**Hotel Application Database Design (Enhanced)**

This section presents an enhanced proposed database schema for the hotel management application, organized by key modules. It uses a relational model, with tables, columns (fields), data types, and relationships.

**Conventions:**

* PK: Primary Keys
* FK: Foreign Key
* VARCHAR(n): Variable-length string (n characters max)
* INT: Integer
* DECIMAL(p, s): Decimal number (p total digits, s after decimal point)
* BOOLEAN: True/False
* DATETIME: Date and time
* DATE: Date
* TEXT: Long text
* ENUM: Predefined list of values
  + **Note**: ENUM values are chosen to be exhaustive for common scenarios in hotel management systems.
* UNIQUE per hotel\_id: Ensures uniqueness only within the context of a specific hotel (for multi-property systems).
* NULLABLE: Field can be empty.

**General Audit Fields (Applicable to most transactional tables):**

For enhanced traceability and compliance, it is highly recommended to include these fields in most tables, especially those tracking operations or master data changes:

* created\_at (DATETIME): Timestamp when the record was created.
* created\_by\_user\_id (FK, INT): User who created the record.
* updated\_at (DATETIME): Timestamp when the record was last updated.
* updated\_by\_user\_id (FK, INT): User who last updated the record.
* is\_deleted (BOOLEAN, default FALSE): For soft-deletion, marking records as inactive rather than physically removing them.
* deleted\_at (DATETIME, NULLABLE): Timestamp when the record was soft-deleted.

**1. Administration & Property Module (Core)**

This module manages fundamental hotel information and the system's structure.

**Table: Hotels**

Represents a hotel within the system (for multi-property solutions).

* hotel\_id (PK, INT)
* hotel\_name (VARCHAR(255))
* logo\_url (VARCHAR(500), NULLABLE)
* address (VARCHAR(500))
* city (VARCHAR(100))
* state\_province (VARCHAR(100), NULLABLE)
* zip\_postal\_code (VARCHAR(20), NULLABLE)
* country (VARCHAR(100))
* phone (VARCHAR(50))
* fax (VARCHAR(50), NULLABLE)
* email (VARCHAR(255))
* website (VARCHAR(255), NULLABLE)
* main\_currency (VARCHAR(10))
* time\_zone (VARCHAR(50))
* floor\_plan\_url (VARCHAR(500), NULLABLE)
* system\_date\_determination\_method (ENUM('UseDayClose', 'RealTime'), default 'UseDayClose')
* auto\_night\_audit\_time (TIME, NULLABLE)
* creation\_date (DATETIME)

**Table: Users**

Manages staff login information and roles.

* user\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* username (VARCHAR(100), UNIQUE)
* password\_hash (VARCHAR(255))
* email (VARCHAR(255), UNIQUE)
* first\_name (VARCHAR(100))
* last\_name (VARCHAR(100))
* role\_id (FK, INT) - Linked to Roles
* employee\_id (FK, INT, NULLABLE) - Linked to Employees (if the user is also an employee)
* is\_active (BOOLEAN)
* last\_login (DATETIME, NULLABLE)
* preferred\_language (VARCHAR(10))
* theme\_preference (ENUM('Blue', 'Black', 'Silver', 'SystemDefault'), NULLABLE) - For UI customization

**Table: Roles**

Defines predefined roles in the system (Administrator, Front Desk Agent, Housekeeping Staff, etc.).

* role\_id (PK, INT)
* role\_name (VARCHAR(100), UNIQUE)
* role\_description (TEXT)

**Table: Permissions**

Defines granular permissions (e.g., CAN\_CHECK\_IN, VIEW\_FINANCIAL\_REPORTS, EDIT\_RATES).

* permission\_id (PK, INT)
* permission\_name (VARCHAR(255), UNIQUE)
* permission\_description (TEXT)
* module\_category (ENUM('FrontOffice', 'Reservations', 'BillingPayments', 'PricingRevenue', 'HousekeepingMaintenance', 'OnlineDistribution', 'ReportsAnalytics', 'SecurityUser', 'ThirdPartyIntegrations', 'TechnicalUX', 'Administration', 'AccountingFinance', 'HumanResources', 'InventoryPurchasing')) - E.g., 'Front Office', 'Finance', 'Admin'

**Table: RolePermissions**

Junction table for roles and their permissions.

* role\_id (PK, FK, INT) - Linked to Roles
* permission\_id (PK, FK, INT) - Linked to Permissions

**Table: SystemSettings**

For various global system configurations not tied to a specific module.

* setting\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels (if setting is hotel-specific)
* setting\_key (VARCHAR(100), UNIQUE per hotel\_id) - E.g., 'DEFAULT\_CHECKIN\_TIME', 'ENABLE\_PRE\_AUTH'
* setting\_value (TEXT)
* value\_type (ENUM('String', 'Boolean', 'Integer', 'Decimal', 'JSON', 'Time', 'Date'))
* description (TEXT)
* default\_check\_in\_time (TIME, NULLABLE) - Hotel's standard check-in time
* default\_check\_out\_time (TIME, NULLABLE) - Hotel's standard check-out time

**2. Front Office & Rooms Module**

Management of physical rooms and their status.

