



**SIMATS SCHOOL OF ENGINEERING**  
**SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL**  
**SCIENCES**

**CHENNAI-602105**

**SCHOOLMANAGEMENT SYSTEM**  
**CAPSTONE PROJECT REPORT**

*Submitted in the partial fulfillment for the award of the degree of*  
**BACHELOR OF ENGINEERING**

**IN**

**Computer Science Engineering**

**Submitted by**

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**Under the Supervision of**  
**Dr. Carmel Mary Belinda**

**March 2024**

## **DECLARATION**

We, **P. VENKY (192211871), K.V. SASIKANTH (192211955), V. MADHAN REDDY(192211759)** students of **B. Tech in Computer Science Engineering**, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, hereby declare that the work presented in this Capstone Project in **SCHOOLMANAGEMENT SYSTEM** is the outcome of our own, Bonafede work and is correct to the best of our knowledge and this work has been undertaken taking care of Engineering Ethics.

Date:6-04-2024

Place: Chennai

### **CERTIFICATE**

This is to certify that the project entitled **Railway Reservation System** submitted by **P. Venky(192211871)**, **K.V. Sasikanth (192211955)**, **V. Madhan reddy(192211759)** has been carried out under our supervision. The project has been submitted as per the requirements in the current semester of B.Sc. Computer Science Engineering.

Faculty-in-charge

**Dr. Carmel Mary Belinda**

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# **SCHOOLMANAGEMENT SYSTEM**

