SUNRISE PUBLIC SCHOOL • LUCKNOW (CBSE AFFILIATED)

17 September 2026 • Branch: `slice/office-feedback`

Sunrise School ERP — All-Tables Database & Feature Mapping Reference

Comprehensive architectural specification detailing all 93 schema tables, their live row states, foreign key relationships, and exact correspondence to operational and planned features on the Sunrise Web ERP and Mobile platforms.

- 🗄️ 93 Database Tables (68 Live Populated • 25 Unused For Now)
- 🏢 15 Functional Business Domains
- 🖥️ 27 Live Screens in Web ERP (`web/src/screens.ts`)
- 🛡️ Tenant Isolation via `school_id` on 89 Tables
- 🔒 Contract 3 Compliance & Immutable Financial Ledger

93	68	25	27
TOTAL SCHEMA TABLES	LIVE POPULATED TABLES	UNUSED FOR NOW TABLES	LIVE WEB ERP SCREENS

🛡️ Core Architectural Invariants & Development Contracts

1. Multi-Tenant Scoping (`school_id`): Every table deriving from `TenantBase` carries an indexed `school_id` foreign key pointing to `schools.id`. Only `schools` (tenant anchor) and `alembic_version` (system engine) lack it.

2. The Enrolment Invariant: A student joins a class for an academic session via `enrolments`. All year-scoped facts (marks, attendance, fees, bus seat) hang off `enrolment_id`, never `student_id` directly.

3. Contract 3 Compliance Auditing: Destructive operations (status changes, voids, reversals, marks overrides) mandate a user-typed reason and commit immutable entries to `audit_log` with IP and user ID.

4. Financial Immutability: Money rows in `fee_invoices`, `fee_invoice_lines`, and `fee_payments` are never updated in-place. Cancellations create void flags and reversals post audited contra-allocations.

5. Contract 1 (Canonical Screen Registry): Every web screen is declared once in `web/src/screens.ts`. Navbars, routes, and RBAC gates derive strictly from this single source of truth.

6. "UNUSED FOR NOW" Designation: 28 tables are currently unpopulated in seed data. Each table is fully implemented with SQLAlchemy models and working endpoints, reserved for operational counter workflows or planned roadmap modules.

📋 Master Functional Domain Index & Roadmap Alignment

FUNCTIONAL DOMAIN	TABLES	LIVE	UNUSED	PRIMARY WEB ROUTES	DOMAIN OPERATIONAL SCOPE
1. Tenancy, Identity & Access	11	11 Live	0 Unused	`/configuration`, `/login`, `/settings` +4 more	Controls multi-tenant isolation, user authentication, RBAC permissions, and global school settings.
2. People — Students & Guardians	4	4 Live	0 Unused	`/classes`, `/students`	Manages student identities, demographics, parental relationships, and annual academic enrolments.
3. People — Staff & Departments	2	2 Live	0 Unused	`/teachers`	Manages employee records, teaching designations, and departmental structures.
4. Academics, Timetable & Homework	9	9 Live	0 Unused	`/classes`, `/dashboard`, `/staff-leave` +2 more	Drives class sections, timetable scheduling, subjects, school calendar, and homework assignments.
5. Attendance	2	1 Live	1 Unused	`/attendance`, `/attendance/leave-requests`	Drives daily student roll call, absence tracking, leave requests, and attendance dashboard analytics.
6. Examinations, Grading & Results	8	7 Live	1 Unused	`/exams Tab 1`, `/exams Tab 2`, `/exams Tab 3`	Manages CBSE assessment schemes, exam datesheets, marks entry, and report card publications.
7. Fees & Financial Ledger	10	8 Live	2 Unused	`/fees`, `/fees/ledger`, `/fees/periods` +1 more	Drives student billing, fee plans, concessions, payments, receipting, and defaulter tracking.
8. Transport & Fleet Management	5	5 Live	0 Unused	`/transport`	Manages school buses, transport routes, boarding stops, vehicle fitness papers, and student riders.
9. Human Resources & Payroll	10	5 Live	5 Unused	`/payroll [Planned]`, `/settings`, `/staff-leave` +1 more	Drives employee salary packages, statutory deductions, monthly payroll runs, staff leave, and biometric attendance.
10. Admission Management	15	3 Live	12 Unused	`/admission`, `/admission/applications`, `/admission/applications Tab 2` +5 more	Drives the front-desk admission cycle, inquiry register, applicant screening, scoring, merit ranking, and waitlists.
11. Communication & Notices	6	3 Live	3 Unused	`/notices`, `/notices [Planned]`, `/settings` +1 more	Drives the school digital notice board, parent notifications, and delivery tracking.

FUNCTIONAL DOMAIN	TABLES	LIVE	UNUSED	PRIMARY WEB ROUTES	DOMAIN OPERATIONAL SCOPE
12. Inventory & Stock Management	2	2 Live	0 Unused	`/inventory`	Drives the school consumable catalog, minimum quantity alerts, and purchase approval workflows.
13. Grievances & Feedback System	2	2 Live	0 Unused	`/dashboard`	Drives the ticketing helpdesk, priority queues, staff assignments, and conversational resolution threads.
14. System, Documents & Audit	5	4 Live	1 Unused	`/configuration`, `/students`, `Background Worker Queue` +1 more	Drives document verification checklists, binary file storage, background scheduler, and compliance audit logs.
15. Teacher Recruitment & Onboarding	2	2 Live	0 Unused	`/recruitment`	Drives front-desk candidate intake, CBSE A4 printable application dossiers, admin review, salary offers, and automatic teacher account provisioning.

Domain 1: Tenancy, Identity & Access

11 Tables | 11 Live | 0 Unused For Now

Controls multi-tenant isolation, user authentication, RBAC permissions, and global school settings.

⚙️ Internal Schema Migration Engine: `alembic_version`

System Infrastructure | LIVE MIGRATION HEAD

Migration Head: `a1b2c3d4e5f6` (Teacher Leave & Recruitment Migration).
Role: Internal Alembic version tracking table storing the single active schema revision hash. It does not contain `school_id`, `id`, or audit columns because it is an engine-level state table rather than an application business entity. All 92 business tables derive from either `TenantBase` or `TimestampedBase`.

schools

LIVE / IN USE (1 ROW) | Tenant Root Anchor | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/settings, /configuration`

🖥️ **UI COMPONENTS & MODALS:**
School Header Branding, School Profile Card on /settings, Logo/Palette Customizer

🎯 **Core Business Role:** Root tenant anchor for multi-school isolation. Stores school legal name, CBSE board affiliation number, school code (SPS), brand hex colors, and official contact details.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Queried on initial application boot and Shell mounting to populate top navbar school name and brand styling. Updated via PUT /admin/settings when modifying school profile details.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Root entity: does NOT have a school_id column (TimestampedBase). Every other product table enforces an indexed school_id referencing schools.id.

SCHEMA COLUMNS (17 COLUMNS) — 0 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
code	varchar(16)	REQUIRED	UNIQUE
name	varchar(160)	REQUIRED	—
status	varchar(10)	REQUIRED	—
address	text	OPTIONAL	—
city	varchar(80)	OPTIONAL	—
state	varchar(80)	OPTIONAL	—
pincode	varchar(10)	OPTIONAL	—
phone	varchar(20)	OPTIONAL	—
email	varchar(160)	OPTIONAL	—
website	varchar(200)	OPTIONAL	—
logo_url	text	OPTIONAL	—
primary_color	varchar(9)	OPTIONAL	—
board	varchar(20)	OPTIONAL	—
affiliation_no	varchar(40)	OPTIONAL	—
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

academic_years

LIVE / IN USE (1 ROW) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/configuration, /settings, Top Header Bar`

🖥️ **UI COMPONENTS & MODALS:**
Top Navbar Academic Session Badge ('2025-26'), Configuration Session Card, Promotion Target Picker

🎯 **Core Business Role:** Controls active academic operating session (e.g., 2025-26). Delineates class enrolments, fee structures, timetable grids, exam schedules, and attendance rolls.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Mounted globally across all screens to scope queries to the active session. Admin configures start/end dates and locks past terms on /configuration.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, name). At least one academic year marked is_active=True per tenant.

SCHEMA COLUMNS (12 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
school_id	bigint	REQUIRED	TENANT FK, UNIQUE
code	varchar(9)	REQUIRED	UNIQUE
start_date	date	REQUIRED	—
end_date	date	REQUIRED	—
status	varchar(15)	REQUIRED	—
is_current	boolean	REQUIRED	—
promotion_completed_at	date	OPTIONAL	—
result_published_at	date	OPTIONAL	—
closed_at	date	OPTIONAL	—
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

users

LIVE / IN USE (223 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/login, /auth/*, System-Wide Auth`

🖥️ **UI COMPONENTS & MODALS:**
Login Screen Form, User Profile Menu, User Switcher (Dev Mode), Password Reset Modal

🎯 **Core Business Role:** Core authentication credentials table storing login_id (email), Argon2 password hashes, full display name, and active account status for all staff, guardians, and students.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Queried during POST /auth/login. Issues signed JWT bearer tokens. Used by Audit Log to stamp who performed every write.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, login_id). Foreign-referenced by employees, guardians, students, and audit_log.

SCHEMA COLUMNS (12 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
role	varchar(7)	REQUIRED	—
login_id	varchar(64)	REQUIRED	UNIQUE
password_hash	varchar(255)	REQUIRED	—
full_name	varchar(120)	REQUIRED	—
email	varchar(160)	OPTIONAL	—
phone	varchar(20)	OPTIONAL	—
photo_url	text	OPTIONAL	—
is_active	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

roles

LIVE / IN USE (14 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
RBAC Engine (All Screens)

UI COMPONENTS & MODALS:
Sidebar Navigation Filter, Permission Gate Component (<Can>), Role Badges in Staff Directory

🎯 **Core Business Role:** Defines system-wide and tenant-defined role profiles (super_admin, receptionist, principal, teacher, student, parent, fee_clerk).

REAL SCHOOL ERP WORKFLOW:
Read during JWT verification to determine caller's permission set. Controls sidebar item visibility and URL access.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(school_id, name). Seeded system roles are immutable.

SCHEMA COLUMNS (8 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
code	varchar(40)	REQUIRED	UNIQUE
name	varchar(80)	REQUIRED	—
description	text	OPTIONAL	—
is_system	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

permissions

LIVE / IN USE (91 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
RBAC Engine (All Screens)

UI COMPONENTS & MODALS:
Backend Endpoint Gates (require_permission), UI ActionButton Tooltip Disablers

🎯 **Core Business Role:** Granular capability codes (e.g., admission.enquiry.read, fees.invoice.write, attendance.record.correct, inventory.item.read).

REAL SCHOOL ERP WORKFLOW:
Checked on every HTTP API request via FastAPI dependency injection and on frontend buttons via <ActionButton>.

DATABASE INVARIANTS & GUARDRAILS:
Global catalogue of permissions. Uniqueness enforced across permission code strings.

SCHEMA COLUMNS (7 COLUMNS) — 0 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
code	varchar(80)	REQUIRED	UNIQUE
module	varchar(40)	REQUIRED	—
action	varchar(40)	REQUIRED	—
description	text	OPTIONAL	—
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

role_permissions

LIVE / IN USE (325 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
RBAC Engine (All Screens)

🖥️ **UI COMPONENTS & MODALS:**
Role Permission Assignment Grid on /configuration (Admin)

🎯 **Core Business Role:** Many-to-many bridge linking roles to specific permissions. Enforces exclusive privileges (e.g. receptionist restricted to admission queues).

🔄 **REAL SCHOOL ERP WORKFLOW:**
Queried during role token resolution to build user's effective permission scope.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Composite PRIMARY KEY (role_id, permission_id).

SCHEMA COLUMNS (6 COLUMNS) — 3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
role_id	bigint	REQUIRED	→ roles.id UNIQUE
permission_id	bigint	REQUIRED	→ permissions.id UNIQUE
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

user_roles

LIVE / IN USE (230 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
User Management, /teachers

🖥️ **UI COMPONENTS & MODALS:**
Staff Profile Role Pills, Role Assignment Dropdown in Staff Creation Modal

🎯 **Core Business Role:** Binds users to roles with optional scope constraints (school-wide, class-section, or departmental).

🔄 **REAL SCHOOL ERP WORKFLOW:**
Read on authentication to resolve all active roles for the authenticated user.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Composite PRIMARY KEY (user_id, role_id).

SCHEMA COLUMNS (8 COLUMNS) — 3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
user_id	bigint	REQUIRED	→ users.id UNIQUE
role_id	bigint	REQUIRED	→ roles.id UNIQUE
scope_type	varchar(13)	REQUIRED	UNIQUE
scope_id	bigint	OPTIONAL	UNIQUE
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

settings

LIVE / IN USE (4 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/settings, /configuration`

🖥️ **UI COMPONENTS & MODALS:**
School Configuration Form, Attendance Threshold Slider, Fee Due Day Input, Module Toggles

🎯 **Core Business Role:** Per-school key/value configuration registry storing operational settings and module switches (feature.<module>).

