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DEPARTMENT OF COMPUTER TECHNOLOGY

Software Requirements Specification

for

**A holistic approach to campus recruitment and student
profile analysis for placement.**

Version 1.0 approved

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DEPARTMENT OF COMPUTER TECHNOLOGY.

Table of Contents

Table of Contents	ii
Revision History	ii
1. Introduction.....	1
1.1 Purpose	2
1.2 Document Conventions	2
1.3 Intended Audience and Reading Suggestions.....	2
1.4 Product Scope	2
1.5 References	4
2. Overall Description	5
2.1 Product Perspective	5
2.2 Product Functions	6
2.3 User Classes and Characteristics	8
2.4 Operating Environment	9
2.5 Design and Implementation Constraints.....	9
2.6 User Documentation.....	9
2.7 Assumptions and Dependencies	10
3. External Interface Requirements	11
3.1 User Interfaces.....	11
3.2 Hardware Interfaces.....	12
3.3 Software Interfaces	12
3.4 Communications Interfaces	12
4. System Features	13
4.1 System Feature	13
5. Other Nonfunctional Requirements.....	15
5.1 Performance Requirements.....	15
5.2 Safety Requirements.....	16
5.3 Security Requirements.....	17
5.4 Software Quality Attributes.....	18
5.5 Business Rules.....	19
6. Other Requirements	20
Appendix A: Glossary.....	21
Appendix B: Analysis Models	22
Appendix C: To Be Determined List.....	24

Revision History

Name	Date	Reason For Changes	Version
A holistic approach to campus recruitment and student profile analysis for placement.	18/10/2023	N. A	1

1. Introduction

Problem Definition

The task is to design and develop a Training and Placement Application that streamlines the process of connecting job seekers (students or candidates) with potential employers (companies) while providing comprehensive support for skill development, job search, and placement activities.

Overview

In a world where the job market is constantly evolving at a rapid pace, the alignment between education and industry stands as a pivotal concern. Educational institutions today are entrusted with the responsibility of preparing students not only with the foundational knowledge but also with the practical skills necessary to thrive in their chosen careers. Simultaneously, organizations are on the hunt for the most qualified and competent candidates who can seamlessly integrate into their dynamic and ever-evolving workforce.

However, despite the shared goal of preparing students for the workforce, the transition from academia to the professional world is often marked by numerous challenges for both students and employers. Graduates may find it challenging to translate their educational experiences into practical job skills, and employers may struggle to identify the most suitable candidates who align with their evolving needs and industry demands. To address these intricate challenges and to foster a harmonious connection between students and potential employers, we are proud to introduce the "Integrated Campus Recruitment, Placement, and Training Analysis" (ICRPT) system. Developed with the specific needs and aspirations of our college students in mind, ICRPT represents a cutting-edge solution designed to bridge the gap between the academic realm and the professional landscape. With ICRPT, we embark on a journey to revolutionize the way our students prepare for their future careers and how employers identify the best-fit talent.

This innovative system leverages the power of data-driven analysis, comprehensive student profiling, and a holistic approach to campus recruitment, placement, and training. It not only helps students gain a clearer understanding of their strengths, weaknesses, and career potential but also empowers our institution to tailor educational experiences that align with the demands of the job market. On the employer's side, ICRPT streamlines the recruitment process by offering insights into the most promising talent pool among our students, thereby saving valuable time and resources. With ICRPT, we embark on a transformative journey that puts our students at the forefront of industry readiness and ensures that the knowledge and skills they acquire during their time at our college are directly applicable in their future careers. We invite you to explore this dynamic system and join us in shaping a brighter and more prosperous future for our students and the organizations that seek their talents.

Motivation:

Application is to bridge the gap between job seekers and employers, making the job search and placement process more efficient, effective, and user-friendly. It strives to empower individuals with the tools and opportunities to advance their careers while helping companies find the right talent for their needs.

1.1 Purpose

The proposed system is a Web application meant to be used for recruitment process. It can be used by organizations as a tool for effective recruitment by analyzing the candidate's fitness for the job. And colleges can use the system to get an idea about the probability of the student to be placed prior to the placement drive with the help of Placement prediction feature. This system recommends the candidates on the basis of their likelihood to get placed. It considers parameters like candidate's SSC marks, Intended Audience and Reading Suggestions Probable candidate list HSC marks, CGPA, gender to predict the placement probability. Machine learning technique is used to implement OCEAN Model. The model is first trained on a dataset of any previous placement drives and then used to predict the probability of the candidate to get placed.

1.2 Document Conventions

STYLE	FONT	FONT STYLE	SIZE
Heading	Times New Roman	Bold	18
Sub-Heading	Times New Roman	bold	14
Others	Times New Roman	regular	12

1.3 Intended Audience and Reading Suggestions

The development of the ICRPT (Integrated Campus Recruitment, Placement, and Training) System is a multifaceted project with critical design and implementation constraints at every stage. It begins with the need for robust security measures, including secure authentication and data encryption to protect user data. Scalability is a key concern, given the potential for a large user base and extensive data. User-friendly design is pivotal, ensuring an intuitive interface for various user roles. Integration with educational institutions poses compatibility and data synchronization challenges. Skill assessment and job matching algorithms are complex, requiring sophisticated data analysis. Analytics, reporting, and continuous improvement through feedback loops and monitoring tools play a crucial role. Integration with alumni networks requires collaboration and consent. Ensuring reliable email notifications, real-time communication, and user registration management present technical challenges. Geolocation services must deliver accurate results. Finally, designing secure terms and conditions agreements for product renting involves legal considerations. These constraints underscore the complexity of the ICRPT project, emphasizing the need to address these challenges for an effective system serving students, teachers, HR professionals, and administrators in education and recruitment.