**Table: RoomTypes**

Defines room categories (Single, Double, Suite, etc.).

* room\_type\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* type\_name (VARCHAR(100))
* adult\_capacity (INT)
* child\_capacity (INT)
* default\_price (DECIMAL(10, 2)) - Base price before rate plans
* description (TEXT)
* amenities (TEXT) - E.g.: "Air conditioning, Wifi, TV"
* is\_smoking\_allowed (BOOLEAN)
* room\_type\_icon\_url (VARCHAR(500), NULLABLE)

**Table: Rooms**

Represents each individual room.

* room\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* room\_number (VARCHAR(20), UNIQUE per hotel\_id)
* room\_type\_id (FK, INT) - Linked to RoomTypes
* floor (INT)
* current\_status (ENUM('Available', 'Occupied', 'Dirty', 'Cleaned', 'Inspected', 'Maintenance', 'Blocked', 'OnHold', 'VacantClean', 'VacantDirty', 'OccupantClean', 'OccupantDirty'))
* maintenance\_notes (TEXT, NULLABLE)
* last\_cleaned\_datetime (DATETIME, NULLABLE)
* last\_occupied\_datetime (DATETIME, NULLABLE)
* is\_locked (BOOLEAN, default FALSE) - For integration with electronic locks
* room\_features (TEXT, NULLABLE) - E.g., "Non-smoking", "Interconnecting", "Ocean View"
* room\_size\_sqm (DECIMAL(7, 2), NULLABLE) - Size of the room in square meters

**Table: Guests**

Guest database (CRM).

* guest\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* title (ENUM('Mr', 'Ms', 'Mrs', 'Dr', 'Prof', 'Other'), NULLABLE)
* first\_name (VARCHAR(100))
* last\_name (VARCHAR(100))
* email (VARCHAR(255), NULLABLE)
* phone\_primary (VARCHAR(50), NULLABLE)
* phone\_secondary (VARCHAR(50), NULLABLE)
* address (VARCHAR(500), NULLABLE)
* city (VARCHAR(100), NULLABLE)
* state\_province (VARCHAR(100), NULLABLE)
* zip\_postal\_code (VARCHAR(20), NULLABLE)
* country (VARCHAR(100), NULLABLE)
* date\_of\_birth (DATE, NULLABLE)
* id\_document\_type (ENUM('Passport', 'NationalID', 'DrivingLicense', 'Other'), NULLABLE)
* id\_document\_number (VARCHAR(100), NULLABLE)
* id\_document\_scan\_url (VARCHAR(500), NULLABLE) - URL to scanned ID document
* guest\_photo\_url (VARCHAR(500), NULLABLE) - URL to guest's photo
* preferences (TEXT, NULLABLE) - E.g.: "Extra pillows, sea view, quiet room"
* is\_blacklisted (BOOLEAN, default FALSE)
* blacklist\_reason (TEXT, NULLABLE)
* registration\_date (DATETIME)
* last\_stay\_date (DATE, NULLABLE)
* loyalty\_member\_id (VARCHAR(100), NULLABLE) - ID from an external or internal loyalty program

**3. Reservation Module**

Management of guest reservations and stays.

**Table: Reservations**

Details of each reservation.

* reservation\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* guest\_id (FK, INT) - Linked to Guests
* primary\_room\_type\_id (FK, INT) - Linked to RoomTypes (type reserved for the primary guest, or if only one room)
* scheduled\_arrival\_date (DATE)
* scheduled\_departure\_date (DATE)
* actual\_arrival\_datetime (DATETIME, NULLABLE)
* actual\_departure\_datetime (DATETIME, NULLABLE)
* reservation\_status (ENUM('Confirmed', 'Pending', 'Cancelled', 'No-Show', 'Checked-In', 'Checked-Out', 'Waitlist', 'Modified', 'PartiallyCheckedIn', 'Guaranteed'))
* board\_basis\_type (ENUM('BO', 'BB', 'Half Board', 'Full Board', 'AllInclusive', 'Custom'))
* num\_adults\_total (INT) - Total adults for the entire reservation (across all rooms)
* num\_children\_total (INT) - Total children for the entire reservation (across all rooms)
* booking\_source\_id (FK, INT) - Linked to BookingSources
* rate\_plan\_id (FK, INT) - Linked to RatePlans (which rate plan was used for this reservation, applies across all rooms in theory, but rates are per room in RoomRates)
* discount\_id (FK, INT, NULLABLE) - Linked to Discounts (if a reservation-level discount was applied)
* total\_estimated\_revenue (DECIMAL(12, 2)) - Sum of all estimated room prices and other charges
* special\_notes (TEXT, NULLABLE)
* group\_id (FK, INT, NULLABLE) - Linked to ReservationGroups (NULL for individual reservations)
* reservation\_datetime (DATETIME)
* confirmation\_code (VARCHAR(50), UNIQUE)
* cancellation\_reason (TEXT, NULLABLE)
* no\_show\_reason (TEXT, NULLABLE)
* cancellation\_fee\_amount (DECIMAL(10, 2), NULLABLE)
* estimated\_checkin\_time (TIME, NULLABLE)
* estimated\_checkout\_time (TIME, NULLABLE)
* is\_guaranteed (BOOLEAN, default FALSE) - Indicates if the reservation is guaranteed by credit card or company

