CS631, Sec #002
Prof. Dimitri Theodoratos
Group Project Phase 1

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1. **Outline the Goals of this Project Phase:**

The first goal of this phase of the project is to become thoroughly acquainted with the specifications for the database we will be designing. The second goal is to conceptualize exactly how we will plan to build the database to include all the necessary information from the specifications. The third and final goal is to resolve ambiguities in the specification and think through the constraints we will need to impose on the database in the future.

2. **Analysis/Diagram:**

Attached at the end.

3. **Assumptions:**

We assume it's possible for a customer's home address not to be a shipping address for that customer, so we made HomeAddress an attribute for the CUSTOMER entity.

We assume every customer must have at least one shipping address.

We interpret, "A customer can have one or many credit cards," to mean that a customer must have at least one credit card in the system. We assume that "the type of credit card" refers to things like Visa/American Express as opposed to Credit/Debit, and thus does not affect the other attributes of the credit card and makes the number unique and able to be used as a primary key.

We assume that when the specification says, "Each product has a unique product type," this does not mean that every single product's type is different from every other product's type, but that a product cannot be of two different types simultaneously (e.g. Desktop AND Laptop). This is why we made all subclasses of PRODUCT distinct instead of overlapping.

We assume that a credit line extended to Silver/Gold/Platinum members can be treated as an additional credit card (with all associated attributes).

4. **Additional Constraints/Additional Keys:**

A customer may not checkout without entries in the HAS_IN_BASKET relationship type, which implies an empty shopping basket.

OfferPrice (as an attribute of the PRODUCT entity) will be null if the product is not on offer.

We do not allow shipping addresses or customers to be deleted from the database.

No additional keys exist on entity types in the diagram besides those that are shown.

5. **Difficulties:**

We had difficulty deciding how to implement a customer's shopping basket, and we ended up using a relationship type between Customer and Product because we realized we didn't need an entirely new entity type. We also had a bit of an issue figuring out how to deal with credit cards that were only used for one specific sale. Originally, we planned to have a credit card number as an attribute to TRANSACTION, but we eventually decided to create a relationship type between CREDIT_CARD and TRANSACTION. The program we used for making the ER diagram was a bit annoying to work with as well.