# Sample ER and Relational mappings

1. The leave details (considering different types of leave) of the faculty must be available. The faculty must be able to take any type of leave (casual, medical, sabbatical, maternity) as per the rules and this must be updated in the leave records. Students can also apply for leave (including duty leave), enter leave details and forwarded to class advisor for approval. The leave can also be extended on special request. The application for a type of leave can include the purpose of taking leave like official (attending the conferences/workshops etc) or personal (marriages). This application can be approved on the basis of different criteria including uploading proofs like conference brochure, certificates etc
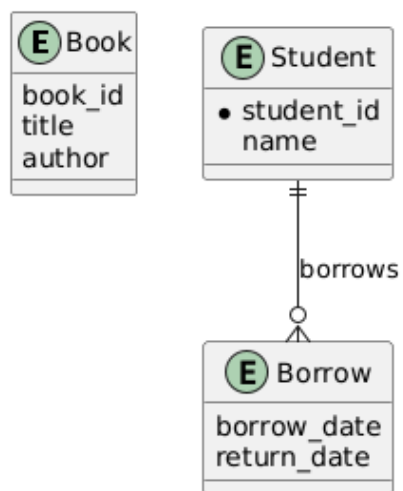
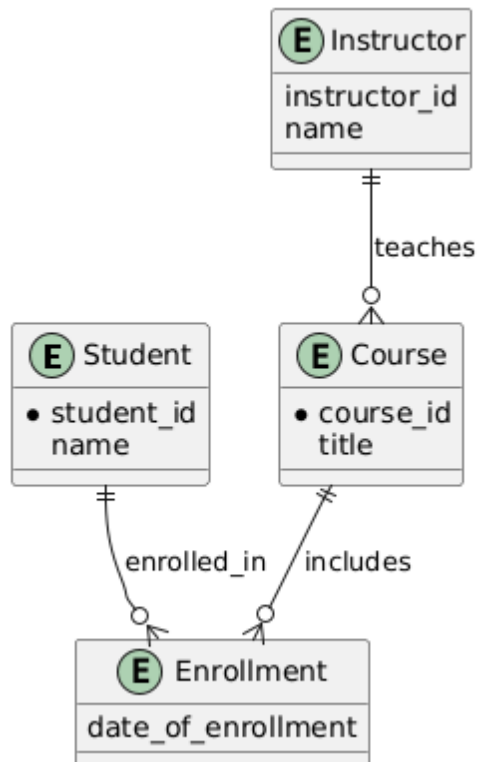ER diagram
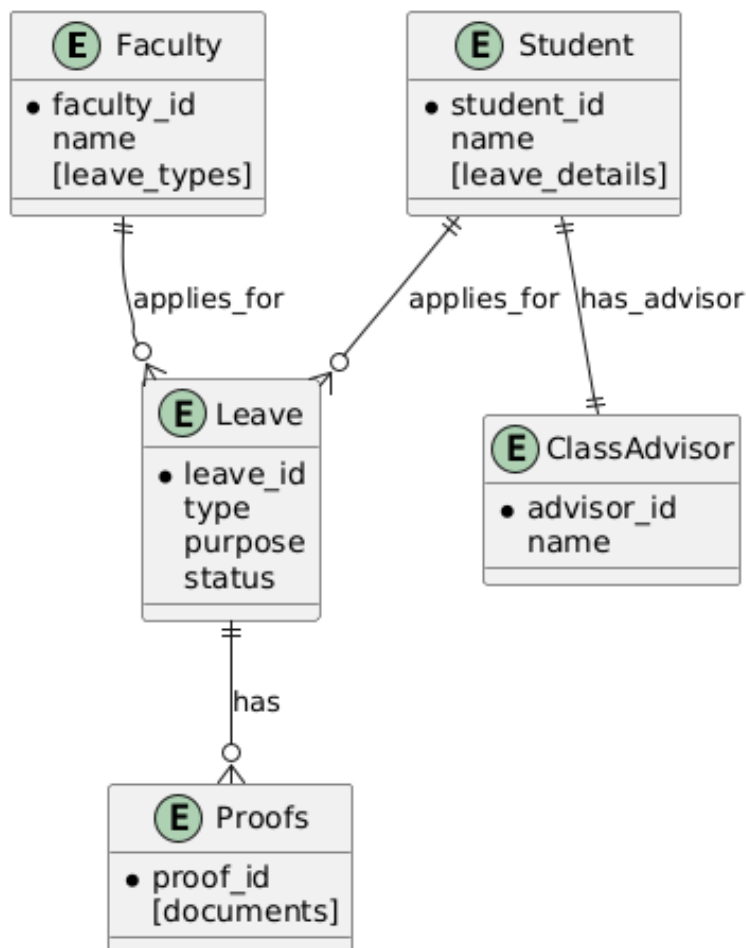
Relational Schema
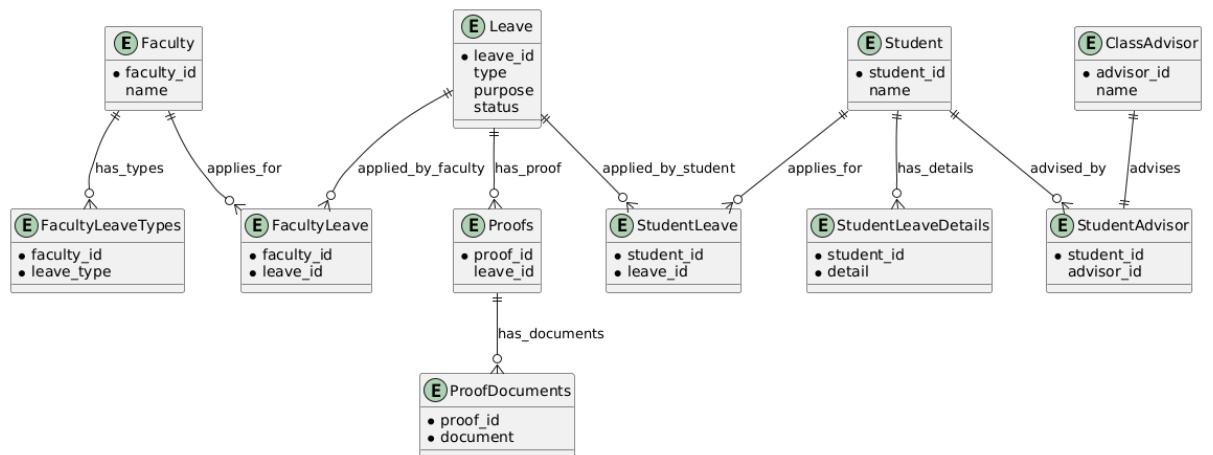
2. A library maintains the details of books and the students who borrow them. Each book has a unique book ID, title, and author. Students are identified by a student ID and have a name and email. When a student borrows a book, the borrow date and return date are recorded.
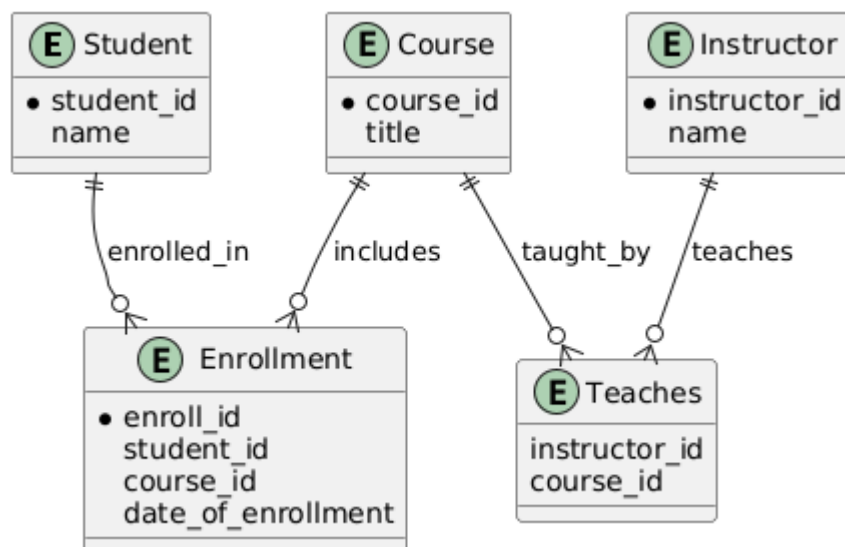
ER diagram