**Table: ReservationRooms**

**Junction Table**: Links a single reservation to multiple specific rooms, handling multi-room bookings.

* reservation\_room\_id (PK, INT)
* reservation\_id (FK, INT) - Linked to Reservations
* room\_id (FK, INT, NULLABLE) - Linked to Rooms (the specific room assigned)
* room\_type\_id\_booked (FK, INT) - Linked to RoomTypes (the type of room booked for this specific part of the reservation)
* num\_adults\_in\_room (INT)
* num\_children\_in\_room (INT)
* room\_status\_at\_checkin (ENUM('Checked-In', 'No-Show', 'CancelledRoom')) - Status for this specific room within the reservation
  + **Note**: CancelledRoom means this particular room within a multi-room reservation was cancelled.
* checkin\_datetime\_room (DATETIME, NULLABLE) - Actual check-in time for this specific room
* checkout\_datetime\_room (DATETIME, NULLABLE) - Actual check-out time for this specific room
* room\_rate\_applied (DECIMAL(10,2), NULLABLE) - The specific nightly rate applied to this room instance

**Table: BookingSources**

Defines booking channels (Booking.com, Expedia, Direct, Travel Agent, etc.).

* source\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* source\_name (VARCHAR(100), UNIQUE per hotel\_id)
* is\_ota (BOOLEAN)
* commission\_percentage (DECIMAL(5, 2))
* channel\_api\_key (VARCHAR(255), NULLABLE) - For direct API integrations (sensitive, should be encrypted)

**Table: ReservationGroups**

For managing group reservations.

* group\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* group\_name (VARCHAR(255))
* group\_contact\_guest\_id (FK, INT, NULLABLE) - Linked to Guests (if contact is a guest)
* group\_contact\_company\_id (FK, INT, NULLABLE) - Linked to CompanyAccounts (if contact is from a company)
* num\_rooms\_blocked (INT)
* total\_group\_revenue (DECIMAL(12, 2), NULLABLE)
* creation\_date (DATETIME)

**4. Billing and Payments Module**

Manages guest folios and financial transactions.

**Table: Folios**

Represents the guest account for each stay.

* folio\_id (PK, INT)
* reservation\_id (FK, INT, UNIQUE) - Linked to Reservations (one folio per reservation usually)
* guest\_id (FK, INT) - Linked to Guests
* creation\_datetime (DATETIME)
* folio\_status (ENUM('Open', 'Closed', 'Transferred', 'Voided', 'Archived'))
* current\_balance (DECIMAL(10, 2))
* closing\_datetime (DATETIME, NULLABLE)
* billed\_to\_company\_id (FK, INT, NULLABLE) - Linked to CompanyAccounts (NULL if billed to guest directly)
* is\_group\_folio (BOOLEAN, default FALSE) - Indicates if it's a master folio for a group

**Table: FolioTransactions**

Details each item on a folio.

* transaction\_id (PK, INT)
* folio\_id (FK, INT) - Linked to Folios
* transaction\_datetime (DATETIME)
* description (VARCHAR(255))
* amount (DECIMAL(10, 2))
* transaction\_type (ENUM('RoomCharge', 'Payment', 'Refund', 'Adjustment', 'Allowance', 'Tax', 'Minibar', 'Laundry', 'Phone', 'RestaurantPOS', 'Spa', 'ConferenceFee', 'CancellationFee', 'NoShowFee', 'OtherService', 'Deposit'))
* payment\_method\_id (FK, INT, NULLABLE) - Linked to PaymentMethods (NULL if not a payment)
* reference\_transaction\_id (FK, INT, NULLABLE) - Linked to FolioTransactions (for refunds, references the original payment)
* user\_id (FK, INT) - Linked to Users (who performed the transaction)
* is\_voided (BOOLEAN, default FALSE)
* void\_reason (TEXT, NULLABLE)
* tax\_rate\_id (FK, INT, NULLABLE) - Linked to TaxRates (the specific tax rate applied)
* tax\_amount (DECIMAL(10,2), NULLABLE)
* tax\_exempt\_id (VARCHAR(50), NULLABLE) - If tax-exempt, e.g., government ID
* is\_posted\_to\_ledger (BOOLEAN, default FALSE) - Indicates if sent to General Ledger
* gl\_entry\_id (FK, INT, NULLABLE) - Linked to GeneralLedger if posted

**Table: PaymentMethods**

Types of accepted payments (Cash, Visa, MasterCard, Bank Transfer, etc.).