1.4 Product Scope

The scope of the ICRPT project encompasses the development of a comprehensive web and mobile application designed to facilitate the entire campus recruitment and placement process. It includes features such as user authentication, student and job profile management, job posting, communication tools, skill assessment, and data analytics. The system aims to streamline interactions between students, educational institutions, and HR professionals, enhancing career opportunities for students while providing data-driven insights for educational institutions and employers. The Integrated Campus Recruitment, Placement, and Training (ICRPT) system holds significant potential for various sectors, and its future scope is quite promising. Here are several key areas of opportunity and development:

1. Education Sector Enhancement:

The ICRPT system can further integrate with educational institutions, offering tailored curriculum recommendations based on industry demand and trends.

Enhanced data analytics and predictive modeling can assist in optimizing training programs and improving student employability.

2. Advanced AI and Machine Learning:

- Implementing advanced AI and machine learning algorithms for better job matching, enabling more accurate skill assessment, and offering personalized learning paths.
- The application can analyze market trends, skill gaps, and emerging technologies, helping students make informed career choices.

3. Global Expansion:

- Expanding the system's reach to cater to international markets and facilitating global job placements.
- Incorporating multilingual support and cultural adaptability to serve a diverse range of users.

4. Enhanced Career Services:

- Integrating additional career services, such as interview coaching, resume reviews, and mentorship programs.
- Providing a comprehensive career development ecosystem.

5. Industry-Specific Modules:

- Developing industry-specific modules for specialized sectors like IT, healthcare, finance, and engineering.
- Offering tailored features to meet the unique needs of each industry.

6. Government and Non-profit Collaboration:

- Partnering with government agencies and non-profit organizations to facilitate employment opportunities and vocational training for disadvantaged or underserved communities.

7. AI-Driven Chatbots and Virtual Career Advisors:

- Implementing AI-driven chatbots and virtual career advisors to provide immediate assistance to users, answering queries and offering guidance.
- Enhancing user experience and accessibility.

8. Enhanced Security Measures:

- Continuously evolving security features to protect sensitive user data, including biometric authentication and advanced encryption techniques.
- Ensuring data privacy and compliance with evolving data protection regulations.

9. Data Analytics for Talent Acquisition:

- Offering advanced analytics tools for HR professionals to identify and attract top talent effectively. Using big data analysis to optimize recruitment processes.

10. Integration with Emerging Technologies:

- Integrating with emerging technologies such as virtual reality (VR) and augmented reality (AR) for immersive training and assessment experiences.
- Utilizing blockchain for secure and transparent transactions, including contracts and payments.

11. User-Friendly Mobile Apps:

- Developing user-friendly mobile applications for both Android and iOS platforms, with an emphasis on responsive design and cross-platform compatibility.
- Facilitating on-the-go access and engagement.

12. Sustainability and Corporate Social Responsibility (CSR):

Aligning the ICRPT system with sustainability initiatives and corporate social responsibility programs by promoting eco-friendly practices and diversity and inclusion. The future scope of the ICRPT system is dynamic and adaptable, driven by technological advancements, user needs, and market dynamics. By continuously evolving and embracing emerging technologies, it can revolutionize the way students, educational institutions, and employers engage in recruitment, placement, and training.

1.5 References

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2. Overall Description

2.1 Product Perspective

A training and placement system is typically a software or platform designed to facilitate and streamline the process of preparing individuals for employment and helping them find job opportunities. Here are key elements to consider:

1. User Interface:

The system should have an intuitive and user-friendly interface for both job seekers and employers. It should be easy to navigate, search for jobs, and submit applications.

2. User Roles:

The system should support different user roles, such as job seekers, employers, and administrators.

3. Job Posting and Matching:

Employers should be able to post job vacancies, and the system should match these vacancies with the profiles of registered job seekers based on their qualifications and preferences.

4. Communication:

The system should facilitate communication between job seekers and employers, including messaging, interview scheduling, and notification features.

5. Training and Skill Development:

Provide resources for skill development, including online courses, tutorials, or training materials. Track and report on a user's progress in these training programs.

6. Analytics and Reporting:

Offer data analytics and reporting capabilities for both job seekers and employers, enabling them to track their job application success rates, hiring trends, and more.

7. Security:

Implement robust security measures to protect user data, as well as mechanisms to prevent fraudulent job postings or applications.

8. Feedback and Ratings:

Allow both employers and job seekers to provide feedback and ratings for each other, helping to build a transparent and trustworthy environment.

9. Cost and Revenue Model:

Determine whether the system will be free for users, subscription-based, or generate revenue through other means, such as premium job postings.

10. User Support:

Provide customer support and help resources to assist users in using the platform effectively.

2.2 Product Functions

A training and placement system typically serves as a platform for managing various aspects of the ICRPT (Integrated Campus Recruitment, Placement, and Training) process. Here are some common product functions used in such systems:

1. Student Profile Management:

Allows students to create and maintain their profiles, including personal information, educational background, and skills. The Student Profile Management feature in the Integrated Campus Recruitment Placement and Training Analysis (ICRPT) system is a critical component designed to streamline the management of student data within the academic institution. This feature includes:

1. Student Information: Capture personal, academic, and contact details.
2. Academic Performance Tracking: Monitor grades, attendance, and course history.
3. Skill and Achievement Tracking: Record skills, certifications, and achievements.
4. Resume Building: Create and update resumes with academic and extracurricular achievements.
5. Career Preferences: Define career interests for matching with job opportunities.
6. Placement History: Track past placements, internships, and projects.

