

Student Placement Preparation Hub with Mock Test Tracking and Skill Analytics

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ABSTRACT

The Student Placement Preparation Hub (SPPH) is a comprehensive web-based platform developed to enhance students' readiness for campus recruitment through structured learning, continuous assessment, and performance monitoring. Increasing competition in placement drives demands a centralized system that provides systematic evaluation, timely feedback, and effective collaboration among teachers, students, and parents. Conventional placement preparation methods often rely on fragmented resources, manual record keeping, and limited performance tracking, resulting in inadequate assessment and reduced transparency. The proposed system addresses these limitations by integrating placement-oriented academic activities into a unified digital platform with secure role-based access. Teachers function as administrators to approve registrations, manage attendance, create Multiple Choice Question (MCQ)-based mock tests, and monitor student performance. Students can access attendance records, attempt mock examinations, receive automated evaluations, and analyze their performance through grading and progress reports. Parents are provided with controlled access to monitor their child's attendance, assessment results, and overall placement preparedness, thereby promoting transparency and active participation. The frontend is developed using React JavaScript (React.js) to deliver a responsive and interactive user interface, while the backend is implemented using the Django Representational State Transfer (REST) Framework for secure Application

Programming Interface (API) communication and business logic management. My Structured Query Language (MySQL) is employed for reliable storage of user profiles, attendance data, examination records, and evaluation results. Automated assessment and analytical performance summaries enable students to identify strengths and improvement areas, ultimately enhancing placement readiness, academic performance, confidence, and overall employability.

Key words: React JavaScript (React.js), Django Representational State Transfer (REST) Framework, Application Programming Interface (API), Role-Based Access Control (RBAC).

1. INTRODUCTION

The continuous increase in university tuition fees, especially in the United Kingdom (UK) and United States of America (USA), is a concern for many students, their parents and guardians [1,2]. In the UK, for example, tuition fees have been increased by three times by the previous Coalition Government formed by the Conservative Party (CP) and Social Democratic Party (SDP) led by David Cameron as the Prime Minister and Nick Clegg as the Deputy Prime Minister in 2015 [3]. The implication is that home students (students that are UK or EU citizens) now pay nothing less than nine thousand pounds (GBP 9000 or USD 13,800) per academic year. Depending on the degree programmer, this amount could double or triple. In addition, the university authorities are given the option to charge any amount they deem fit for any courses they are offering [3]. International students (students that are not from the UK or EU

countries) pay a minimum of GBP 14,000 (USD 17,800) per academic year on average.

Universities in the Russell Group charge international students a minimum of GBP 23,700 on an average per academic year for engineering programmers [4]. The same scenario is happening in the USA and some other countries [5]. Because of this rise in tuition fees, parents and students are demanding for improved quality of education through an increase in teaching and learning resources, enjoyable learning experiences, as well as a guarantee for good job opportunities to justify such increases in annual tuition fees [6]. From the institutional perspective, there is an argument for the justification of an increase in tuition fees for studying engineering courses with the skills needed for employers in the cloud industry.

2. LITERATURE SURVEY

Bhuvaneswaran, et al. [7] proposed a system that sought to address these contemporary challenges by offering a comprehensive and user-centric platform for skill development, interview preparation, and mentorship. It was designed to empower users, particularly students, with the tools required to navigate the fiercely competitive job market. Klenowski, et al. [8] analyzed the systemic push for standardized testing and improved scores, and argued for a greater balance of assessment types by providing alternative, inclusive, and participatory approaches to student assessment. Nagro, et al. [9] conducted a quasi-experimental study to understand the effects of guiding teacher candidates through common video-recording and self-reflection activities during student teaching internships to determine whether such activities improved teacher candidates' reflective abilities and instructional skills. Thirty-six teacher candidates with similar prior experience were divided into two groups. Valentine, et al. [10] reported several sensitivity analyses which suggested that these results were

not a function of particular stylized studies or the choices made in assembling the meta-analytic database. Boyd, et al. [11] aimed to build a strong research basis for understanding how teachers were prepared. This research was one of the first to estimate the effects of features of teachers' preparation on teachers' value added to student test score performance. The results indicated variation across preparation programs in the average effectiveness of the teachers they supplied.