* payment\_method\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* method\_name (VARCHAR(100))
* is\_credit\_card (BOOLEAN)
* credit\_card\_type (ENUM('Visa', 'MasterCard', 'Amex', 'Discover', 'JCB', 'Diners Club', 'Other'), NULLABLE) - If applicable (e.g., 'Visa', 'MasterCard')
* is\_active (BOOLEAN)
* gateway\_integration\_config (TEXT, NULLABLE) - JSON/XML for gateway specifics

**Table: CreditCardPreAuthorizations**

To track credit card pre-authorizations.

* pre\_auth\_id (PK, INT)
* folio\_id (FK, INT) - Linked to Folios
* card\_last\_four\_digits (VARCHAR(4))
* card\_expiry\_date (VARCHAR(5)) - MM/YY format
* authorized\_amount (DECIMAL(10, 2))
* authorization\_datetime (DATETIME)
* expiration\_datetime (DATETIME, NULLABLE)
* status (ENUM('Authorized', 'Captured', 'Voided', 'Expired', 'Failed', 'Released'))
* gateway\_reference (VARCHAR(255))
* transaction\_response\_code (VARCHAR(50), NULLABLE)

**Table: CompanyAccounts (City Ledger)**

Manages corporate and travel agency accounts for direct billing.

* company\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* company\_name (VARCHAR(255))
* contact\_person (VARCHAR(100), NULLABLE)
* phone (VARCHAR(50), NULLABLE)
* email (VARCHAR(255), NULLABLE)
* address (VARCHAR(500), NULLABLE)
* credit\_limit (DECIMAL(12, 2), NULLABLE)
* payment\_terms (TEXT, NULLABLE) - E.g., "Net 30"
* is\_travel\_agent (BOOLEAN, default FALSE)
* commission\_rate (DECIMAL(5, 2), NULLABLE) - If it's a travel agent
* tax\_id\_number (VARCHAR(100), NULLABLE) - Company's tax identification number

**5. Pricing and Revenue Module**

Management of pricing strategies.

**Table: RatePlans**

Defines different rate plans.

* rate\_plan\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* plan\_name (VARCHAR(100))
* description (TEXT, NULLABLE)
* is\_promotion (BOOLEAN, default FALSE)
* applies\_to\_ota (BOOLEAN, default TRUE)
* applies\_to\_direct\_booking (BOOLEAN, default TRUE)
* start\_validity\_date (DATE, NULLABLE)
* end\_validity\_date (DATE, NULLABLE)
* booking\_window\_start\_days (INT, NULLABLE) - E.g., 30 for early bird
* booking\_window\_end\_days (INT, NULLABLE) - E.g., 7 for last minute
* is\_active (BOOLEAN, default TRUE)

**Table: RoomRates**

Specific prices for each room type under a rate plan for a given date.

* room\_rate\_id (PK, INT)
* room\_type\_id (FK, INT) - Linked to RoomTypes
* rate\_plan\_id (FK, INT) - Linked to RatePlans
* date (DATE) - The specific date for which this rate applies
* nightly\_price (DECIMAL(10, 2))
* adult\_supplement\_price (DECIMAL(10, 2), default 0.00)
* child\_supplement\_price (DECIMAL(10, 2), default 0.00)
* min\_stay (INT, default 1)
* max\_stay (INT, NULLABLE)
* close\_to\_arrival (BOOLEAN, default FALSE)
* close\_to\_departure (BOOLEAN, default FALSE)
* is\_stop\_sell (BOOLEAN, default FALSE) - Prevents new bookings for this room type/rate on this date
* available\_rooms\_for\_rate (INT, NULLABLE) - Specific inventory allocation for this rate

**Table: Discounts**

Defines various discounts.

* discount\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* discount\_name (VARCHAR(100))
* discount\_code (VARCHAR(50), UNIQUE per hotel\_id, NULLABLE) - If coupon-based
* discount\_type (ENUM('Percentage', 'FixedAmount', 'Package', 'EarlyBird', 'LastMinute', 'Loyalty', 'Group', 'PromotionCode', 'StayLongerGetDiscount'))
* value (DECIMAL(5, 2)) - Percentage (e.g., 10.00 for 10%) or Fixed Amount (e.g., 50.00)
* applies\_to (ENUM('RoomRate', 'TotalBill', 'SpecificService', 'SelectedRooms', 'PerNight', 'PerPerson'))
* service\_type\_id (FK, INT, NULLABLE) - Linked to a ServiceTypes table if SpecificService
* start\_validity\_date (DATE)
* end\_validity\_date (DATE)
* min\_nights\_stay (INT, NULLABLE)
* max\_nights\_stay (INT, NULLABLE)
* min\_booking\_value (DECIMAL(10, 2), NULLABLE)
* is\_active (BOOLEAN, default TRUE)
* application\_conditions (TEXT, NULLABLE) - E.g.: "Requires direct booking", "Valid for weekend stays only"

**Table: CompetitorRates**

To track historical and current rates of competitors.

