Institute Administration Automation and Student Database Management System

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Abstract: The main objective of this project is to develop a method to use a personal computer to automate the administration procedures of an educational institute and effectively and efficiently manage students' database using a Web-based application. The program will enable the college staff to enter students' information in the system which will generate a unique ID for each student at the time of admission. The staff will be able to manage the students' marks, fee information, personal information and all other academic information which is usually done manually. This ID will be used to reference the student in all the functions of this application. Since the system is automated, there is hardly any room left for human error, thus minimizing any potential complications in entering information and maintaining records. So, we propose a software application that will have a simple interface that would be easily understandable to everyone with minimal cost and can be used in various education institutions for automating the administration work and efficiently manage the student database with minimal error possibility.

Keywords: Student Database Management System, Database Management, College Admin Automation System, Institute Administration Automation System, Student Record Keeping System, Admission Automation Management System.

I. INTRODUCTION

Various Methods of Admin Automation are available in the market. The most basic and widely used method is manual data entry and record management. In this system, the Admin Staff manually enters the student information in the register and maintains the records manually. This process becomes problematic if the number of students enrolled is very high. In the case of Engineering Colleges, the number of students enrolled in each academic year is approximately 800-1000. The price for commercial systems is very high and goes on increasing according to the number of students enrolled. So, small organizations, institutes, individual teachers, coaching institutes cannot use this easy method of admin automation without spending a lot of money. They resort to manual management of the students' information. The main theme of our project comes from the idea that we could build a software application that will save their precious time and be inexpensive, can be used in small scale. So, our idea is to develop a method to use a personal computer and a local server or a cloud server and a PHP based application that will automate everyday tasks of the Admin Staff. The program will be tested to accept only correct information entered by students in the forms. All the data will be highly encrypted and will be isolated from any unauthorized access.

II. LITERATURE SURVEY

A. Literature Review

In our country, engineering field has become of the utmost importance in the last decade. Various branches of Engineering have gained popularity resulting in a very high number of student admissions every year. Due to the growing demand in the number of seats various colleges have been built which facilitate these needs. Every year millions of students take admission for Engineering all over India. The Directorate of Technical Education for every state takes care of the admission process for engineering. But the management of admission at the college level is important all the same. Although the DTE provides a Centralized Admission Process, which is online, for students to be actually admitted to the college, there has to be a long procedure to be followed physically at the college. Due to the very high number of students enrolling every academic year, the work at college level increases

exponentially. All this work has to be done manually. Most of the colleges do all this work manually while some colleges use the system which is very expensive and not customizable. In the case of a manual system, it takes a lot of time and manpower while the existing systems impact the finances of the college as they are SaaS-based and mostly charge per student. There is also a need for registration and form filling which is also done manually to be automated. There is a need for a system which can be installed locally in the institute and which would automate the tedious process of manual admission. So, we will be exploring various possibilities where one does not have to use the manual system or any expensive system of efficiently manage the students' data and information.

In the paper, "A Research Paper on College Management System" the author has come up with a structure for the system where the process of entering the information and viewing the information is elaborated. However, it has its demerits, as the system does not allow integration of the admission process or exam process that should be integrated for next level of automation.

In the paper "Campus Information Systems for Colleges", the author has researched on a system that will help institutes integrate management system with a social module, which is not a requirement for all the institutes. It also integrates a Housing module which helps enables the institutes to manage the data for the hostels and other facilities.

B. Comparative Analysis of Literature

TABLE I
COMPARATIVE ANALYSIS OF LITERATURE

AUTHOR	METHOD AND DESCRIPTION	ADVANTAGES	DISADVANTAGES
[1]Lalit Mohan Joshi "A Research Paper on College Management System"	To provide a login system for the admins to update the information and the students to view the marks, exams schedules etc.	The software is very robust. Can be adapted in any small scale educational institute because it is very cheap and relatively faster.	It does not have an integrated system for admissions which is needed mainly for high volume admission process.
[2]Josep Cobrasí |"Campus Information Systems for Colleges"	The system was designed for implementation on large campuses with integrated housing for students. It provides major modules like Academics, Social and Administrative	It gave a full proof method for large campuses and provided an easy academic as well as housing management system.	This system can be very expensive to implement as it requires multiple nodes and servers to be implemented.

C. Motivation
The motivation for this project is that there is no full proof and economical solution that can be used to completely substitute the manual record keeping system traditionally going on in the educational institutes. There have been various studies on how we can use various software methods to automate the administration work for the educational institute. In this project, we have a goal for cost cutting and the creation of integrated software, which will cater to all the needs for the educational institute administration.

III.PROBLEM DEFINITION
Considering the number of students enrolled in an academic year in any institute, the administration, and management work is tedious, especially when it is done manually. The admin staff has to maintain the registers for the students and write all the information down. If anyone wants their information changed or updated, the same has to be done manually which is a very time-consuming task. If automation has to be done, there are existing systems which are very expensive and require constant maintenance and running costs.