2. Job Listings:

Provides a database of job opportunities for students to browse and apply for. The Job Listings feature streamlines the recruitment and placement process, making it efficient and convenient for students and employers, while also providing valuable data and insights to educational institutions for continuous improvement.

1. Student-Centric:
 - Allows students to search and apply for jobs.
 - Provides detailed job descriptions and application tracking.
2. Employer-Centric:
 - Enables employers to post job listings and manage applicants.
 - Supports direct communication with applicants.
3. Administrator Functions:
 - Content moderation and quality control.
 - Data analytics for educational institutions.
4. Efficiency: Streamlines the recruitment and placement process.

3. Status Tracking:

Let's students track the status of their job applications.

- Monitors job applications and their progress.
- Facilitates interview scheduling and notifications.
- Tracks placement offers and allows students to accept or decline them.
- Manages training progress and completion.
- Can be customized to suit specific institutional needs.

4. Skills Assessment:

May include assessments or quizzes to evaluate a student's skills and match them with suitable job openings. The Skill Assessment feature in an ICRPT system is a crucial component

designed to evaluate and measure the skills and capabilities of students or job applicants in the context of campus placements.

- Customizable Testing: Tailored assessments for diverse skills.
- Automated Evaluation: Eliminates bias and human error.
- Scalability: Handles assessments for many candidates at once.
- Real-time Feedback: Provides instant performance insights.
- Security Measures: Prevents cheating during assessments.
- User-Friendly Interface: Easy navigation for all users.

5. Interview Scheduling:

The Interview Scheduling feature in ICRPT system is the process of coordinating interviews between employers and job-seeking students.

1. Efficient Coordination: Simplifies the scheduling of interviews between employers and students.
2. Student-Centric: Allows students to view, express preferences, and confirm interview slots.
3. Employer Interaction: Employers post interview schedules and preferences.
4. Real-Time Updates: Provides up-to-date information on interview slot availability.
5. Automated Reminders: Sends reminders to both students and employers.
6. Customization: Offers flexibility in interview parameters and requirements.

6. Communication Tools:

Provides a messaging system for communication between students, placement officers and employers. The communication tools in the ICRPT system are designed to foster effective and efficient communication among all stakeholders, enhancing the overall campus recruitment, placement.

1. Internal Messaging: Facilitates communication among users.
2. Event Scheduling: Allows scheduling and reminders for interviews and events.
3. Email Integration: Automates email notifications.
4. Document Sharing: Simplifies document submission and sharing.
5. Feedback and Evaluation: Gathers feedback from students and recruiters.

7. Placement Officer Tools:

Tools for placement officers to manage and track student progress, schedule events, and communicate with students and employers

1. Student Database Management: The system allows placement officers to maintain a comprehensive database of students, including their academic records, resumes, and skill sets.
2. Job Posting and Management: Placement officers can post job openings from various companies, specifying job descriptions, qualifications, and application deadlines.
3. Application Tracking: The system facilitates tracking of student applications to different job postings, helping placement officers monitor the progress of each application.
4. Communication Tools: Features for sending notifications, updates, and alerts to students and companies, as well as facilitating email communication between placement officers, students, and recruiters.

5. Interview Scheduling: A tool for scheduling interviews, including options for placement officers to set up interview slots and students to choose convenient times.
6. Student Assessment and Preparation: Tools to assess students' readiness for interviews and provide resources for interview preparation, such as mock interview sessions.
7. Analytics and Reporting: Data-driven insights and reports to evaluate placement statistics, track student progress, and assess the effectiveness of placement strategies.

8. Analytics and Reporting:

Generates reports on job placement statistics and the performance of students in the system.

Analytics:

1. Collects and processes data from various sources.
2. Utilizes predictive analytics to forecast job market trends.
3. Monitors student, company, and training program performance.
4. Provides real-time insights for quick decision-making.

Reporting:

1. Generates customizable reports for specific needs.
2. Offers interactive dashboards for easy performance assessment.
3. Highlights historical trends for data-driven decisions.
4. Uses data visualization for user-friendly presentation.
5. Allows users to set up event notifications.

9. Security and Data Privacy:

Implements robust security measures to protect user data and privacy. The ICRPT system is a comprehensive platform designed to facilitate campus recruitment, placement, and training processes. Security and data privacy are crucial aspects of this system to ensure the protection of sensitive information and compliance with regulations.

1. Data Encryption: Strong encryption for data at rest and in transit.
2. User Authentication: Robust user verification.
3. Role-Based Access Control: Controls data access based on roles.
4. Incident Response Plan: Addresses security breaches.
5. Secure Backups: Encrypted data backups for recovery.

2.3 User Classes and Characteristics

• **Teacher(TPO)** : Teacher can create and manage students profiles. They can also post job related information. Teacher can communicate with students to provide guidance, feedback, or additional information regarding job placements. Access to analytics and reports related to student performance, job placement and the effectiveness of their recommendations.

• **Student:** Students can create detailed profiles, including their education history, skills, achievements and career aspirations. Access to job listings posted by teachers or HR personnel. Students can apply for jobs, track application statuses. They can also receive updates on application statuses, interview invitations and other relevant information. Optional assessments or quizzes to evaluate and show their skills.

• **HR:** HR personnel can create and manage company profiles including company information job listing and contact details & post job opening for students to apply. view and manage application

from students including reviewing resume and profile. They can also communicate with students and teachers regarding job listing and selection processes. Provide feedback on the platform usability and the quality of candidates. Identify the various user classes that you anticipate will use this product. User classes may be differentiated based on frequency of use, subset of product functions used, technical expertise, security or privilege levels, educational level, or experience.

