Academic Monitoring System

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Abstract - Academic Monitoring System provides a simple interface for maintenance of student information. It can be used by educational institutes or colleges to maintain the records of students easily. It tracks all the details of a student from the day one to the end of the course which can be used for all reporting purpose, tracking of attendance, progress in the course and all these will be available through a secure online interface embedded in the college’s website. Though it has used an information system, it was totally manual. Hence there is a need to upgrade the system with a computer based information system. We have seen the problem faced by the staff of our dept. in gathering the information about students. They have to collect the data from teachers and then they analyze it. The development of this system is motivated due to the fact that the students’ attendance records are one of the important elements that reflect their academic achievements in the higher academic institutions.

Keywords - Academic Monitoring System, Hadoop, Hive.

1. Introduction

Now-a-days, there are lots of colleges and Universities around the world and some of them consist of students up to thousands or more. To handle a large number of students may be a problem especially to get the attendance of the students. The manual process is that whenever a lecturer comes to class, he come with a register and manually take attendance by calling roll-numbers. This manual process has some flaws because in a case where students can cheat by saying attendance of their friends, the another problem is that the lecturer had to take care of the register and enter the attendance into the log (or) database, calculate the attendance percentage.

The design and implementation of comprehensive student information system and user interface is to replace the current paper records. College Staff are able to directly access all aspects of a student’s academic progress through a secure, online interface embedded in the college’s website. The system utilizes user authentication, displaying only information necessary for an individual’s duties. Additionally, each sub-system has authentication allowing authorized users to create or update information in that subsystem. All data is thoroughly reviewed and validated on the server before actual record alteration occurs. The system features a complex logging system to track all users’ access and ensure conformity to data access guidelines and is expected to increase the efficiency of the college’s record management thereby decreasing the work hours needed to access and deliver student records to users.

2. Literature Survey

Comparisons between using the manual system or the online system in recording and reporting attendances among respondents.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Strongly Agreed</th>
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<tr>
<td></td>
<td>Manual System</td>
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<tr>
<td>1</td>
<td>Attendance system needs</td>
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<tr>
<td>2</td>
<td>Attendance system is efficient &amp; effective</td>
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<td>3</td>
<td>Attendance sheets are easy to allocate</td>
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<td>4</td>
<td>Record keeping is more organized</td>
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<td>5</td>
<td>The potential of losing attendance sheets is low</td>
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<td>6</td>
<td>Easy to track students’ absences</td>
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<td>7</td>
<td>The format of the report for students’ absences is consistent</td>
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<td>8</td>
<td>Delivery of reports for students’ absences are easy to produce</td>
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<td>9</td>
<td>The process to report students’ absences is easy</td>
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<tr>
<td>10</td>
<td>Students are not difficult to contact to attend the discipline trials via emails</td>
</tr>
<tr>
<td>11</td>
<td>The process to inform student’s status to parents are effective</td>
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<tr>
<td>12</td>
<td>Cost to develop, manage &amp; maintain the attendance system is low</td>
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<tr>
<td>13</td>
<td>The attendance system process is fast</td>
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Average 8.2% 34.2%

Figure 1: Comparison of manual and online system
This chapter will describe about the literature review to gather information related to the project. Beside that this chapter also will explain about project methodology that is going to use to develop the project which is Academic Monitoring System. This chapter also will explain about the software, hardware and other tools or technologies that to be used to develop the system. In addition it also presents the schedule and that guide will guide the project. The literature review will focus on existing system about student management that is currently being used. Project methodology is one of the most important steps development systems to follow from start to the end of project.

2.1 Purpose

The purpose is to design a college website which contains up to date information of the college. That should improve efficiency of college record management. It can be used by educational institutes or colleges to maintain the records of students easily. Achieving this objective is difficult using a manual system as the information is scattered, can be redundant and collecting relevant information may be very time consuming.

2.2 Organization of the Paper

The paper is organized as follows:
Section III explains system design. Section IV provides technologies used. Section V covers the details of the testing results and Section VI the conclusion.

