

## CPIS 240: Database Management Systems

### Assignment 1 – deadline Thursday 13<sup>th</sup> of April 2023 (at 5:00pm)

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You are hired to design a database for a startup company that sells gifts. The information stored in the database will be used for analytical and operational purposes. The database will store data about the customers, products, orders, and recipients.

The products in this store can be chocolate or flowers or both (there is no other option). Each product has a unique identifier (product\_id), name, description, and price. Chocolate has also production and expiration dates whereas flowers have a quantity and color.

A customer may place many orders while an order must belong to only one customer. A customer has an id, name (first and last name), email, and a phone number.

Each order has an order\_id, date, and total\_price. Each order must contain at least one item. Each item must belong to one order. Items will be numbered sequentially starting from 1 for each order, quantity, item\_price, in addition to a possibility to add a message. Each item should reference a product. Each order must be delivered to one recipient. A recipient has an id, multiple phone numbers, and address (city, street, unit\_no).

Given the above description:

1. Draw an ERD for the database, identifying the following:
  - a. All the entities, attributes, and relationships
  - b. Identify all primary keys and discriminator in weak entity, if any.
  - c. Participation and cardinality constraints. (**Write an explanation for two constraints your choices - i.e., identify the exact words the guided your decision**)
  - d. Write the type of the participation and completeness **constraints for the specialization relationship** (if there is any).
2. Write a schema for: a) Recipients, b) Orders, c) Chocolate.
3. Would you write a separate schema for 'place' relationship? Why? What would you do? re-write any schema that will change.

Please use a tool to draw the ERD. There are many online tools. Former students suggested:  
<https://app.diagrams.net/>

- This assignment worth 10% of your overall grade.

#### General Rubric

Item	Points
Entities, attributes, and relationships.	2.5
Primary keys and discriminator	1
Participation and cardinality constraints (on ER)	2
Explanation of two constraint sentences	1
Specialization/Generalization (constraints)	0.5
Schema for two entities	2
Schema for two relationships (with explanation)	1
Each wrong choice in ER (-0.2)	
<b>Total</b>	<b>10</b>