WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

A Report on Employability Test Portal

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ABSTRACT—

Placements are the biggest part of the final year student's life and most of the students are not well prepared in order to face the tests of the companies. Even though we have a lot of platform to learn from, students are not properly trained in this field. This has increased the need for a platform which will facilitate not only the preparation of students in Programming as well as other major factors of placements like Aptitude and Computer Fundamentals. This project that we aim to develop solves this particular issue and will also enhance the skills of the students by continuous feedback learning. The purpose of this work is to prepare a platform which will help the students of the final year in preparation for the placements in subjects like Aptitude, Operating Systems, Database Management System and Coding. It focuses on preparing students for the tests that are conducted during the placements by different companies. The end-product will be a web application which the students can use to practise and appear for the tests in Coding, Aptitude, Operating Systems and Database Management System sections. This kind of platform has to have very strong backend as well as an attractive and simple to handle frontend. The application will be developed using: React in the Front-end, Django for the Backend and Rest Api for the connectivity between the backend and the frontend. The data will be transferred in the form of a JSON contract for easy interpretation. The web application will be composed of REST API endpoints for preforming various operations. Some of the features that will be provided by the application are Practise section for students to practise questions, Test Section where students can solve different tests, Report generation which will give feedback to student to see the mistakes made by him/her in tests, Dashboard in order to see the profile for the student, support of languages like JavaScript, Java, C++, C and Python for coding, 13 different types of questions in the Aptitude Section. Thus, this project will solve the critical need of the students preparing for the placements in their respective colleges.

Keywords - Programming, Computer Fundamentals, Aptitude, Operating Systems, Database Management System, React, Django, REST

INTRODUCTION

Starting placements studies raises many questions in students' thoughts, such as how much to learn and from whom, as well as which resources to use as there are many courses and teachers available on platforms like Youtube and Udemy. There are other online resources as well, but they do not offer pupils comprehensive assistance in the areas of aptitude, coding, and computer fundamentals. Many students simply waste a lot of time making these judgments and switching between resources as a result of the uncertainty. When you know what to study and how to study, placement studies are not difficult. There are other online resources as well, but they do not offer pupils comprehensive assistance in the areas of aptitude, coding, and computer fundamentals. Many students simply waste a lot of time making these judgments and switching between resources as a result of the uncertainty. When you know what to study and how to study, placement studies are not difficult. Any student applying for a placement in the IT business is already proficient in coding; as a result, all that is required of them is to answer high-quality questions of various types to develop their confidence in handling challenging test questions. To determine whether they can do well under pressure from the timer and the test setting, the students should be ready to make the proper decisions and test their performance in the actual test. Students should not use many resources to prepare for placement exams; instead, they should be able to practise each of the three sections—aptitude, computer fundamentals, and coding—on a single platform.

LITERATURE SURVEY

A. Survey on Problems of Students

The insights below are based on our research into the difficulties students face when preparing for placement.

a. As a result of the ambiguity, many students simply waste a lot of time making these decisions and hopping between resources.
b. There are numerous platforms available online for coding, aptitude, and computer fundamentals questions. All of these components are not, however, present on any of the internet platforms.
c. Online tests are also accessible, but they don't produce any reports to let pupils know where they need to improve.

d. In other cases, when a student takes the test but is not chosen for the interviews, they are unable to identify the errors they made and become more confused about how to pass the tests.

B. Survey on existing platforms

The following are the observations based on our review of the existing systems.

a. HackerRank:

Programmers from all over the world can solve code challenges on the Hacker Rank coding platform. Programming languages supported by Hacker Rank include Java, C++, and PHP, and they cover a range of computer scientific fields. The accuracy of the output is evaluated when a programmer submits a solution to a programming challenge. On the Hacker Rank leaderboard, programmers are then ranked globally. Hacker Rank also holds competitions where programmers compete on a particular set of programming problems over a brief period of time before being ranked at the end of the event, in addition to hosting individual programming challenges. Companies can hire programmers based on their performance thanks to Hacker Rank. The Hacker Rank user interface is excellent. Although Hacker Rank provides a greater number of contests, they do not offer the same kinds of contests as other websites. Features like Aptitude and Computer Fundamental Subjects are not supported by Hacker Rank on their website. The questions in Hacker Rank are frequently of a type that is appropriate for students who are new to programming and have only recently started their journey with coding. The issue with HackerRank is that the practise area for coding has an editorial portion where users may read multiple solutions to a problem, making it simple to solve test cases.