🔄 **REAL SCHOOL ERP WORKFLOW:**
Loaded on app bootstrap to toggle navigation items and enforce business rules (e.g., late fee grace days).

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, key). Key registry defined in backend core/settings_registry.py.

SCHEMA COLUMNS (6 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
key	varchar(80)	REQUIRED	UNIQUE
value	json	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK, UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

custom_fields

LIVE / IN USE (2 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/configuration`

🖥️ **UI COMPONENTS & MODALS:**
Custom Field Builder on /configuration, Dynamic Form Fields on Student Profile

🎯 **Core Business Role:** Allows school administrators to define bespoke student/staff attributes (e.g., caste category, house, father's occupation) without altering the database schema.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Admin defines custom field; Student creation modal dynamically renders input widgets matching field_type.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, entity_type, field_name). Stored values validated against field data type.

SCHEMA COLUMNS (12 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
entity	varchar(11)	REQUIRED	UNIQUE
key	varchar(40)	REQUIRED	UNIQUE
label	varchar(120)	REQUIRED	—
field_type	varchar(7)	REQUIRED	—
options	json	OPTIONAL	—
is_required	boolean	REQUIRED	—
is_active	boolean	REQUIRED	—
sort_order	integer	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK, UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

number_sequences

LIVE / IN USE (5 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
`/students, /admission, /fees/ledger`

UI COMPONENTS & MODALS:
Voucher Number Preview, Admission Number Formatter, Receipt Generation Dialog

Core Business Role: Atomic sequence counter guaranteeing gapless, sequential numbering for admission numbers (SPS/2026/0001), fee receipts (REC-...), and enquiry codes.

REAL SCHOOL ERP WORKFLOW:
Invoked inside write transactions via SELECT ... FOR UPDATE to atomically increment next_val and format voucher codes.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(school_id, sequence_type, prefix). Concurrency-safe via row-level database locks.

SCHEMA COLUMNS (9 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
kind	varchar(24)	REQUIRED	UNIQUE
year	integer	REQUIRED	UNIQUE
prefix	varchar(24)	OPTIONAL	—
width	integer	REQUIRED	—
next_value	integer	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK, UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

alembic_version

LIVE / IN USE (1 ROW) | Tenant Root Anchor | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
`Database Migration Engine`

UI COMPONENTS & MODALS:
Backend Schema Revision Head Tracker

Core Business Role: Internal Alembic schema migration version tracker recording the active database migration revision hash.

REAL SCHOOL ERP WORKFLOW:
Read and updated during alembic upgrade head to ensure database schema matches current codebase revision.

DATABASE INVARIANTS & GUARDRAILS:
Single-row table storing version_num varchar(32).

SCHEMA COLUMNS (1 COLUMNS) — 0 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
version_num	varchar(32)	REQUIRED	—

Domain 2: People — Students & Guardians

4 Tables | 4 Live | 0 Unused For Now

Manages student identities, demographics, parental relationships, and annual academic enrolments.

students

LIVE / IN USE (100 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/students, /admission, /fees/ledger`

🖥️ **UI COMPONENTS & MODALS:**
Student Roster Table, Student Search Bar, Student 360° Profile Drawer, Add Student Modal

🎯 **Core Business Role:** Master biographical record of enrolled students: admission number, full name, date of birth, gender, blood group, medical notes, and linked user authentication ID.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Created when converting an accepted admission applicant or manually by Admin. Searched across student fee ledger and attendance register.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, admission_number). Year-independent: historical facts attach to enrolments, not students.

SCHEMA COLUMNS (12 COLUMNS)

2 FOREIGN KEYS • 2 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
user_id	bigint	REQUIRED	→ users.id UNIQUE
admission_no	varchar(32)	REQUIRED	UNIQUE
status	varchar(15)	REQUIRED	—
dob	date	OPTIONAL	—
gender	varchar(6)	OPTIONAL	—
address	text	OPTIONAL	—
admission_date	date	OPTIONAL	—
custom	json	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

guardians

LIVE / IN USE (98 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
`/students, /fees/defaulters`

UI COMPONENTS & MODALS:
Guardian Contact Card in Student Drawer, Defaulter Chase Phone Call Button, Parent Portal Link

🎯 **Core Business Role:** Parent and guardian registry holding primary mobile numbers, email addresses, occupations, and residential addresses.

REAL SCHOOL ERP WORKFLOW:
Displayed on student profile drawer. Queried on Defaulters screen (/fees/defaulters) to generate parent contact lists for payment reminders.

DATABASE INVARIANTS & GUARDRAILS:
A guardian may be linked to multiple children (siblings) via student_guardian.

SCHEMA COLUMNS (7 COLUMNS) — 3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
user_id	bigint	REQUIRED	→ users.id UNIQUE
occupation	varchar(80)	OPTIONAL	—
employee_id	bigint	OPTIONAL	→ employees.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

student_guardian

LIVE / IN USE (100 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
`/students, /fees/defaulters`

UI COMPONENTS & MODALS:
Family Relationship Section in Student Drawer, Primary Contact Checkbox

🎯 **Core Business Role:** Many-to-many bridge linking students to guardians, capturing relationship type (father, mother, local guardian) and emergency contact priority.

REAL SCHOOL ERP WORKFLOW:
Populated during student onboarding. Read whenever parent notifications or emergency notices are dispatched.

DATABASE INVARIANTS & GUARDRAILS:
Composite PRIMARY KEY (student_id, guardian_id).

SCHEMA COLUMNS (8 COLUMNS) — 3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
guardian_id	bigint	REQUIRED	→ guardians.id UNIQUE
student_id	bigint	REQUIRED	→ students.id UNIQUE
relation	varchar(14)	REQUIRED	—
is_primary	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

enrolments

LIVE / IN USE (100 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
`/classes, /students, /attendance, /fees`

UI COMPONENTS & MODALS:
Class Roster List on /classes, Academic Enrolment History in Student Drawer, Roll Number Editor

Core Business Role: The single most critical academic anchor: connects a student to exactly one class_section for one academic_year, assigning their roll_no.

REAL SCHOOL ERP WORKFLOW:
Created during annual admission or session promotion. All year-scoped operational data (fees, attendance, exam marks, bus seats) hangs off enrolment_id.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(student_id, academic_year_id) and UNIQUE(class_section_id, roll_no).

SCHEMA COLUMNS (12 COLUMNS) — 4 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
student_id	bigint	REQUIRED	→ students.id
academic_year_id	bigint	REQUIRED	→ academic_years.id
class_section_id	bigint	REQUIRED	→ class_sections.id UNIQUE
roll_no	integer	REQUIRED	UNIQUE
status	varchar(15)	REQUIRED	—
joined_on	date	OPTIONAL	—
left_on	date	OPTIONAL	—
house	varchar(20)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 3: People — Staff & Departments

2 Tables | 2 Live | 0 Unused For Now

Manages employee records, teaching designations, and departmental structures.

departments

LIVE / IN USE (6 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
/teachers

🖥️ **UI COMPONENTS & MODALS:**
Department Filter Tabs on /teachers, Department Manager Dropdown

🎯 **Core Business Role:** Academic and administrative department master (Science, Languages, Mathematics, Social Studies, Administration) with assigned Department Heads.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Queried on Staff screen to group teachers by discipline and filter staff rosters.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, name).

SCHEMA COLUMNS (7 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
code	varchar(12)	REQUIRED	UNIQUE
name	varchar(80)	REQUIRED	—
head_employee_id	bigint	OPTIONAL	→ employees.id
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

employees

LIVE / IN USE (18 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/teachers, /classes

UI COMPONENTS & MODALS:
Staff Directory Grid, Employee Profile Drawer, Add Staff Modal, Teacher Allocation Picker

Core Business Role: Employee master directory storing employee code (EMP001), designation (PGT, TGT, PRT, Admin), joining date, qualifications, and department affiliation.

REAL SCHOOL ERP WORKFLOW:
Queried on /teachers for HR directory. Referenced when assigning class teachers on /classes and creating timetable periods.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(school_id, employee_code). Links to users.id for web authentication.

SCHEMA COLUMNS (22 COLUMNS) — 4 FOREIGN KEYS • 2 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
user_id	bigint	REQUIRED	→ users.id UNIQUE
employee_code	varchar(16)	REQUIRED	UNIQUE
employee_type	varchar(14)	REQUIRED	—
qualification	varchar(120)	OPTIONAL	—
joining_date	date	OPTIONAL	—
department_id	bigint	OPTIONAL	→ departments.id
designation	varchar(60)	OPTIONAL	—
reporting_to_id	bigint	OPTIONAL	→ employees.id
status	varchar(13)	REQUIRED	—
exited_on	date	OPTIONAL	—
emergency_contact_name	varchar(120)	OPTIONAL	—
emergency_contact_phone	varchar(20)	OPTIONAL	—
pan	varchar(10)	OPTIONAL	—
uan	varchar(12)	OPTIONAL	—
esi_number	varchar(20)	OPTIONAL	—
bank_account_no	varchar(20)	OPTIONAL	—
bank_ifsc	varchar(11)	OPTIONAL	—
bank_name	varchar(80)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 4: Academics, Timetable & Homework

9 Tables | 9 Live | 0 Unused For Now

Drives class sections, timetable scheduling, subjects, school calendar, and homework assignments.

class_sections

LIVE / IN USE (10 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/classes, /attendance, /fees/setup`

🖥️ **UI COMPONENTS & MODALS:**
Class Selector Dropdown (All Screens), Class 1-A to 10-A Cards, Room Allocation Modal

🎯 **Core Business Role:** Academic class-section unit for an academic session (e.g., Class 10-A, Class 5-B) with room number, student capacity, and appointed Class Teacher.

🔄 **REAL SCHOOL ERP WORKFLOW:**
The primary operational grouping across the entire ERP. Feeds class dropdowns in Attendance, Exams, Fees, and Timetable.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, academic_year_id, name).

SCHEMA COLUMNS (11 COLUMNS) — 3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
class_name	varchar(8)	REQUIRED	UNIQUE
section	varchar(4)	REQUIRED	UNIQUE
class_teacher_id	bigint	OPTIONAL	→ employees.id
academic_year_id	bigint	REQUIRED	→ academic_years.id UNIQUE
capacity	integer	OPTIONAL	—
stream	varchar(20)	OPTIONAL	—
room	varchar(20)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

subjects

LIVE / IN USE (9 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/classes, /exams

UI COMPONENTS & MODALS:
Curriculum Subject List on /classes, Exam Subject Picker on /exams Tab 1

Core Business Role: Subject master catalogue (Mathematics, English, Hindi, Science, Social Science, Computer Science, Sanskrit, Art, EVS) with subject code and credit units.

REAL SCHOOL ERP WORKFLOW:
Attached to classes through class_subject_teacher; defines subjects scheduled on exam datesheets.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(school_id, code).

SCHEMA COLUMNS (6 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
name	varchar(60)	REQUIRED	—
code	varchar(12)	REQUIRED	UNIQUE
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

class_subject_teacher

LIVE / IN USE (60 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/classes

UI COMPONENTS & MODALS:
Teacher Allocation Matrix on /classes, Weekly Teaching Load Counter (25 periods/wk)

Core Business Role: Associates subject specialists to class sections. Enforces balanced teaching workloads and gates which teachers can enter exam marks and assign homework.

REAL SCHOOL ERP WORKFLOW:
Configured at the start of session on /classes. Used by RBAC to verify teacher marks-entry permissions.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(class_section_id, subject_id, teacher_id).

SCHEMA COLUMNS (7 COLUMNS) — 4 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
class_section_id	bigint	REQUIRED	→ class_sections.id UNIQUE
subject_id	bigint	REQUIRED	→ subjects.id UNIQUE
teacher_id	bigint	REQUIRED	→ employees.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

school_periods

LIVE / IN USE (6 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/classes, /dashboard`

🖥️ **UI COMPONENTS & MODALS:**
Period Timing Configuration on /classes, Daily Schedule Timeline on /dashboard

🎯 **Core Business Role:** Defines daily bell timings and period slots (Period 1 to Period 6, 08:00 AM to 02:00 PM) including recess intervals.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Forms the vertical time axis of the weekly timetable grid on /classes and 'Today's Schedule' on the dashboard.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces period sequence order and non-overlapping start/end times per school.

SCHEMA COLUMNS (9 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
period_no	integer	REQUIRED	UNIQUE
start_time	time without time zone	REQUIRED	—
end_time	time without time zone	REQUIRED	—
name	varchar(20)	OPTIONAL	—
is_break	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK, UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

timetable_slots

LIVE / IN USE (300 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/classes, /dashboard

UI COMPONENTS & MODALS:
Weekly Timetable Interactive Grid on /classes, Today's Classes Widget on /dashboard

🎯 **Core Business Role:** Weekly timetable grid mapping day_of_week, period_id, class_section_id, subject_id, and teacher_id to classroom rooms.

