Student Management System

Schools and Universities are the foundation of knowledge and an educational body on which students rely upon. Therefore, they need to maintain a proper database of its students to keep all the updated records and easily share information with students.

Most schools and Universities count on an advanced software tool knows as 'Student Information System (SIS)' to keep all their student records and administrative operations including, examinations, attendance, and other activities.

Over the recent years, the performance and efficiency of the education industry have been enhanced by using the Student Management System. This tool has productively taken over the workload of the admin department with its well-organized, easy, and reliable online school management software.

What is a Student Management System?

"Student Management System (SMS) is a solution tool that is designed to track, maintain and manage all the data generated by a School, including the grades of a student, their attendance, their interpersonal activities records, etc.,"

SMS acts as the bottom line database to store all the day-to-day school operations, maintain the proper records of the past few

decades, regulate the various operation modules, managing the critical tasks, efficiently handling the administrative processes such as:

1. Admissions: The Student Management System software is created to help manage the student's admissions activities, starting from initial communication to course enrolment.

2. Billing and Payments: The Payments paid or received can also be managed and recorded through Student Management System; unlike invoice generation, credit notes, refunds, etc., SMS stores all the necessary information about parents and staff suppliers, and contractors.

3. Reporting: Reporting feature benefits the schools to analyze the trends in student behavior and examine the outcomes to boost their performance.
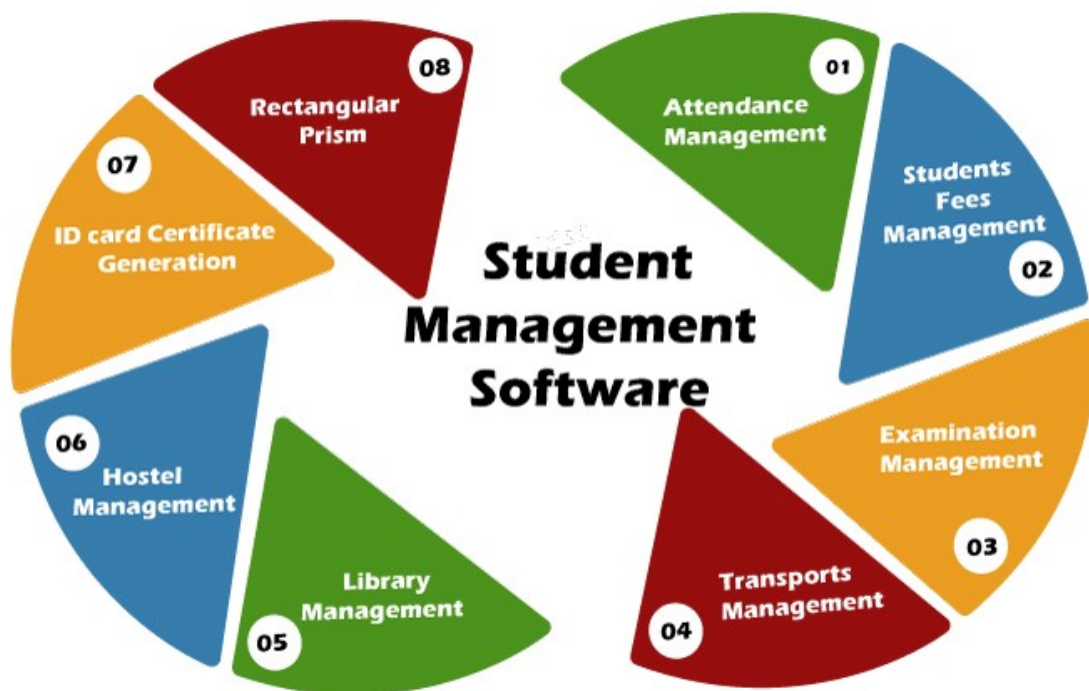
4. Tracking Student's Fees: Fee tracking is one of the most beneficial features of this online software.

The school administration department can track billing dates, induce late fee penalty, generate invoice, and automatically gets the report of received payments throughout the year.

Student Management System software is helpful for teachers and school supervisors and also support applications and dashboards effective for students and parents as well for communication and combined data collection.

The other names of Student Management System are Student Information System (SIS), Student Information Management System (SIMS) and Student Record System (SRS).