b. CodeChef:

It is an international platform for programming competition that supports more than 50 coding languages and has a sizable community of programmers that assist students and other computer professionals in testing and enhancing their coding abilities. Its goal is to give both students and experienced software engineers a place to practise, compete, and get better. Code Chef holds regular ACM-ICPC practise competitions as well as monthly contests with rewards. In addition, it wants to foster a culture of programming in India by reaching out to children when they are still in school. Code Chef is more engaging than other platforms since it hosts contests of roughly three categories. The difficulty level of the issues offered is unexpected, which is a concern with Code Chef. Programming specialists are the ones who typically use Code Chef. Normally, those that are experts in programming use Code Chef over here as well.

c. PrepInsta:

PrepInsta is an online platform that offers various resources and preparation materials for students and professionals preparing for competitive exams and job placements, particularly in the field of information technology. It provides a wide range of content, including practice questions, study materials, interview preparation guidance, coding challenges, and placement preparation courses. It has features like Exam Preparation, Study Materials and Resources, Interview Preparation, Mock Tests and Practise Questions and Community and Discussion Forum. While PrepInsta offers several benefits and resources for exam preparation and job placements, there are a few potential drawbacks to consider like Limited Subject Coverage, Quality and Accuracy of Content, Lack of Personalization, Pricing and Access problems, Dependency on a Single Platform for placements can also cause problem and Lack of Real-Time Updates. These drawbacks not only apply to PrepInsta but can also apply to similar sites like PrepInsta.

TABLE 1. Further Observations

Observation	Inference
Quality of Questions	**CodeChef is the best.**
User Interface	**HackerRank is best.**
Quality of editorials	**CodeChef is the best.**
QA and Discussion forums	**CodeChef and HackerRank are similar.**
Prizes and rewards	**HackerRank is the best.**
Number of contest	**HackerRank hosts more, but Codechef contest are of three types and more interesting.**
Participation	**Codechef attracts more international participation especially in the long challenge**

PROPOSED METHODOLOGY

A] Block Diagram of the Project:

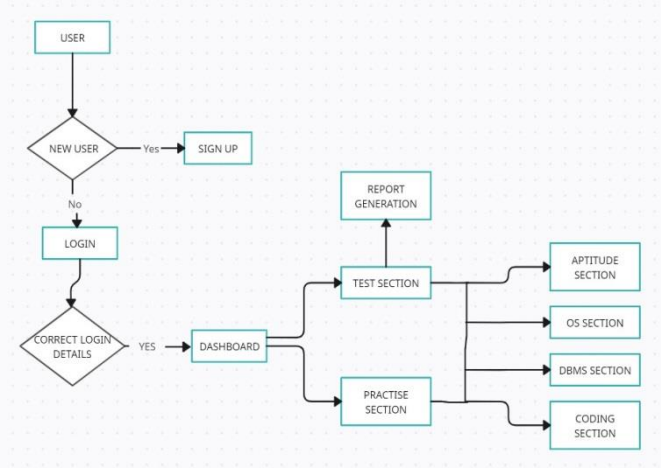

Fig. 1 Block Diagram of Project

For a user to access the services of Employability Test Portal, he or she needs to first Sign Up through the Sign Up form at the first page. If user has already been signed up then he or she can directly Login. Upon successful login of the users, users will be taken to the Home page wherein they can view different things like New Tests, Dashboard, Practise Section and Test Section. When user selects the Practise Section he or she can view different fields like Coding Section, Aptitude Section and Computer Fundamental sections. User can select any options and practise accordingly. When a user solves the questions and selects the Answer option he can see the answer as well as the explanation for that answer. Upon selecting the Test section user will be able to view the new tests uploaded and they can take part in it. In Test Section also they will get different options like Aptitude, Computer Fundamentals and Coding. They can choose any option and start the particular test. But these tests will be having a timer and when the time ends for particular test, the test will be automatically submitted. After the test the user will be able to see the results of the test after sometime.

