Development And Implementation Of Resource Management System For Seamless Management Of College Resources

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i) Introduction:

Around the beginning of the twentieth century, as colleges grew from one-room college houses into college with multiple grades and classrooms, the need arose for someone to manage these more complex organizations. This need was filled initially by teachers, who continued to teach while also dealing with their school's management needs. These teachers were called principal teachers. As colleges continued to grow, principal teachers became full-time administrators in most colleges. Most principals soon stopped teaching because of the many demands their management responsibilities placed on their time. As managers, principals were responsible for financial operations, building maintenance, student scheduling, personnel, public relations, school policy regarding discipline, coordination of the instructional program, and other overall school matters. The management role included some curriculum and instruction supervision, but overall colleges management was the primary role principals played until the early 1980s. As the accountability movement gained momentum, the role of the principal changed from college manager to colleges instructional leader and then to the collge reform leader. With this shift in role focus, principals retained their management roles. Principals currently play multiple roles: college manager, instructional leader, and the leader of reform.

They are responsible for the overall operation of their colleges. During the latter part of the twentieth century, as colleges began to be held more accountable for the performance of their students on national and state assessments, the duties and responsibilities of administrators changed and became more responsible for teaching and learning in their colleges. In particular, their duty to monitor instruction increased along with their responsibility to help teachers improve their teaching. With this change in responsibilities, and the need to more effectively evaluate instruction and assist teachers as they worked to improve their instructional techniques.

Computers are now affecting every sphere of human activity and bringing about changes in industry, education, scientific research, accounting, shopping and even in arts like music and painting. The areas of application of computers are confined only by limitations on human creativity and imagination. In fact, any task that can be carried out systematically, using a step-by-step method can be performed by a computer with more efficiency and accuracy.

This era is dominated by people who have information handy as required. To be on the top of the game for anyone having the right information is critical, be it individual or an organization. For an organization like an educational institute where there are 1000s of students who come and leave year after year, proper documentation of information is very important. Manual tracking of such information is out of question and having a system to support this is of utmost importance at this point of time. A system like this will not only help the college administration but also the staff, students and parents by giving the access to the right information at the click of a button. This will increase the effectiveness of communication between various parties seamless and puts the organization in good light.

The project discussed here is a **Resource Management System for educational institutes.** The work aimed to implement a user-friendly database management system to manage the

resources of an educational institute. The software is interactive and requires no previous knowledge and very little training for the operator.

This software is to manage the resources in the institution and thereby implement the automation of its resources wherever possible. It is a resource management system that provides information related to resources available in the institution like students, staff, departments, labs and the upcoming modules interfaces are provided. This is expected to increase the efficiency of educational resource administration.

The tedious and time consuming task of searching for the information in the hard copies of files kept in the office room can be avoided. The reports can be printed directly which makes it flexible to use. As we all know the digital media is more efficient and safe to use these days. And it is high time we switch from pen and paper system to IT solutions. This is a perfect fit for what any institution will be looking for.

We believe in open source philosophy. For that very reason we choose PHP and MYSQL server and AJAX which are among the leading technologies used by most IT companies for software development.. This product will work with Windows as well as Linux and is compatible with most of the web browsers available.

Flexibility, efficiency, usability, safety and security are the prime focus all the time during its development. This results in a quality product, the features of which are being discussed across this document.

(ii) Interdisciplinary relevance.

This product is intended to be used by students, teaching staff, non teaching staffs, principal, parents etc. Various classes of users are to be defined based on the privileges granted by the administrator for that particular class.

The super body controlling the whole program is the **administrator** who will have full access to all the database entries and will be able to change even the entries in the master table which form the basis of the software.

Next comes the **Management/principal** class who will have the right to add any user to any particular class except as administrator and

principal itself, and is given right to access all other areas of database except master tables. He is also given privilege to edit his own profile.

Staffs will be given privilege to edit their profile and teaching staffs can enter marks for the particular group of students he is dealing with. If the staff is a tutor he/she should be able add more users to student class to the batch which he is the tutor.

(a). Product Features

- **Data entry**

  The provisions to enter the details are given to particular user-classes depending on the functionality of the page. The details are specified along with the description of various modules.

- **Verification and Validation**

  The verification module verifies the Login ID and password for validation. Each user has to be authenticated before he can access the required portions of the system.

  The data fed into the database are validated at client sides and server side thereby nullifying manual errors.

- **Updating Program to be used by the Administrator**

  This program is used exclusively by the administrator to update or remove the entries of the database used. Most of the parameters defining the functionality are not being hard coded, instead it is stores in an editable database which brings tremendous flexibility to the system developed and will allow the administrator to adapt to the changing environment within seconds.