REAL SCHOOL ERP WORKFLOW:
Displayed on /classes as a full weekly timetable matrix. Filtered on /dashboard to show active classes today.

DATABASE INVARIANTS & GUARDRAILS:
Enforces zero teacher collisions (no teacher double-booked in the same period) and zero room collisions.

SCHEMA COLUMNS (10 COLUMNS) — 5 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
class_section_id	bigint	REQUIRED	→ class_sections.id UNIQUE
day_of_week	varchar(3)	REQUIRED	UNIQUE
period_id	bigint	REQUIRED	→ school_periods.id UNIQUE
subject_id	bigint	REQUIRED	→ subjects.id
teacher_id	bigint	REQUIRED	→ employees.id
room	varchar(20)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

holidays

LIVE / IN USE (5 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/dashboard, /attendance

UI COMPONENTS & MODALS:
Upcoming Events & Holidays Widget on /dashboard, Non-School Day Greyout on /attendance

🎯 **Core Business Role:** School calendar closures, gazetted holidays, and vacation breaks (Mid-term Break, Winter Break, Founder's Week).

REAL SCHOOL ERP WORKFLOW:
Displayed in the Upcoming Events widget on the dashboard. Prevents attendance roll-call marking on closed days.

DATABASE INVARIANTS & GUARDRAILS:
Enforces holiday date ranges within the active academic session.

SCHEMA COLUMNS (7 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
academic_year_id	bigint	REQUIRED	→ academic_years.id UNIQUE
date	date	REQUIRED	UNIQUE
name	varchar(80)	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

homework

LIVE / IN USE (8 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`Mobile App (Teacher) & Web Homework`

🖥️ **UI COMPONENTS & MODALS:**
Teacher Homework Creation Form, Daily Diary Card, Due Date Picker

🎯 **Core Business Role:** Homework assignments set by subject teachers for specific class sections, including description, due date, and attachments.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Teacher creates homework task via Mobile App or Web; pushed to student/parent mobile diaries.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references class_sections, subjects, and employees.

SCHEMA COLUMNS (11 COLUMNS) — 4 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
class_section_id	bigint	REQUIRED	→ class_sections.id
subject_id	bigint	REQUIRED	→ subjects.id
teacher_id	bigint	REQUIRED	→ employees.id
title	varchar(160)	REQUIRED	—
description	text	OPTIONAL	—
assigned_date	date	REQUIRED	—
due_date	date	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

homework_submissions

LIVE / IN USE (47 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`Mobile App (Student/Teacher)`

🖥️ **UI COMPONENTS & MODALS:**
Student Submission Upload Button, Teacher Grading & Feedback Modal

🎯 **Core Business Role:** Student homework submissions with submission timestamps, student comments, and teacher evaluation marks.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Student uploads completed work via mobile app; teacher reviews and assigns remarks and marks.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(homework_id, student_id).

SCHEMA COLUMNS (8 COLUMNS) — 3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
homework_id	bigint	REQUIRED	→ homework.id UNIQUE
student_id	bigint	REQUIRED	→ students.id UNIQUE
answer_text	text	REQUIRED	—
submitted_at	timestamptz	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

substitutions

LIVE / IN USE (2 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/staff-leave, /classes, /leave (Mobile Duties)`

🖥️ **UI COMPONENTS & MODALS:**
Dynamic Free Teacher Picker, 100% Coverage Progress Bar, Substitute Duty Card on Mobile App

🎯 **Core Business Role:** Date-bound provisional and confirmed substitution assignments covering timetable periods when a teacher is on leave. Acts as a daily overlay without modifying master timetable slots.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Admin selects free substitute teacher from dynamic non-conflicting teacher list. Approved leaves mark substitutions as confirmed; rejected leaves purge provisional rows immediately.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Zero mutation of master timetable_slots. Scope is strictly date-bound with CASCADE delete on rejected leave request.

SCHEMA COLUMNS (11 COLUMNS) — 5 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
timetable_slot_id	bigint	REQUIRED	→ timetable_slots.id UNIQUE
date	date	REQUIRED	UNIQUE
absent_teacher_id	bigint	REQUIRED	→ employees.id
substitute_teacher_id	bigint	OPTIONAL	→ employees.id
reason	text	REQUIRED	—
status	varchar(11)	REQUIRED	—
leave_request_id	bigint	OPTIONAL	→ staff_leave_requests.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 5: Attendance

2 Tables | 1 Live | 1 Unused For Now

Drives daily student roll call, absence tracking, leave requests, and attendance dashboard analytics.

attendance

LIVE / IN USE (5,800 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/attendance, /dashboard`

🖥️ **UI COMPONENTS & MODALS:**
Main Dashboard Attendance Overview Card (90% Present, 10 Absent Breakdown), Daily Roll Register on /attendance, Mark Attendance Button

🎯 **Core Business Role:** Daily student roll-call records: status (present, absent, late, half_day, leave) per enrolment per school date.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Marked each morning by class teacher on /attendance. Directly powers the top Attendance Overview card on the main dashboard with auto-fallback to last recorded school day.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(enrolment_id, date). Revisions require attendance.record.correct permission.

SCHEMA COLUMNS (11 COLUMNS) — **4 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS**

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
enrolment_id	bigint	REQUIRED	→ enrolments.id UNIQUE
date	date	REQUIRED	UNIQUE
status	varchar(8)	REQUIRED	—
marked_by	bigint	OPTIONAL	→ employees.id
remarks	varchar(200)	OPTIONAL	—
corrected_by	bigint	OPTIONAL	→ employees.id
corrected_at	timestamptz	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

student_leave_requests

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 WEB SCREEN / ROUTE:
/attendance/leave-requests

🖥️ UI COMPONENTS & MODALS:
Parent Leave Application Form (Mobile), Office Leave Approval Queue on /attendance

🎯 **Core Business Role:** Student absence and medical leave applications submitted by parents, with doctor's notes and admin approval status.

🔄 REAL SCHOOL ERP WORKFLOW:
Parent submits leave in mobile app; Class teacher or receptionist approves or rejects request with remarks.

🛡️ DATABASE INVARIANTS & GUARDRAILS:
Approved leave automatically converts student daily attendance status to 'leave'.

SCHEMA COLUMNS (14 COLUMNS) — 4 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
enrolment_id	bigint	REQUIRED	→ enrolments.id
from_date	date	REQUIRED	—
to_date	date	REQUIRED	—
type	varchar(9)	REQUIRED	—
reason	text	REQUIRED	—
status	varchar(9)	REQUIRED	—
requested_by	bigint	OPTIONAL	→ users.id
decided_by	bigint	OPTIONAL	→ users.id
decided_at	timestamptz	OPTIONAL	—
decision_note	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 6: Examinations, Grading & Results

8 Tables | 7 Live | 1 Unused For Now

Manages CBSE assessment schemes, exam datesheets, marks entry, and report card publications.

assessment_schemes

LIVE / IN USE (1 ROW) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/exams Tab 2`

🖥️ **UI COMPONENTS & MODALS:**
CBSE Assessment Scheme Selector, Scheme Weightage Panel

🎯 **Core Business Role:** Formal CBSE assessment architecture defining evaluation components and weightages for the academic session.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Configured once per academic year on /exams Tab 2 (Grading Setup). Dictates report card component calculation.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, academic_year_id, name).

SCHEMA COLUMNS (7 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
academic_year_id	bigint	REQUIRED	→ academic_years.id UNIQUE
name	varchar(80)	REQUIRED	UNIQUE
is_active	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

scheme_components

LIVE / IN USE (8 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/exams Tab 2

UI COMPONENTS & MODALS:
Component Weightage Breakdown (Periodic Assessment 10%, Notebook 5%, Enrichment 5%, Term Exam 80%)

🎯 **Core Business Role:** Constituent evaluation components and percentage weightages belonging to an assessment scheme.

REAL SCHOOL ERP WORKFLOW:
Sum of component weightages validated to total exactly 100% before activating scheme.

DATABASE INVARIANTS & GUARDRAILS:
Foreign key references assessment_schemes.id with ON DELETE CASCADE.

SCHEMA COLUMNS (10 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
scheme_id	bigint	REQUIRED	→ assessment_schemes.id UNIQUE
term	varchar(20)	REQUIRED	UNIQUE
code	varchar(12)	REQUIRED	UNIQUE
name	varchar(60)	REQUIRED	—
max_marks	numeric(5,2)	REQUIRED	—
sequence	integer	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

grading_scales

LIVE / IN USE (1 ROW) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/exams Tab 2, /settings

UI COMPONENTS & MODALS:
CBSE 8-Point Grading Scale Card on /exams Tab 2

🎯 **Core Business Role:** Master grading system definition (e.g. CBSE 8-point scale from A1 down to E).

REAL SCHOOL ERP WORKFLOW:
Linked to assessment schemes to automatically convert percentage marks into CBSE letter grades.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(school_id, name).

SCHEMA COLUMNS (8 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
name	varchar(60)	REQUIRED	UNIQUE
version	integer	REQUIRED	UNIQUE
is_active	boolean	REQUIRED	—
frozen_at	timestamptz	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

grade_bands

LIVE / IN USE (8 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/exams Tab 2

UI COMPONENTS & MODALS:
Grade Interval Matrix (A1 >= 91%, A2 >= 81%, ..., E < 33%), Report Card Remarks Editor

Core Business Role: Specific percentage threshold intervals, letter grades, grade points, and qualitative remarks (e.g. Outstanding, Satisfactory).

REAL SCHOOL ERP WORKFLOW:
Queried when compiling student report cards and term marks summaries.

DATABASE INVARIANTS & GUARDRAILS:
Enforces non-overlapping, contiguous percentage ranges from 0% to 100%.

SCHEMA COLUMNS (8 COLUMNS) — 2 FOREIGN KEYS • 2 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
grading_scale_id	bigint	REQUIRED	→ grading_scales.id UNIQUE
min_percent	numeric(5,2)	REQUIRED	UNIQUE
grade	varchar(4)	REQUIRED	UNIQUE
description	varchar(40)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

exams

LIVE / IN USE (4 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/exams Tab 1

UI COMPONENTS & MODALS:
Exam Term Selector (Half-Yearly Exam, Final Exam), Create Exam Dialog

Core Business Role: Formal examination term definitions with scheduled start and end dates.

REAL SCHOOL ERP WORKFLOW:
Coordinator creates exam term; opens exam datesheet scheduling and marks entry windows.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(school_id, academic_year_id, name).

SCHEMA COLUMNS (9 COLUMNS) — 2 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
name	varchar(120)	REQUIRED	—
term	varchar(20)	REQUIRED	—
start_date	date	REQUIRED	—
end_date	date	REQUIRED	—
scheme_component_id	bigint	OPTIONAL	→ scheme_components.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

exam_schedule

LIVE / IN USE (240 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/exams Tab 1`

🖥️ **UI COMPONENTS & MODALS:**
Datesheet Table, Max Marks/Pass Marks Inputs, Exam Paper Lock Button

🎯 **Core Business Role:** Datesheet papers scheduled per class and subject: exam date, start/end time, max marks, pass marks, and marks entry lock status.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Teacher views assigned papers on /exams Tab 1. Coordinator locks paper after entry deadline to freeze scores.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces pass_marks <= max_marks and UNIQUE(exam_id, class_section_id, subject_id).

SCHEMA COLUMNS (13 COLUMNS) — 5 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
exam_id	bigint	REQUIRED	→ exams.id UNIQUE
class_section_id	bigint	REQUIRED	→ class_sections.id UNIQUE
subject_id	bigint	REQUIRED	→ subjects.id UNIQUE
exam_date	date	REQUIRED	—
start_time	time without time zone	OPTIONAL	—
max_marks	numeric(5,2)	REQUIRED	—
room	varchar(20)	OPTIONAL	—
marks_locked_at	timestamptz	OPTIONAL	—
marks_locked_by	bigint	OPTIONAL	→ users.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

marks

LIVE / IN USE (2,400 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/exams Tab 1

UI COMPONENTS & MODALS:
Marks Entry Matrix Grid, Absent Checkbox, Audit Reason Override Dialog

Core Business Role: Marks scored by each student for a scheduled exam paper, tracking absent flags, medical exemptions, and audited edits.

REAL SCHOOL ERP WORKFLOW:
Entered by subject teachers on /exams Tab 1. Score corrections post-lock require audited user-typed justification.

DATABASE INVARIANTS & GUARDRAILS:
Enforces score <= exam_schedule.max_marks and UNIQUE(exam_schedule_id, student_id).

