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Description for all the project

Description of the School Management System Tables

1. Teacher Table

Attribute	Description
teacher_id	Unique identifier for each teacher (Primary Key).
email	Teacher's unique email address (cannot be null).
password	Login password for the teacher.
fname	Teacher's first name.
lname	Teacher's last name
dob	Date of birth of the teacher.
phone	Landline phone number of the teacher.
mobile	Unique mobile number of the teacher.
status	Teacher's status (0 for inactive, 1 for active).
last_login_date	Date of the teacher's last login.
last_login_ip	IP address used during the teacher's last login.

2. Grade Table

Attribute	Description
grade_id	Unique identifier for each grade (Primary Key).
name	Name of the grade (e.g., "Grade 1", "Grade 2").
grade_description	Detailed description or remarks about the grade.

3. Classroom Table

Attribute	Description
classroom_id	Unique identifier for each classroom (Primary Key).
year	Academic year of the classroom.
grade_id	Links the classroom to a specific grade.
section	Section designation for the classroom.
status	Classroom status (0 for inactive, 1 for active).
remarks	Additional comments or notes about the classroom.
teacher_id	Links the classroom to a specific teacher.

4. Parent Table

Attribute	Description
parent_id	Unique identifier for each parent (Primary Key).
email	Parent's unique email address.
password	Login password for the parent.
fname	Parent's first name.
lname	Parent's last name (optional).
dob	Date of birth of the parent.
phone	Landline phone number of the parent.
mobile	Unique mobile number of the parent.
status	Parent's status (0 for inactive, 1 for active).
last_login_date	Date of the parent's last login.
last_login_ip	IP address used during the parent's last login.

5. Student Table

Attribute	Description
student_id	Unique identifier for each student (Primary Key).
email	Student's unique email address.
password	Login password for the student.
fname	Student's first name.
lname	Student's last name
dob	Date of birth of the student.
phone	Landline phone number of the student.
mobile	Mobile number of the student.
parent_id	Links the student to a specific parent.
date_of_join	Date when the student joined.
status	Student's status (0 for inactive, 1 for active).
last_login_date	Date of the student's last login.
last_login_ip	IP address used during the student's last login.

6. Classroom-Student Table

Attribute	Description
classroom_id	Links students to a specific classroom.
student_id	Links a student to a classroom.

7. Attendance Table

Attribute	Description
date_of_attendance	Date of the attendance record.
student_id	Links the attendance record to a specific student.
status	Attendance status (1 for present, 0 for absent).
remark	Additional comments or remarks about the attendance.

8. Exam Type Table

Attribute	Description
exam_type_id	Unique identifier for each exam type (Primary Key).
name	Name of the exam type.
description_exam	Additional remarks or details about the exam type.

9. Exam Table

Attribute	Description
exam_id	Unique identifier for each exam (Primary Key).
exam_type_id	Links the exam to a specific type.
name	Name of the exam.
start_date	Scheduled start date of the exam.

10. Course Table

Attribute	Description
course_id	Unique identifier for each course (Primary Key).
name	Name of the course.
description	Detailed description of the course.
grade_id	Links the course to a specific grade.

11. Exam Result Table

Attribute	Description
exam_id	Links the result to a specific exam.
student_id	Links the result to a specific student.
course_id	Links the result to a specific course.
marks	Marks obtained by the student in the exam.

SQL Queries with Descriptions

Query 1: Retrieve Students in a Specific Classroom

Description: This query fetches the list of students in a specific classroom (classroom ID = 3), including their full names, associated grade, and grade description. The results are sorted by classroom ID and students' last names.

Query:

```
SELECT
  classroom.classroom_id AS classroom_id,
  student.fname || ' ' || student.lname AS student_name,
  grade.name AS grade_name,
  grade.grade_description AS grade_desc
FROM
   student
JOIN
    classroom_student ON student.student_id = classroom_student.student_id
JOIN
    classroom ON classroom_student.classroom_id = classroom.classroom_id
JOIN
    grade ON classroom.grade_id = grade.grade_id
WHERE
    classroom.classroom_id = 3
ORDER BY
   classroom.classroom_id, student.lname;
```

Query 2: Fetch Teachers Teaching a Specific Course

Description: Retrieves all teacher information, including their details and the course ID they teach, for a specific course (course ID = 4). The data is sorted by course ID and teacher ID.

