

CanSTEM School Database System

HTTP 5126 Final Project

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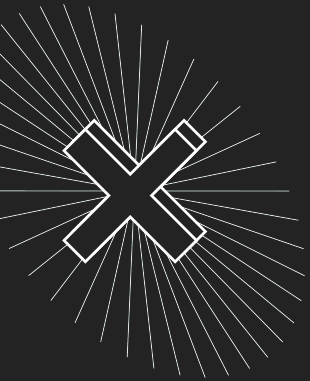


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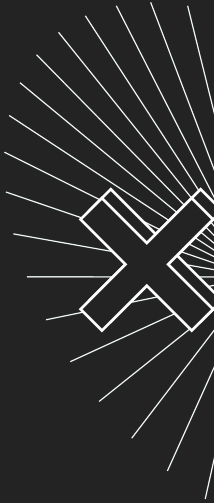
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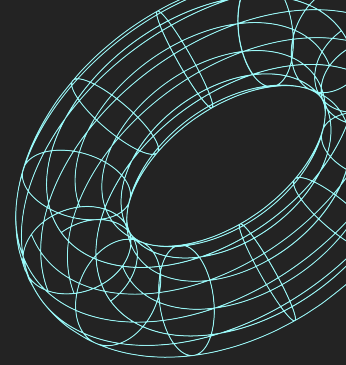
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**Impact & Next
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Problem Statements



Problem 1: Manual Attendance Tracking

- Attendance was tracked on paper. It took 2 to 3 days to update in the system, and no one got notified if a student was missing too often.

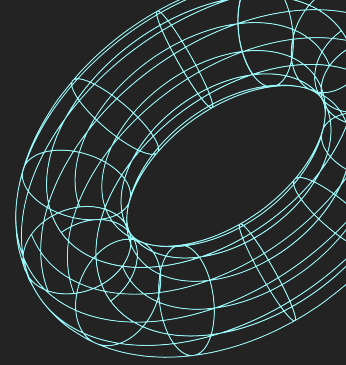
Problem 2: Inconsistent Grade Calculation

- Grades were calculated manually. Teachers were spending over 10 hours a week, and each one had their own way of grading — which wasn't fair for students



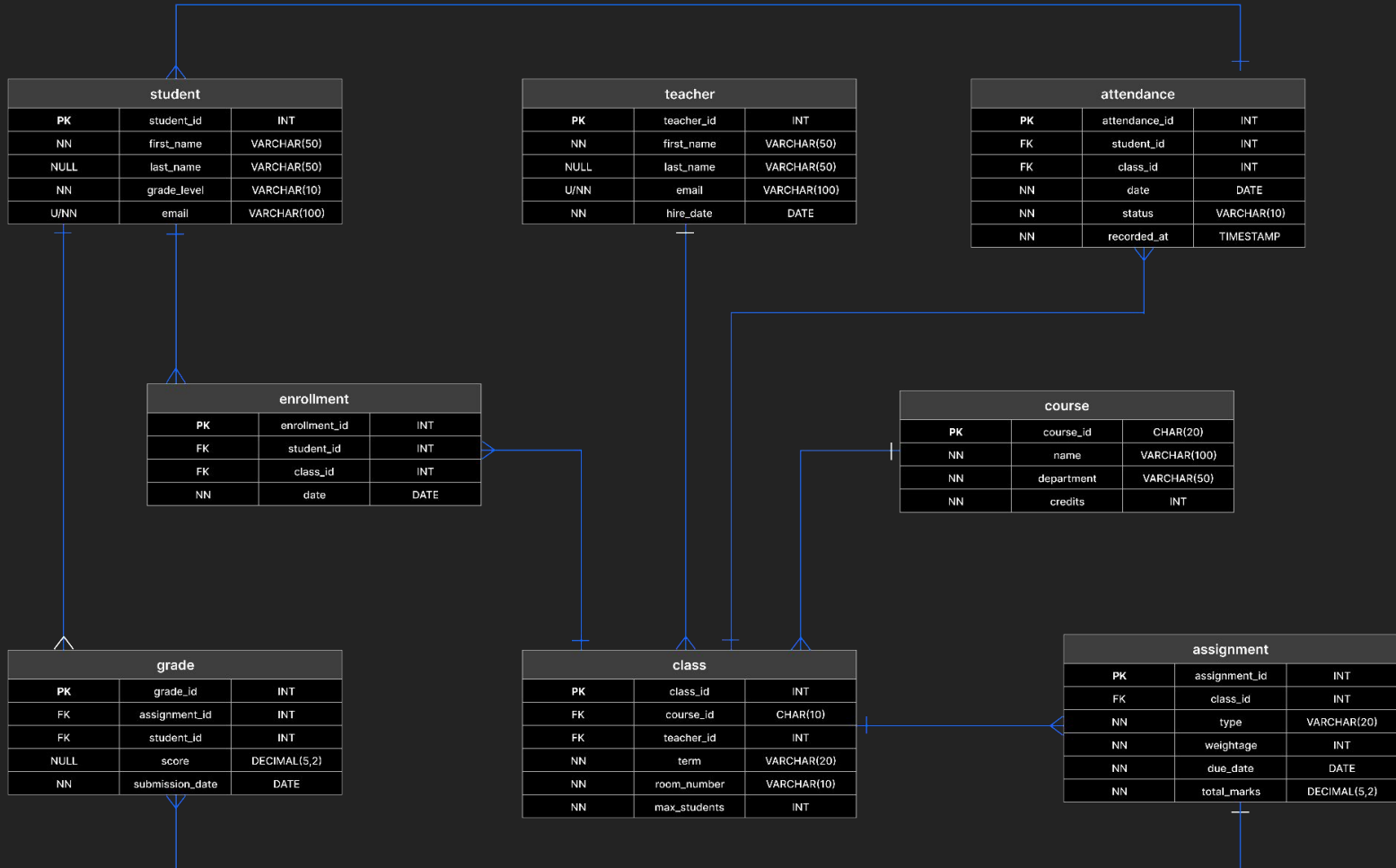


Database Design (ERD)



