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Review JoADMS

A Development of Web Based Placement Management System for Campus Recruitment

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Abstract

The Placement Management System introduces an innovative platform aimed at addressing the intricacies of contemporary recruitment within the sphere of graduating final-year students. The rationale behind this initiative is to streamline campus placement procedures through the incorporation of technological advancements, thereby bolstering communication, coordination, and decision making among students, educational institutions, and prospective employers. This approach encompasses the creation of a holistic system facilitating students in crafting detailed profiles, submitting job applications, and receiving automated notifications concerning interview scheduling and outcomes. Moreover, the system integrates advanced data analytics to provide actionable insights, enhancing decision-making processes for both students and employers. The principal outcomes of this system include heightened administrative efficiency, amplified student exposure to potential employers, and enriched decision-making processes underpinned by data-centric insights. By leveraging cutting-edge technology, the system also offers features such as real-time tracking of application statuses, personalized job recommendations, and seamless interaction channels between all stakeholders involved. In essence, this platform not only simplifies the logistical aspects of campus recruitment but also enhances the overall experience for students, making them more competitive in the job market. In summary, this Placement Management System proffers a paradigm-shifting solution, thereby redefining campus recruitment dynamics toward optimized and more effective outcomes, ensuring that the transition from education to employment is as smooth and efficient as possible.

Keywords: Placement, eligibility, management, employment, database management

INTRODUCTION

Traditional manual training and placement processes at various colleges rely heavily on human intervention, leading to a high likelihood of error. A primary challenge lies in the search for and updating of student data. Placement officers are tasked with managing student profiles and their associated documents as well as gathering information from companies participating in recruitment. They must organize student profiles based on different academic streams and notify them manually according to company requirements. Submission and updating of student information are laborious tasks, particularly as the number of users increases, resulting in time-consuming processes and potential data discrepancies. The advent of Placement Management Systems, akin to numerous other placement management websites, aims to address these challenges by providing comprehensive information on placement opportunities and

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maintaining up-to-date student records. This platform enables students to effectively explore and evaluate their career prospects. The system incorporates various user accounts such as admin, student, and company accounts. Each student's profile was meticulously crafted using essential credentials for portal access. Leveraging MySQL for database management, the system organizes student data based on the eligibility criteria specified by the participating companies, generating a list of eligible candidates. Candidates of interest can then register for specific recruitment drives or tests. This automation significantly alleviates the burden on college staff and faculty, mitigating the risks associated with human error and time wastage inherent in manual processes.

Traditional manual training and placement processes face issues related to scalability and adaptability. As colleges experience growth in student numbers and expand their networks with more recruiting companies, manual systems struggle to cope with the increasing workload. In addition, manual processes lack real-time data updates, leading to delays in providing students with relevant placement information and opportunities. Additionally, the manual handling of documents and profiles increases the risk of data loss or security breaches. In contrast, Placement Management Systems offer scalability and adaptability, accommodating the growing needs of colleges and students, while ensuring data integrity and security. These systems offer real-time updates, thereby guaranteeing that students receive the most current placement opportunities and information. Furthermore, automation reduces the administrative burden on placement officers, allowing them to focus on strategic tasks, such as building relationships with recruiters and enhancing career development services for students. Overall, the transition from manual processes to Placement Management Systems not only improves efficiency and accuracy but also enhances the overall effectiveness of the placement process in colleges.

EVOLUTION OF TRAINING AND PLACEMENT MANAGEMENT

The historical evolution of training and placement management in educational institutions traces back to the industrial era when apprenticeships and vocational training were commonplace. Over the decades, this process has evolved in tandem with societal and technological advancements, transitioning from manual record-keeping and paper-based systems to digital platforms and integrated management systems. Today, training and placement management encompass a broad spectrum of activities, including student counseling, skill development programs, industry-academia collaborations, recruitment drives, and alumni engagement initiatives.

Challenges in Traditional Systems

Despite the progress made in training and placement management, traditional systems continue to grapple with several challenges. Manual processes are typically time-consuming, error-prone, resource-intensive, and demand substantial manpower and administrative supervision. Moreover, the lack of real-time data updates and communication channels results in information asymmetry and impedes the timely dissemination of placement opportunities to students. Additionally, the growing complexities of the job market and the dynamic nature of industry requirements necessitate agile and adaptive solutions that can cater to diverse student profiles and evolving skill sets.