Also, if the record keeping is to be done manually, there is always a possibility of human error causing overall delays in the work process. Since there is a possibility of delay in the process, we cannot rely on this system for not causing any complications, when the staff is hastily trying to close the gap of the delay, which can lead to a lack of precision and unnecessary errors.

IV.EXISTING SYSTEM

The existing system is a completely manual system where the admin staff maintains registers for information of all students and write down all the information manually. The information of all the students is added/updated at the time of admission and all the records are added one by one after verifying the admission forms. At the time of admission, receipt generation is done manually and hand written receipts are given to all the students.

In the existing system, all the following tasks are carried out manually without the use of a customised system:
- Student Information Entry
- Fees Management
- Academics Management
- Generation of Reports
- Student Eligibility Check
  And much more…

V. INSTITUTE AUTOMATION SYSTEM AND STUDENT INFORMATION DATABASE SYSTEM

We propose a system that overcomes the drawbacks of the previous manual system and uses papers and surveys conducted on how we can improve the management and working of the educational institute administration work. Our system will be designed in PHP and the database will be in MySQL. The layout will be very simple and easy to use so that even a novice user can be able to easily access and use the system. At the time of the admission, the students will fill the form online and the administration staff will be able to import the information from the online database where the forms are stored. They will update the fee information for each student. It will then generate a unique ID for each student which will be used to reference the student throughout his/her tenure at the institute. There will be a provision for teachers to log into the system to update notices, students' marks and view the notices, marks and any other information respectively. If the admin wants to pull students information, they just have to enter the student ID and all the information regarding the student will be displayed on the screen. It will include students' personal information, academic information (CGPA, Number of ATKTs, Month/Year of passing exam, etc.)

A. *Architectural Design*

1. Creating a master database for storing the students' information which can be further used in the application.
2.   The students' information is obtained using the admission forms where students enter their information in the online form and send it to admin for verification.
3. When the students enter their information in the online form, the following is carried out:
    a. The entered information is stored in the database.
    b. There is a Permanent Registration Number generated for the student and the admin is intimated of the new entry on the dashboard.
    c. The admin then approves the registration after verifying all the details and enters the payment information in the system.
4. For teachers' login, the following procedure is carried out for updating the information:
    a. Teachers login and select the subject.
    b. The student list is displayed where the teachers will be able to enter marks as well as attendance for the students.
    c. When this information is updated, the system then sends emails to the parents' registered email addresses which contain the marks reports and the attendance reports of their respective children.
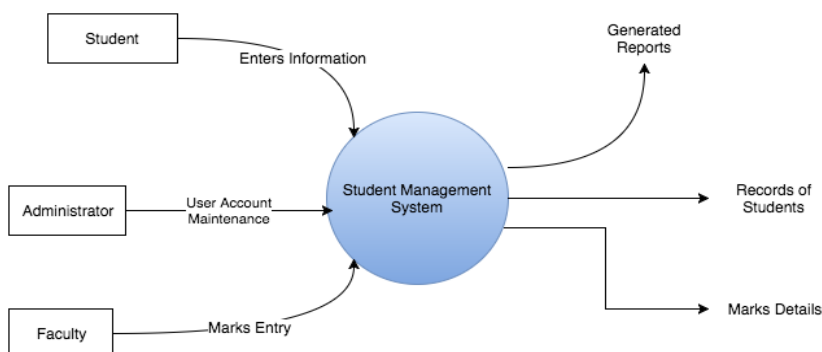

Fig. 1 Architectural Design Diagram

B. *Requirement Analysis:*
  1. Software Requirements:
- Operating System: Windows/Linux
- Server Software: Apache2
- Database: MySQL

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- Language: PHP, HTML, CSS3
2. Hardware Requirements:
   - CPU: Intel/AMD 2GHz or more
   - RAM: 1GB or more
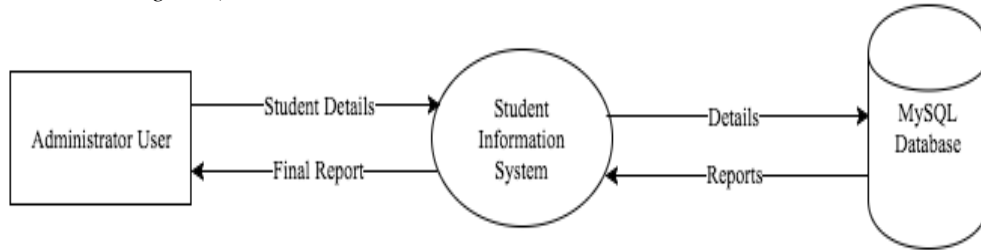   - Hard Disk Space: 20GB

