VIRTUAL INSTITUTION MANAGEMENT USING COMBINED TECHNOLOGY ACCEPTANCE MODEL

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Abstract

A advanced managing web site which can be used to manage multiple educational institutions along with extra features . like Providing notes in the same website for the student usage , Generating Report for all kind of analysis from academic to expenditure, Contact guardians of students directly through mail or sending them notification, Teachers can provide hand written notes to the students, give video lectures, and also schedule live classes to the students, Students can directly rise complaint, if they have any issues, All kind of departments and staffs can be managed using his web enabled application, Being an web enabled application it can be easily accessed from any device with internet connection.VCR is a web enabled application developed in PHP and powerful MYSQL database backend and storing a bulk data in big data . This paper Used the unified theory of acceptance and combined technology acceptance model use of SPSS 21 ,with seem and smart PLS V3 software used to test the proposed model.this paper proposed model for the electronic record management adoption to support the productivity and performance of higher professional education institution in the Yemeni context. To implement this application, educational institution do not need much expensive hardware and software, they just need an internet connection and a desktop with basic operating system and a browser.

Introduction

Management is a great art. It is not as easy the way says. So, to enhance the efficiency management process and to reduce the efforts of human and to help them in management we developed this web enabled application. It will be useful for the management of entire institution system both its accounting, colleges , schools , and manage any organizations also ect..,

In addition to it there was one problem in the current pandemic situation it about the giving providing education to the students all over the world in the proper way has become very challenging task for the teachers and for the educational institution. As a solution for this every educational

institution moved to third party software for different activities involved in education. For example, to provide notes they used google class room, whatsapp etc. To convey information and communicate with students they used whatsapp . instagram etc.. And for live lectures they used zoom, webex , google meet etc.. Likewise for each activity there was an individual platform which are far efficient but as a student it's really difficult to handle these different platforms. So to make it convenient for both teachers and students we have integrated this features in this web enabled application .Every institution have their own individual website but they wont use it in this appropriate way . And one main thing is recently UGC announced , a person can study two degrees at simultaneously and also there is no need to study master degree to study a PHD . This two big announcements are make this project as efficient thing. Now so many people are like to study degree in online mode .It will be useful entire institution system both a accounting students , teachers , employee , workers ect… To bring all those things in website we made this website or web enabled application.

LITERATURE SURVEY

INSTITUTIONS ELECTRONIC RECORDS MANAGEMENT

Electronic records management system (ERMS) is important in bringing about the productivity of organizations, majority of them refuse to implement it, while a few embark on implementing it blindly, without guidance, which often results in failure. This paper, therefore, proposed a model for the ERMS adoption to support the productivity and performance of higher professional education (HPE) institutions . This paper used the unified theory of acceptance and use of technology (UTAUT) and a mixed explanatory approach to gather quantitative and qualitative data. Data were then analyzed through the use of SPSS 21, with SEM and Smart PLS V3 software used to test the proposed model. he quantitative findings showed that performance expectancy, effort expectancy, social influence, facilitating conditions, policy, and training have a significant relationship with the ERMS adoption, which in return has a significant relationship with HPE organizations' productivity. This was supported by the qualitative results, confirming the theoretical study and contributing to the understanding of the ERMS adoption among HPEs. Such adoption ensures educational institutions' productivity.

2. RANDOM INTERVEL ATTENDANCE MANAGEMENT SYSTEM

The exceptional circumstance caused by the COVID-19 pandemic demands substantial modifications in the teaching-learning processes across the globe. Teachers and students are making useof online learning in virtual classrooms as an alternative for face-to-face learning in physical classrooms.However, students' attendance management during virtual learning is a challenging problem. It is quite difficult to identify students' disengagement and even to know whether they are in front of their smart devices or not. In this paper, we introduce the 'Random Interval Attendance Management System' (RIAMS),which

is an innovative solution for attendance monitoring issues, students' disengagement, and attendance faking during virtual learning. In RIAMS, we employed a face recognition module built using the Dlib open-source software library. The output analysis of each of the RIAMS modalities and the combined results emphasize the effectiveness and reliability of our system in the attendance management for virtual learning. The novel RIAMS model has the potential to be extensively deployed for virtual learning in post-COVID settings.