Benefits of Using Student Management System

1. Enhances the overall Performance of Students:

One of the mantras to improve academic performance is by constantly monitoring your pace. Therefore, with the help of school administration software, the students utilize their time on studies and all the other tasks, unlike keeping track of

their performance; maintaining records all are handled by SMS software.

2. It helps to Streamline all Task:

Earlier it was too challenging for teachers to keep track of all the activities and tasks allocated to each student, and sometimes it gets overlooked. But life has become easy with the school management software. Because of its efficient dashboard, teachers can easily maintain, monitor, track the performance of every student, and eventually take appropriate measures to get it completed.

3. Improved Communication:

During a physical batch, whenever a teacher delivers any lesson, it is likely that some students won't catch the lesson perfectly and may have their doubts. But with such strength, it becomes impossible for students to clear their problems.

Also, some students are introvert in nature and may feel shy to ask things in front of the class. SMS has been designed in such a way so it can cater to the above issues. Most software has inbuilt discussion portals allowing students to communicate with their teachers and clear their doubts.

4. Can be accessed by all Parents:

Parents are also satisfied with the Student Management System software because earlier they find it challenging to catch the details of their child' day-to-day school activities or how they are performing in-class tests or exams.

But thanks to this open-source software that have created the student dashboard so creatively that parents can access and easily monitor their children's performance and ongoing school activities, including homework, project submission, attendance, etc.,

5. Well-organized Management and Organization of Programs:

The timetable of a class is organized by the school admin department and passed across to teachers and students. Despite being committed to their responsibility, it never relates, and there is always a clash of lectures. With this software, the admin department freezes the timetable online, preventing all the clash errors. In addition to that, every party, including students, teachers, and parents, can easily access it.

6. Helps to maintain the record of All Students:

Not only academics, School monitors the overall personality grooming, including sports, recitation, music, dance, aerobics, swimming, etc. Software Management System keeps a proper track and documentation of extracurricular activities, making sure that the record of every student is intact.

7. Reduction of Human Labour, Papers, and Workload:

The cost and time invested in employing staff to direct all the School's day-to-day events is an extra cost that could be easily cut down by implementing this new open-source administration management technology. It also decreases

the usage of written materials, human errors, and staff workload.

8. Provide an inbuilt Library Management:

The student management system has an inbuilt library management system within itself that helps the students and faculty to keep track of the books management process and issues all the operation, unlike return, book penalty, issue date, return date, etc.,

Modern Pillars of Student Management System

With technology and urbanization, modern needs are rapidly growing. In order to keep the software the performance of the software streamlined as per the growing requirements, it always better to keep on adding new features to your tech stack. Below are the three integral new day features that should be embedded in School Management System:

1. Cloud-based:

Cloud-based software has significant advantages when compared with locally hosted counterparts. With Cloud system, there is a minimal need for IT support, hardware maintenance, and it offers software upgrades. Therefore, making it significantly more accessible for the IT division to operate multiple systems.

2. Information security:

Data is the most critical and confidential aspect for every industry, including schools and universities. Therefore, it must be secure, and there should be a proper management for backing up this data. Because School system management software also deals with an array of sensitive information, so they need to have a security layer to safeguard it from illegitimate hackers or unknown users.

3. Integrations:

Integrations ensures that the data kept inside your software is consistent and accurate in all the software system databases.

Modules of Student Management System

The system has a different segment to process a specific task which is the modules. This will help the system to developed easily and makes it more user-friendly.

The modules of the project are: –

Login Module:

- This will help users to login into the system using institute id and password. A user who has the valid id and password can only log in to their respective accounts.

- It will help the authentication of the user who enters the system. The module provides a layer of security over

the system as only authorized personnel can login into the system.

- This prevents any anonymous person to enter the system and mishandle the records. It is better than the manual method as they do not have any security measure of who can access the system and who cannot.

Registration Module:

- In this module, the student will get registered as it is new in the educational institute. It will be formed like a structure where all the student details will be filled.

- It will have the fields regarding their personal information like date of birth and address along with that it will also ask its professional details of previous education if it has.

- As this module is present online, the student can register them from anywhere on the internet is present. After registration information will go to the admin for authentication.

- This module will reduce the hectic task of taking multiple forms from the institute and filling them carefully as any mistake will lead to getting new sets of the forms.

Course Module:

- Each student will be able to select various courses present in the system. It will be published by the

administrator under the specific department.

- Every course has the qualification criteria, it will be available to those students who are eligible for it. The student will pick the course from the given choices according to his/her interest.