Arnold, et al. [12] reported results indicating that the newly developed learning analytics tool did not significantly impact learning achievement. Shaughnessy, et al. [13] reported a study examining the specific knowledge and skills related to teaching practice that novices brought to teacher education, focusing on eliciting student thinking in elementary mathematics. The study described the use of a standardized teaching simulation to examine novices' skills. Findings revealed details about preservice teachers' skills and habits of practice at the time they entered formal teacher preparation. Boatman, et al. [14] examined the impact of remedial and developmental courses on college students with varying levels of academic preparedness, focusing on a broader range of students than previous studies. Using a regression discontinuity design, the study provided causal estimates of the effects of placement in different levels of remedial courses on short-, intermediate-, and long-term outcomes at both two- and four-year colleges. Kolluri, et al. [15] summarized existing research on whether the AP program had achieved its dual goals of equal access and effectiveness. The reviewed literature suggested that despite increased access to AP programs, significant barriers remained in ensuring equal access for all students and effective preparation for college coursework.

3. PROPOSED METHODOLOGY

This research is a web-based application developed to enhance student readiness for campus placement examinations. As shown as fig. 1 The system provides a centralized platform that integrates placement preparation activities with academic monitoring. It enables structured practice through MCQ-based mock tests and ensures continuous evaluation of student performance. The platform supports role-based access for teachers, students, and parents to maintain secure and organized interaction. Teachers manage user approvals, attendance records, and mock test creation within the system. Students can view their profiles, track attendance, and participate in mock tests with instant evaluation. Parents are allowed to monitor their child's academic progress and performance. The application is implemented using React.js for the frontend and Django REST Framework for backend services. MySQL is used for reliable data storage and management. The system promotes transparency, automation, and data-driven placement preparation.

User Interface (Web Browser – React): The user interacts with the system through a browser-based graphical interface developed using React.js, which provides simple and intuitive navigation. Features such as user registration, login, profile viewing, attendance tracking, and MCQ mock test participation are designed for ease of use. Students and parents access their respective dashboards to view performance-related information, while teachers access additional controls for approvals, attendance marking, mock test creation, and performance analysis. Every user action is converted into secure Hyper Text Transfer Protocol (HTTP) requests and sent to the backend for processing.

Backend Server (Django REST Framework): The backend server acts as the central control unit that processes all incoming requests from the user

interface. It handles authentication, role validation, approval checks, and routing of requests to appropriate services. Core application logic, such as attendance management, MCQ evaluation, grade calculation, and permission enforcement, is executed at this layer. This ensures secure communication and smooth coordination between the frontend and the database.

Database Layer (MySQL): The database layer is responsible for storing and managing all persistent information used by the system. It maintains structured records of users, roles, approval status, attendance, mock test questions, student answers, and grades. Efficient relational queries enable fast data retrieval and updates while maintaining data integrity. This layer ensures reliable storage and consistency across all academic and placement preparation operations.



Fig. 1: Proposed system architecture for student placement preparation hub.

User Registration and Approval Flow: When a student or parent submits registration details, the information is validated and stored securely with a pending approval status. This prevents unauthorized access and ensures only verified users can use the system. The teacher reviews registration details and approves legitimate users. Once approved, users gain access to their authorized dashboards and features.

Teacher Management Module: Teachers act as administrators who manage students and parents

within the system. They approve registrations, mark student attendance, create MCQ-based mock tests, and view performance analytics. Automated MCQ evaluation reduces manual effort and ensures accuracy. These controls help teachers monitor placement readiness effectively.

Student Access and Mock Test Module:

Approved students can view their profiles, track attendance, participate in MCQ mock tests, and receive instant evaluation results. The system automatically calculates performance metrics and grades based on test outcomes. This continuous assessment helps students identify strengths and areas for improvement.

Parent Monitoring Module: Parents are provided controlled access to monitor their child's attendance records and mock test performance. Search and progress tracking features allow parents to stay informed about academic status. This improves transparency and encourages parental involvement in placement preparation.

End-to-End Operational Flow: All user actions follow a structured flow from the React interface to the Django backend and MySQL database. Requests are validated, processed, and stored using secure mechanisms. Role-based access ensures users interact only with permitted features. The system operates as an integrated workflow that supports transparency, automation, and real-time academic monitoring.

