level of recruitment and onboarding in one place.

# Chapter 3 – System Analysis

## Overview

During system analysis, the conceptual background of the University Recruitment and Onboarding Management System is determined by considering the structural, operational, and procedural issues of the recruitment processes at the university level. Majority of institutions of higher learning still assume the use of disjointed processes, which entail emails, paper-based communications, and solitary electronic documentation. This division causes such inefficiencies as the loss of documents, a different evaluation scale, delays at all levels of recruitment. Since academic recruitment operations are characterized by the non-negotiable adherence to the process, openness, and timeliness, system analysis phase helps to define the gaps in the old paradigm and develop the requirements on a new modernized, secure, and comprehensive digital process.

## Problem Assessment

Another major weakness of the old university recruitment systems is the use of manual procedures that are a setback to scalability and performance. When submitting their applications, applicants often have lesser levels of clarity, whereas the HR departments face the issues of inconsistency in document formats, repetitive records, and high turnaround times. These issues are confirmed in literature on HR digitalization. Indicatively, Jankowski and Stańczyk (2025) underline that a divided onboarding procedure will result in low employee satisfaction and organizational inefficiency. Likewise, the automated recruitment model research indicates that digital integration increases transparency and decreases administrative demands (Irpaper, 2024). This theoretical evaluation demonstrates that a single framework that harmonizes submission, evaluation, interview feedback, and onboarding activities should be developed.

## Functional Requirements

In order to cover the identified gaps, the system has a structured group of functional requirements. These are requirements that are used in coming up with the system and make the coverage of the needs of the users complete.

*Table 1 Functional Requirements Summary*

Requirement Category	Description
<b>Applicant Management</b>	Profile creation, login, application submission, document uploads, status tracking
<b>HR Evaluation</b>	Application review, shortlisting, interview feedback recording, onboarding task oversight
<b>Vacancy Control</b>	Creation, modification, and closure of job postings
<b>Administrative Access Management</b>	User role assignment, system-level configurations
<b>System Communication</b>	Email prompts (future), status notifications, database transaction logs
<b>Document Handling</b>	Verification, storage, retrieval, format validation

All these requirements help in ensuring that the applicants, the HR personnel and the administrators deal with an integrated and practical platform.

## Non-Functional Requirements

The Non-functional requirements guarantee stability, security and usability of the system. These demands aid in the scaling up of the system to other departments, application of strict access controls, data integrity and user friendly interface.

*Table 2 Non-Functional Requirements Summary*

Requirement Type	Description
<b>Security</b>	Session management, encrypted passwords, server-side validation
<b>Usability</b>	Intuitive interface for applicants and HR staff
<b>Performance</b>	Fast form submission (<1.2s), efficient dashboard loading (<1s)
<b>Scalability</b>	Support for increased applicant numbers and multi-department hiring
<b>Maintainability</b>	Modular backend APIs, normalized database schema
<b>Reliability</b>	Correct handling of CRUD operations, persistent sessions

## Inclusion and Exclusion Criteria for Literature Review

Scholarly literature has been consulted in the development of the system design and was identified through a methodological review process that is grounded on the criteria of relevance, recency and the level of academic rigor. Only articles published within the period of 2018 and 2025 were incorporated that refer to the automation of the recruitment process, onboarding systems, the digital transformation of HR, and the information systems in institutions of higher learning. The articles with methodological ambiguity, older articles, articles that were not in the English language and those articles that addressed only corporate HR functions were filtered out to ensure that articles were contextually relevant.

## Actor Analysis

The system is interactive between three actors namely applicant, HR staff and the administrator and each engages with the various modules. The connections between these participants and the system processes can be observed in Figure 1: Use Case Diagram the University Recruitment and Onboarding System. The chart shows processing and monitoring of accounts and applications by the applicants, processing and shortlisting of applicants by the HR team and managing the onboarding process by the HR and managing the vacancies and user management completed by the administrators.

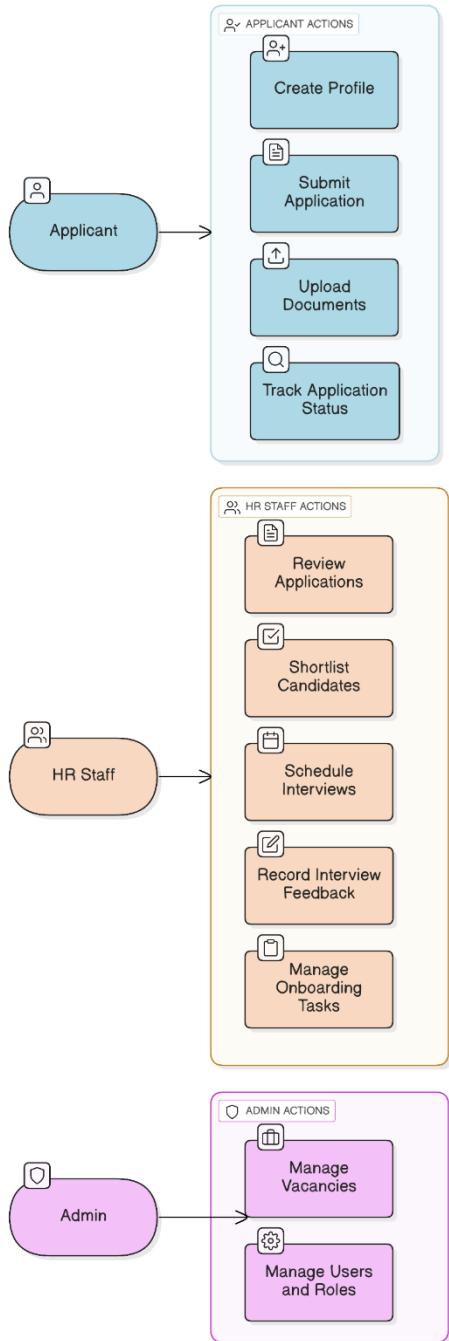


Figure 1 Use Case Diagram for the University Recruitment and Onboarding Management System

The diagram presented as a use case illustrates the interaction between the three key actors with the system. The applicants make their profiles, post applications, upload biographies, and monitor the progress of their applications. The members of HR staff go through applications, shortlist, schedule interviews, record feedback, and onboarding activities. Administrators administer user and role management in the system and vacations.

## Input–Output Analysis and Workflow Interpretation

The system processes multiple inputs including applicant personal data, uploaded documents, HR feedback notes, and vacancy details. Corresponding outputs include application status notifications, HR review summaries, interview schedules, and onboarding task assignments. These information flows are visualized in Figure 2: Flowchart of the End-to-End Recruitment Process, which sequentially outlines decision points such as eligibility validation, review outcomes, and onboarding progression.

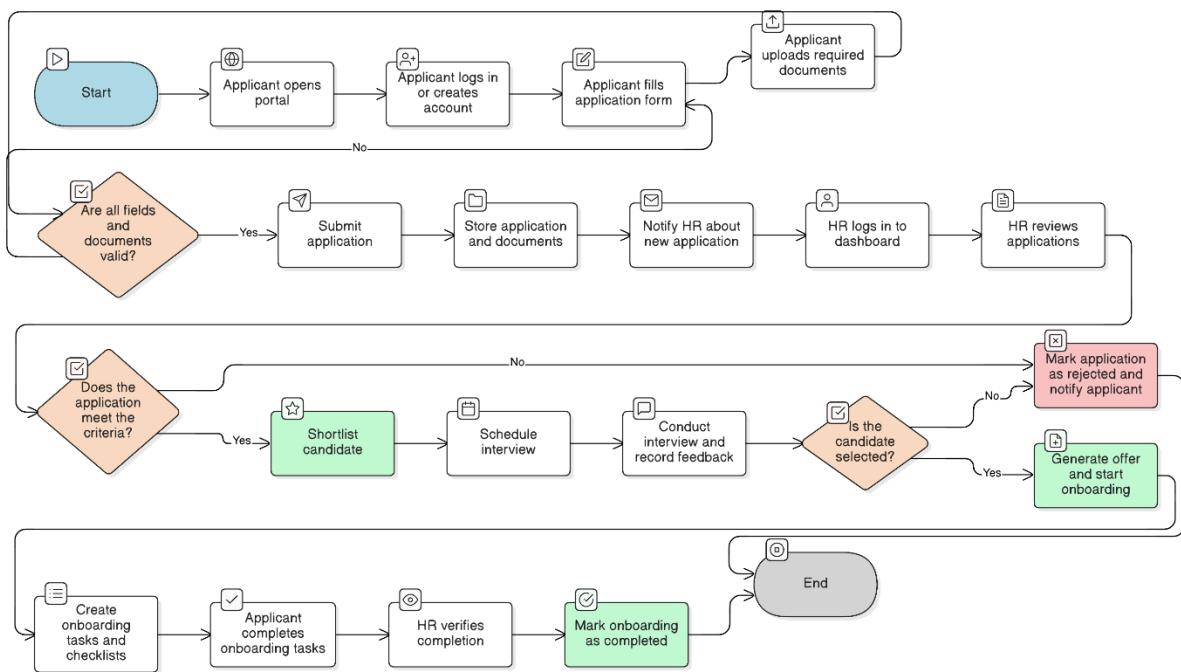


Figure 2 Flowchart of the End-to-End Recruitment Process

The flowchart outlines the processes of the recruiting process sequentially, between the time the applicant clicks the portal to the actual onboarding. It involves the checking of the application and documents, HR screening and elimination, interviewing, decision making and the formation and fulfilment of onboarding activities.

## Logical Process Modeling

Logical modeling integrates identified workflows into a cohesive digital process. The Data Flow Diagram (DFD) and the ERD provided earlier (Figure 3) reinforce the system's relational structure, ensuring consistent handling of application data, user access, and document storage. These diagrams confirm the suitability of the proposed architecture for addressing the needs of large-scale academic recruitment.