- It will be added to their professional information details. All the courses will be handled by the department assigned to them by the administrator.

Search Module:

In the institution there will be thousands of students and suppose from this there is a need to find the detail of specific students. The only information provided to search is the name of the student. In the manual system, it will be catastrophic to find the student as it is a very tedious job to do so. But with the computerized system admin can easily find the specific student by just typing the name and click the search button.

This module will help the admin in searching the student record for alteration and maintenance.

Assignment Module:

As every course has an assignment that will be given to the student to complete. Based on these assignments every student will be awarded the marks. The assignment can of the various types which will be provided to the student. The student will be able to access the assignment given by the department that handles the course.

The user will also be able to check the marks he/she got in

each exam. Department can also able to differentiate the assignment into various categories like quizzes, essays, or report writing. This helps in making the studies more vibrant for the students.

Attendance Module:

This module is one of the essential parts of the system as this will act as the official document of student presence in the institution. It will show the attendance of the student in every course.
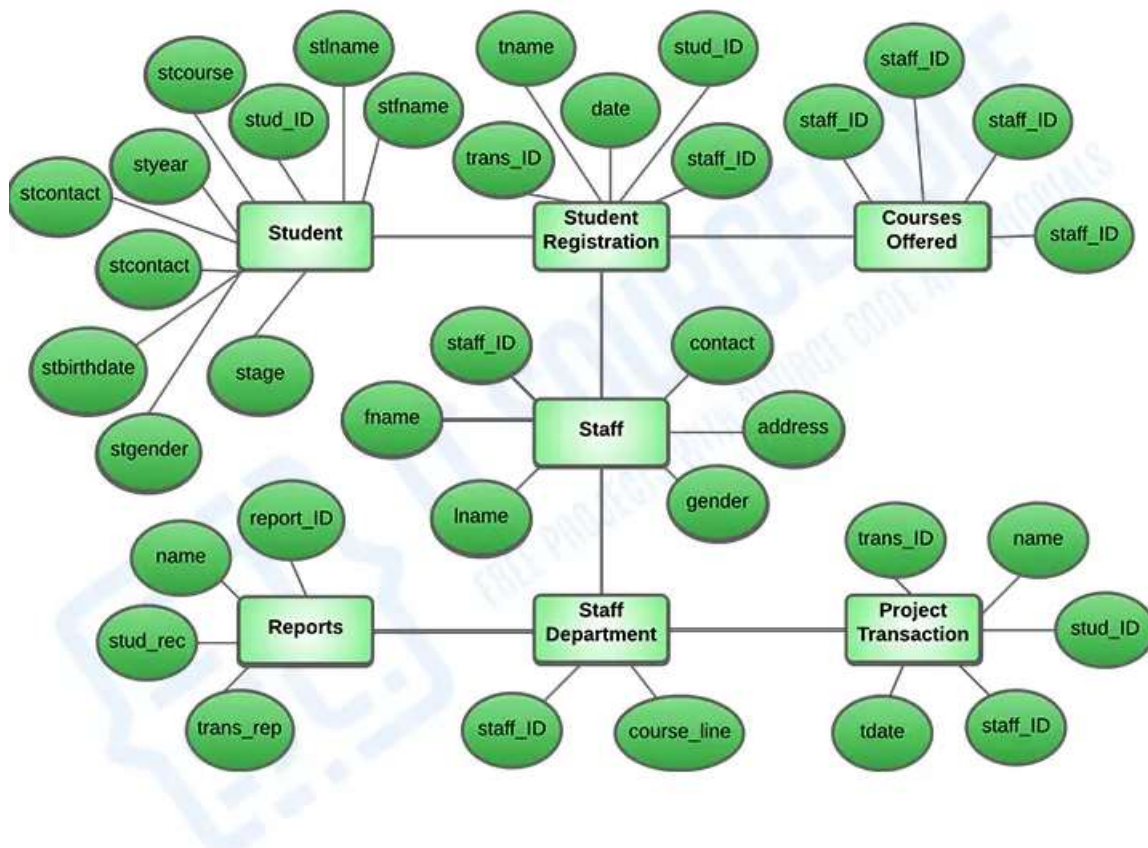
System Design of Student Management System

Once the planning and analysis of the project are completed, the design phase begins. The goal of system design is to transform the information collected about the project into the blueprint structure which will serve as a base while constructing the system. It is considered to be an unwieldy process as most of the errors are introduced in this phase.