3. UNIVERSITY STAFF DATA MANAGEMENT SYSTEM

The application of Model-Based Systems Engineering (MBSE) methodology in the normal conceptual design stage of data management system. With the university personnel data management system as an example, it establishes the model diagram on Rhapsody platform through Systems Modeling Language (SysML), and defines the forward design process of the key functional architecture of MBSE. From the system top-level model building to the user fuzzy demand acquisition, finally, taking data audit as an example, the activity diagram and sequence diagram models are built, which provide direct reference for software development. Because of the replacement of text description by models, this methodology realizes the full decoupling of system functions, ensuring a consistent understanding of system description by all stakeholders and accordingly the effective reduction of the system iterative cost.

4. NOVEL STUDENT INFORMATION MANAGEMENT SYSTEM

With the continuous development of information technology, the means of information technology in the student management system continue to popularize and promote. It can make management efficient, fast and convenient. In view of the problems existing in the current student information management system, such as long development cycle, difficult maintenance and poor user experience. This paper design and implement novel student information management system. Based on the mode of Client/Server, the design of mobile terminal is added that WeChat mini-program is used for development. At the same time, Development of client based on Qt Quick. The interface is simple and easy to implement, also easy to transplant in different operating system platforms. The system is simple to implement, the system developers only need to be familiar with QML, JavaScript, CSS and other front-end development technologies to complete the development of the system. The practice shows that the system is more scientific and institutionalized student information management, reducing the labor intensity of the management personnel, with low cost, easy maintenance, low development threshold, short development cycle and other advantages, with a certain promotion value.

5. ONLINE TEACHING METHODOLOGIES IN HIGHER EDUCATION

Based on Erasmus credit mobility programs, ErasmusX is a project envisaged to offer students the possibility to add value to international exchange periods by combining online certified studies with further professional or academic experiences abroad. However, differences between national higher education systems and teaching styles can lead to issues concerning the recognition of credits, which makes necessary to establish common basic procedures. For this purpose, five different European Higher Education Institutions which have traditionally based their academic organization in the face to face credit system, have joined to develop on-line certified courses on several pre-defined areas following common practices. Bearing in mind this purpose, this communication focuses on the proposal of key pedagogical models, approaches and strategies to consider when designing online courses for mobility students. The revision of existing practices underline that online teaching requires not only an adjustment of the role of professors and students, but also a different structure of the courses based on a flexible online instructional design. The methods and models revised in this preliminary study point to the need of incorporating a collaborative online teaching approach with processed educational technology in English mediated instruction.

6. PERSONAL LEARNING ENVIRONMENTS AND ONLINE CLASS ROOMS

The present study investigates the use of Learning Management Systems as tools constituting student's Personal Learning Environments in the degree of Informatics Applied to Education in the National University of Chimborazo – Ecuador. The main result of this work is that there is an increasing number of courses that rely on virtual classrooms, but learning occurs both in and out of these learning environments. This study is the starting point for future research on the relevance, impact, and effectiveness of incorporating Learning Management Systems in university teaching, as well as on relations and possibilities of integration between them, Personal Learning environments, and mobile learning trends.

7. COOPERATIVE EDUCATION MANAGEMENT SYSTEM USING TAM MODEL

Information management system for cooperative education is a part of the cooperative project operation among entrepreneurs, universities, lecturers, and students to enhance student's experience during their studies with the actual establishment. There are various processes during the project, such as students selection for joining the project, entrepreneur selection, lecturer assessment, report issue of project management by project staff, and information summary of the management report. Different from original cooperative operation with a hard copy, the concept of information management system is designed and developed based on the SDLC Process and Laravel development framework, respectively.

A representational state transfer API software architecture is also applied with the management information system which helps to support all types of user system operations.

SYSTEM DESIGN

The system design is a tradition web development methodology that uses well-furnished and most used technologies ere used so that it made us feel quite easy to solve our doubts while developing this entire system.About the design, being a web enabled application or probably an website every one who can access internet and have any kind of browser can access this website and use it easily use it.

MODULE DESCRIPTION

Login

The login module contains username and password field that are given by the super admin to other users, based on the permissions given to user he can access the several different pages or modules of the admin site. The super admin is the one who have access to all the modules in the site. The super admin is the one who an add institutions, teachers, students, staff. He can also create a new user and assign roles for them. The login system is highly secured and all the passwords are encrypted.

Super Admin

Super admin is the person who manages the entire system he can customize all the modules in the system. He can add new institution, teachers, students, transport, give announcement etc. He can add new roles if he wishes to add. He can set email templates and also restrict some features to the users. He can generate all institution reports. The super admin can have n number of admins and manage all kind of staff in the institution.

