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PERFORMANCE ANALYSIS SYSTEM USING WEB BASED SOLUTION FOR MCQ TYPE ONLINE EXAMINATION

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Abstract: - *Performance Analysis System using Web based Solution for MCQ type Online Examination is an effective solution for the college or institute to computerize the traditional way of conducting exams and to simplify conducting examination and generation of result. The project's goal is to implement a centralised framework that will ensure that examination-related activities are efficiently handled. Students and faculty can enroll in the system by registering and providing information such as their name, mobile number, email address, password, and so on. The system is not restricted to a single branch. It allows a student's test details to be accessed more easily. The information is entered into a database, which the instructor can provide for each student. All of the above tasks can be completed by an automated system in just a few clicks. The administrator may update the student and faculty information, as well as add or remove them, from this page. The admin and instructor login terminals also generate and administer all of the Tests. This system is build using various open source technologies i.e. CSS, JAVA SCRIPT, PHP. and MYSQL is used to create database. The progress report of a particular exam is stored in the student's individual account which can be accessed by all the three entities (admin, teacher & student).*

Keywords – *MCQ based online Examination and Result generation system, Web Design, Auto grading, Students database, Result Generation, Online Examination*

I INTRODUCTION

Most important process in any institute is to carry out exams and evaluate them. Currently this process is carried out manually which leads to enormous bulk work and uncountable human errors. As a result, there is a lack of quality, a lot of paperwork, which contributes to unmanageable data, a time-consuming process that takes a lot of time and human resources. All of these processes are completed manually or with the assistance of third-party software, but using multiple software to complete a task is never considered successful.

The main goal of the **Performance Analysis System using Web based Solution for MCQ type Online Examination** is designed to reduce these workloads and make the Exam

process more comfortable for students. Furthermore, by eliminating human errors, this module can provide us with productive performance. The following are the institution's primary issues on a daily basis for e.g.

- 1)The administrative offices are the focal point of the activity.
- 2)It is essential to update and retain information (results).
- 3)There is inconsistency and duplication of data.

In this Pandemic situation where the world is trapped indoors the day-to-day schedule is hampered. To overcome the effect of this epidemic everyone has switched to the internet where the world is at your fingertips. **The Performance Analysis System using Web based Solution for MCQ type Online Examination** will help Institutes before and after the test, to centralise, monitor, and address various examination-related

student issues by generating examination papers and evaluating on basis of the same. The examination pattern will be MCQ (i.e. multiple choice questions).

II.LITERATURE REVIEW

Performance Analysis System using Web based Solution for MCQ type Online Examination is a solution to the ever challenging problem in the history of educational institutions in the management of the examination records and maintaining results. In the dark phase of the Pandemic it has become even more tedious to conduct and maintain records of the examination where it has nearly become impossible for the management to collaterally conduct the examination process.

Several attempts have been made by numerous researchers in developing an online platform for Examination and Results generation, but it has never been more in need than ever before.

ODES is an open-source research project that began in 2015 as part of an M.Sc. thesis and is still being developed and maintained today. The aim of this tool is to help developers and academics with online review projects. It has similar features and behaviour to other software systems, is lightweight, and can be used by computers running various operating systems. ODES provides a simple-to-implement solution that eliminates the need for code creation and the associated risks of failure. Teachers can quickly execute their exams/questions with an automated system thanks to the plugin's customizability. Furthermore, it facilitates the sharing of exams/questions within the group of schools/universities/other institutes, thereby improving collaboration. It is not subject to any commercial licencing requirements and can be used freely by universities and schools since it was written using WordPress and released under an open-source licence. [1]

Web-based adaptive exam system that has been improved Due to its design and simple visual characteristics, the evolved adaptive exam system offers a broad range of applications to students and lecturers. Users do not need any additional guidance. Exams can be implemented, analysed, and calculation and assessment procedures can all be done using various approaches. In addition to the adaptive implementation of tests, student monitoring and instruction, as well as exam outcome assessment, which is often overlooked due to its time- consuming structure but critical in terms of meeting educational goals, can be made more convenient. [2]

Another important component was the design of the online review system's web page, which included placing information in a logical order and using images of sufficient resolution so that users/visitors could understand the system's intent. The system's web page is a user-friendly resource with

useful information that is appropriate for the World Wide Web and can be accessed through a web browser. [3]

Existing computer-based assessment systems typically do not scale well and do not completely embrace features such as subjective question evaluation, interactive content delivery, and off-line exams. These characteristics are extremely desirable for distance estimation, and new approaches to designing such applications are needed. Mobile Agents are an efficient distributed application paradigm. Mobile Agents are self- contained software entities that can pause, ship to another agent-enabled host on the network, and resume execution, determining where to go and what to do in the process. They have a number of benefits over conventional design methodologies, including: network load reduction, latency reduction, and disconnected operations. [4]