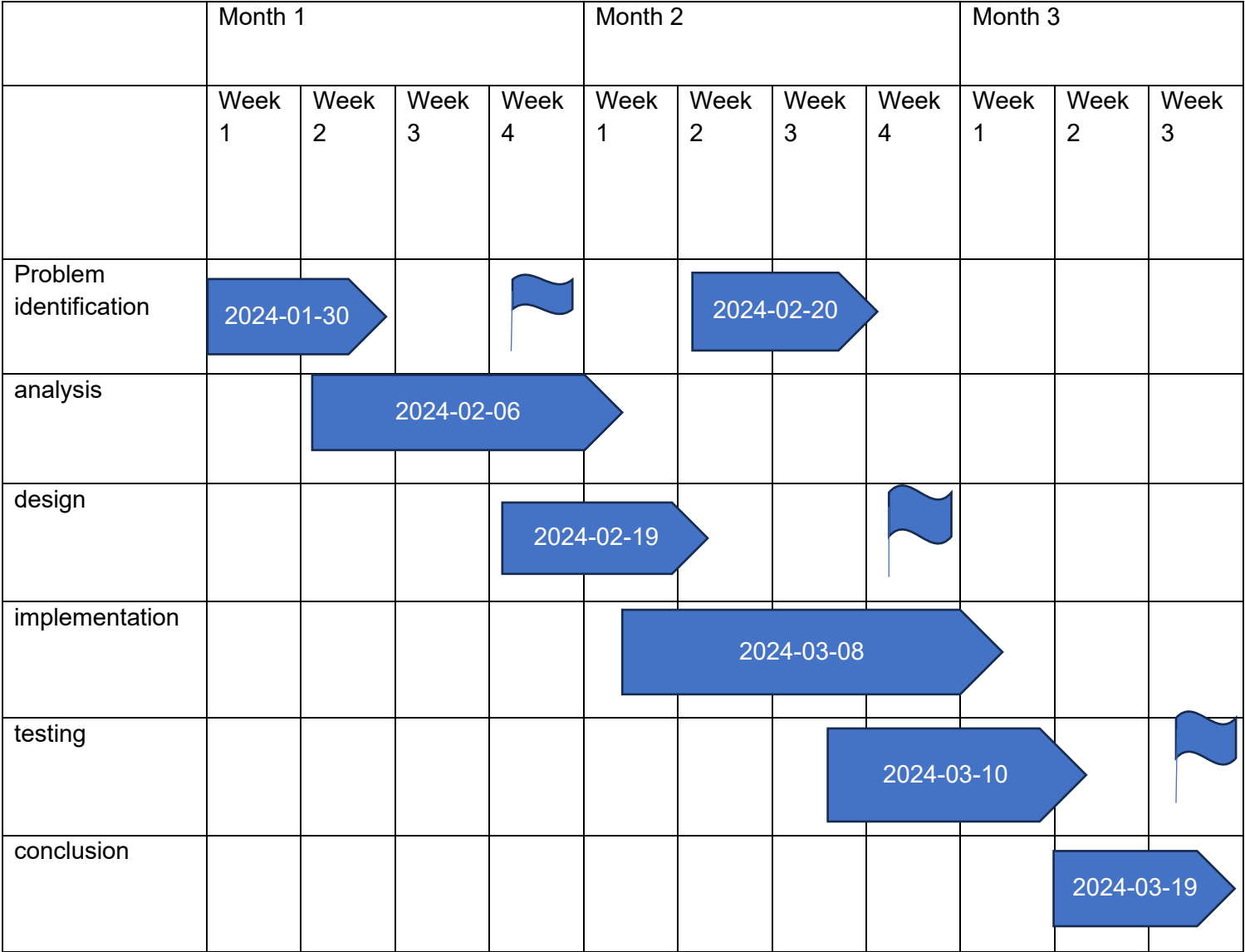
## **OBJECTIVE:**

The objective of designing a School Management System database project is to develop a comprehensive and efficient system capable of managing all aspects of academic institution operations seamlessly. By structuring information into distinct tables such as Students, Teachers, Courses, Classes, Grades, Attendance, and Payments, the goal is to facilitate easy access, retrieval, and manipulation of data related to students, teachers, courses, classes, grades, attendance, and financial transactions. This database aims to streamline administrative tasks, optimize academic scheduling, ensure accurate record-keeping, and provide comprehensive reporting capabilities. Ultimately, the objective is to enhance the overall educational experience for both students and administrators by creating a robust and reliable platform for school management.

## **INTRODUCTION:**

The School Management System project aims to create a comprehensive and efficient platform for managing various aspects of educational institutions. At its core, the project involves designing and implementing a relational database consisting of interconnected tables, each dedicated to specific functionalities within the educational ecosystem. The Students Table acts as a central repository for student information, including unique identifiers, names, addresses, contact details, and any relevant identifiers such as student IDs. Meanwhile, the Teachers Table stores comprehensive records of teaching staff, encompassing personal details, contact information, qualifications, and any other pertinent data. For academic organization, the Courses Table contains details about the courses offered by the institution, including course IDs, names, descriptions, credit hours, and associated teacher IDs. Additionally, the Classes Table manages information about specific class instances, recording details such as class IDs, course IDs, teacher IDs, schedules, and classroom assignments. To monitor academic performance, the Grades Table captures student grades for various assessments, including exam scores, assignment grades, and overall course grades, alongside relevant metadata like student IDs and assessment IDs. Simultaneously, the Attendance Table tracks student attendance records, recording attendance statuses for each class session, associated student IDs, and timestamps. For financial management, the Payments Table is responsible for storing transactional data, including payment IDs, student IDs, payment amounts, payment dates, and payment statuses, facilitating seamless financial transactions within the system. Lastly, the Academic Calendar Table provides a structured overview of important academic dates, including semester start and end dates, examination schedules, and holidays, aiding in effective academic planning and scheduling.

GANTT CHART:



## **LITERATURE REVIEW:**

### **1. Indian Education System and Technological Integration (Sharma et al., 2018)**

The integration of technology into the Indian education system has become increasingly prevalent in recent years. Sharma et al. discuss the importance of leveraging technologies like Aadhaar, the unique identification system in India, to streamline administrative processes within educational institutions. Similar to the implementation of UID in the Indian Railways Reservation System, Aadhaar could serve as a primary component in a smart School Management System, enhancing efficiency and accessibility for both administrators and students.

### **2. Impact of IoT on Educational Institutions (Srivastava et al., 2019)**

The adoption of IoT technology has had a profound impact on various industries, including education. Srivastava et al. explore how IoT innovations have transformed traditional educational paradigms, enabling more efficient management of resources and enhancing the overall learning experience. Drawing parallels with the challenges faced by travelers in the Indian railway reservation system, the study emphasizes the potential of IoT integration to address similar challenges within school management, such as student enrollment, attendance tracking, and academic performance monitoring.

