

THE ROLE AND UTILIZING OF WEB BASED ONLINE EXAMINATION SYSTEM IN ALL EDUCATIONAL AREAS

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DOI: 10.5958/2249-7137.2021.02727.0

ABSTRACT

The term "online examination system" refers to a web-based examination system that allows students to take exams online. Using a computer system, over either the internet or an intranet. Research and comparison of various web examination systems in the current individual field, proposed a set of design modes for a general examination platform that can be used in colleges and universities, researched and analyzed key technology, and proposed an improved scheme, resulting in a perfect system. Exam questions leakage, human errors during script marking, and score recording are all common problems with the traditional form of evaluation (examination). The growth of technology in the field of computer science has forced the use of computers in almost every aspect of human life and activity, including education. This project, Web-based Examination System, arose from a desire to address the issues plaguing the traditional (paper-based) examination system by providing a campus-wide service for e-assessment that is free of irregularities and generally fair to examinees, as well as improving instant feedback. The method allows examination results to be released in record time and without error. Web-based Examination System can be an excellent option for mass education evaluation because it has several innovative characteristics that are not available in paper-based systems, such as real-time data collecting, management, and analysis, as well as distributed and interactive assessment to encourage distance learning.

KEYWORDS: *Web-Based Examination System, E-Examination, Computer-Based Test, Web Server, Database.*

INTRODUCTION

The Online Examination System is now regarded a rapidly emerging examination method because of its precision and speed. In addition, less staff is required to conduct the examination. Assessment tests, aptitude tests, psychometric tests, personality tests, entrance exams, and campus examinations are all conducted with it. Organizations can also simply track a student's development by administering an examination. As a result, the result takes less time to calculate.

It also helps to reduce the use of paper. According to today's requirements, an online examination project in various programming languages is highly good to study. The educational institution's use of an online examination system is critical for preparing exams, as it saves time and effort in checking exam papers and preparing results reports.

Furthermore, the system based on a Browser/Server framework to conduct the examination and auto-grading of objective questions. The system simplifies the administration of exams, the gathering of answers, the automatic marking of submissions, and the generation of test reports. It will be accessed over the Internet, making it appropriate for both local and remote testing.

The devised system decreases the amount of time spent on examinations, grading, and reviewing. It also has the potential to drastically reduce examination malpractice because examinees are duly authenticated online in real-time and their results are released a few minutes after the examination is completed. Instead of the lecturer spending weeks marking scripts and grading manually, the computer will grade the students as soon as they finish their paper, get their already stored continuous assessment, and produce their final result. It also enhances effective distance education as examinees can write examination in any part of the world and equally get their results instantly.

E-EXAMINATION (COMPUTER-BASED EXAMINATION)

The conduct of examinations, as well as the process of producing results, has been fraught with problems in many higher institutions across the Globe, resulting in the failure to release results on time, the inability of certain students to receive their results, and some incomplete results. These issues can be addressed through the utilize of electronic media.

As used in this document, e-examination refers to a system that involves conducting examinations through the internet or intranet utilizing a computer system. Because Internet and database technology have advanced, Computer Based Test, which was previously only available on personal computers (PCs) or local area networks (LANs), has been gradually upgraded to work on the Internet using browsers as the test interface, allowing users to access it from anywhere in the world. Web Based Examination has proven to be a useful tool for assessing large groups of students. Computer-based examination and test tools have been applied for different purposes [1]:

- placement tests,
- entry-level tests (prognostic tests),
- self-assessment tests,
- regular written and oral examinations (selective and diagnostic examinations),
- Online surveys.

METHODOLOGY AND SYSTEM DESIGN

This technical paper aims to demonstrate the development of an e-examination application for boosting successful distant education, with the goal of eliminating the digital divide in access to high-quality education around the world.

