

## ERD Design Exercises

### 1. Hotel Reservation System

The hotel reservation system needs to manage various aspects of hotel operations, including room bookings, guest information, and staff management. Each hotel will have multiple rooms, each identified by a unique room number. Rooms will have attributes such as room type (single, double, suite), price per night, and current availability status.

Guests will be registered in the system with unique guest IDs, names, contact information, and the dates of their stay. Each guest can make multiple reservations, and each reservation will include a unique reservation ID, check-in date, check-out date, and payment details.

Additionally, the system should track staff members, with attributes such as staff ID, name, role (e.g., receptionist, housekeeper), and contact information. Staff members can assist in managing reservations and checking guests in and out.

### 2. Bookstore Management System

The bookstore management system will manage various aspects of the bookstore's operations, including inventory, customers, and sales. Each book in the inventory will have a unique ISBN, title, author, genre, publication year, and price. The system should also track the number of copies available for each book to manage stock effectively.

Customers will be registered in the system with unique customer IDs, names, contact information, and membership status (if applicable). Each customer can make multiple purchases and may also provide reviews for books they've bought.

Sales transactions will be recorded with unique transaction IDs, including the date of purchase, total amount, and payment method. Each transaction will link to the specific books purchased and the customer making the purchase.

### 3. IT training center

The management system for the IT training center will oversee different facets of the center's operations, focusing on courses, instructors, and students. Each course will be assigned a unique course ID, along with a title, description, duration, and fee structure. Additionally, courses will be classified by skill levels, including categories like beginner, intermediate, and advanced.

Instructors will be registered with unique instructor IDs, names, contact information, and areas of expertise. Each instructor can teach multiple courses, and each course can be taught by multiple instructors.

Students will have unique student IDs, names, contact details, and enrollment dates. Students can enroll in multiple courses, and their progress in each course should be tracked, including attendance and completion status.

The system should also record payment details for course enrollments, including transaction IDs, payment dates, and payment methods. The ERD should clearly illustrate the relationships between the entities: Courses, Instructors, Students, and Payments.

Additionally, the design should allow for features such as feedback collection on courses and instructors, facilitating effective course management and improving the quality of training offered. The overall structure should ensure data integrity and efficient retrieval of information for reporting purposes.