COMP 3311: Database Management Systems

Tutorial 1 Entity-Relationship (E-R) Model and Database Design

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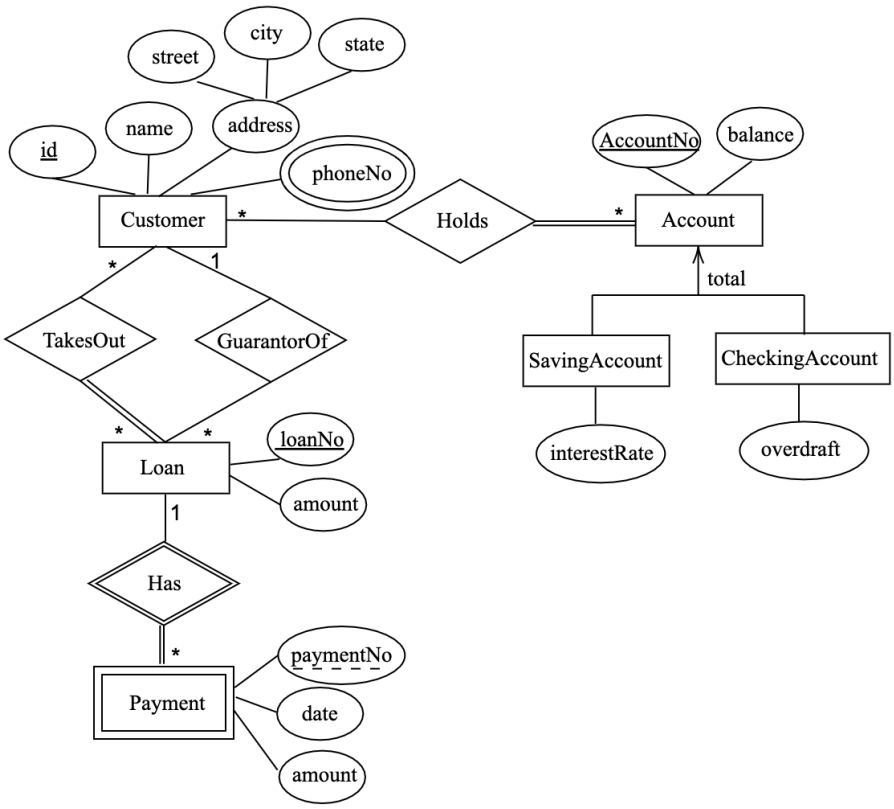
Submission: Upload this exercise worksheet by 11.59pm Friday (18 Feb) (Only one student needs to upload)

Exercise 1: We want to record account and loan information for a bank's customers.

- For each customer we store an id, name, address, which is composed of street, city and state, and one or more phone numbers.
- For each account we store a unique account number and the balance.
- For a saving account we store the interest rate while for a checking account we store whether it has overdraft protection.
- An account can be held by several customers and a customer can hold several accounts.
- For each loan that a customer takes out we record a number and amount.
- A loan may require a guarantor, who must also be a bank customer.
- Each loan can have several payments for which we record a number, date and amount.
- A customer can either hold an account or take out a loan or both.

In the space below, construct an E-R diagram for the bank application.
Identify all keys of entities and constraints on relationships.



Exercise 2: We want to record information about products that a factory manufactures.

- The factory has a number of employees. For each employee, we need to store the employee id, name and salary.
- Each employee must be an admin staff or a worker, but not both.
- Admin staff must take seminars. For each seminar we keep its id, name and date. For the admin staff, we must store the grade received for each seminar taken.
- The factory manufactures a number of products and each product is identified by a product id and has a name.
- A worker is assigned to work on exactly one product; a product has multiple (one or more) workers assigned to it.
- A large number of items are manufactured for each product. Each item has a serial number and a color. Different items of the same product have different serial numbers. However, two items that belong to different products may have the same serial number.

In the space below, construct an E-R diagram for the factory application.
Identify all keys of entities and constraints on relationships.