SCHEMA COLUMNS (11 COLUMNS) — 4 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
exam_schedule_id	bigint	REQUIRED	→ exam_schedule.id UNIQUE
student_id	bigint	REQUIRED	→ students.id UNIQUE
marks_obtained	numeric(5,2)	OPTIONAL	—
is_absent	boolean	REQUIRED	—
is_exempted	boolean	REQUIRED	—
remarks	varchar(200)	OPTIONAL	—
entered_by	bigint	REQUIRED	→ users.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

report_card_publications

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
/exams Tab 3

🖥️ **UI COMPONENTS & MODALS:**
Publish Report Cards Button, Withhold for Fee Dues Filter, Student PDF Download Link

🎯 **Core Business Role:** Formal publication records releasing term report cards to parent portals, supporting automated dues withholdings.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Principal reviews finalized class marks and clicks Publish. System suppresses download for students with pending fee arrears.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Audited with publisher user ID and publication timestamp.

SCHEMA COLUMNS (13 COLUMNS) — 5 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
enrolment_id	bigint	REQUIRED	→ enrolments.id UNIQUE
term	varchar(20)	REQUIRED	UNIQUE
scheme_id	bigint	REQUIRED	→ assessment_schemes.id
grading_scale_id	bigint	REQUIRED	→ grading_scales.id
document_no	varchar(32)	REQUIRED	—
published_at	timestamptz	REQUIRED	—
published_by	bigint	OPTIONAL	→ users.id
result_status	varchar(20)	REQUIRED	—
payload	json	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 7: Fees & Financial Ledger

10 Tables | 8 Live | 2 Unused For Now

Drives student billing, fee plans, concessions, payments, receipting, and defaulter tracking.

fee_heads

LIVE / IN USE (5 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/fees/setup`

🖥️ **UI COMPONENTS & MODALS:**
Fee Head Master Table, Add Billing Category Modal (Tuition, Annual, Transport, Exam)

🎯 **Core Business Role:** Financial billing categories (Tuition Fee, Admission Fee, Annual Charges, Exam Fee, Transport Fee, Computer Lab Fee).

🔄 **REAL SCHOOL ERP WORKFLOW:**
Configured by finance manager on /fees/setup; forms the vocabulary from which fee plans and invoice lines are built.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, name).

SCHEMA COLUMNS (10 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
name	varchar(60)	REQUIRED	—
code	varchar(16)	REQUIRED	UNIQUE
type	varchar(9)	REQUIRED	—
is_refundable	boolean	REQUIRED	—
gl_code	varchar(20)	OPTIONAL	—
is_active	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

fee_plans

LIVE / IN USE (10 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/fees/setup

UI COMPONENTS & MODALS:
Class Fee Schedule Cards (Class 1 Plan to Class 10 Plan), Clone Plan Action

Core Business Role: Class-wise annual fee structures governing student billing schedules across classes.

REAL SCHOOL ERP WORKFLOW:
Created during annual budget setup. Applied automatically to all enrolled students in the corresponding class.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(school_id, academic_year_id, name).

SCHEMA COLUMNS (8 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
academic_year_id	bigint	REQUIRED	→ academic_years.id UNIQUE
name	varchar(60)	REQUIRED	UNIQUE
class_name	varchar(8)	OPTIONAL	—
is_active	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

fee_plan_items

LIVE / IN USE (30 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/fees/setup

UI COMPONENTS & MODALS:
Fee Plan Line Item Table, Billing Frequency Picker (Monthly, Quarterly, Annual, One-Time)

Core Business Role: Constituent line items of a fee plan defining fee head, billing frequency, and amount.

REAL SCHOOL ERP WORKFLOW:
Batch invoice generator multiplies item amounts by frequency periods to build monthly student invoices.

DATABASE INVARIANTS & GUARDRAILS:
Foreign key references fee_plans.id and fee_heads.id.

SCHEMA COLUMNS (8 COLUMNS) — 3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
fee_plan_id	bigint	REQUIRED	→ fee_plans.id UNIQUE
fee_head_id	bigint	REQUIRED	→ fee_heads.id UNIQUE
amount	numeric(10,2)	REQUIRED	—
frequency	varchar(8)	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

fee_concessions

LIVE / IN USE (2 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/fees/setup`

🖥️ **UI COMPONENTS & MODALS:**
Concession Approvals Table, Concession Type Picker (Staff Ward 50%, Sibling 25%, Merit Scholarship)

🎯 **Core Business Role:** Audited fee waivers and discount structures approved by School Management or Principal.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Concession percentage or fixed amount automatically deducted from student monthly invoice line calculations.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Requires principal approval notes committed to audit log.

SCHEMA COLUMNS (16 COLUMNS) — **5 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS**

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
enrolment_id	bigint	REQUIRED	→ enrolments.id
type	varchar(11)	REQUIRED	—
fee_head_id	bigint	OPTIONAL	→ fee_heads.id
percent	numeric(5,2)	OPTIONAL	—
amount	numeric(10,2)	OPTIONAL	—
reason	text	REQUIRED	—
status	varchar(9)	REQUIRED	—
requested_by	bigint	OPTIONAL	→ users.id
approved_by	bigint	OPTIONAL	→ users.id
decided_at	timestamptz	OPTIONAL	—
valid_from	date	OPTIONAL	—
valid_to	date	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

fee_invoices

LIVE / IN USE (300 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/fees, /dashboard`

🖥️ **UI COMPONENTS & MODALS:**
Fee Billing Roster, Financial Summary Card (₹4,72,890 Realized / ₹9,72,930 Demand), Void Invoice Action

🎯 **Core Business Role:** Monthly student billing invoices recording total demand, concessions credited, net payable, and payment status.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Generated monthly by automated background cron or clerk. Displayed on /fees and dashboard financial overview.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Financial Immutability: Invoices are never updated in-place; voided and reissued with audited reason.

SCHEMA COLUMNS (14 COLUMNS) — 3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
enrolment_id	bigint	REQUIRED	→ enrolments.id
academic_year_id	bigint	REQUIRED	→ academic_years.id
invoice_no	varchar(24)	REQUIRED	UNIQUE
period_month	integer	REQUIRED	—
period_year	integer	REQUIRED	—
issued_on	date	REQUIRED	—
due_date	date	REQUIRED	—
status	varchar(14)	REQUIRED	—
settled_on	date	OPTIONAL	—
void_reason	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

fee_invoice_lines

LIVE / IN USE (900 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/fees/ledger`

🖥️ **UI COMPONENTS & MODALS:**
Student Fee Account Ledger Table, Head-wise Breakdown Drawer, Balance Due Pills

🎯 **Core Business Role:** Granular line-item breakdown of student invoices showing exact fee heads (e.g. Tuition ₹3,500, Transport ₹1,200).

🔄 **REAL SCHOOL ERP WORKFLOW:**
Rendered on /fees/ledger when inspecting a student account. Target of double-entry payment allocations.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Sum of invoice lines equals parent invoice total_amount.

SCHEMA COLUMNS (9 COLUMNS) — 3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
invoice_id	bigint	REQUIRED	→ fee_invoices.id
fee_head_id	bigint	REQUIRED	→ fee_heads.id
description	varchar(80)	REQUIRED	—
amount	numeric(10,2)	REQUIRED	—
discount	numeric(10,2)	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

fee_payments

LIVE / IN USE (170 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/fees/ledger`

🖥️ **UI COMPONENTS & MODALS:**
Payment History Table, Print Receipt Voucher Button, Reverse Payment Action Dialog

🎯 **Core Business Role:** Financial collection transaction receipts holding receipt number, payment mode (Cash, UPI, Cheque, Bank Transfer), and amount.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Created when recording fee collections. Printed as official school receipt. Payment reversals create contra-entries.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, receipt_number). Completely immutable once committed.

SCHEMA COLUMNS (15 COLUMNS) — **4 FOREIGN KEYS • 2 UNIQUE CONSTRAINTS**

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
enrolment_id	bigint	REQUIRED	→ enrolments.id
receipt_no	varchar(24)	REQUIRED	UNIQUE
amount	numeric(10,2)	REQUIRED	—
method	varchar(20)	REQUIRED	—
instrument_ref	varchar(40)	OPTIONAL	—
received_at	timestamptz	REQUIRED	—
received_by	bigint	OPTIONAL	→ users.id
idempotency_key	varchar(64)	REQUIRED	UNIQUE
status	varchar(8)	REQUIRED	—
reverses_payment_id	bigint	OPTIONAL	→ fee_payments.id
reason	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

payment_allocations

LIVE / IN USE (450 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/fees/ledger

UI COMPONENTS & MODALS:
Allocation Breakdown Drawer, Double-Entry Reversal Audit Trail

Core Business Role: Double-entry accounting bridge associating payment receipts to specific invoice lines.

REAL SCHOOL ERP WORKFLOW:
Reconciles money collected against individual fees owed. When a payment is voided, negative contra-allocations are written.

DATABASE INVARIANTS & GUARDRAILS:
Sum of allocations for a payment cannot exceed payment.amount.

SCHEMA COLUMNS (7 COLUMNS) — 3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
payment_id	bigint	REQUIRED	→ fee_payments.id
invoice_line_id	bigint	REQUIRED	→ fee_invoice_lines.id
amount	numeric(10,2)	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

student_fee_plans

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

WEB SCREEN / ROUTE:
/fees/setup

UI COMPONENTS & MODALS:
Individual Student Fee Plan Override Modal, Custom Billing Agreement Card

Core Business Role: Individual student fee schedule overrides differing from the standard class fee plan (e.g. RTE quota exemptions).

REAL SCHOOL ERP WORKFLOW:
Assigned to specific students by administrator when class-wide standard billing does not apply.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(enrolment_id).

SCHEMA COLUMNS (7 COLUMNS) — 4 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
enrolment_id	bigint	REQUIRED	→ enrolments.id UNIQUE
fee_plan_id	bigint	REQUIRED	→ fee_plans.id
assigned_by	bigint	OPTIONAL	→ users.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

fee_periods

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 WEB SCREEN / ROUTE:
/fees/periods

🖥️ UI COMPONENTS & MODALS:
Period Close Screen (/fees/periods), Close Month Button, Prior-Period Adjustment Locks

🎯 **Core Business Role:** Monthly accounting period close locks preventing retroactive modifications to finalized financial accounts.

🔄 REAL SCHOOL ERP WORKFLOW:
School bursar closes financial month on /fees/periods; locks all invoice lines against retroactive edits.

🛡️ DATABASE INVARIANTS & GUARDRAILS:
Requires super-admin authorization and audit log stamp to reopen a closed period.

SCHEMA COLUMNS (10 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
period_year	integer	REQUIRED	UNIQUE
period_month	integer	REQUIRED	UNIQUE
status	varchar(6)	REQUIRED	—
closed_by	bigint	OPTIONAL	→ users.id
closed_at	timestamptz	OPTIONAL	—
note	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 8: Transport & Fleet Management

5 Tables | 5 Live | 0 Unused For Now

Manages school buses, transport routes, boarding stops, vehicle fitness papers, and student riders.

vehicles

LIVE / IN USE (2 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/transport`

🖥️ **UI COMPONENTS & MODALS:**
Fleet Registry Cards (Buses UP-32-AT-1001 to 1003), Vehicle Fitness Tracker, Expiring Papers Banner

🎯 **Core Business Role:** School fleet registry holding registration numbers, seating capacities, insurance expiry, fitness certificates, and pollution checks.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Viewed on /transport. Alerts school administration 30 days prior to fitness/insurance paper expirations.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, registration_number).

SCHEMA COLUMNS (10 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
registration_no	varchar(20)	REQUIRED	UNIQUE
make_model	varchar(60)	OPTIONAL	—
capacity	integer	REQUIRED	—
ownership	varchar(5)	REQUIRED	—
status	varchar(17)	REQUIRED	—
gps_device_id	varchar(40)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

routes

LIVE / IN USE (2 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/transport`

🖥️ **UI COMPONENTS & MODALS:**
Route Management Cards (Gomti Nagar, Aliganj, Indira Nagar), Interactive Leaflet Route Map

🎯 **Core Business Role:** Transport routes operating across Lucknow sectors, linking vehicles, drivers, and pickup/drop corridors.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Rendered on /transport with interactive route maps. Selected when assigning transport to students.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, route_name).

SCHEMA COLUMNS (11 COLUMNS) — 4 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
code	varchar(16)	REQUIRED	UNIQUE
name	varchar(80)	REQUIRED	—
vehicle_id	bigint	OPTIONAL	→ vehicles.id
driver_id	bigint	OPTIONAL	→ employees.id
attendant_id	bigint	OPTIONAL	→ employees.id
distance_km	numeric(6,2)	OPTIONAL	—
status	varchar(9)	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

route_stops

LIVE / IN USE (7 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
/transport

🖥️ **UI COMPONENTS & MODALS:**
Stops & Timings Table, Boarding Sequence Ordering, Pickup/Drop Arrival Schedule

🎯 **Core Business Role:** Designated boarding stops along each route with sequence order numbers, GPS coordinates, and morning/afternoon scheduled arrival times.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Displayed on route drill-down. Feeds parent transport notifications for scheduled bus arrivals.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces stop sequence order along the route path.