2.4 Operating Environment

Sr.	Resource Name	Specification
1.	Computer Processor	Intel core 5 or higher
2.	Microphone	Mini Collar mic
3.	Camera	Good Quality 3MP
4.	Storage Space	60GB or higher
6.	Memory (RAM)	Minimum 4GB

2.5 Design and Implementation Constraints

Design and implementation constraints for a ICRPT (Integrated Campus Recruitment, Placement, and Training) System may include various factors that can limit the system's development, deployment, and functionality. Here are some common constraints to consider:

1. Limited job Opportunities:

The availability of job listing on these platform depends on the companies and organizations using the service. Therefore, there might be a limited number of job opportunities.

2. Competition:

Due to the wide accessibility of these platforms, there can be intense competition among students applying for the same job listings. This can make it challenging for some students to secure placement.

2.6 User Documentation

1) Privacy policy:

A privacy policy document outlines how user data is collected, used , and protected by the software. It is important for ensuring compliance with data privacy regulations.

2) Terms of service:

The terms of service document specifies the terms and conditions under which users can access and use the software. It covers legal aspects , user responsibilities, and software ownership.

3) Change log:

A change log or release notes document details the changes and updates made to the software with each release. Users and administrators can refer to this document to understand what's new and what issues have been addressed.

4) Training materials:

Training materials for a web application include user manuals, video tutorials, interactive walkthroughs, FAQs, a knowledge base, webinars, reference sheets, and more. These resources aim

to help users learn how to effectively navigate the application, understand its features, and troubleshoot issues.

2.7 Assumptions and Dependencies

Assumptions:

1. **Availability of Suitable Candidates:** The system assumes that there are qualified candidates seeking employment opportunities.
2. **Adequate Training Resources:** It assumes that there are resources and infrastructure available for providing training and skill development.
3. **Industry Demand:** It assumes that there is a demand for the skill and qualifications being offered, and that there are job vacancies in relevant industries.
4. **Job Market Stability:** The system assumes a relatively stable job market with consistent demand for skilled labor.
5. **Collaboration with Employers:** Assumption of collaboration with companies and organizations willing to hire candidates from the system.

Dependencies:

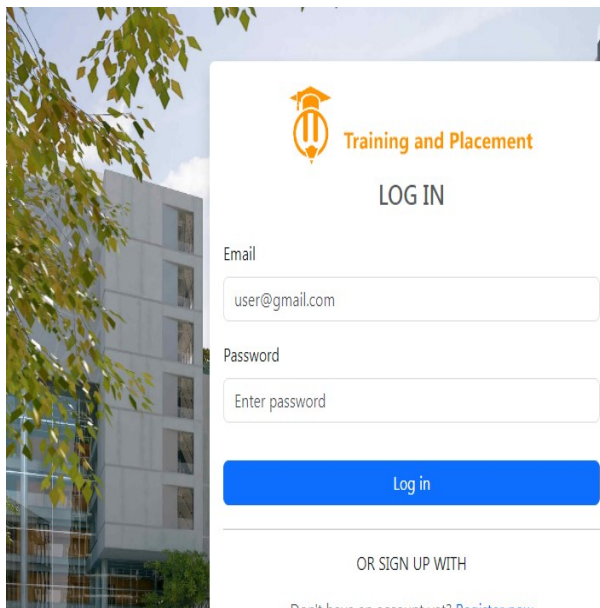
1. **Data and Information:** The system relies on accurate and up-to-date data about job openings, candidate qualifications, and training resources.
2. **Funding:** Availability of funding or resources to support training programs and infrastructure.
3. **Technology Infrastructure:** Dependence on the technology infrastructure for online applications, job matching, and communication.
4. **Education and Training Partners:** Collaboration with educational institutions and training providers is often necessary for access to qualified candidates.
5. **Market Trends:** Keeping up with market trends to adjust training programs based on the evolving needs of industries.
6. **Employer Engagement:** Dependence on employer engagement and partnerships to create job opportunities for candidates.
7. **Candidate Motivation:** Relying on candidates motivation and commitment to training and placement efforts external Interface Requirements,

3. External Interface Requirements

3.1 User Interfaces

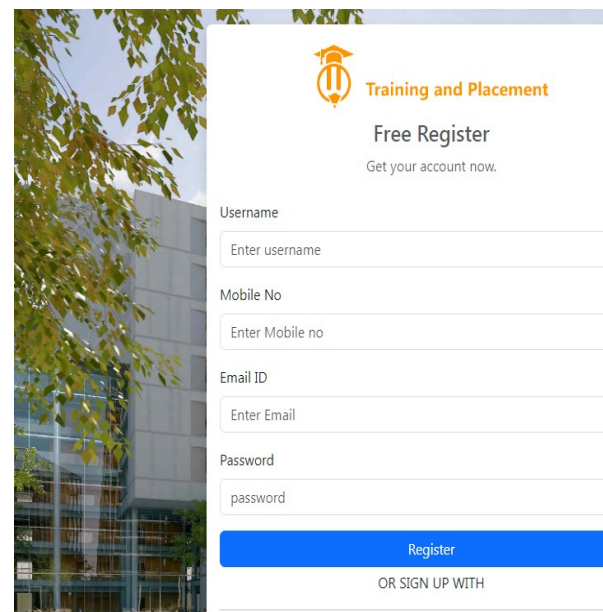
Designing a user interface for integrated campus recruitment, placement, and training system involves several key components.

- **User Roles:** Define clear roles such as students and administrators, each with their specific access and functionalities.
- **Student Profile:** Allow students to create and manage their profiles, including personal details, academic records, and skills.
- **Job Listings:** Display a list of available job opportunities with filters and sorting option, include details like company name, job description, and application deadlines.
- **Company Profiles:** Showcase information about recruiting companies, including their profiles, culture, and previous recruitment history.
- GUI along with meaningful frames and Implementation.
- Front-End: HTML, CSS, JavaScript
- Back-End: Python.



