Design and Development of Efficient Virtual Education System

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Abstract— The younger generations of today (Gen Y) no longer benefit from traditional classroom instruction. The country's educational system greatly benefits from internet and distance learning, also known as online education. It is undeniable that young learners can benefit greatly from online education. However, there are a lot of drawbacks to online learning as well. Online education has several drawbacks, including little opportunity for collaborative learning and more work and time required. This study explores the effects of online learning on students, particularly those in private higher education institutions, and how it may affect Malaysia's national education system. Surveys, interviews, and secondary data were used to gather information, which was then analyzed using SPSS. According to the studies, there are several grave problems with online learning and how it may have an indirect impact on the quality of the Malaysian educational system. There are several issues that need to be resolved in order to maintain the standard of education for upcoming generations. In order to maintain the standard of online education in private higher education institutions, the Ministry of Higher Education (MOHE) should also develop a standard policy, closely monitor the implementation of online education, evaluate, and review the method used in teaching, and upgrade.

Keywords — Sustainability, Quality Education System, and Online Education.

Introduction

E-learning is a method of teaching that uses the internet and electronic gadgets to deliver education through electronic media. It is a brand-new trend that surfaced along with the widespread use of the internet and electronic devices. Despite having existed for a while, it was not as well-liked as traditional learning.

One should need an electronic device and internet access, as the name suggests (electronic learning). It was typically used for distant learning and students whose mobility was restricted and for research. Databases, pre-recorded videos, live streams, references, and other formats are all available. However, at first, not many people used it because it couldn't take the place of conventional learning. But because of numerous technological advancements, it has gained a quick increase.

Conventional classrooms have frequently failed to meet students' needs. It is at this point that e-learning becomes significant. The increased use of e-learning was made possible by the pervasive use of the internet and electronic devices. Additionally, a number of additional factors, including the COVID pandemic and the global lockdown, forced all educational institutions to implement e-learning facilities. As a result, online learning resources were heavily utilized in the academic year 2020–2021.

Because it is so accessible and readily available, online learning has many benefits. With the aid of the internet and a technological device, it could be accessed whenever and from anywhere. Giving students the necessary knowledge is the aim of education. It is in fact provided here. From this platform, he or she receives what they require. An individual interacts with the vast world of knowledge in the same way that a student directly interacts with a teacher. It also provides a space for independent study. But despite having many positive attributes, it also has many drawbacks. There are many issues, such as little interaction with teachers, difficulties answering questions, etc.

However, despite all of these issues, students everywhere are being forced to switch to e-learning because of the current conditions that make traditional learning impossible. However, e-learning has made it easier for both students and teachers to continue the learning and teaching process. Through the internet, they could continue their regular activities. Exams and classes were completed. E-learning has therefore benefited the educational sector in a variety of ways. Do the students find this concept annoying, though, given that it is not a common one? Are they at ease using this approach? What do they think about that? This research is being done to identify a solution.

Different technological tools are used to support different online learning methodologies. By utilizing asynchronous communication tools (like email, threaded discussion boards, and newgroups), one category of online learning models enables users to take part at their convenience. For instance, synchronized technologies like webcasting, chat rooms, and desktop audio/video technology imitate in-person teaching methods like giving lectures and holding meetings with groups of students. In earlier online programmers, one model or the other was frequently employed. In more contemporary applications, asynchronous and synchronous online contacts, as well as irregular face-to-face interactions, are frequently combined.

Due to its potential to offer more convenient access to information and instruction at any time and from any location, online learning has gained popularity. The focus is frequently on (a) making learning opportunities more accessible to students who cannot or prefer not to participate in traditional face-to-face offerings, (b) creating and disseminating instructional content more cheaply, or (c) allowing instructors to manage more students while maintaining learning outcomes of a standard that is comparable to face-to-face instruction.

Literature Survey

Title of Research Paper	Author and Publication House	Features Included
Smart Contract Enabled Online Examination System	Mr. Apurv Jain *(From IEEE Paper - 2021)*	Online test assessment
Automated attendance management systems	Nabeel Salih Ali, Ahmed Hazim Alhilali, Hasanein D. Rjeib, Haider Alsharqi and Basheer Al-Asdawi (from IEEE paper - 2022).	Attendance System
Self-Efficacy In Online Learning Environments	Emtinan Alqura shi, Duquesne University, USA (from IEEE paper -2019)	Online Learning
An overview of chatbot Technology	Eleni Adamopoulou and lefteris Moussiades Department of Computer Science, International Hellenic University, Agios Loulas, 65404 Kavala, Greec	Quick and convenient support responding specifically to student question
Natural Language Processing based New Approach to Design Factoid Questions Answering System	Mr. Machhirke Vinodkumar Sadhuram, Mrs. Aparna Soni Proceedings of the Second International Conference (ICIRCA-2020)	An QA system that uses the answer triggering for the providence of answers
Design an MVC Model using Python for Flask Framework Development	Mohammad Robihul Mufid, Basofi, M. Udin Harun Al Rasyid	It offers full control over HTML and URLs which makes it easy to design web application architecture
An Analysis of The Significance of Spring Boot in The Market	M. Mythily; A. Samson Arun Raj; Iwin Thanakumar Joseph	Spring boot is one of the spring module frameworks which provides Rapid Application development (RAD) functionality