SCHEMA COLUMNS (13 COLUMNS) — 3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
route_id	bigint	REQUIRED	→ routes.id UNIQUE
sequence	integer	REQUIRED	UNIQUE
name	varchar(80)	REQUIRED	—
landmark	varchar(120)	OPTIONAL	—
pickup_time	time without time zone	REQUIRED	—
drop_time	time without time zone	OPTIONAL	—
fee_slab_id	bigint	OPTIONAL	→ transport_fee_slabs.id
latitude	float	OPTIONAL	—
longitude	float	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

transport_fee_slabs

LIVE / IN USE (3 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/transport, /fees/setup

UI COMPONENTS & MODALS:
Distance Slab Pricing Table (0-3 km ₹800, 3-6 km ₹1,200, 6-10 km ₹1,600, 10+ km ₹2,000)

Core Business Role: Distance-based transport fare pricing slabs linked to monthly fee invoice generation.

REAL SCHOOL ERP WORKFLOW:
When student transport is assigned, system queries stop distance and adds corresponding slab charge to monthly fee invoice.

DATABASE INVARIANTS & GUARDRAILS:
Enforces non-overlapping kilometer distance intervals.

SCHEMA COLUMNS (7 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
name	varchar(40)	REQUIRED	UNIQUE
monthly_amount	numeric(10,2)	REQUIRED	—
is_active	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

transport_assignments

LIVE / IN USE (30 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/transport

UI COMPONENTS & MODALS:
Route Passenger Roster Drilldown, Assign Bus Seat Modal, Trip Direction Radio (Both, Morning, Evening)

Core Business Role: Maps enrolled students to specific bus routes, boarding stops, and trip directions.

REAL SCHOOL ERP WORKFLOW:
Gated with transport.assignment.read on /transport. Generates daily bus attendance rosters for bus attendants.

DATABASE INVARIANTS & GUARDRAILS:
Enforces bus seating capacity limits (cannot over-allocate riders beyond vehicle capacity).

SCHEMA COLUMNS (11 COLUMNS) — 3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
enrolment_id	bigint	REQUIRED	→ enrolments.id
route_stop_id	bigint	REQUIRED	→ route_stops.id
direction	varchar(6)	REQUIRED	—
start_date	date	REQUIRED	—
end_date	date	OPTIONAL	—
status	varchar(9)	REQUIRED	—
end_reason	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 9: Human Resources & Payroll

10 Tables | 5 Live | 5 Unused For Now

Drives employee salary packages, statutory deductions, monthly payroll runs, staff leave, and biometric attendance.

salary_components

LIVE / IN USE (11 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/payroll [Planned]`

🖥️ **UI COMPONENTS & MODALS:**
Salary Component Master Table, Component Type Toggle (Earning vs Deduction)

🎯 **Core Business Role:** Statutory and standard salary building blocks: Basic Pay, Dearness Allowance (DA), HRA, Provident Fund (PF), ESI, Professional Tax.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Configured in HR setup; defines compensation contract formulas for Lucknow teaching and administrative staff.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, name).

SCHEMA COLUMNS (14 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
code	varchar(16)	REQUIRED	UNIQUE
name	varchar(60)	REQUIRED	—
type	varchar(21)	REQUIRED	—
calculation	varchar(16)	REQUIRED	—
value	numeric(12,2)	REQUIRED	—
applies_below_gross	numeric(12,2)	OPTIONAL	—
taxable	boolean	REQUIRED	—
statutory	boolean	REQUIRED	—
active	boolean	REQUIRED	—
sequence	integer	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

salary_structures

LIVE / IN USE (16 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/teachers, /payroll [Planned]

UI COMPONENTS & MODALS:
Staff Salary Package Card in Teacher Profile (PGT ₹42,000, TGT ₹32,000, PRT ₹19,500)

Core Business Role: Active compensation scale packages assigned to staff designations reflecting private school salary levels.

REAL SCHOOL ERP WORKFLOW:
Viewed in employee profile drawer on /teachers. Used as base contract for monthly salary calculations.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(school_id, name).

SCHEMA COLUMNS (9 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
employee_id	bigint	REQUIRED	→ employees.id UNIQUE
effective_from	date	REQUIRED	UNIQUE
monthly_gross	numeric(12,2)	REQUIRED	—
is_active	boolean	REQUIRED	—
note	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

leave_types

LIVE / IN USE (4 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

WEB SCREEN / ROUTE:
/settings, /teachers

UI COMPONENTS & MODALS:
Staff Leave Policy Setup Table (Casual Leave 12d, Sick Leave 10d, Earned Leave 15d)

Core Business Role: School staff leave quota categories and annual allocations.

REAL SCHOOL ERP WORKFLOW:
Configured in School Settings; governs maximum allowed paid leaves per employee per academic session.

DATABASE INVARIANTS & GUARDRAILS:
Enforces UNIQUE(school_id, code).

SCHEMA COLUMNS (9 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
code	varchar(12)	REQUIRED	UNIQUE
name	varchar(60)	REQUIRED	—
annual_quota	numeric(5,1)	REQUIRED	—
is_paid	boolean	REQUIRED	—
active	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

staff_attendance

LIVE / IN USE (1 ROW) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/teachers, /attendance`

🖥️ **UI COMPONENTS & MODALS:**
Staff Biometric Punch Log, Daily Staff Attendance Register, Clock-in/Clock-out Table

🎯 **Core Business Role:** Daily biometric, RFID, and leave-derived punch records for teachers, drivers, and administrative staff.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Updated when morning staff roll is recorded or when staff leave requests are approved with status='leave'. Feeds payroll loss-of-pay calculations.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(employee_id, date).

SCHEMA COLUMNS (12 COLUMNS) — 4 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
employee_id	bigint	REQUIRED	→ employees.id UNIQUE
date	date	REQUIRED	UNIQUE
status	varchar(8)	REQUIRED	—
check_in	time without time zone	OPTIONAL	—
check_out	time without time zone	OPTIONAL	—
marked_by	bigint	OPTIONAL	→ users.id
corrected_by	bigint	OPTIONAL	→ users.id
remarks	varchar(200)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

staff_leave_requests

LIVE / IN USE (2 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/staff-leave, /leave (Mobile)`

🖥️ **UI COMPONENTS & MODALS:**
Staff Leave Queue, Review & Substitution Matrix, Locked/Unlocked Approval Button, Mobile Apply Leave Form, Mobile My Leaves History

🎯 **Core Business Role:** Staff leave applications submitted by teachers strictly through the mobile app, with dates, reason, status (applied, approved, rejected), and admin remarks.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Teacher applies on mobile app. Admin reviews on /staff-leave. Approval is strictly locked until 100% of affected timetable slots have assigned substitutes. Rejection purges provisional substitutions.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces 100% substitution coverage gate before approval. Non-cancellable by teachers once submitted.

SCHEMA COLUMNS (17 COLUMNS) — 5 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
employee_id	bigint	REQUIRED	→ employees.id
leave_type_id	bigint	OPTIONAL	→ leave_types.id
academic_year_id	bigint	REQUIRED	→ academic_years.id
from_date	date	REQUIRED	—
to_date	date	REQUIRED	—
is_half_day	boolean	REQUIRED	—
days	numeric(5,1)	REQUIRED	—
reason	text	REQUIRED	—
status	varchar(9)	REQUIRED	—
balance_exception	boolean	REQUIRED	—
decided_by	bigint	OPTIONAL	→ users.id
decided_at	timestamptz	OPTIONAL	—
decision_note	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

leave_balances

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
/teachers

🖥️ **UI COMPONENTS & MODALS:**
Annual Leave Quota Balance Ledger, Used vs Available Leave Gauges

🎯 **Core Business Role:** Annual running ledger tracking credited, used, and remaining leave quotas per employee.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Updated automatically when staff leave requests are approved or annual quotas are credited.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(employee_id, leave_type_id, academic_year_id).

SCHEMA COLUMNS (9 COLUMNS) — 4 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
employee_id	bigint	REQUIRED	→ employees.id UNIQUE
leave_type_id	bigint	REQUIRED	→ leave_types.id UNIQUE
academic_year_id	bigint	REQUIRED	→ academic_years.id UNIQUE
entitled	numeric(5,1)	REQUIRED	—
used	numeric(5,1)	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

salary_structure_items

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
/payroll [Planned]

🖥️ **UI COMPONENTS & MODALS:**
Custom Salary Package Line Items, Allowance Calculation Formula Builder

🎯 **Core Business Role:** Itemized salary rules and customized earnings/deduction amounts linked to staff compensation packages.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Detailed contract items compiled into monthly employee payslips.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references salary_structures and salary_components.

SCHEMA COLUMNS (8 COLUMNS) — 3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
structure_id	bigint	REQUIRED	→ salary_structures.id UNIQUE
component_id	bigint	REQUIRED	→ salary_components.id UNIQUE
value	numeric(12,2)	REQUIRED	—
included	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

payroll_runs

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/payroll [Planned]`

🖥️ **UI COMPONENTS & MODALS:**
Monthly Payroll Disbursal Batch Screen, Run Payroll Button, Bank Transfer Export (NEFT/RTGS)

🎯 **Core Business Role:** Monthly salary processing batches recording total school wage bill, statutory deductions, and disbursement approval stamps.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Bursar clicks 'Run Payroll' for active month; computes attendance deductions, generates individual payslips, and exports bank transfer sheet.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces one finalized payroll run per calendar month per school.

SCHEMA COLUMNS (15 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
year	integer	REQUIRED	UNIQUE
month	integer	REQUIRED	UNIQUE
run_no	integer	REQUIRED	UNIQUE
is_supplementary	boolean	REQUIRED	—
status	varchar(10)	REQUIRED	—
working_days	integer	OPTIONAL	—
calculated_at	timestamptz	OPTIONAL	—
approved_at	timestamptz	OPTIONAL	—
approved_by	bigint	OPTIONAL	→ users.id
paid_at	timestamptz	OPTIONAL	—
note	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

payslips

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/payroll [Planned]`

🖥️ **UI COMPONENTS & MODALS:**
Staff Payslip Voucher Drawer, Download Payslip PDF Button, Net Salary Breakdown

🎯 **Core Business Role:** Individual monthly pay vouchers issued to staff detailing gross earnings, deductions, and net salary payout.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Generated during payroll run; accessible to staff members on their employee profiles.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(payroll_run_id, employee_id).

SCHEMA COLUMNS (14 COLUMNS) — 3 FOREIGN KEYS • 2 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
run_id	bigint	REQUIRED	→ payroll_runs.id UNIQUE
employee_id	bigint	REQUIRED	→ employees.id UNIQUE
payslip_no	varchar(32)	REQUIRED	UNIQUE
working_days	integer	REQUIRED	—
lop_days	numeric(5,1)	REQUIRED	—
monthly_gross	numeric(12,2)	REQUIRED	—
total_earnings	numeric(12,2)	REQUIRED	—
total_deductions	numeric(12,2)	REQUIRED	—
net_pay	numeric(12,2)	REQUIRED	—
employer_cost	numeric(12,2)	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

payslip_lines

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:** `/payroll [Planned]`

🖥️ **UI COMPONENTS & MODALS:** Itemized Payslip Ledger, Statutory PF/ESI Deduction Lines

🎯 **Core Business Role:** Itemized earnings and deduction breakdown lines on individual payslips.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Provides itemized audit trail for statutory compliance and employee tax filings.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references payslips.id and salary_components.id.

SCHEMA COLUMNS (11 COLUMNS) — **3 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS**

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
payslip_id	bigint	REQUIRED	→ payslips.id UNIQUE
component_id	bigint	OPTIONAL	→ salary_components.id
code	varchar(16)	REQUIRED	UNIQUE
name	varchar(60)	REQUIRED	—
type	varchar(21)	REQUIRED	—
amount	numeric(12,2)	REQUIRED	—
sequence	integer	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 10: Admission Management

15 Tables | 3 Live | 12 Unused For Now

Drives the front-desk admission cycle, inquiry register, applicant screening, scoring, merit ranking, and waitlists.

⚙️ Internal Schema Migration Engine: `alembic_version`

System Infrastructure | LIVE MIGRATION HEAD

Migration Head: `a1b2c3d4e5f6` (Teacher Leave & Recruitment Migration).
Role: Internal Alembic version tracking table storing the single active schema revision hash. It does not contain `school_id`, `id`, or audit columns because it is an engine-level state table rather than an application business entity. All 92 business tables derive from either `TenantBase` or `TimestampedBase`.

admission_cycles

LIVE / IN USE (1 ROW) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
/admission

🖥️ **UI COMPONENTS & MODALS:**
Admission Dashboard Header, Active Cycle Card ('2026-27 Intake'), Application Fee Configuration

🎯 **Core Business Role:** Admission campaign cycle controller (e.g. AY 2026-27 Intake) with start/end dates, application fee, and operational status.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Loaded on /admission to display executive metrics, lead funnel counts, and seat fill gauges.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, name). Exactly one cycle marked is_active=True.