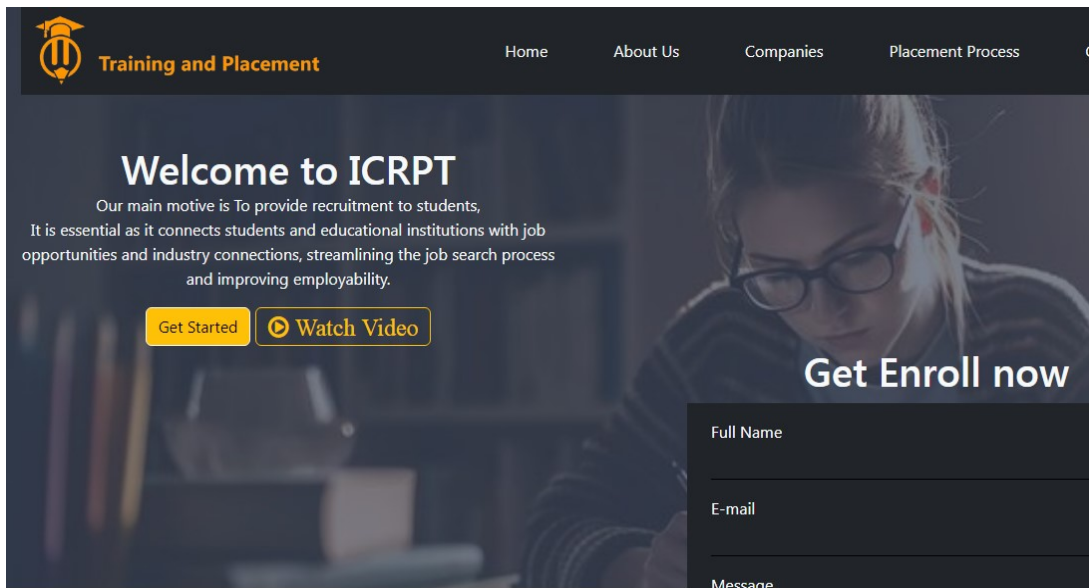
The login form is titled "Training and Placement" with a logo featuring a graduation cap. Below the title is the text "LOG IN". The form contains two input fields: "Email" with the placeholder text "user@gmail.com" and "Password" with the placeholder text "Enter password". A blue "Log in" button is positioned below the password field. At the bottom, there is a link that says "OR SIGN UP WITH" followed by "Don't have an account? Register now".

Login Form



The registration form is titled "Training and Placement" with a logo featuring a graduation cap. Below the title is the text "Free Register" and a subtext "Get your account now.". The form contains four input fields: "Username" with the placeholder text "Enter username", "Mobile No" with the placeholder text "Enter Mobile no", "Email ID" with the placeholder text "Enter Email", and "Password" with the placeholder text "password". A blue "Register" button is positioned below the password field. At the bottom, there is a link that says "OR SIGN UP WITH".

Registration Form



Home Page

3.2 Hardware Interfaces

Sr.	Resource Name	Specification
1.	Computer Processor	Intel core 5 or higher
2.	Microphone	Mini Collar mic
3.	Camera	Good Quality 3MP
4.	Storage Space	60GB or higher
6.	Memory (RAM)	Minimum 4GB

3.3 Software Interfaces

1. Operating System: Windows 8+ versions
2. Front End: HTML, CSS, JavaScript
3. Programming Language: Python
4. Dataset: Firebase
5. Technology: ML
6. Algorithm: OCEAN AND MIDDLEWARE (Django)

3.4 Communications Interfaces

This project supports all types of web browsers. Active internet connection: Wi-Fi or mobile data (4G, 5G). The system requires a stable and high-speed internet connection to ensure that users can access the platform without delays and retrieve large datasets and training data for machine learning models. A reliable internet connection is essential for seamless user experiences, especially when viewing job listings, submitting applications, or accessing machine learning-driven features. Machine learning models often require the transfer of data between users' devices and the portal's servers. Fast data transfer speed is crucial for delivering real-time recommendations, such as job suggestions or personalized training programs.

4. System Features

4.1 System Feature

4.1.1 Description and Priority

The Integrated campus recruitment, placement and training analysis (ICRPT) is a comprehensive software solution designed to bridge the gap between educational institutions, students, and potential employers. ICRPT aims to streamline the process of student placement by providing a centralized platform where students can enhance their skills, access job opportunities, and receive guidance, while employers can efficiently recruit suitable candidates. The priority of the Integrated campus recruitment, placement and training analysis is to provide job to the students who are willing to contribute and those in need of financial support. The Student Module within the Integrated Campus Recruitment, Placement, and Training Analysis (ICRPT) system is a crucial component designed to empower students in their journey towards successful career placement. This module offers an array of features tailored to streamline and optimize the job search and application process. Students can create and maintain comprehensive profiles, search for job openings, and apply for positions directly through the system. The module also provides a platform for interview scheduling and tracking, allowing students to manage their placement journey efficiently. Additionally, it offers access to company profiles, valuable skill development resources, and a calendar of career-related events. With robust security measures in place, this module ensures data privacy and security. The ICRPT Student Module is a comprehensive tool that equips students with the resources and support they need to excel in the competitive job market and facilitates a seamless transition from academia to their professional careers.

