## Databases 1

## TD: E/R

In the following exercises you will be asked to design E/R diagrams. Justify your design choices. Also, identify various limitations of E/R as a modeling language.

**Exercise 1.** Propose an E/R diagram for a database of a website like Reedit that allows users to have conversation with public messages. The conversations are organized as threads: a single root message and replies to root messaged or other replies. Threads are classified into a set of categories; each thread can belong to precisely one category. Naturally, with every message we wish to know the user that has written it and the date of posting.

**Exercise 2.** Propose an E/R diagram for a database for an internet store. We wish to store the information on clients, products, product categories, and orders. Each product belongs to a number of categories and categories create an tree-like hierarchy.

**Exercise 3.** Propose an E/R diagram to model the network of energy distribution. We have energy producers, a number of energy distributors, and finally, energy consumers that can be individuals customers or businesses. Each producer manufactures energy from a single source (coal, nuclear, etc.). Each distributor purchases energy from a number of producers in different quantities. Each consumer buys energy from a single distributor. We also want to store information on customer electric meter readings, taken every month.

**Exercise 4.** Propose an E/R diagram to model a chat messaging system. We have a number of register users that can send text messages to each other. Conversation groups can also be created and messages shared among members of a group. For every message we wish to track who and when has read it, whether the recipient has read it, and if so, on what date.

**Exercise 5.** Propose an E/R diagram for a hotel room reservation system.