3. A college tracks details of students, courses, and instructors. Each student has a student ID, name, and batch. Each course has a course ID, title, and credits. Instructors are identified by instructor ID and name. Each instructor can teach multiple courses. Each student can enroll in multiple courses, and the date of enrollment is recorded. The instructor assigned to a course is also recorded.
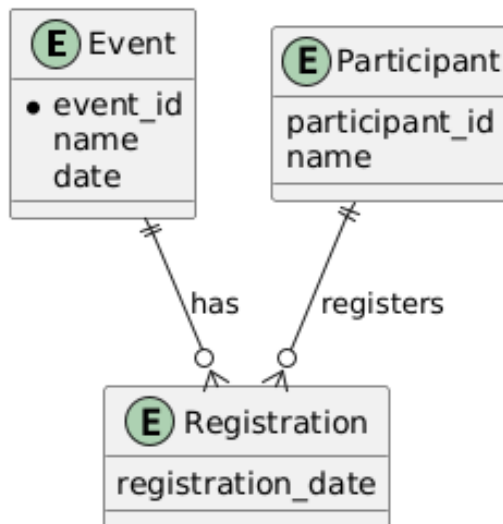
ER diagram

Instructor
instructor_id
name

teaches

Student
• student_id
name

Course
• course_id
title

enrolled_in / includes

Enrollment
date_of_enrollment

Relational Schema

Student
• student_id
name

Course
• course_id
title

Instructor
• instructor_id
name

enrolled_in / includes / taught_by / teaches

Enrollment
• enroll_id
student_id
course_id
date_of_enrollment
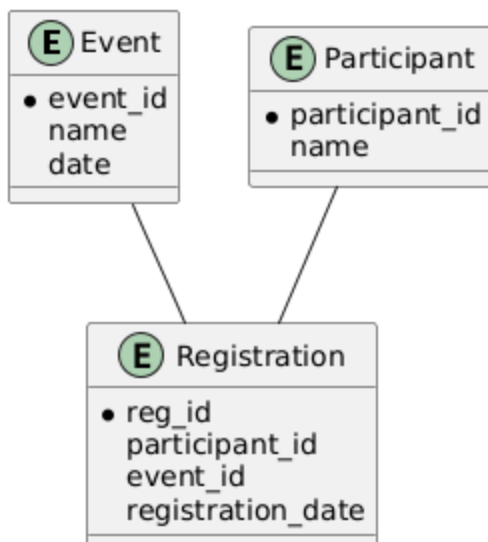
Teaches
instructor_id
course_id

4. An event management system maintains information about events and the participants. Each event has a unique event ID, name, date, and location. Participants have a participant ID, name, and contact number. A participant can register for multiple events, and the registration date is recorded.