SCHEMA COLUMNS (13 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
academic_year_id	bigint	REQUIRED	→ academic_years.id UNIQUE
name	varchar(80)	REQUIRED	UNIQUE
status	varchar(8)	REQUIRED	—
starts_on	date	OPTIONAL	—
ends_on	date	OPTIONAL	—
application_fee	numeric(10,2)	REQUIRED	—
late_fee	numeric(10,2)	REQUIRED	—
allow_online_applications	boolean	REQUIRED	—
admission_fee_refund_policy	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

cycle_class_config

LIVE / IN USE (3 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
/admission

🖥️ **UI COMPONENTS & MODALS:**
Class Intake Capacity Table (Class 1: 40 seats, Class 6: 20 seats, Class 9: 15 seats), Written Test Toggles

🎯 **Core Business Role:** Class-wise admission seat quotas, minimum/maximum age requirements, and evaluation workflow switches (written test, interview).

🔄 **REAL SCHOOL ERP WORKFLOW:**
Rendered on /admission to display class capacity utilization bars and validate candidate birthdates during application intake.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(admission_cycle_id, class_section_id).

SCHEMA COLUMNS (15 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
cycle_id	bigint	REQUIRED	→ admission_cycles.id UNIQUE
class_name	varchar(8)	REQUIRED	UNIQUE
stream	varchar(20)	OPTIONAL	UNIQUE
total_seats	integer	REQUIRED	—
reserved_seats	json	OPTIONAL	—
age_on	date	OPTIONAL	—
min_age_years	numeric(4,2)	OPTIONAL	—
max_age_years	numeric(4,2)	OPTIONAL	—
requires_test	boolean	REQUIRED	—
requires_interview	boolean	REQUIRED	—
required_document_codes	json	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

enquiries

LIVE / IN USE (6 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/admission/enquiries`

🖥️ **UI COMPONENTS & MODALS:**
Enquiry Register Table, Add Enquiry Modal, Status Filter (Open, Contacted, Converted, Dropped), Convert to Application Button

🎯 **Core Business Role:** Front-desk walk-in and telephone inquiry register capturing candidate details, contact phones, lead sources, and admission stage.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Logged by receptionist on /admission/enquiries. One-click conversion carries enquiry biodata into a formal applicant record.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, enquiry_number).

SCHEMA COLUMNS (16 COLUMNS) — 4 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
cycle_id	bigint	REQUIRED	→ admission_cycles.id
enquirer_name	varchar(120)	REQUIRED	—
mobile	varchar(20)	REQUIRED	—
email	varchar(160)	OPTIONAL	—
child_name	varchar(120)	OPTIONAL	—
child_dob	date	OPTIONAL	—
class_of_interest	varchar(8)	OPTIONAL	—
source	varchar(10)	REQUIRED	—
status	varchar(23)	REQUIRED	—
assigned_to	bigint	OPTIONAL	→ users.id
next_follow_up_on	date	OPTIONAL	—
converted_application_id	bigint	OPTIONAL	→ applications.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

applications

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/admission/applications`

🖥️ **UI COMPONENTS & MODALS:**
Application Register Table, Multi-tab Applicant Dossier Drawer (Biodata, Parents, Medical, Documents), Application Status Pills

🎯 **Core Business Role:** 360° candidate admission application dossier holding applicant biodata, category, photographs, and submission timestamps.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Receptionist enters application details on /admission/applications or received from public online portal. Advances through merit screening.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, application_number).

SCHEMA COLUMNS (39 COLUMNS) — 5 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
cycle_id	bigint	REQUIRED	→ admission_cycles.id
application_no	varchar(24)	OPTIONAL	UNIQUE
first_name	varchar(60)	REQUIRED	—
middle_name	varchar(60)	OPTIONAL	—
last_name	varchar(60)	REQUIRED	—
date_of_birth	date	REQUIRED	—
gender	varchar(12)	REQUIRED	—
nationality	varchar(40)	OPTIONAL	—
religion	varchar(40)	OPTIONAL	—
caste_category	varchar(12)	OPTIONAL	—
mother_tongue	varchar(40)	OPTIONAL	—
place_of_birth	varchar(80)	OPTIONAL	—
identification_marks	text	OPTIONAL	—
is_single_child	boolean	REQUIRED	—
aadhaar_last4	varchar(4)	OPTIONAL	—
aadhaar_verified	boolean	REQUIRED	—
class_applying_for	varchar(8)	REQUIRED	—
stream	varchar(20)	OPTIONAL	—
second_language	varchar(40)	OPTIONAL	—
optional_subject	varchar(40)	OPTIONAL	—
preferred_section	varchar(4)	OPTIONAL	—
admission_category	varchar(12)	REQUIRED	—
transport_required	boolean	REQUIRED	—
status	varchar(27)	REQUIRED	—
submitted_at	timestamptz	OPTIONAL	—
source	varchar(10)	REQUIRED	—
created_by	bigint	OPTIONAL	→ users.id
address	json	OPTIONAL	—
previous_school	json	OPTIONAL	—

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
declarations	json	OPTIONAL	—
sibling_verified	boolean	REQUIRED	—
staff_ward_verified	boolean	REQUIRED	—
age_override_reason	text	OPTIONAL	—
previous_application_id	bigint	OPTIONAL	→ applications.id
student_id	bigint	OPTIONAL	→ students.id
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

enquiry_interactions

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 WEB SCREEN / ROUTE:
/admission/enquiries

🖥️ UI COMPONENTS & MODALS:
Follow-up Timeline Drawer, Log Counselling Call Modal, Next Follow-up Date Picker

🎯 **Core Business Role:** Chronological audit log of parent follow-up calls, campus visits, and counselling notes for each admission lead.

🔄 REAL SCHOOL ERP WORKFLOW:
Receptionist logs phone interaction notes on /admission/enquiries; sets reminder flags for pending callbacks.

🛡️ DATABASE INVARIANTS & GUARDRAILS:
Foreign key references enquiries.id.

SCHEMA COLUMNS (10 COLUMNS) — 3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
enquiry_id	bigint	REQUIRED	→ enquiries.id
occurred_at	timestamptz	REQUIRED	—
channel	varchar(8)	REQUIRED	—
notes	text	OPTIONAL	—
outcome	varchar(23)	OPTIONAL	—
by_user_id	bigint	OPTIONAL	→ users.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

application_guardians

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/admission/applications Tab 2`

🖥️ **UI COMPONENTS & MODALS:**
Applicant Parent Details Tab, Primary Guardian Designation, Annual Income Field

🎯 **Core Business Role:** Parent and guardian records submitted as part of the admission application dossier.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Entered on application form; converted into permanent guardians records upon student enrollment.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references applications.id.

SCHEMA COLUMNS (23 COLUMNS) — 3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
application_id	bigint	REQUIRED	→ applications.id
relation	varchar(14)	REQUIRED	—
full_name	varchar(120)	REQUIRED	—
date_of_birth	date	OPTIONAL	—
qualification	varchar(120)	OPTIONAL	—
occupation	varchar(80)	OPTIONAL	—
designation	varchar(80)	OPTIONAL	—
organisation	varchar(120)	OPTIONAL	—
annual_income_band	varchar(40)	OPTIONAL	—
office_address	text	OPTIONAL	—
mobile	varchar(20)	REQUIRED	—
alternate_mobile	varchar(20)	OPTIONAL	—
email	varchar(160)	OPTIONAL	—
is_primary	boolean	REQUIRED	—
is_emergency_contact	boolean	REQUIRED	—
is_authorised_for_pickup	boolean	REQUIRED	—
is_school_alumnus	boolean	REQUIRED	—
is_school_staff	boolean	REQUIRED	—
employee_id	bigint	OPTIONAL	→ employees.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

application_siblings

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/admission/applications Tab 2`

🖥️ **UI COMPONENTS & MODALS:**
Sibling Quota Point Selector, Current Student Roll Lookup Modal

🎯 **Core Business Role:** Records elder siblings currently studying in the school to award sibling quota priority points.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Checked during merit list compilation to award additional admission points.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references applications.id and students.id.

SCHEMA COLUMNS (9 COLUMNS) — **3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS**

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
application_id	bigint	REQUIRED	→ applications.id
student_id	bigint	OPTIONAL	→ students.id
name	varchar(120)	OPTIONAL	—
age	integer	OPTIONAL	—
school_name	varchar(160)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

application_medical

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/admission/applications Tab 7`

🖥️ **UI COMPONENTS & MODALS:**
Applicant Medical Disclosure Tab, Blood Group Selector, Chronic Conditions & Allergy Notes

🎯 **Core Business Role:** Medical disclosures, allergy alerts, and emergency care authorizations submitted during admission.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Transferred into permanent student medical profile upon admission conversion.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references applications.id.

SCHEMA COLUMNS (15 COLUMNS) — **2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS**

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
application_id	bigint	REQUIRED	→ applications.id UNIQUE
blood_group	varchar(8)	OPTIONAL	—
known_allergies	text	OPTIONAL	—
chronic_conditions	text	OPTIONAL	—
regular_medication	text	OPTIONAL	—
physical_disability	text	OPTIONAL	—
learning_needs	text	OPTIONAL	—
vision_hearing_notes	text	OPTIONAL	—
emergency_doctor	varchar(160)	OPTIONAL	—
emergency_doctor_phone	varchar(20)	OPTIONAL	—
consent_for_emergency_treatment	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

application_payments

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/admission/applications Tab 6`

🖥️ **UI COMPONENTS & MODALS:**
Application Registration Fee Receipt Drawer, Cash/UPI Payment Mode Toggle, Print Receipt Action

🎯 **Core Business Role:** Application processing fee transaction receipts recording payment mode, receipt number, and payment timestamp.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Receptionist collects registration fee; issues official application fee receipt voucher.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, receipt_number).

SCHEMA COLUMNS (15 COLUMNS) — 3 FOREIGN KEYS • 2 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
application_id	bigint	REQUIRED	→ applications.id
purpose	varchar(15)	REQUIRED	—
amount	numeric(10,2)	REQUIRED	—
method	varchar(20)	REQUIRED	—
reference	varchar(80)	OPTIONAL	—
receipt_no	varchar(24)	REQUIRED	UNIQUE
paid_at	timestamptz	REQUIRED	—
collected_by	bigint	OPTIONAL	→ users.id
status	varchar(8)	REQUIRED	—
void_reason	text	OPTIONAL	—
idempotency_key	varchar(120)	OPTIONAL	UNIQUE
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

assessments

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/admission/merit`

🖥️ **UI COMPONENTS & MODALS:**
Entrance Test Session Scheduling Matrix, Room Allocation, Roll Number Allotment

🎯 **Core Business Role:** Scheduled entrance evaluation sessions for applicants applying for Class 6 and Class 9 intake.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Coordinator schedules entrance exam dates on /admission/merit; allocates applicants to test halls.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references admission_cycles and class_sections.

SCHEMA COLUMNS (15 COLUMNS) — 3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
application_id	bigint	REQUIRED	→ applications.id
assessment_type	varchar(22)	REQUIRED	—
scheduled_at	timestamptz	REQUIRED	—
venue	varchar(80)	OPTIONAL	—
seat_no	varchar(16)	OPTIONAL	—
status	varchar(9)	REQUIRED	—
total_marks	numeric(6,2)	OPTIONAL	—
obtained_marks	numeric(6,2)	OPTIONAL	—
is_absent	boolean	REQUIRED	—
evaluated_by	bigint	OPTIONAL	→ users.id
remarks	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

assessment_subjects

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
/admission/merit

🖥️ **UI COMPONENTS & MODALS:**
Subject Test Score Entry Grid (English, Mathematics, Science), Max Marks vs Scored Inputs

🎯 **Core Business Role:** Subject-level entrance test scores entered by evaluating teachers for candidate ranking.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Teachers input written test scores on /admission/merit; system computes aggregated test totals.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references assessments.id and subjects.id.

SCHEMA COLUMNS (8 COLUMNS) — 2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
assessment_id	bigint	REQUIRED	→ assessments.id UNIQUE
subject	varchar(60)	REQUIRED	UNIQUE
max_marks	numeric(6,2)	REQUIRED	—
obtained	numeric(6,2)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

interviews

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/admission/merit`

🖥️ **UI COMPONENTS & MODALS:**
Interview Schedule Table, Principal Evaluation Rating Stars, Interaction Remarks Box

🎯 **Core Business Role:** Oral interview and interaction ratings conducted by Principal or Coordinator for primary applicants.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Principal rates candidate readiness on /admission/merit; marks recommendation notes.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references applications.id.

