Veer Narmad South Gujarat University, Surat.

Department of Information and Communication Technology

M.Sc. (Information and Communication Technology)
Programme

Project Report

3rd Semester

M.Sc. (Information and Communication Technology)
2 Year Course

Year 2023 - 2024

Placement Management System

Guided By:

Submitted By:

Mr. Dhaval Joshi (Internal Guide)

Sagar PrakashBhai Sevaykar R22110018000710048 Ishika Bhimrao Pawar R22110018000710038

Veer Narmad South Gujarat University, Surat.

Department of Information and Communication Technology

M.Sc. (Information and Communication Technology) Programme

Certificate

This is to certify that Miss. <u>Ishika Bhimrao Pawar</u> with Exam Seat Number: <u>10032</u> and Enrollment Number: <u>R22110018000710038</u> has worked on his part time project work entitled <u>Placement management</u>

<u>System</u> as a partial fulfillment of the requirements for 3rd Semester - M.Sc. (Information and Communication Technology), during the academic Year 2023-2024.

Date:

Place: Dept. of ICT, VNSGU, Surat.

Internal Project Guide M.Sc.(I.C.T.) 3rd Semester Department of I.C.T. Veer Narmad South Gujarat University, Surat Course Coordinator
M.Sc. (I.C.T.) Programme
Department of I.C.T.
Veer Narmad South Gujarat
University, Surat

Head of the Department Department of I.C.T. Veer Narmad South Gujarat University, Surat

Veer Narmad South Gujarat University, Surat.

Department of Information and Communication Technology

M.Sc. (Information and Communication Technology) Programme

Certificate

This is to certify that Miss. <u>Sagar Prakashbhai Sevaykar</u> with Exam Seat Number: <u>10042</u> and Enrollment Number: <u>R22110018000710048</u> has worked on his part time project work entitled <u>Placement Management</u>

<u>System</u> as a partial fulfillment of the requirements for 3rd *Semester - M.Sc.* (*Information and Communication Technology*), during the academic Year 2023-2024.

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Veer Narmad South Gujarat
University, Surat

Head of the Department Department of I.C.T. Veer Narmad South Gujarat University, Surat

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1. Introduction

1.1 Customer Profile:

A Placement Management System (PMS) typically involves the organization and coordination of various aspects related to placing individuals in suitable positions, such as job placements, internships, or educational placements. Customer profiles in a Placement Management System may vary depending on the specific needs and functionalities of the system.

1.1.1 Current System:

In Various colleges, training and placement officers have to manage the students profile and documents of students for their training and placement manually.

Placement Officer have to collect the information of various companies who want to recruit students and notify students time to time about them.

Placement Officer have to arrange profiles of students according to various streams and notify them according to company requirements.

If any modifications or updates are required in the profile of any student, it has to searched and to be done it manually.

1.1.2 Customer Detail:

Student Details:

Personal Information:

Full Name

Date of Birth

Gender

Contact Information (Email, Phone)

Academic Details:

University/College Name

Department/Major

Year of Study

GPA/Grade Information

Placement Information:

Previous work experience (if any)

Skills and Competencies

Resume/CV

Login Credentials:

Username

Password

Preferences:

Preferred Job Locations

Preferred Industry
Type of Placement (Internsh

Type of Placement (Internship, Full-Time, Part-Time)

Application History:

Company Information:

Company Name

Industry

Contact Information (Email, Phone)

Placement Opportunities:

Job Titles

Job Descriptions

Required Skills and Qualifications

Recruiter Information:

Personal Information:

Full Name

Email

Contact Information (Phone)

Administrative Role:

Permissions:

Access to student and company data Approval rights for job postings Login Credentials:

Admin Username

Password

System Configuration:

Settings related to the Placement Management System

Customization options

Reports and Analytics Access:

Access to analytics and reports generated by the system

2. Proposed System

2.1 Scope :

The main purpose of proposed Web based Training and Placement portal is meantto give more easiness to TPO, Placement coordinators and Students that they canmodify and access information so quickly. The system provides a better way tomaintain students information in the database, ensures data correctness and dataintegrity as well. The system also reduces the paperwork time and provides anefficient information flow between different system modules. Our system consists of different modules to interact with. Firstly, on opening the web portal you'll landon the main page of the portal which showcases information about the college. Secondly ,there are three tabs given in the portal namely T&P, Student ,andCompany. Each module has the same login page consisting of user id and passwordfield for gaining access to the functionalities of the system. in the portal namely T&P, Student, and Company. Each module has the same login page that contain userid and password field, by entering data in these field the user can gain access to thefunctionalities.

2.2 Objective:

- Efficient Placement Process: Streamlining the entire placement process, from job posting to candidate selection and placement, to make it more efficient and time-effective.
- Enhanced Communication: Facilitating effective communication between students, employers, and placement officers to ensure a smooth flow of information throughout the placement lifecycle.
- Centralized Information: Centralizing and maintaining a database of relevant information, including student profiles, job opportunities, employer details, and placement records.
- Automated Job Posting and Application Automating the job posting process for employers and the application process for students, reducing manual effort and improving accuracy.
- Skill and Qualification Matching: Matching student skills, qualifications, and preferences with job requirements to increase the likelihood of successful placements.
- Data Analytics and Reporting Providing analytics tools and reporting capabilities to institutions for tracking placement trends, assessing the success of placement programs, and making data-driven decisions.
- Alumni Engagement: Facilitating engagement with alumni networks for mentorship opportunities, networking, and potential job placements.
- Security & Compliance: Ensuring a secure environment while adhering to data protection standards.
- Scalability & Adaptability: Building a platform capable of growth and seamless integration with existing systems.
- Empowering Educators: Providing resources and support for educators to optimize their teaching methods in the digital space.