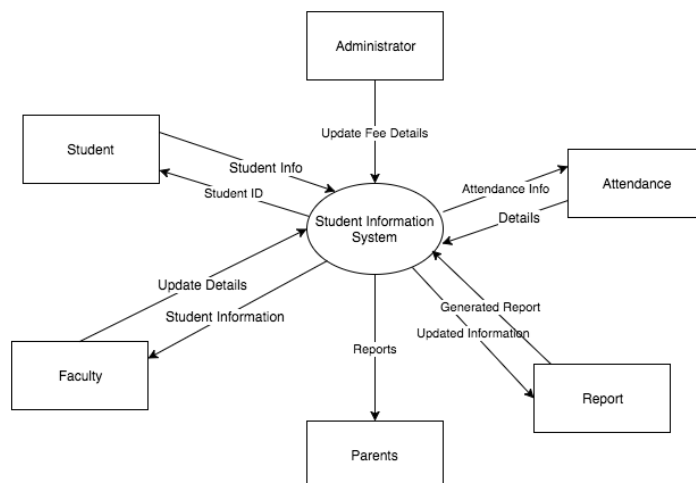C. *Data Design (Data Flow Diagrams)*
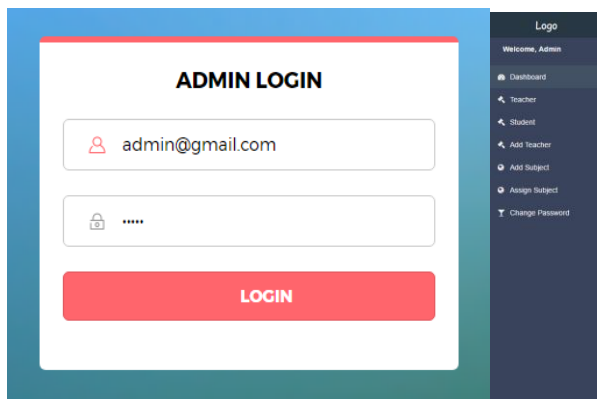

Fig. 2 Level 0 DFD
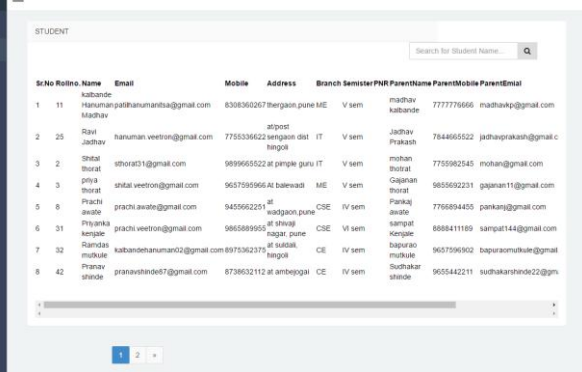

Fig. 3 Level 1 DFD
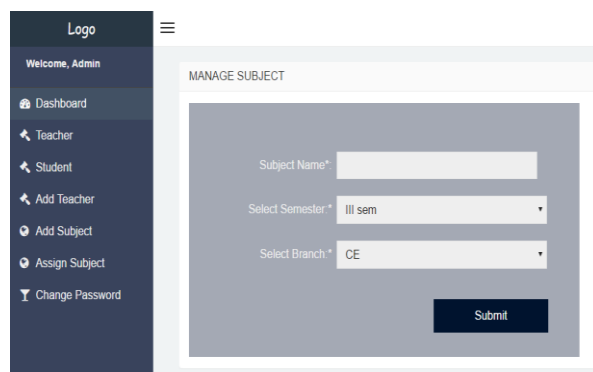

Fig. 5. Login Page

Fig. 5 Students List

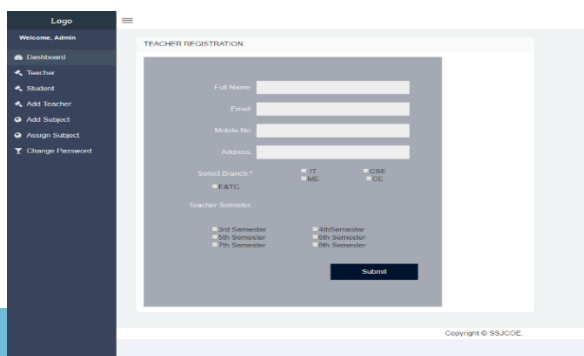**Fig. 6. Add Teacher Page**   **Fig. 7. Add New Subject**

Fig. 8. Teachers List

CONCLUSIONS

For flexible use and lower cost, our proposed system uses a normal personal computer and a local server than a much more expensive dedicated server. The student information is not only just displayed but is used for all student-related activities such as Examination, Marksheet, Reports, etc. Teachers and Parents have a dedicated login wherein Teachers can enter student's marks and Parents can view notices and their child's progress instantly. The system also has an automated mailing system where periodical emails will be sent to the parents' email addresses containing various details regarding the student.

Admin Automation has a definite role to play in PC-based automation systems. Some of the direct benefits of the system vis-à-vis traditional admin system include reduction of labor, better scalability and automated and fast admission process.

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