Query:

```
SELECT
    t.*,
    co.course_id
FROM
    teacher t
JOIN
    classroom c ON t.teacher_id = c.teacher_id
JOIN
    course co ON c.grade_id = co.grade_id
WHERE
    co.course_id = 4
ORDER BY
    co.course_id, t.teacher_id;
```

Query 3: Find Exams Taken by a Student

Description: Fetches the list of exams, their types, and the marks obtained by a specific student (student ID = 2). The results are ordered by exam name and exam type.

Query:

```
SELECT
   exam.name AS exam_name,
   exam_type.name AS exam_type_name,
   exam_result.marks
FROM
     student
JOIN
     exam_result ON student.student_id = exam_result.student_id
JOIN
     exam ON exam_result.exam_id = exam.exam_id
JOIN
     exam_type ON exam.exam_type_id = exam_type.exam_type_id
WHERE
     student.student_id = 2
ORDER BY
     exam_name, exam_type_name;
```

Query 4: Retrieve Attendance Records for a Specific Student

Description: Fetches attendance details (date, status, and remarks) for a specific student (student ID = 6) within a specified date range (January 1, 2024, to January 5, 2024). The results are sorted by attendance date.

Query:

```
SELECT
      attendance.date_of_attendance,
  attendance.status,
    attendance.remark
FROM
    attendance
WHERE
  attendance.student_id = 6
    AND attendance.date_of_attendance
        BETWEEN TO_DATE('2024-1-01', 'YYYY-MM-DD')
        AND TO_DATE('2024-01-5', 'YYYY-MM-DD')
ORDER BY
    attendance.date_of_attendance;
```

Query 5: List Parents’ Contact Information for Students in a Specific Grade

Description: Retrieves contact details of parents (name, email, phone, and mobile) of students in a specific grade (grade ID = 1). The results are ordered by parents' names.

Query:

```
SELECT
    parent.fname || ' ' || parent.lname AS parent_name,
    parent.email,
    parent.phone,
    parent.mobile,
    grade.name AS grade_name
FROM
    parent
JOIN
    student ON parent.parent_id = student.parent_id
JOIN
    classroom_student ON student.student_id = classroom_student.student_id
JOIN
    classroom ON classroom_student.classroom_id = classroom.classroom_id
JOIN
    grade ON classroom.grade_id = grade.grade_id
WHERE
    grade.grade_id = 1
ORDER BY
    parent.fname, parent.lname;
```

Query 6: Calculate Average Marks by Exam Type for a Course

Description: Calculates the average marks for each exam type within a specific course (course ID = 3). The data is grouped by exam type.

Query:

```
SELECT
    exam_type.name AS exam_type,
    avg(to_number(exam_result.marks)) AS average_marks
FROM
    exam_result
JOIN
    exam ON exam_result.exam_id = exam.exam_id
JOIN
    exam_type ON exam.exam_type_id = exam_type.exam_type_id
WHERE
      exam_result.course_id = 3
GROUP BY
    exam_type.name;
```

Query 7: List Courses, Grades, and Teachers

Description: Fetches the list of courses, their associated grades, and the teachers responsible for those courses. The data is ordered by course name.

Query:

```
SELECT
```

```
    course.name AS course_name,
    grade.name AS grade_name,
    teacher.fname || ' ' || teacher.lname AS teacher_name
FROM
    course
JOIN
    grade ON course.grade_id = grade.grade_id
JOIN
    classroom ON grade.grade_id = classroom.grade_id
JOIN
    teacher ON classroom.teacher_id = teacher.teacher_id
ORDER BY
    course.name;
```

Query 8: Count Students in Each Classroom

Description: Retrieves the count of students in each classroom, along with the classroom ID, year, and section. It uses a `LEFT JOIN` to include classrooms with no students. The data is ordered by classroom ID.

Query:

```
SELECT
    classroom.classroom_id,
    classroom.year,
    classroom.section,
    count(classroom_student.student_id) AS student_count
FROM
    classroom
LEFT JOIN
    classroom_student ON classroom.classroom_id =
classroom_student.classroom_id
GROUP BY
    classroom.classroom_id, classroom.year, classroom.section
ORDER BY
    classroom.classroom_id;
```