2.3 Constraints:

When considering constraints in the context of hardware and software for a Online Classroom, the following limitations may exist:

\rightarrow 2.3.1 H/W Constraints :

- Device Compatibility: Ensuring the platform functions smoothly across various devices such as laptops, tablets, and smartphones with different operating systems and specifications.
- Internet Connectivity: Designing the platform to be accessible and usable even with varying internet speeds and connection stability.
- Resource Intensiveness: Optimizing the platform to operate efficiently without demanding excessive processing power or memory, particularly important for older devices or those with limited capabilities.
- Peripheral Support: Considering compatibility with additional hardware such as web cameras, microphones, or interactive tools for a seamless learning experience.

→ 2.3.2 S/W Constraints :

- Compatibility Across Browsers/Platforms: Ensuring the platform functions consistently across various web browsers (Chrome, Firefox, Safari, etc.) and operating systems (Windows, macOS, Linux, etc.).
- Integration with Existing Systems: Compatibility with different learning management systems (LMS), student information systems (SIS), or other educational software already in use within institutions.
- Scalability: Designing the software to handle increasing numbers of users, data, and interactions without compromising performance or stability.
- Security Measures: Implementing robust cybersecurity protocols to protect student data, privacy, and the platform itself from potential threats.
- Software Dependencies: Managing and minimizing dependencies on specific software libraries, frameworks, or third-party tools to ensure reliability and flexibility.

2.4 Advantages:

- Efficiency in Placement Processes:
 - Automation of placement-related tasks, such as job posting, application submission, and candidate evaluation, significantly improves the efficiency of the placement process. This allows organizations to handle a large volume of placements more effectively.
- Streamlined Communication:
 - PMS facilitates communication between students, Admin, and placement coordinators. Notifications, updates, and feedback can be communicated in real-time, reducing delays and improving overall communication flow.Cost-Effective: Reduces expenses related to commuting, physical infrastructure, and sometimes, textbooks, making education more affordable.
- Centralized Data Management:

A PMS centralizes data related to students, candidates, and job opportunities. This centralized database makes it easier to manage and access information, reducing redundancy and ensuring data consistency. Global Collaboration: Facilitates international collaborations, connecting students and educators worldwide for discussions and projects.

•

2.4 Limitation:

- The effectiveness of a placement management system relies heavily on the accuracy of the data input. If the data about students or candidates is outdated or inaccurate, it can lead to incorrect placements or recommendations.
- Placement management systems often use predefined criteria for assessment. However, these
 criteria may not cover all the nuances of a candidate's abilities, skills, or potential. The system may
 not fully capture qualities that are not easily quantifiable, such as creativity, adaptability, or
 emotional intelligence. Technical Glitches: Connectivity issues or device malfunctions disrupt
 learning.
- While automation can streamline the placement process, it may lack the nuanced judgment and intuition that human evaluators can provide. Human judgment considers context, empathy, and qualitative factors that algorithms may struggle to grasp. Distractions: Home or non-traditional settings may impact focus during sessions.
- Some placement systems may give excessive weight to academic achievements, potentially overlooking other essential skills and qualities that are crucial for success in a particular role. This can lead to a narrow view of a candidate's capabilities. Assessment Integrity: Ensuring fair assessment and preventing cheating in remote settings.

3. Environment Specification 1.1 Hardware & Software Requirements

Hardware:

| Processor | Intel CORE i3 7th GEN |
|-----------|-----------------------|
| Ram | 4.00 GB or More |
| HDD / SSD | 250 GB or More |

Software:

- ➤ Operating system Windows, Linux, MacOS, IOS, Android etc.
- Accessing Software Any browser with latest update and that can have internet Access like - Chrome, edge, Safari and Firefox.

1.2 Development Description

| Operating System | Windows 10/11 64-bit |
|----------------------------|-----------------------------------|
| Front-End | HTML, CSS, Bootstrap, JavaScript, |
| | jQuery |
| Back-End | РНР |
| Database | mysql |
| Development software (IDE) | Visual Studio code |
| Web Server | Xampp server |

4. System Planning

4.1 Feasibility Study:

→ The feasibility study confirmed our technology choices (Node.js, MongoDB, Pug) meet project needs. Financially, it aligns initial costs with long-term gains, ensuring project viability. This comprehensive assessment validates the project's feasibility for successful execution

4.2 Software Engineering Model:

→ Selecting an appropriate software engineering model is essential for the successful development of the online classroom project. Common models include the Waterfall model, Agile methodologies, or a hybrid approach.

4.3 Risk Analysis:

→ Conducting a risk analysis helps identify and manage potential risks that may impact the project's success. Risks can include technical challenges, resource constraints, changes in requirements, or external factors. By assessing risks, developing mitigation strategies, and establishing contingency plans, the project team can effectively manage uncertainties throughout the development process.

4.4 Project Schedule:

→ 4.4.1 Task Dependency:

Identify the dependencies among various project tasks. Some tasks may need to be completed before others can begin, while some can run concurrently. Understanding task dependencies helps in determining the optimal sequence of activities and ensuring smooth progress.