- 3NF Normalized: No redundant or duplicate data
- Key Relationships:
student (1) → attendance (many) ,
student (1) → grades (many)
- Nullable fields for flexibility: first_name, last_name, score





Feature 1: Attendance Trigger

- **Trigger Name:** trg_attendance_alert
- **Purpose:**
 - Automatically flags students with 3 or more absences
- **Logic Summary:**
 - After inserting into the attendance table, the trigger counts absences
 - If the count is 3 or more, an alert message pops up
- **Test Case:**
 - Inserts for student_id=1 trigger alert on 3rd absence
 - Error: "ALERT: Student 1 has 3+ absences!"

Attendance table

<div>↩️ T ➡️</div>			attendance_id	student_id	class_id	date	status	recorded_at	
<input type="checkbox"/>	<div><div><div></div></div><div>Edit</div></div>	<div><div><div></div></div><div>Copy</div></div>	<div><div><div></div></div><div>Delete</div></div>	12	1	1	2023-10-02	Present	2025-04-17 03:58:07
<input type="checkbox"/>	<div><div><div></div></div><div>Edit</div></div>	<div><div><div></div></div><div>Copy</div></div>	<div><div><div></div></div><div>Delete</div></div>	13	1	1	2023-10-04	Absent	2025-04-17 03:58:07
<input type="checkbox"/>	<div><div><div></div></div><div>Edit</div></div>	<div><div><div></div></div><div>Copy</div></div>	<div><div><div></div></div><div>Delete</div></div>	14	2	1	2023-10-02	Present	2025-04-17 03:58:07

```
2 INSERT INTO attendance (student_id, class_id, date, status) VALUES
3 (1, 1, '2023-10-06', 'Absent'),
4 (1, 1, '2023-10-09', 'Absent');
```

MySQL said: 

#1644 – ALERT: Student 1 has 3+ absences!

Feature 2 – Grade Calculation View

– **View Name:** vw_final_grades

– **Purpose:**

- Converts student's scores and weightages, then calculates the final grade and Assigns consistent letter grades (A+, A, B, C, D)

– **Benefits:**

- Ensures grading is consistent across all subjects
- Saves over 10 hours/week for each teachers

– **Formula (Simplified):**

- $\text{Weighted Score} = (\text{Score} \div \text{Total Marks} \times \text{Weight}) \div \text{Total Weight}$

View: vw_final_grades

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0002 seconds.)

```
1 CREATE VIEW vw_final_grades AS
2 SELECT
3     s.student_id,
4     CONCAT(s.first_name, ' ', s.last_name) AS student_name,
5     c.name AS course,
6     ROUND(SUM((g.score / a.total_marks) * a.weightage) / SUM(a.weightage) * 100, 2) AS final_percentage,
7     CASE
8         WHEN ROUND(SUM((g.score / a.total_marks) * a.weightage) / SUM(a.weightage) * 100, 2) >= 90 THEN 'A+'
9         WHEN ROUND(SUM((g.score / a.total_marks) * a.weightage) / SUM(a.weightage) * 100, 2) >= 80 THEN 'A'
10        WHEN ROUND(SUM((g.score / a.total_marks) * a.weightage) / SUM(a.weightage) * 100, 2) >= 70 THEN 'B'
11        WHEN ROUND(SUM((g.score / a.total_marks) * a.weightage) / SUM(a.weightage) * 100, 2) >= 60 THEN 'C'
12        ELSE 'D'
13    END AS letter_grade
14 FROM student s
15 JOIN grade g ON s.student_id = g.student_id
16 JOIN assignment a ON g.assignment_id = a.assignment_id
17 JOIN class cl ON a.class_id = cl.class_id
18 JOIN course c ON cl.course_id = c.course_id
19 GROUP BY s.student_id, c.course_id;
```

student_id	student_name	course	final_percentage	letter_grade
1	Aarav Patel	English	78.50	B
1	Aarav Patel	Advanced Functions	85.50	A
2	Priya Sharma	Advanced Functions	92.00	A+

Impact & Next Steps

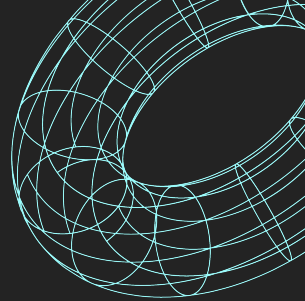
– Results:

- Attendance alerts now happen in seconds instead of 3 days
- Grade calculation takes minutes and is now fair and consistent

– Next Steps:

- Add a parent portal for real-time updates
- Generate exportable performance reports for teachers
- Explore teacher dashboards and attendance trends





Thank You :)

