A New Approach to E-Learning (E-Web Class)

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Abstract

Student- Teacher relationship has evolved over the WEB CLASS. Through the use of internet, the interaction between student and teacher has increased. So through our project we will create a classroom portal which will provide students effective and interactive learning and at the same it will reduce the work of teachers. Our portal is a new approach of classroom learning. It provides an option for the teachers to upload teaching videos which are related to the topic taught in the class. It provides an opportunity for the students to ask individual doubts in the chat option. This feature is helpful for the students who are afraid to ask doubts in the class. Virtual education is an emerging concept.

Here the classes are not taken face-to-face in a classroom but through an electronic medium as a substitute. These virtual classrooms are gaining importance every day and very soon they are going to be an integral part of our world. As the number of Internet access points are growing rapidly, E-Learning is also gaining a new peak. This electronic medium serves best for dissemination of information. E-Learning is proving itself as a boon for students especially for the disabled who are not able to go and attend the lectures. All these emphases the need for developing an Open Source software that can be used to generate rich multimedia presentation for E-Learning.

Keywords: E-learning, Assignment, Quiz , Upload

1   Introduction

The portal provides the platform for the teacher to upload his/ her notes, tutorials and digital assignment questions. The teacher can also upload list of students performing well in exams to create healthy competition among students. This software is different from other e-learning portals in a way that the access to the portal would be only available to the students in that class. I have used languages such as HTML and CSS as formatting languages. We have used JavaScript (scripting language), JQuery and PHP for form validation and event handling to make the website interactive. Necessary validations have been applied to all the text fields using JavaScript. We have used PHP and SQL plus for database interaction.

1.1   Literature Survey

•   A study on needs for e-learning – Through the analysis of national survey and case studies (Progress in Informatics, No. 2, pp. 77-86, (2005))

This research paper by Keiko WATANABE on the need for E-learning in universities and for online certified courses. It says that the focus of e-learning is on campus courses where students can obtain credits based on e-learning. It includes their activities with course management tools such as posting of teaching materials On Web sites, posting of teacher

messages and assignments, acceptance of questions from students and online message platform.

•   The Effectiveness of E-Learning: An Explorative and Integrative Review (The Electronic Journal of e- Learning Volume 13 Issue 4 2015, (pp278-290))

This research paper by Signe Schack Noesgaard and Rikke Orngreen investigates the effectiveness of e-learning through an integrative review . Their study suggested that it is difficult to use e-Learning to improve teaching performance, as participating teachers can apply several strategies to avoid substantially changing their work-related practices.

 The research provides insight into the validity of self-assessments, suggesting that participants are able to successfully report their own practices, provided certain qualitative survey approaches are used.

2. Methodology:

FRONT END:

The front end is designed using of html, CSS, JavaScript

•**HTML**- HTML or Hyper Text Mark-up Language is the main mark-up language for creating web pages and other information that can be displayed in a web browser. It is used because as the its very user friendly and it can be easily accessed on any system having a web browser. And the GUI is generated through it very easily.

```
<! DOCTYPE html>
<html>
 <head>
   <title>This is a title</title>
 </head>
 <body>
   <p>Hello world! </p>
 </body>
</html>
```

•**CSS**- Cascading Style Sheets (CSS) is a style sheet language used for describing the look and formatting of a document written in a mark-up language. It can be embedded along with our HTML code to make our page look attractive and user friendly.

•**JAVA SCRIPT**- JavaScript (JS) is a dynamic computer programming language.

It is used in almost all of the browsers available today in the market. It allows the client-side and the user to communicate and take part accordingly.

BACK END:

The back end is designed using MySQL and which is used to design the databases.

•**MYSQL**-MySQL is the world's second most widely used open source relational database management system (RDBMS). This language is used for creating the database which is used for storing the details of each user. It has many in-built commands which helps in manipulation of data and manage the database.

•**PHP**- It is a server-side scripting language designed for web development. PHP commands can be embedded directly into an HTML source document rather than calling an external file to process data. PHP will work with virtually all database software, including local hosts as well online database tools.