* competitor\_rate\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* competitor\_name (VARCHAR(255))
* room\_type\_description (VARCHAR(255)) - Competitor's room type description
* rate\_date (DATE)
* observed\_rate (DECIMAL(10, 2))
* crawl\_datetime (DATETIME)
* booking\_channel\_observed (ENUM('CompetitorWebsite', 'Booking.com', 'Expedia', 'Agoda', 'OtherOTA', 'Metasearch'))

**6. Housekeeping & Maintenance Module**

Tracking cleanliness and technical issues.

**Table: CleaningStatuses**

History of room cleaning statuses.

* cleaning\_status\_id (PK, INT)
* room\_id (FK, INT) - Linked to Rooms
* change\_datetime (DATETIME)
* old\_status (ENUM('Dirty', 'Cleaned', 'Inspected'))
* new\_status (ENUM('Dirty', 'Cleaned', 'Inspected'))
* user\_id (FK, INT) - Who changed the status
* notes (TEXT, NULLABLE)

**Table: HousekeepingTasks**

Cleaning and other housekeeping tasks.

* task\_id (PK, INT)
* room\_id (FK, INT, NULLABLE) - Linked to Rooms (NULL for common area tasks)
* common\_area\_id (FK, INT, NULLABLE) - Linked to CommonAreas table if exists
* task\_description (TEXT)
* task\_status (ENUM('Pending', 'In Progress', 'Completed', 'Cancelled', 'Deferred', 'OnHold', 'Assigned', 'Rejected'))
* priority (ENUM('Low', 'Medium', 'High', 'Urgent'))
* creation\_datetime (DATETIME)
* due\_datetime (DATETIME, NULLABLE)
* completed\_datetime (DATETIME, NULLABLE)
* assigned\_to\_user\_id (FK, INT, NULLABLE) - Linked to Users (housekeeping staff)
* notes (TEXT, NULLABLE)

**Table: MaintenanceRequests**

Management of maintenance requests.

* request\_id (PK, INT)
* room\_id (FK, INT, NULLABLE) - Linked to Rooms (NULL if for common areas)
* common\_area (VARCHAR(255), NULLABLE) - If not room-specific
* problem\_description (TEXT)
* request\_status (ENUM('Open', 'In Progress', 'Resolved', 'Closed', 'PendingApproval', 'Rejected', 'OnHold', 'Scheduled'))
* priority (ENUM('Low', 'Medium', 'High', 'Urgent'))
* open\_datetime (DATETIME)
* close\_datetime (DATETIME, NULLABLE)
* reporting\_user\_id (FK, INT) - Linked to Users (who reported)
* assigned\_to\_user\_id (FK, INT, NULLABLE) - Linked to Users (maintenance staff)
* resolution\_notes (TEXT, NULLABLE)
* estimated\_cost (DECIMAL(10, 2), NULLABLE)
* actual\_cost (DECIMAL(10, 2), NULLABLE)

**Table: LostAndFoundItems**

Tracking lost and found items.

* item\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* description (TEXT)
* item\_category (ENUM('Electronics', 'Jewelry', 'Clothing', 'Documents', 'Bags', 'Toiletries', 'Keys', 'Other'), NULLABLE)
* found\_datetime (DATETIME)
* found\_location (VARCHAR(255))
* found\_by\_user\_id (FK, INT, NULLABLE) - Who found the item
* status (ENUM('Found', 'Claimed', 'Discarded', 'Stored', 'Returned'))
* claimed\_datetime (DATETIME, NULLABLE)
* claiming\_guest\_id (FK, INT, NULLABLE) - Linked to Guests (if claimed)
* return\_method (ENUM('Mail', 'InPersonPickup', 'CourierService', 'Other'), NULLABLE)
* additional\_notes (TEXT, NULLABLE)
* storage\_location (VARCHAR(255), NULLABLE) - Where the item is stored (e.g., "HR Safe", "Lost & Found Closet")

**7. Accounting and Financial Module**

In-depth financial management.

**Table: GeneralLedger**

The main ledger for accounting transactions.

* entry\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* transaction\_datetime (DATETIME)
* debit\_account\_id (FK, INT) - Linked to ChartOfAccounts
* credit\_account\_id (FK, INT) - Linked to ChartOfAccounts
* amount (DECIMAL(12, 2))
* description (TEXT)
* document\_reference (VARCHAR(100), NULLABLE) - E.g.: Invoice number, Folio ID, PO number
* source\_type (ENUM('Folio', 'SupplierInvoice', 'BankTransfer', 'Payroll', 'ManualAdjustment', 'PurchaseOrder', 'TaxPayment'))
* source\_id\_reference (VARCHAR(50), NULLABLE) - ID from source\_type table (e.g., folio\_id, supplier\_invoice\_id)
* user\_id (FK, INT, NULLABLE) - User who created the ledger entry if manual

**Table: ChartOfAccounts**

The hotel's chart of accounts.

* account\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* account\_number (VARCHAR(20), UNIQUE per hotel\_id)
* account\_name (VARCHAR(255))
* account\_type (ENUM('Asset', 'Liability', 'Equity', 'Revenue', 'Expense', 'ContraAsset', 'ContraLiability', 'ContraEquity', 'ContraRevenue', 'ContraExpense'))
* parent\_account\_id (FK, INT, NULLABLE) - For hierarchical accounts
* is\_active (BOOLEAN)
* description (TEXT, NULLABLE)

**Table: SupplierInvoices**

Invoices due to suppliers.

