📊 Attendance Calculator

Complete Technical Documentation

Project: Student Attendance Percentage Calculator

Date: February 13, 2026

Theme: Dark Mode Interface

🔑 Core Concept

This calculator solves two real student problems:

Scenario	Question Answered	Visual Result
✅ **Good Attendance**	"How many days can I skip and still maintain 75%?"	🟢 Green positive message
❌ **Poor Attendance**	"How many days must I attend to reach 75%?"	🔴 Red instructional message

🧮 Mathematical Logic

Basic Formula:

```
Current % = (Present Days ÷ Total Days) × 100
```

✅ Scenario 1: You Can Skip Days

When Current Attendance ≥ Target Percentage

```
Days You Can Skip = ⌊ (Present ÷ Target%) - Total ⌋
```

Why this works: We solve for **x** in:

```
Present ÷ (Total + x) = Target%
```

Rearranged → **x = (Present ÷ Target%) - Total**

Example Calculation

Present = 100 days
Total = 100 days
Target = 75% (0.75)

x = (100 ÷ 0.75) - 100
x = 133.33 - 100
x = **33 days** (rounded down)

Verification:
Future Total = 100 + 33 = 133 days
Attendance = 100 ÷ 133 = **75.19%** ✓

❌ Scenario 2: You Must Attend More

When Current Attendance < Target Percentage

```
Days You Must Attend = ⌈ ((Target% × Total) - Present) ÷ (1 - Target%) ⌉
```

Why this works: We solve for **x** in:

```
(Present + x) ÷ (Total + x) = Target%
```