•   Connecting to MySQL database

•   Create MySQL database Using PHP

•   Delete MySQL database Using PHP

•   Insert data from MySQL database

•   Retrieve data from MySQL database
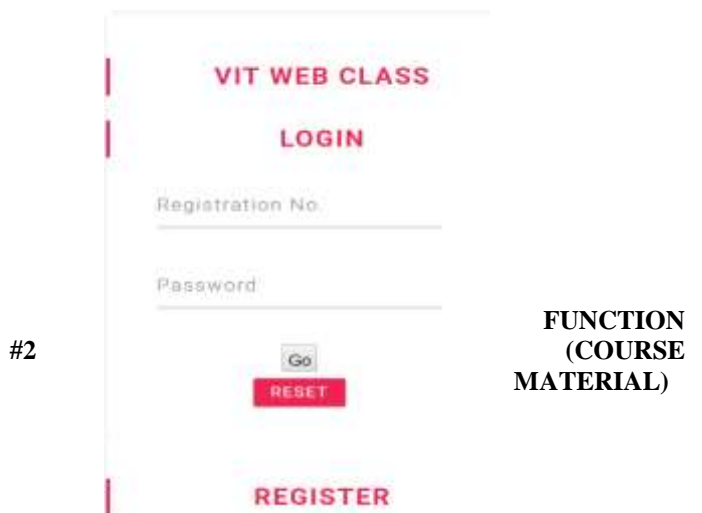
•   Updating data into MySQL database

•   Updating data into MySQL database

•   Using PHP to backup Updating MySQL   database.

3. MODULE EXPLANATION

FUNCTION #1 (LOGIN):

INTRODUCTION	Registration to enrol in a specific batch
INPUT	Registration No., E-mail id and Password
PROCESSING	Verification of entries (password and registration no.)
Output	Desired Interface-Link to specific web class

This login module helps the user to access his/her account. Access to the system happens after verification of the user credentials LOGIN and PASSWORD with the records that is kept in the database. We have used form validations using JavaScript to ensure that no invalid entries are made at the time of entering the login and password. If the access credentials match user is redirected to the Registered User Home page. If the user login/password doesn't match, the system displays an error message and is asking to enter the login/password again.

#2

FUNCTION #2 (COURSE MATERIAL)

INTRODUCTION	Create and upload material
INPUT	Messages, pdf, ppt and hyperlinks
PROCESSING	Availability of offline reading
Output	Display record of files uploaded

This module provides an option for the faculty to upload study materials, links, pdf and messages to interact with the student. It is the core of our website. It is place where students get the tools to study and enhance their knowledge. The material is stored in the database and is connected to the site using data base connectivity using SQL and PHP. The site is incorporated with feature of reading the stuff offline.

FUNCTION #3 (VIDEO TUTORIALS)

INTRODUCTION	Video lectures for enhanced learning
INPUT	Embedded code file(e.g. YouTube file)/ Uploading flash files
PROCESSING	Validity of video size and downloading option
Output	Display tracks of video uploaded

This module enables the faculty to upload teaching videos for students. These online tutorials are like classroom lectures where the faculty teaches the students through online lectures. The advantage of these tutorial are that the student can re-watch these tutorials time after time. This advantage, enhances the learning of the students and makes learning easier.

FUNCTION # 4 (QUIZ/ASSESSMENT)

INTRODUCTION	To access the performance of students.
INPUT	MCQ form of questions
PROCESSING	Question bank
Output	Correct answers

This module is very important as it helps the teacher to judge the performance of students. It helps the teacher to access if the student can understand what is being taught in the E- web

class. The questions are in the form of MCQ, with radio buttons (user can select one option). The MCQ's are of varying difficulty and covers all the topics which are being taught in the video tutorials and uploaded study material.

FUNCTION #5 (MARKS AND RANK)

INTRODUCTION	To upload marks, display rank
INPUT	File document containing result
PROCESSING	Processing marks to generate rank
Output	Rank

This module enables the faculty to see the performance of the students and programming done in the website enables it to generate ranks. These ranks are displayed after every assessment, so that student can view his performance and see where he is going wrong. The program helps to calculate the rank according to the marks and thus helps in bringing competitive spirit among students.

FUNCTION #6 (DISCUSSION INTERFACE)

INTRODUCTION	Doubt Clearance
INPUT	Text Field, For Processing Queries
PROCESSING	Sending and receiving of queries between faculty and students
Output	Solutions to the doubts

This module enables the user to interact with the faculty and discuss queries and ask questions. The professor and the student can interact freely. The discussion is kept confidential. The student can ask doubts without hesitation. Others can respond him with the solution to it. The faculty wherever's login can see the question at his/hers left side and respond directly from there only.