→ 4.4.2&3 Timeline Chart & Project table :

| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|--|---|---|---|---|---|---|----------|---|---|----|----|----|----|----|---------|
| · · · · · · · · · · · · · · · · · · · | _ | | 3 | - | | U | ' | 0 | | 10 | 11 | 12 | 13 | 17 | 13 |
| 1.Requirement | | | | | | | | | | | | | | | |
| Gathering & Analysis | | | | | | | | | | | | | | | |
| 1.1 Learn PHP | | | | | | | | | | | | | | | |
| 1.2 Requirement | | | | | | | | | | | | | | | |
| Gathering | | | | | | | | | | | | | | | |
| 1.3 Requirement | | | | | | | | | | | | | | | |
| Analysis | | | | | | | | | | | | | | | |
| Milestone: | | | | | | | | | | | | | | | |
| Requirements Gathered | | | | | | | | | | | | | | | |
| 2.Modeling | | | | | | | | | | | | | | | |
| 2.1 Identifying | | | | | | | | | | | | | | | |
| proposed project profile | | | | | | | | | | | | | | | |
| 2.2 Identifying | | | | | | | | | | | | | | | |
| Objectives | | | | | | | | | | | | | | | |
| 2.3 Scope definition | | | | | | | | | | | | | | | |
| 2.4 Review | | | | | | | | | | | | | | | |
| Milestone : Modelling Completed | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 3.System Design | | | | | | | | | | | | | | | |
| 3.1 Design system flow | | | | | | | | | | | | | | | |
| 3.2 Database Design | | | | | | | | | | | | | | | |
| 3.3 Admin side Design | | | | | | | | | | | | | | | |
| 3.4 User side Design | | | | | | | | | | | | | | | |
| 3.5 Review | | | | | | | | | | | | | | | |
| Milestone: System Design Completed | | | | | | | | | | | | | | | |
| 4.Coding | | | | | | | | | | | | | | | |
| 4.1 Admin side Coding | | | | | | | | | | | | | | | |
| 4.2 User side Coding | | | | | | | | | | | | | | | |
| Milestone: Coding | | | | | | | | | | | | | | | |
| Completed | | | | | | | | | | | | | | | |
| 5.Testing | | | | | | | | | | | | | | | |
| 5.1 Unit Testing | | | | | | | | | | | | | | | |
| 5.2 Integration Testing | | | | | | | | | | | | | | | |
| 5.3 Functional Testing | | | | | | | | | | | | | | | |
| 5.4 Environment | | | | | | | | | | | | | | | |
| Testing | | | | | | | | | | | | | | | |
| 5.5 Correction | | | | | | | | | | | | | | | |
| Milestone: Testing | | | | | | | | | | | | | | | |
| Completed | | | | | | | | | | | | | | | |
| 6. Documentation | | | | | | | | | | | | | | | |

5. System Analysis

5.1 Detailed SRS:

Module: Student Module

Description:

Allow students to create profiles, providing personal, academic, and contact information.

Job Search: Enable students to search for and view available job postings.

Inputs:

First Name: User's first name. Last Name: User's last name.

Username: Chosen username for identification.

Email: User's email address for communication and login. Password: Securely chosen password for account access.

Events:

User submits the registration form after entering required details.

Outputs:

Successful registration confirmation message.

Unique user profile creation within the system.

Validations:

Email Validation: Ensure a valid email format is provided. Password Criteria: Implement password strength validation.

Username Uniqueness: Verify username uniqueness within the system.

Constraints:

Unique Email Constraint: Prevent duplicate email registrations.

Password Encryption: Ensure secure storage of passwords using encryption methods.

Username Availability: Confirm the availability of chosen usernames.

Module: Admin Module

Description:

Allow administrators to manage user accounts, roles, and permissions.

Job Approval: Admins can review and approve job postings before they are made visible to students.

Inputs:

Name: Unique name identifying the class.

Description: Brief overview or details about the class.

<u>Events:</u>

Students: Users seeking placement opportunities.

Companies: Organizations offering job opportunities.

Administrators: System administrators responsible for managing the Placement Management

System.

Validations:

Name Uniqueness: Ensure no duplicate admin names exist.

Constraints:

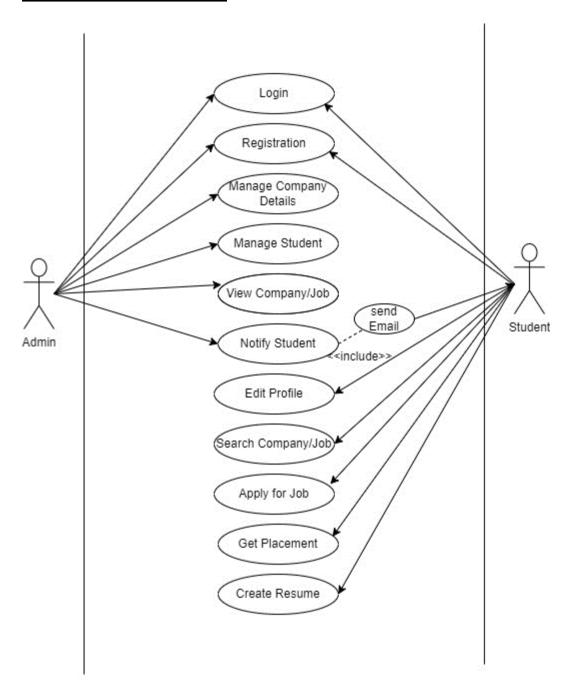
Unique Email Constraint: Prevent duplicate email registrations.

Password Encryption: Ensure secure storage of passwords using encryption methods.

Username Availability: Confirm the availability of chosen usernames.