However, if an error gets unnoticed in the later process it may become difficult to track them down. In our system, we are developing a system that helps in student management by the institution. It will minimize the problems faced by both students and the institutes for the duration.

Let's discuss the system in detail:

Er Diagram of Student Management System

STUDENT MANAGEMENT SYSTEM

Description Above figure shows the E-R diagram of the proposed system. The ER model defines the conceptual view of a database. It works around real-world entities and the associations among them. At the view level, the ER model is considered a good option for designing databases.

So, let's see each entity in Details-:

Administrator:

- The information of the admin of the institute is stored in this entity. It is stored data of login and the password. This provides security to the system and keeps the record of which user entered in the system at what instance of time.

- This entity will have the access to all the entities as it will add the student to the system.

- This will enter the course in the department and manage them.

It has following attributes:

a. Username: It stores the name of the admin which acts as the unique name given to the manager of the firm. Through this login into the system and the work they made will be recorded against his name. It will help their seniors to see what students have the manager brings in the institute and how much of the task he has completed.

b. Password: This attribute holds the secured keyword given to every manager of the educational institutions who need access to the system. This should not be shared with any other member. As it would make any staff employee enter the system and see the information regarding students which can make them unbiased.

c. Login-Time: The login time of the admin will be recorded

in this field which helps in tracking the admin performance.

d. Logout-Time: It stores the logout time of the admin from the system.

Students:

- The essential entity of the system holds the information regarding students. This has all the attributes required to register a student in the educational institute.

- As the student inputs its information i.e. personal or professional it will be stored in this entity. It has a relationship with the courses of degree one too many.

- As students will enroll for various courses as per their eligibility so a relationship is required between both entities.

It has the following attributes:

S-Id: Student's Identity number attribute is a distinct numeric field that will be given to every student registered in the institute. It helps in making every student unique throughout the system and helps the administrator.

Name: Student name is the personal information of the student. It helps in making the system friendlier for the user and aids the admin in search or update the record.

Section: Every student is divided into different segments that belong to the same course. This helps in making the study more efficient for every student.

Email-Id: This will store the email id of the student required

for sending the urgent update to a student from the institute.

C-Id: As many courses can be opted by a student. So, the multivalued attribute required to store all the reference id of the courses for which the student has enrolled. Courses Id is, therefore, belonging to course entity.

Mobile: The mobile number of the student is an attribute is used as a point of contact to the student.

Address: This field is a composite attribute of the city and the pin code. As the address required the full location of the student.

Departments:

To manage all the courses, present in the institute there is a need for the upper house to manage them. It is the body that allows the assignment for the courses that come from them. This entity will also handle the attendance of the student in the specific course. As per the requirement entity will have a relationship with the attendance and courses entity.

Department had to manage the attendance as it is the responsibility of the division to keep a record of the information of the students who belong to their courses are coming to attend classes or not. This makes them informed about the course situation and constructs the roadmap for the future of each course. Every department also requires allotting the assignment to each student who has opted for the course.

The allotment should be such that every type of assignment could be given to each student and no one is left. Admin will manage this entity as it comes indirectly under the institute.

It has following attributes:

Dept-Id: Department Id is a distinct numeric field. This attribute stores the unique number given to each department present in the institute. It also helps the admin in further reference department in other entity rather than giving full information.

D-name: Department name is string field which holds the name of the department.

Courses:

There is a requirement in the system to store all the information about the courses given by the institute. Each course has its properties like which departments it belongs to or it belongs to which type. When students enroll for a course, it must check the qualification required for him/her to apply. As every course has some eligibility criteria which one has to follow to enroll.

It has the following attributes:

C-Id: Course identity attribute is the distinct number given to each course given by the institute. This attribute further aid in giving reference to the course in the student's profile. It also eases the entity assignment as they cannot get all the information every time a new assignment is added for the course.

C-name: Name of the course is stored in the course name attribute.

Ct-id: Course type id attribute stores the unique identification number that refers to each type of the course. As the three is various type of course as a minor, major or optional. A course should be categories to avoid any type of confusion.

Dept-Id: The department identity number attribute is a reference to the department to which a specific course belongs. It is important to make a relation with the department so the threads can be pulled when needed.

Qualification: Every course has the qualification attribute for which type of qualification a specific course is needed like for high school national history course would be used but for intermediate contemporary world history is required.