4. NON-FUNCTIONAL REQUIREMENTS

1) PERFORMANCE

Response time of the website should be less. Response time refers to the waiting time while the system accesses, queries and retrieves the information from the databases (DB-user, DB-schedule etc.) (A local copy of flight schedule database is maintained as DB-schedule to reduce this access time). Web class shall be able to handle at least 1000 transactions / inquiries per second. Web class shall show no visible deterioration in response time as the number of users or flight schedule data increases.

2) RELIABILTY

Web class shall be available 24 hours a day, 7 days a week. It shall always provide real time information about flight availability information. Web class shall be robust enough to have a high degree of fault tolerance. For example, if the user enters a negative number of passengers or a value too large, the system should not crash and shall identify the invalid input and produce a suitable error message. WEB CLASS shall be able to recover from hardware failures, power failures and other natural catastrophes and rollback the databases to their most recent valid state.

3) USABILITY

Web class shall provide an easy-to-use graphical interface similar to other existing reservation system so that the users do not have to learn a new style of interaction. . The web interface should be intuitive and easily navigable Users should be able to understand the menu and options provided by it. Any notification or error messages generated by Web class shall be clear, succinct, polite and free of jargon.

4) INTEGRITY

Only system administer has the right to change system parameters, such as pricing policy etc. The system should be secure and must use encryption to protect the databases. Users need to be authenticated before having access to any personal data.

5) INTEROPERABILITY

Web class shall minimize the effort required to couple it to another system, such material schedule database system.

6) SECURITY

 Users will be able to access only their own personal information and not that of other users. All system data must be backed up every 24 hours and the backup copies stored in another server at different building or location for disaster recovery.

7) MAINTAINABILITY

This product shall be maintained by an administrator in case of any defect. In addition, any update or change that is made will be changed on server-side computers without any patches required by the users.

8) DESIGN CONSTRAINTS

The E Web class shall conform to the following design constraints. Able to support all operating platforms like Windows, Linux, Mac etc. System logs out user after a ten minute inactivity period. System supports all web browsers (i.e. both graphical and non-graphical like Mozilla, IE, and Google Chrome).

9) CONSISTENCY

The material availability in system shall be updated when a task (more, administrator's update operation) is finalized to ensure that the most updated information is delivery to any following queries from other customers. When administrator is updating the information, the consistency should also hold among user view.

10) ACCOUNTING REQUIREMENTS

Revenue information must be visible to the admin only. The owner will be the admin.

11) PORTABILITY

It is portable to all user and fulfil the user's satisfaction.

5. REQUIREMENT ANALYSIS

This specification described functional requirements for creation of web based Online Educational system. The purpose of the software requirements document is to systematically capture requirements for the project and the system to be developed. Both functional and non-functional requirements are captured in this document. It also serves as the input for design and development. The structure of the system allows interacting without installing any software on client side. To access the system a browser is only required.

Using this approach is a de facto standard in online educational systems because it allows to access remotely by just using web browser: reliable and stable work via internet without such risks as dependencies from installing additional software on client side.

System requirements- server side

Operational system: Unix/Linux

• Web Server: Apache
• Programming language: PHP
• Database: MySQL
• Disk Space on the server: 500 Mb

The server side of the system consists from the following components:

• User Interface (web interface), which is required to interact to the application from user side.
• Abstract user interface - serves as a middle layer between user interface and the system Will be written in xml language.

• Multithreading component - component of the system serving parallel requests from several users and transferring them to the server.
• Virtual engine - core of the system. Responsible for serving active resources
• Registration Manager - used to work with information component of the system
• User Manager - used to work with user records of the system.
• System Component - consists from low level functions to interact with API of OS and database

System requirements – client

• Operation System: Windows/OS/Unix/Linux
• Browser: any browser (IE 5.5+, Netscape.).

6. Conclusion

We have successfully formed an E-web class with all the necessary features. It can perform all the functions of normal class. We have tested the website and can conclude that is fully functional and is very helpful for students to learn the concepts digitally. E WEB CLASS will be a great help for the students as well as for the faculty. This system will be designed to allow students with ease to perform various tasks. It will be a great help for the students who are living in remote villages where proper schools and education facilities are not available. They can be part of E web class as distance learning. By using this system will reduce the time utilized if same work manually. More specifically, this system is designed to allow a student to manage his academics database and communicate with teaching faculty and management. Preformatted forms are used in each stage of the action performed in the software system to provide a uniform process. The location of these forms is configurable via the application's maintenance options. The system also contains a database of projects and assignments, study material and faculty.

7. References

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