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Online Platform for Coding Examand Interviews

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***Abstract:** Online technical interview websites have emerged as the new means of communication in today's world for attending interviews, classes, meetings, and gatherings. Coding evaluation platforms help to assess programming skills properly, and provide an authentic programming environment in which you can develop and test code. An essential part of education is the evaluation of students and the facilitation of students' studies through feedback. During evaluation and feedback, it is important toensure that it applies equally to all students, is fair and objective. However, source code evaluation is still done manually and often incorrectly. An automatic evaluation system gives a boundless relief for the examiners, andthus, it raises the objectivity, quality and speed of the assessment and gives the feedback to the students in time. Ultimately, the main goal of this paper is for it to be a web application used in academic environments supporting different programming languages with thepossibility of offering interviewers the ability to create evaluations and evaluate exams.*

***Keywords:** REST API, Isolated Environment, Coding Interviews, Real-time Assessments*

1. INTRODUCTION

Stakeholders or interviewers can assess dynamic code execution in the browser thanks to the emergence of online technical interview platforms for online hiring and interviewing. The Platform'sassessment is an adaptive, multiple-choicetest, testing coding skills that augments or replaces traditional ways of assessments, resume screening with granular skills data. Traditional resume screening often results in non-diverse teams. Our assessment removes unconscious bias from the screening process and finds hidden gems from multi-dimensional backgrounds. Examinee's assessment test is simply moreaccurate when it comes to measuring programming ability in applicants rather than focusing exclusively on a small number of algorithms. Here, hiring managers could save their time, increase hiring velocity and diversify the applicantpool. Many companies nowadays use acoding skills assessment to pre-

screen inbound applicants so that their team isn't wasting time on phone calls with unqualified candidates. This platform helps measure actual technical skills. Leveraging the Examinee's assessment tool will let you see skills data side-by-side with an applicant's resume, reduces wasted interviews and helps find hidden gems from all backgrounds. The project's objective includes examining and analyzing the process of developing a separate environment, designing and developing a flexible structure for managing, monitoring, and scoring programming competitions. Any computer programming course must include the time consuming but important work of examining student's programs. In most cases, it is not possible to completely test each student's software during a lab session. The fact that that student doesn't always follow the program is another issue. Since our project uses similar testing, this approach would encourage students to take part in a variety of competitive programming competitions. Additionally, because a significant portion of industry uses automated testing, it would greatly facilitate the shift from academia to industry.

Literature Review

1.1   Online Platform for Coding Exam and Interviews[1]:

According to the survey, the present systems have observed that they're well- known for his or her sort of questions divided in numerous categories, a scalable judging system and good program together with discussion forums on each question. Some of these systems support common programming languages like C, C++, Java, Python. A number of these are modern systems like WorkAt Tech, Interview Bit, Codewars and Hacker Rank. We looked into many automated online coding platforms that assess code and provide instantaneous results which was a difficult task to realize.

A. Problem Management: One of the most functionalities of the system are the exams attached to varied programming languages for testing candidates coding skills before the interview.

B.   Isolation: As the system will give access to users for submitting their code it becomes important that no code of two people maliciously affects the others. For this purpose, the containers are managed per se so that they're isolated. Hence containerizing each candidate's run code may be a critical part of the appliance. Considering this, it's not going to be the foremost practical way to perform these tests in the office. By performing them online, you may be able to test an outsized number of candidates in an exceedingly short period of your time, speeding up the recruitment process and finding the most effective candidate in a better and faster way.

1.2 Development of an automated system for conducting, checking and evaluating programming competitions [2]:

The need for automation of the contest processes has emerged as a need for such events, as the number of teams and work has expanded along with the time needed to receive answers, review them, and tally results. Furthermore, even though that such system has been around for a while, recent advances in technology have opened up new possibilities for their development.

1.3   Automatic code evaluation system [3]:

Organization must include automation of code evaluation. Monitoring tools and automation technology can be combined to easily assess learners' progress on a platform. The standard methods for evaluating code are difficult and time-consuming. The automated code evaluation systems generally in use only provide evaluations; they are unable to provide a personalized analysis of the learner. The purpose of this project is to provide a brand-new system for code assessment that is fully automated and solves the system's current weaknesses.