Teacher

A teacher can be added by the super admin. A teacher can add class, syllabus, student and also notes that can be used by the students. Its upto the teacher to permit students to allow to edit the notes or add new notes etc. Teacher can give announcement to students, mark attendance, give announcements, conduct events, post recorded lectures, schedule class and exams. The teacher can store the entire details of student's academic records etc..,

Student

As a student he can check for announcements, rise complaints, download or view notes when they need, view or download video lectures ,view his attendance, access to view class links.

Managing institutions, teachers, students, staff, transport, class ,guardian

The entire managing system have same architecture the request is given from the frontend(view), and the control is transferred to the controller where the database and the frontend is connected. Once an add request is given then from the frontend then the control is transferred to controller, In controller we write SQL queries using a special helper library and then the data is sent to database and store them there. Then when we need to retrieve we use the same query helper to retrieve them.

Generating Report , Issue Result

All types of reports can be generated both as a tabular report and graphical report.Any kind of reports like accounts, academic performance of the students, salary details and expense can also be generated. And all kind of result can be send to the respective student and his guardian.

Mail Service

Mailing system is integrated using php mail which is an helper library in codeigniter. This mail uses smtp to send mail we can set the for every user and they can receive mail.

Library management

Library management have entire books in the library and also hold the details about the library members who took book from library and all other details about the library the super admin or admin can add an librarian to handle the library records.

Basic college site

Along with this admin site an additional site that showcase some information about the institution will be displayed in the site. And this site can be controlled by the admin site as it is integrated in the back end.

Manage accounts

Super admin can handle all the details of accounting section if super admin need to appoint a separate accountant for this task super admin or admin who is permitted to access role assigning can create a new role and give him access to that.

The above mentioned are the major modules present in the proposed system. Apart from this we have provided some additional features which follow the same architecture. We have also provided the provision for SMS and payment integration which will be integrated later versions.

IMPLEMENTATION

Intgrated Developement Environment

It's a coding tool which allows us to **write**, test, and debug your code in an easier way, as they typically offer code completion or code insight by highlighting, resource management, and debugging tools. IDE's provide so many features because of all the features they are extremely useful for development.

● IDE enables us to design to write and manipulate source code.

● Maintains a smooth Development Cycle

● Increases efficiency and satisfaction

● Automatically checks for errors to ensure top quality code.

● Code completion capabilities improve programming workflow.

● Deliver top quality software on schedule.

● Provides IntelliJ which very helpful for developer and reduce development time

Features

● **Text Editor:** Designed to write text and to manipulate source code.

● **Debugger:** This tool is used for identifying and remedying errors within source code. This usually tests the various segments of code and identifies the errors before the application is release

● **Compiler:** This translates the code into a form machine can process, such as binary code. It is analysed to ensure its accuracy. The compiler then parses and optimizes performance.

● **Code completion:** This inserts the common code components.

● **Integrations and plugins:** After incorporating all the development tools the workflow and productivity is increased.

DATA STORAGE TECHNOLOGY

Bigdata

Big Data is a collection of data that is huge in volume, yet growing exponentially with time. It is a data with so large size and complexity that none of traditional data management tools can store it or process it efficiently. Big data is also a data but with huge size.

Big data can be described by the following characteristics:

➢ Volume

➢ Variety

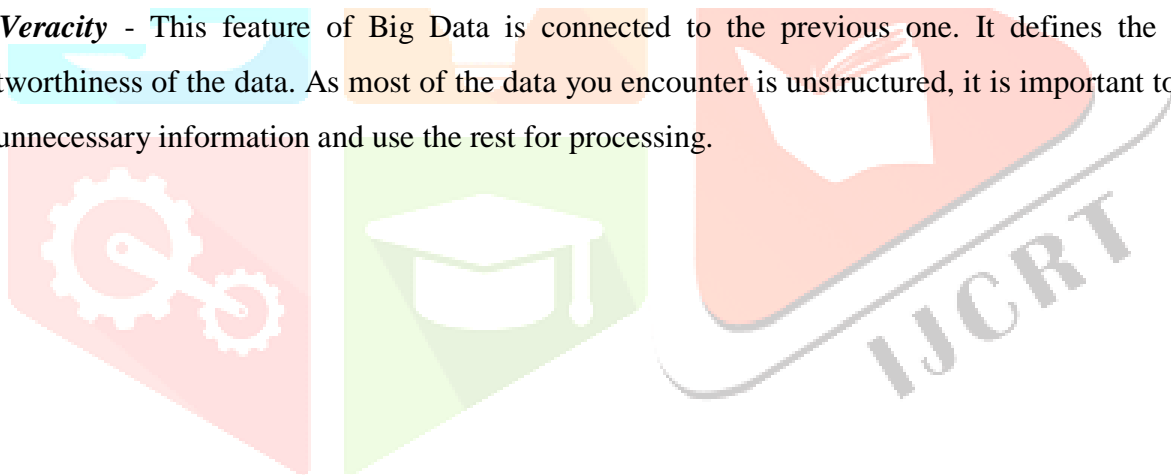➢ Velocity

➢ Variability

➢ Veracity

(i) Volume **–** The name Big Data itself is related to a size which is enormous. Size of data plays a very crucial role in determining value out of data. Also, whether a particular data can actually be considered as a Big Data or not, is dependent upon the volume of data. Hence, **'Volume'** is one characteristic which needs to be considered while dealing with Big Data solutions.

(ii) Variety **–** The next aspect of Big Data is its **variety**. Variety refers to heterogeneous sources and the nature of data, both structured and unstructured. During earlier days, spreadsheets and databases were the only sources of data considered by most of the applications. Nowadays, data in the form of emails, photos, videos, monitoring devices, PDFs, audio, etc. are also being considered in the analysis applications. This variety of unstructured data poses certain issues for storage, mining and analyzing data.

(iii) Velocity **–** The term **'velocity'** refers to the speed of generation of data. How fast the data is generated and processed to meet the demands, determines real potential in the data.Big Data Velocity deals with the speed at which data flows in from sources like business processes, application logs, networks, and social media sites, sensors, Mobile devices, etc. The flow of data is massive and continuous.

(iv) Variability **–** This refers to the inconsistency which can be shown by the data at times, thus hampering the process of being able to handle and manage the data effectively.

