1. AVANTIVE Corporation is a company specializing in the commercialization of automotive parts. AVANTIVE has two types of customers: retail and wholesale. All customers have a customer ID, a name, an address, a phone number, a default shipping address, a date of last purchase, and a date of last payment. Retail customers have the customer attributes, plus the credit card type, credit card number, expiration date, and e-mail address. Wholesale customers have the customer attributes, plus a contact name, contact phone number, contact e-mail address, purchase order number and date, discount percentage, billing address, tax status (if exempt), and tax identification number. A retail customer cannot be a wholesale customer and vice versa. Given that information, create the ERD containing all primary keys, foreign keys, and main attributes.
2. AVANTIVE Corporation has five departments: administration, marketing, sales, shipping, and purchasing. Each department employs many employees. Each employee has an ID, a name, a home address, a home phone number, and a salary and tax ID (Social Security number). Some employees are classified as sales representatives, some as technical support, and some as administrators. Sales representatives receive a commission based on sales. Technical support employees are required to be certified in their areas of expertise. For example, some are certified as drivetrain specialists; others, as electrical systems specialists. All administrators have a title and a bonus. Given that information, create the ERD containing all primary keys, foreign keys, and main attributes.
3. AVANTIVE Corporation operates under the following business rules:
   1. AVANTIVE keeps a list of car models with information about the manufacturer, model, and year.
   2. AVANTIVE keeps several parts in stock. A part has a part ID, description, unit price, and quantity on hand. A part can be used for many car models, and a car model has many parts.
   3. A retail customer normally pays by credit card and is charged the list price for each purchased item. A wholesale customer normally pays via purchase order with terms of net 30 days and is charged a discounted price for each item purchased. (The discount varies from customer to customer.)
   4. A customer (retail or wholesale) can place many orders. Each order has an order number; a date; a shipping address; a billing address; and a list of part codes, quantities, unit prices, and extended line totals. Each order also has a sales representative ID (an employee) to identify the person who made the sale, an order subtotal, an order tax total, a shipping cost, a shipping date, an order total cost, an order total paid, and an order status (open, closed, or cancel).

Given that information, create the complete ERD containing all primary keys, foreign keys, and main attributes.

1. The FlyRight Aircraft Maintenance (FRAM) division of the FlyRight Company (FRC) performs all maintenance for FRC’s aircraft. Produce a data model segment that reflects the following business rules:
   1. All mechanics are FRC employees. Not all employees are mechanics.
   2. Some mechanics are specialized in engine (EN) maintenance. Some mechanics are specialized in airframe
   3. (AF) maintenance. Some mechanics are specialized in avionics (AV) maintenance. (Avionics are the electronic components of an aircraft that are used in communication and navigation.) All mechanics take periodic refresher courses to stay current in their areas of expertise. FRC tracks all courses taken by each mechanic—date, course type, certification (Y/N), and performance.
   4. FRC keeps a history of the employment of all mechanics. The history includes the date hired, date promoted, date terminated, and so on. (*Note:* The “and so on” component is, of course, not a real-world requirement. Instead, it has been used here to limit the number of attributes you will show in your design.)

Given those requirements, create the ERD .