The application was created by utilizing a variety of programming paradigms and languages, including HTML, CSS, and PHP (for the front-end interface) as well as MySQL, and was hosted on an Apache web server. The usage of HTML and CSS, which are respectively a markup language for information presentation and a styling language, allows for the creation and proper layout of the user interface. To enable dynamic content production, PHP (a web scripting language) is utilized to generate dynamic material based on the system's user and the matching content contained in the MySQL-managed backend database. The web server is used to serve WebPages to users as needed, as well as to interpret the PHP scripting commands on the page. In other words, the computer simply serves as a platform for students to take exams, teachers to create tests, and test papers to be transmitted. [2]

DEVELOPMENT LANGUAGES

Cascading Style Sheet (CSS)

It is a set of rules that allows the user to control the appearance of a web content in a web browser. Colors, background pictures, typefaces (fonts), margins, and indentation are all examples of formatting applied to a website. CSS allows a designer to create a style (a list of formatting characteristics such as fonts, sizes, and colors) and then apply it to one or more portions of an HTML page using a selector. There are three places where CSS information can be specified: (i) within the document body's particular tags (Inline CSS), and (ii) at the top of the document within a <style> block, or combined with named <div> or containers in the document body (Embedded CSS), and (iii) in one or more separate files shared across many Web pages (External CSS).

Hyper Text Mark-up Language (HTML)

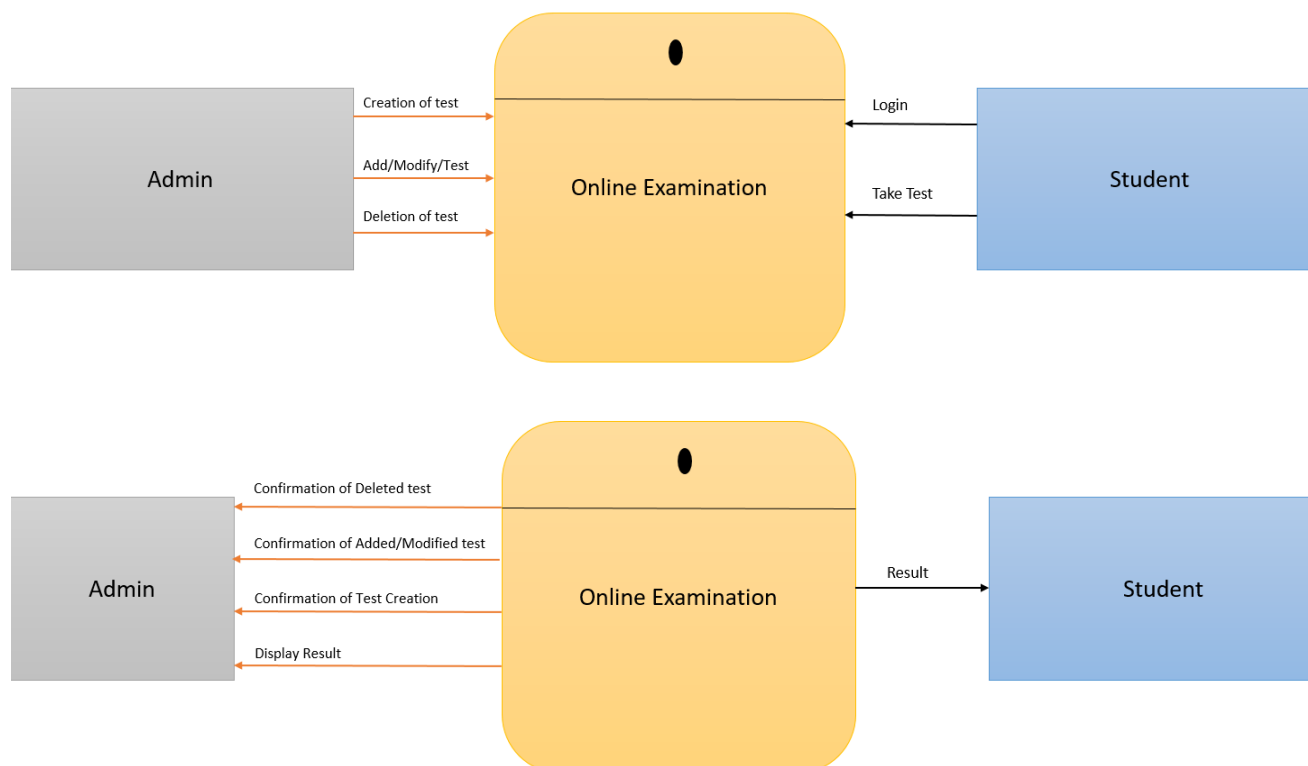
It is the core technology in which all Web pages are written. HTML is not a programming language rather it is a mark-up language for collection of mark-up tags to describe WebPages. Mark-up is made up of tags, and tag names are enclosed in angle brackets.

