In Class team Exercise – Business Rules and ER Diagrams

Use the following descriptions of the operations of RC_ Models Company to complete this exercise. RC_ Models Company sells its products— plastic models (aircraft, ships, and cars) and "add- on" decals for those models— through its Internet Web site, www. Rc_models. com. Models and decals are available in scales that vary from 1/ 144 to 1/ 32.

Customers use the Web site to select the products and to pay by credit card. If a product is not currently available, it is placed on back order at the customer's discretion. (Back orders are not charged to a customer until the order is shipped.) When a customer completes a transaction, the invoice is printed and the products listed on the invoice are pulled from inventory for shipment. (The invoice includes a shipping charge.) The printed invoice is enclosed in the shipping container. The customer credit card charges are transmitted to the CC Bank, at which RC_ Models Company maintains a commercial account. (Note: The CC Bank is not part of the RC_ Models database.)

RC_ Models Company tracks customer purchases and periodically sends out promotional materials. Because the management at RC_ Models Company requires detailed information to conduct its operations, numerous reports are available. Those reports include, but are not limited to, customer purchases by product category and amount, product turnover, and revenues by product and customer. If a product has not recorded a sale within four weeks of being stocked, it is removed from inventory and scrapped.

Many of the customers on the RC_ Models customer list have bought RC_ Models products. However, RC_ Models Company also has purchased a copy of the FineScale Modeler magazine subscription list to use in marketing its products to customers who have not yet bought from RC_ Models Company. In addition, customer data are recorded when potential customers request product information.

RC_ Models Company orders its products directly from the manufacturers. For example, the plastic models are ordered from Tamiya, Academy, Revell/ Monogram, and others. Decals are ordered from Aeromaster, Tauro, WaterMark, and others. (Note: Not all manufacturers in the RC_ Models Company database have received orders.) All orders are placed via the manufacturers' Web sites, and the order amounts are automatically handled through RC_ Models' commercial bank account with the CC Bank. Orders are automatically placed when product inventory reaches the specified minimum quantity on hand. (The number of product units ordered depends on the minimum order quantity specified for each product.)

1) Given that brief and incomplete description of operations for RC_ Models Company, write entities, attributes and all applicable business rules to establish relationships. Write the Entities/attributes in the format below.
- Customer (Cust_Id,Cust_Name ……..) Do not spend too much time on attributes now.
- Vendors (Vendor_ID, Vendor Name, Vendor_AreaCode, Vendor_Phone)

- Products (Product_ID, Vendor _ID, Add_ons, Unit_Price)
- Invoices (Invoice_ID, Product_ID, Customer_ID)
- Line(Line_ID, Invoice_Id, Line_units, Product_Id)
- Marketing(Subscriber_ID, Sub_Phone, Sub_Email, Sub_engagment)

2) Write Business Rules for the relationships : Use the following three business rules as examples, writing the business rules for relationships in the same format. Requirements/rules that don't specific entities, attributes, relationships, constraints should be written separately.
- Each invoice is generated by only one customer.
- Each customer can have 0 or many invoices.
- Each product comes from one vendor
- Each vendor can supply several products
- Each line of an invoice is for a specific product
- Each product can be on 0 or many invoices
- Each subscriber can be none or a single customer
- Each customer can be none or a single subscriber

   Constraints:
- The subscriber hasn't bought a product from RC

3) Document any assumptions you need to make in a section called assumptions
    -Subscribers are recorded when the request product information
    -Customers information is recorded when they make an order
    -Products are unique and different manufacturers do not make the same product

4) Create a draft ER model in https://www.drawio.com/ . Dont worry about filling in all attributes. Just entities and relationships. This is a draft, you will work on it

5) submit one document PDF and one ER model link as a team, Write names of team members present on PDF document

Business Rules:
- Each invoice is generated by only one customer.
- Each customer can have one or many invoices.
- Each product comes from one vendor
- Each vendor can supply one or many products
- Each product can be in one or many invoice lines
- Each invoice line must contain one and only one product
- Each invoice can have one or many lines
- Each invoice line must come from one and only one invoice

Constraints:
- The subscriber hasn't bought a product from RC
- All primary keys must be unique and non-null