Databases and information management
Lab 3

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Part I
Normalization

1. Identify all the functional relations in the warehouse database.
2. Assuming the functional relations from the previous task find all the candidate keys of each table of the database.
3. Determine the highest normal form that is not violated by each of the tables. Normalize the database up to 3NF.
4. Create a pdf report from all the above steps and send it to the lecturer at least 24h before the deadline.

Part II
MongoDB

1. Install MongoDB or connect to a web Mongo interface. Create `MongoWarehouse` database with 3 collections: `people`, `orders`, `stuff`.
2. Export data from `warehouse` database (list 2) to appropriate file format (e.g., JSON) and import the data into `MongoWarehouse` database.
3. Add at least 15 new products into `stuff`. Each new item should have its price and information about its manufacturer (it should be embedded document including information about the name of the manufacturer and their location – cities, state or federal district and country). At least 3 of the new products should have been included in some orders – modify the existing ones or add new.

4. Add at least 10 `orders` that have their products combined in a list instead of multiple entries. Please ensure that the quantity cannot be negative. Deal with the problems of calculating the total value of the order.

5. Use loops so that you may add new `people`. Add 15 entries with dates containing full month names, e.g., *November 11, 2022*. For at least 5 of them compress the address into a single field (an embedded document).

6. Show all collections from `MongoWarehouse`.

7. List all orders made between *December 24* and *December 27*.

8. For each of the months, please find the most popular product (the one that was ordered the most times). Please remember about two different date formats and include the products in kept the lists.

9. For each order that is `overdue`, add a discount (reduce the value of the order by 15%).

10. Delete from the database all the orders to *Russia* that have not been shipped yet.

11. Find the most expensive order.

12. Find a month and year in which there were the most overdue shipments.

13. Find an employee that had the least orders between *July* and *September*. Remember about two different formats.

14. Find the order with the most unique items ordered. Please remember about two different products' format.

15. For each customer add a field with the number of orders made.