Hypertext Pre-processor (PHP)

It is a popular Open Source general-purpose scripting language that is well-suited for Web development and can be integrated in HTML. Unlike other CGI scripts written in languages such as Perl or C, where a large number of commands are typed to generate HTML, PHP code is surrounded in specific start and end tags that allow you to switch between PHP and other modes.

Structured Query Language (SQL)

This is the standard language designed to access relational databases.



To make software development easier and faster, Integrated Development Environment(IDE) may be adopted. An IDE is a software application that provides comprehensive facilities to computer programmers for software development. An IDE normally consist of a source code editor; build automation tools and a debugger.

MySQL Workbench

MySQL is the world’s most well known open source database, empowering taken a toll viable delivery of dependable, high-performance and adaptable web-based and implanted database application. The information in MySQL are put away in tables. MySQL workbench may be a bound together visual instrument for database models, engineers, and DBAs. It gives information modeling, SQL advancement and comprehensive administration tools for server setup, client organization, reinforcement and much more. MySQL workbench empowers a DBA, designer, or information planner to oversee databases. It includes everything a information modeler needs for making complex Entity Relational (ER) models, forward and switch designing additionally conveys key highlights for performing difficult change administration and documentation errands that regularly require much time and effort. MySQL workbench conveys visual instruments for making, executing and optimizing SQL inquiries. The SQL editor gives color language structure highlighting, auto-complete, reuse of SQL snippets and execution history of SQL. The database associations board empowers designers to effortlessly oversee database associations. The protest browser gives instant access to database construction and objects. [3]

SYSTEM DESIGN

Database (Backend) Design

Database design is concerned with how data is represented and stored within the system. The examination questions, answers, grades, and reviews must be stored in a persistent way. Moreover, we need to keep information about the students. The system stores the above information in a MySQL Database server. Such database has been chosen since it is open source, and there are implementations available for the main architectures.

User Interface (Frontend) Design

Usability is the ease with which a user can learn to operate, prepare inputs for, and interpret outputs of system or component. This usability of a system is made less more or less stressful by the usability and complexity of the user interface. The user interface of a system is therefore the part of the system that the end user interacts with. User interface design is concerned with how users add information to the system and with how the system presents information back to them.

YII Framework

Yii is a generic Web programming framework, meaning that it can be used for developing all kinds of Web applications using PHP. Because of its component-based architecture and sophisticated caching support, it is especially suitable for developing large-scale applications such as portals, forums, content management systems (CMS), e-commerce projects, Restful Web services, and so on.

Yii is not a one-man show, it is backed up by a strong core developer team, as well as a large community of professionals constantly contributing to Yii's development. The Yii developer team keeps a close eye on the latest Web development trends and on the best practices and features found in other frameworks and projects. The most relevant best practices and features found elsewhere are regularly incorporated into the core framework and exposed via simple and elegant interfaces. It is flexible enough to work for many unique design needs.

FUNCTIONAL REQUIREMENTS

Functional requirement defines the capabilities and functions that a system must be able to perform successfully. In software engineering and system engineering a functional requirement defines a function of a system or its component. These functions are the set of inputs, the behavior and outputs of the system in question. In other words it captures the intended behavior of the system. This behavior may be expressed as services, tasks or functions the system is required to perform and it shows the features that differentiate the system from other systems. Functional requirements should include:

- descriptions of data to be entered into the system,
- descriptions of operations performed by each screen,
- descriptions of work-flows performed by the system,
- which can enter the data into the system
- how the system meets applicable regulatory requirements.

The intended software's functions are highlighted below:

- The system has a homepage where respective users (administrator & students) can login to perform their different operations.
- The system has the test page where the student would be presented with test questions to be answered by him/her. The system then automatically adds the marks allocated in each question to determine the total mark for the test.

NON-FUNCTIONAL REQUIREMENTS

These define system properties and constraints e.g. reliability, response time and storage requirements. Constraints are I/O device capability, system representations, etc. It is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. This should be contrasted with functional requirements that define specific behavior or function.