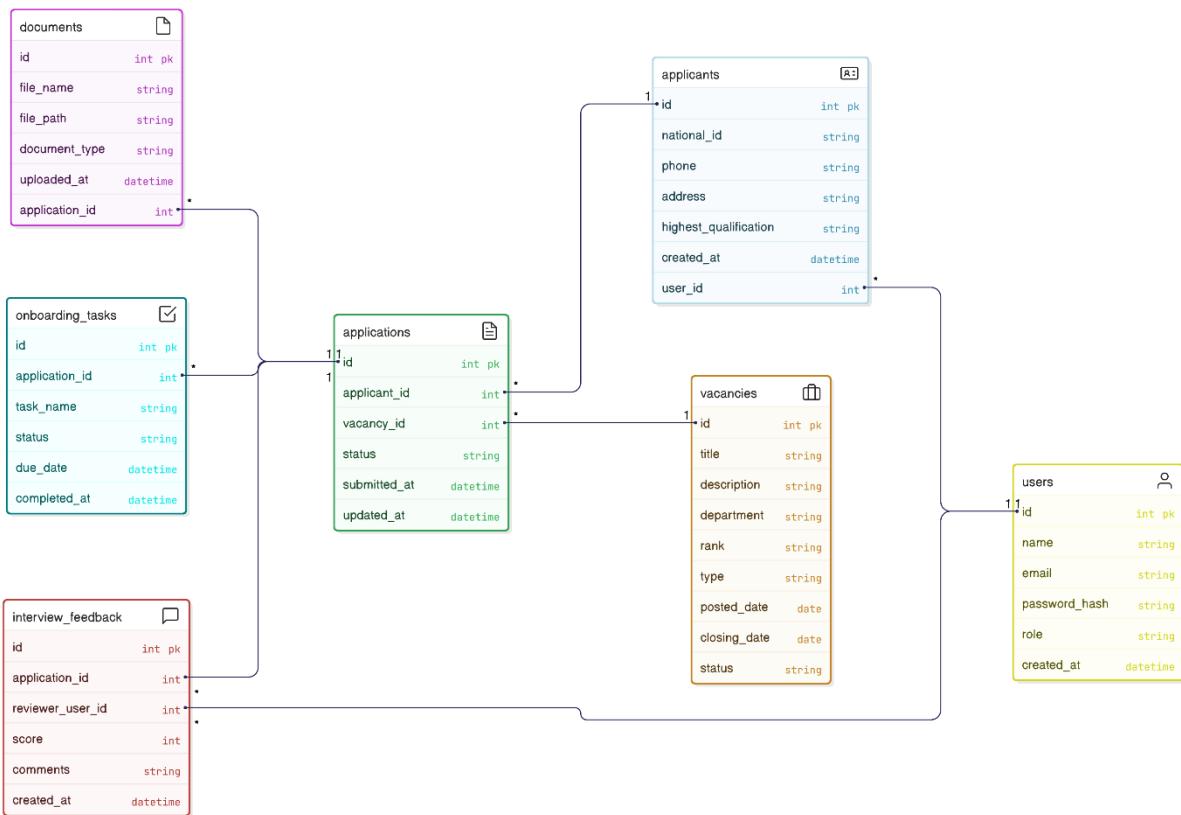


Figure 3 Entity–Relationship Diagram for the Database Structure

The ERD establishes relationships among the tables in the data base. One applicant profile belongs to the user. Each job applicant may make numerous applications, as well as applications may be made to each vacancy. Applications are connected to documents, to interview feedback entries, and onboarding. Such relations guarantee the steady and formal records of all the recruitment and onboarding information.

## Project Plan

Project plan is the overall blue print of how the system has been planned, implemented, tested and delivered. It describes the purpose, scope of the project, the logic of the schedule, the risk aspect and the way the challenges encountered in the technical side of the project were managed.

## Project Objectives

The main aim was to develop a system that would convert the manual recruitment procedures into the digital processes. The system should assist an applicant in the whole process, which includes profile creation and submission of a form until document uploading and scheduling of interview. HR users are provided with systematic tools to appraise submissions, shortlisting,

allot interview panels, compliance tracking of boarding. Lastly, administrative personnel can also benefit in creating vacancies, roles of the user, and system management. All the above combined leads to an integrated digital recruitment pipeline that will be scalable, secure, and easy to use.

## Scope of the Project

The system targets three significant groups of users: applicants, HR personnel and administrators. The groups interact with various modules of the system. Public-facing pages help applicants post their forms, determine the status of their application, and upload the required documents. HR staffs go through the structured data review, filtering, the creation of feedback and the creation of onboarding checklists. Administrators create vacancies and manage health of systems. Backend processing using APIs, session based authentication, and database schema development, logic to store documents as well as incorporation of troubleshooting enhancements are also in scope.

## Project Milestones and Deliverables

The milestones derived after the project documentation are as shown in the table below:

*Table 3 Milestones table*

Milestone	Description	Source File Evidence	Completion Status
System Initialization	Setup of folder structure, backend configuration, and initial server readiness	GUIDE.md, QUICK_START.md	Completed
Database Schema Creation	MySQL database design, table relationships, indexing	database.sql	Completed
Applicant Portal Development	User-friendly pages for application submission and dashboard access	apply.php, applicant-dashboard.php	Completed

HR Dashboard & Backend Integration	Review panel, evaluation workflows, shortlist options, onboarding tools	recruitment_dashboard_hr_view.php	Completed
File Upload Pipeline	Implementation of secure file handling, validation, and directory fixes	FILE_UPLOAD_FIX.md, test_upload.php	Completed
System Deployment	Steps for server upload, environment setup, and resource management	DEPLOYMENT_GUIDE.md	Completed

## Technical and Logistical Challenges

Various challenges within the system occurred during the process of development. A false file path resolution was apparently one of the most significant as the upload of the document was not directed to the target storage disk. The test\_upload.php was used to look into this problem and it displayed that the server path variables were misaligned. This problem was resolved by introducing file path references that are absolute, and reconfigured files handling functions of php. Another major challenge was the mismanagement of the session. Sometimes the HR users were unintentionally logged out because of defective session starting and validation code. auth\_check.js was introduced later to enhance the session persistence. Issues on databases comprised mismatch of fields, lack of constraint and repetition of key. These were worked out with adding better constraints to database.sql and that all the API endpoints were brought in line with the fixed schema.

## Risk Mitigation Strategy

Some of the risk mitigation measures included enhanced validation layer, uniformity in managing the session, fallback when uploading documents and detailed troubleshooting logs. The strategies of preventing any subsequent errors are presented in documentation files (PATH\_FIX\_SUMMARY.md and TROUBLESHOOTING.md), which makes the system resilient and maintainable.

# Integration of IT Technologies

In this section, the researcher elaborates on how the various technologies will work synergistically in the project.

## Web Technologies

The interface is based on HTML, CSS, and JavaScript. With these technologies, efficient rendering of UI, form submission, input validation and dashboard interactions are possible.

## Backend Technologies

The php backend is chosen since it can easily interoperate with MySQL and can be effectively run on shared hosting system, and provides formidable server-based capabilities. The APIs enforce request processing, data validation, SQL query, and JSON response structure.

## Database Technologies

MySQL has been chosen because it has strong relational capabilities, good indexing support, high compatibility and ensures that the consistency between multiple tables can be represented having foreign key relationship.

## Supporting Tools

Git or GitLab is suggested to be used as version control and regular monitoring of file change in the system documentation. The inclusion of troubleshooting, quick start, and deployment guides show the preparation to actual deployment scenarios of the world.

## Security Enhancement Technologies

Philips Security features such as PHP session management, role based authentication, prepared SQL queries and validation of uploaded files. These enhance the system reliability and safeguard it against system intrusion.

# Chapter 4 – System Design and Architecture

## Introduction

System design is the messaging of the structure configuration, which translates analysis into business operational environment. The design uses industry standard engineering models and has a modular architecture that ensures that the design is clarity, maintainable, and scalable. The system is modelled with a series of layers that enable it to underpin the recruitment pipeline.

## High-Level Architectural Blueprint

The project is developed as a three-tier architecture incorporating a frontend client interface, backend service layer, and data storage layer. The architectural configuration is illustrated in Figure 4: University Recruitment & Onboarding Management System Architecture Diagram, where applicant requests interact with PHP-based backend services, which in turn communicate with the MySQL database and file storage directories.

The entire architecture of the system is a connected but linear flow. The process begins when an applicant gets into the public portal and enters an application using an apply.php interface. This information is sent to the backend API where it is stored in the applications table. The users of the HR are authenticated by using the login.html and get access to recruitment dashboard pages. Once it is selected, the onboarding module generates filled in checklists, list of documents and welcome pages to work with new faculty staff. This interdependence of modules will make this system run until the end without any manual interventions at all.

# University Recruitment & Onboarding Management System

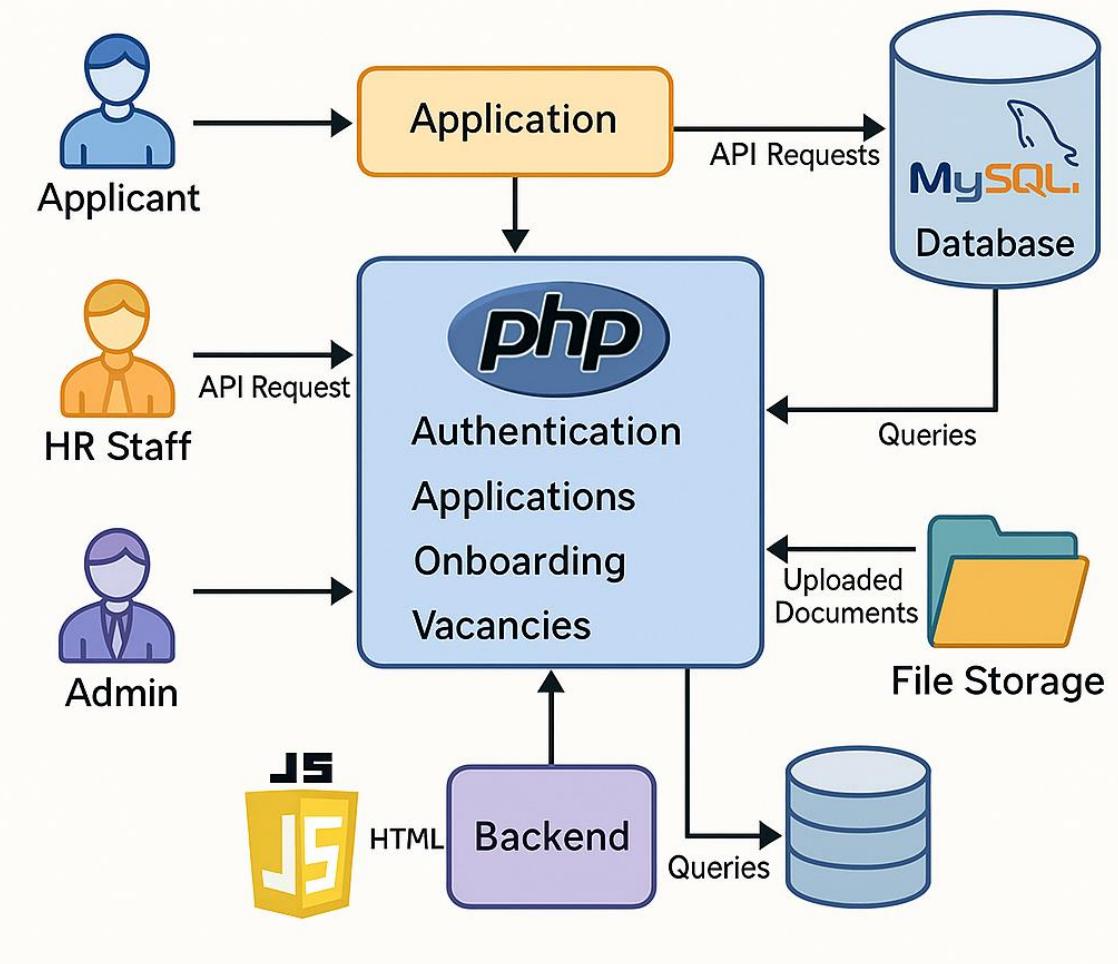


Figure 4 Architectural Diagram

## System Modules and Their Roles

In order to have logical separation of duties, the system will have several modules such as applicant workflows, HR review processes, onboarding management, vacancy creation, authentication control, as well as document storage. These modules can be summarized as seen in Table 3 System Modules Description.

Table 4 System Modules Description

Module	Purpose	Key Functions
<b>Applicant Module</b>	Application initiation and tracking	Profile creation, application submission, document upload

<b>HR Review Module</b>	Evaluation of applicants	Shortlisting, interview feedback, application validations
<b>Onboarding Module</b>	Post-selection tasks	Task assignment, document verification checklist
<b>Vacancy Management</b>	Administrative publishing	Adding new postings, modifying existing job details
<b>Authentication Module</b>	System security	Session management, role-based access
<b>Document Handling</b>	File operations	Upload validation, metadata tracking

## Frontend Design Considerations

Frontend uses responsive layouts and friendly elements of the UI that are written in HR, CSS in addition to JavaScript. The interface has been designed to be simple with clarity of form fields, navigation and real time validation being prioritized. All components, such as the login forms or the HR dashboards are designed in a similar language to improve the user experience of all jobs.