- **Program for the users to view details**

  Various reporting and display functions allow the users to retrieve data in the desired format. This can be customized as required.

- **Program for automation**

  The provision of automation is provided in the Academic and hostel modules, where found necessary.

- **Program for search/reporting**

  Searches based on various criteria are provided in different modules as explained in the description of these modules in the later

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section. This module will equip the user to retrieve the required information as and when required.

- **Database Design**

    The Database is designed using RDBMS concepts thereby enabling the sharing of data and is normalized to avoid redundancy. This will ensure the speed, performance and low maintenance overheads.

- **Security:**

    Various security modules will be implemented to keep the data secure from unauthorized access. The passwords are maintained in the database in the encrypted form so as to ensure the security of the system and to prevent all kinds of unauthorized access to the system.

- **Connection to network**

    This software can be accessed from any system connected in the network to which the server running this software is attached.

- **Communication**

    This module equips the users to communicate to required parties through emails or SMS as desired.

(iii) User Classes and Characteristics

This product is intended to be used by students, teaching staff, non teaching staffs, principal, parents etc. Various classes of users are to be defined based on the privileges granted by the administrator for that particular class.

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Staffs will be given privilege to edit their profile and teaching staffs can enter marks for the particular group of students he is dealing with. If the staff is a tutor he/she should be able add more users to student class to the batch which he is the tutor.

Students will be given provisions to view their details and to edit their temporary address, phone number, email id etc. **Parents** will be allowed to use the software using their child's user identification code.

(iv). Operating Environment and Requirements

This software will operate on x86 architecture in Windows and Linux operating system using Apache web server and most of the web browsers like Opera, Mozilla firefox, Internet explorer 7+ etc.

- **Hardware**

    Any reasonable hardware configuration that supports networking facility.

- **2. Software**
  - ➢ Microsoft Windows 98 or above
  - ➢ Apache Tomcat Web Server
  - ➢ MySQL Database Server
  - ➢ PHP Interpreter
  - ➢ Javascript enabled web browser

(v) High Level Design
(a). Modules and Functionality
Student

This module deals with personal details of students. This section is subdivided into mainly three categories- student entry, search and report. Search and report are provided for relieved students also.

Entry/Edit

1. **Student Personal Entry/Edit**: All the necessary personal details of students are entered or edited.
2. **Sessional mark Entry/Edit**: Sessional marks of students can be entered or edited subject wise either as total or the split up with automated calculation.
3. **Board marks Entry/Edit**: University marks of a student in a semester can be entered or edited.
4. **Attendance Entry/Edit**: Hours attended by students for a subject is entered.

All user classes above the student class can make new student entries. Sessional marks and attendance are entered by teaching staff concerned with that subject and all higher user classes. Board

marks are entered by tutor of the corresponding classes and all higher user classes. Tutors are restricted within their class.

Search

Personal and academic details of students can be searched here.

1. **Student Search**: A student can be searched by name, admission number or ID. Page contains a link to update & delete each of them.
2. **Relieved Student search**: Relieved student can be searched by giving name or ID.
3. **Academic search:** Here, a student can be searched by his ID. This will display the Board and sessional marks of that student in the selected class.

All user classes above student class can use the searches 1 & 2. But update/delete link is restricted for each user class. Administrator and principal can update/delete students belongs to any department. Tutor is restricted to a particular class. Other Teaching and nonteaching staff cannot update/delete a student.

Search 3 can be accessed by all the user classes with student allowed to view only details.

Report

Personal and academic reports can be generated here.

1. **Student Report**: Report of students belongs to particular class can be generated. The output is customizable by the user which also contains links to update and delete each of them.
2. **Relived Student report**: Report of students relieved from a particular class can be generated. Report can be generated by selecting class or relieving year along with the department.
3. **Class Sessional**: This report generates the sessional marks of all students for a particular or all subjects.
4. **Class attendance**: This report generates the attendance percentage of all students in a class.
5. **Aggregate report**: This report generates the list of students below a particular cut off mark.

6. **Attendance report**: This report generates the list of students below a particular attendance percentage.

All user classes above student can use the above reports. In report 1 link to update/delete a student is restricted for each user classes.

Validation:

Client side validation is done in entry and edit pages. It validates student name, father's name, mother's name, phone number, email id. Student name should be entered and only spaces and characters can be entered. Only numbers can be entered in phone number field. Checking of email id for @ after a group of characters followed by a '.' with characters in between.

Server side validation is performed in case of marks and attendance entry. Here it checks whether the inputs are numbers and less than the maximum marks or hours allowed.

