

# Database Systems

## Assignment 1

Department of Computer Science  
University of Aarhus

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### Introduction

The purpose of this project is to try out the proces of creating a relational database application, including design in the E/R-model, transfer to relational model, implementation in an actual DBMS, and programming of a user application for the interaction with the database. The project description is intentionally kept loose in form, and it is part of the design phase of the project to decide on the specific details.

The project should be done in groups of two persons. MySQL should be used as DBMS, and Java with JDBC should be used for the programming part.

### The project

The task of the project is to implement an electronic cookbook. The idea is to keep information about recipes and kitchen inventory in a system which can suggest recipes, make list of things to buy, and ensure a basic inventory at all times.

Here is a suggestion for some of the objects which should be modelled in the system:

**Recipe** Possible features: name, list of ingredients, number of persons served, the actions for making the dish, total preparation time, actual working time, type (e.g. hors d'oeuvre, game dish, dessert), picture of dish (if available), comments on recipe.

**Ingredient** Possible features: name, type (vegetable, fruit, etc.), price.

**Menu** Possible features: list of recipes, comments.

**Basic Inventory** Possible features: list of ingredients and their allowed minimum amount.

**Current Inventory** Possible features: list of ingredients and their current amount.

Several basic inventories can be invisioned to exist for selection in different situations (e.g. standard, Christmas time, guests in house), whereas it probably only makes sense to have one current inventory (most houses have only one kitchen).

Suggestion for queries that the system could support includes:

- Print recipe** scaled to a given number of persons.
- Show recipes** containing a given set of ingredients.
- Show recipes** possible to make with the current inventory.
- Show recipes** possible to make within a given time limit (and/or price).
- Show menus** fulfilling constraints as above.
- Suggest random recipe/menu** among those fulfilling constraints as above.
- Write out list of things to buy** to be able to make a given (set of) recipes or a menu, given the current inventory, and a number of persons to serve.
- Write out list of things to buy** to ensure a given basic inventory.

The project groups are free to come up with further useful queries. Besides queries, updates should of course be possible. Inventories could be updated based on the use of a given recipe, or shopping based on a given list produced by the system, besides manual updates for a single ingredient (a barcode scanner would be a great addition to the system to ease the manual updates in everyday situations like drinking milk from the fridge!).

## Input and Output

To keep the number of codelines limited, only a simple, command-line based interface is envisioned for user interaction. For instance, choices by the user can be input by showing a numbered list of alternatives, after which the user inputs the desired number. Project groups are free to make a more elaborate GUI if they wish, but should only do so for the fun of it.

## Formalities

A printed report of five to ten pages should be handed in. It should describe the structure of the final solution, the design choices made during development, and the reasoning behind these choices. To prepare for the writing of the report, it is a very good idea to keep a log of the discussions had within the group and of the work done.

Actual code should not be handed in, but should be made publicly accessible on your departmental account. For the final version, you should have a copy of your database on the department's MySQL server (host `amigo`), and your code should work on this copy (i.e. it should be possible for the lecturer to try out your system).

The deadline for the project is

*Tuesday, April 8*