Boston Exchange (BEX) is a catalog-based mail-order company that sells apparel to customers. The following is a description of their operations and data requirements. This description is provided for the purpose of designing an application to help BEX better manage its operations.

BEX sells clothes and shoes referred to as products by BEX. Each product has a product code and is described by size (XS, S, M, L, XL, XXL for clothes, and shoe size for shoes), and color. BEX would like to know the quantity on hand and the reorder point for each variation of this product. (For example, pin-point oxford long-sleeve shirt might be a product with product code 1109876. BEX would like to know how many such shirts in XS size, white color are on hand and the reorder point for this shirt).

BEX customers place orders for products over phone. To be able to place an order with BEX, a customer has to be a BEX-member. They can do this by providing a name (first, last, and middle) and a mailing address. They must also provide SSN that is used for credit-checking but is not stored in the database by BEX for protecting privacy and for security reasons. Once credit is approved, BEX then creates an “account#” for the member that is unique to that member. BEX does not deal with credit cards. A member can then order products and BEX will debit the member’s account with the amount of the order. Members will get to know the total amount for an order when they receive the shipment. This amount is also communicated to the member when the order is confirmed.

Members can pay a minimum amount to BEX (just like paying against the balance on a credit card) and the amount is credited to the member’s account. There is an interest charged to the account balance and this rate may vary from member to member (the older the member the better the rate they receive). BEX would like to keep track of the amounts charged to a member-account, payments received and credited to the account including the amount and the date, as well as the account balance.

An order can consist of several products and each product may be ordered in different quantities. BEX will accept the order if and only if the product is available in stock. BEX does not support back-orders. The database must hence permit the order clerk to check inventories and confirm the availability of the product (specific size and color too). Orders placed are first validated (i.e. the order clerk verifies that the products are indeed available and that the customer has a good credit standing with BEX) and the order status is noted as “validated”. Validated orders will be assembled and marked with a status code “in-progress”. When the order is complete, i.e. when all the products in the order are packed, its status is changed to “complete”. BEX would then ship the order (order status is “shipped”) to the member with an invoice that lists the products included, quantities of each, unit price of each, and the order total including shipping charges and applicable taxes. BEX would like to track the progress of each order through all its
stages. When the order is shipped, the order package becomes a shipment and is assigned a shipment code. Shipping is managed by UPS. A single customer order always corresponds to one shipment – in other words, BEX will not ship products in one order separately. BEX customers do not typically return products – they are always satisfied!

BEX obtains its products from the same manufacturers who make brand-name apparel. It negotiates prices with these manufacturers. A product may be made by several different manufacturers. However, when placing a purchase order for a product, all purchase orders go to one manufacturer's only. (If a large quantity of a product is needed, BEX would generate several different purchase orders for the same product and send each to a specific manufacturer who can supply this product). A purchase order may include several products. It is described by a date, the product ordered, quantity of the product, purchase price per unit, as well as the overall value of the purchase order. Manufacturers, upon receipt of the order, would ship the products to BEX. BEX refers to these as "manufacturer shipments". Manufacturers may ship products in one purchase orders in multiple manufacturer shipments.

The manufacturer shipment is accompanied by an invoice that specifies the products and quantities in the shipment. When the manufacturer shipment is received, BEX generates a check that is then mailed to the manufacturer. To simplify the requirements, we will assume that there are no defects and hence no returns.

BEX would like the application to track the data on manufacturers (name, contact person, phone, and address). BEX would also like to know which manufacturer can provide which product(s), and would like to keep track of the purchase orders, manufacturer shipments, and payments to manufacturers.

Question:
- There are actually the specifications for three applications in this write up. Think about the functional areas within an organization … what are the three applications?