Automation:

1. Student ID is generated automatically after allotting them their classes.
2. Calculation of total marks for Board and sessional for particular class.
3. Calculation of subject mark which is the sum of board and sessional marks obtained for a particular subject for a particular student.
4. Attendance percentage calculation subject wise and total.
5. Aggregate calculation

Staff

Staff section deals with teaching staff, Non teaching staff and relieved staff. This section is further subdivided into 4 sections. These include entry/edit, search, report automation and validation.

Entry/Edit:

This section enables the creation and editing of profiles for both teaching and non teaching staff.

1) **Teaching staff entry**: Here the personal details of teaching staff are entered. User classes above tutor are given this permission.

2) **Teaching staff edit**: The personal details of teaching staff can be edited here. User classes above tutor are given this permission.

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3)**Non teaching staff entry**: Here the personal details of non teaching staff are entered. User classes above tutor are given this permission.

4)**Non teaching staff edit**: The personal details of non teaching staff can be edited here. User classes above tutor are given this permission.

Search:

In this section several searches are provided for staffs which include teaching staff, non-teaching staff and relieved staff.

1)**Teaching staff search:** A teaching staff can be searched based on name or id. User classes higher than student can perform this search.

2)**Non-teaching staff search**: A non teaching staff can be searched based on name or id. User classes higher than student can perform this search.

3)**Relieved teaching staff search:** A relieved teaching staff can be searched based on name or id. User classes higher than student can perform this search.

4)**Relieved non teaching staff search**: A relieved non teaching staff can be searched based on name or id. User classes higher than student can perform this search.

The output of the search includes links with which the details of the staffs can be edited. User class above tutor can perform this. The tutor class is restricted to his class level.

Report:

In this section several reports are provided for staffs which include teaching staff, non-teaching staff and relieved staff.

1)**Teaching staff Reports**: List of teaching staff based on some criteria can be obtained here i.e by selecting department and designation, the list can be generated. User classes higher than student can make this report.

2)**Non teaching staff Reports**: List of Non teaching staff based on some criteria can be obtained here i.e. by selecting department and designation, the list can be generated. User classes higher than student can make this report.

3)**Relieved teaching staff Reports**: List of relieved teaching staff based on some criteria can be obtained here i.e. by selecting department and

designation, the list can be generated. User classes higher than student can make this report.

4)**Relieved non teaching staff Reports**: List of relieved non teaching staff based on some criteria can be obtained here i.e. by selecting department and designation, the list can be generated. User classes higher than student can make this report.

The output of the report includes links with which the details of the staffs can be edited. User class above tutor can perform this. The tutor is restricted to his class level. The details to be displayed can be customized by the user.

Automation:

ID for staffs are generated for teaching, non teaching staffs.

Format:

For teaching staff: format: DDSNNN
  1) D-Department.
  2) S-Permanent or guest.
  3) N-Number

For Non teaching: Format: DDSNNN
  1) D-Department
  2) S-Technical, non technical or apprentice or daily wages.
  3) N-Number

Validation:

Client side validations are done in the data entry and edit pages. It includes

1.Checking of email id for @ after a group of characters followed by a . with characters in between.

2.Name is checked against the presence of special characters

3.Phone no: is validated for integers

4.SDO code and PAN card no etc should be entered without fail.

Accounting

Various functionalities regarding accounts management will be implemented here. There will be provision of data entry/edit, search and reporting and partial automation of accounting functions based on the requirement by management. This will include fees, payroll, funding, project costing etc. The details of these modules will be finalized while preparing the specification document based on the feedback from accounts department.

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Accounts department and top management will have access to this module.

Hostel

Various details related to hostels are dealt in this module.

Entry/Edit :

1. **Expense entry**: A new expense type can be entered.
2. **Company entry:** Details of a company from which items are purchased can be entered.
3. **Debit entry**: The transaction details between the company and a selected hostel can be entered.
4. **Bill payment**: The receipt number of the bill paid by the student can be entered.

Administrator, principal and hostel warden have permission to access these pages.

Report:

1. **Mess Bill**: This report generates mess bill of a month.
2. **Student List:** This report list the name, course and current semester of students in the given hostel.
3. **Messout List**: This report list the name, course and current class of students who are mess out for a month.
4. **Paid students List**: It lists out the students who paid the selected month's mess bill and the details of payment.
5. **Not paid students list**: This report list out the students who didn't pay the selected month's mess bill.
6. **Company details**: This report list out the details of transactions occurred with a company in the selected period.
7. **Company Balance**: This report calculates the balance amount to pay to a company and also the details of the transactions for each expense type.