4. RESULTS AND DISCUSSION

The system is implemented as a web-based academic management application designed to support student placement preparation activities through automation and structured data handling. It integrates student assessment, attendance tracking, MCQ-based evaluation, grading, and performance monitoring into a unified workflow. The implementation follows a modular architecture to ensure maintainability, scalability, and ease of enhancement. Each module interacts

seamlessly to convert raw academic data into meaningful performance insights.

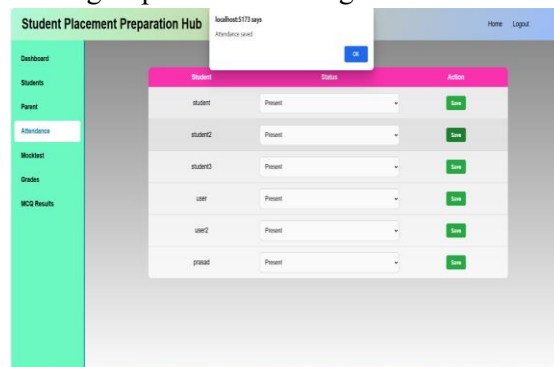


Fig.2: Admin add attendance page.

Fig. 2 displays the attendance management module accessible to the teacher. It allows the teacher to mark attendance for each student by selecting the appropriate status. The attendance data is saved individually for each student using the save action. A confirmation message indicates that the attendance has been successfully recorded in the system.

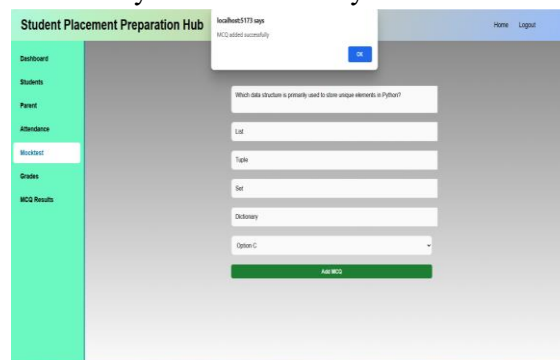
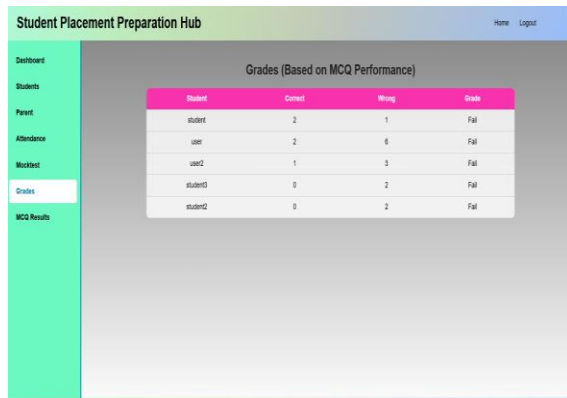


Fig. 3: Admin add mock test page.

Fig. 3 represents the mock test creation module available to the teacher. It allows the teacher to enter a multiple-choice question along with four answer options and select the correct answer. Upon submission, the system confirms that the MCQ has been added successfully. This module supports structured test creation for student placement preparation.



Student Placement Preparation Hub

Dashboard

Students

Parent

Attendance

Mocktest

Grades

MCQ Results

Grades (Based on MCQ Performance)

Student	Correct	Wrong	Grade
student1	2	1	Fail
user	2	6	Fail
user2	1	3	Fail
student3	0	2	Fail
student2	0	2	Fail

Fig. 4: Admin view grades page.

Fig. 4 displays the grades module based on MCQ performance. It shows each student's number of correct and wrong answers along with the final grade status. The results are automatically calculated by the system after mock test evaluation. This module helps teachers monitor student performance and identify areas for improvement.