ER diagram

Event
- event_id
  name
  date

Participant
participant_id
name

has

registers

Registration
registration_date

Relational Schema

Event
- event_id
  name
  date

Participant
- participant_id
  name

Registration
- reg_id
 participant_id
  event_id
  registration_date

5. A conference system tracks speakers, sessions, venues, organizers, and registrations. Each speaker has an ID, name, and [expertise_areas]. Sessions include title and duration. Venues have name and capacity. Organizers manage sessions. Registrations include attendee name and registration date.
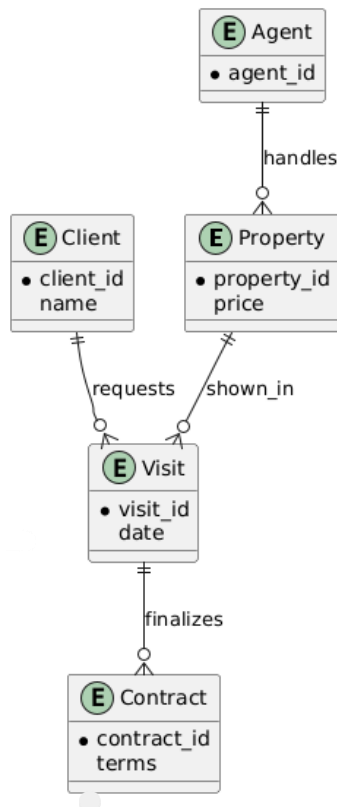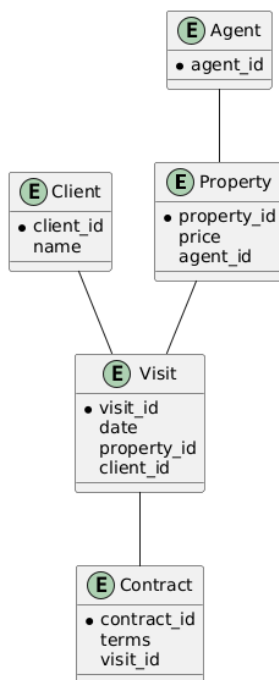
ER diagram
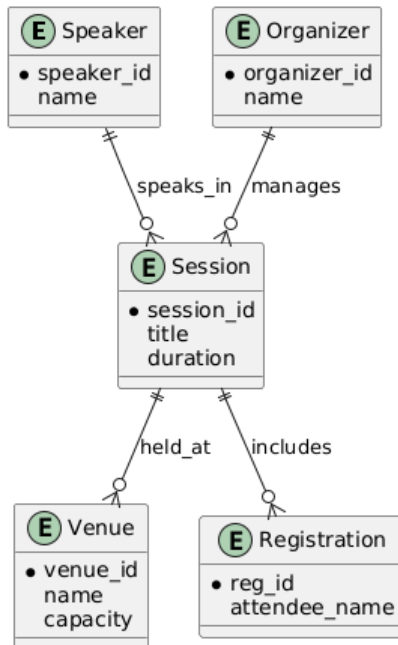
Relational Schema
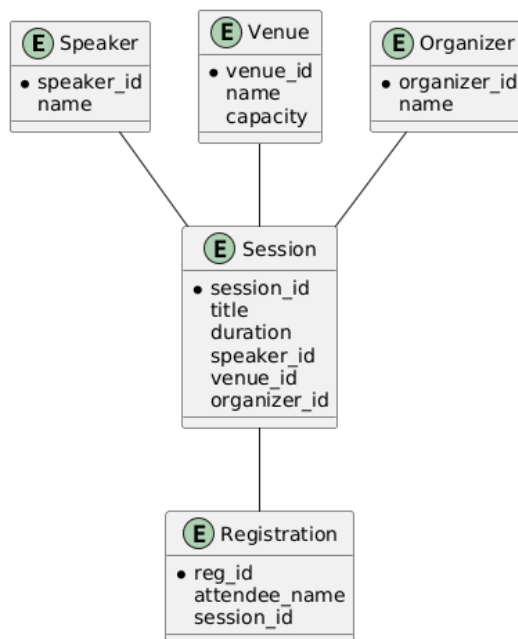
6. A real estate system keeps track of properties, agents, clients, visits, and contracts. Properties have ID, address (street, city), and price. Agents have ID and [languages_spoken]. Clients have ID and name. Visits include date and purpose. Contracts have terms and signing date.
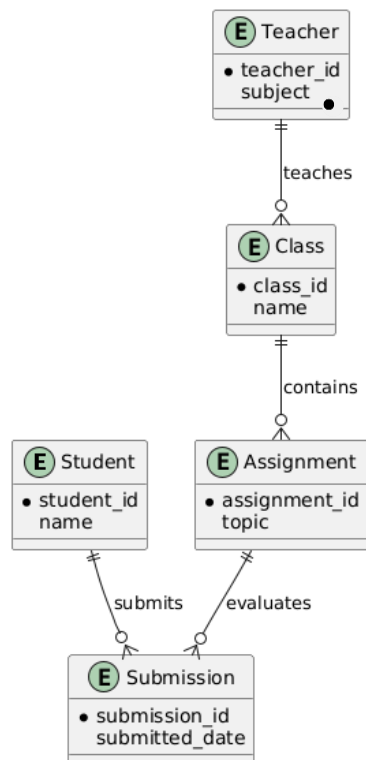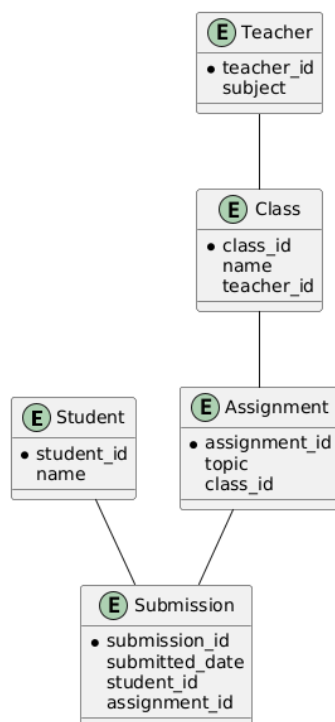
ER diagram

