

Implementation of Placement Management System Using MERN Stack

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Abstract

In educational institutions, placements play a crucial role in order to provide opportunities to students to get employed in different companies. Many companies hire students through educational institutions by conducting drives in their respective institution. In order to proper monitoring and application process of the in-house campus placements, there is a necessity for a placement management system. In this context, it is necessary to develop a placement management system for educational institutions. This paper presents the implementation of an interface to the students to apply for a particular campus drive and placement officer to manage and monitor the recruitment process. The placement portal has the features to send notifications to the students and apply to the notified industry through online portal. Thus, the platform helps to monitor the campus drives and application process for student in the institute.

Index Terms:

Placement Management System, Online Portal

1. INTRODUCTION

In general, online job portals are widely used such as Naukri, indeed, LinkedIn etc., which connects people for job opportunities and able to apply for jobs. A modern job search process creates an effective and excellent platform for connecting and having several employment opportunities.

In educational institutions, the registration process for campus drives often involves multiple stages of work, including sending a Google Form link to students, collecting and storing data in Excel sheets, and finally, sending the compiled data to the respective companies. This process can be complex and time-consuming for Training and Placement Officers (TPOs).

This paper presents the capability to maintain student details and generate a list of candidates for companies interested in recruiting based on specific criteria. Similar projects were done by some people in the past, the following are discussed below.

2. LITERATURE SURVEY

The authors in [1] recognized the challenges students face in keeping track of placement opportunities. They proposed a placement cell management system to provide a centralized platform for students, college staff, and faculty to access and manage placement-related information efficiently. They used HTML, CSS, Java script for frontend and for backend they used PHP. To store the data, they used MySQL for database. This system aimed to improve coordination among stakeholders and enhance the overall efficiency of the placement process within the college ecosystem.

They created the web portal by using Java script which is difficult to understand and modify the code in future

In [2], the authors emphasized the importance of efficient campus recruitment processes for students seeking job opportunities. They suggested creating a Placement Management System (PMS) to streamline the process, providing a centralized platform for students, admin and companies. The PMS included features such as job posting, student profile management, and interview scheduling, aiming to reduce manual efforts and improve communication between stakeholders to ensure a more organized and efficient campus recruitment experience.

In this portal where every student can apply for the placements irrespective of their eligibility. Then the admin had to filter the students based on their eligibility criteria. In view of the above discussions, there is a necessity to develop a PMS

for educational institutions. To develop a placement management system using the MERN stack.

The remaining sections of the paper are structured as follows: Section III explains the methodology, Section IV describes the results, and Section V provides conclusive remarks.

3. METHODOLOGY

A. Technology Selection

1. Front End:

To develop frontend of this web portal, Various technologies and frameworks are used to create a dynamic and interactive user experience. React serves as the base for the reusable and efficient components, like home and login components, allowing for the modular and structured approach. Framer Motion improves the application's overall look and feel by smoothly animating components inside the dashboard and drives, adding a layer of interactivity. Some components are drawn from DevUI, a library that provides pre-built UI components. Server is connected using Axios, which makes it possible to obtain the information needed to provide dynamic content to the application. The routing functionality is achieved using react routes. authentication functionality is integrated into the login pages by using JSON web tokens. By combining these technologies and methodologies the frontend is designed.

1) Backend:

Backend serves as the foundation for the web portal. The application's data is managed and necessary operations are carried out by the backend. Node.js and Express.js plays a crucial role in managing the operation in the background. Making it perfect for building the backend logic. For implementation of CRUD (Create, Read, Update, Delete) operations node.js is used. For handling the Http requests and manage middleware's express.js is used. When logging in, the user receives access tokens and refresh tokens. These tokens are deleted when the user logs out. For generating access token and refresh tokens Json web token is used. Storing various type data efficiently make a crucial role for building an efficient and quick backend. For storing data MongoDB is used. Its flexibility and scalability make it a best choice for handling diverse data sets, including information related to placements, student details, and placed students. the data models and the required methods injected into the schema with the help of mongoose library. the website can effectively manage and retrieve data, supporting features such as user authentication, content management. these technologies work together for implementing complete backend.

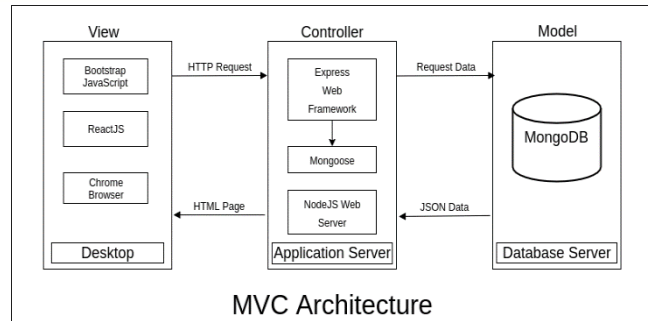


Fig. 1. Model View Control Architecture.

This model view control architecture provides the clear representation of the most efficient technologies which are used in placement management system. In this MVC, view represents the frontend technologies, controller represents the backend technologies and model represents the database used to store the data in placement management system.