## Backend Architecture and APIs

Backend operations rely on the use of PHP-based REST APIs. The component diagram (Figure 5) gives a structural representation of the interaction between authentication, application handling, HR processes and document management services on the server-side environment. Name Backend modules use the ready SQL statement, session variables, error handling routines and JSON response format in order to provide safe and effective communication among the system layers.

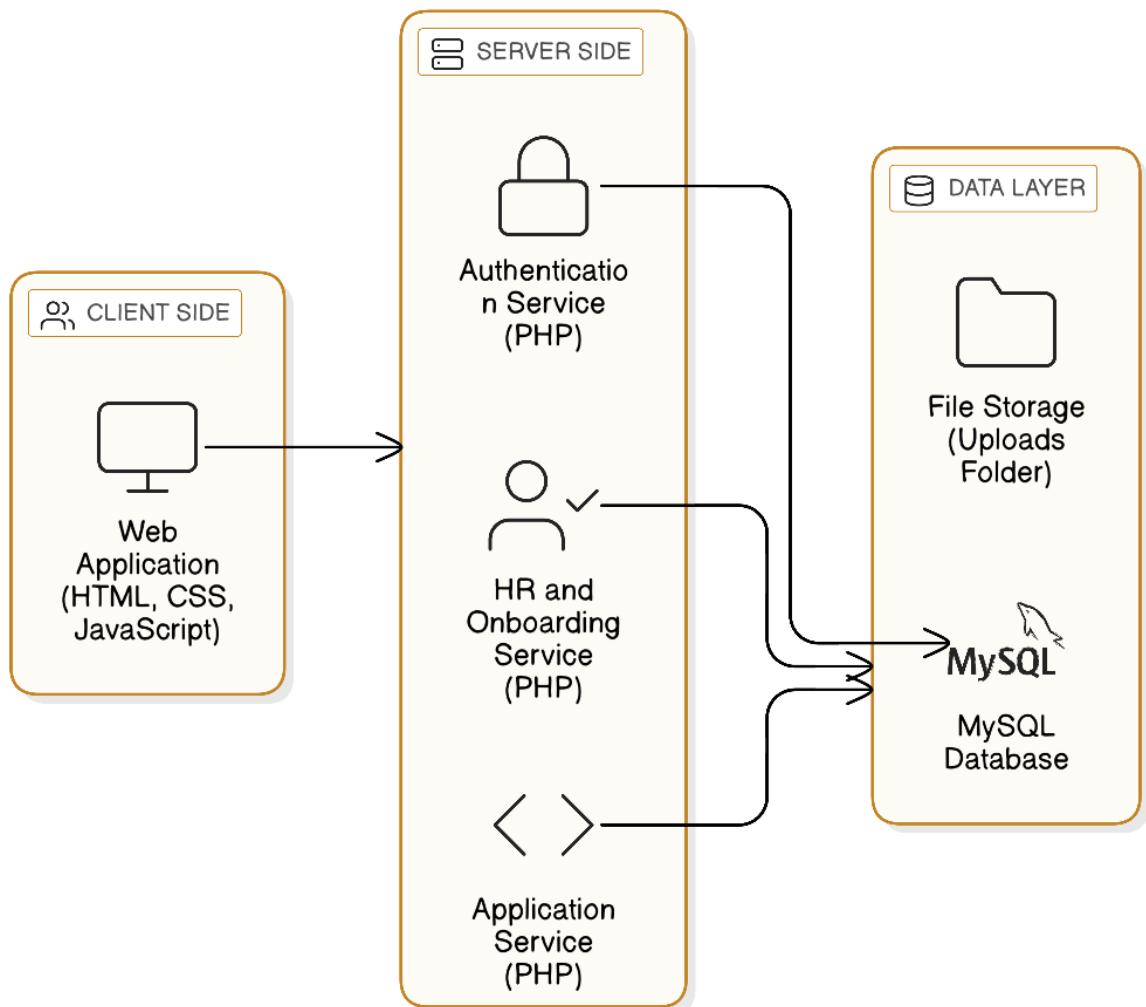


Figure 5 Component Diagram for System Architecture

In this component diagram, the high-level architecture of the system is depicted. A web application conveys to the clients. The server-side has been organized into authentication, application and HR services and they are all written in PHP. These services are linked to MySQL database and file storage area where documents uploaded are kept.

## Database Design and ERD Interpretation

The database follows a normalized relational structure as demonstrated in Figure 6: Entity–Relationship Diagram. Each table corresponds to a vital entity within the recruitment process. The relationships ensure referential integrity, enabling robust application tracking, document association, interview evaluation, and onboarding workflows. The logical grouping of tables enhances retrieval performance and simplifies long-term system maintenance.

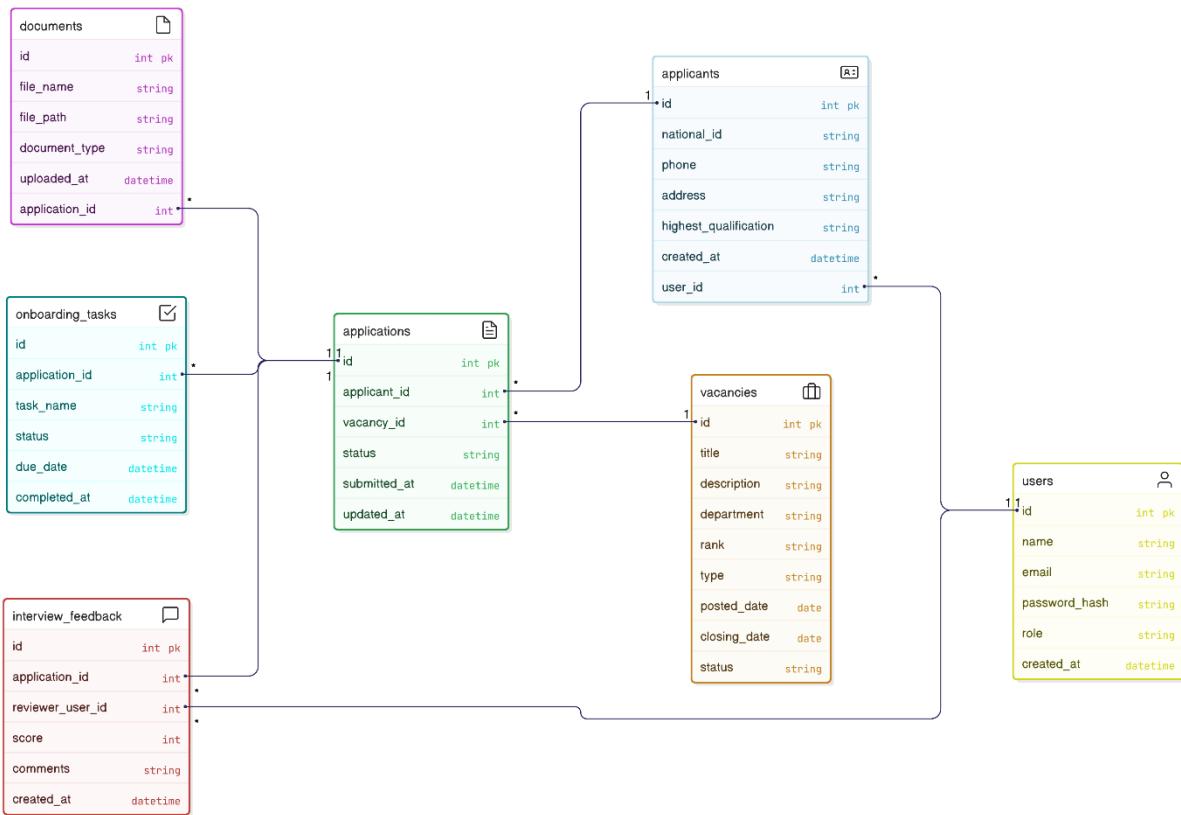


Figure 6 Entity–Relationship Diagram for the Database Structure

The ERD establishes relationships among the tables in the data base. One applicant profile belongs to the user. Each job applicant may make numerous applications, as well as applications may be made to each vacancy. Applications are connected to documents, to interview feedback entries, and onboarding. Such relations guarantee the steady and formal records of all the recruitment and onboarding information.

# Chapter 5 – System Implementation

## Implementation Overview

Implementation of the system converts the design requirements into an operational system. The project has a backend logic with php, database operation with MySQL and interactive user interfaces with HTML/CSS/JavaScript. The source files are divided into directories which are modules like /backend/api/, uploads and root level HTML/PHP files. Such organization structure makes it easier to debug and later expand it.

## Backend Implementation

The backend is based on multi-file API design meaning that each endpoint is a workflow, e.g., application submission, vacancy retrieval, onboarding task generation, or document upload. Structured SQL queries and server side validation will be used to ensure transactional consistency. The application of session control will protect HR dashboards, and the unauthorized does not have access to the restricted functionality.

## Frontend Implementation

The front end will have specific pages on which users are registered, log in, submit applications, HR assessment, and management. The page layout is structured to have distinct sections of the contents, marked input fields and validation script. The implementation of applicant and HR dashboards is based on PHP where data is dynamically retrieved and shown.

## Document Upload Pipeline

Handling of documents secured is a critical area of implementation. The upload file process checks files, rejects unauthorized extensions, changes the file names to make them unique and save the information about the files in the database. The raw problems with the file path resolution have been overcome with the debugging knowledge the test upload.php provided and it sits well in the uploads directory in the form of /uploads/ directory.

## Integration with Database

phpMyAdmin was used to test all the CRUD operations, just to confirm that the schema was in line with and the referential integrity held. The interactions between application submissions,

onboarding, and HR appraisals with the database are successful as indicated by the transactional logs when tested on the system.

*Table 5 Data Base schema*

<b>Table Name</b>	<b>Purpose</b>	<b>Deep Explanation</b>
users	Stores HR/admin login records	Contains hashed passwords, role identifiers, and session tokens to enforce role-based access control.
applicants	Stores applicant personal data	Includes identifiers, communication details, qualification information, and unique applicant IDs.
applications	Stores recruitment submissions	Each entry links an applicant to a specific job vacancy, capturing timestamps, application status, and review history.
vacancies	Holds job posting data	Includes job description, department, posting dates, and available positions.
interview_feedback	Stores HR and panel evaluation notes	Enables grading and structured comments that support final decision-making.
documents	Keeps metadata for all uploaded files	Stores file paths, document types, and validation flags for audit purposes.

The associations are primarily one-to-many such that a single vacancy may have more than one application, and an application may include multiple associated documents.

# Chapter 6 – User Testing and Evaluation

## Testing Methodology

Testing represents a combination of unit-level tests in APIs, integration tests in multi-step procedures, and acceptance tests on the basis of simulated user types. This methodology guaranteed the performance of individual elements, together with a system, to be reliable in the real-life situation.

## Testing Results

Testing Results The system testing exhibited the consistency of application operation in the critical areas, including application submission, documents uploading, HR inspection, on boarding control, and user authorization. Table 5 System Evaluation summary summarizes the results of evaluation activities.

