Exercise: Database design, 20p

Draw Physical model from the following problems: Draw the models using MySQL Workbench and return .mwb file from each task to moodle. Models should be in 3NF

1. Look at the following data about cancers at https://www.kaggle.com/datasets/preetigupta004/cancer-issue. The data is not normalized in dataset because all data is wanted to be shown in the same set. However if you would like the data to be used in transactional applications then it is better to be normalized. Draw a physical schema model for mysql database based on dataset. Model should be in 3NF. You must also define appropriate column types for each column.

   4p

2. Design physical model for mysql database and the normalization to 3NF also to following dataset: https://www.kaggle.com/datasets/iamsouravbanerjee/world-population-dataset.

   4p

3. You need to design physical database tables for tracking food orders in your whole sale. Each order is done by a retailer. Each order includes one or more products. You should also record how many kilograms the product is ordered and the paid price (per kg). From each product you should store information about its name, where it has been produced and what by which price you have bought the product (per kg).

   For example one order could be that K-supermarket (retailer) has ordered 97kg Edam cheese by 5€ per kg and 55kg pork with price of 4€ per kg

   4p

4. You work for a startup IT company that offers web development for outside companies. You should make a database schema which keeps record who has worked for which project and for how many hours.

   In any given day, you may be working on more than one project. Projects are typically group projects so others may be working on the same project on the same day that you are.

   To keep track of what projects you and your co-workers are working on every day, each employee must create entries into the time system every night before they leave for that day. That time entry will list one project and the number of hours the employee worked on that project that day. There will be entry every day for each project that each person worked on that day.

You can keep things simple and do not need to save any extra information what is not relevant for this exercise but you can decide the columns and their names by yourself. They are not all clearly mentioned in this exercise. For example it is not exactly told what information should be recorded about an employee but you can just design the table with some most relevant columns.

4p

5. The library owns (physical) books that are stored on shelves and checked out by customers. From each customer we must record following information: name, social security number, address and phone number.

   Each of these books is represented by a catalog entry. There is only one catalog entry for each book, but there can be many physical copies of that book on the shelves. Catalog entry has all necessary information about the book: Books name, Books Author and ISBN.

   Each physical book contains information about the publisher (only one publisher is possible for each book), information about the cover and physical location (shelf_number). Cover can have either value “soft” or “hard”. Each publisher should contain information about publisher’s name, phone number and address.

   4p