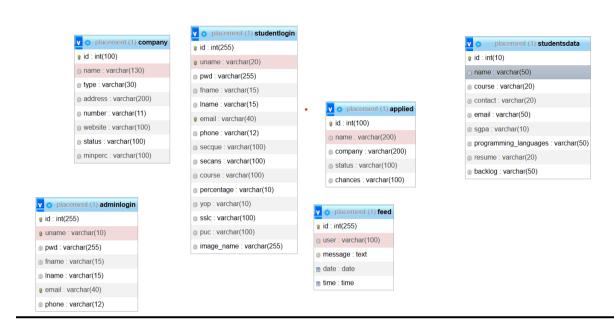
5.2 UML Diagram:

5.2.1 Use Case Diagram:



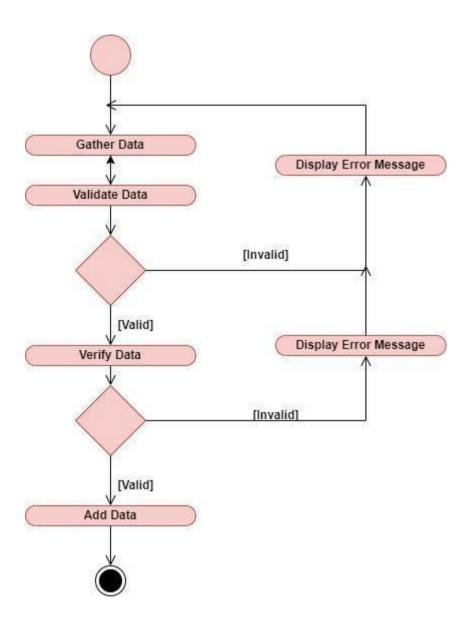
5.2.3 Class Diagram:

•

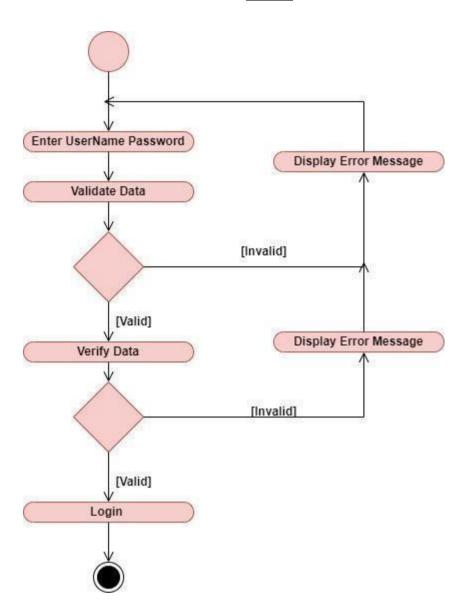


5.2.4 Activity Diagram:

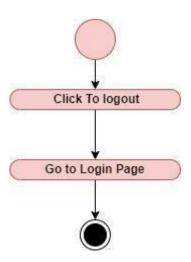
Registration



❖ Login

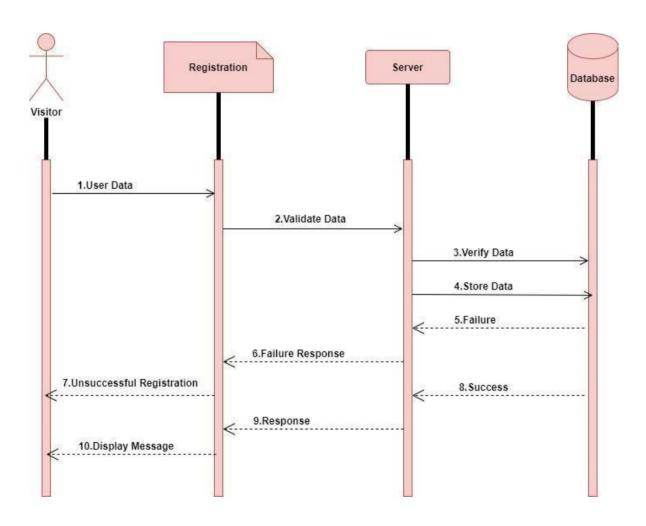


❖ <u>Logout</u>

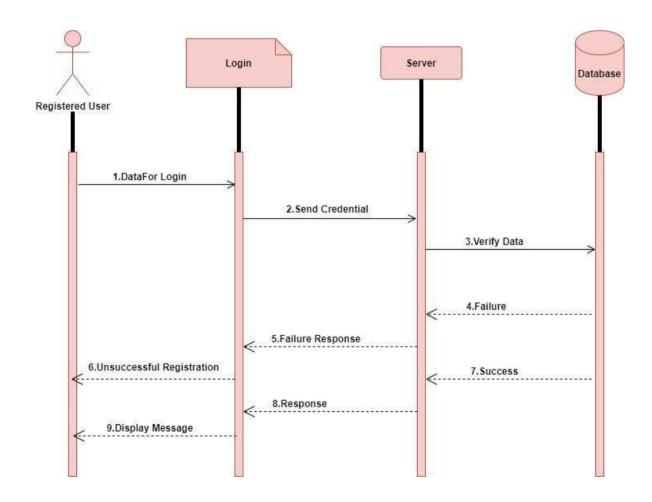


5.2.5 Sequence Diagram:

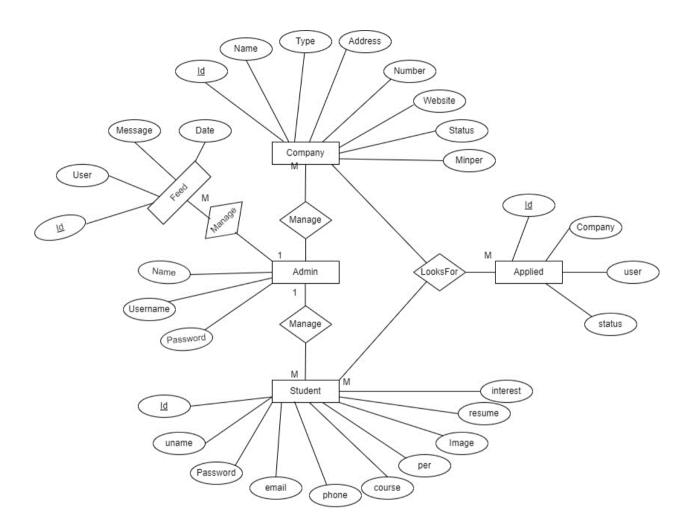
> Registration



> Login



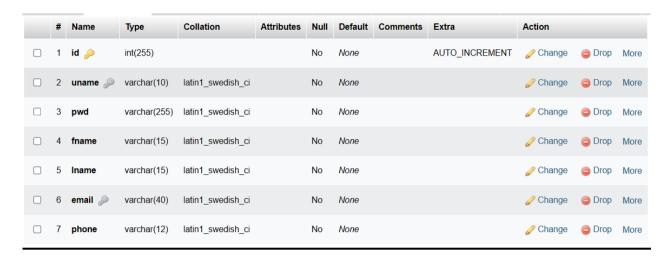
5.3 E-R Diagram:



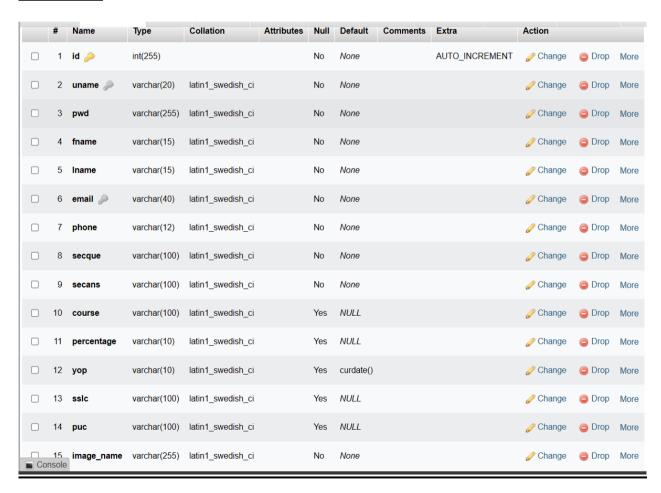
6. System Design

6.1 Database Design:

1)Admin:



2)Student:



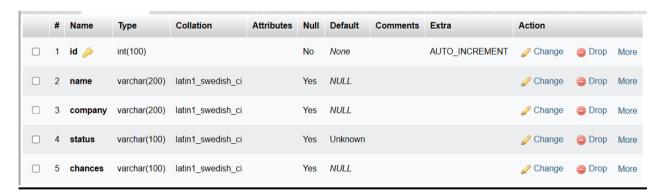
3)Company:

| # | Name | Туре | Collation | Attributes | Null | Default | Comments | Extra | Action | | |
|---|---------|--------------|-------------------|------------|------|---------|----------|----------------|--------|------|------|
| 1 | id 🔑 | int(100) | | | No | None | | AUTO_INCREMENT | Change | Drop | More |
| 2 | name | varchar(130) | latin1_swedish_ci | | No | None | | | Change | Drop | More |
| 3 | type | varchar(30) | latin1_swedish_ci | | No | None | | | Change | Drop | More |
| 4 | address | varchar(200) | latin1_swedish_ci | | No | None | | | Change | Drop | More |
| 5 | number | varchar(11) | latin1_swedish_ci | | No | None | | | Change | Drop | More |
| 6 | website | varchar(100) | latin1_swedish_ci | | No | None | | | Change | Drop | More |
| 7 | status | varchar(100) | latin1_swedish_ci | | No | Active | | | Change | Drop | More |
| 8 | minperc | varchar(100) | latin1_swedish_ci | | No | 0 | | | Change | Drop | More |

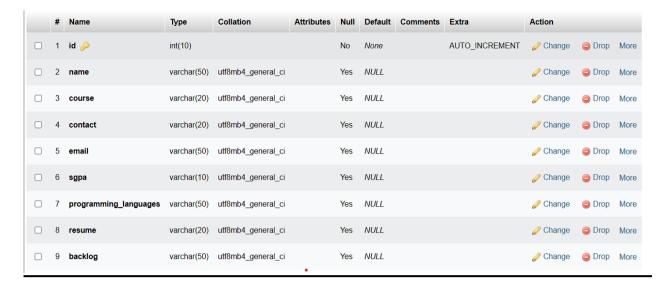
4)Feed:



5)Applied:

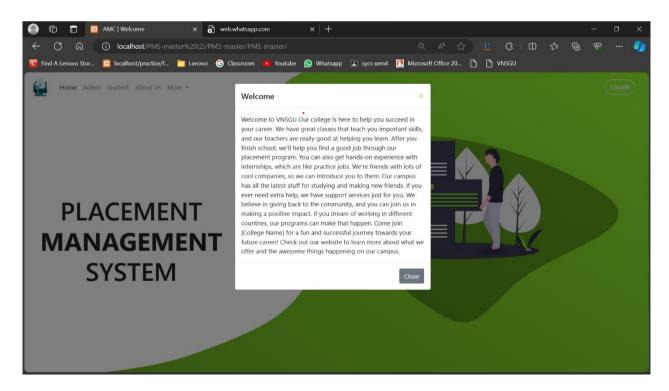


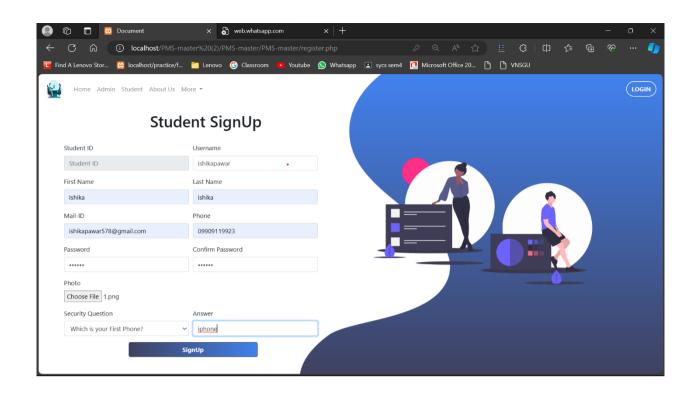
6)StudentData:

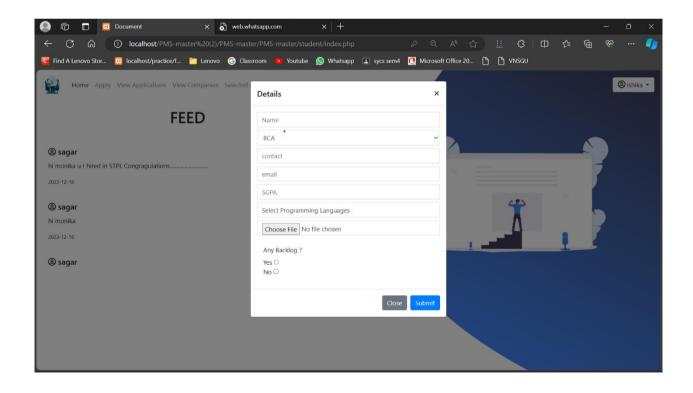


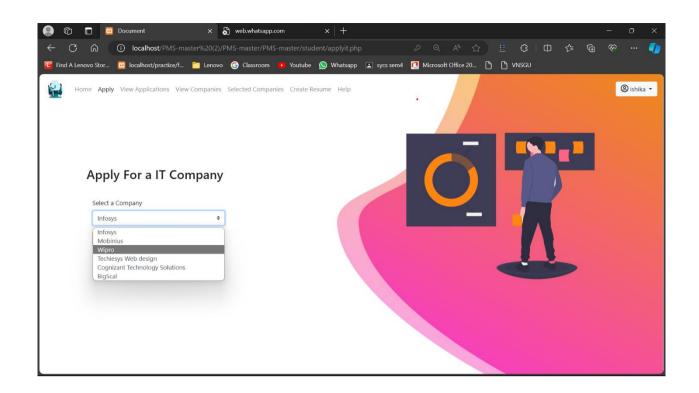
6.2 Interface Design:

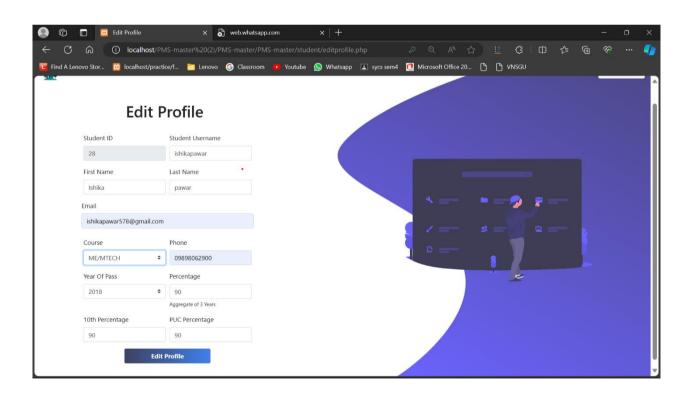
Main Website Home Page:

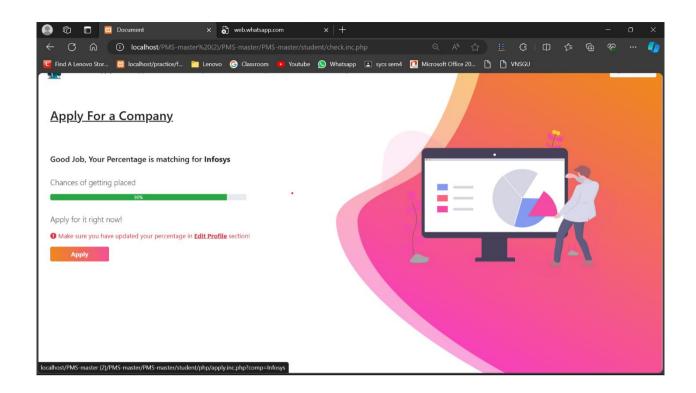


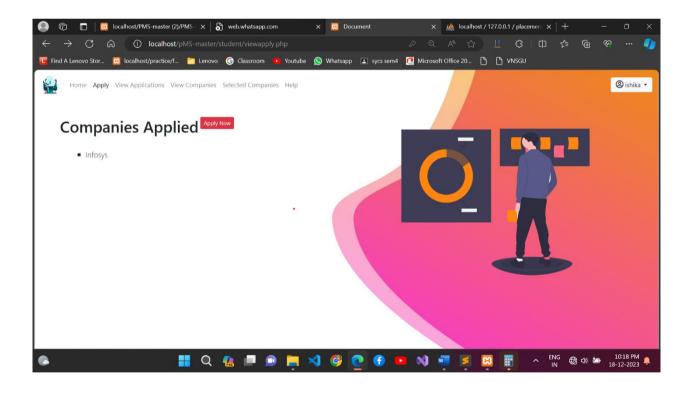


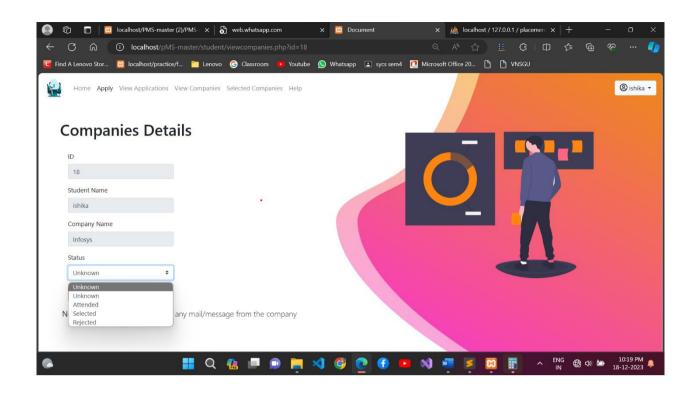


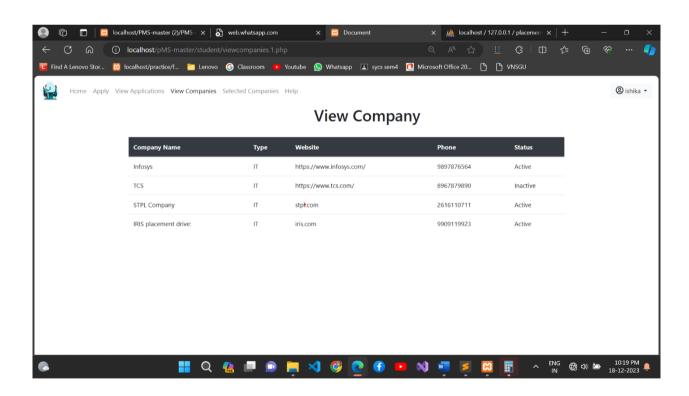


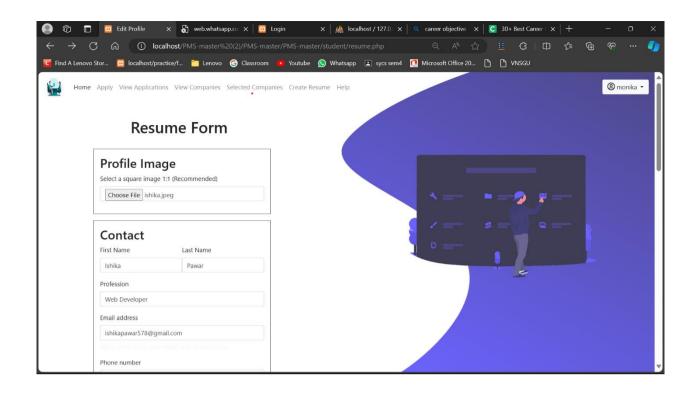






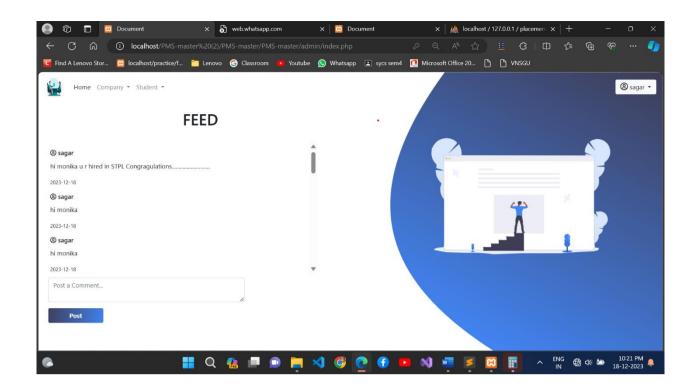


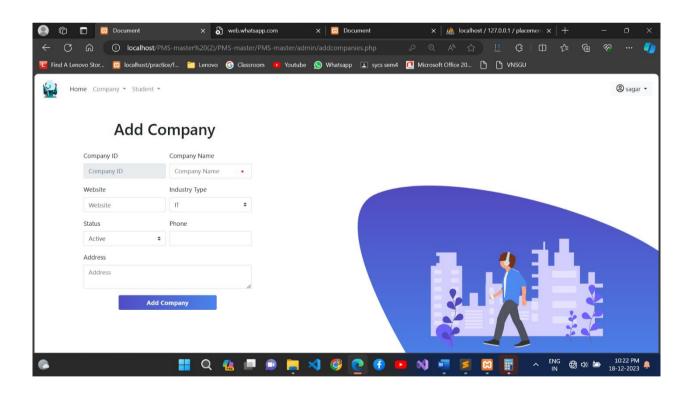


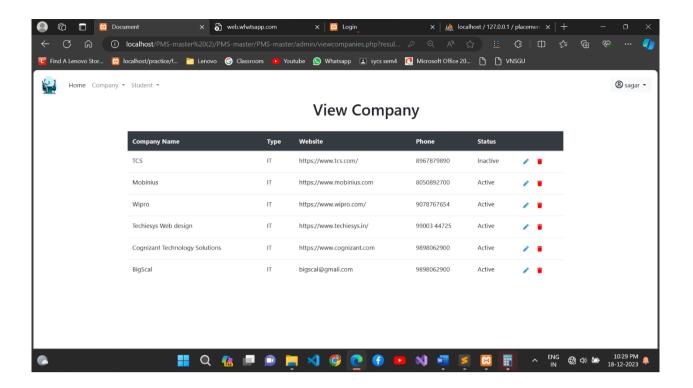


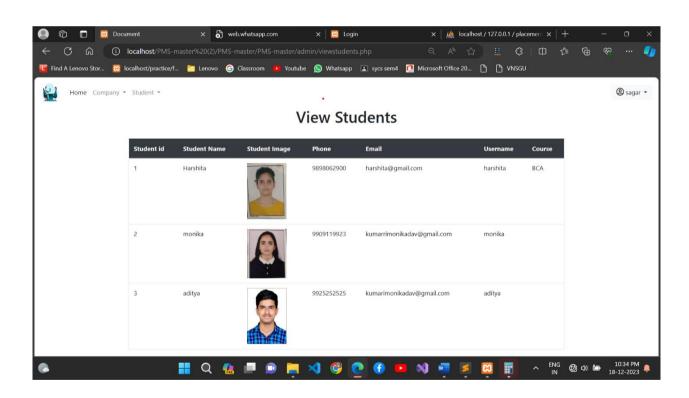


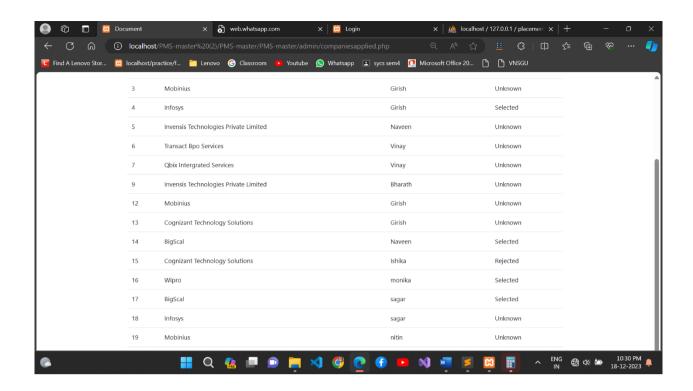
<u>Admin:</u>

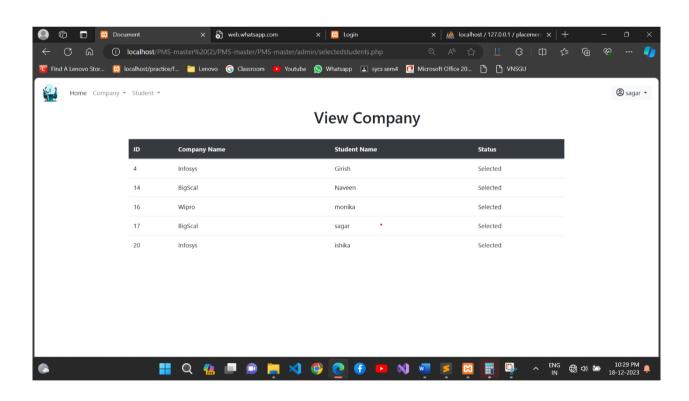












7. Testing

7.1 Unit Testing:

→ Component Evaluation:

Assessing individual components such as user registration, class creation, or assignment submission to ensure they perform as intended.

→ Test Case Creation:

Developing specific test cases for each component, covering various scenarios and functionalities, including boundary cases and error handling.

→ Dependency Isolation:

Employing mock objects or stubs to isolate dependencies and simulate interactions, ensuring each component is tested independently.

→ Validation of Inputs and Outputs:

Verifying inputs against expected outputs, assessing functionality, and ensuring correct responses for different use cases.

→ Error Identification and Resolution:

Detecting errors or unexpected behaviors through test outcomes and logs, addressing and resolving issues before integration.

→ Ensuring Code Stability:

Striving for comprehensive code coverage to test multiple code paths and scenarios, enhancing system stability and robustness.

7.2 Integration Testing:

Integration testing focuses on:

• Module Integration:

Testing the collaboration between different modules like user registration, class creation, content delivery, and assessment submission to ensure they work together smoothly.

• Data Flow Validation:

Verifying the flow of data between interconnected modules, ensuring proper information exchange without loss or corruption.

• Interface Functionality:

Checking the interfaces between modules, ensuring compatibility and correct communication protocols.

• Error Handling and Recovery:

Assessing how the system responds to errors or exceptions during integrated operations, ensuring graceful handling and recovery mechanisms.

• End-to-End Scenarios:

Testing complete end-to-end scenarios involving multiple modules, simulating real user interactions to validate the system's behavior in real-world usage.

8. Future Enhancements

• Data Analytics and Reporting:

Implement data analytics tools to provide insights into placement trends, success rates, and areas for improvement.

Generate comprehensive reports for administrators to make data-driven decisions.

• Machine Learning for Matching:

Integrate machine learning algorithms to enhance the matching process between students and job opportunities.

Provide personalized job recommendations based on students' skills, preferences, and historical data.

• Automated Interview Scheduling:

Implement a system for automated interview scheduling, allowing companies and students to coordinate interviews seamlessly.

Include calendar integration and real-time notifications.

• Mobile Application:

Develop a mobile application to enable students, companies, and administrators to access the Placement Management System on the go.

Provide push notifications for important updates.

• Integration with Learning Management Systems (LMS)

Integrate with the institution's Learning Management System to access academic records, certifications, and other relevant information.

Enhance the accuracy of student profiles.

9. Glossary

- Placement Management System (PMS): The web-based application designed to streamline and automate the process of managing and coordinating placement-related activities within an educational institution.
- **Student**: An individual enrolled in an educational institution seeking placement opportunities.
- **Company**: An organization or employer offering job opportunities for students.
- **Administrator**: A user with elevated privileges responsible for managing and overseeing the Placement Management System.
- **User Registration**: he process by which students and companies create accounts within the Placement Management System.
- **Job Search**: The feature that allows students to search and view available job postings based on various criteria.
- **Application Submission**: The process where students submit their applications for specific job opportunities.
- **Company Registration**: The process by which organizations create accounts within the Placement Management System.
- **Job Posting**: The feature that enables companies to post details about job opportunities for students.
- **User Management**: The administrative function that involves managing user accounts, roles, and permissions.
- **Performance Requirements**: Specifications related to the responsiveness and speed of the Placement Management System, including acceptable response times and simultaneous user connections.
- **Reliability:** The measure of the system's ability to consistently perform its functions without errors or failures.
- **Availability** The percentage of time the Placement Management System is expected to be operational and accessible.
- **Compliance**: The adherence to relevant laws, regulations, and policies governing the operation of the Placement Management System.

10. Reference

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