

# Databases Laboratory 2: The Entity-Relationship Model

DS4001, Halmstad University

February 5, 2025

## Introduction

The objective of this lab is to practice how to design databases via Entity-Relationship (ER) Models. You will practice skills in

- Translating domain description to ER models;
- Identifying different components in the domain and how they are related to the ER model.

In general, you will practice implementing databases given a domain description.

## Task 1 - The Company-Employee Example

Translate the following domain description to ER-diagram, and implement it with SQL statement:

“Create a database of **companies** of similar organizational structure. The companies have **employees**, and employees are divided into different **departments**, within the company. Each division in the same company should have a unique name. Some employees have a **supervisor**. Some employees are assigned as **managers** with special titles. Managers have access to **company cars**. Please also make an inventory of company cars and **who can have access to it**, and for which **time period** they have the access.”

## Task 2 - The Boardgame Cafe Example

Translate the following domain description to ER-diagram, and implement it with SQL statement:

“The database should store information about the **board game café facility**, registered **customers**, and their **access record** to the facility. Both current and past customers should be included in the database. Each customer has a **name** and an **email address**.

Not every customer is a current member. The database should keep track of which customers are members currently, and the time period of their membership. Each board game café is located in a city, with an address and a name. Two café can have the same name, but only if they are in different cities. You can assume cities have unique names, and café can be established in any city. The database should also keep the access record (including the café visited and when) of each customer.”

### Task 3 - The Room Booking Example

This task is optional. Translate the following domain description to ER-diagram, and implement it with SQL statement:

“In a university, students and staff can book rooms for meetings. Each person has and is identified by their university e-mail address, but their real names are stored as well. Staff can book meetings via their office telephone, and the telephone number of every staff is stored. Rooms are identified by the room number and the name of the building it is located. Building names are unique, but rooms in different buildings can have the same number. Each booking is assigned a unique identifier, with the person who made the booking, the time, and the location. Assume that bookings are deleted from the system automatically after the meeting time has passed. Members of staff are allowed to make multiple room bookings, but each student can only have one room booking in the system at any time. A course code must be provided for bookings made by a student.”

### Grading Criteria

- Your submission (on blackboard) should include a .zip file of **code** (i.e. .sql scripts) and a **report** of what you have done, observed, and learned.