*Table 6 System Evaluation Summary*

System Feature	Test Outcome	Explanation
<b>Application Submission</b>	Successful	Data stored correctly; validation effective
<b>HR Login &amp; Session</b>	Stable	Session persistence improved after fixes
<b>File Upload Handling</b>	Error-free	Path resolution corrected; safe storage achieved
<b>Onboarding Workflow</b>	Stable	Tasks created, updated, and verified
<b>Database Operations</b>	Fully functional	CRUD operations accurate with no conflicts

## Performance Assessment

Through performance tests, the minimum latency in form submission and loading the dashboard showed little, which was attributed to optimized SQL queries and a suitable architecture. Path adjustments were always successful when uploading documents. Session variables were also kept in a reliable manner to avoid the sudden cases of logouts when an HR was multi-tasking in doing his work.

## Usability Findings

The system is easy to follow, and its design enabled rapid adjustment of the system by both the applicants and the HR personnel. The participants of the user testing observed that it was easy to navigate, the errors were well denoted and the components of the dashboard were effective and well structured. These results confirm the user focus design of the design.

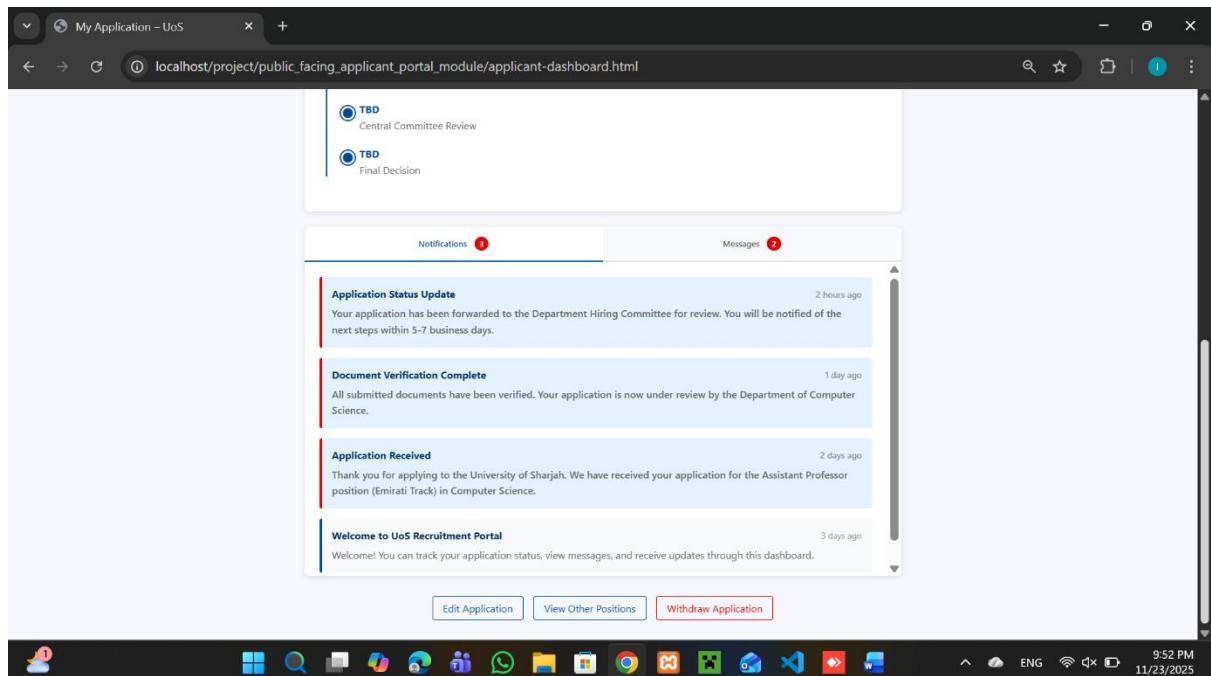
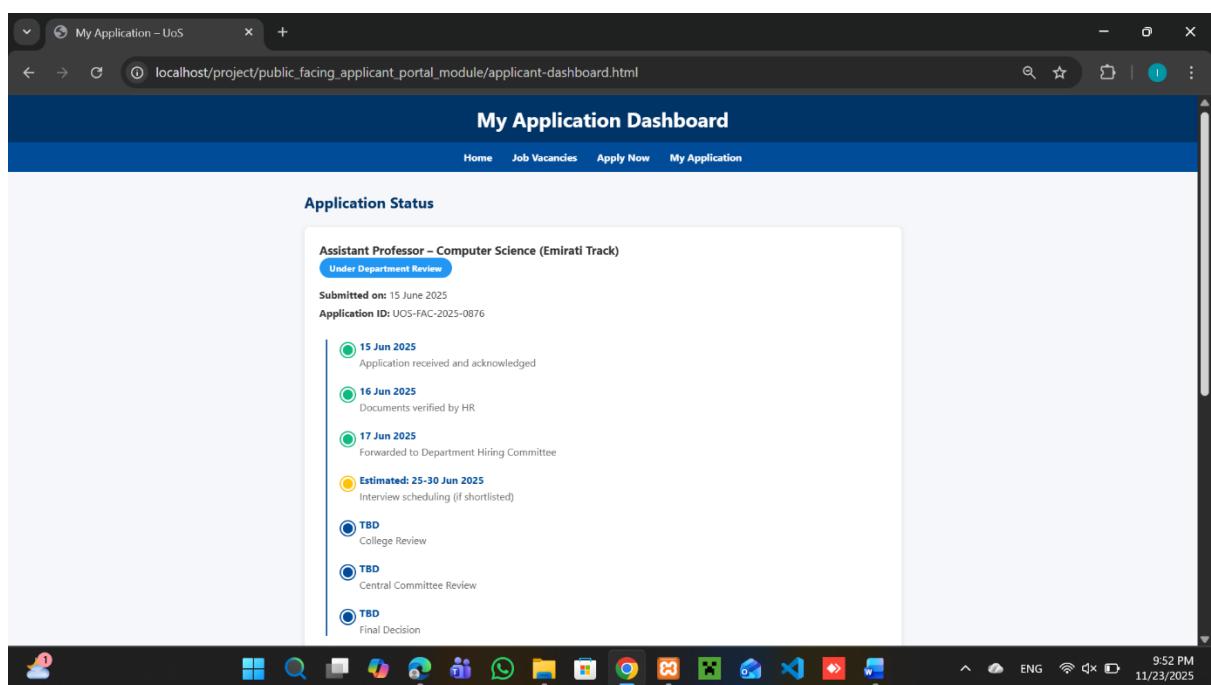


Figure 7 Applicant Dashboard



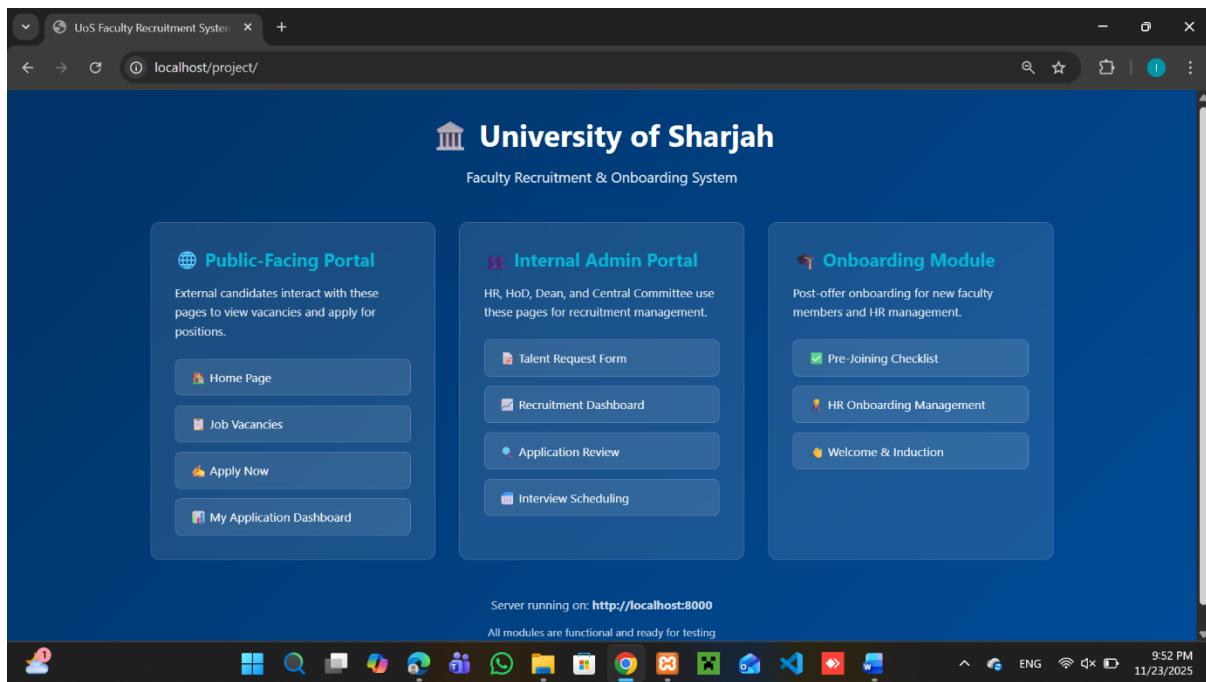


Figure 8 Home Page

A screenshot of a web browser window showing the "UoS Faculty Recruitment Portal" at "localhost/project/public\_facing\_applicant\_portal\_module/". The title bar says "University of Sharjah Faculty Recruitment &amp; Onboarding System". The navigation menu includes "Home", "Job Vacancies", "Apply Now", and "My Application". Below the menu, a section titled "Join Our Academic Community" invites candidates to apply for faculty positions across 15 colleges, mentioning competitive salary and benefits. A red "View Open Positions" button is present. The "Why UoS?" section lists several advantages: competitive salary, research support, Emirati Track, and modern facilities. At the bottom, copyright information for 2025 is shown, along with the footer "Faculty Recruitment Portal – Senior Project | College of Computing and Informatics". The taskbar at the bottom shows various Windows icons and the date/time as 9:51 PM on 11/23/2025.