The Rise of Digital Solutions

In response to the limitations of traditional systems, digital solutions have emerged as game changers in the realms of training and placement management. Utilizing advanced technologies, such as artificial intelligence, machine learning, data analytics, and cloud computing, these solutions provide unparalleled automation, efficiency, and customization. By streamlining processes, optimizing resource allocation, and fostering seamless collaboration between stakeholders, digital platforms can empower educational institutions to enhance their students' employability and strengthen their competitive edge in the global marketplace.

Objectives of the Study

Against this backdrop, the primary objective of this study is to explore the role of digital solutions, specifically Placement Management Systems (PMS), in revolutionizing training and placement

management in educational institutions. By conducting a comprehensive analysis of the existing literature, case studies, and empirical data, this research aims to identify the key drivers, challenges, and opportunities associated with the adoption and implementation of a PMS. Furthermore, this study seeks to assess the impact of PMS on various stakeholders, including students, faculty members, placement officers, recruiters, and industry partners, and evaluate the efficacy of these systems in facilitating seamless integration between academia and industry.

Structure of the Paper

This paper is organized into several sections, each focusing on different aspects of training and placement management and the role of PMS in addressing challenges and leveraging opportunities presented by the digital age. The following section provides a comprehensive review of the existing literature, highlighting key insights, trends, and gaps in the field. Subsequent sections delve into the conceptual framework of PMS, including its features, functionalities, and implementation strategies. This is followed by a discussion on the benefits, challenges, and best practices associated with PMS adoption. The paper concludes with a summary of the findings, implications for practice and policy, and recommendations for future research.

LITERATURE SURVEY

The prevailing manual processes in placement systems often lead to time-consuming operations and challenges in data management, particularly in retrieving and organizing student data. Our proposed system addresses these issues by automating various functions, including student registration for placements, user management, timely notifications for students, and enhanced data privacy measures. By enabling administrative validation and criteria-based student listings, this system significantly simplifies placement management tasks, which would otherwise be labor-intensive [1].

The manual handling of placement processes in colleges often results in resource-intensive and time-consuming operations. In response, our project aims to develop a web portal solution to streamline placement management tasks. Accessible across the organization, the application is designed to support placement officers by facilitating efficient management of student information, thereby reducing manual effort and paper usage. Our system also enhances record-keeping and ensures timely resource utilization, providing a reliable and user-friendly management platform [2].

While current placement systems may feature user-friendly interfaces, they require enhancements to meet contemporary efficiency standards. Our PMS aims to save placement officers significant time by reducing the need for manual intervention. The system's capabilities are designed to ensure accessibility for users with limited technical expertise. With intuitive coding and robust functionality, our project addresses the diverse needs of both placement officers and students, providing a comprehensive solution for efficient placement management [3].

The existing manual processes in current placement systems create challenges in managing data and distributing placement and training information to students (Figure 1). Our proposed E-Training and PMS addresses these challenges by automating processes and providing a user-friendly interface for students. The system includes features such as notice display, student data entry, practice test provision, and enhancements to the recruitment process, fostering effective communication among students. Overall, our system offers a user-friendly and efficient solution for placement officers and students alike, ensuring smooth placement activities within institutes [4].

Efforts to address the increasing demand for centralized data management have led to the development of a web-based training and placement portal (Figures 2 and 3). This system utilizes machine learning to dynamically predict student placement probabilities, providing recruiters with valuable insights. Our system offers comprehensive support for recruitment processes with features such as skill-based student bifurcation and alumni data maintenance. Additionally, the user-friendly interface and practice test provision contribute to a seamless recruitment experience for both students and placement officers [5].

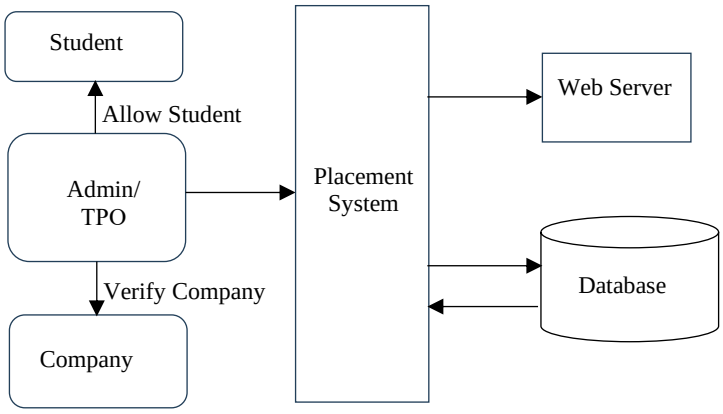

Figure 1. System architecture.