Relational Schema

7. A school tracks students, classes, teachers, assignments, and submissions. Each student has ID, name, and [parent_contacts]. Classes have name and schedule. Teachers have ID and subject. Assignments include due date and topic. Submissions are weak entities tied to students.
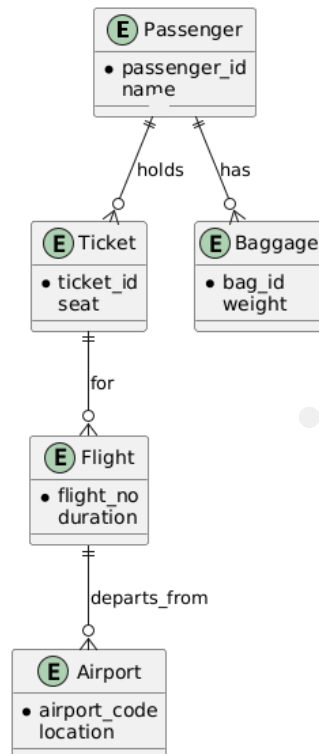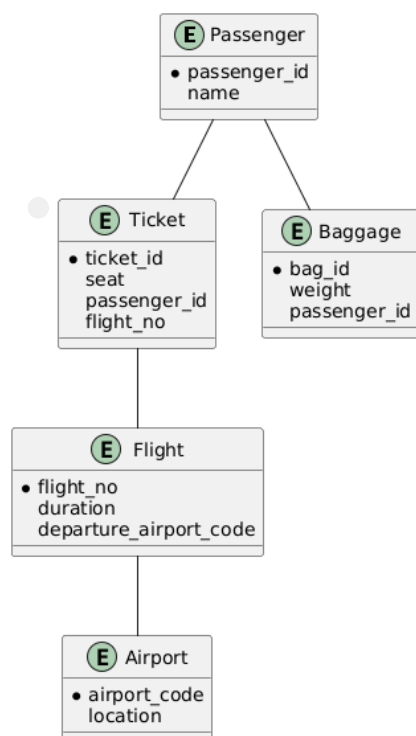ER diagram

Relational Schema

8. An airline maintains data about passengers, flights, tickets, airports, and baggage. Passengers have ID, name, and [contacts]. Flights include flight number and duration. Tickets include seat and class. Airports have code and location. Baggage is weak under passenger.
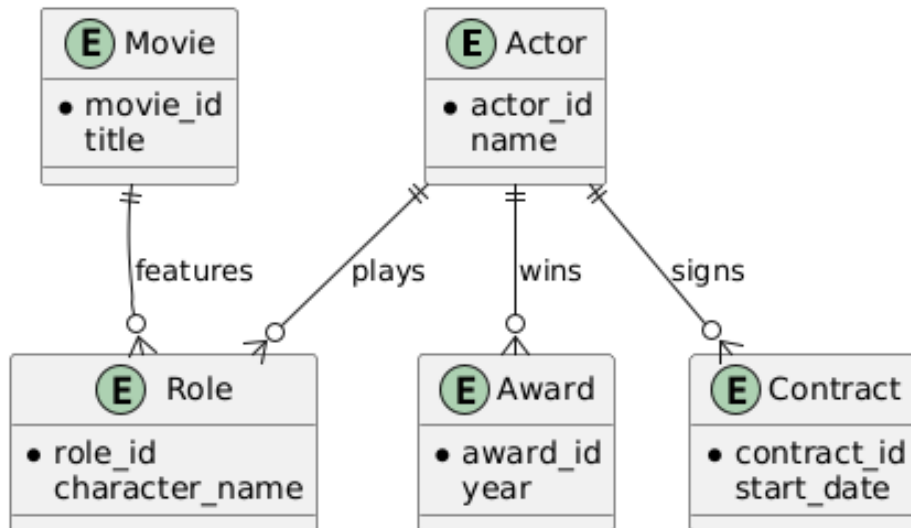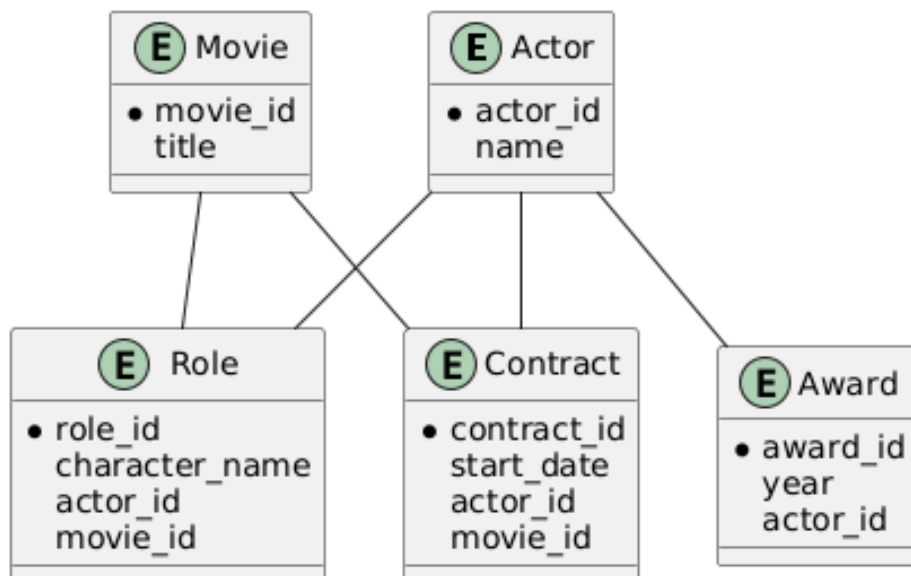
ER diagram