The process of defining, modelling, and recording how data flows around an information system is known as data flow modelling (DFM). A data flow model is made up of a series of connected data flow diagrams that are accompanied by relevant documentation. Processes (activities that convert data from one type to another), data stores (data storage areas), external entities (things that send data into or receive data from a system), and data flows are all represented by DFMs (routes by which data can flow through). [5]

The Waterfall Software Development Life Cycle (SDLC) model was used as the design methodology for this analysis. The SDLC is a process for developing, designing, and maintaining computer software, information systems, and industrial systems. Linear Sequential Life Cycle Model is another name for it. It's a well-known software development framework. This model is easy to understand and is ideally suited for smaller projects with well-defined specifications. It is made up of a series of stages, each of which has an output that feeds into the next stage's input. The end users (students and lecturers) were interviewed during the requirement stage to assess their attitudes and expectations.. [6]

Grading time is cut in half thanks to the widespread use of automated testing, which enables graders to concentrate on issues like code style. The aim of this paper is to show how computerised testing systems can be combined with the World Wide Web to create web-based evaluation and testing systems. This paper focuses on comprehensive programmes that use a central server to deliver and grade exams. The aim of this project is to create an exam management tool that students and instructors can use to track and improve their learning and teaching practises. [7]

One of the most significant features of the exam cell module is the form filling function. This feature allows students to get the different forms they need to fill out online instead of standing in a line in the examination room. It also aids

examination cell staff in maintaining all types in a digital format, making examination cell management and operation simpler. The student can access the form at any time from his or her account. The student may be required to pay for the forms (depending on the situation), and until the payment status is validated in the ERP module, the form is made available to the student.. [8]

The majority of important processes in an educational institute are carried out manually, such as the details of teaching and non-teaching staff, student records, and the number of examination halls available. Since all of these processes are carried out manually, they increase the work load and are more prone to errors. The existing systems are conventional systems that support manual procedures, resulting in a significant amount of time spent and a large number of hard copies. Existing system is unreliable, ineffective, and inaccurate; thus, report generation is a difficult task; additionally, if a report is produced, calculations must be performed manually, which would almost certainly result in errors.[9]

When a student applies for admission, they must first pay the application fee, in which an office user can create an entry in the appropriate student database. Students must login to the application using that registration id, fill out the college form, and then send the printouts of the form along with the relevant documents. Because of this, the office user just needs to enter the student's name, registration number, and payment amount. By filling out the questionnaire, students will create their own entries in the database. Other departments can only see student or employee information. For the admissions process, students may obtain a unique id. Students are identified by a unique id, which allows them to participate in any activity offered by the college. Students and employees may provide input to the administrator or the user of the collage office. [10]

III.PROBLEM STATEMENT

The project aims to develop a Web based Application which can provide an online platform to conduct Examination and generate and maintain results accordingly without any human errors.

IV.PROPOSED METHOD

Performance Analysis System using Web based Solution for MCQ type Online Examination has a separate section for admin, students and teachers. Multiple users can use the module through different login id's and on multiple systems simultaneously using the internet.

Below shown is the activity UML diagram of examination and result generation module, which shows flow between activity of administrator, test, faculties, students and results. System access is provided only after a secure login with unique id and password. It shows activity flow of adding, updating and

deleting users, tests, and results. After login admin can manage all the operations on users, test, teachers and can view result analysis.

Admin can register users, search users and test, view descriptions of test, add users and test and can delete users and test. Admin and faculty can view overall performance of students in rank generation. All the pages such as student, faculty and test are secure and user can access these after secure login only.

