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ONLINE SKILL TEST PLATFORM

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Abstract

Information communication and technology are the most important skills for 21st-century learning and help promote other skills, including life and career skills and learning and innovation skills. This kind of learning allows the learner to connect as a learning network without barriers or borders. The growth of online education has taken our education system to another level. Now anyone can learn from anywhere, anytime as per convenience. In different platforms, questions link are shared with a submission time. Although, learners are taking up unfair means to clear the test provided online in which students usually search up the topic, use different means to get the answers, and get good marks. Hence, teachers cannot get an idea of who is good in the class and who needs extra attention. So, our idea is to make such a platform where the teacher will be taking the test just like our offline classes. In this platform, the teacher will be discussing every question after the students submit the answer in a time duration which will also be proctored and at the same time, the teacher will get the top performer and their submission time. This way we can assure minimal malpractice and identify the students who need more explanation for the questions. This will clear their doubts and the teacher understands the actual performance ratio.

Keywords : Skill test platform, MongoDB, MERN Stack, MongoDB, student's performance.

I. Introduction

Today online skill system has become a fast-growing examination method because of their speed and accuracy. It is the simplest-to-use web-based application for schools, colleges, universities, coaching classes, training centers, certification agencies, and recruitment firms to conduct the timer-based, completely automated paperless examination. It's main objective of the online examination system is that it helps educational institutions and the corporate world to conduct exams to any number of candidates at a time, in an automated manner [I]. It reduces the time consumption and workload that exist in the current system of examination. It also helps in storing the record of each examination and the result is also stored in the system. This makes searching the records

easier than the existing file. It provides an easy-to-use environment for both the Test conductor and students appearing for the examination. It is a cost-effective and popular means of the mass-evaluation system. The faculty prepares the test and questions for the exam. The candidates can login through the client computers with their roll number given to them and take the exam. The questions are shuffled in a random order so that the possibility of getting questions in the same order for the students who are besides, is very less [IV, VI].

Today every organization, whether big or small, has challenges to overcome and manage the information of Long Questions, True False, Matching, etc. Every online examination has different exam needs; therefore, we design exclusive employee management systems that are adapted to your managerial requirements. This is designed to assist in strategic planning and will help us to ensure that your organization is equipped with the right level of information and details for our future goals. Also, for those busy executives who are always on the go, our systems come with remote access features, which will allow us to manage our workforce anytime, at all times. These websites will ultimately allow us to better manage resources.

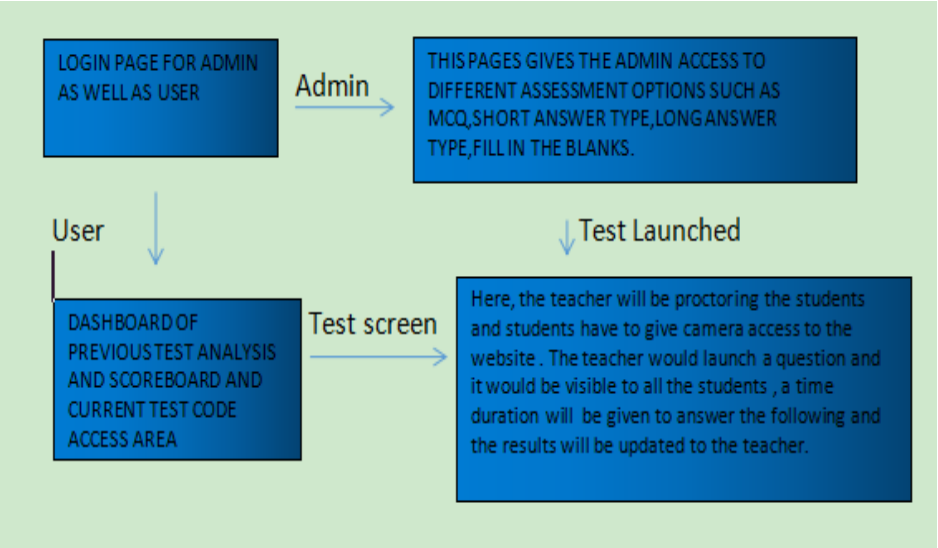
Our project is only a humble venture to satisfy the needs to manage their project work. Several user-friendly coding has also been adopted. This package shall prove to be a powerful package in satisfying all the requirements of the schools, colleges, and universities. The objective of software planning is to provide a framework that enables made within a limited time frame at the beginning of the software project and should be updated regularly as the project progresses.

II. Flow of the website

The Online Skill Test Platform consists of two sides. One side resembles the user side and another resembles the admin side.
As in offline mode, the teachers invigilate our performance by giving us assessments in class and discuss it along as the discussion moves ahead that is how the admin side is planned to be designed.