SCHEMA COLUMNS (15 COLUMNS) — 3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
application_id	bigint	REQUIRED	→ applications.id
scheduled_at	timestamptz	REQUIRED	—
venue	varchar(80)	OPTIONAL	—
panel_member_ids	json	OPTIONAL	—
status	varchar(9)	REQUIRED	—
structured_scores	json	OPTIONAL	—
child_rating	integer	OPTIONAL	—
parent_rating	integer	OPTIONAL	—
recommendation	varchar(12)	OPTIONAL	—
notes	text	OPTIONAL	—
conducted_by	bigint	OPTIONAL	→ users.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

admission_decisions

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
/admission/merit

🖥️ **UI COMPONENTS & MODALS:**
Merit Selection Table, Decision Buttons (Selected, Waitlisted, Rejected), Bulk Decision Modal

🎯 **Core Business Role:** Final admission decisions (selected, waitlisted, rejected, offered) with audited principal rationale.

🔄 **REAL SCHOOL ERP WORKFLOW:**
School committee reviews merit ranks on /admission/merit; commits decisions to database.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(application_id).

SCHEMA COLUMNS (12 COLUMNS) — 3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
application_id	bigint	REQUIRED	→ applications.id
decision	varchar(10)	REQUIRED	—
decided_by	bigint	OPTIONAL	→ users.id
decided_at	timestamptz	REQUIRED	—
reason	text	REQUIRED	—
seat_category	varchar(20)	OPTIONAL	—
conditions	text	OPTIONAL	—
over_allocation_approved	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

admission_offers

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
/admission/applications

🖥️ **UI COMPONENTS & MODALS:**
Offer Letter Generator, Fee Payment Deadline Picker, Send Offer SMS/Email Action

🎯 **Core Business Role:** Provisional admission offer letters issued to selected candidates with fee payment deadlines.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Issued on /admission/applications; triggers notification to parents to pay admission dues.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Tracks offer expiration date; unaccepted offers trigger waitlist promotion.

SCHEMA COLUMNS (11 COLUMNS) — 2 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
application_id	bigint	REQUIRED	→ applications.id
offered_at	timestamptz	REQUIRED	—
expires_on	date	REQUIRED	—
offer_amount	numeric(10,2)	OPTIONAL	—
status	varchar(9)	REQUIRED	—
accepted_at	timestamptz	OPTIONAL	—
released_at	timestamptz	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

waitlist_entries

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/admission/waitlist`

🖥️ **UI COMPONENTS & MODALS:**
Waitlist Queue Table, Drag-and-Drop Rank Reorder, Promote to Offered Action Button

🎯 **Core Business Role:** Ordered waitlist queue tracking priority rank, merit scores, and seat promotion actions.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Displayed on /admission/waitlist. When a selected candidate declines, receptionist clicks 'Promote' to offer seat to next waitlisted child.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(admission_cycle_id, class_section_id, waitlist_rank).

SCHEMA COLUMNS (9 COLUMNS) — 3 FOREIGN KEYS • 2 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
cycle_id	bigint	REQUIRED	→ admission_cycles.id UNIQUE
class_name	varchar(8)	REQUIRED	UNIQUE
application_id	bigint	REQUIRED	→ applications.id UNIQUE
rank	integer	REQUIRED	UNIQUE
status	varchar(9)	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 11: Communication & Notices

6 Tables | 3 Live | 3 Unused For Now

Drives the school digital notice board, parent notifications, and delivery tracking.

⚙️ Internal Schema Migration Engine: `alembic_version`

System Infrastructure | LIVE MIGRATION HEAD

Migration Head: `a1b2c3d4e5f6` (Teacher Leave & Recruitment Migration).
Role: Internal Alembic version tracking table storing the single active schema revision hash. It does not contain `school_id`, `id`, or audit columns because it is an engine-level state table rather than an application business entity. All 92 business tables derive from either `TenantBase` or `TimestampedBase`.

notices

LIVE / IN USE (6 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/notices, /dashboard`

🖥️ **UI COMPONENTS & MODALS:**
School Notice Board Roster, Publish Notice Drawer, Audience Target Picker (All, Students, Teachers, Parents, Class 10-A)

🎯 **Core Business Role:** School digital notice board for announcements, circulars, and holiday notifications.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Published on /notices; displayed on dashboard notice widget and mobile apps.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Audited with author employee_id and publication timestamp.

SCHEMA COLUMNS (11 COLUMNS) — 4 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
title	varchar(160)	REQUIRED	—
body	text	REQUIRED	—
audience	varchar(8)	REQUIRED	—
class_section_id	bigint	OPTIONAL	→ class_sections.id
published_by	bigint	REQUIRED	→ users.id
published_at	timestamptz	REQUIRED	—
message_id	bigint	OPTIONAL	→ messages.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

message_templates

LIVE / IN USE (4 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
/notices

🖥️ **UI COMPONENTS & MODALS:**
Pre-approved SMS/WhatsApp Template Selector, Template Placeholder Variable Pills ({student_name}, {due_amount})

🎯 **Core Business Role:** Pre-approved TRAI DLT message templates for fee reminders, attendance absence alerts, and urgent closures.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Selected when composing broadcast alerts on /notices to ensure compliance with Indian telecom regulations.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, code).

SCHEMA COLUMNS (12 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
code	varchar(40)	REQUIRED	UNIQUE
version	integer	REQUIRED	UNIQUE
name	varchar(80)	REQUIRED	—
channel	varchar(8)	REQUIRED	—
category	varchar(11)	REQUIRED	—
subject	varchar(200)	REQUIRED	—
body	text	REQUIRED	—
is_active	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

messages

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/notices [Planned]`

🖥️ **UI COMPONENTS & MODALS:**
Outbound Message Dispatch Queue, Broadcast Channel Selector (SMS, WhatsApp, Email)

🎯 **Core Business Role:** Outbound communication batch queue for school-wide SMS, WhatsApp, and email alerts.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Enqueued when sending batch announcements; processed asynchronously by messaging worker.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references message_templates.id.

SCHEMA COLUMNS (17 COLUMNS) — 4 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
category	varchar(11)	REQUIRED	—
channel	varchar(8)	REQUIRED	—
template_id	bigint	OPTIONAL	→ message_templates.id
template_version	integer	OPTIONAL	—
subject	varchar(200)	REQUIRED	—
body	text	REQUIRED	—
audience	json	REQUIRED	—
status	varchar(9)	REQUIRED	—
scheduled_for	timestamptz	OPTIONAL	—
sent_at	timestamptz	OPTIONAL	—
created_by	bigint	OPTIONAL	→ users.id
approved_by	bigint	OPTIONAL	→ users.id
approved_at	timestamptz	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

message_recipients

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
/notices [Planned]

🖥️ **UI COMPONENTS & MODALS:**
Delivery Status Indicator Pills (Sent, Delivered, Failed, Read), Retry Dispatch Button

🎯 **Core Business Role:** Recipient-level dispatch logs tracking individual phone numbers and delivery gateway statuses.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Updated via SMS gateway webhook callbacks to report real delivery rates to school administrators.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references messages.id and users.id.

SCHEMA COLUMNS (17 COLUMNS)

6 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
message_id	bigint	REQUIRED	→ messages.id
user_id	bigint	OPTIONAL	→ users.id
guardian_id	bigint	OPTIONAL	→ guardians.id
student_id	bigint	OPTIONAL	→ students.id
application_id	bigint	OPTIONAL	→ applications.id
to_address	varchar(200)	REQUIRED	—
channel	varchar(8)	REQUIRED	—
context	json	REQUIRED	—
status	varchar(9)	REQUIRED	—
attempts	integer	REQUIRED	—
sent_at	timestamptz	OPTIONAL	—
failure_reason	text	OPTIONAL	—
provider_ref	varchar(120)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

notification_preferences

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 **WEB SCREEN / ROUTE:**
/settings

🖥️ **UI COMPONENTS & MODALS:**
Parent Notification Preferences Matrix, Channel Toggles (SMS on/off, WhatsApp on/off)

🎯 **Core Business Role:** Guardian opt-in/opt-out channel preferences per notification category (academic, fee, transport).

🔄 **REAL SCHOOL ERP WORKFLOW:**
Checked before dispatching automated notifications to respect parental channel choices.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(user_id, category).

SCHEMA COLUMNS (8 COLUMNS) — **2 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS**

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
user_id	bigint	REQUIRED	→ users.id UNIQUE
category	varchar(11)	REQUIRED	UNIQUE
channel	varchar(8)	REQUIRED	UNIQUE
opted_out	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

in_app_notifications

LIVE / IN USE (11 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`Mobile App / Web App Notifications`

🖥️ **UI COMPONENTS & MODALS:**
Top Navigation Notification Bell, In-App Alert Banners, Mobile Duties & Leave Alerts

🎯 **Core Business Role:** In-app notifications dispatched to teachers, staff, and leadership for leave approvals/rejections, substitution duty assignments, and stock requests.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Triggered by backend domain events (e.g. staff leave approval). Queried by mobile and web clients via GET /notifications; marked read on interaction.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Indexed on (user_id, is_read) and school_id.

SCHEMA COLUMNS (10 COLUMNS) — 2 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
`user_id`	`bigint`	REQUIRED	→ `users.id`
`title`	`varchar(150)`	REQUIRED	—
`message`	`text`	REQUIRED	—
`category`	`varchar(50)`	REQUIRED	—
`link_url`	`varchar(255)`	OPTIONAL	—
`is_read`	`boolean`	REQUIRED	—
`school_id`	`bigint`	REQUIRED	TENANT FK
`id`	`bigint`	REQUIRED	PRIMARY KEY
`created_at`	`timestamptz`	REQUIRED	`def: now()`
`updated_at`	`timestamptz`	REQUIRED	`def: now()`

Domain 12: Inventory & Stock Management

2 Tables | 2 Live | 0 Unused For Now

Drives the school consumable catalog, minimum quantity alerts, and purchase approval workflows.

⚙️ Internal Schema Migration Engine: `alembic_version`

System Infrastructure | LIVE MIGRATION HEAD

Migration Head: `a1b2c3d4e5f6` (Teacher Leave & Recruitment Migration).
Role: Internal Alembic version tracking table storing the single active schema revision hash. It does not contain `school_id`, `id`, or audit columns because it is an engine-level state table rather than an application business entity. All 92 business tables derive from either `TenantBase` or `TimestampedBase`.

stock_items

LIVE / IN USE (31 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/inventory`

🖥️ **UI COMPONENTS & MODALS:**
Stock Catalogue Grid, Low Stock Reorder Threshold Alert Banner, Add Item Modal, Adjust Stock Counter

🎯 **Core Business Role:** Consumables and equipment catalogue (Chalk, Whiteboard Markers, Printing Paper, Footballs) with reorder thresholds and live stock counts.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Monitored on /inventory; triggers red warning pills when stock falls below reorder_level.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, item_code) and non-negative stock quantities.

SCHEMA COLUMNS (16 COLUMNS) — 2 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
name	varchar(120)	REQUIRED	—
category	varchar(60)	REQUIRED	—
location	varchar(80)	REQUIRED	—
unit	varchar(30)	REQUIRED	—
current_quantity	integer	REQUIRED	—
min_quantity	integer	REQUIRED	—
unit_cost	numeric(10,2)	OPTIONAL	—
is_critical	boolean	REQUIRED	—
has_discrepancy	boolean	REQUIRED	—
discrepancy_notes	text	OPTIONAL	—
last_checked_at	timestamptz	OPTIONAL	—
last_checked_by_id	bigint	OPTIONAL	→ users.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

stock_requests

LIVE / IN USE (9 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/inventory, Mobile App (Teacher)`

🖥️ **UI COMPONENTS & MODALS:**
Stock Indent Approval Queue, Approve/Reject Action Dialog, Teacher Stock Request Modal

🎯 **Core Business Role:** Replenishment indents and consumable issuance requests submitted by teachers and staff.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Teacher flags diminishing stock via mobile app; Administrator reviews and approves indent on /inventory.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Requires administrative approval reason logged to audit trail upon status change.

SCHEMA COLUMNS (18 COLUMNS) — 4 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
item_id	bigint	OPTIONAL	→ stock_items.id
item_name	varchar(120)	REQUIRED	—
category	varchar(60)	REQUIRED	—
location	varchar(80)	REQUIRED	—
quantity_requested	integer	REQUIRED	—
urgency	varchar(20)	REQUIRED	—
status	varchar(20)	REQUIRED	—
flag_type	varchar(20)	REQUIRED	—
requested_by_id	bigint	REQUIRED	→ users.id
requested_by_name	varchar(120)	REQUIRED	—
reason	text	REQUIRED	—
decided_by_id	bigint	OPTIONAL	→ users.id
decided_at	timestamptz	OPTIONAL	—
decision_note	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 13: Grievances & Feedback System

2 Tables | 2 Live | 0 Unused For Now

Drives the ticketing helpdesk, priority queues, staff assignments, and conversational resolution threads.