### **3. Information Systems and Competitive Advantage in Education (Porter, 1985)**

Porter's seminal work on competitive advantage highlights the significance of information systems in reshaping industries and gaining strategic edges. By optimizing revenue management and yield, educational institutions can enhance their competitive positioning. Porter's framework can be applied to the realm of school management systems, emphasizing the importance of efficient information systems in driving operational excellence and achieving academic objectives.

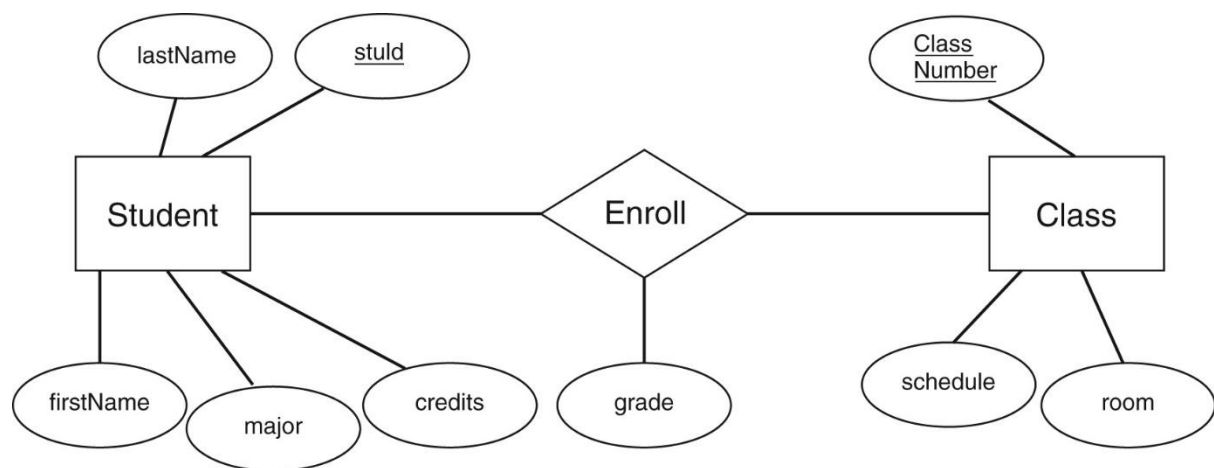
### **4. Formal Approaches in Educational Technology (Wenger, 1998)**

Formal approaches, historically utilized in domains like transportation and railway signaling, have demonstrated efficacy in ensuring safety and reliability. Wenger discusses the application of formal methods in developing software systems for educational technology, citing examples such as the implementation of formal verification techniques in driverless shuttle systems and metro control systems. These approaches can inform the development of robust and reliable school management systems, ensuring the integrity and security of educational data.

## 5. Sustainable Development in Education Infrastructure (UNESCO, 2020)

Sustainable development encompasses various dimensions, including the provision of reliable and accessible educational infrastructure. UNESCO underscores the importance of sustainable transportation networks in facilitating equitable access to education, particularly in remote areas. However, challenges such as inadequate funding and maintenance issues can impede the consistent delivery of educational services. A robust school management system can contribute to sustainable development goals by optimizing resource allocation and enhancing operational efficiency, thereby improving educational access and quality.