Course Type:

This entity is a part of the course entity. Courses can be of various types based on the credit and value in the world of education. They can easily categorize the Institute norms like major, minor, optional, and core. As the student enrolls for the course it must be known to them that what kind, of course, is it. This makes the system more transparent for both the admin and the students.

This categorization further hassles out the confusion for the student for calculating their grades based on the credits. It has relation with the course entity as the latter owns this entity with the degree of one to many.

The entity has following attributes:

Ct-id: Course type id attribute stores the unique identification number that refers to each type of the course. It acts as the primary key for the entity as it is distinct for each category.

Ct-Name: The course type name is a string name given to each category to identify for the student as it becomes difficult for the user to differentiate course type on the basis of the number. It helps the student in various processes of registration like selecting the course, they first have to select for which category they are searching for. Thus, make the system faster and more reliable in the course search.

Assignments:

Exams or Assignment is required in the system to keep track of the student's performances. This helps the institute to construct the roadmap for the future of its pupils. This entity is in direct relation to the department. They will manage the assignment given to a student based on the courses latter have opted for.

It has the following attribute:

Ass-Id: Every assignment will have a unique number that will be stored in this attribute. It is required to maintain a record that is unique and distinct. It helps in removing the redundancy in the record which can create errors and bugs in the system.

Ass-Name: Assignment name is given to each assignment to make it understandable to the user and make the system

more reliable to use.

S-Id: Is will store the student identification number as reference to students to whom this assignment is allotted.

Asst-Id: It holds the information about what category this assignment belongs to which is further discussed in its own entity description.

C-Id: This attribute holds the reference id of the course to which an assignment belongs. It creates the relationship between the course and this entity.

Marks: It will hold the marks or the evaluation criteria for the assignment. This attribute helps in evaluating the student and give them remarks about their performance.

Assignment Type:

This entity keeps the record of types of assignments present in the institute. An assignment can a written exam, project, or group activity. Thus, the different entity is required to hold the categorize only as this will remove the repetition of information in the assignment entity.

It has the following attributes:

Asst-Id: A unique and distinct numeric value given to each type of assignment. It uses to identify and differentiate each type from another and act as the primary key to the entity.

Asst-Name: Assignment Name is given to each type as it aids the user to identify the category without mixing them

with the assignment given to the student.

Attendance:

One of the essential parts of the institute to keep track of the student whether they are attending the classes or not. In the system, this entity will help them to achieve that goal. It will store the record of each student's presence or absence based on the courses they opt for.

It has the following attributes:

S-Id: It holds the id of the student to whom this attendance belongs.

C-Id: The course id will be referencing the course whose attendance is recorded.

P/A: It is a multivalued attribute which shows a number of classes student was present and absent.

Total Classes: It holds the total classes held for the course of Percentage: It shows the percentage of students' presence in class based on total classes held.

<u>User Interface of Student Management System</u>

The student management system for the institution eases the admin problems by providing a user-friendly interface for students and managers. It does that by designing a simple and easy to interact interface through which users will not

have any problem interacting and queries for the system.

To show the ease of interaction with system sees the use case diagram of the system:

- In the figure, it is clearly shown how the user is directly interacting with the registration process. He/she can further go to a home page which gives them various tabs to navigate.

- Each tab will provide special functionality to the user like for student attendance will show their percentage of absence and presence for every course they opted or for admin enroll course help them to add a new course in the institute.

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Functional Requirement of The Student Management System

- Creation of the new record for the new student.

- Deletion of the record which already exists in the

system based on the requirement of the institute.

- Update in the record which is present in the system as per the need.

- Generate the report on the attendance of the student as per his/her record.

- Admin's handle of the department, this function eases the process of management.

Non-Functional Requirement of The Student Management System

- The security of the system is maintained by providing a login interface to the user. Only those who have the login is and password can enter the system.

- User-Friendly as the system is very interactive and can be easily operated.

- Maintainability and reliability if the system is kept very thoroughly as all the records kept in the database have the backups and system can restore if there is power loss.

Conclusion of Student Management System

Student Management System can be used by educational institutions to maintain their student records easily. Achieving this objective is difficult using the manual system as the information is scattered, can be redundant, and collecting relevant information may be very time-consuming. All these problems are solved by this project.

This system helps in maintaining the information of pupils of the organization. It can be easily accessed by the manager and kept safe for a long period of time without any changes.

THE END