4. RESULTS

This section features the results of the placement management system, including website images such as the Home page, and different sections of the admin and student pages.

A. Home Page

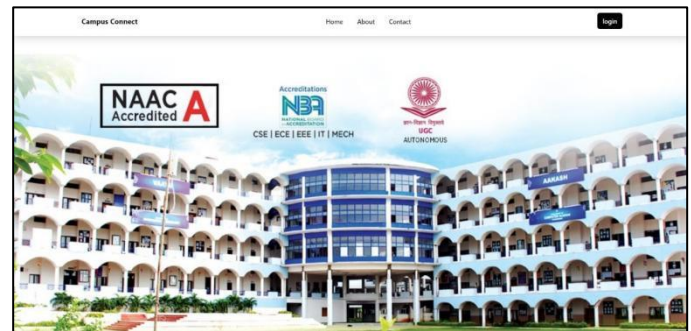


Fig. 2. Home Page

The fig. 2 illustrates the Home page of the web portal.

B. Login Page

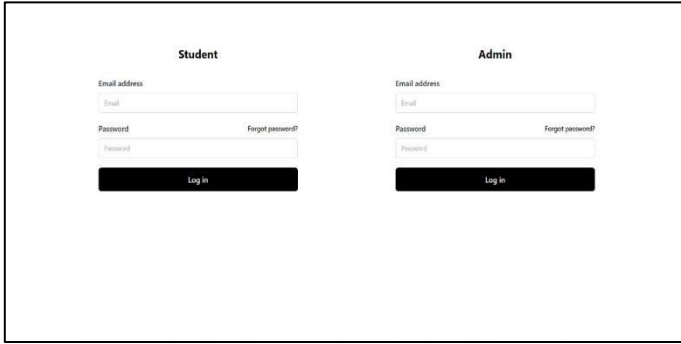


Fig. 3. Login Page

Following the Home page, users can log in as either an admin or student based on their respective roles using their credentials.

Students can login with their credentials and apply for respective drives whereas admin can login with their credentials and can monitor and create different drives, announcements etc.

C. Student Page

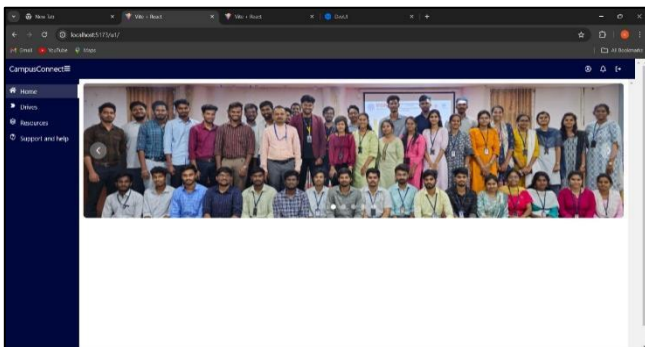


Fig 4. Student Page

The figure describes the homepage of the student login. The student homepage consists of a navbar and dashboard.

D. Drive page

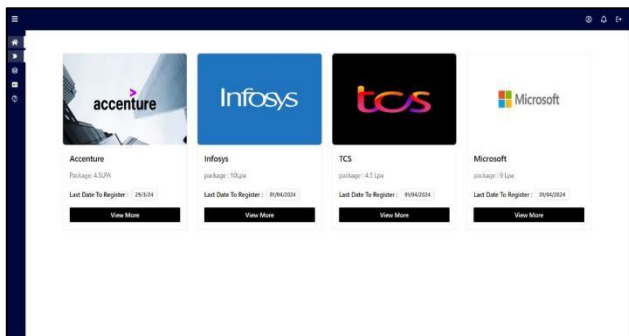


Fig 5. Drive Page

The figure describes the Drives page acts as a central hub where users can apply for ongoing and upcoming drives.

It provides a clear-cut description about the drives based on the student's eligibility.

E. Job Apply Page

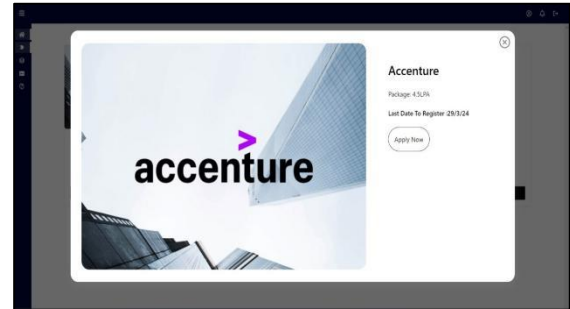


Fig 6. Job Apply Page

The application page for job placements is easy to use and provides a seamless experience for students. It displays the job details, and keeps the student informed of the status of their application.

By clicking the "Apply Now" button, students can easily register for the drive without any inconvenience.

The process of registering for the drives doesn't require any filling of data.

F. Student profile page

It contains student details and student information about their education.

