Module: Information Systems, 2nd Year Bachelor's Degree in computer science

Tutorial N 5: FD and CDM

Exercise 1

For the structuring of a company's information system, information has been gathered on the following subjects:

> - CLIENT: Client number, name

> - COMPANY: Company name, activity, capital

> - DEPOT: Depot name, address, area

The INVOICE has the following structure:

Based on the business rules below, determine the set of functional dependencies:

- A company has multiple depots.

- A depot can store multiple or no products.

- A product can be stored in multiple depots.

Exercise 2

A department is identified by a (unique) number and a name. It is headed by a director, identified by their name, and by a number of teachers who work there. A teacher is identified by their last name, first name, and rank. They can teach several modules, but only within their department. A module is characterized by a unique code and a description. It can be taught by several teachers. A research team is identified by a number and a research theme. Each teacher must belong to a research team. A

project is identified by a number and a description. Each team can be responsible for at least one research project.

1. Extract the business rules
2. Build the Data Dictionary (DD)
3. Provide the Graph of Functional Dependencies (GFD)
4. Deduce the Conceptual Data Model (CDM)

Exercise 3

We are interested in the inventory management system of a company with several stores. In the company's stores, products are managed and identified by their reference, description, unit sale price, and stock quantity. A product can be in stock in several stores, where each store is identified by an internal code and an address. In case of stock shortages, a numbered and dated order is placed with suppliers for restocking purposes. A product can be sold by one or more suppliers. A supplier is characterized by a number, a name, and an address.

Questions:
1. Extract the business rules
2. Build the Data Dictionary (DD)
3. Provide the Graph of Functional Dependencies (GFD)
4. Deduce the Conceptual Data Model (CDM)