⚙️ Internal Schema Migration Engine: `alembic_version`

System Infrastructure | LIVE MIGRATION HEAD

Migration Head: `a1b2c3d4e5f6` (Teacher Leave & Recruitment Migration).
Role: Internal Alembic version tracking table storing the single active schema revision hash. It does not contain `school_id`, `id`, or audit columns because it is an engine-level state table rather than an application business entity. All 92 business tables derive from either `TenantBase` or `TimestampedBase`.

grievances

LIVE / IN USE (5 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/dashboard, Mobile App`

🖥️ **UI COMPONENTS & MODALS:**
Grievance Feed on Dashboard, Priority Badges (Low, Medium, High, Urgent), Category Pills, Status Dropdown (Submitted, In Progress, Resolved)

🎯 **Core Business Role:** School helpdesk tickets raised by parents, teachers, and students (Facilities, Academic, Transport, Billing).

🔄 **REAL SCHOOL ERP WORKFLOW:**
Complainant submits ticket on mobile app; School leadership assigns ticket to staff and tracks resolution on dashboard.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, ticket_number).

SCHEMA COLUMNS (18 COLUMNS)

4 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
title	varchar(200)	REQUIRED	—
description	text	REQUIRED	—
category	varchar(60)	REQUIRED	—
raised_by_id	bigint	REQUIRED	→ users.id
raised_by_role	varchar(30)	REQUIRED	—
raised_by_name	varchar(120)	REQUIRED	—
student_id	bigint	OPTIONAL	→ students.id
student_name	varchar(120)	OPTIONAL	—
status	varchar(30)	REQUIRED	—
priority	varchar(20)	REQUIRED	—
assigned_to_id	bigint	OPTIONAL	→ employees.id
assigned_to_name	varchar(120)	OPTIONAL	—
resolution_notes	text	OPTIONAL	—
resolved_at	timestamptz	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

grievance_replies

LIVE / IN USE (4 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/dashboard, Mobile App`

🖥️ **UI COMPONENTS & MODALS:**
Ticket Detail Modal Thread, Post Reply Textarea, Internal Note Toggle

🎯 **Core Business Role:** Conversational messages, internal administrative notes, and complainant replies on grievance threads.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Staff and parents exchange updates directly inside the ticket drawer until issue closure.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Foreign key references grievances.id and users.id.

SCHEMA COLUMNS (10 COLUMNS) — 3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
grievance_id	bigint	REQUIRED	→ grievances.id
author_id	bigint	REQUIRED	→ users.id
author_name	varchar(120)	REQUIRED	—
author_role	varchar(30)	REQUIRED	—
message	text	REQUIRED	—
is_internal	boolean	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 14: System, Documents & Audit

5 Tables | 4 Live | 1 Unused For Now

Drives document verification checklists, binary file storage, background scheduler, and compliance audit logs.

⚙️ Internal Schema Migration Engine: `alembic_version`

System Infrastructure | LIVE MIGRATION HEAD

Migration Head: `a1b2c3d4e5f6` (Teacher Leave & Recruitment Migration).
Role: Internal Alembic version tracking table storing the single active schema revision hash. It does not contain `school_id`, `id`, or audit columns because it is an engine-level state table rather than an application business entity. All 92 business tables derive from either `TenantBase` or `TimestampedBase`.

document_types

LIVE / IN USE (21 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/configuration, /admission/applications`

🖥️ **UI COMPONENTS & MODALS:**
Mandatory Document Checklist Setup Table, Required Document Badges

🎯 **Core Business Role:** Mandatory document checklist definitions (Birth Certificate, Transfer Certificate, Aadhaar Card, Previous Marksheet).

🔄 **REAL SCHOOL ERP WORKFLOW:**
Governs required attachments during student admission and employee hiring workflows.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, name).

SCHEMA COLUMNS (12 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
code	varchar(40)	REQUIRED	UNIQUE
name	varchar(120)	REQUIRED	—
applies_to	varchar(11)	REQUIRED	—
is_mandatory	boolean	REQUIRED	—
required_if_category	varchar(40)	OPTIONAL	—
has_expiry	boolean	REQUIRED	—
is_confidential	boolean	REQUIRED	—
sort_order	integer	REQUIRED	—
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

documents

LIVE / IN USE (13 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/students, /admission/applications, /transport`

🖥️ **UI COMPONENTS & MODALS:**
Uploaded Files Attachment Drawer, Document Verification Checkmark, Expiry Date Warning

🎯 **Core Business Role:** Binary file storage metadata for uploaded student identities, employee certificates, and vehicle fitness papers.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Office staff uploads scanned PDF/JPG; marks document status as Verified. Soft-deleted to preserve audit integrity.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Soft-deleted records preserve historical references in audit log.

SCHEMA COLUMNS (24 COLUMNS)

4 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
owner_type	varchar(11)	REQUIRED	—
owner_id	bigint	REQUIRED	—
document_type_id	bigint	OPTIONAL	→ document_types.id
file_key	varchar(255)	REQUIRED	UNIQUE
file_name	varchar(255)	REQUIRED	—
mime_type	varchar(120)	REQUIRED	—
size_bytes	bigint	REQUIRED	—
checksum	varchar(64)	OPTIONAL	—
uploaded_by	bigint	OPTIONAL	→ users.id
uploaded_at	timestamptz	REQUIRED	—
status	varchar(17)	REQUIRED	—
original_seen	boolean	REQUIRED	—
verified_by	bigint	OPTIONAL	→ users.id
verified_at	timestamptz	OPTIONAL	—
rejection_reason	text	OPTIONAL	—
expires_on	date	OPTIONAL	—
is_confidential	boolean	REQUIRED	—
deleted_at	timestamptz	OPTIONAL	—
deleted_by	bigint	OPTIONAL	—
delete_reason	text	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

scheduled_jobs

LIVE / IN USE (4 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/configuration`

🖥️ **UI COMPONENTS & MODALS:**
Background Cron Jobs Table, Last Run Status Indicator, Run Now Trigger Button

🎯 **Core Business Role:** System automation cron definitions for nightly fee invoice generation, daily absentee SMS alerts, and attendance aggregation.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Monitored on /configuration; executed periodically by backend scheduler worker.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, job_name).

SCHEMA COLUMNS (10 COLUMNS) — 0 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
kind	varchar(48)	REQUIRED	UNIQUE
payload	json	OPTIONAL	—
enabled	boolean	REQUIRED	—
every_minutes	integer	REQUIRED	—
at_hour	integer	OPTIONAL	—
last_run_at	timestamptz	OPTIONAL	—
next_run_at	timestamptz	OPTIONAL	—
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

audit_log

LIVE / IN USE (288 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
System-Wide (Contract 3 Compliance)

🖥️ **UI COMPONENTS & MODALS:**
Contract 3 Compliance Audit Trail, Entity History Drawer, User Reason Viewer

🎯 **Core Business Role:** Contract 3 Compliance Audit Log: immutable audit trail recording every write, status change, and reverse action with timestamp, IP address, and user-typed reason.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Automatically written on every state-changing HTTP request across all ERP modules. Never updated or deleted.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Append-only: zero UPDATE or DELETE operations permitted on this table.

SCHEMA COLUMNS (15 COLUMNS) — 3 FOREIGN KEYS • 0 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
occurred_at	timestamptz	REQUIRED	—
actor_user_id	bigint	OPTIONAL	→ users.id
actor_label	varchar(120)	OPTIONAL	—
entity_type	varchar(40)	REQUIRED	—
entity_id	bigint	OPTIONAL	—
action	varchar(13)	REQUIRED	—
before	json	OPTIONAL	—
after	json	OPTIONAL	—
reason	text	OPTIONAL	—
academic_year_id	bigint	OPTIONAL	→ academic_years.id
ip	varchar(45)	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

jobs

UNUSED FOR NOW | Tenant Scoped (school_id) | PLANNED FEATURE

🌐 WEB SCREEN / ROUTE:
`Background Worker Queue`

🖥️ UI COMPONENTS & MODALS:
Long-running Task Progress Bar, Bulk Export Download Modal, PDF Generation Status

🎯 **Core Business Role:** Asynchronous background worker queue for long-running report exports, bulk PDF generation, and batch data migrations.

🔄 REAL SCHOOL ERP WORKFLOW:
When user requests a heavy report export, job is enqueued here and processed in background by worker tasks.

🛡️ DATABASE INVARIANTS & GUARDRAILS:
Tracks task execution state (pending, processing, completed, failed) with retry counts.

SCHEMA COLUMNS (16 COLUMNS) — 1 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
kind	varchar(48)	REQUIRED	—
payload	json	OPTIONAL	—
status	varchar(9)	REQUIRED	—
run_after	timestamptz	REQUIRED	—
started_at	timestamptz	OPTIONAL	—
finished_at	timestamptz	OPTIONAL	—
attempts	integer	REQUIRED	—
max_attempts	integer	REQUIRED	—
last_error	text	OPTIONAL	—
result	json	OPTIONAL	—
idempotency_key	varchar(120)	OPTIONAL	UNIQUE
requested_by	bigint	OPTIONAL	—
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

Domain 15: Teacher Recruitment & Onboarding

2 Tables | 2 Live | 0 Unused For Now

Drives front-desk candidate intake, CBSE A4 printable application dossiers, admin review, salary offers, and automatic teacher account provisioning.

⚙️ Internal Schema Migration Engine: `alembic_version`

System Infrastructure | LIVE MIGRATION HEAD

Migration Head: `a1b2c3d4e5f6` (Teacher Leave & Recruitment Migration).
Role: Internal Alembic version tracking table storing the single active schema revision hash. It does not contain `school_id`, `id`, or audit columns because it is an engine-level state table rather than an application business entity. All 92 business tables derive from either `TenantBase` or `TimestampedBase`.

candidates

LIVE / IN USE (2 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/recruitment`

🖥️ **UI COMPONENTS & MODALS:**
Candidate Intake Form, Pipeline Stages (Applied, Shortlisted, Offered, Hired), CBSE A4 Printable Application Preview

🎯 **Core Business Role:** Teacher recruitment candidate master storing personal details, CBSE teaching qualifications, prior school experience, post applied for, expected salary, and recruitment status.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Receptionist registers walk-in candidate on /recruitment. Admin reviews dossier, prints CBSE A4 form, moves candidate through pipeline stages, and confirms hiring.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(school_id, application_no) and optional UNIQUE(employee_id).

SCHEMA COLUMNS (23 COLUMNS) — 3 FOREIGN KEYS • 2 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
application_no	varchar(50)	REQUIRED	UNIQUE
full_name	varchar(120)	REQUIRED	—
email	varchar(255)	REQUIRED	—
phone	varchar(20)	REQUIRED	—
gender	varchar(20)	REQUIRED	—
date_of_birth	date	REQUIRED	—
address	text	OPTIONAL	—
post_applied_for	varchar(100)	REQUIRED	—
qualification	varchar(200)	REQUIRED	—
specialization	varchar(100)	OPTIONAL	—
experience_years	numeric(4,1)	REQUIRED	—
previous_school	varchar(200)	OPTIONAL	—
expected_salary	numeric(12,2)	OPTIONAL	—
resume_file_key	varchar(500)	OPTIONAL	—
photo_file_key	varchar(500)	OPTIONAL	—
status	varchar(11)	REQUIRED	—
notes	text	OPTIONAL	—
employee_id	bigint	OPTIONAL	→ employees.id UNIQUE
created_by_user_id	bigint	OPTIONAL	→ users.id
school_id	bigint	REQUIRED	TENANT FK UNIQUE
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()

candidate_offers

LIVE / IN USE (2 ROWS) | Tenant Scoped (school_id) | LIVE OPERATIONAL FEATURE

🌐 **WEB SCREEN / ROUTE:**
`/recruitment`

🖥️ **UI COMPONENTS & MODALS:**
Issue Job Offer Modal, Designation & Department Selector, Offered Salary Input (₹), Joining Date Picker

🎯 **Core Business Role:** Formal employment offer issued to a shortlisted teacher candidate, tracking offered designation, department, monthly CTC salary, and scheduled joining date.

🔄 **REAL SCHOOL ERP WORKFLOW:**
Admin creates offer via POST /admin/recruitment/candidates/{id}/offer. Upon candidate acceptance, admin confirms joining which automatically provisions active teacher employee and user accounts.

🛡️ **DATABASE INVARIANTS & GUARDRAILS:**
Enforces UNIQUE(candidate_id) and school_id tenant scoping.

SCHEMA COLUMNS (11 COLUMNS) — 4 FOREIGN KEYS • 1 UNIQUE CONSTRAINTS

COLUMN	DATA TYPE	NULLABILITY	FOREIGN KEYS & INVARIANTS
candidate_id	bigint	REQUIRED	→ candidates.id UNIQUE
offered_designation	varchar(100)	REQUIRED	—
offered_department_id	bigint	OPTIONAL	→ departments.id
offered_salary	numeric(12,2)	REQUIRED	—
joining_date	date	REQUIRED	—
offer_notes	text	OPTIONAL	—
created_by_user_id	bigint	OPTIONAL	→ users.id
school_id	bigint	REQUIRED	TENANT FK
id	bigint	REQUIRED	PRIMARY KEY
created_at	timestamptz	REQUIRED	def: now()
updated_at	timestamptz	REQUIRED	def: now()