On the other hand, the students taking the assessment should also get the same experience of offline class so to integrate that we have planned the user side.

Admin Interface



The administration is a process of systematically arranging and co-coordinating the human and material resources available to any organization for the main purpose of achieving the stipulated goals of that organization. It is a very important role played by the admin. Here, the teachers are the admin who is responsible for the organization of different assessments for the development of the knowledge provided by them. First, they have to register themselves using their email and provide a password which will be stored in our database in an encrypted manner. Then the backend will process the login information and detect that the person is an admin or not and the admin page will be loaded. The Different types of assessment will be given to the admin to access. He can select any of them and then he will be asked to enter the questions and answers to the question which will be stored in the database. After completing the questions and answer inputs, he will be given a link to invite the students and this link can only be accessed by those students whom the admin has given access. When the test launches the admin can view students' faces and an analysis will be provided to the admin about the student's background whether it is appropriate or not and accordingly the teacher can communicate with the students. Then s/he launches the question and the student who submitted first will be shown to them. He can then communicate with students and discuss the result or appreciate the fastest answer-er. The interaction which is missed in the online mode is what we are trying to bridge the gap.

User Panel

The purpose of any website is to solve the problems of a user. User experience is important because it tries to fulfill the user’s needs. It aims to provide positive experiences that keep a user loyal to the product or brand. Additionally, a meaningful user experience allows us to define customer journeys on our product that are most conductive to business success. Here, the students have to login with their email and password and then the website will take them to their dashboard page. There will be

information and analysis of their previous performance of previous assessments. There will be a area to enter current test by entering the code given by the teacher.

When the test is launched by the teacher the students have to give access to the camera of the device they are using as this will be a mandatory requirement for the test. The question will be seen by the student and they will be given options or answer pads to answer according to the type of question within a given amount of time. Then the teacher will discuss the question as per her/his will. The timer is added to each question to reduce the malpractices happening in online mode. The problems faced by different students have been kept in mind and then the idea of the website originated. The essence of learning will be rejuvenated by the experience provided by the website to the user.

MERN Stack

In MERN Stack is a collection of powerful technologies and robust, used to develop scalable master web applications comprising backend, front-end, and database components. It is JavaScript that is used for the faster and easier development of full-stack web applications. MERN Stack is a technology that is a user-friendly full-stack JavaScript framework for building applications and dynamic websites.

MERN Stack consists of four main components or can say four main technologies:

1. **M** stands for **MongoDB (Database),** mainly used for preparing document databases, and is a NoSQL (Non-Structured Query Language) Database System
2. **E** stands for **Express,** mainly used for developing Node.js web framework
3. **R** stands for **React,** mainly used for developing a client-side JavaScript framework
4. **N** stands for **js,** mainly used for developing the premier JavaScript web server

Each of these four technologies plays an important role in providing an end-to-end framework for the developers. Even these four technologies play an important role in the development process of web applications.

MONGODB

MongoDB is an open-source document-oriented database that is designed to store a large scale of data and also allows you to work with that data very efficiently. It is categorized under the NoSQL (Not only SQL) database because the storage and retrieval of data in the MongoDB are not in the form of tables [II, III, V]..

The MongoDB database is developed and managed by MongoDB.Inc under SSPL (Server Side Public License) and initially released in February 2009. It also provides official driver support for all the popular languages like C, C++, C#, and .Net, Go, Java, Node.js, Perl, PHP, Python, Motor, Ruby, Scala, Swift, and Mongoid. So, that you can create an application using any of these languages. Nowadays there are so many companies that used MongoDB like Facebook, Nokia, eBay, Adobe, Google, etc. to store their large amount of data.

React JS

Linear **ReactJS** is a JavaScript library used for building reusable UI components. It encourages the creation of reusable UI components, which present data that changes over time. Lots of people use React as the V in MVC. React abstracts away the DOM from you, offering a simpler programming model and better performance. React can also render on the server using Node, and it can power native apps using React Native. React implements a one-way reactive data flow, which reduces the boilerplate and is easier to reason about than traditional data binding.

A React application is made of multiple components, each responsible for rendering a small, reusable piece of HTML. Components can be nested within other components to allow complex applications to be built out of simple building blocks. A component may also maintain an internal state – for example, a TabList component may store a variable corresponding to the currently open tab.

React Features:

- **JSX** − JSX is a JavaScript syntax extension. It isn't necessary to use JSX in React development, but it is recommended.
- **Components** − React is all about components. You need to think of everything as a component. This will help you maintain the code when working on large-scale projects.
- **Unidirectional data flow and Flux** − React implements a one-way data flow which makes it easy to reason about your app. Flux is a pattern that helps keep your data unidirectional.
- **License** − React is licensed under Facebook Inc. Documentation is licensed under CC BY 4.0.