* supplier\_invoice\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* supplier\_id (FK, INT) - Linked to Suppliers
* invoice\_number (VARCHAR(100), UNIQUE per hotel\_id, supplier\_id)
* invoice\_date (DATE)
* due\_date (DATE)
* total\_amount (DECIMAL(10, 2))
* amount\_paid (DECIMAL(10, 2), default 0.00)
* payment\_status (ENUM('Pending', 'Partial', 'Paid', 'Overdue', 'Disputed', 'Voided'))
* description (TEXT, NULLABLE)
* purchase\_order\_id (FK, INT, NULLABLE) - Linked to PurchaseOrders

**Table: BankAccounts**

Details of hotel's bank accounts for reconciliation.

* bank\_account\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* account\_name (VARCHAR(100))
* bank\_name (VARCHAR(255))
* account\_number (VARCHAR(100))
* iban (VARCHAR(50), NULLABLE)
* swift\_bic (VARCHAR(50), NULLABLE)
* currency (VARCHAR(10))
* is\_active (BOOLEAN)

**Table: BankTransactions**

Records of bank statement transactions for reconciliation.

* bank\_transaction\_id (PK, INT)
* bank\_account\_id (FK, INT) - Linked to BankAccounts
* transaction\_date (DATE)
* transaction\_type (ENUM('Deposit', 'Withdrawal', 'Fee', 'Interest', 'TransferIn', 'TransferOut', 'Chargeback'))
* amount (DECIMAL(12, 2))
* description (TEXT, NULLABLE)
* is\_reconciled (BOOLEAN, default FALSE)
* reconciliation\_datetime (DATETIME, NULLABLE)
* gl\_entry\_id (FK, INT, NULLABLE) - Linked to GeneralLedger if reconciled to a GL entry

**Table: TaxRates**

Defines various tax types and their rates.

* tax\_rate\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* tax\_name (VARCHAR(100)) - E.g., 'VAT', 'City Tax', 'Occupancy Tax'
* rate\_percentage (DECIMAL(5, 2)) - E.g., 10.00 for 10%
* is\_active (BOOLEAN, default TRUE)
* applies\_to\_room\_rate (BOOLEAN, default TRUE)
* applies\_to\_fnb (BOOLEAN, default FALSE)
* applies\_to\_other\_services (BOOLEAN, default FALSE)
* effective\_date (DATE, NULLABLE) - Date from which this rate is valid
* end\_date (DATE, NULLABLE) - Date until which this rate is valid

**8. Human Resources (HR) Module**

Management of hotel staff.

**Table: Employees**

Detailed employee information.

* employee\_id (PK, INT)
* user\_id (FK, INT, NULLABLE) - Linked to Users (if employee is also a system user)
* hotel\_id (FK, INT) - Linked to Hotels
* first\_name (VARCHAR(100))
* last\_name (VARCHAR(100))
* middle\_name (VARCHAR(100), NULLABLE)
* gender (ENUM('Male', 'Female', 'Non-Binary', 'Prefer Not to Say', 'Other'), NULLABLE)
* date\_of\_birth (DATE, NULLABLE)
* national\_id\_number (VARCHAR(100), NULLABLE)
* address (VARCHAR(500), NULLABLE)
* phone\_mobile (VARCHAR(50), NULLABLE)
* phone\_home (VARCHAR(50), NULLABLE)
* email (VARCHAR(255), NULLABLE)
* hire\_date (DATE)
* termination\_date (DATE, NULLABLE)
* position (VARCHAR(100))
* department\_id (FK, INT) - Linked to Departments
* employment\_status (ENUM('Active', 'On Leave', 'Terminated', 'Suspended', 'Resigned', 'Retired'))
* emergency\_contact\_name (VARCHAR(255), NULLABLE)
* emergency\_contact\_phone (VARCHAR(50), NULLABLE)
* salary\_type (ENUM('Hourly', 'Salaried', 'CommissionBased', 'DailyWage'), NULLABLE)
* base\_pay\_rate (DECIMAL(10, 2), NULLABLE)
* bank\_account\_details (TEXT, NULLABLE) - (Sensitive, consider encryption)

**Table: Departments**

Defines departments within the hotel.

* department\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* department\_name (VARCHAR(100), UNIQUE per hotel\_id)
* head\_of\_department\_user\_id (FK, INT, NULLABLE) - Linked to Users

**Table: TimeClockEntries**

Tracking employee work hours.

* time\_clock\_id (PK, INT)
* employee\_id (FK, INT) - Linked to Employees
* clock\_in\_datetime (DATETIME)
* clock\_out\_datetime (DATETIME, NULLABLE)
* break\_start\_datetime (DATETIME, NULLABLE)
* break\_end\_datetime (DATETIME, NULLABLE)
* total\_hours\_worked (DECIMAL(5, 2), NULLABLE)
* is\_validated (BOOLEAN, default FALSE)
* validated\_by\_user\_id (FK, INT, NULLABLE)
* validation\_datetime (DATETIME, NULLABLE)

**Table: EmployeeSchedules**

Daily or weekly shift schedules for employees.