Relational Schema

9. A talent agency manages actors, movies, contracts, roles, and awards. Each actor has ID, name, and [languages_known]. Movies have title and genre. Contracts have start and end dates. Roles include character name. Awards have name and year.

ER diagram

Relational Schema

10. In a Conference Management System, Each Researcher has a unique researcher_id, name, and multiple affiliations (e.g., universities or research institutes). Papers are identified by paper_id, and have a title and an abstract. Each paper can be authored by multiple researchers, and each researcher can author multiple papers. Reviewers have a unique reviewer_id and multiple areas of expertise. A Session is scheduled with a unique session_id, and includes a date and a room. Each session may feature multiple papers, and each paper may be scheduled in multiple sessions (e.g., in different tracks). Feedback is identified by feedback_id, with a comment, and is provided by a reviewer.
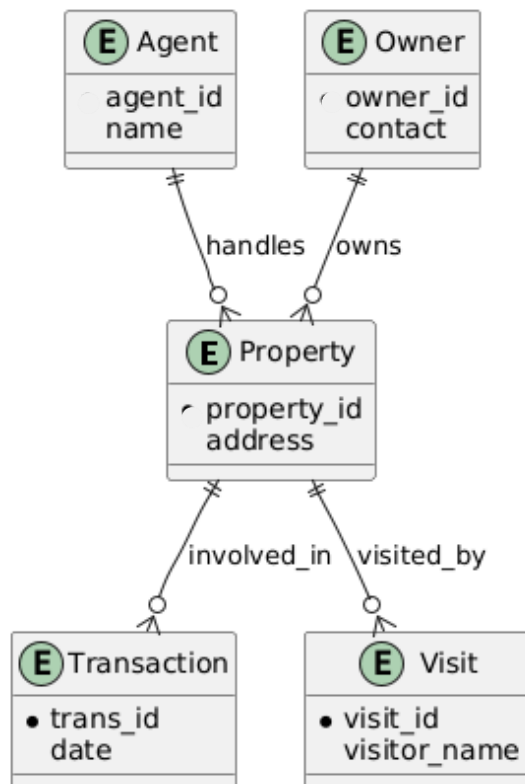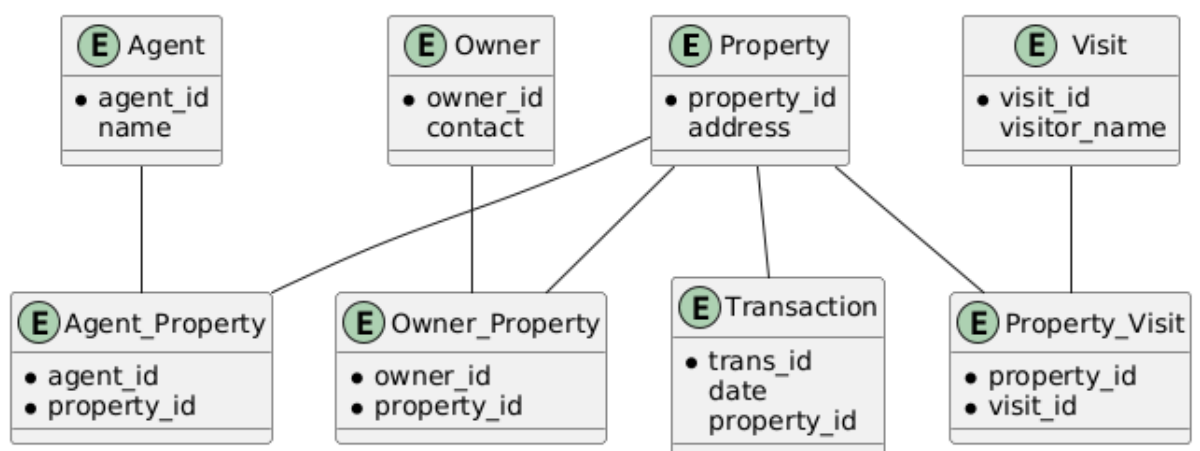
ER diagram
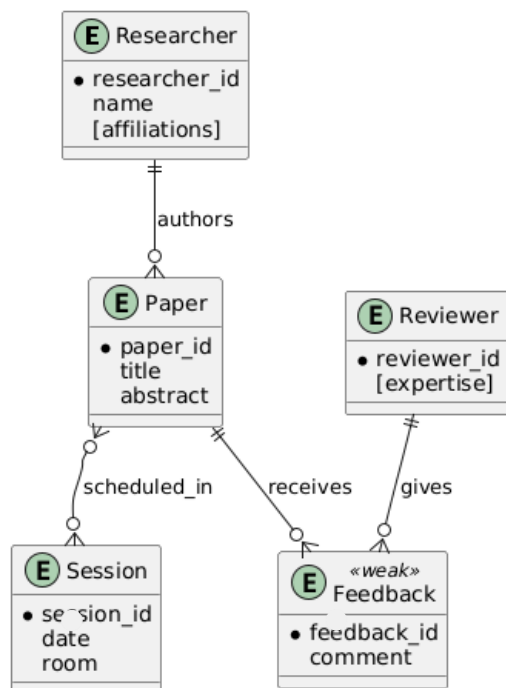
Relational Schema
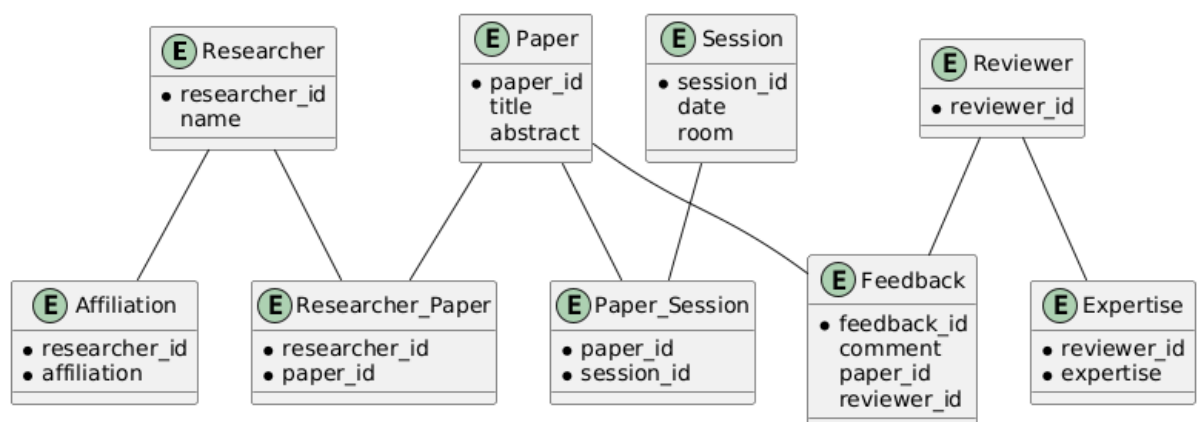
11. A real estate company manages properties, agents, owners, transactions, and visits. Each property has ID, address, and [features]. Agents have ID and name. Owners have ID and contact. Transactions include date and price. Visits are weak under property.
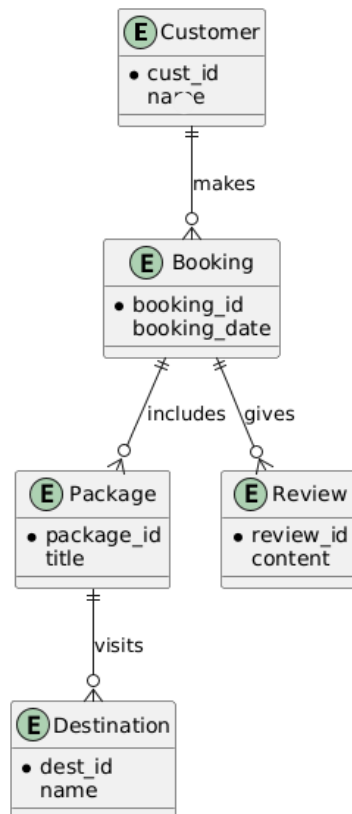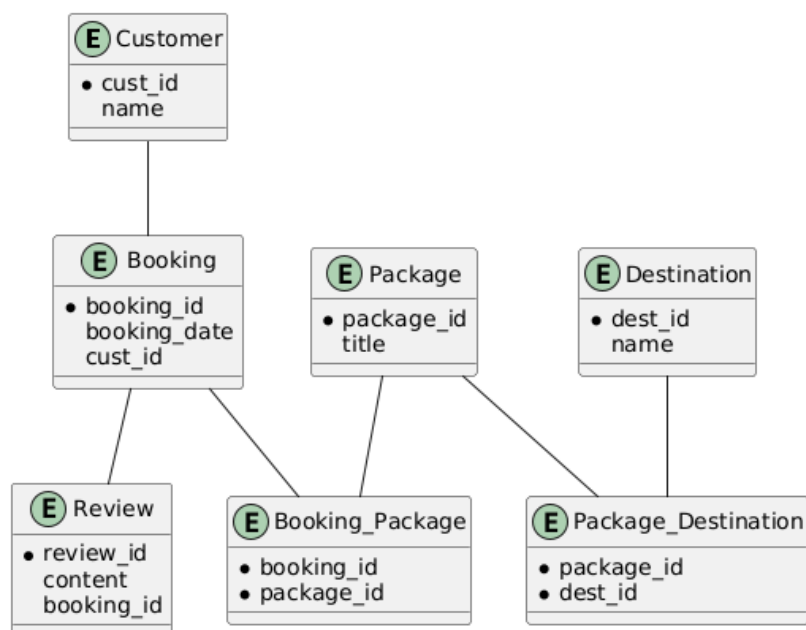
ER diagram