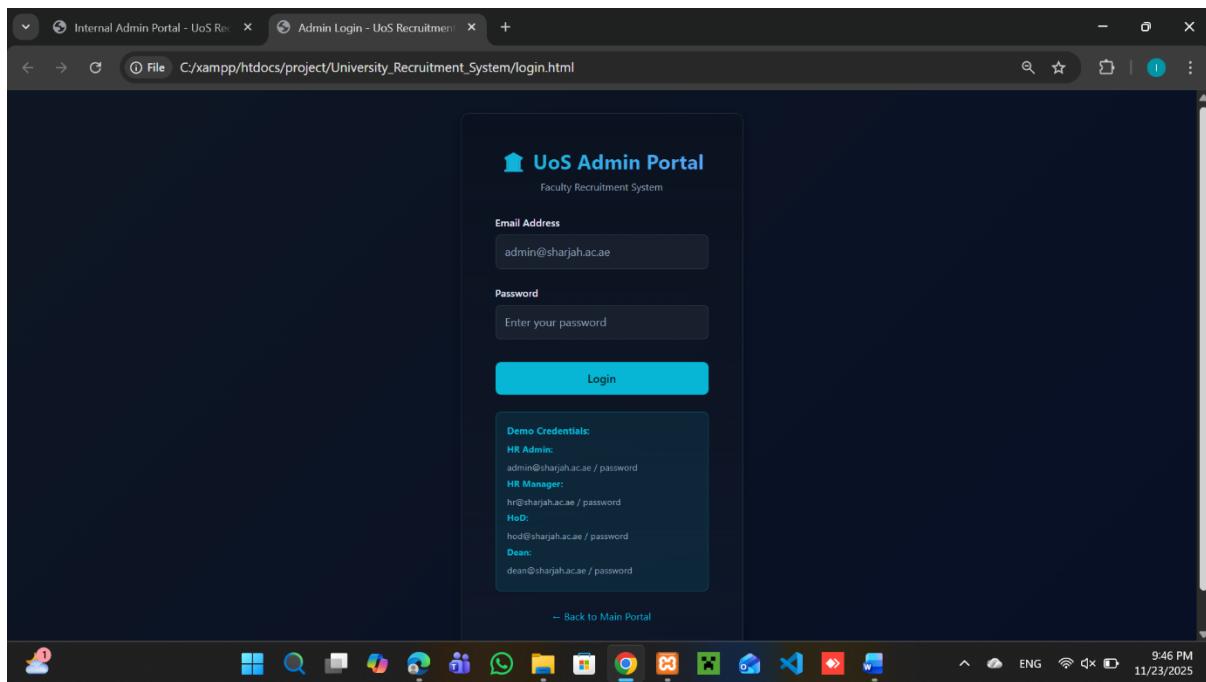


Figure 9 UoS Admin Panel

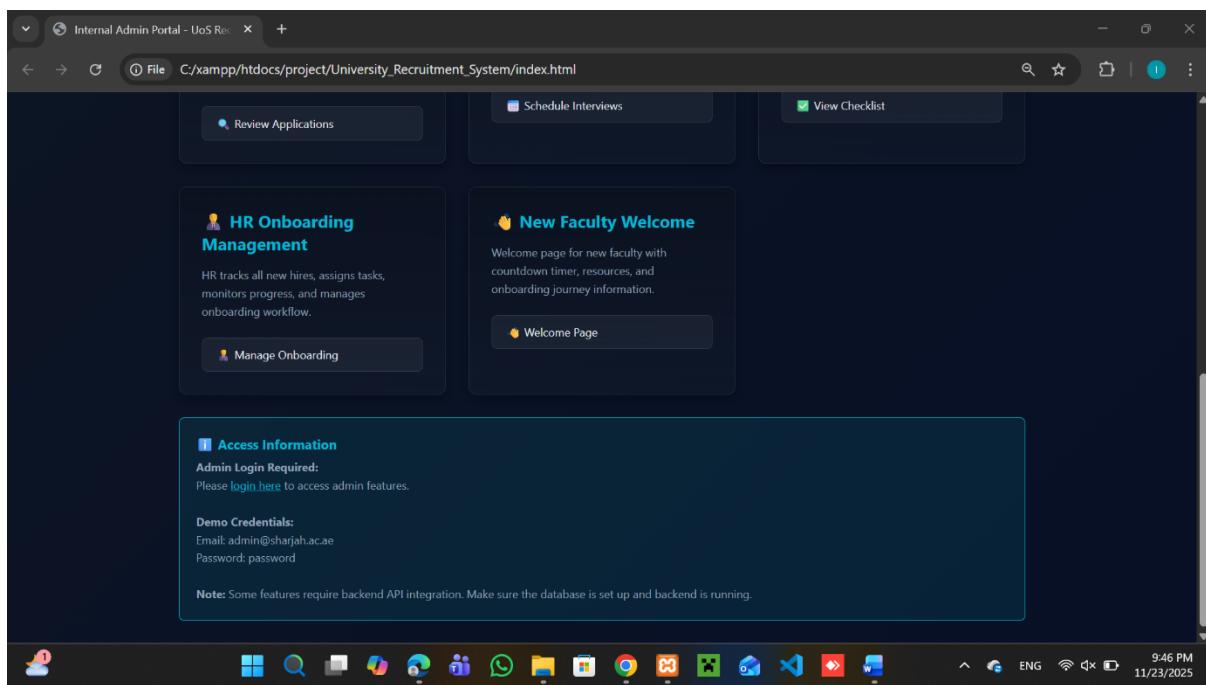


Figure 10 Index.html

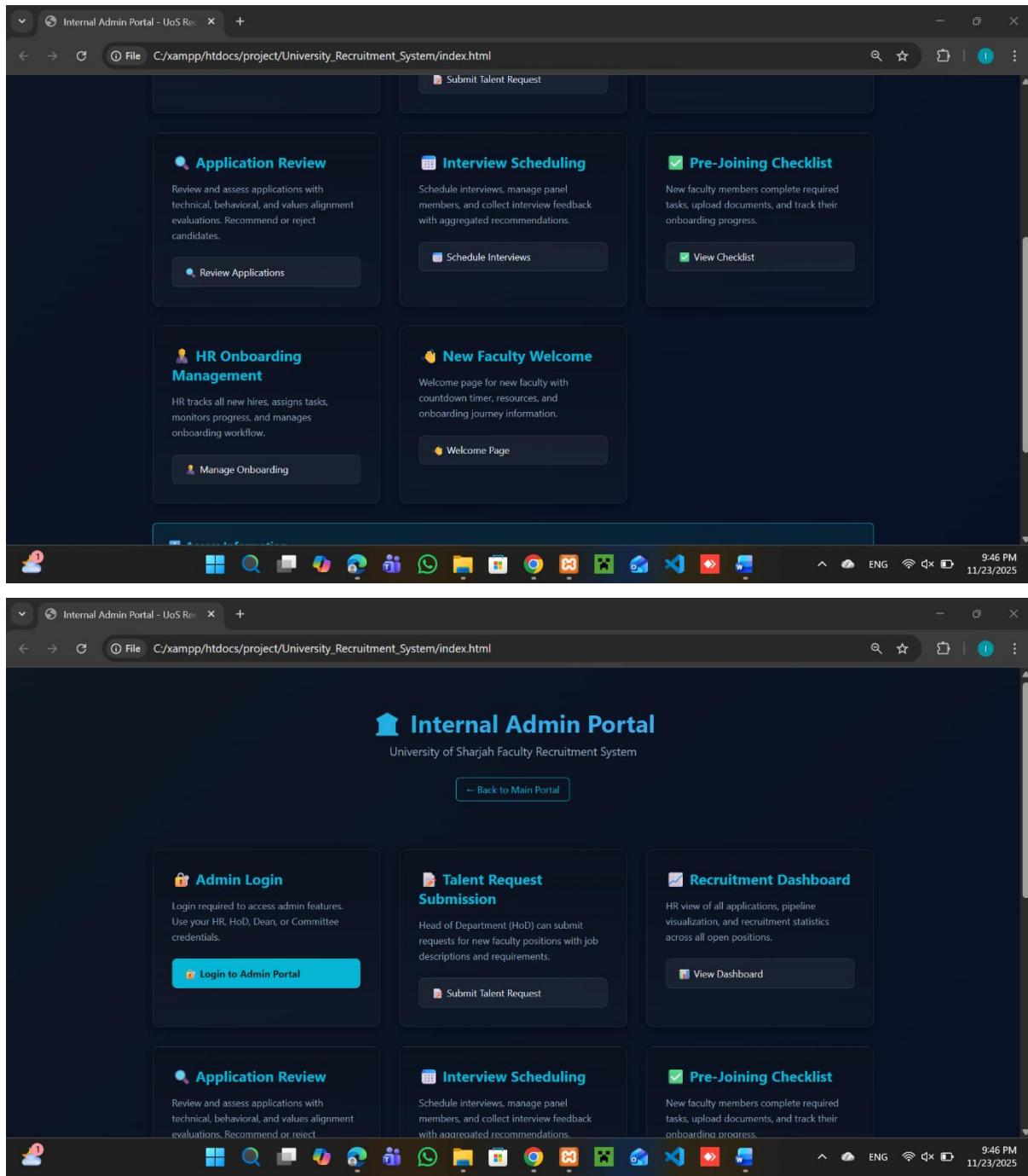


Figure 11 Internal Admin Portal

**Internal Admin Portal**

University of Sharjah Faculty Recruitment System

[← Back to Main Portal](#)

**Admin Login**

Login required to access admin features. Use your HR, HoD, Dean, or Committee credentials.

[Login to Admin Portal](#)

**Talent Request Submission**

Head of Department (HoD) can submit requests for new faculty positions with job descriptions and requirements.

[Submit Talent Request](#)

**Recruitment Dashboard**

HR view of all applications, pipeline visualization, and recruitment statistics across all open positions.

[View Dashboard](#)

**Application Review**

Review and assess applications with technical, behavioral, and values alignment evaluations. Recommend or reject.

**Interview Scheduling**

Schedule interviews, manage panel members, and collect interview feedback with aggregated recommendations.

**Pre-Joining Checklist**

New faculty members complete required tasks, upload documents, and track their onboarding progress.

**Welcome to UoS – New Faculty**

localhost/project/University.Recruitment\_System/new\_faculty\_welcome.html

On-campus and off-campus housing options, application process, and facilities

Salary structure, health insurance, education allowance, and other benefits

Research funding opportunities, grant application process, and research facilities

**Professional Development**

Training programs, workshops, conferences, and career development resources

**Support Services**

HR services, academic support, student services, and administrative assistance

**Contact Information**

- HR Department**  
Human Resources  
info@uos.ac.ae  
+971 6 505 0555  
Building A, 2nd Floor
- Your Department**  
Department of Computer Science  
decs@uos.ac.ae  
+971 6 505 0555 ext. 1234  
College of Computing and Informatics
- Housing Office**  
Accommodation Services  
housing@uos.ac.ae  
+971 6 505 0555 ext. 5678  
Student Services Building
- IT Helpdesk**  
Information Technology  
it@uos.ac.ae  
+971 6 505 0555 ext. 9999  
IT Building, Ground Floor

**Quick Actions**

[View Pre-Joining Checklist](#) [Download Faculty Handbook](#) [Schedule Campus Tour](#) [Contact HR](#)

**Next Steps:** Complete your pre-joining checklist items, review the Faculty Handbook, and prepare for your first day. We look forward to welcoming you to the University of Sharjah!