SYSTEM IMPLEMENTATION

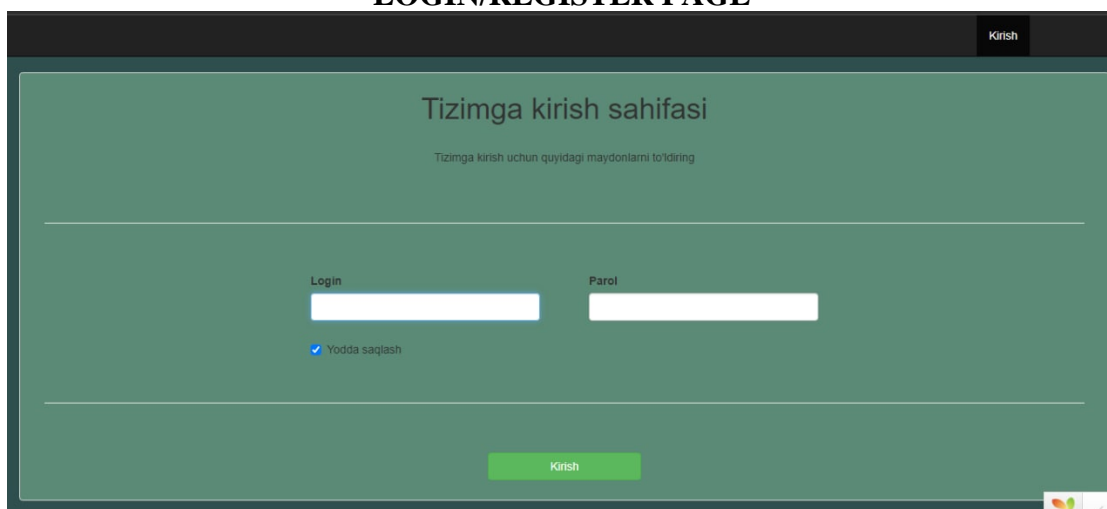
To test the effectiveness of the design, PHP and HTML were used, with MySQL as the back-end integration database. The choice of these programming languages is based on the features of the languages that make them very appropriate for this work.

SYSTEM REQUIREMENT AND SPECIFICATION

The minimum hardware and software requirements for the WES are: Minimum of PentiumIV or IBM compatible system, 500Mhz processor speed or higher, minimum of 512MB memory capacity, minimum of Windows XP as the operating system (OS), support any web browser. Internet Explorer, Mozilla Firefox, Google Chrome and Xamp server.