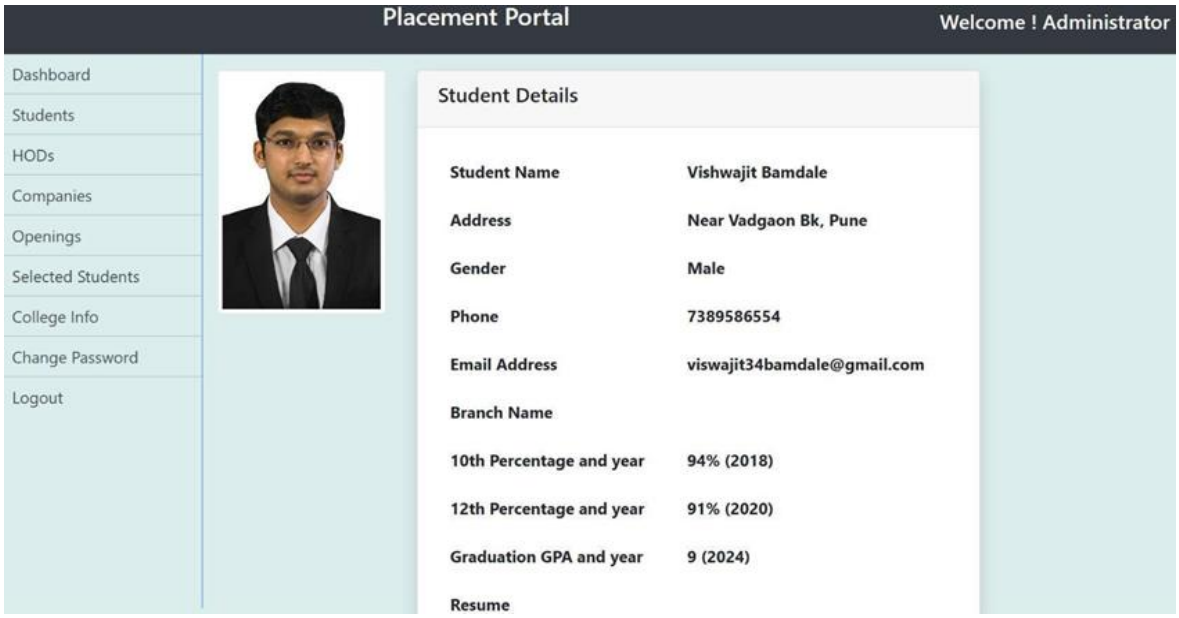

Figure 2. Placement portal.

