Databases and information management

Lab 0

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The exercises below do not require any information from the first lecture. It does not rely on any database knowledge, yet it assumes that you know the basics of file operations and data structures in a selected programming language. The main purpose of the list is to learn how to extract the required information and, during the course, show how proper tools can help us to process the information more efficiently. Note: Due to the code overhead dynamically-typed or script languages may be preferred (try python or bash), yet for the simplicity of JSON/XML operations you may prefer languages like C++, Java or Rust. Note that some of the solutions may be useful later on, during NoSQL tasks.

1. Using the selected programming language read the data from one of the files csv or json to perform the tasks below:

   (a) Count all the records in the database.

   (b) Print out all the unique CustomerIDs.

   (c) For each customer count the number of his orders.

   (d) Find the order with the shortest sending time.

   (e) Find the order with the highest total value.

   (f) Select all the orders containing any variation of Filo.

   (g) Order the companies with respect to their joint value of orders.

   (h) Select those companies that are represented by their owner.

   (i) Find the addresses of all the suppliers who listed a Jose as their contact.

   (j) For each country find the number of unique companies located in it.

   (k) Print out all the customers that did not order any product from category number 3.

   (l) Find the product that is present in the most orders.

(m) Find an employee that was hired at the youngest age.

2. Install a database engine (MariaDB will be used in the examples, yet any relational database is suitable) and download `Northwind` database from here. Try to import the data to the DBMS.