Express JS

Express is a fast, assertive, essential, and moderate web framework of Node.js. Express as a layer built on top of Node.js that helps manage a server and routes. It provides a robust set of features to develop web and mobile applications. Express.js is based on the Node.js middleware module called ***connect*** which in turn uses **http** module. So, any middleware which is based on connect will also work with Express.js

Core features of Express framework:

- It can be used to design single-page, multi-page, and hybrid web applications.
- It allows the setup of middleware to respond to HTTP Requests.
- It defines a routing table which is used to perform different actions based on HTTP method and URL.
- It allows the dynamic render HTML Pages based on passing arguments to templates.

Node JS

Node.js is an open-source and cross-platform JavaScript runtime environment. Node.js runs the V8 JavaScript engine, the core of Google Chrome, outside of the browser. This allows Node.js to be very performant.

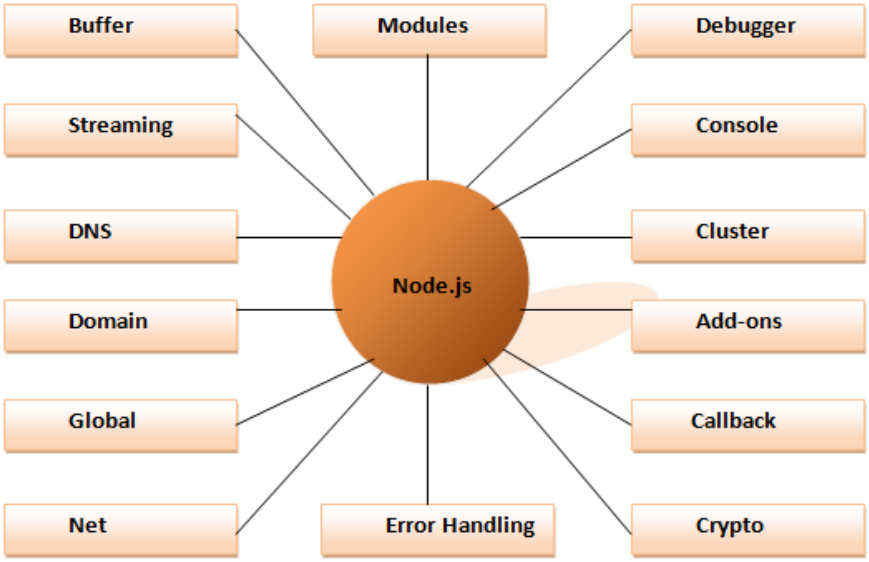
A Node.js app runs in a single process, without creating a new thread for every request. Node.js provides a set of asynchronous I/O primitives in its standard library that prevent JavaScript code from blocking and generally, libraries in Node.js are written using non-blocking paradigms, making blocking behavior the exception rather than the norm.

When Node.js performs an I/O operation, like reading from the network, or accessing a database or the filesystem, instead of blocking the thread and wasting CPU cycles waiting, Node.js will resume the operations when the response comes back. This allows Node.js to handle thousands of concurrent connections with a single server without introducing the burden of managing thread concurrency, which could be a significant source of bugs.

In Node.js the new ECMAScript standards can be used without problems, as you don't have to wait for all your users to update their browsers - you are in charge of deciding which ECMAScript version to use by changing the Node.js version, and you can also enable specific experimental features by running Node.js with flags

Node.js can be used to build different types of applications such as command line applications, web applications, real-time chat applications, REST API servers etc. However, it is mainly used to build network programs like web servers, similar to PHP, Java, or ASP.NET.

Different parts of Node.JS



III. Results and Discussions

Administration

This is the part where admin has the control over everything and can see the report of the assessment. The Admin side consists of two different charts. A Bar Chart showing the number of users who attended that test along with the marks they obtained and a Pie Chart showing the percentage of students attended vs absent on that particular test.

By using ChartJS we fetch the data from our database which will be processed by our algorithm and gives us the data. For every type of assessment, admin gets the name of the user who gives the answer in the shortest time and also gets the name of the student who obtained the maximum marks.

User Panel

This is the part where admin has the control over everything and can see the report of the assessment. The Admin side consists of two different charts. A Bar Chart showing the number of users who attended that test along with the marks they obtained and a Pie Chart showing the percentage of students who attended vs absent on that particular test.

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IV. Conclusion

This website will help to bridge the gap between the offline mode of assessment and the online mode. It is very user-friendly for both the teacher as well as the students. The teacher can understand each student's performance without even being in contact and also the student will have a competitive spirit as the analysis will be given to them

Conflicts of Interest:

There is no conflict of interest regarding the paper.

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