Validation:

Server side validation is done. Here it checks whether the amount, points and guest entered is in numbers.

Automation

1. Calculation of mess bill.

Lab

This module aims at storing information about the dues for a student in a particular lab.

Data Entry/Edit:

The provision for entry as well as editing of the data is given.

1. **Lab Master Entry/Edit**: The permission to enter and edit the lab master table is given to the Administrator.
2. **Due Entry/Edit**: The Administrator, Principal and the corresponding lab-in charge are given the permission to enter and edit the details of dues for a particular student in the lab.

Search:

1. **Student-ID Search:** There is provision to get the details of dues for a particular student in all the labs by specifying the student ID. The permission of this search is given to the Administrator and the Principal.

Report:

The various reports made available are:

1. **Lab wise Report**: This displays the list of students who have dues in a lab along with details of the dues.
2. **Class wise Report:** This displays the list of students from a class who have dues in a particular lab, along with its details.
3. **Student wise Report:** The due details of a student in a particular lab can be viewed by the Administrator and the Principal.

The Administrator and Principal can view the reports numbered 1 to 3. The tutor is given permission to view the reports from 1 restricted to the lab under his class. Tutor is given permission to view the reports 2 and 3 restricted to the class and students under his class. The lab-in charge can view the 3 reports of only the particular lab of which he is the present in charge.

Validation:

The particular fields which must be entered in each form are specified and alerted on submission of the page, without selecting the field.

The text fields in the forms for the entry and edit of lab master are validated in the client side

thereby ensuring that manual errors while entering the data are minimized as follows:

1.**Lab Name**: Inclusion of special characters in this name is prohibited.

Master Table Modules

This section contains the entry and edit of various master tables used.

Entry/Edit:

1) **Department**: When new department is introduced, its corresponding entry is given to this master. Similarly edit is also possible.

2) **Subject**: When new subject is introduced, its corresponding entry is given to this master. Similarly edit is also possible.

3) **Class**: When new class is introduced in a particular department, its corresponding entry is given to this master. Similarly edit is also possible.

4) **Designation**: When new designation is introduced for the staff, its corresponding entry is given to this master. Similarly edit is also possible.

5) **Stream**: When a new stream (Science, Commerce, Humanities etc) is introduced, its corresponding entry is given to this master. Similarly edit is also possible.

6) **Hostel:** This master belongs to the hostel section. When a new hostel is introduced, the corresponding entry is done here. Edit is also possible.

7) **Lab**: This master belongs to lab section. When a new lab is introduced in the institution, its corresponding details are entered here. Similarly edit is also possible.

SMS & EMAIL FACILITY

This module provides interfaces for reports to be sent to the respective guardians on various issues.

MISCELLANEOUS

File Upload/Download

The provision for uploading and downloading files is provided. The various categories of files for uploading and downloading includes syllabus, question paper and application forms. The permission to upload file is given to administrator, principal and tutor. All user classes are given provision to download files.

(vi). Other Nonfunctional Requirements

(a). Performance Requirements

This software guarantees to process the requests in reasonable time. PHP which is known for its operational speed helps the software achieve this. Even the complex queries should retrieve the output in the minimum time possible. Primary keys are provided for most tables for easier retrieval of data.

(b). Safety Requirements

Care is taken against loss or corruption of data. Manual errors also should not be allowed to some extent. Erroneous data should not be allowed to be input. Extensive testing at various levels should be done to see that only values in the intended range are stored in the database and mathematical errors like division by zero shouldn't come during any operations. Backup and log facility should be provided so as to restore the incorrect data if input by mistake or to retrieve the data due to accidental loss.

(c). Security Requirements

Provisions should be provided to restrict the unauthorized access using user identity authentication. Different classes of users should be defined and various privilege levels should be set for each class and should restrict the access of users to only those portions of the database where the particular user has permission. Password information should be stored in encrypted format so that no one who accesses the database should be able to retrieve passwords from it.

(d). Software Quality Attributes

Flexibility is one thing to be highlighted about this Software. In this case flexibility means that when requirements change, programmers should be able to reflect those changes in the software without much effort. Interfaces have been provided so as to attach new modules easily. The program is easy to use and code should be readable. A simple GUI interface should be defined which is apt for all class of users and which meets the requirements of all. This product should be made platform independent and portable too. It guarantees high security and care is taken against loss and corruption of data. Concurrent execution is possible since the DBMS used in this product support ACID properties.

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(vii)   User Classes

The different user classes used are listed below.

