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# HW 3 – Practical Databases

Question 1 – Database intro [10 points]:

Please provide your own database scenario.

Make sure your database is meet with the following properties:

* At least 6 different entities.
* One entity needs to follow a one kind of generalization (covering/overlapping).
* At least 4 different relationships (connection between the entities):
  + one of them is a trinary connection.
  + one is a unary connection.
* For each entity provide at least 3 attributes. Think which one will be a primary key and why.

In addition, provide a short explanation why you choose this database and a short description for

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*Answer:*

The scenario we will refer to is that of a particularly innovative flower shop that decided to use the services of drones. The store delivers flowers that are in its inventory to the entire city. In addition, over time the store decided to use the "dead time" of the drones it bought to make food deliveries. Unlike the flower deliveries that are in the store, in food deliveries the drone must collect the food from a business that has agreed to process it with the store. We assume that the food business allways can supply the delivery. The store has a relatively small number of drones, so it is important to perform their tasks efficiently and quickly, and for the benefit of this purpose, the store owner decided to test two different navigation algorithms. To attract new customers, the owner of the store decided to give a benefit in which everyone who received a bouquet of flowers, can buy a discounted gift card to purchase food at one of the food buisnesses that works with the flower shop.

Entities:

1. Drone (DroneID, Manufacturer, Model, PayloadCapacity, AlgoUses)
2. Navigation Algorithm (AlgoName, License, NeedInternet, BasedGPS)
3. Costumer (ID, FullName, Gender, Address, X, Y, DateOfBirth, PartnerID, GiftCardEligible)
4. Product (CatalogNumber, Type, Price, weight, height)

(The *type* attribute determine rather it is subclass *Food* or *Flowers* )

* 1. Food (CatalogNumber, Calories , Vegan, Cosher)
  2. Flowers (CatalogNumber, Name, Color, LightNeed, WaterNeed)

1. Order (CostumerID, TimeDate, CatalogNumber, DroneID, Quantity, TotalPrice,)
2. Flowers inventory (CatalogNumber, Room, Shelf, Quantity)
3. Food Business (BuisnessName, Address, X, Y, Phone)

Relations:

1. One costumer is **married** to another costumer - Unary
2. Flowers **available** at flowers inventory - Binary
3. Food is **sold in** the food business - Binary
4. Drone **operated by** navigation algorithms - Binary
5. Drone made a **delivery** of product to a costumer - Trinary

Question 2 – ERD [30 points]:

Provide an entity relation diagram (ERD) for the created database from question 1.

Please provide a short explanation of the diagram and why you choose to model each part.

Question 3 – Code the database [50 points]:

Create the database using sqllite3 (using the notebook from lecture 9). Give seven meaningful insights from your created dataset. You need to use at least once with joins, aggregation operations, summarize functions, and the like operator for your insights.

You should note the following:

* You need to determine the database scheme. The relations number should be greater than the number of entities.
* You need data to insert it to the relations (please view Creativity section).

Creativity [10 points]:

Since this is your decision of the database data, a more creative dataset will get more points. A low creative dataset like random numbers will get no points on creativity section.

Bonus [10 points]:

Make two (each 5 point) more operations on the created dataset that aren’t showed at class (each need to be of a different kind). Please state whether you do this section. (More operations won’t resolve in more points…)

Make sure you are submitting two files; one is a pdf file that covers question 1 and 2. This file should also contain an executive summary (at most two pages long) of what you did in the code (question 3) and what was creative in your dataset and whether you choose to do the bonus section or not.

**In addition, provide the notebook file (ipynb).**