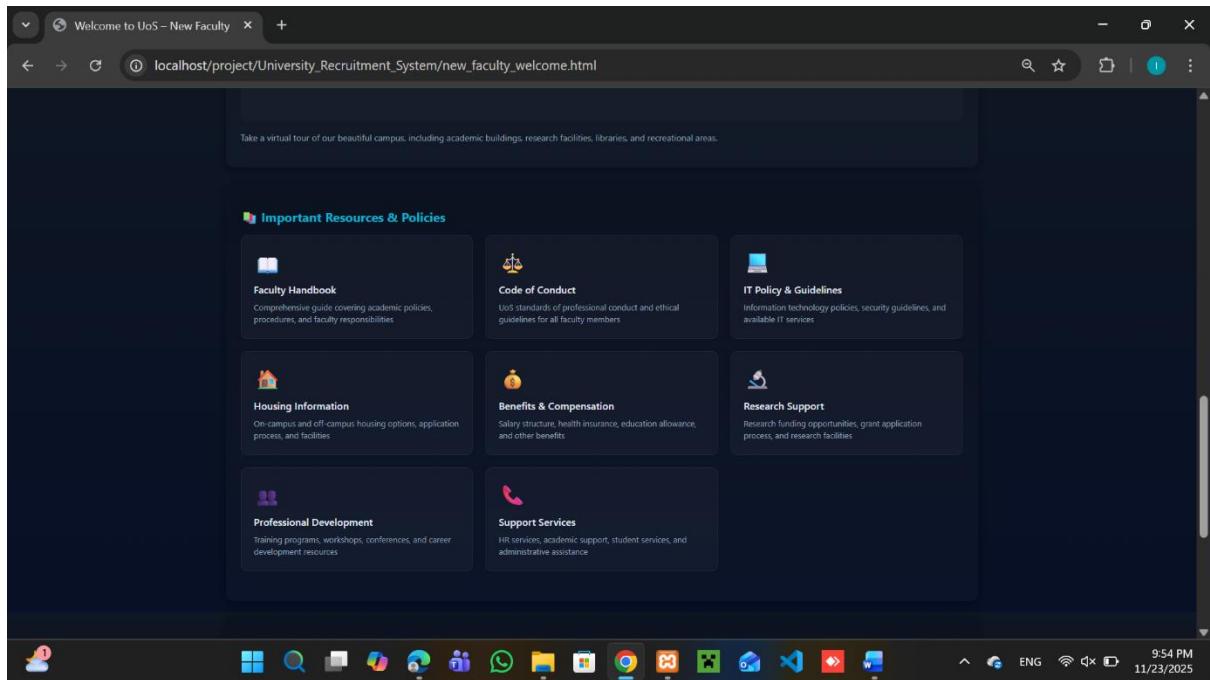
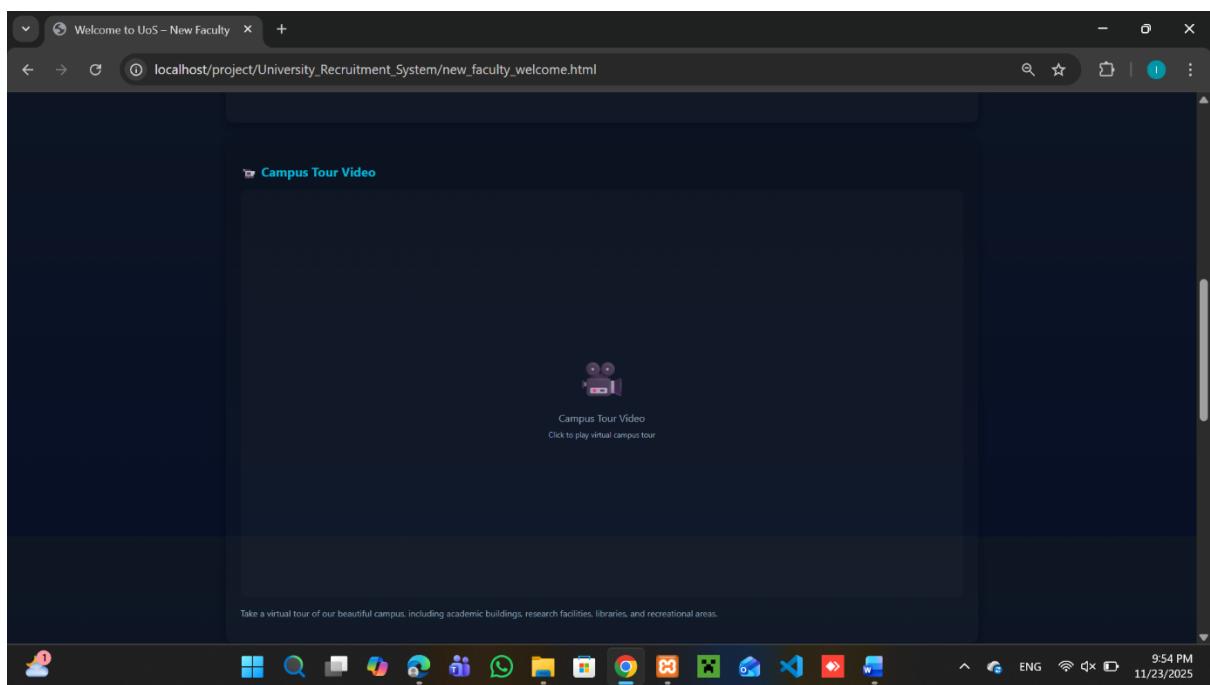
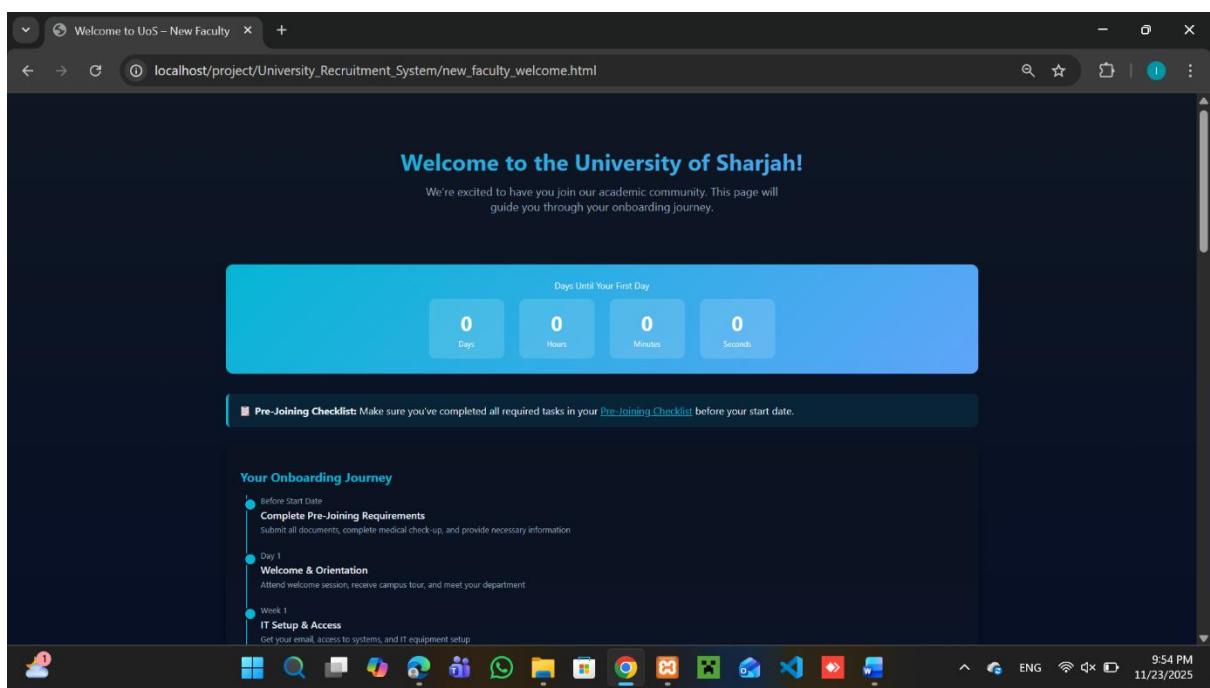
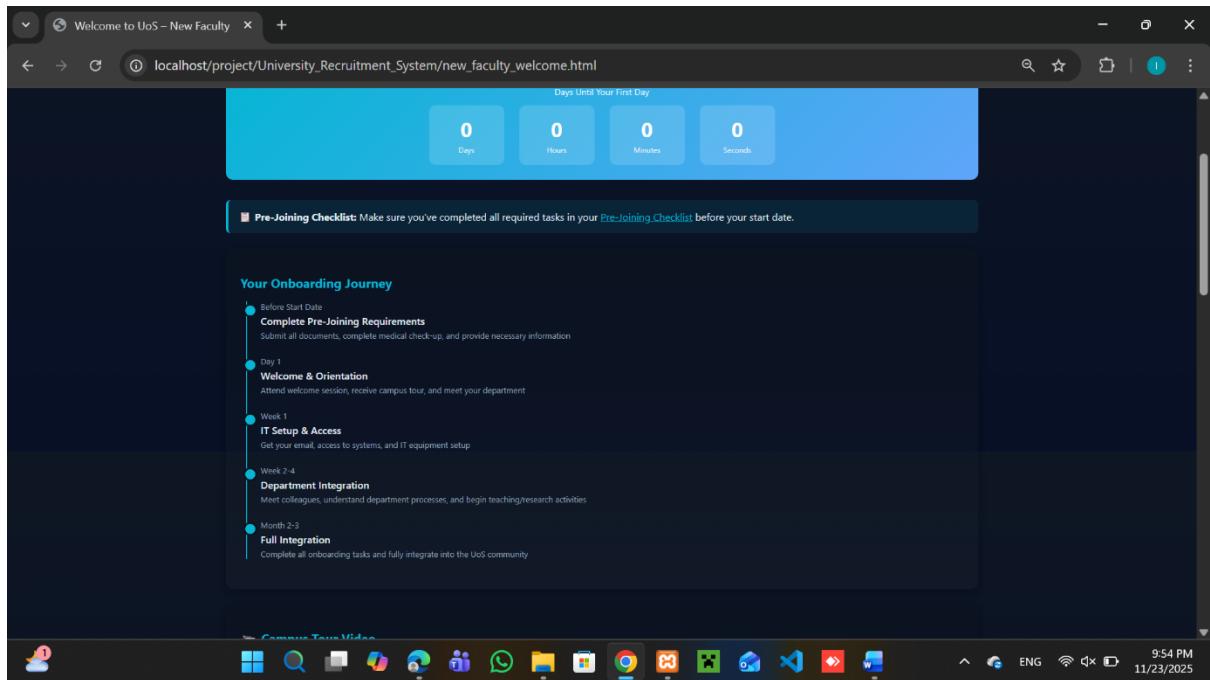


Figure 12 new faculty welcome page





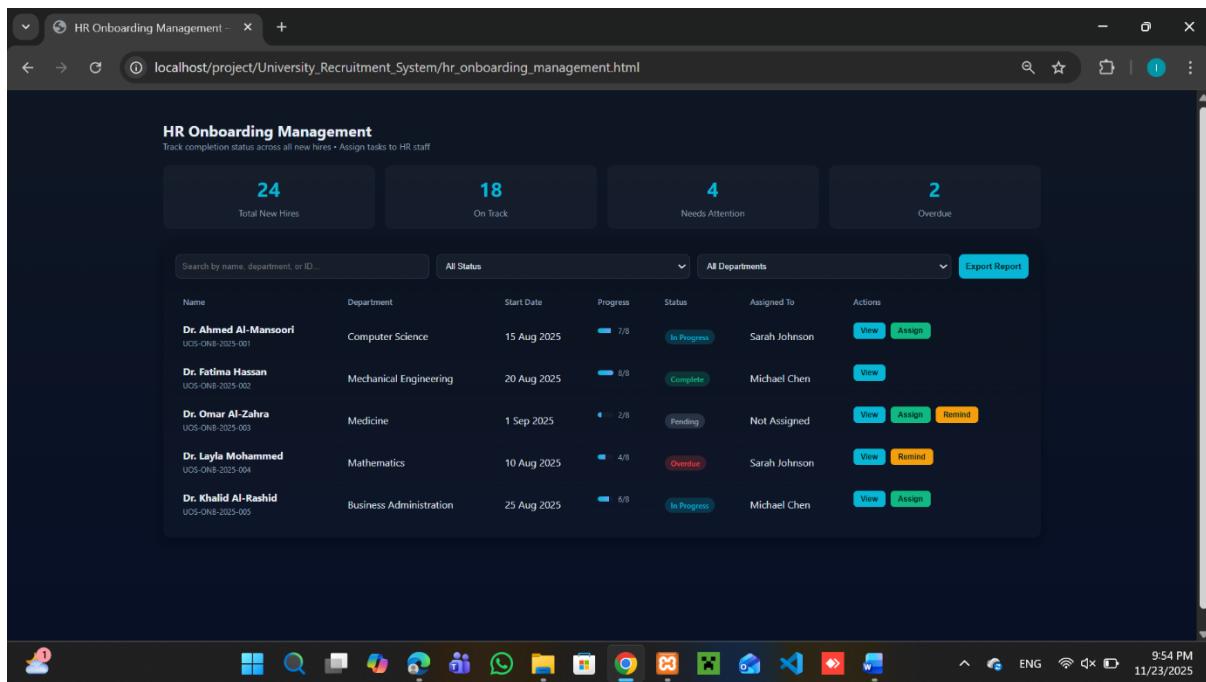


Figure 13 hr on boarding management

The screenshot shows the 'Pre-joining Checklist - UoS' application interface. It displays two forms side-by-side. The left form is for 'Bank Account Information' with fields for Bank Name, Account Number, and IBAN, and a 'Submit Bank Details' button. The right form is for 'Emergency Contact Information' with fields for Contact Name, Relationship, Phone Number, and Email, and a 'Submit Contact Information' button. Both forms include a 'Pending' status and a deadline of '10 August 2025'.