To increase efficiency, the system includes tools that automatically generate test cases, analyze optimizations, and generate code. Also, this method aims to fix errors like learners using the same codes over. First, they are able to complete the review at a much faster pace. This means your organization can evaluate each application repeatedly without requiring a vast amount of time. Second, the software used for an automated code review process contains specific knowledge about potential vulnerabilities without requiring the user to have the same knowledge. Put simply, automated code review software removes the possibility of human error, improves code coverage, and is more effective and ultimately more affordable.

1.4   Automatic Analysis and Evolution of Student Source Code [4]:

Essential part of Online platform for coding is to correctly evaluate the data and solution from each candidate. Here the author mentioned automation evaluation, as poor evaluation can cause an impact on students' result so it is necessary to be evaluated correctly. There are advantages of automation evaluation:

- Evaluation is fast, as it takes place immediately as the student submits the solution.
- Fair assessment can be consistent and errors are evaluated after the completion of examination.
- Independent, the previous results and feedback analysis doesn't affect the student's current evaluation.

System's Architecture/Design

The choice of frameworks for developing both the backend and the frontend turned out to be a crucial decision because the client-server architecture was chosen as the foundation for developing the product.

1.5   In order to create dynamic and interactive websites, PHP (Hypertext Pre-processor), a general-purpose scripting language, can be employed. Being one of the first server-side languages that could be included into HTML, it made it simpler to add functionality to web sites without having to call outside files for information. Its application has changed over time as a result of frequent updates (version 8.0 was launched in November 2020), which unlock new features. Because PHP is simple to learn and use, open source, adaptable, has strong community support, decent connectivity with databases, and is powerful and secure (newer versions), it was chosen as the preferable language. Because PHP allows for embedded HTML code, these two technologies work so well together. Most of the time, a PHP script completes HTML code on a web page inside the "<?php?> tags" stated boundaries rather than interfering with it. A script can be used to integrate HTML code into a page that has been entirely constructed in PHP. The LAMP stack is the most typical configuration for a PHP website. It denotes that a website uses MySQL as its database and is run on an Apache HTTP web server that is installed on a Linux system. Since the stack is well-tested and all of these components are free, less time and money will be needed for development.

1.6   When it comes to database connectivity, considering all the project objectives a decision was made to use a Relational database (MySQL) due to its provision of storing data in a structured manner (candidates and admin data). Information about connected items is kept in a relational database's data tables. Each column has the data properties, and each row comprises a record with a distinct identifier, or key. Each feature is given a value in each record, making it simple to see how the many data points are related. Structured Query Language serves as the default user and application programme interface (API) for relational databases. Both interactive queries for data from a relational database and the collection of information for reports employ SQL code statements. To guarantee that the relational database is accurate and usable, defined data integrity and constraint rules must be adhered to.

1.7 For the duration of the testing and development phase, we used XAMPP. On a local web server, we can easily build and test their code using the well-liked cross- platform web server XAMPP. The deployment simplicity of XAMPP allows a developer to rapidly and easily install a WAMP or LAMP stack on an operating system. XAMPP is only a local host or server to test clients or websites before publishing them to a remote web server. The XAMPP server software can be used to test MYSQL, PHP, Apache, and Perl projects in a suitable setting.

1.8 Communication architecture

REST was chosen as the architectural style of interaction between the backend and the frontend. Some features of this architecture are described below:

- Separating the user interface from the business logic in a client-server architecture makes it easier to adapt the user interface to different platforms and promotes scalability by streamlining server components.

- State absence (commonly referred to as Stateless service) - Each request to the server must contain all the information required for its successful execution, i.e. The server stores no contest between different requests (for example, in the form of sessions), and all information required for the user's "session" is stored on the client's side (for example, an access token).

