

Project Instructions - Part1

Type	Individual or Group of 2
Worth	15%
Due	Feb 2nd, 2025 @23:59
Penalty	Late submissions lose 10% until Feb 4th, 2025. Nothing is accepted after Feb 4th, 2025 and a grade of 0% will be given.
Submissions	Project-part1-StudentNo.pdf (see instructions below)

Objective:

Design and implement a database system for a specific application, including at least 6 tables and functionalities to perform CRUD (Create, Read, Update, Delete) operations and database definition operations.

Project Requirements:

1. Select a Project Idea

Choose one of the following application ideas or propose your own (with instructor approval) by **Jan 17th, 2025**:

- **Online Retail Store Database**
Design a database for an e-commerce platform that manages products, orders, customers, payments, inventory, and shipping.
- **Library Management System**
Create a system that tracks books, authors, members, due dates, fines, and borrowing history.
- **Hospital Management System**
Design a database to manage patients, doctors, appointments, medical history, prescriptions, and billing.
- **Inventory Management System**
Build a database that tracks products, stock levels, suppliers, orders, and sales for a company or warehouse.
- **Hotel Reservation System**
Develop a system to manage hotel bookings, customer information, rooms, check-ins/outs, and payments.
- **Employee Payroll Management**
Design a database that handles employee records, salary details, tax calculations, benefits, and leave management.

- **Real Estate Property Management**

Create a database to manage properties, listings, agents, clients, contracts, payments, and maintenance requests.

- **Event Management System**

Design a database for organizing events, managing attendees, registrations, venues, schedules, and tickets.

- **Online Learning System**

Build a database to manage courses, students, instructors, quizzes, assignments, and learning materials.

- **Movie Rental System**

Create a system for managing movies, customers, rentals, returns, late fees, and movie reviews.

- **Car Rental System**

Develop a database to manage vehicles, customers, reservations, locations, payment, and reviews.

- **Banking System**

Build a database to manage customers, accounts, transactions, loans, branches, and ATM usage.

2. Database Design

- Tables: Design a database schema with a minimum of 6 tables.
 - Include appropriate primary and foreign keys to establish relationships.
 - Use meaningful column names and data types.
- Constraints: Define constraints (e.g., NOT NULL, UNIQUE, CHECK) as required.
- ERD: Use standard symbols to represent entities, relationships, keys, and cardinalities

3. Database Creation

- Write SQL scripts to create and initialize the database schema, including:
 - Creating tables.
 - Defining relationships (foreign keys).
 - Adding constraints.
- Include a script to populate the database with system data.

4. Functionalities(Questions only)

Implement 20 functionalities for the system that interact with the database. These functionalities must include:

- CRUD Operations: (Create, Read, Update, Delete). Examples:
 - Add new records
 - Update existing records
 - Delete records
 - View/search data
- Other Operations: Implement at least 5 complex operations involving multiple tables, such as:
 - Generating reports
 - Calculating totals

5. Submission

Submit a report including:

- ER Diagram: Show the relationships between tables.
- Database Schema: Describe the structure of each table, columns, and relationships.
- Functionalities: List and explain the implemented functionalities.

Evaluation Criteria

Component	points
Database Design	5
Database Creation	5
Functionalities	5
Total	15