System Architecture

This system's architecture is very straightforward. Image 1. From this web application, users can quickly find all the options they require. The VACP system supports access across multiple platforms and web-based internet browsers or software. Users can be classified as either bidders, sellers, or system administrators. The system is made up of eight main parts: user registration and authentication, user profile, the auction system for buying and selling goods, payment processing, the AI chat system, the recommendation system, and feedback.
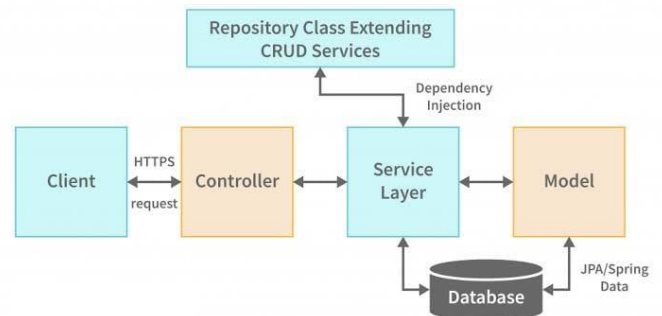

Figure 1: System architecture

The client-side and server-side are where the system is primarily implemented. Some fundamental system requirements must be met in order to design the VACP System in accordance with the planning.

First, the relationships and interactions between application components, such as middleware systems, UI, and databases, are studied using a use case diagram (Figure 2) of the web application architecture.

After that, work starts on the client-side component, which is the website's UI/UX design that describes the system's features to users. HTML elements, CSS, and JavaScript are used to specify the UI/UX design or visual content part. HTML building blocks are used to create web pages, and this is how the front end of the entire system is created.
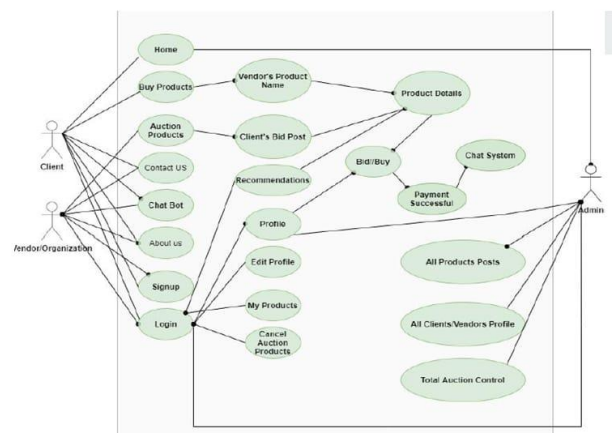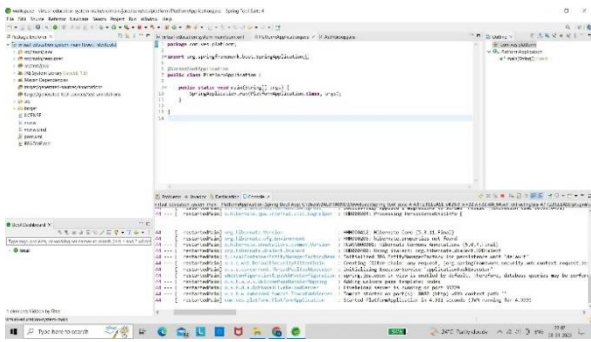

Figure 2: Use a case diagram

Figure 3

The code execution for the website of the Virtual Educational System is shown in Figure 3 on the app's opening page.
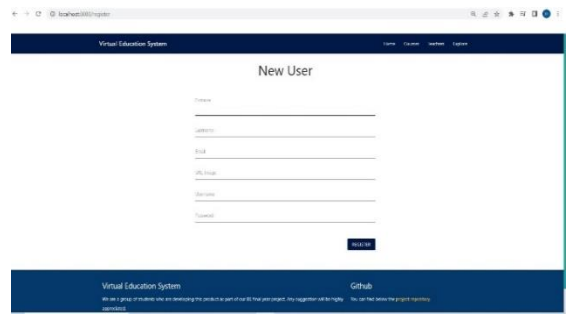