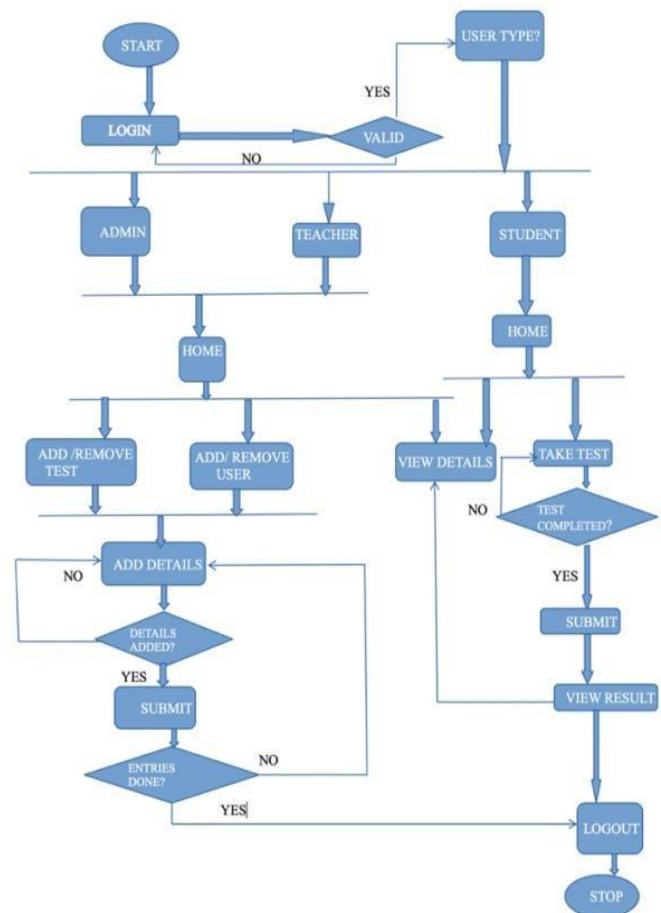


Figure 1. System flow diagram

The procedure is as follows:

- 1) Using a correct username and password to log in.
- 2) Select user type i.e. admin, teacher, or student.
- 3) Admin and teachers can create and modify the tests as and when required. Whereas students can appear the examination and view the results.
- 4) In the Home page students get to see all the exams and their progress reports appeared by them.
- 5) Using admin login one can manage different users in the application.
- 6) Using teachers login one can create tests periodically.
- 7) Using student login students can appear for the exams

and get evaluated on the basis of the same.

- 8) In Report section we can view the progress (score) of a particular student which is automated by the system as the student appears the exam.
- 9) Separate student and teacher id's are created once they complete the registration process.
- 10) Logout from the application.

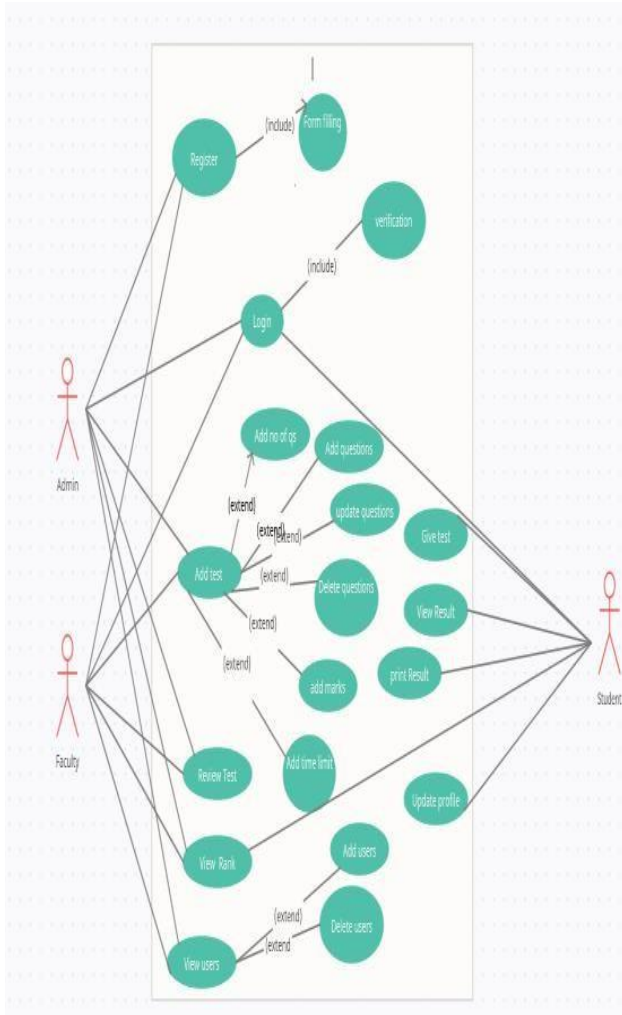


Figure 2. Use case diagram

• Use Case Diagram:

In this diagram there are three actors, Administrator, Student and Teacher. Administrators activities on the application are initiating new users by registering teacher or student on the system, modifying details of users or existing test, creating test, viewing questions and result analysis. Teachers activities are setting test and instructions, moderate the questions and adding or deleting the test. Teachers can view students' progress through result analysis and rank calculation. Examinations are attempted by students, Students can also modify their profile details. results can be viewed with rank calculation to improve performance of students.