- Administrator
- Principal
- Tutor
- Teaching staff
- Non Teaching staff
- Student
- Warden
- Office staff

International Status

The concept of global village, which was the end product of revolutionary changes in the international scenario, brought out tremendous changes in the world communications. Teachers are no more exceptions as the service sector added to the GATS agreement. Education is one of the factor which in looking forward ambitiously to find harmony in its chaos.

Education is emerging as one of the most important by product of globalization activities. Then each factor involved in the education cannot spare themselves from the consequences of this globalization.

India having one of the largest fields for service sector looking forward with great enthusiasm at global changes. Then of course teachers have pivotal roles to play in these activities. Due to these transformations the role of teacher has been charging. Teachers have to be dynamic to find themselves fit to these roles.

Administration becomes quicker and sooner with the help soft ware which can connect all sub system under one umbrella.. Management solution works with your current systems and leverages existing technology. It centralizes the mountains of data to learning and automates routing administrative functions. This package has education's most flexible and interactive scheduling function, thus meeting the communication and information needs of the entire **community in real time. And, it would be utterly simple for everyone to use.**

National Status:

With institutions facing increased pressure to improve teaching and learning, the duties and responsibilities of administrators expanded further to include the responsibility for leading reform that would raise student achievement .The ability to create a shared vision within the community and success in implementing new organizational structures that engage teachers in shared decision-making, Administrators need to equip with new technology. To interact with parents and others in the community for the management of their institutions even though their primary responsibility has shifted. This responsibility includes ensuring that facilities and equipment are safe and in good working order, the development of overall school discipline policies and the enforcement of those policies, and the assignment of supervisory responsibilities among school personnel. . This process focused on the leadership skills that were determined to most significantly impact their ability to effectively lead their schools, and the procedure was based on a task analysis conducted in cooperation. The skills required to include leadership, sensitivity, organizational ability, judgment, problem analysis, range of interest, motivation, decisiveness, educational values, oral and written communication, and stress tolerance.. The six standards address an Administrator need to promote the success of all students through the following:

- The creation and implementation of a shared school vision
- The nurturing and sustaining of a culture and instructional program conducive to learning and staff development
- The ensuring of the management of school operations to produce a safe and effective learning environment
- The collaboration with families and the diverse communities
- The promotion of integrity, fairness, and ethical behavior
- The interaction with larger political, social, legal, and cultural contexts of schooling

Research on administration

Research has consistently shown that Administrators play a significant role in school reform efforts. As the accountability movement gained momentum during the 1980s and 1990s,

research on school effectiveness, generally referred to as effective schools research, and focused on principals and their role. These studies consistently found that the principal was the key to run an effective school. Research found that the unique position principals hold, as the one person in a school who is responsible for and empowered to oversee the entire school, places them in powerful position to coordinate the entire school operation and move it forward. The research further revealed that the most effective principals had a clear vision of how the school could serve its students; had aligned resources and priorities with the vision; and could engage other key players, within and outside the school, in achieving the goals embedded in the vision.

Other studies have supported the key roles principals play in their institution's success and point to other leader characteristics as critical to the principal's success. These characteristics include high energy, initiative, tolerance for ambiguity, sense of humor, analytical ability, excellent inter personal communication and common sense. As society grows more diverse, researchers are beginning to look into the principal's role in leading institution with various streams that are increasingly diverse.

Research on the leadership focused on the changing role of leaders in a changing society. Thus far, research has shown the principal to be a key to a successful transition into an institution that will adequately prepare students. As society continues to change and technological advances change the tools available for teaching, the role of the principal will likely change. Vouchers, charter schools, and technology have the potential to change schooling in fundamental ways. As these changes take place, the role of the principal will also change. The principal of an online school will function in very different ways than the principal of a traditional school.

References

1. Choudhury, N. R. (2001) *Management in Education,* A.P.H. Publishing Corporation, New Delhi.
2. Doctoroff, M. (1977) *Synergistic Management,* AMACOM, New York.
3. Joshi, K.M. (2000) *Higher Education-Development Issues,* Commonwealth Publishers, New Delhi.
4. Koontz, H. and O'Donnell (1976) *Essential of management,* Tata McGraw-Hill Publishing Company Ltd, New Delhi.
5. Singh, M. (1995) *Fundamentals of educational Management,* Vikas Publishing House, New Delhi.
6. Tripathi, P.C. and Reddy, P.N. (1991) *Principles of Management,* Tata McGraw-Hill Publishing Company Ltd, New Delhi.
7. Trivedi, P.R. and Sudarshan, K.N. (1996) *Management Education,* Discovery Publishing House, New Delhi.