Figure 4

Figure 4 shows the add or browse path for the virtual educational system website to execute in the c drive, followed by Workspace.
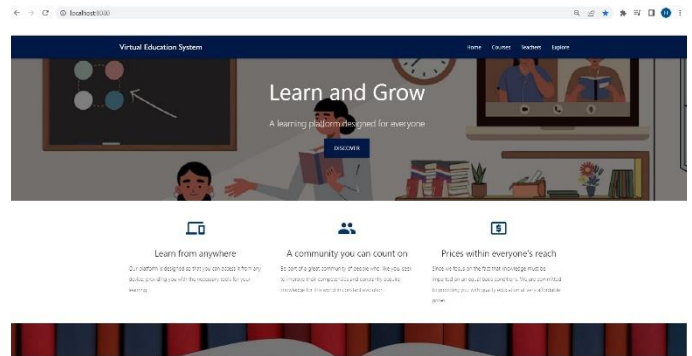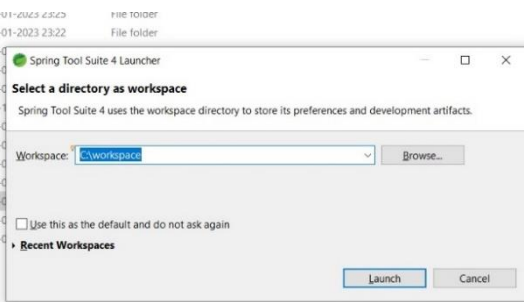

Figure 5

Figure 5 shows that after selecting the main program for the virtual educational system, the code is opened. Next, Run as is selected once more, and Spring Boot App is selected once more. Program execution then begins, and it is successfully completed.
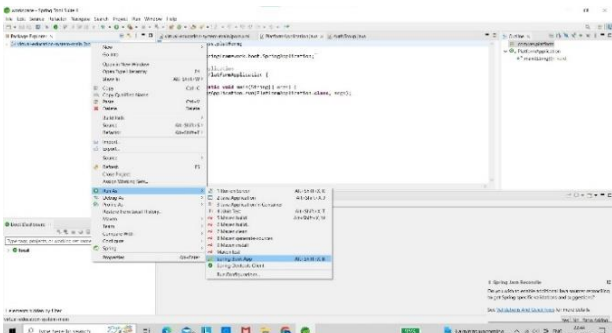

Figure 6

Figure 6 shows code that has executed successfully with output printed to localhost 8080. And the Spring Tool Suite App has finished working.

Figure 7

The virtual educational system's website, which is open in localhost 8080 in Figure 7, has four sections: Home, Courses, Teachers, and Explore. The Home section is where we explore our website; it is shown above in Figure 7.

Figure 8

Figure 8 shows the Courses Section page, followed by various class sections and classes for preparing for competitive exams.

Figure 9

This page of the Teachers Section is shown in Figure 9, where teachers can sign in using their username and password and do so successfully.
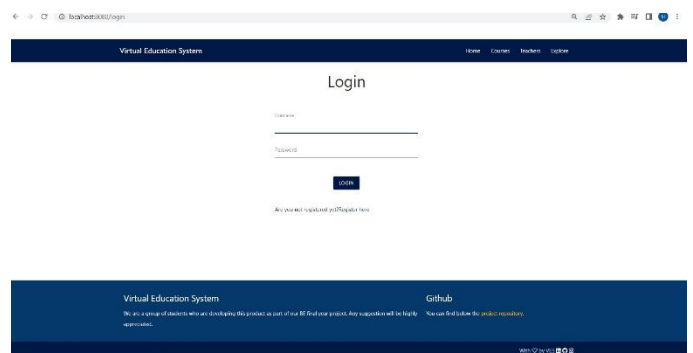

Figure 10

Figure 10 depicts the page of the Explore Section, where two

options are available: Login and Register. Here, we can register as a student or teacher.

Conclusion

The solutions that are currently on the market for object placement and interaction have been examined in the process of developing virtual reality training systems. Also identified are the fundamental prerequisites for the creation of training programmers for assembly and disassembly. Based on this, the benefits and drawbacks of the current approach were noted, and a fresh strategy was suggested.

A component that can be used with any virtual reality equipment and can conform to the shape of any object has been developed during the development process. The developed components decreases the amount of duplications caused by interaction objects placed in the scene, making it easier to work both in the object tree and on the scene without having to place as many objects at once

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