Student Placement Preparation Hub

Dashboard

Students

Parent

Attendance

Mocktest

Grades

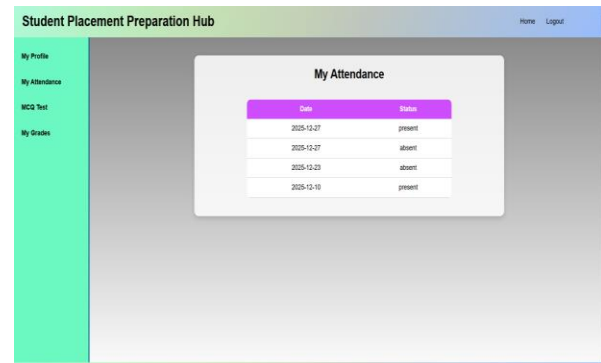
MCQ Results

MCQ Performance Summary

Student	Correct	Wrong
student1	2	1
user	2	6
user2	1	3
student3	0	2
student2	0	2

Fig. 5: Admin view MCQ results page.

Fig. 5 shows the MCQ performance summary module of the system. It displays student-wise counts of correct and wrong answers obtained in mock tests. The data is generated automatically after test evaluation. This summary helps teachers analyze performance trends and individual student progress.



Student Placement Preparation Hub

My Profile

My Attendance

MCQ Test

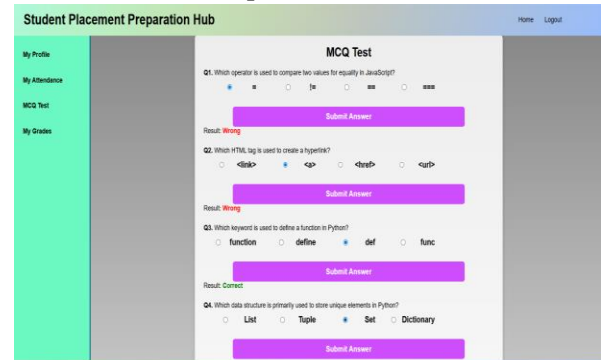
My Grades

My Attendance

Date	Status
2025-12-27	present
2025-12-27	absent
2025-12-23	absent
2025-12-10	present

Fig. 6: Student view attendance page.

Fig. 6 displays the student attendance history module. It shows date-wise attendance status marked by the teacher. Students can review their presence and absence records over time. This module helps students track regularity and monitor attendance performance.



Student Placement Preparation Hub

My Profile

My Attendance

MCQ Test

My Grades

MCQ Test

Q1. Which operator is used to compare two values for equality in JavaScript?

Result: Wrong

Submit Answer

Q2. Which HTML tag is used to create a hyperlink?

Result: Wrong

Submit Answer

Q3. Which keyword is used to define a function in Python?

Result: Correct

Submit Answer

Q4. Which data structure is primarily used to store unique elements in Python?

Result: Correct

Submit Answer

Fig. 7: Student submit MCQ test page.

Fig. 7 shows the MCQ test interface for students. It presents multiple-choice questions with selectable options and a submit option for each question. The system evaluates the selected answer instantly and displays the result as correct or wrong. This module enables students to practice and assess their knowledge during placement preparation.

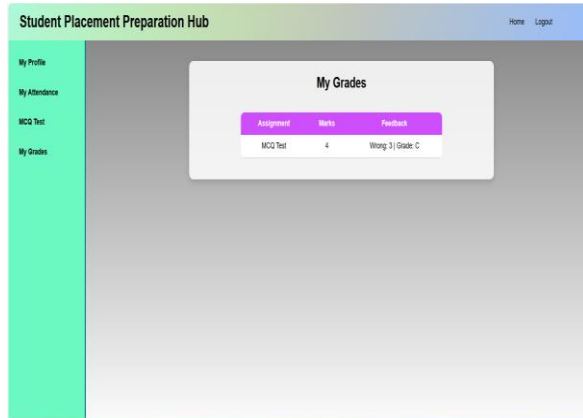


Fig. 8: Student view grades page.

Fig. 8 displays the student grades module of the system. It shows the assignment name, marks obtained, and feedback based on MCQ test performance. Grades are calculated automatically after evaluation of answers. This module helps students understand their performance and improvement areas.