B] System Design Components

For designing the system completely we needed to add different databases like Users, Aptitude Questions, OS Questions, DBMS Questions, Coding Questions, Tests Table, and Submissions Table. Database Design is the important part of the system. It is used to store data in the form E-R relationship. All services get the data through database for their operations.

Database Tables and their field items:

1] Users: id, Name, Email, Submissions<list>, Total_point, q_Easy, q_Medium, q_Hard, q_Arr, q_stack and q_graphs.

2] Aptitude Table: Question_id, Question, Option_1, Option_2, Option_3, Option_4, Answer, Tag, Points and Explanation.

3] Coding Question Table: q_id, Name, Description, Q_text, Q_test, Q_input, Q_output, Q_explanation, Q_author, Q_points, Q_difficulty and Q_tag.

4] DBMS Table: Question_id, Question, Option_1, Option_2, Option_3, Option_4, Answer, Points.

5] OS Table: Question_id, Question, Option_1, Option_2, Option_3, Option_4, Answer, Points.

6] Submission Table: Id, Users_id, Code, Test_Case_passed, Result, problem_id, used_language.

7] Participation Table: ParticipationId, UserId, ChallengeId, Scores, AcceptedSubmissions.

8] Challenge Table: ChallengeId, Name, ChallengeStartTime, ChallengeEndTime.

RESULTS AND IMPLEMENTATION

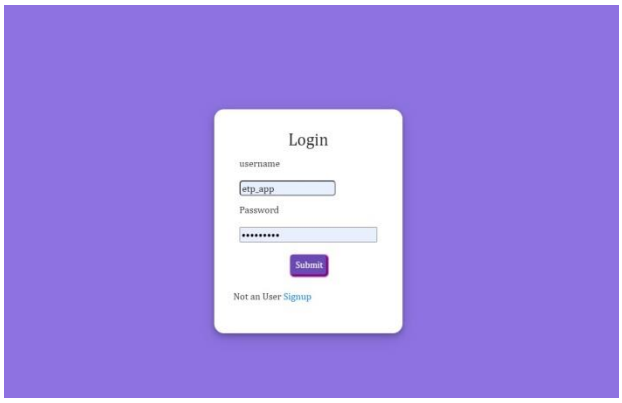

Fig. 2 Login Page Interface

This is the Login form which consists of two fields username and password. These details will be filled by user in the signup form. Along with that if the user is new he/she can go to signup page using Signup link.

Fig.3 SignUp Page Interface

This is SignUp page which consists of 3 fields and these details will be used in Logging into the system by the user.

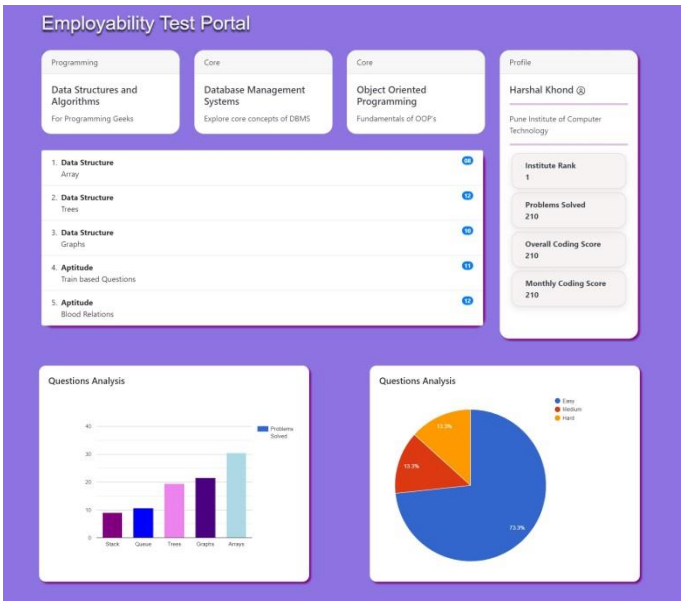

Fig.4 Dashboard Interface

Upon Logging in the system the user will be able to see his/her dashboard which will display the different sections like the no. of questions solved by the user. Along with that the user can also see visual representation of the performance of the user.