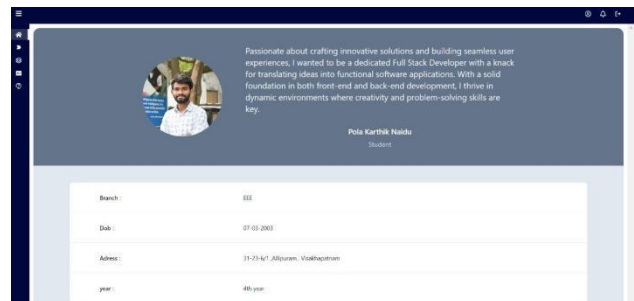


Fig 7. Student Page

It provides easy access to personal information, job application, and career resources while maintaining a user-friendly interface.

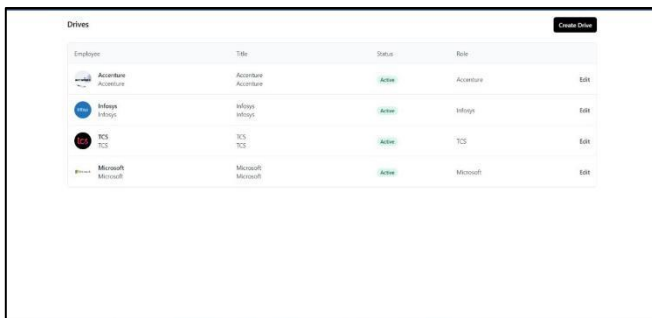
By clicking on the edit button, the students can edit their data in one go.

G. Admin page

The PMS (Placement Management System) offers administrators a set of tools and insights to efficiently manage job listings, student profiles, and system settings.

It ensures data security and integrity at all times. In addition, the PMS comes with reporting capabilities and help/support resources to enhance administrators' ability to oversee and support the system effectively.

H. Admin Drive Management Page



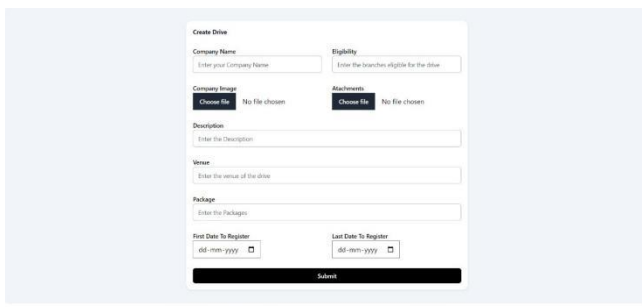
Employer	Title	Status	Role	
Accenture	Accenture	Active	Accenture	Edit
Infosys	Infosys	Active	Infosys	Edit
TCS	TCS	Active	TCS	Edit
Microsoft	Microsoft	Active	Microsoft	Edit

Fig 8. Admin Drive Management Page

The Admin Drive Management page is a platform designed to provide administrators with the necessary tools required to create, organize, and manage drives related to campus placements

It offers a user-friendly interface for creating drives and viewing drive details, managing student's registrations, and editing drive information.

I. Creation of a New Drive Page



Create Drive

Company Name: Eligibility:

Company Image: Requirements:

Description:

Writer:

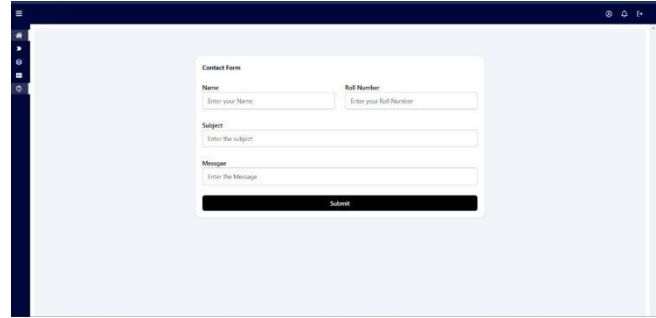
Package:

First Date To Register: Last Date To Register:

Fig 9. Creation of a New Drive Page

The form allows administrators to input the essential details for creating a new drive, such as the title, description, duration, type, organizer, and cover image. Once the form is filled out, admins can submit the information to create the new drive.

J. Help and support page



Contact Form

Name: Roll Number:

Subject:

Message:

Fig 10. Help and support page

The students can send their queries, requirements and the feedback to the admins.

K. Notification Alert

Implementing an effective notification system ensures users are informed and engaged with PMS, enhancing communication between users and admins.



form closes by 5pm

karthik_07 Admin

Fig 11. Notification Alert Visible to Students

The students can be notified about the announcements sent by the admins about the updates of the placement.



message

form closes by 5pm

karthik_07 Admin

Fig 12. Notification Alert Created by Admin

The figure describes the notification page through which the admin can create and delete the announcements for the students.

5. CONCLUSION



This web portal is built using MERN Stack. This portal is designed for the students to apply for the campus drives. It contains several features like announcements, drive details, and a contact form. These features make the portal user user-friendly and convenient option for students and TPOs.

6. REFERENCES

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