INTERFACES

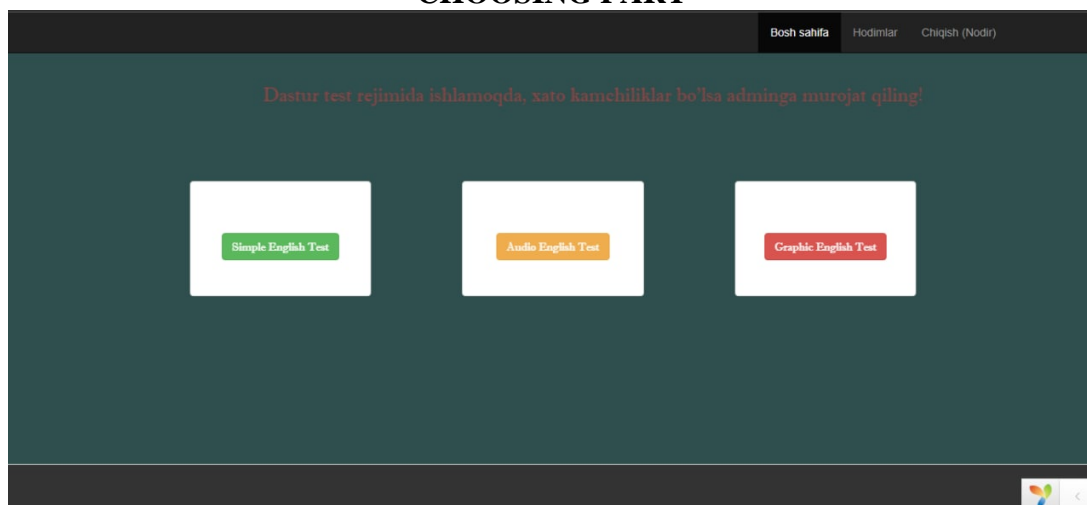
LOGIN/REGISTER PAGE



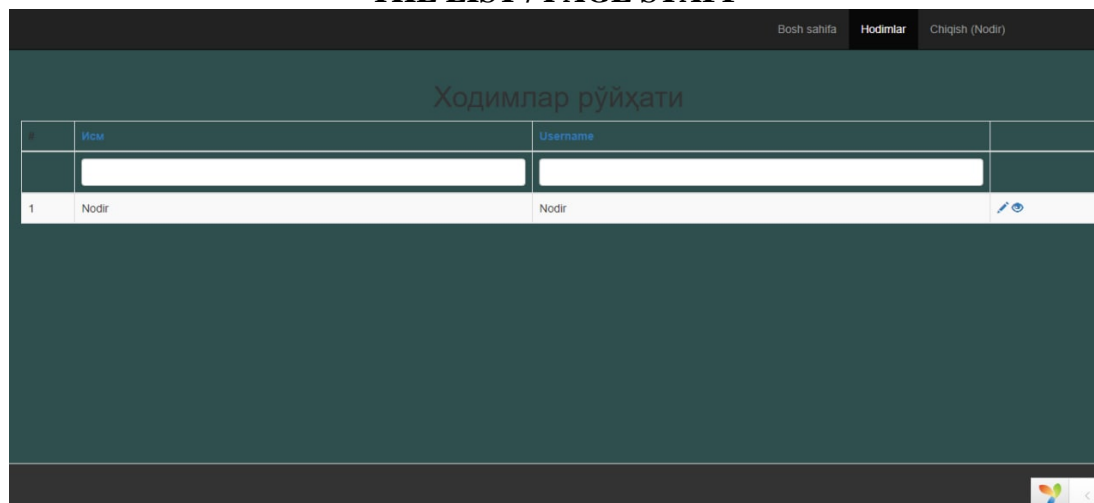
Login module helps the user (students or lecturers) to login to the site. The lecturer cannot login on this platform but would be done by the administrator. An administrator is to register the lecturers' credential and then provide each lecturer with login credentials. The students must

register first before using the registered credentials to login. The login provision in this page helps the already registered user to directly access the site.