(v) Veracity - This feature of Big Data is connected to the previous one. It defines the degree of trustworthiness of the data. As most of the data you encounter is unstructured, it is important to filter out the unnecessary information and use the rest for processing.
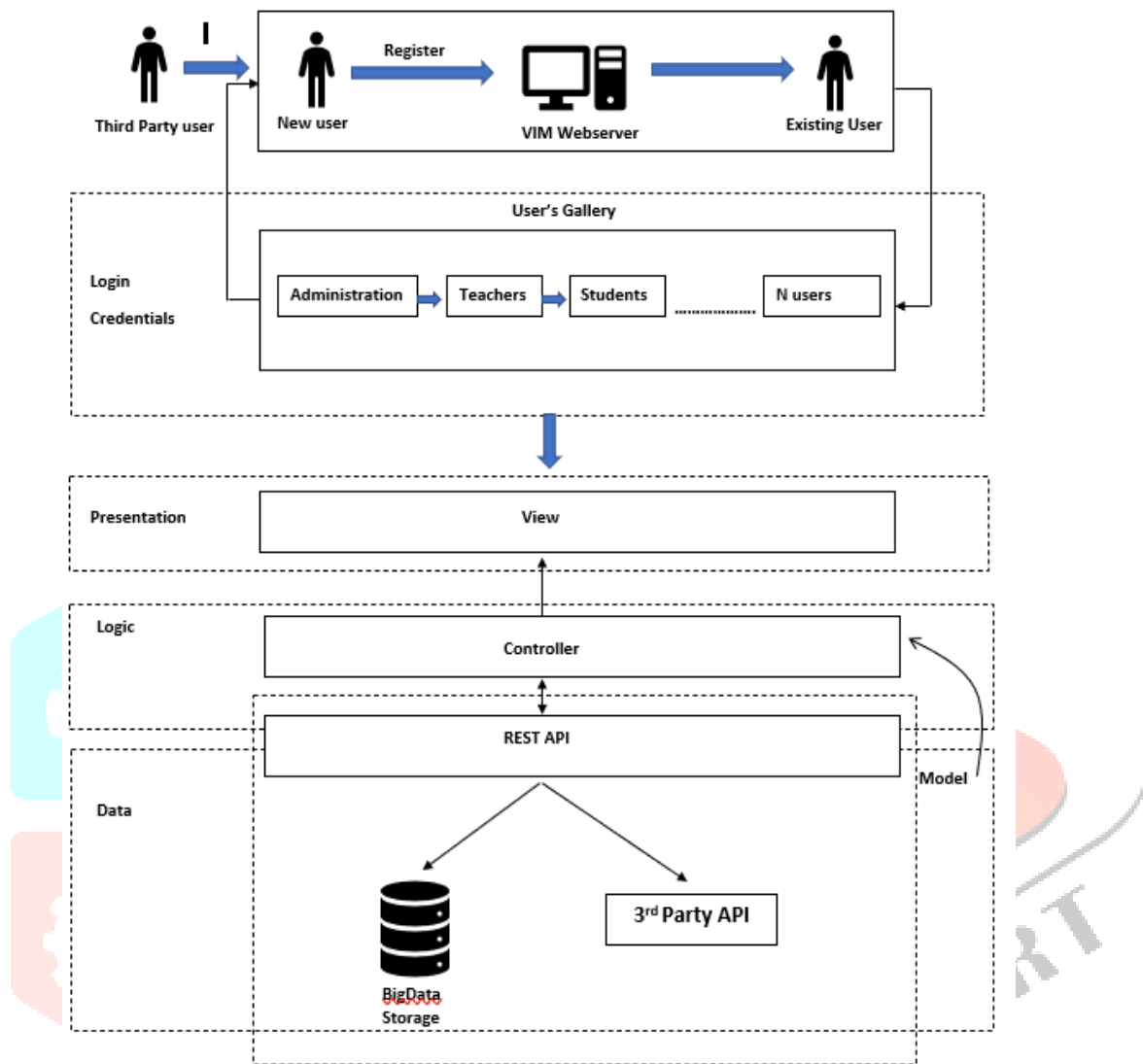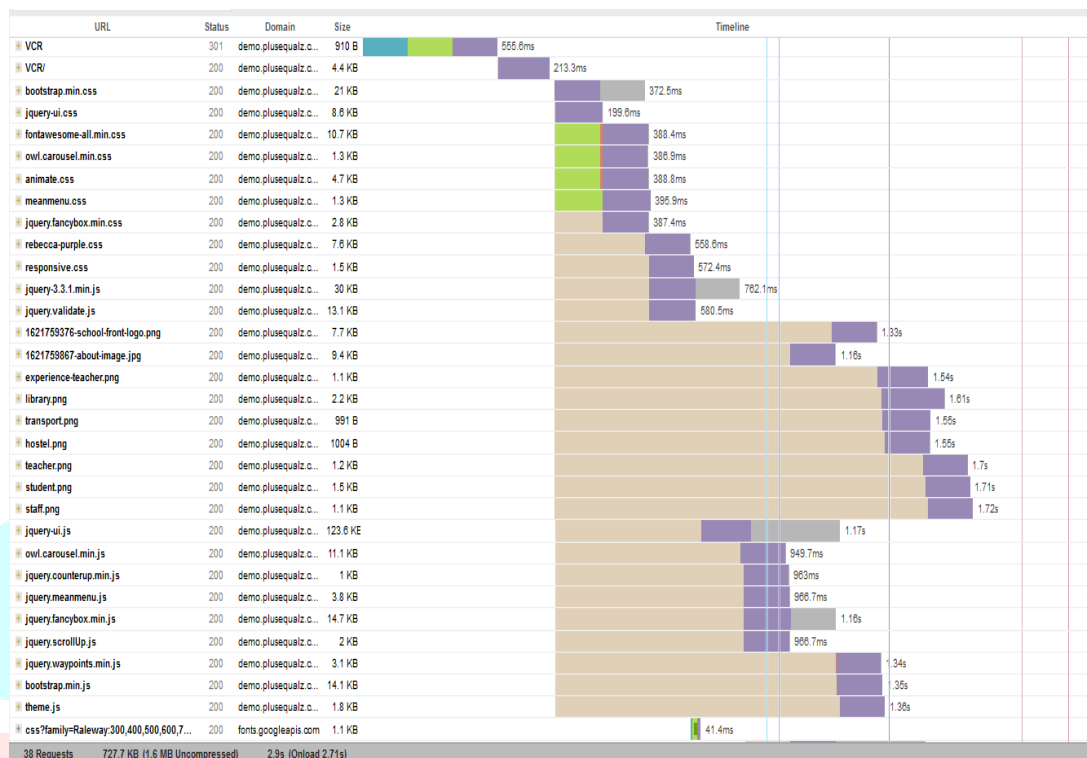
System architecture

