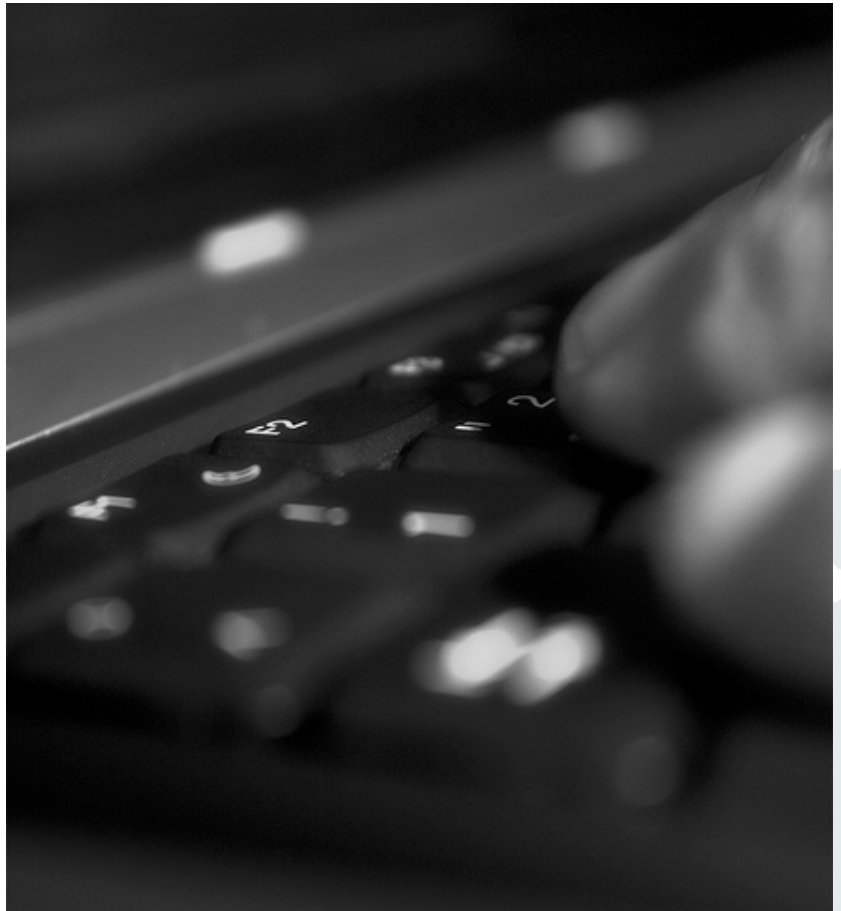


Mentorium 6  
Business Informatics 2 (PWIN)

Databases & Data-oriented  
Modelling

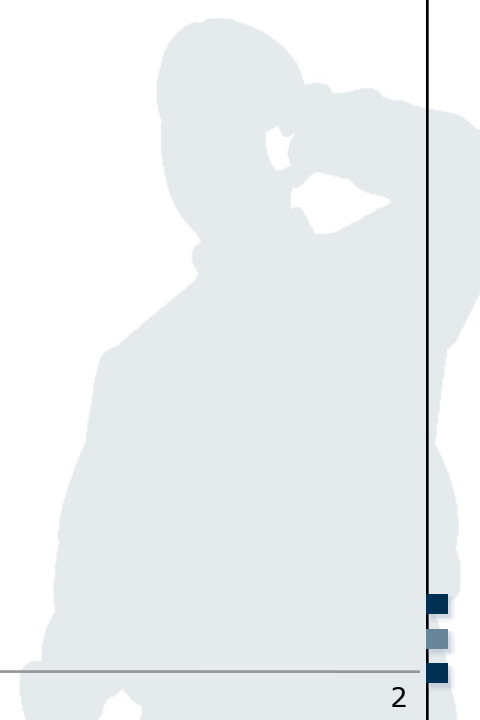
SQL

Frédéric Tronnier, M.Sc.  
[www.m-chair.de](http://www.m-chair.de)

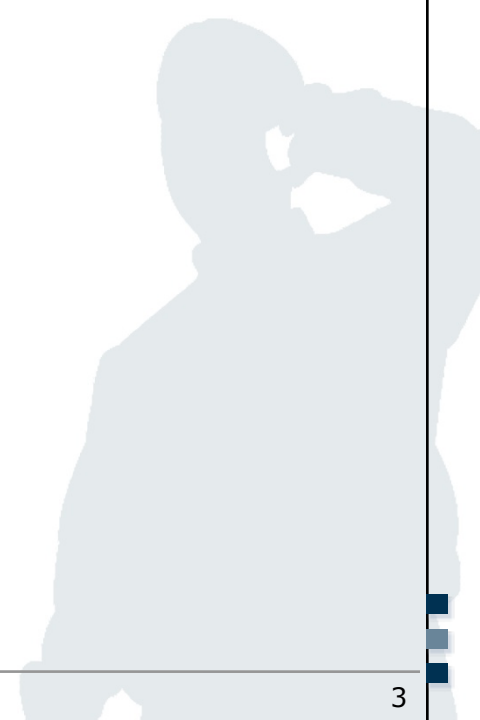


Jenser (Flickr.com)