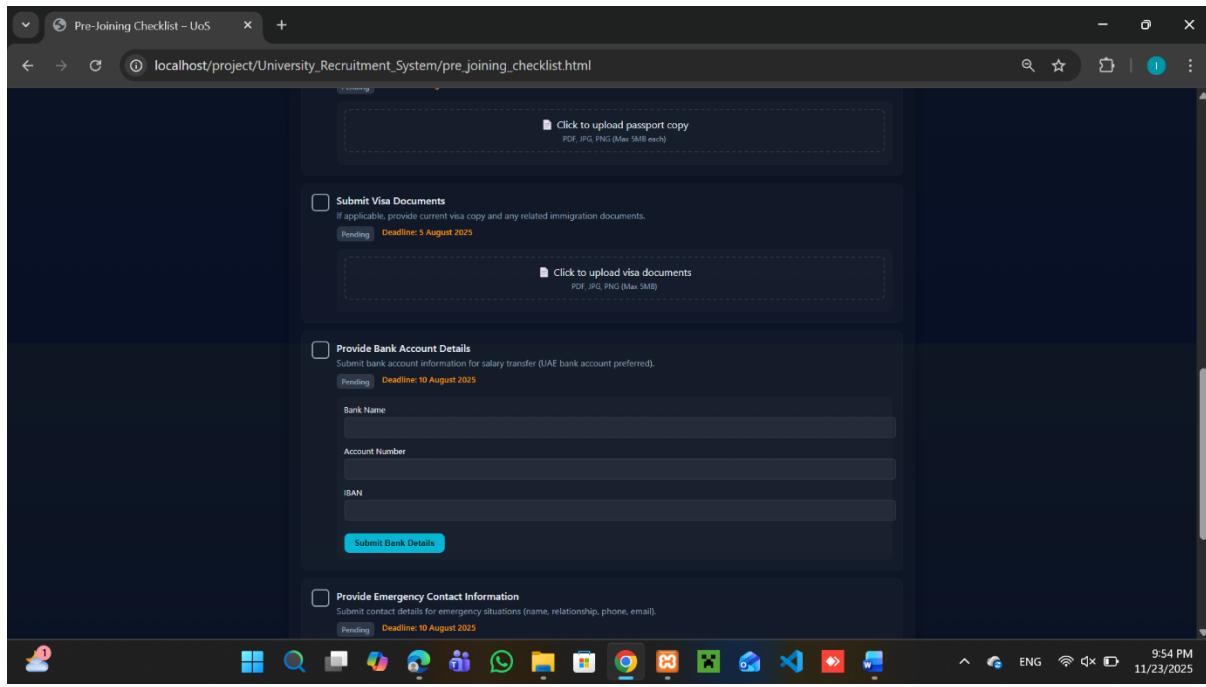
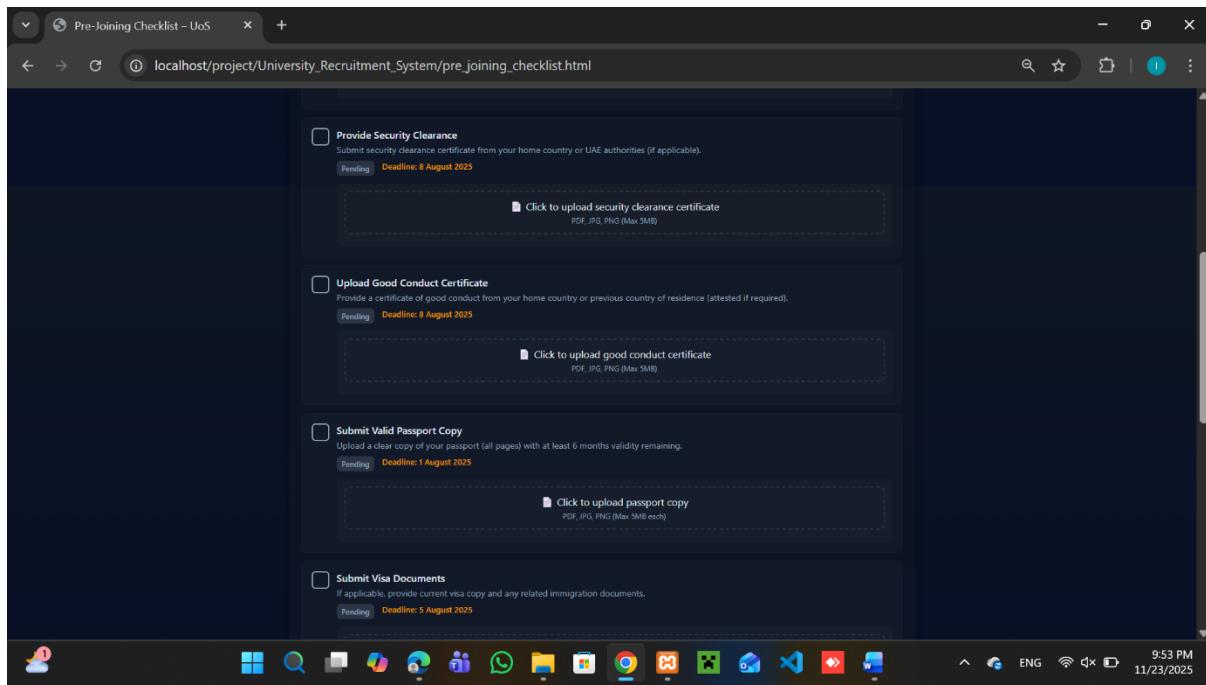


Figure 14 pre joining checklist



The screenshot shows a web browser window titled "Pre-Joining Checklist - UoS" displaying a checklist for a pre-joining application. The checklist consists of five tasks:

- Submit Attested Degree Certificates**: Schedule and complete a medical examination at an approved medical center. Upload the medical fitness certificate. Deadline: 5 August 2025.
- Complete Medical Check-up**: Schedule and complete a medical examination at an approved medical center. Upload the medical fitness certificate. Deadline: 5 August 2025.
- Provide Security Clearance**: Submit security clearance certificate from your home country or UAE authorities (if applicable). Deadline: 8 August 2025.
- Upload Good Conduct Certificate**: Provide a certificate of good conduct from your home country or previous country of residence (attested if required). Deadline: 8 August 2025.
- Submit Valid Passport Copy**: Upload a clear copy of your passport (all pages) with at least 6 months validity remaining.

The browser interface includes a top navigation bar with back, forward, and search icons. Below the title bar, there are tabs and a search bar. The main content area has a dark background with white text. At the bottom of the screen, the Windows taskbar is visible, showing various pinned icons and the system tray with the date and time (11/23/2025, 9:53 PM).

**Pre-Joining Checklist**

Complete all required tasks before your start date

Overall Progress: 0% Complete

Start Date: 15 August 2025

0 of 8 tasks completed

**Required Tasks**

- Submit Attested Degree Certificates  
Upload copies of all degree certificates that have been attested by the UAE Ministry of Education and Ministry of Foreign Affairs.  
Deadline: 1 August 2025  
Pending
- Click to upload attested degree certificates  
PDF, JPG, PNG (Max 5MB each)
- Complete Medical Check-up  
Schedule and complete a medical examination at an approved medical center. Upload the medical fitness certificate.  
Deadline: 5 August 2025  
Pending
- Click to upload medical fitness certificate  
PDF, JPG, PNG (Max 5MB)
- Provide Security Clearance  
Submit security clearance certificate from your home country or UAE authorities (if applicable).  
Deadline: 8 August 2025

**Interview Scheduling & Feedback**

Mock calendar to propose dates. Feedback form and auto-aggregation of panel recommendations.

**Week view (mock)**

Click a slot to propose it. Proposed slots show in the proposals list.

Mon Nov 24	Tue Nov 25	Wed Nov 26	Thu Nov 27	Fri Nov 28	Sat Nov 29	Sun Nov 30
09:00	09:00	09:00	09:00	09:00	09:00	09:00
10:30	10:30	10:30	10:30	10:30	10:30	10:30
13:00	13:00	13:00	13:00	13:00	13:00	13:00
15:00	15:00	15:00	15:00	15:00	15:00	15:00

**Proposed interview times**

No proposed times.

**Panel members**

Add panel members who will submit feedback.

Name e.g. Dr. Lee

**Post-interview feedback**

Select panel member to enter their feedback. Feedback auto-captures a recommendation.

**Technical performance**

Notes on technical competence

**Behavioral traits**

Notes on behavioral traits

**Values alignment**

Notes on values alignment

**Interview rating (1-5)** 3

**Recommendation**

**Justification**

Short justification (required for reject)

**Aggregated panel recommendations**

No feedback yet.

