Design an Entity-Relationship diagram for the FOLLOWING database. Specify key attributes of each entity type and cardinality ratio on each relationship type.

CASE 1:

It is required to design database for supermarket. A supermarket has different products that have different types. Type of product may be food, beverages, cosmetics and etc….
Each product has only one type. Data to be kept about products are code, name, expiration date, unit price and their type. Supermarket's customers may get offers this is why we keep data about them. We give them unique code and store their name and mobile number. Invoice data should be stored as well. Date of invoice along with the invoice number and the customer to whom the invoice is issued should be kept. Invoice numbers should not be repeated. Invoice should contain items purchased, quantity of each purchased product and total amount of the invoice. In order to track supermarket's employees' performance, we should store which employee issued which invoice. Data about employees include their ID, name, mobile number and salary.

CASE 2:

A hospital keeps track of their doctors and the family members of doctors. Each doctor has unique id, a first and last name that must be stored in parts, and multiple addresses. Each of their family members has no unique id, a first and last name (that does not have to be stored in parts), a date of birth and an age that needs to be calculated each time.

CASE 3:

A car rental company needs to keep track of its car-orders, which relates between cars and customers. Car/customer each has a unique id and a single name (no need to store parts). For someone to be customer they must have purchased at least one car. The order needs to specify the time/date, the quantity and id of each car in the order.

CASE 4:

Consider a MAIL_ORDER database in which employees take orders for parts from customers. The data requirements are summarized as follows:
The mail order company has employees, each identified by a unique employee number, first and last name, and Zip Code.
Each customer of the company is identified by a unique customer number, first and last name, and Zip Code.
Each part sold by the company is identified by a unique part number, a part name, price, and quantity in stock.
Each order placed by a customer is taken by an employee and is given a unique order number. Each order contains specified quantities of one or more parts. Each order has a date of receipt as well as an expected ship date. The actual ship date is also recorded.