### ER-DIAGRAM:



### SQL:

```
CREATE TABLE Students (  
  StudentID INT PRIMARY KEY,  
  FirstName VARCHAR(50),  
  LastName VARCHAR(50),  
  DateOfBirth DATE,  
  Address VARCHAR(100),  
  Phone VARCHAR(15)  
);
```

```
CREATE TABLE Teachers (  
  TeacherID INT PRIMARY KEY,  
  FirstName VARCHAR(50),
```



```
    LastName VARCHAR(50),  
    DateOfBirth DATE,  
    Address VARCHAR(100),  
    Phone VARCHAR(15),  
    SubjectTaught VARCHAR(50)  
);
```

```
CREATE TABLE Courses (  
    CourseID INT PRIMARY KEY,  
    CourseName VARCHAR(100),  
    TeacherID INT, -- Foreign key referencing Teachers table  
    FOREIGN KEY (TeacherID) REFERENCES Teachers(TeacherID)  
);
```

```
CREATE TABLE Classes (  
    ClassID INT PRIMARY KEY,  
    CourseID INT, -- Foreign key referencing Courses table  
    ClassName VARCHAR(50),  
    Schedule VARCHAR(100),  
    RoomNumber VARCHAR(20),  
    FOREIGN KEY (CourseID) REFERENCES Courses(CourseID)  
);
```

```
CREATE TABLE StudentEnrollment (  
    EnrollmentID INT PRIMARY KEY,  
    StudentID INT, -- Foreign key referencing Students table  
    ClassID INT, -- Foreign key referencing Classes table  
    EnrollmentDate DATE,  
    FOREIGN KEY (StudentID) REFERENCES Students(StudentID),  
    FOREIGN KEY (ClassID) REFERENCES Classes(ClassID)  
);
```

## OUTPUT:

```
mysql> use vihana;
Database changed
mysql> create table student
  -> (stdid int(5),stdname varchar(50),sex char(6),percentage number,sclass number,sec char(3),stream char(10),dob date,teacherid varchar(20));
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'number,sclass
number,sec char(3),stream char(10),dob date,teacherid varchar(20))' at line 2
mysql> create table student
  -> stdid number,stdname varchar(30),sex char(6),percentage number,sclass number,sec char,stream char(10),dob date,teacherid varchar(20));
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'stdid number,
stdname varchar(30),sex char(6),percentage number,sclass number,sec' at line 2
mysql> create table student
  -> (stdid decimal(10,2),stdname varchar(50),sex varchar(40),percentage decimal(10,2),sclass decimal(10,2),sec varchar(20),stream varchar(30),dob date,teacherid varc
har(20));
Query OK, 0 rows affected (0.12 sec)

mysql> desc student;
+-----+-----+-----+-----+-----+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| stdid | decimal(10,2) | YES  |     | NULL    |       |
| stdname | varchar(50)   | YES  |     | NULL    |       |
| sex    | varchar(40)   | YES  |     | NULL    |       |
| percentage | decimal(10,2) | YES  |     | NULL    |       |
| sclass | decimal(10,2) | YES  |     | NULL    |       |
| sec    | varchar(20)   | YES  |     | NULL    |       |
| stream | varchar(30)   | YES  |     | NULL    |       |
| dob    | date          | YES  |     | NULL    |       |
| teacherid | varchar(20)  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
9 rows in set (0.01 sec)

mysql> insert into student
  -> (stdid,stdname,sex,percentage,sclass,sec,stream,dob,teacherid)
  -> values
  -> (1011,"john","male",85,10,"a","science","1995-05-15","tid001"),
  -> (1012,"smith","female",78,11,"b","commerce","1994-08-22","tid002"),
  -> (1013,"bob","male",92,12,"c","science","1993-03-10","tid003"),
  -> (1014,"swati","female",86,10,"a","commerce","1996-12-05","tid004"),
  -> (1015,"alex","male",75,11,"b","science","1997-07-18","tid005"),
  -> (1016,"megan","feamale",79,12,"c","commerce","1992-09-30","tid006");
Query OK, 6 rows affected (0.01 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

Activate Windows  
Go to Settings to activate Windows.

## CONCLUSION:

The implementation of a School Management System (SMS) represents a significant advancement in the educational landscape, revolutionizing the way educational institutions operate, communicate, and manage their resources. Through the integration of technology, comprehensive data management, and streamlined processes, an SMS offers numerous benefits for both administrators and stakeholders within the educational community. the School Management System serves as a pivotal tool in enhancing efficiency, transparency, and effectiveness in educational administration. By providing a centralized platform for managing student information, academic resources, and administrative tasks, an SMS empowers educational institutions to optimize their operations, improve communication, and elevate the overall educational experience for students, teachers, and staff alike.