4.1.2 Stimulus/Response Sequences

1. **Stimulus:** Prompt the user to create an account or log in if they already have one.
2. **Response:** User creates an account with a unique username and password.
3. **Stimulus:** Ask the user to complete their profile by adding personal details, educational background, and skills.
4. **Response:** User adds personal information, academic history, and skills.
5. **Stimulus:** Encourage the user to take a skill assessment to better understand their strengths and areas that need improvement.
6. **Response:** User takes a skills assessment test.
7. **Stimulus:** Ask the user if they are interested in finding job opportunities. If yes, guide them to the job search & filter job listings based on their preferences, such as location, industry, or job type.
8. **Response:** User selects "Yes" to search for job opportunities & filters job listings by location and industry.
9. **Stimulus:** User clicks on a job listing for a "Software Developer" position.
10. **Response:** The user is presented with a detailed job description, including responsibilities, qualifications, and application deadline. A "Apply Now" button is prominently displayed.
11. **Stimulus:** User clicks "Apply Now."
12. **Response:** The user's profile is successfully created, and the job application is automatically submitted.
13. **Stimulus:** User receives an email confirmation of the application.

14. **Response:** The portal sends an email with a confirmation of the job application and a reference number for tracking. The user is also prompted to complete optional skill assessments for a more comprehensive profile.
15. **Stimulus:** User explores "Resources."
16. **Response:** The user finds a range of resources, including articles on resume building, interview tips, and a schedule

4.1.3 Functional Requirements

1. **REQ-1:** The system should allow users to register and create an account to access the Integrated campus recruitment, placement and training.
2. **REQ-2:** The system should be able to take skill assessments and receive personalized recommendations for training and job opportunities.
3. **REQ-3:** The system should search for job opportunities by keywords, location, industry, and job type. Job listings should include detailed descriptions, qualifications, and application deadlines.
4. **REQ-4:** The system should include a comprehensive questionnaire or assessment tool to evaluate the user's performance.
5. **REQ-5:** The system should be able to apply for jobs and internships directly through the portal. Track the status of job applications, including "submitted," "under review," and "accepted."
6. **REQ-6:** The system should have a user-friendly interface that is easily accessible on multiple devices.
7. **REQ-7:** The system should be able to continuously update its database of Users to keep track of their progress.
8. **REQ-8:** The system should have a search feature to help users find specific information or resources related to jobs, placement & training.
9. **REQ-9:** The system should allow users to share their assessment results and progress reports on their profile. This feature facilitates communication and collaboration between users and their job providers, ensuring a coordinated approach to job.
10. **REQ-10:** The system should be able to establish partnerships with universities, colleges, and vocational training centers to integrate student data and facilitate collaboration.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

1. Response Time:

The portal should aim for a fast response time, with pages loading in a matter of seconds. For instance, job search results should be displayed within two seconds of the search query.

2. Concurrent Users:

The portal should be able to handle a substantial number of concurrent users, especially during peak times such as application deadlines. Load testing should be conducted to ensure the portal's capacity to serve multiple users simultaneously.

3. Data Transfer Speed:

The portal should optimize data transfer speed to ensure that users can efficiently upload documents, such as resumes and cover letters, and download resources.

4. Scalability:

The system should be designed to scale horizontally or vertically to accommodate a growing number of users, job listings, and training programs without significant degradation in performance.

5. Cache Mechanism:

Implement caching to reduce server load and speed up common operations, such as job searches and profile retrieval.

6. Mobile Responsiveness:

Ensure that the mobile web versions are responsive and provide a smooth user experience on Smartphone and tablets.

7. Database Optimization:

Optimize database queries to reduce server load and improve response times.

8. Reduced Bandwidth:

Minimize data transfer by optimizing images, scripts, and styles, reducing the amount of data sent to users.

9. Accessibility:

Ensure the application is accessible to all users, including those with disabilities, to promote inclusivity in sustainability efforts.

10. User-Friendly Interfaces:

Design intuitive and user-friendly interfaces that make it easy for users to find information related to placement

5.2 Safety Requirements**1. Secure Authentication:**

Implement secure authentication mechanisms to protect user accounts and personal information. Encourage strong password practices and support multi-factor authentication (MFA) for added security.

2. User Safety:

Ensure that all job listings and training programs posted on the portal are legitimate and safe for users. Implement mechanisms to report fraudulent or suspicious content.

3. Privacy Protection:

Protect user privacy by allowing users to control who can view their profiles and communicate with them. Prevent spam and harassment through the messaging system.

4. Content Review:

Regularly review and moderate job listings and training programs to maintain quality and safety. Provide mechanisms for users to report inappropriate or fraudulent content.

5. User Training:

Offer resources and guides on safe online practices and job search safety, educating users on recognizing and avoiding potential scams.

6. Data Safety:

Backup user data and implement disaster recovery measures to ensure data safety and recovery in the event of system failures or data loss.

7. Legal Compliance:

Ensure that the portal complies with labor laws, equal opportunity regulations, and other relevant legal requirements to protect user rights and safety.

8. Account Recovery:

Provide a secure account recovery process for users who forget their credentials to prevent unauthorized access.

5.3 Security Requirements

1. Data Encryption:

All sensitive data, including personal information and login credentials, should be encrypted both in transit and at rest to ensure confidentiality and prevent unauthorized access.

2. Access control:

The solution should have robust access controls in place, ensuring that only authorized users can access sensitive data and perform specific actions.

3. Authentication and Authorization:

Implement strong authentication mechanisms, like two-factor authentication (2FA), to verify user identities. Ensure proper authorization controls are in place to prevent unauthorized access.

4. Secure data storage:

User data should be stored securely in a protected and encrypted database, with regular backups to prevent data loss. Strong security measures should also be implemented to protect against data breaches.

5. Data Protection Compliance:

The solution should comply with relevant data protection regulations, such as the General Data Protection Regulation (GDPR) or Health Insurance Portability and Accountability Act (HIPAA), or other relevant laws, depending on the region. This includes user data consent, data retention policies, and the ability to delete user data upon request.