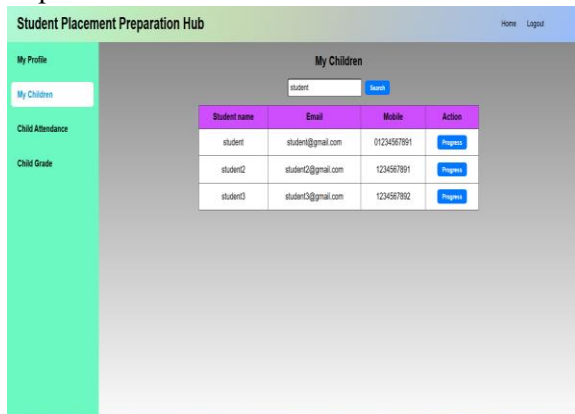


Fig. 9: Parent search children page.

Fig. 9 displays the “My Children” module for parent users. It lists the registered children along with their email and mobile details. Parents can search for a specific student and view individual progress information. This module enables parents to monitor their children’s academic participation effectively.

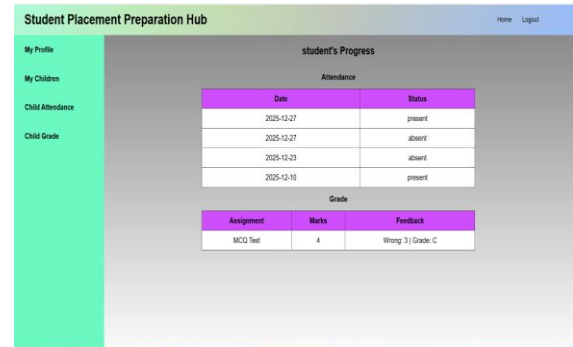


Fig. 10: Parent view children progress.

Fig. 10 displays the student progress view accessible to parents. It shows the child’s attendance records with date-wise status and the academic performance details. Mock test marks and feedback are presented together for clear understanding. This module helps parents track progress and learning outcomes of their child.

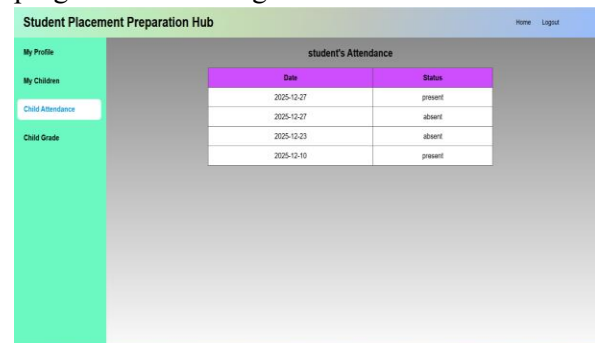


Fig. 11: Parent view children attendance page.

Fig. 11 displays the child attendance module for parent users. It shows date-wise attendance status recorded for the selected student. The data is retrieved from attendance records maintained by the teacher. This module enables parents to monitor their child’s regularity and classroom participation.

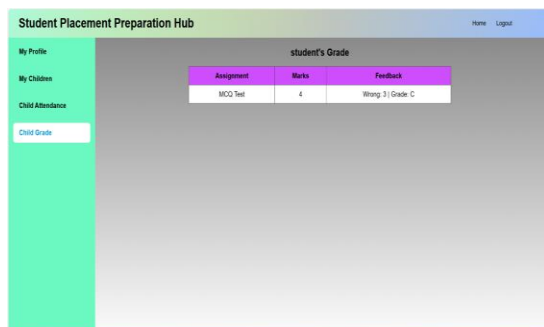


Fig. 12: Parent view children grade page.

Fig. 13 shows the child grade module accessible to parents. It displays the assignment name, marks obtained, and feedback generated after MCQ evaluation. The grades are calculated automatically by the system. This module helps parents assess their child's academic performance and progress.

5. CONCLUSION

The research is designed to provide a complete and organized solution for managing placement-oriented academic activities within an institution. The system brings together students, teachers, and parents on a single platform, ensuring smooth communication and transparent information flow. Core functionalities such as secure authentication, role-based access, attendance management, MCQ-based mock tests, grading, and performance reporting are efficiently automated. This eliminates dependency on manual record keeping and reduces delays in evaluation and result generation. The integration of MCQ tests with instant evaluation improves accuracy and saves significant time for faculty members. Attendance records and grades are maintained systematically, allowing users to track progress over time. Real-time dashboards provide meaningful insights into student performance, helping educators identify strengths and areas for improvement. In the future, the system can be extended with advanced analytics to predict placement readiness and skill gaps.

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