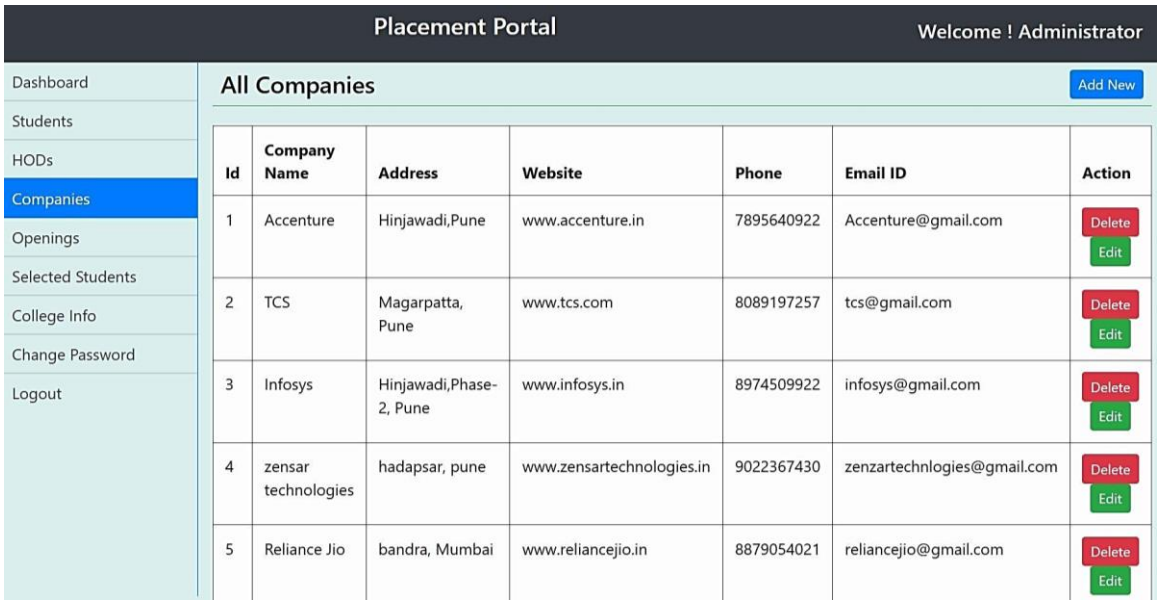

Figure 3. Placement portal for all companies.

METHODOLOGY

Algorithm

- *Step 1:* Start
- *Step 2:* Authenticate login credentials.
- *Step 3:* Choose the desired account type (Student/TPA/Principal/Department) for login, allowing access to the respective features (Figure 4).
- *Step 4:* Provide usernames and passwords. Optionally, utilize the "Forgot Password" feature to reset the password using profile settings.
- *Step 5:* Manage faculty, students, and company details by adding, editing, deleting, or creating records.
- *Step 6:* Access student, company, and campus details (Figure 5). Apply to campus drives and utilize the provided study materials and practice tests for preparation.
- *Step 7:* Engage in chat functionality with fellow students and access practice tests through the exam module relevant to the user category.
- *Step 8:* Review lists of placed and non-placed students.
- *Step 9:* Logout to securely exit the system.
- *Step 10:* Exit the system.

TECHNOLOGIES

Front-End

In addition to HTML and CSS, consider incorporating other front-end technologies to enhance the user experience and functionality. JavaScript frameworks such as Vue.js or Angular are used for building single-page applications with dynamic content and seamless interaction. Consider utilizing CSS frameworks such as Bootstrap or Tailwind CSS to speed up front-end development and maintain design consistency across various devices and screen sizes. Additionally, integrating Progressive Web App (PWA) features can boost user engagement by providing offline access and push notifications, thereby enhancing the overall user experience [6]. Moreover, we consider integrating responsive design principles to ensure that the application is accessible and visually appealing across various devices and platforms [7].