3. System Design

This deals with system architecture and the design process of the front and back end design of the academic monitoring system.

3.1 System Architecture

System architecture shows different components of the system and interconnections between them. Figure 2 shows the system architecture of academic monitoring system.

The GUI component of the system is purposely developed for friendly interaction with the users. The developed GUI is in the form of dynamic web pages, which are database driven. This signifies that the information displayed on the web pages are constructed based on the data extracted from the database.

**Web Server:** The web server here refers to either hardware (computer) or software (application) that helps to deliver content publicly accessible through the Internet. It provides the web site functionality by accepting requests from the user’s browser and responds by sending back HTML documents (Web pages) and files. To enable the system dynamic functionalities, the web server hosts the data collector component, a database and the graphical user interface (GUI) pages enabling online interaction with the system users.

**Manipulating** a database includes functions such as querying the database to retrieve specific data, updating the database to reflect in the mini-world, and generating reports from the data. Sharing a database allows a multiple users and programs to access the database simultaneously.

**Application program** accesses the database by sending queries or request for data to the DBMS. A query typically causes some data to be retrieved; a transaction may cause some data to be read and some data to be written into the database.

4. Technologies Used

**HTML**

HTML is a hypertext mark-up language which is in reality a backbone of any website. Every website can’t be structured without the knowledge of html. If we make our web page only with the help of html, than we can’t add many of the effective features in a web page, for making a web page more effective we use various platforms such as CSS. So here we are using this language to make our web pages more effective as well as efficient. And to make our web pages dynamic we are using Java script.

**CSS**

CSS Stands for “Cascading Style Sheet.” Cascading style sheets are used to format the layout of Web pages. They can be used to define text styles, table sizes, and other aspects of Web pages that previously could only be defined in a page’s HTML. The basic purpose of CSS is to separate the content of a web document from its presentation. There are lots of benefits that one can
extract through CSS like improved content accessibility, better flexibility and moreover, CSS gives a level of control over various presentation characteristics of the document.

**JAVA SCRIPT**

JavaScript is considered to be one of the most famous scripting languages of all time. JavaScript, by definition, is a Scripting Language of the World Wide Web. The main usage of JavaScript is to add various Web functionalities, Web form validations, browser detections, creation of cookies and so on.

**SQL**

SQL stands for Structured Query Language. SQL lets us access and manipulate databases. SQL is an ANSI (American National Standards Institute) standard. SQL can execute queries against a database, retrieve data from a database, insert records in a database, update records in a database, delete records from a database, create new databases, create new tables in a database, create stored procedures in a database, create views in a database, set permissions on tables, procedures, and views.

**HADOOP**

Apache Hadoop is an open-source software framework written in Java for distributed storage and distributed processing of very large data sets on computer clusters built from commodity hardware. All the modules in Hadoop are designed with a fundamental assumption that hardware failures are common and should be automatically handled by the framework. The core of Apache Hadoop consists of a storage part, known as Hadoop Distributed File System (HDFS), and a processing part called MapReduce.

**HIVE**

The Apache Hive™ data warehouse software facilitates querying and managing large datasets residing in distributed storage. Hive provides a mechanism to project structure onto this data and query the data using a SQL-like language called HiveQL.

**5. Results**

Figure 3 shows the login page of the application. Users will log into the application by using the credentials provided to them.

Figure 4 Shows the snapshot in which admin creates a user. Using these credentials, users can log into the system.

Figure 5 shows the page which admin will use to change the rights. Here user can be changed from normal user to admin and also able to change the timetable of a user.

Figure 6 shows a page from user portal. This is an online registration form which will be filled by students.
6. Conclusion

This paper assists in automating the existing manual system. This is a paperless work. It can be monitored and controlled remotely. It reduces the man power required. It provides accurate information always. Malpractice can be reduced. All years together gathered information can be saved and can be accessed at any time. The data which is store in the repository helps in taking intelligent decisions by the management. So it is better to have a Web Based Information Management system. All the stakeholders, faculty and management can get the required information without delay. This system is essential in the colleges/hostels and universities.

References


