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Week 1: Assignments

1. Define and explain the purpose of a database.
2. Create ERD diagrams for **two** simple business or organizational scenarios.
 - Complete both scenarios below (Library, Clinic).
 - Limit each diagram to a maximum of **three entities** (three boxes).
 - Use the assumptions and business activities to infer **entities, attributes, and relationships**.

Steps:

1. Read the **assumptions and activities** for the scenarios.
2. Identify **2–3 entities** for each scenario based on the activities.
3. List **3 or more attributes** for each entity
4. Identify any **primary or foreign key** for each entity
5. Draw each **ERD** using any **standard notation**
6. Use **appropriate attribute types and notation** as needed (e.g. composite, derived, key etc).
7. Write **2–3 sentences explaining your assumptions and key design choices**.

Deliverables:

- ERDs as images or PDFs (filename: week1-erd-.pdf).
- A short note (3–5 bullets) listing entities, PKs/FKs, and the derived attribute(s).

Expectations:

- Grading focus: correctness in choosing entities, attributes, keys and clarity.

Scenario: Library

Background

We are digitizing a small public library's borrowing process. After speaking with library staff, we agreed on a few simplifying assumptions and captured the core activities to guide the ERD.

Assumptions

- The collection has one copy per item.
- Each borrowing involves exactly one item.
- Any late fee is recorded alongside the borrowing.

Business activities

- Register a new library user.
- Update a library user's contact information.
- Add a new title to the catalog.
- Mark an item as available or checked out.
- Check out an item to a library user.
- Record an item return and any late fee.
- Extend a borrowing period when renewed.
- Temporarily suspend borrowing privileges for unpaid fees.

Scenario: Clinic

Background

We are digitizing appointment scheduling for a small community clinic. After meeting with clinic staff, we agreed on a few simplifying assumptions and captured the core activities to guide the ERD.

Assumptions

- Each appointment links one person and one clinician.
- Each appointment covers a single visit type; visit types are not modeled separately.

- Appointments are scheduled for a specific calendar day and time; reusable time-slot catalogs are out of scope.

Business activities

- Register a new person seeking care.
- Update a person's contact and insurance information.
- Schedule an appointment on a specific day with a clinician.
- Change an existing appointment's time or day.
- Check in a person on arrival.
- Mark an appointment as completed or canceled and give a reason.
- Send reminders for upcoming appointments.

Useful Reading Materials and References:

- [Crow's Foot notation: relationship symbols and how to read diagrams](#)
- [ER diagram symbols and notation guide](#)
- [Types of attributes in ER model](#)