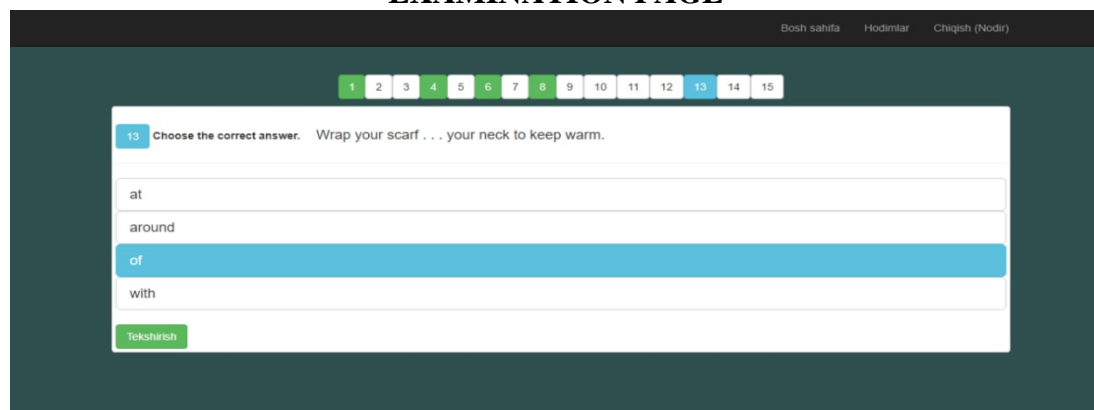
CHOOSING PART



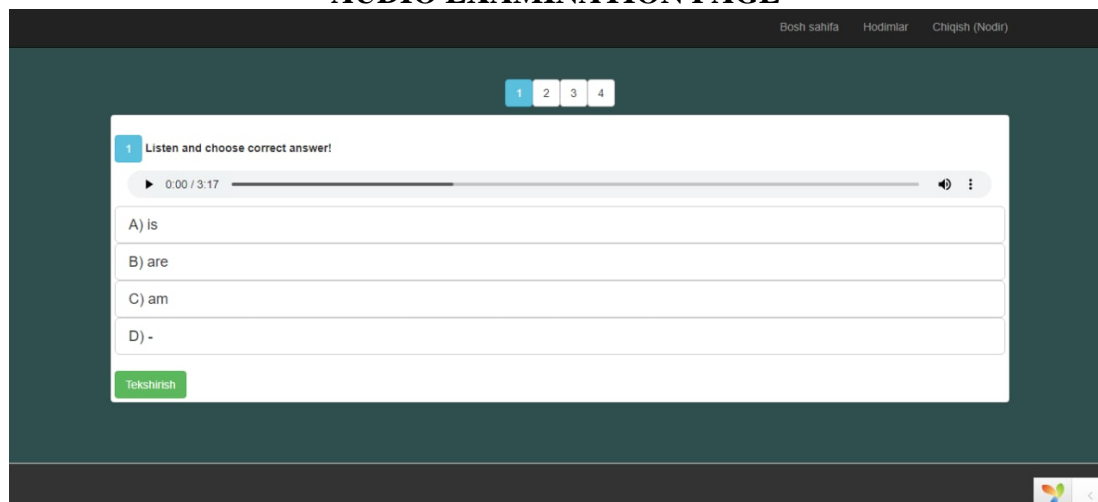
THE LIST / PAGE STAFF



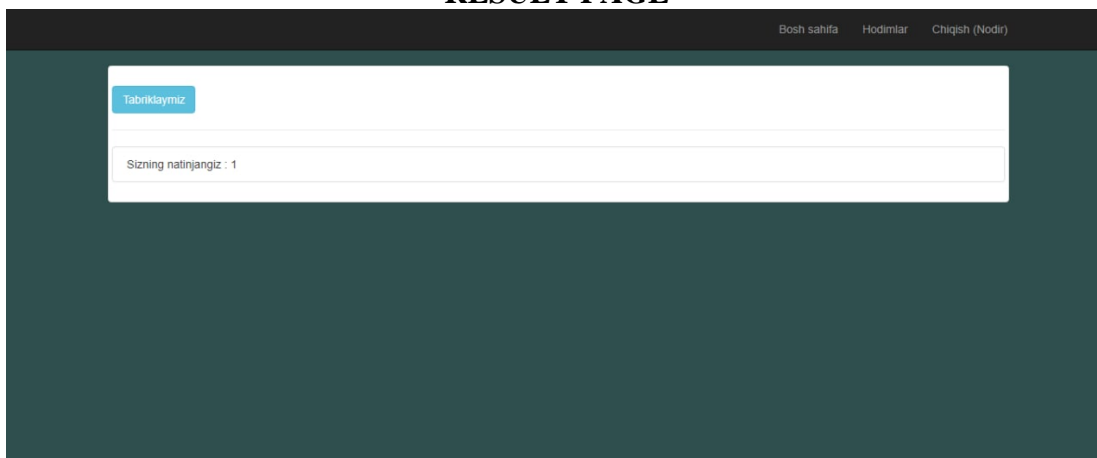
EXAMINATION PAGE



AUDIO EXAMINATION PAGE



RESULT PAGE



CONCLUSION AND RECOMMENDATIONS

It is not enough to focus on the passing required skills to the learners in distance education but to equally furnish them with their performances shortly after evaluation without hitch. Consequently, the developed WES is capable of solving the associated problems with the traditional test methods and equally promotes distance education.

When online method of instruction is used to acquire skills in higher education, the application can be used for efficient assessments regardless of the location of the examinees across the globe.

It is possible with this system to space the period of examination without compromising quality and integrity of the examination. The system has the potentials to reduce drastically examination malpractice as applicants are duly authenticated online, real-time before taking the examination and the integrity of the result could also be enhanced since the candidates have access to instant result checking.

If the e-examination system is fully optimized and it is introduced into the institutions, it will go a long way to control and check examination malpractices and all fraudulent acts associated with

the manual process of writing examination. However, for the system to be adopted on a large scale, efforts should be intensified to ascertain its disadvantage on accounts of IT illiteracy on the part of the students', by making the interface easy to interact with.

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