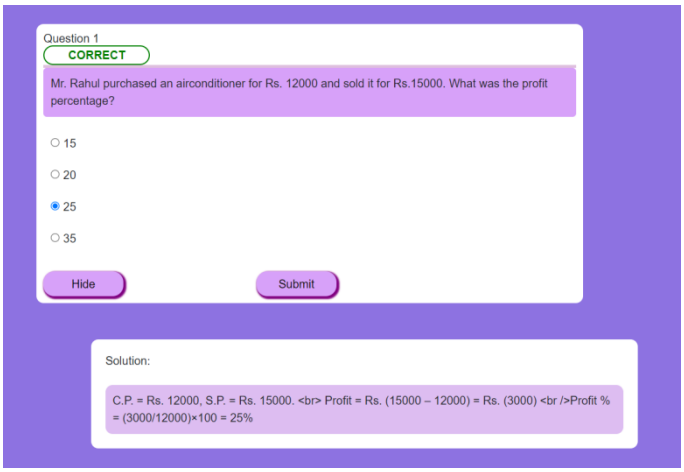

Fig.5 Aptitude Practise Section

This is the interface for the Aptitude Practise Section which displays the question along with the explanation upon clicking the Submit button.

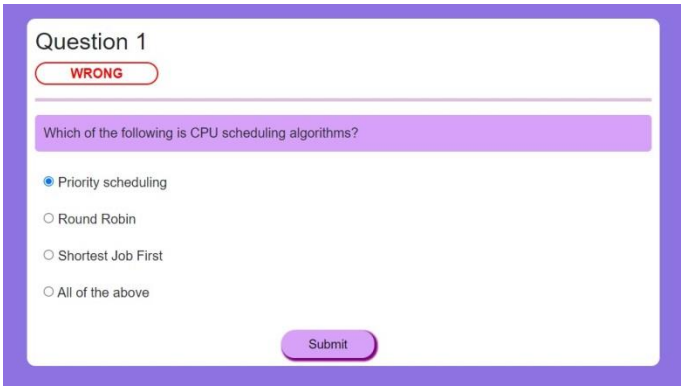

Fig.6 OS Practise Section

This is the interface for the OS Practise Section which displays the question along with answer upon clicking the Submit button.

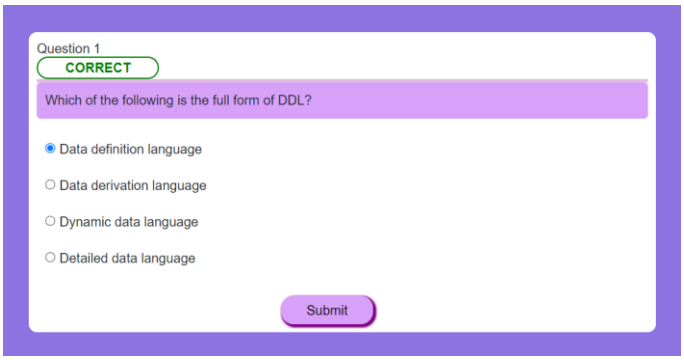

Fig.7 DBMS Practise Section

This is the interface for the DBMS Practise Section which displays the answer along with the explanation upon clicking the Submit button.

Fig.8 Test Menu Interface

This is the Test Menu option which displays different test menus like Coding, Aptitude and Core Subjects .Upon clicking the Start Now buttons the test for particular section will be started.

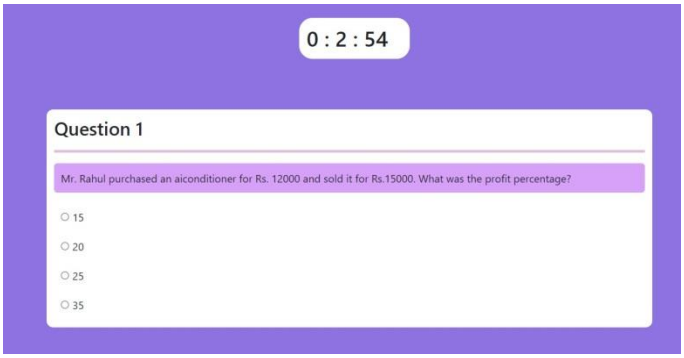

Fig.9 Aptitude Test Section

This is the Aptitude Test Section and along with the Timer. As the timer will end the user will be redirected to the Test Menu page.