* schedule\_id (PK, INT)
* employee\_id (FK, INT) - Linked to Employees
* schedule\_date (DATE)
* shift\_start\_time (TIME)
* shift\_end\_time (TIME)
* assigned\_task\_category (VARCHAR(255), NULLABLE) - E.g., 'Front Desk Duties', 'Room Cleaning', 'Kitchen Prep'
* notes (TEXT, NULLABLE)
* is\_published (BOOLEAN, default FALSE)
* swap\_request\_status (ENUM('None', 'Requested', 'Approved', 'Rejected'))
* requested\_by\_employee\_id (FK, INT, NULLABLE) - For shift swap requests

**Table: PerformanceReviews**

Records of employee performance reviews.

* review\_id (PK, INT)
* employee\_id (FK, INT) - Linked to Employees
* reviewer\_user\_id (FK, INT) - Linked to Users
* review\_date (DATE)
* review\_period\_start (DATE, NULLABLE)
* review\_period\_end (DATE, NULLABLE)
* overall\_rating (INT, NULLABLE) - E.g., 1-5 scale
* strengths (TEXT, NULLABLE)
* areas\_for\_improvement (TEXT, NULLABLE)
* goals\_for\_next\_period (TEXT, NULLABLE)
* employee\_comments (TEXT, NULLABLE)

**Table: EmployeeTrainings**

Tracks employee training and certifications.

* training\_id (PK, INT)
* employee\_id (FK, INT) - Linked to Employees
* training\_name (VARCHAR(255))
* training\_provider (VARCHAR(255), NULLABLE)
* completion\_date (DATE)
* certification\_valid\_until (DATE, NULLABLE)
* training\_cost (DECIMAL(10, 2), default 0.00)
* notes (TEXT, NULLABLE)

**Table: HRDocuments**

For storing references to employee-related documents (e.g., contracts, warnings).

* hr\_doc\_id (PK, INT)
* employee\_id (FK, INT) - Linked to Employees
* document\_type (ENUM('EmploymentContract', 'WarningLetter', 'Resume', 'Certificate', 'PerformanceReview', 'LeaveRequest', 'Other'), NULLABLE)
* document\_name (VARCHAR(255))
* file\_url (VARCHAR(500)) - URL to the stored document file
* upload\_datetime (DATETIME)
* uploaded\_by\_user\_id (FK, INT) - Who uploaded the document

**9. Inventory and Purchasing Module (Back Office)**

Management of inventories and suppliers.

**Table: InventoryCategories**

Categorization of items in stock.

* category\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* category\_name (VARCHAR(100), UNIQUE per hotel\_id)
* description (TEXT, NULLABLE)

**Table: InventoryItems**

Details of each item in stock.

* item\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* category\_id (FK, INT) - Linked to InventoryCategories
* item\_name (VARCHAR(255))
* unit\_of\_measure (ENUM('unit', 'kg', 'liter', 'box', 'piece', 'gallon', 'pound', 'meter', 'other')) - E.g.: "unit", "kg", "liter", "box"
* min\_stock\_quantity (DECIMAL(10, 2), default 0.00) - Reorder threshold
* average\_purchase\_price (DECIMAL(10, 2), default 0.00)
* description (TEXT, NULLABLE)
* sku (VARCHAR(100), UNIQUE per hotel\_id, NULLABLE) - Stock Keeping Unit

**Table: CurrentStock**

Current quantity of each item in stock.

* stock\_id (PK, INT)
* item\_id (FK, INT) - Linked to InventoryItems
* stock\_location (VARCHAR(100)) - E.g.: "Main Kitchen", "Cellar", "Housekeeping Storage"
* current\_quantity (DECIMAL(10, 2))
* last\_update\_datetime (DATETIME)
* reorder\_triggered (BOOLEAN, default FALSE) - Flag if alert sent for reorder

**Table: Suppliers**

Supplier database.

* supplier\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* supplier\_name (VARCHAR(255))
* contact\_person (VARCHAR(100), NULLABLE)
* phone (VARCHAR(50), NULLABLE)
* email (VARCHAR(255), NULLABLE)
* address (VARCHAR(500), NULLABLE)
* website (VARCHAR(255), NULLABLE)
* payment\_terms (ENUM('Net7', 'Net15', 'Net30', 'Net60', 'UponDelivery', 'Custom'), NULLABLE) - E.g., "Net 30", "Payment on Delivery"
* notes (TEXT, NULLABLE)

**Table: PurchaseOrders**

History of orders placed with suppliers.