6. System monitoring and logging:

The solution should have logging mechanisms in place to track and monitor any suspicious activities or unauthorized access attempts. Regular system audits and monitoring should be conducted to identify and mitigate security vulnerabilities. Implement role-based access control (RBAC) to restrict access to sensitive data and features based on user roles and responsibilities.

7. Firewalls and Intrusion Detection:

Employ firewalls and intrusion detection systems to safeguard against unauthorized access and hacking attempts.

8. Secure third-party integrations:

If the solution integrates with third-party services or platforms, proper security measures should be in place to ensure the security of data exchanged between systems.

5.4 Software Quality Attributes

1. Usability:

The portal should be user-friendly, with an intuitive interface that allows students to easily navigate and access features.

2. Performance:

The portal should have fast response times, ensuring quick loading of pages and search results, and minimal latency during interactions.

3. Scalability:

The system should be designed to scale with increasing user loads, job listings, and training programs without a significant drop in performance.

4. Reliability:

The portal should be highly reliable, minimizing system failures, crashes, and errors that could disrupt user experiences.

5. Security:

The system should implement robust security measures to protect user data, prevent unauthorized access, and comply with data protection regulations.

6. Compatibility:

The portal should be compatible with various web browsers, operating systems, and hardware configurations, maximizing its accessibility to users.

7. Maintainability:

The software should be designed with clean, modular code that is easy to understand and maintain, allowing for future updates or modifications.

8. Performance Monitoring:

Implement tools and processes for real-time performance monitoring to identify and address performance issues proactively.

9. Search Engine Optimization (SEO):

Optimize the portal for search engines to improve visibility and discoverability of job listings, training programs, and resources.

10. Content Moderation:

Implement content moderation processes to ensure that all job listings, training programs, and user-generated content meet quality and ethical standards.

5.5 Business Rules

1. Confidentiality:

The business must adhere to strict rules and best practices for handling and safeguarding user's data and information, ensuring the privacy and confidentiality of individuals using the ICRPT.

2. Fraudulent Information:

It is expected that a student does not add any ambiguous or fraudulent information in his/her resume. Resume checks will continue throughout the placement process. If, on verification, any discrepancies are found, the student would be de-barred from placements. Also strict disciplinary action may be taken.

3. Professionalism:

The business should maintain a high level of professionalism in all interactions with clients, including students. All communication, whether through messages, comments, or reviews, should be respectful and non-discriminatory.

4. Equal Opportunity:

Promote equal opportunity for all users. Employers should not discriminate based on race, gender, religion, age, disability, or any other protected characteristic in their job postings.

5. Compliance with regulations:

The business must comply with all relevant laws, regulations, and guidelines related to placement, data protection, and user rights.

6. User Support and Assistance:

Offer support and assistance to users who may encounter issues, whether related to job applications, platform usage, or security concerns.

7. Continuous improvement:

The business should regularly review and update their Integrated campus recruitment, placement and training analysis to incorporate the latest research findings and best practices. This might involve collaborating with professionals, researchers, and experts in the field to ensure the highest quality of job.

8. Ethical marketing and advertising:

The business should ensure that their marketing and advertising practices are transparent, honest, and responsible. They should avoid making unsubstantiated claims and promote their services in an ethical manner, focusing on raising awareness and providing support rather than exploiting vulnerable individuals.

6. Other Requirements

1. Advanced Search and Recommendation:

Algorithms Implement advanced search and recommendation algorithms to help users discover relevant job opportunities, training programs, and resources.

2. Multilingual Support:

Support multiple languages to cater to a diverse user base and provide information in the preferred language of users.

3. Interview Scheduling:

Implement features for scheduling job interviews and training program interviews within the portal.

4. Interactive Dashboard:

Create interactive dashboards for users to view their application status, access personalized recommendations, and track their training progress.

5. Personalized Email Notifications:

Send email notifications to users about relevant job openings, training programs, and events based on their preferences and profiles.

6. Industry Partnerships:

Establish partnerships with industry organizations, companies, and educational institutions to enhance the range of opportunities available on the portal.

7. Data Analytics and Reporting:

Implement advanced analytics and reporting features to help administrators gain insights into user behavior, platform performance, and the effectiveness of training programs and job placements.

Appendix A: Glossary

1. **Profile:** A user's personal page on the portal that includes information about their background, skills, and preferences.
2. **Resume/CV:** A document detailing a user's educational and professional background, typically used for job applications.
3. **Job Listing:** A posting by an employer or organization advertising a job or internship opportunity.
4. **Training Program:** An educational course, workshop, or program designed to improve skills and knowledge in a specific field.
5. **Application:** The process of expressing interest in a job or training program by submitting a resume and cover letter.
6. **Skill Assessment:** An evaluation of a user's skills and competencies, often used to provide personalized recommendations.
7. **Recommendations:** Suggested job listings, training programs, or resources based on a user's profile and preferences.
8. **Messaging System:** A feature that allows users to communicate with employers, training program providers, and other users.
9. **Feedback and Reviews:** User-generated comments and ratings for job listings, training programs, and employers.
10. **Community Groups:** Forums or discussion groups where users can connect with peers, share insights, and discuss career-related topics.
11. **Data Protection:** Measures in place to safeguard user data and ensure compliance with data protection regulations.