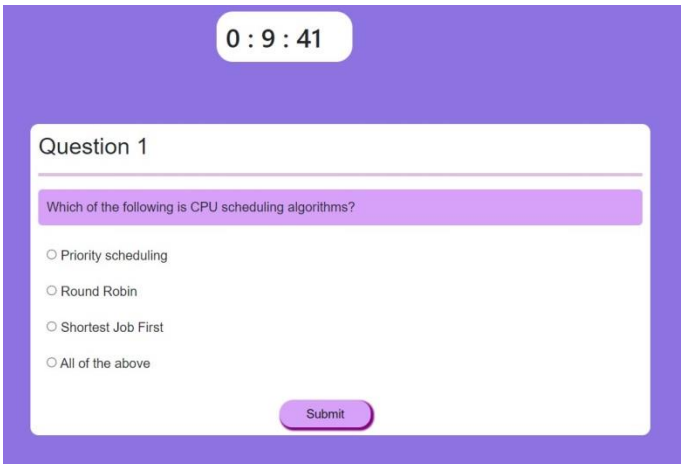

Fig.10 OS Test Section

This is the OS Test Section and along with the Timer. As the timer will end the user will be redirected to the Test Menu page.

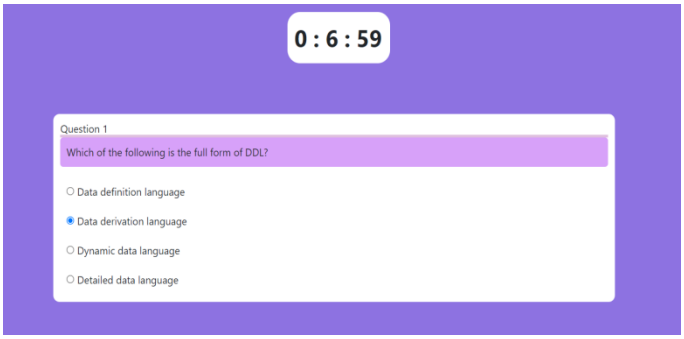

Fig.11 DBMS Test Section

This is the DBMS Test Section and along with the Timer. As the timer will end the user will be redirected to the Test Menu page.

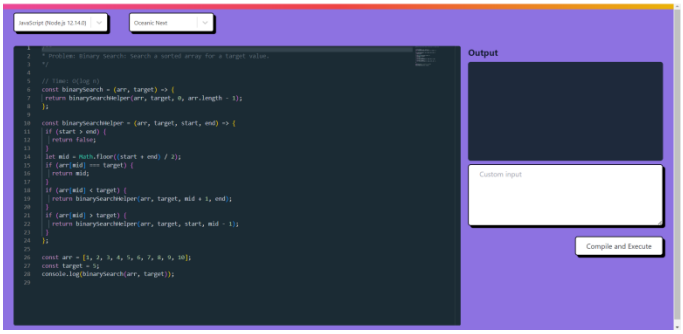

Fig. 12 Compiler Section

This is the Compiler that has been developed in order to solve the Coding questions not only in the Practise section but also in the Test Section. Here there are sections like Coding area, language dropdown menu, Themes Menu, Output menu, and Compile and Execute button.

CONCLUSION

In this paper, we've gone over the various issues that arise for students as they navigate the placement process. We have also analyzed a number of websites that provide services of a similar nature. These websites that we reviewed are PrepInsta, CodeChef, and HackerRank. This platform, which we are developing, will improve the college's pool of competent resources and boost the number of placements that take place. Instead of using various platforms, integrating options like the Coding portion, the Aptitude section, and the Computer Fundamentals section into one platform makes learning more uniform for students. All the required functionalities proposed to be implemented are successfully implemented in this system.

ACKNOWLEDGMENT

We take this opportunity to express our sincere thanks to our guide respected Dr.S.S.Narkhede sir for their support and encouragement throughout the completion of this project. We are grateful to him for his constant support.

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