Fig 1:system design

PERFORMANCE ANALYSIS

BIG DATA STORAGE

Fig 2: performance analysis

Functionality Testing

URL	Status	Domain	Size	Timeline
VCR	301	demo.plusequalz.c..	910 B	555.6ms
VCR/	200	demo.plusequalz.c..	4.4 KB	213.3ms
bootstrap.min.css	200	demo.plusequalz.c..	21 KB	372.5ms
jquery-ui.css	200	demo.plusequalz.c..	8.6 KB	199.6ms
fontawesome-all.min.css	200	demo.plusequalz.c..	10.7 KB	388.4ms
owl.carousel.min.css	200	demo.plusequalz.c..	1.3 KB	386.9ms
animate.css	200	demo.plusequalz.c..	4.7 KB	388.8ms
meanmenu.css	200	demo.plusequalz.c..	1.3 KB	395.9ms
jquery.fancybox.min.css	200	demo.plusequalz.c..	2.8 KB	387.4ms
rebecca-purple.css	200	demo.plusequalz.c..	7.6 KB	558.6ms
responsive.css	200	demo.plusequalz.c..	1.5 KB	572.4ms
jquery-3.3.1.min.js	200	demo.plusequalz.c..	30 KB	762.1ms
jquery.validate.js	200	demo.plusequalz.c..	13.1 KB	580.5ms
1621759376-school-front-logo.png	200	demo.plusequalz.c..	7.7 KB	1.33s
1621759867-about-image.jpg	200	demo.plusequalz.c..	9.4 KB	1.16s
experience-teacher.png	200	demo.plusequalz.c..	1.1 KB	1.54s
library.png	200	demo.plusequalz.c..	2.2 KB	1.61s
transport.png	200	demo.plusequalz.c..	991 B	1.55s
hostel.png	200	demo.plusequalz.c..	1004 B	1.55s
teacher.png	200	demo.plusequalz.c..	1.2 KB	1.7s
student.png	200	demo.plusequalz.c..	1.5 KB	1.71s
staff.png	200	demo.plusequalz.c..	1.1 KB	1.72s
jquery-ui.js	200	demo.plusequalz.c..	123.6 KE	1.17s
owl.carousel.min.js	200	demo.plusequalz.c..	11.1 KB	949.7ms
jquery.counterup.min.js	200	demo.plusequalz.c..	1 KB	963ms
jquery.meanmenu.js	200	demo.plusequalz.c..	3.8 KB	966.7ms
jquery.fancybox.min.js	200	demo.plusequalz.c..	14.7 KB	1.16s
jquery.scrollUp.js	200	demo.plusequalz.c..	2 KB	966.7ms
jquery.waypoints.min.js	200	demo.plusequalz.c..	3.1 KB	1.34s
bootstrap.min.js	200	demo.plusequalz.c..	14.1 KB	1.35s
theme.js	200	demo.plusequalz.c..	1.8 KB	1.36s
css?family=Raleway:300,400,500,600,7...	200	fonts.googleapis.com	1.1 KB	41.4ms

38 Requests | 727.7 KB (1.6 MB Uncompressed) | 2.9s (Onload 2.71s)

All functions in the application , database connection, forms used to enter data for submission, editing, getting, or deleting information from users were tested. Developers performed the test of the website. Some functionality requirements were tested during the test.