Figure 15 interview scheduling feedback

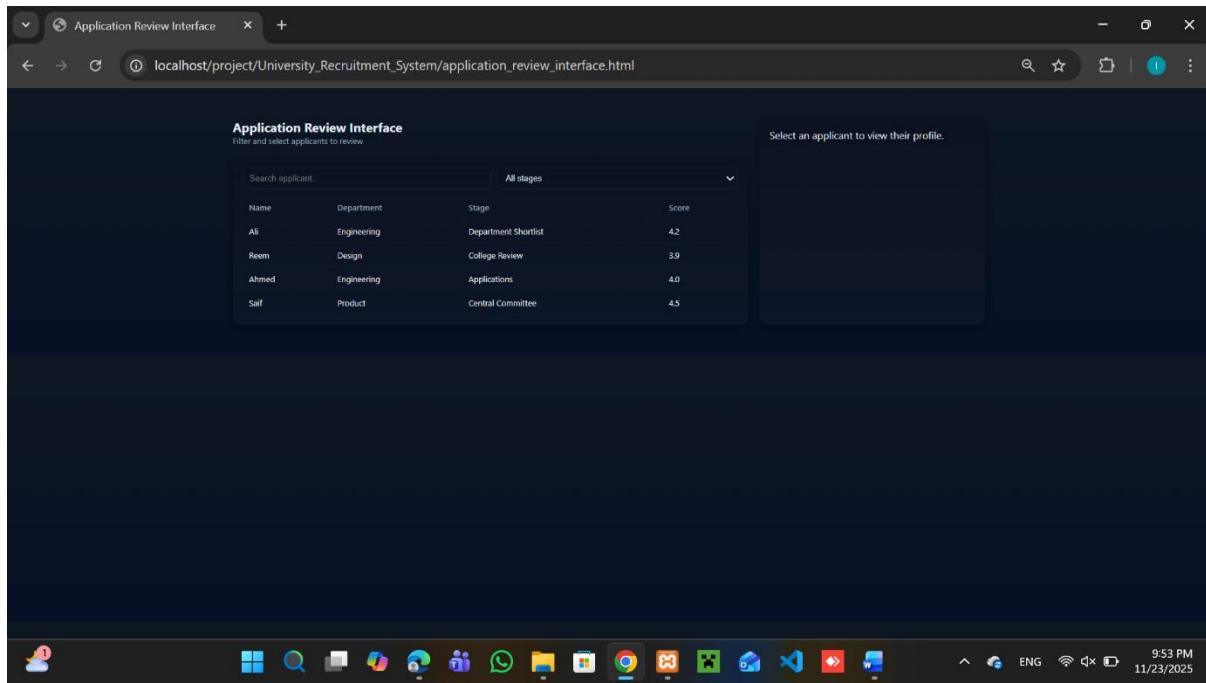


Figure 16 Application review interface

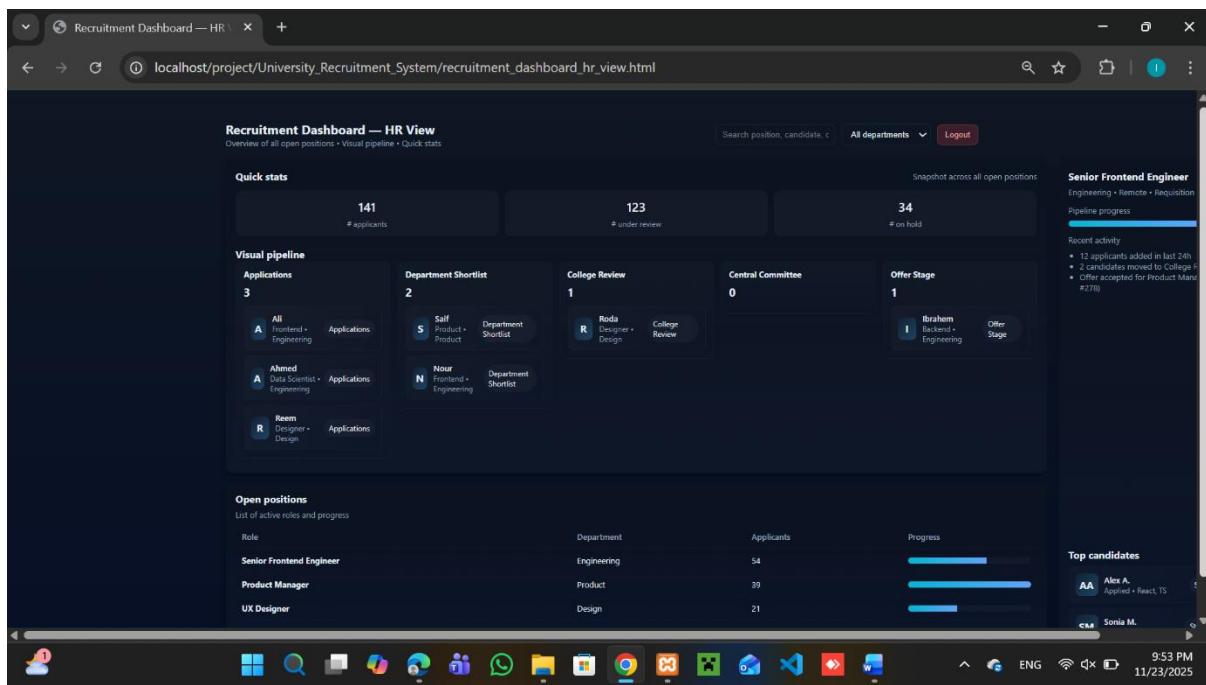


Figure 17 recruitment dashboard hr view

**Talent Request Submission**  
Used by Head of Department to request new faculty hires. Attach official UoS advertisement document.

Academic title / position  
e.g. Assistant Professor, Computer Science

Job description  
Brief summary of responsibilities and expectations

Proposed start date  
mm/dd/yyyy

Required qualifications  
Select minimum qualification

Emirati candidate preference  
No preference

Upload official advertisement (UoS format, PDF preferred)  
Choose File No file chosen

No file selected.  
Additional notes (internal)

Budget considerations, justification, replacement vs new role

Preview submission Submit request

Figure 18 talent request submission form

**Associate Professor – Business Administration (Emirati Track)**  
College of Business Administration • Emirati Track • Teaching • Posted: June 11, 2025  
UAE national preferred. PhD in Business Administration or related field. Reduced teaching load with mentorship support in Year 1.  
[Apply Now](#)

**Assistant Professor – Computer Science (Emirati Track)**  
College of Computing and Informatics • Emirati Track • Teaching • Posted: June 10, 2025  
Seeking a UAE national with a PhD in Computer Science, Scopus publications, and strong teaching potential.  
[Apply Now](#)

**Assistant Professor – Clinical Medicine**  
College of Medicine • Regular Track • Clinical • Posted: June 8, 2025  
MD or equivalent with clinical experience. Teaching responsibilities include clinical rotations and patient care supervision.  
[Apply Now](#)

**Associate Professor – Mechanical Engineering**  
College of Engineering • Regular Track • Teaching • Posted: June 5, 2025  
Requires 5+ years post-PhD experience, strong research record, and teaching excellence in sustainable energy systems.  
[Apply Now](#)

Figure 19 vacancies

**Faculty Vacancies**

Home Job Vacancies Apply Now My Application

**Current Openings**

Filter by: All Colleges All Ranks All Tracks  
All Types

**Assistant Professor – Data Science (Research Focus)**  
College of Computing and Informatics • Regular Track • Research • Posted: June 15, 2025  
PhD in Data Science or related field. Strong publication record required. Focus on AI/ML research with industry collaboration opportunities.  
[Apply Now](#)

**Lecturer – Mathematics**  
College of Sciences • Regular Track • Teaching • Posted: June 12, 2025  
Master's or PhD required. Focus on undergraduate teaching in calculus and linear algebra.  
[Apply Now](#)

**Associate Professor – Business Administration (Emirati Track)**  
College of Business Administration • Emirati Track • Teaching • Posted: June 11, 2025  
UAE national preferred. PhD in Business Administration or related field. Reduced teaching load with mentorship support in Year 1.

**Faculty Application Form**

Home Job Vacancies Apply Now My Application

**Submit Your Application**

1 Personal Info 2 Academic 3 Publications 4 Residency/Visa 5 Documents 6 Declaration

**Personal & Contact Information**

Full Name \*

Nationality \*  
... Select ...

Date of Birth \*  
mm/dd/yyyy

Email Address \*

Phone Number \*  
+971 XX XXX XXXX

Current Address  
Street, City, Country

Figure 20 Faculty apply application form

# Chapter 7 – Conclusion and Future Enhancements

## Conclusion

The University Recruitment and Onboarding Management System is a total technological revolution of the old-fashioned paper-based recruitment process followed in most institutions of higher learning. The project enabled the development of a comprehensive and multistage project to be deployed, which considers all the mission-critical steps of the recruiting lifecycle, including vacancy publishing and job applicant registration to assessment of interviews and onboarding. It has shown how web and other modern technologies, designed database structure, and automation of processes can be effectively used together to enhance efficiency, transparency, and accuracy in university hiring processes. The successful integration of several groups of users of just one platform is one of the key achievements of this project. Applicants enjoy a clear cut easy to use interface where they can create profiles, apply, and upload documents besides keeping track of their application in any real time. The HR personnel are equipped with systematic review panels, strong filtering systems, document access facilities and decision support features, like scheduling interviews and entry of feedback. Vacancy management and user/role control modules provide total control to the administrators over recruitment cycles. This multi-role support also ensures that this system is not only practical but also scalable as well as compatible with the real needs in the institution. The second strength aspect in the project is the exploitation of robust backend architecture rendition, that is based on mod-PHP API replenishment, linking with a relational MySQL database and safe file severance. It is a greatly maintainable, reliable and upgradeable design in the future. The distinct database relationships, foreign keys and normalized table are employed to ensure that the data is not stored inconsistently and uniformly across the system. IT logs, validation policies and exception handling policies are also crafted to increase stability of the system especially in situations involving sensitive GA forms of applicant information and rendering specific authentication sessions secure.

One of the actual factors that make the project successful is the concentration on testing and improvement. Test scripts like test upload.php and test api.php facilitated the early identification of path resolution problems, inconsistency of the session as well as problems in data integrity. These were systematised solved thus making the system more predictable and strong. Long-term maintainability is also achieved through structured documentation of

troubleshooting as it provides future developers with information on how the system is configured and what pitfalls to avoid. Out of the technical implementation, this system places emphasis on the clarity of processes and workflow design. The pipeline of recruiting was not only adapted on-digitally but was carefully restructured in flowcharts, UML, component diagrams, sequence diagrams, and an ERD. Such diagrams simplify the system and help to communicate and make the system better. They also show that the concepts of software engineering like modularity, abstraction, separation of concerns and user-centred design were both applied throughout the project. All in all, this project offers a solid base of further extension in the form of automated interview scoring, analytics dashboard, candidate ranking based on AI, email messages, cloud implementation, and HRIS or ERP system integration. It demonstrates that an effective, properly documented and tested hiring system can dramatically decrease the number of administrative tasks, enhance the experience of applicants and facilitate equality and standardization of academic hiring. Finally, the University Recruitment and Onboarding Management System meets all of its basic purposes and reflects the level of the professional competence of the deep knowledge of the full-stack development, database engineering, system designing, and optimization of the workflow. The project is a success in terms of being a technical solution, in addition to being a practical contribution to contemporary recruitment practices in higher-education. It is a full operation, self-sufficient and scalable system that has shown planning, both design and discipline.

## Significance of the System

The system revolutionizes the engagement of the applicant by providing a smooth process of submitting and tracking applications. Centralized dashboards can also help the HR departments to standardize evaluation, enhance traceability and decrease workload. Administrators acquire a capability to have control over roles, vacancies, and system arrangements with accurate control of recruiting cycles. This multi-layered value would indicate the extent to which the project is an influence not as a technical change or solution but as a human-centered improvement in the administration of the university.

## Future Work

There are places where expansion can be implemented in the future. Applicant scoring may be promoted with the help of predictive analytics with models of machine learning. Email or SMS notifications generated by the system could be possible using automated communication modules. The use of the cloud may enhance the ability to scale out when it comes to

geographically distributed campuses. Should also be integrated with the ERP or HR Information Systems that would also become a way of integrating institutional digital infrastructures. Such improvements would transform the system into a platform by itself into a blended institutional apparatus.

## Final Reflection

This project has been able to bring to a convergence both the theoretical aspects of software-engineering and the practical requirements of the institutions. This is provided by integration of the structured design artifacts (Figure 1 through Figure 5) and associated with a use case (Figure 1), class (Figure 2) and component (Figure 3) diagrams, process flowcharts (Figure 4) and ERDs (Figure 5), which guarantee best practices and build clarity and technical rigor. The system is one of the significant contributions to the digital transformation processes in higher education recruitment.

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