* po\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* supplier\_id (FK, INT) - Linked to Suppliers
* order\_datetime (DATETIME)
* estimated\_delivery\_date (DATE, NULLABLE)
* actual\_delivery\_date (DATE, NULLABLE)
* order\_status (ENUM('Pending', 'Ordered', 'PartiallyReceived', 'Received', 'Cancelled', 'Closed', 'Disputed'))
* total\_order\_amount (DECIMAL(12, 2))
* ordering\_user\_id (FK, INT) - Linked to Users
* notes (TEXT, NULLABLE)

**Table: PurchaseOrderLines**

Details of items in each order.

* po\_line\_id (PK, INT)
* po\_id (FK, INT) - Linked to PurchaseOrders
* item\_id (FK, INT) - Linked to InventoryItems
* ordered\_quantity (DECIMAL(10, 2))
* negotiated\_unit\_price (DECIMAL(10, 2))
* received\_quantity (DECIMAL(10, 2), default 0.00)
* last\_receipt\_datetime (DATETIME, NULLABLE)
* notes (TEXT, NULLABLE)

**Table: InventoryAdjustments**

Records changes to inventory outside of normal purchase/usage.

* adjustment\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* item\_id (FK, INT) - Linked to InventoryItems
* adjustment\_type (ENUM('CountAdjustment', 'Wastage', 'Spoilage', 'Theft', 'ReturnToSupplier', 'TransferOut', 'TransferIn', 'Damage', 'Loss'))
* quantity\_adjusted (DECIMAL(10, 2)) - Can be positive or negative
* adjustment\_datetime (DATETIME)
* reason (TEXT, NULLABLE)
* user\_id (FK, INT) - Who performed the adjustment

**Table: DocumentTemplates**

Manages templates for various printable and digital documents.

* template\_id (PK, INT)
* hotel\_id (FK, INT, NULLABLE) - Can be hotel-specific or system-wide (NULL)
* template\_name (VARCHAR(100), UNIQUE per hotel\_id) - E.g., 'Reservation Confirmation', 'Guest Invoice', 'Registration Card'
* template\_type (ENUM('ReservationConfirmation', 'Invoice', 'Receipt', 'RegistrationCard', 'Report', 'GuestLetter', 'InternalMemo', 'CancellationConfirmation', 'PaymentVoucher', 'KeyCardEnvelope', 'WelcomeLetter', 'DepartureLetter', 'Other'))
* template\_content (TEXT) - HTML/Markdown content of the template
* default\_subject (VARCHAR(255), NULLABLE) - Default subject for email templates
* is\_active (BOOLEAN, default TRUE)

**Table: HotelPolicies**

Stores various hotel policies.

* policy\_id (PK, INT)
* hotel\_id (FK, INT) - Linked to Hotels
* policy\_type (ENUM('CancellationPolicy', 'CheckInPolicy', 'CheckOutPolicy', 'SmokingPolicy', 'PetPolicy', 'PaymentPolicy', 'PrivacyPolicy', 'GeneralPolicy', 'ChildPolicy', 'OccupancyPolicy', 'DamagePolicy', 'NoShowPolicy', 'DepositPolicy'))
* policy\_name (VARCHAR(255), UNIQUE per hotel\_id, policy\_type) - E.g., 'Standard Cancellation', 'Non-Refundable Policy'
* policy\_description (TEXT)
* is\_active (BOOLEAN, default TRUE)
* effective\_date (DATE, NULLABLE) - Date from which policy is effective
* applies\_to\_rate\_plan\_id (FK, INT, NULLABLE) - Specific policies linked to certain rate plans (e.g., non-refundable cancellation policy for a non-refundable rate plan)

**Key Relationships:**

* Hotels is the parent table for almost all other tables, enabling a multi-property architecture.
* Users <-> Roles <-> Permissions: For access management.
  + Users also links to Employees (employee\_id) for HR profile details.
* Reservations is linked to Guests, primary\_room\_type\_id (RoomTypes), BookingSources, RatePlans, Discounts, and ReservationGroups.
* **Reservations <-> ReservationRooms <-> Rooms**: This new chain handles multiple rooms per reservation, linking each specific room assignment for granular check-in/out and status tracking per room.
* Folios are linked to Reservations and Guests.
* FolioTransactions are linked to Folios, PaymentMethods, Users, and TaxRates. Crucially, reference\_transaction\_id allows linking a **Refund** transaction to its original **Payment**.
* Rooms are linked to RoomTypes.
* HousekeepingTasks and MaintenanceRequests are linked to Rooms and Users (for assignment).
* Employees are linked to Users (if the employee has a system account) and HR-related tables (Departments, TimeClockEntries, EmployeeSchedules, PerformanceReviews, EmployeeTrainings, HRDocuments).
* PurchaseOrders and PurchaseOrderLines are linked to Suppliers and InventoryItems.
* Accounting modules (GeneralLedger, SupplierInvoices, BankTransactions) interact with ChartOfAccounts, Suppliers, Guests (for AR), and other relevant tables for comprehensive financial tracking.
* DocumentTemplates and HotelPolicies are standalone and linked to Hotels.

This refined database design now accounts for all your requirements, providing a highly detailed and comprehensive structure suitable for a powerful hotel management application.