1.9 User interface and user experience For Frontend we used languages like Hyper-Text Markup Language (HTML), Cascading Style Sheets (CSS), JavaScript (JS). Each of these technologies serves a different purpose and working together, they allow us to create dynamic, interactive, and visually appealing web pages and applications. The user experience of the system is based on building clear sequences of actions that lead to resources in one most intuitive way. This design allows you to focus the user's attention on performing the planned action, instead of confusing them with oversaturated pages and long transitions. The Interviewer has complete control over how the test is administered thanks to the interviewer dashboard. Our platform gives them the ability to individually build the exam, check the code and score, as well as their resume and applicant profile, which streamlines the selection process. Employers and interviewers have the ability to contact interviewees directly through their dashboards for better communication, which makes their jobs easier. The Candidates are given numerous opportunities to demonstrate their coding abilities. The Candidates also can showcase themselves by uploading their resume. There is a ton of companies from which they can choose. They can use the site to directly look for the job they want and apply for an interview with the employer. Through the platform, candidates can also get in touch with the relevant parties or authorities.
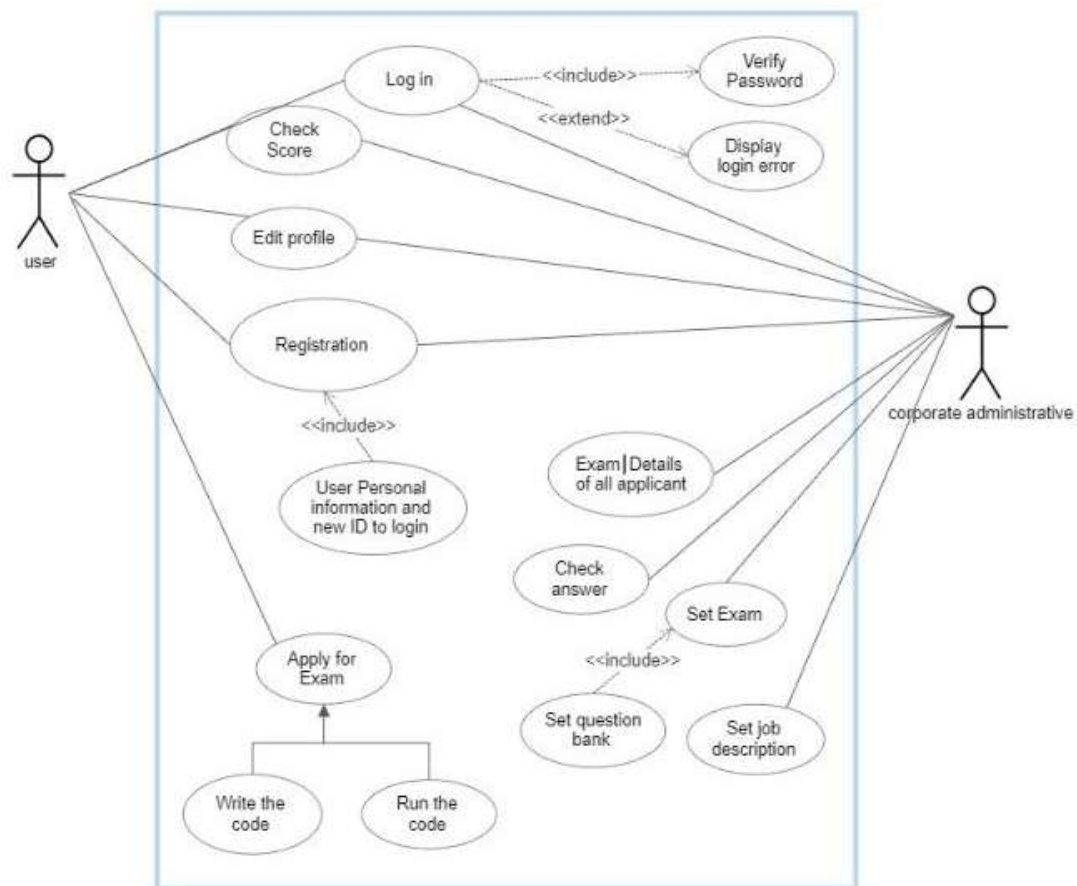
Figure1.

2. CONCLUSION

Online Platform for CodingExam and Interviews will be very beneficial to both students and businesses. Numerous helpful features and capabilities will make it easier for candidates to demonstrate their skills than in early physical interviews, leading to better prospects. Our platform will also assist students in landing their ideal career. The proliferation of online coding platforms for tests and interviews isexcellent for the technology sector. As technology develops, it's possible that we'll witness more breakthroughs in this area, with new platforms and tools appearing to fulfil the requirements of both employers and job candidates.

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