Appendix B: Analysis Models

Waterfall Model

SDLC Model:

1. Planning:

It is performed by the senior members of the team with inputs from the customer, the sales department, market surveys and domain experts. This information is then used to plan the basic project approach and to conduct product feasibility study in the economical, operational and technical areas. Planning for the quality assurance requirements and identification of the risks associated with the project is also done in the planning stage

2. Defining:

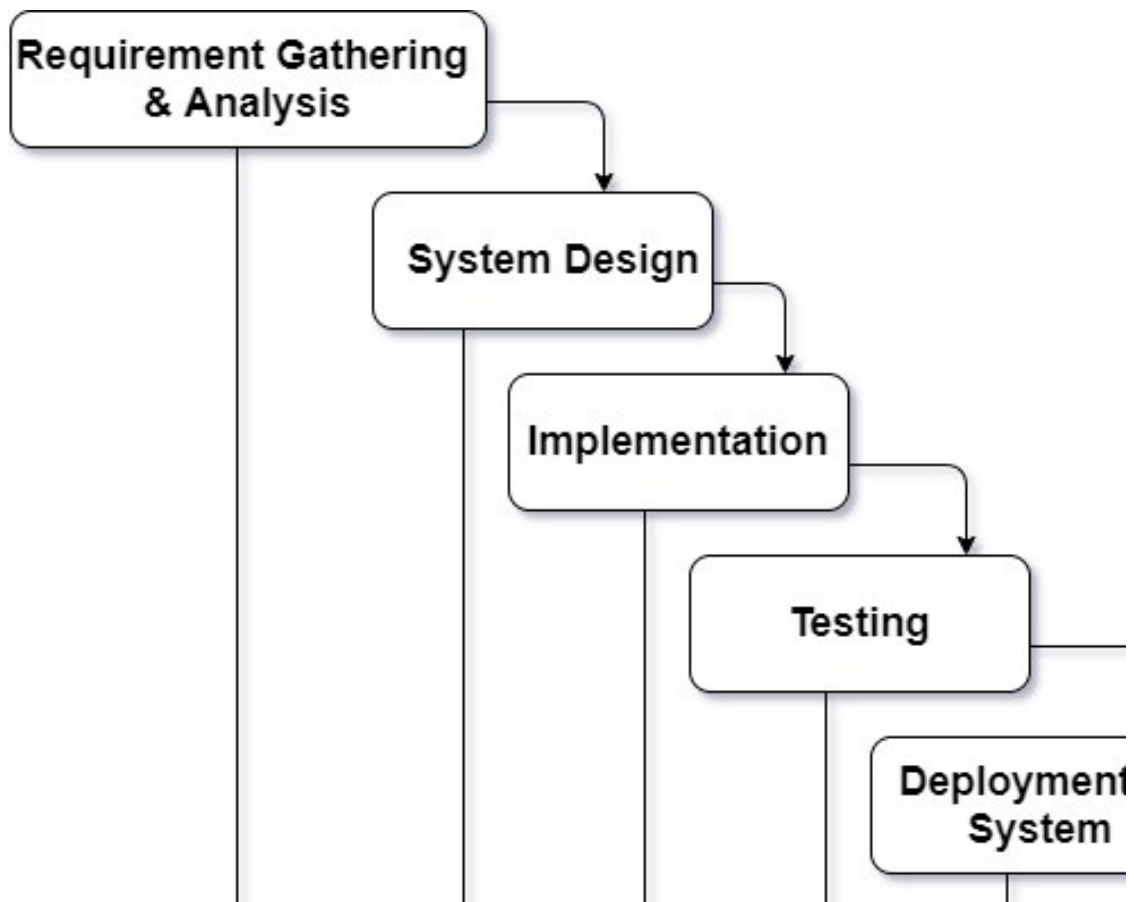
Next step is to clearly define and document the product requirements and get them approved from the customer or the market analysts.

3. Designing:

Based on the requirements specified in SRS, usually more than one design approach for the product architecture is proposed and documented. This is reviewed by all the important stakeholders and based on various parameters as risk assessment, product robustness, design modularity, budget and time constraints, the best design approach is selected for the product. A design approach clearly defines all the architectural modules of the product

4. Building:

The actual development starts and the product is built. The programming code is generated. If the design is performed in a detailed and organized manner, code generation can be accomplished without much hassle. The programming language is chosen with respect to the type of software being developed



5. Testing:

This stage is usually a subset of all the stages as in the modern SDLC models, the testing activities are mostly involved in all the stages of SDLC. However, this stage refers to the testing only stage of the product where product defects are reported, tracked, fixed and retested, until the product reaches the quality standards defined in the SRS.

6. Deployment:

Once the product is tested and ready to be deployed it is released formally.

Appendix C: To Be Determined List

- 1. Pricing Structure:** Determining the pricing model for premium services, courses, or subscriptions.
- 2. User Support Channels:** Defining the specific support channels (e.g., email, chat, phone) and response times for user assistance.
- 3. Integration Partnerships:** Identifying potential external partners for integrations with other educational institutions, job boards, or industry associations.
- 4. User Feedback Mechanisms:** Deciding on the tools and processes for collecting and analyzing user feedback to inform future platform improvements.
- 5. Marketing and Promotion Strategy:** Developing a plan for marketing and promoting the portal to students, educational institutions, and employers.
- 6. Virtual Reality (VR) or Augmented Reality (AR) Features:** Determining if VR or AR components will be integrated to enhance the user experience.
- 7. Career Assessment Tools:** Identifying and integrating assessment tools to help users understand their career strengths and preferences.
- 8. Mobile App Enhancements:** Defining future updates and features for the mobile app to improve user engagement.
- 9. Content Partnership Strategy:** Identifying partners for creating and distributing educational content and resources on the platform.
- 10. Diversity and Inclusion Initiatives:** Developing strategies to promote diversity and inclusion within the portal, both in terms of users and opportunities.
- 11. Geographical Expansion:** Considering expansion plans to make the portal accessible to students and employers in different regions or countries.