V RESULT

Graphical User Interface for Performance Analysis System using Web based Solution for MCQ type Online Examination



Figure 3. User registration in the system by admin User registration in the system by admin:

User registration in the system by admin gathers all the data from the users and creates the database of the same, enabling the system to manage the individual users account.

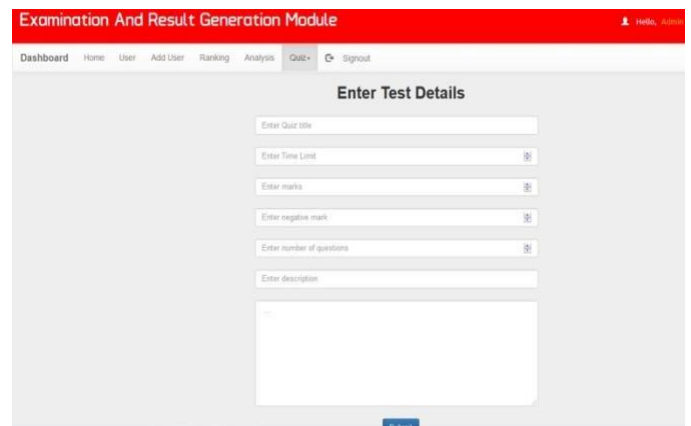


Figure 4. Test creation by admin in the system

Test creation by admin in the system:

Here the MCQ type question paper is created by the admin in which one option has to be chosen. Appropriate weightage according to the test is given to the questions. It enables the admin with the features like time limit & negative marking.

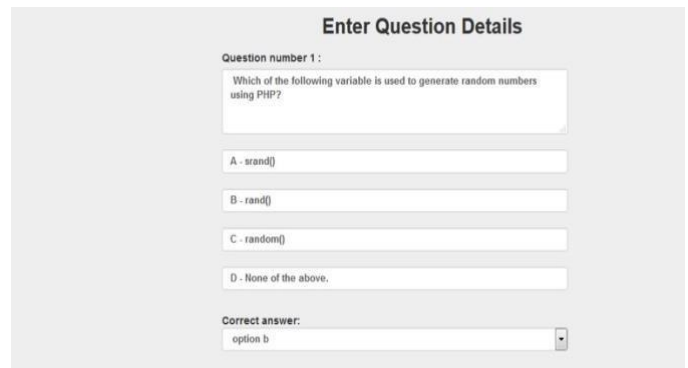


Figure 5. Question Page

Question Page:

Here students are expected to choose the correct options for the given question. The examination pattern is MCQ (multiple choice questions) pattern. This enables the student to think more and react accordingly.

Sr no	subject	Total no of questions	Points	Time	
1	Php	10	10	10 min	Delete
2	Linux	10	10	10 min	Delete
3	Java	10	10	10 min	Delete
4	Maths	10	10	10 min	Delete
5	Python	10	10	10 min	Delete
6	Networking	2	4	5 min	Delete

Figure 6. Quiz created by admin in the system

Quiz created by admin in the system:

In the section under Quiz created by admin topic-wise and/or subject-wise Quiz is created giving students flexibility to attempt it as and when prepared in the given time period.

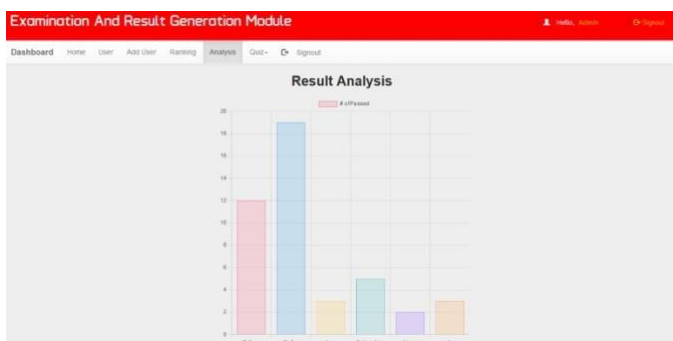


Figure 7. Result analysis of passed students of Test

Result analysis of passed students of Test:

In Result analysis of passed students of Test the progress of each student is tracked and maintained for their academical progress and future analysis.

VI.CONCLUSION

Finally, the introduction of this project would result in a reduction in the workload of students, faculty members, and exam-cell employees. As a result, a fully functional Automated Examination Process System in MCQ (multiple choice questions) format will be developed. Aside from that, students would be able to access their grades and academic status via the system. Faculty members would be eligible to enter marks for students in their respective subjects. The head of the department will be able to keep track of the students' progress, as well as verifying and validating their grades. The proposed framework would take care of the processes. This will make manual processes less repetitive and allow for more effective, scalable, and automated processes.

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