Relational Schema

12. A travel agency records customers, bookings, packages, destinations, and reviews. Customers have ID, name, and contact_info. Bookings have booking date and amount. Packages include title and duration. Destinations have name and highlights. Reviews are weak entities under bookings.
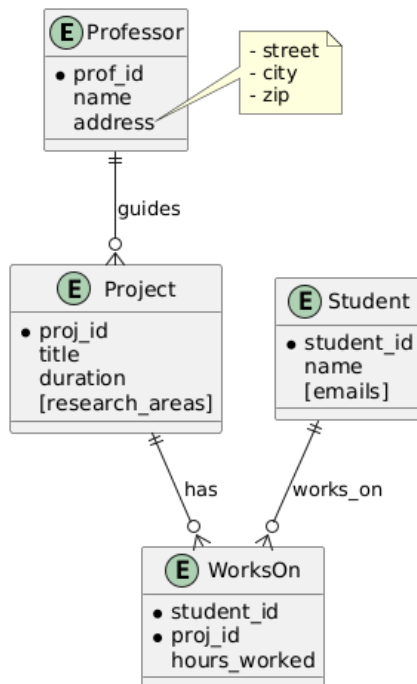
ER diagram

Relational Schema

13. A university department manages research projects and keeps track of professors, projects, and their students involved in those projects. Each professor has a prof_id, name, and a composite attribute: address (with street, city, and zip). A project has a proj_id, title, and duration, and can have multiple areas of focus (→ multivalued attribute research_areas). A professor can guide multiple projects, but each project is guided by one professor. Each student has student_id, name, and multiple emails (→ multivalued attribute). A student can work on multiple projects, and a project can have multiple students. Their contribution to a project is tracked with hours worked.

ER diagram

Relational mapping