Asian Journal of Research in Computer Science

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1 The Development and Deployment of an Online Exam System: A Web Application

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/*AJRCOS*/2023/*v*16*i*2335

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/100098

Abstract

The rapid advancements in computer technology and the internet's acceptance in every aspect of our lives, particularly in recent years, have made students and instructors vital in the teaching and learning sector. Web-based studies have also brought about advances in the education area, and numerous applications have become widespread in this field. In this paper, we suggested an online test multiple-choice question assessment system for students called the Online Exam System (OES). This system may be used by any university, college, or institution that has a

computerized education system. The OES can be used by teachers to administer quizzes. The system will calculate the participant's performance based on his response, and the following question will be created based on the participant's performance. After the examination, the system will display the results and offer feedback based on the participant's request. Administrative control over the entire system is available. A teacher has authority over the question bank and is responsible for creating test schedules. Therefore, the project will be very helpful for the beginner and mid-level programming learners. And also, will give a proper guideline to the students who are willing to learn programming and introduce the users with competitive programming and problem-solving skills.

Keywords: Online exam system; internet applications; PHP; MySQL; CSS; HTML.

2010 Mathematics Subject Classification: 53C25, 83C05, 57N16.

2 INTRODUCTION

Computer technology is advancing at a rapid pace, and it is now being employed in virtually every industry. The use of computer technology, particularly web-based applications, has become a requirement for making education delivered continuous and growing it also in the education sector. Computer technology, particularly internet applications, have begun to be employed in every sector of education in this respect. Many teaching and learning institutions across the globe use online technology to conduct their test activities and studies [1]. In this paper, we present the Online Exam System (OES), a webbased intelligent multiple-choice-question assessment system for assessing pupils. It is a method that allows students to take an exam from anywhere in the globe, with no interaction between pencil and paper, but rather between computer and human person. The questions differ from student to student for the same exam while they are taking it at the same time. Teachers can utilize the OES to evaluate pupils in an effective, efficient, and flawless manner. Any university, college, school, or educational facility can utilize this method to administer examinations to its students. It is now one of the more efficient and successful techniques of evaluating faraway pupils. One of the primary advantages of our system is automatic marking, which eliminates the need for professors to examine the answer script like they would in a manual test. It saves a teacher's important time. Students, on the other hand, can score based on their merit level, and it will provide feedback on whatever side a student is poor in. Due to the challenges of rising class numbers and the need for more efficient and effective means of assessing remote students [2], the usage of online test systems has grown in popularity in recent years. It is because of the growing popularity of distance education. In the past this assessment technique was widely used to evaluate students and remains popular among both students and teachers. However, there are several recurring challenges associated with this method that we encounter regularly. Some of these issues are as follows.

I. The manual approach necessitates the use of pens/pencils and paper. The instructor must devote time to script checking.

II. Students must wait for their results until he teacher has completed script checking.

These are the most prevalent issues with the manual exam method, which alternated each time a quiz was given. Because of these factors, the popularity of the manual method is dwindling, and online test systems have taken its place. The web-based test method is becoming increasingly popular these days. As technology spreads across the world, automated systems will eventually take the place of manual systems [3]. Currently, large institutes are having great success with their online quiz systems [4]. With the passage of time, the online quiz has piqued the curiosity of both faculty and students. People in major cities and companies are realizing how much better and more efficient the online quiz system is [5]. This system has recently been introduced into the technological world. However, this method has several flaws. If this system has an intelligent component, it will be ideal.

The issues that may arise with a web-based quiz system. The main objectives of this Online Exam System are:

I. Responses by the candidates will be checked automatically and instantly.

II. Online exam system can reduce the hectic job of assessing the answer given by the candidates manually.

III. t will reduce paperwork to be Online Exam System.

IV. The result can be shown immediately to the students, reducing the anxiety.

3 LITERATURE REVIEW

P. Hua and colleagues presented and implemented a Web Services-based Online Training and Exam System. The system comprises five modules: System Management Module, Item Bank Management Module, Online Training Module, Online Exam Module, and Statistical Analysis Module. Then there's the design idea [6]. M. A. Sarrayrih [7] created and launched a web-based Online Exam System software at Sur University College with extra security features using biometric devices, network protocol, and object-oriented paradigms to improve online examination systems. A webbased Turkish automated short answer grading system (TASAG) is created in [8] this article to score test questions and generate online examinations for automatic short-response question scoring. TASAG is the first program of its sort for the Turkish language, which makes this research unique. This [9] article aims to present a new digital examination system based on the Visual Studio (MSVS) of Microsoft; this system is the only such system a diversity of applications, but it also has interactive questions and answers interface. This [10] research aimed at introducing and assessing the effectiveness of a large online high-level test for dentistry students at the end of the semester COVID-19. This study describes an attempt to use mobile technology to ease test management and performance evaluation tasks in

the context of a learning process [11,12], citema. In [13] this article, the online exam system was created using the C# language tool,. NET technology, and SQL Server 2005 database technology.

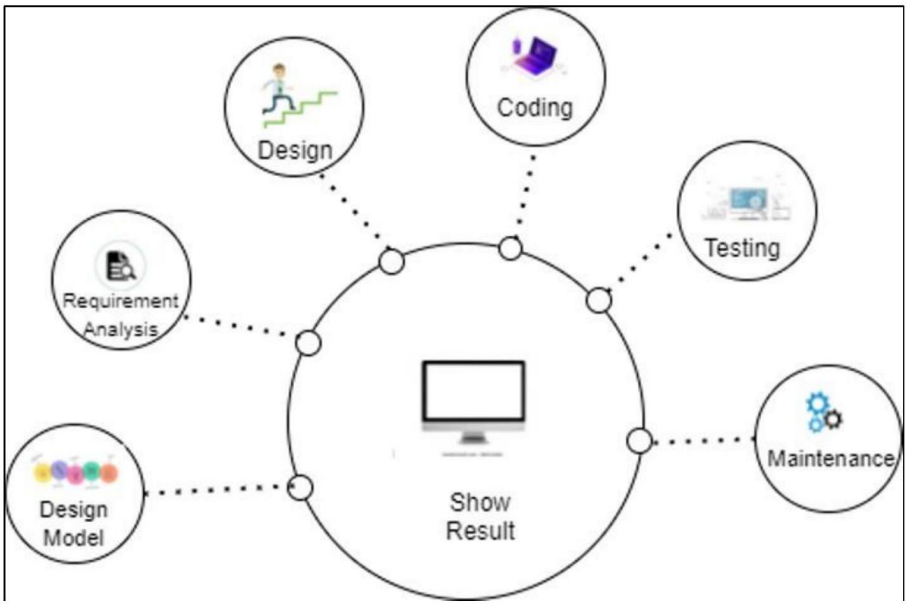

Fig. 1. Workflow of web application development