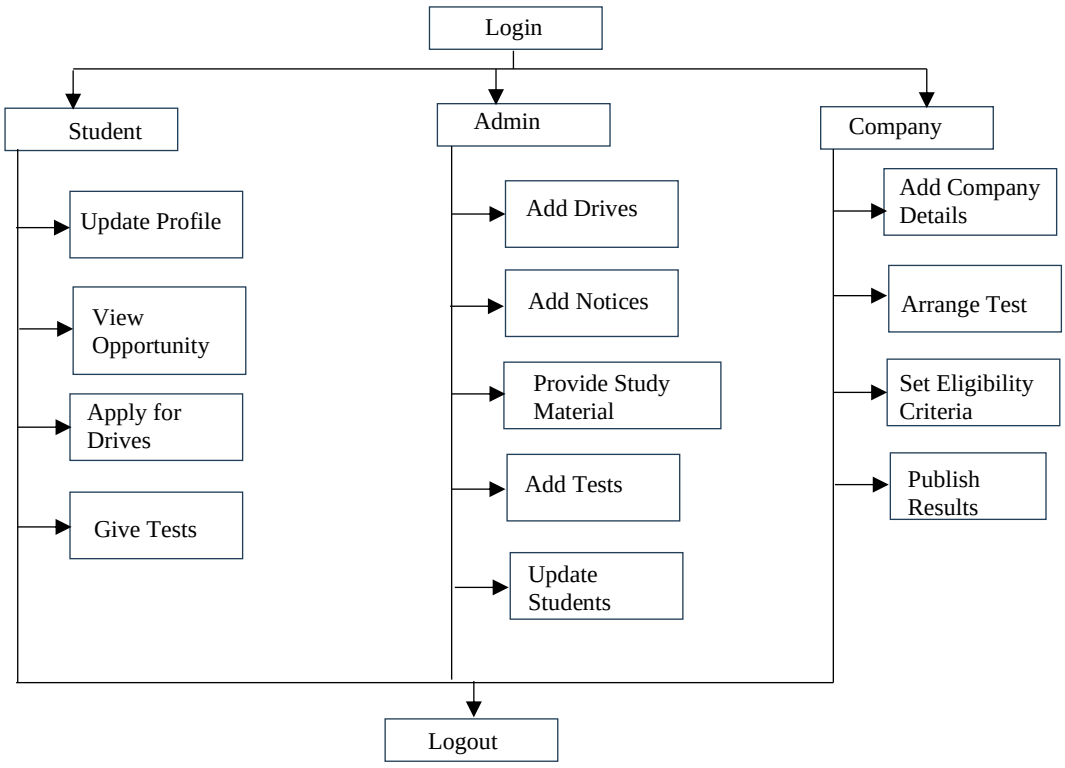

Figure 4. Activity diagram.

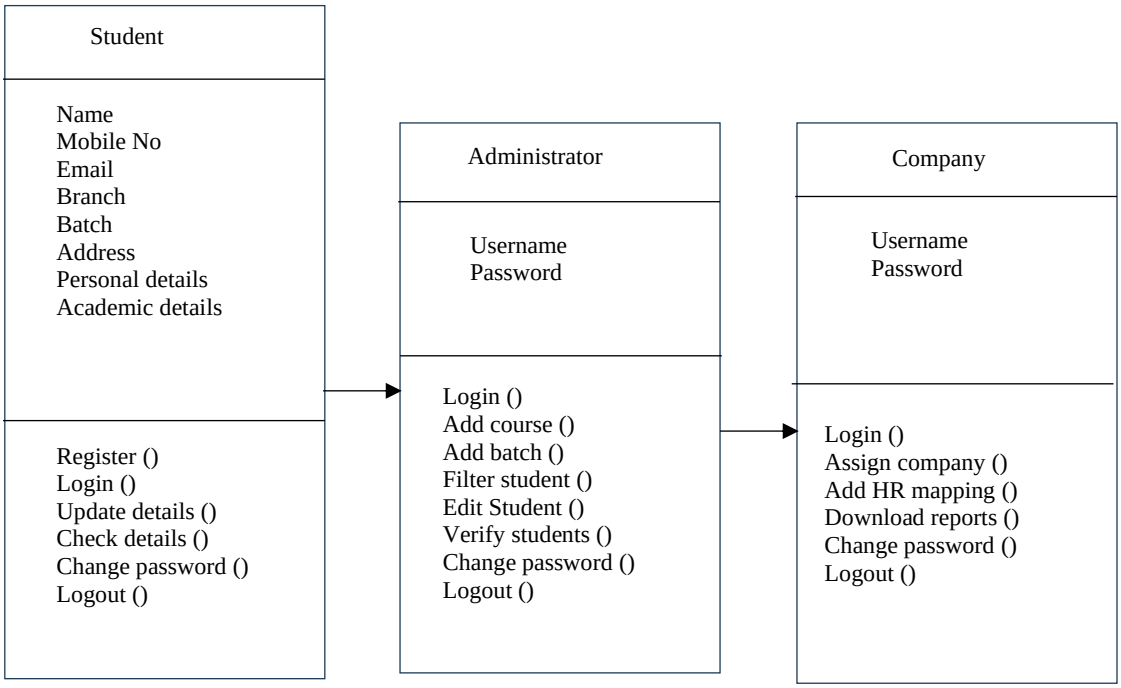

Figure 5. Class diagram.

Backend

Although Java with Spring Boot is a robust choice for backend development, it considers exploring alternative backend technologies to suit specific project requirements [8]. Node.js with Express.js provides a lightweight and adaptable framework for creating scalable and efficient server-side applications that are especially suited for real-time applications or microservices. Additionally, you might consider using cloud-based serverless platforms such as AWS Lambda or Google Cloud Functions can be used for event-driven and cost-effective backend solutions. For databases, in addition to MySQL, explore NoSQL options, such as MongoDB or Firebase Firestore, to manage unstructured or rapidly changing data [9]. These databases offer scalability and flexibility, particularly in applications with large volumes of data or complex data models. Implementing robust authentication and authorization mechanisms, such as OAuth 2.0 or JSON Web Tokens (JWT), can also enhance the security of the backend system, ensuring that only authorized users can access sensitive data or perform privileged actions. Finally, logging and monitoring solutions, such as ELK Stack or Prometheus/Grafana, are used to track system performance, troubleshoot issues, and ensure smooth operation of the backend infrastructure [10].