Security testing

Security was tested by pasting internal URL directly into browser address bar without login. SQL injection, SQL MAP tool was used to test all pages in website. Also when the user (Admin, Teacher) need to edit marks or information to other users if he edit the id URL the system will redirect to logout pae or home page.
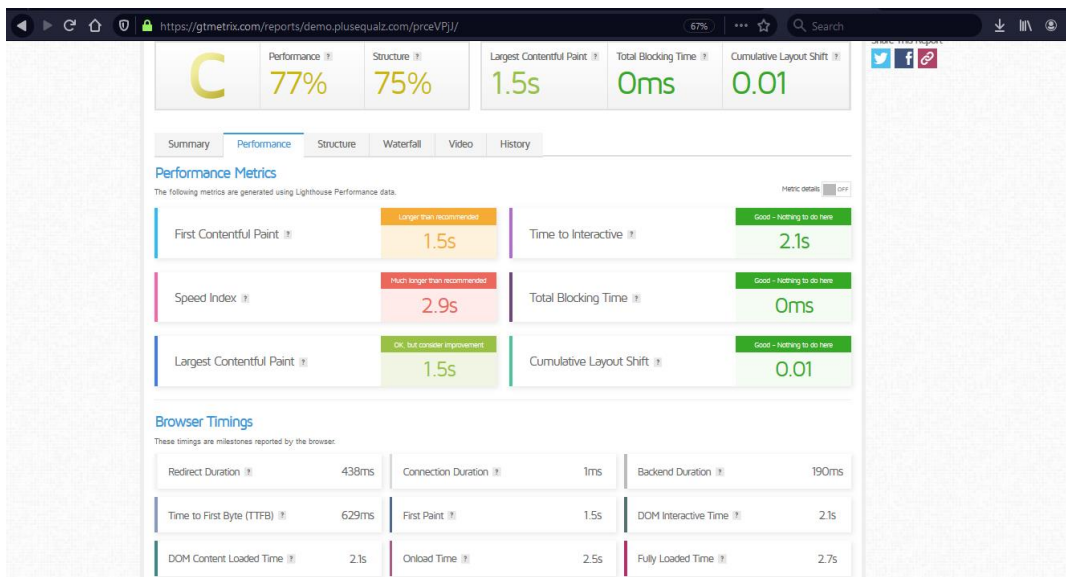
Fig 3: security analysis

Performance Testing

The website was tested on the chrome using an online tool called GTMetrix, which analyses web pages according to different rules by giving each rule a weigh, and then evaluate the score of each rule for the website. Rules used to evaluate is given below.

1. Make fewer HTTP request
2. 2. Remove duplicate JavaScript and CSS
3. Use a CDN
4. 4. Configure ETags
5. Avoid Expires headers
6. 6. Make AJAX requests
7. Add empty src or href
8. 8. Use GET for AJAX request
9. Compress components with zip Gzip
10. 10. Reduce number of DOM elements
11. Reduce cookie size
12. 12. Put CSS at top
13. Put JavaScript at bottom
14. 14. Avoid CSS expressions
15. Use cookie free domains
16. 16. Make JavaScript and CSS external
17. Make JavaScript and CSS external
18. 18. Avoid alpha image loaders
19. Reduce DNS lookups
20. 20. Do not scale images in HTML

IMPACT	AUDIT		
High	Eliminate render-blocking resources	Potential savings of 2.4s	⌄
Med-High	Combine images using CSS sprites	7 images found	⌄
Med	Use HTTP/2 for all resources	Potential savings of 5.6s	⌄
Med-Low	Use a Content Delivery Network (CDN)	31 resources found	⌄
Med-Low	Avoid CSS @import	1 resource found	⌄
Low	Serve static assets with an efficient cache policy	Potential savings of 67.3KB	⌄
Low	Ensure text remains visible during webfont load	3 fonts found	⌄
Low	Avoid chaining critical requests	21 chains found	⌄
Low	Avoid long main-thread tasks	1 long task found	⌄
Low	Serve images in next-gen formats	Potential savings of 9.15KB	⌄
Low	Avoid an excessive DOM size	226 elements	⌄
Low	Avoid enormous network payloads	Total size was 728KB	⌄
Low	Properly size images	Potential savings of 6.47KB	⌄
Low	Avoid multiple page redirects	Potential savings of 437ms	⌄
Low	Reduce JavaScript execution time	4ms spent executing JavaScript	⌄
Low	Reduce unused CSS	Potential savings of 30.8KB	⌄
Low	Reduce initial server response time	Root document took 189ms	⌄
Low	Avoid large layout shifts	5 elements found	⌄
Low	Minify CSS	Potential savings of 2.47KB	⌄
Low	Minify JavaScript	Potential savings of 48.4KB	⌄
Low	Reduce unused JavaScript	Potential savings of 104KB	⌄
N/A	Largest Contentful Paint element	1 element found	⌄
N/A	Minimize main-thread work	Main-thread busy for 299ms	⌄
N/A	Reduce the impact of third-party code	Total size was 47.8KB	⌄
N/A	User Timing marks and measures		⌄

Show No Impact Audits ⌄

Fig 4: testing analysis

CONCLUSION

In recent years, with the pace of technological development, people have become more and more demanding in terms of quality of life, and educational institutional managements in recent years look to improve a performance in their institutions to get the highest rate of knowledge and experience in their students. It is very important to provide education even in this pandemic so this will be helpful for the students to learn and track their performance.

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