- Entity Relationship Model
- SQL



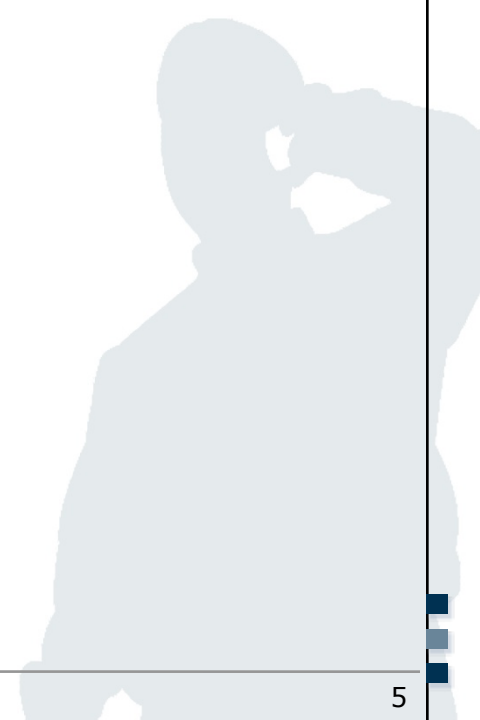
# Exercise 1: Entity Relationship Model



## Exercise 1: ER Model

- Create an ER model which represents the following information. Specify the cardinalities of the relationships using both the n:m notation and the interval notation.
  - A skill can be needed by many projects but might not be needed by any project. A project can need one or more skills.
  - An employee can manage many projects. There are some employees who don't manage any projects. A project must be managed by an employee.
  - An employee may have many skills but might not have any. A skill can be possessed by many employees. There are some skills that no employees possess.
- Add attributes to entities with the help of the following information:
  - A project has a unique acronym and a budget.
  - An employee has an ID and a name.
  - A skill is described by its designation and level.

## Exercise 2: Entity Relationship Model



### Create an ER model of the InstaMatch® system.

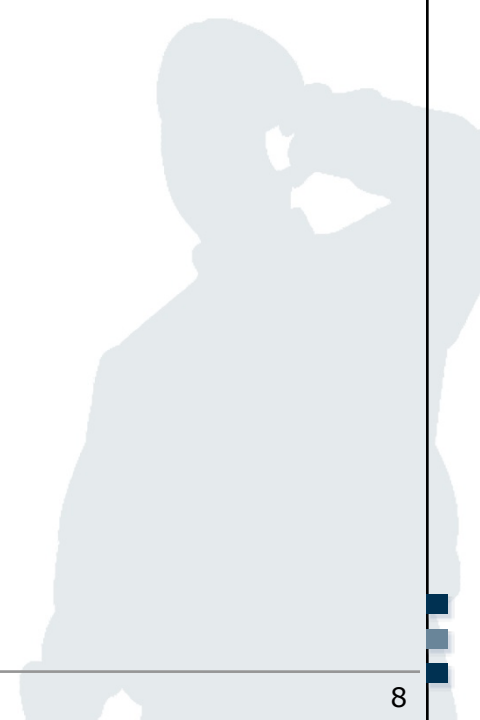
- Identify and mark the primary key for each entity and avoid as far as possible artificial keys (e.g. ID).
- Define the cardinalities using the n:m notation.
- Make explicitly use of weak entities.
- Find adequate attributes.

### Use the following entities for your model:

- User
- Date
- User profile
- Meeting Point

- Entity Relationship Model
- SQL

## Exercise 3: SQL





## Exercise 3: SQL

- Please use the databases and environment provided by [w3schools.com](https://www.w3schools.com) called [Tryit Editor](#)
- The following exercises can be done online and are based on the w3schools, databases

**SQL Statement:**

```
SELECT * FROM Customers;
```

Edit the SQL Statement, and click "Run SQL" to see the result.

Run SQL »

**Result:**

Number of Records: 91

CustomerID	CustomerName	ContactName	Address	City	PostalCode	Country
1	Alfreds Futterkiste	María Anders	Obere Str. 57	Berlin	12209	Germany
2	Ana Trujillo Emparedados y helados	Ana Trujillo	Avda. de la Constitución 2222	México D.F.	05021	Mexico
3	Antonio Moreno Taquería	Antonio Moreno	Mataderos 2312	México D.F.	05023	Mexico
4	Around the Horn	Thomas Hardy	120 Hanover Sq.	London	WA1 1DP	UK
5	Berglunds snabbköp	Christina Berglund	Berguvsvägen 8	Luleå	S-958 22	Sweden
6	Blauer See Delikatessen	Hanna Moos	Forsterstr. 57	Mannheim	68306	Germany
7	Blondel père et fils	Frédérique	24, place Kléber	Strasbourg	67000	France

**Your Database:**

Tablenames	Records
Customers	91
Categories	8
Employees	10
OrderDetails	518
Orders	196
Products	77
Shippers	3
Suppliers	29

Link: [https://www.w3schools.com/sql/trysql.asp?filename=trysql\\_op\\_in](https://www.w3schools.com/sql/trysql.asp?filename=trysql_op_in)

- a) How many customers are stored in the table 'Customers'?
- b) What is the average price over all Products?
- c) Display the Name and Price of the Products from most expensive to least expensive.
- d) How many orders were made per day?
- e) How many Customers are from Paris?
- f) Display the names of all Customers from Germany
- g) Display the Name and Address of all customers, sorted descending
- h) How many Customers are from Berlin?
- i) How many Customers are not from Berlin?
- j) How many Products cost more than 40 and have a CategoryID of less than 3?

- k) How many OrderDetailIDs had a Quantity of more than 5, but less than 10
- l) Display 'CategoryName', 'ProductName' and the Price of all Products
- m) Display all CustomerNames and OrderDates that have been made from Mexico
- n) Insert a data record into the table "Orders" from the customer with CustomerID = 1 and display it.
- o) Update the City of the customer with the CustomerID '1' to Frankfurt.
- p) Delete the entry inserted in Exercise n).
- q) Delete the whole table "Orders".
- r) Delete the whole database.