System Architecture

Student Module

- can login with their details.
- can register for upcoming drives, according to their interest.
- contact with alumni of the college.

Company Module

- Login using a password and username.
- Update the details about their companies and vacancies.
- Can view and download the details of the students who have applied to the vacancy.
- Easy access to students' resumes.

Admin Module

- can be the placement officer.

- can maintain the placement activities via the system.
- can add or remove batches, departments, and drives.
- can analyze the placement activities of each student.
- can categorize students as placed and unplaced.

Block Diagram

The system not only caters to the needs of training and placement officers but also extends its utility to students and administrative staff. For students, the platform offers a seamless registration process and provides access to a plethora of placement-related resources and opportunities (Figure 6). Through this system, students can browse and apply for various job openings, access career guidance materials, and receive notifications regarding upcoming recruitment drives and events. In addition, they can update their profiles with relevant academic and extracurricular achievements, ensuring that their information is always current and accessible to recruiters.

Administrative staff, in addition to TPOs, gain advantages from the system's centralized database and simplified processes (Figure 7). By digitizing and automating placement-related tasks such as data entry, document management, and communication with recruiters, the system reduces the administrative burden on staff members and minimizes the risk of errors and oversights. Additionally, the system's reporting and analytics features offer crucial insights into placement trends, student performance data, and recruiter interactions, facilitating informed decision making and strategic planning. Furthermore, the implementation of this project not only signifies technological advancement but also a cultural shift towards embracing digital solutions in educational institutions. By investing in comprehensive IT deployment and leveraging advanced technologies, colleges demonstrate their commitment to providing students with modern tools and resources for career development and success in a competitive job market. This proactive strategy not only boosts the college's reputation but also encourages a culture of innovation and excellence among both students and staff. Ultimately, the system serves as a catalyst for organizational growth and academic excellence, positioning the college as a leader in training and placement management within the higher-education landscape (Figure 8).

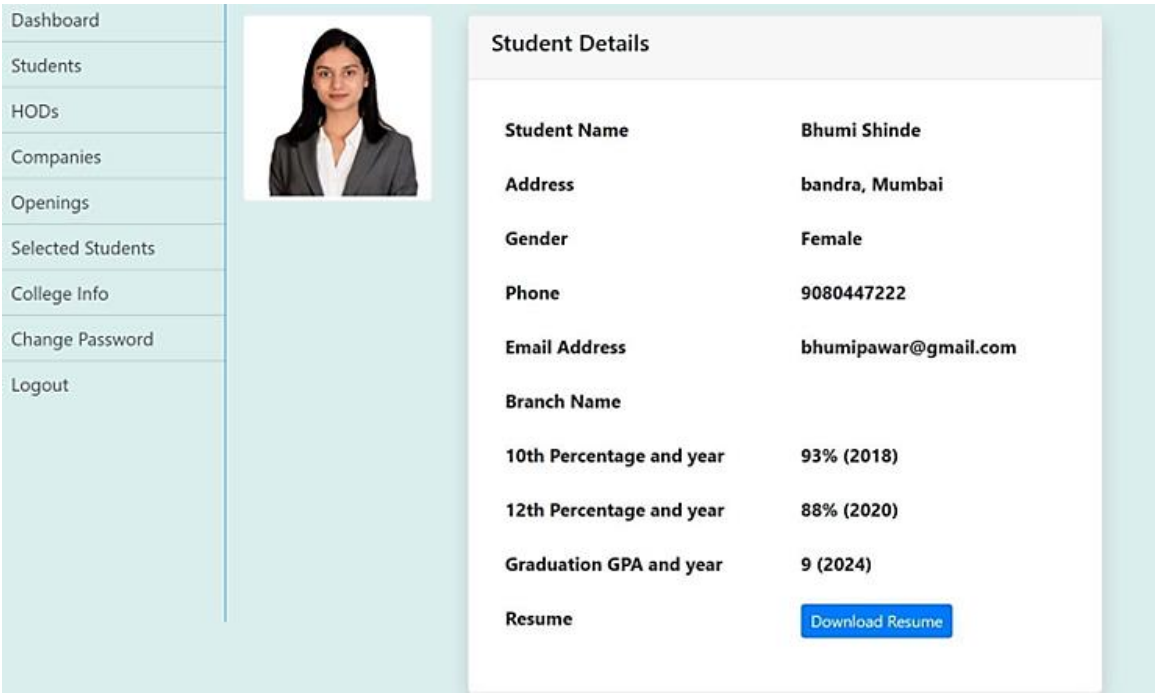

Figure 6. Registration form.