Rearranged → **x = ((Target% × Total) - Present) ÷ (1 - Target%)**

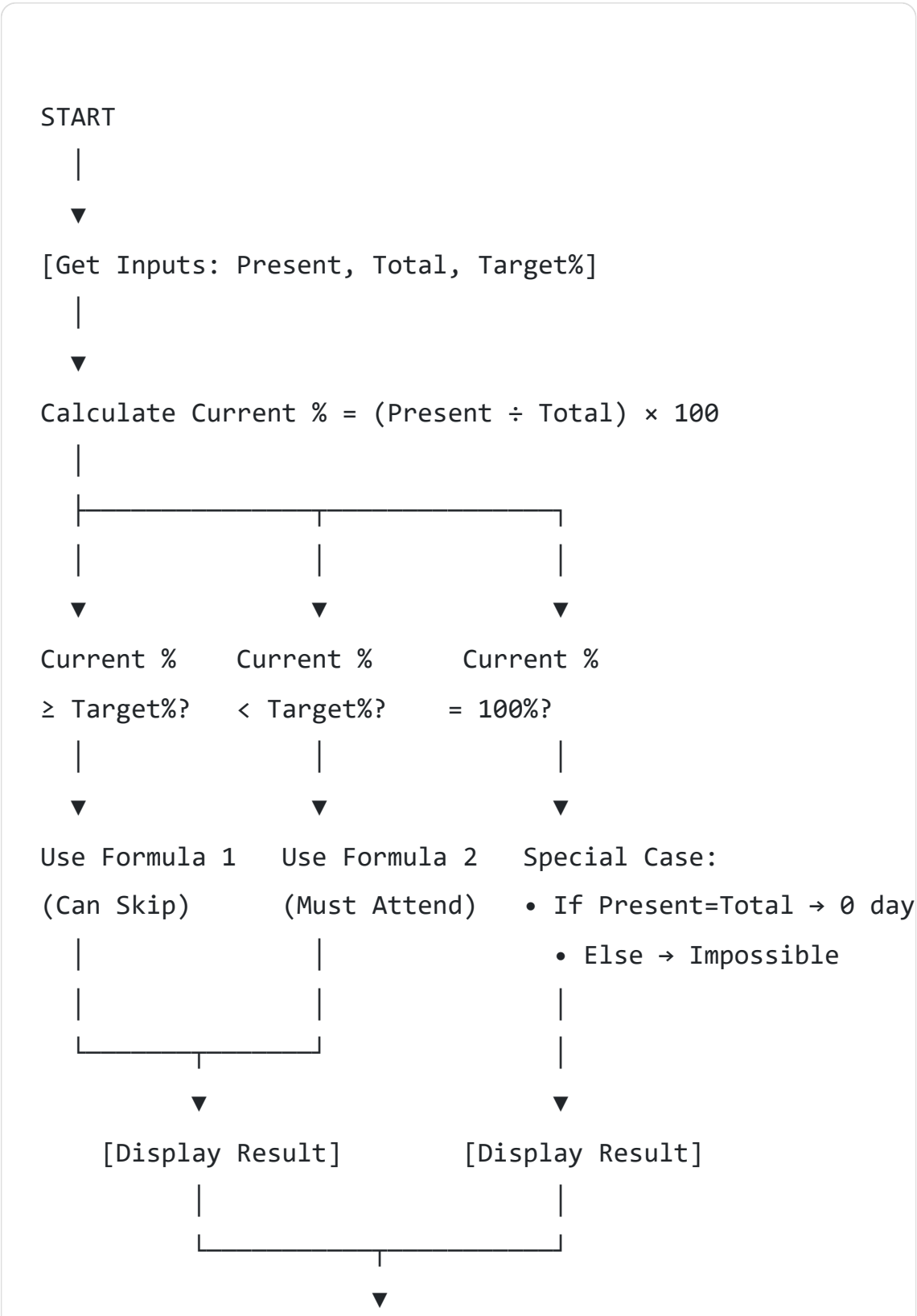
Example Calculation

Present = 55 days
Total = 100 days
Target = 75% (0.75)

x = ((0.75 × 100) - 55) ÷ (1 - 0.75)
x = (75 - 55) ÷ 0.25
x = 20 ÷ 0.25
x = **80 days** (rounded up)

Verification:
Future Present = 55 + 80 = 135 days
Future Total = 100 + 80 = 180 days
Attendance = 135 ÷ 180 = **75.00%** ✓

🔄 Decision Flowchart



```
END
```

⚠️ Special Cases

100% Target Handling:

- If Present = Total → "You can skip 0 days"
- If Present < Total → "Impossible to reach 100% attendance"

Input Validation:

- Present cannot exceed Total
- Total must be ≥ 1
- Negative values rejected

💻 Core JavaScript Logic

```
function calculateAttendance(present, total, requiredPercentage) { const target = requiredPercentage / 100; // Special case: 100% target if (requiredPercentage === 100) { if (present === total) { return "You can skip 0 more days."; } else { return "Impossible to reach 100% attendance."; } } const currentPercent = (present / total) * 100; // DECISION POINT if (currentPercent >= requiredPercentage) { // SCENARIO 1: Can skip days const x = Math.floor((present / target) - total); return `You can skip ${x} more days.`; } else { // SCENARIO 2: Must attend more days const x = Math.ceil(((target * total) - present) / (1 - target)); return `You need to attend ${x} more classes.`; } }
```

📊 Real-World Examples

Present	Total	Target	Current %	Scenario	Result	Future Attendance
100	100	75%	100%	✅ **Skip**	Skip 33 days	100/133 = 75.19%
90	100	75%	90%	✅ **Skip**	Skip 20 days	90/120 = 75.00%
75	100	75%	75%	✅ **Skip**	Skip 0 days	75/100 = 75.00%
74	100	75%	74%	❌ **Attend**	Attend 4 days	78/104 = 75.00%
55	100	75%	55%	❌ **Attend**	Attend 80 days	135/180 = 75.00%

✅ Quick Reference Cheat Sheet

Situation	Formula	Rounding
Can Skip Days	(Present ÷ Target) - Total	⬇️ Floor (down)
Must Attend Days	((Target × Total) - Present) ÷ (1 - Target)	⬆️ Ceiling (up)

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