**Data Model & Database Schema Design**

**Objective:**

Develop a relational schema that ensures consistency, data integrity, version control, and full auditability for all HR-related transactions, aligned with UN and GDPR standards.

**Schema Components:**

**A. Core Entities:**

* Employees: Full profile with job history, contract info, biometric ID, emergency contact.
* AttendanceLogs: Timestamps from mobile app or biometric input.
* LeaveRequests: Type, duration, status, approval path.
* PayrollRecords: Monthly salary breakdown, deductions, allowances.
* PerformanceReviews: Periodic KPIs, supervisor ratings, promotions.
* Roles & Permissions: Linked to RBAC system.

**B. Normalization:**

* **3NF (Third Normal Form)** enforced to eliminate redundancy and maintain referential integrity.
* Foreign key constraints and cascading rules for updates/deletes.

**C. Audit & Compliance:**

* **Change Log Table**: All CREATE, UPDATE, DELETE actions with timestamp, userID, IP, and reason (required).
* **Versioning Tables**: e.g., PerformanceReview\_v, PayrollRecords\_v to preserve data snapshots.
* **Soft Deletes** with timestamped archival logic.

**D. Data Migration Ready:**

* Scripts and ETL templates for migrating from legacy HR systems.
* Built-in data quality validators (e.g., duplicate detection, field completeness, logical date checks).