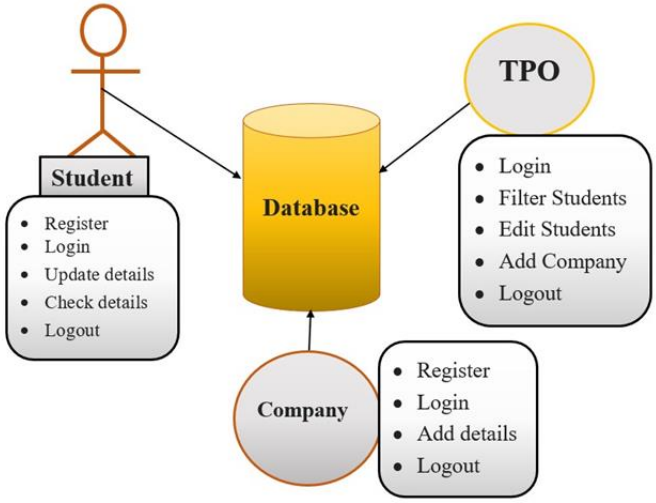

Figure 7. Block diagram.

Figure 8. GUI.

CONCLUSIONS

The PMS revolutionizes campus recruitment by streamlining processes and enhancing efficiency. Through automation, PMS simplifies tasks, fosters improved communication among students, employers, and placement officers, and provides valuable data-driven insights for informed decision-making. Its customizable nature allows for adaptation to the unique needs of each educational institution, albeit with notable resource implications in terms of time and financial investments. Despite these considerations, the long-term benefits of PMS in optimizing placement activities make it a valuable asset for institutions seeking to modernize their recruitment processes and achieve better outcomes.

Acknowledgment

We would like to express our sincere gratitude to the individuals and entities that have been instrumental in the successful completion of Phase 1 of our final-year project. First, we extend our

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REFERENCES

1. Sunny A, Felix A, Saji A, Sebastian C, Praseetha VM. Placement management system for campus recruitment. Int J Innov Sci Res Technol. 2020;5(5):1705–10.
2. Hanshida P, Pius S, Kunhali Y. MSN. Placement management system for campus recruitment. Int J Adv Res Innov Ideas Educ. 2022;8:1710–5.
3. Farheen Taqi Rizvi, Khan NA, Upadhyay SS, Suryawanshi S. Placement Management System. Int J Res Appl Sci Eng Technol. 2021;9:69–76. DOI: 10.22214/ijraset.2021.32641.
4. Padwal S, Ghorpade S, Patil PR, Patil M, Biraje S, Salunkhe S. E-training and placement management system. Int Res J Mod Eng Technol Sci. 2022;4(6):4324-29.
5. Patil SS, Kothari R, Goel R, Chauhan PS. Automation of conventional training & placement management system. IRACST Int J Comput Sci Inf Technol Secur. 2017;7(2):54–7.
6. Thoma C, Labrinidis A, Lee AJ. Automated operator placement in distributed data stream management systems subject to user constraints. 2014 IEEE 30th International Conference on Data Engineering Workshops (ICDEW). Chicago, IL, USA: IEEE; 2014. p. 310–6.
7. Gupta S, Hingwala A, Haryan Y, Gharat S. Recruitment system with placement prediction. In: Proc Int Conf Artif Intell Smart Syst. 2019;4(2):669–73. DOI: 10.1109/ICAIS50930.2021.9395768.
8. Swathi J, PriyaTharsini K, Janani SS, Chakkaravarthy GV. Training and placement cell application. Int Res J Eng Technol. 2018;5(3):2422–24.
9. Banu A, DM SK. A concise study on Placement Management System. Int J Comput Tech. 2022;9:187–92.
10. Pandithurai O, Jayashree D, Aarthy DK, Jaishree R, Bhavani K, Dharani T. Smart job recruitment automation using location-based filtering. In: 2021 International Conference on Advancements in Electrical, Electronics, Communication, Computing and Automation (ICAECA). Coimbatore, India. 2021. p. 1–4. doi: 10.1109/ICAECA52838.2021.9675548.

