1 E-R Design

In the first part of this assignment, you are asked to design an E-R diagram to describe eBay. eBay provides a mechanism to post items for public viewing and allows bidding until a specified time after which bidding is closed.

Note that like in any real-world application, not all the details can be modeled in an E-R diagram. However, you should make sure that all the details that can be represented are represented. The users of the eBay database are:

1. Bidders and potential bidders. We assume that for each item there are either no bidders or one or more bidders, including a single highest bidder (the winner).

2. Sellers, that is, those offering items for auction.

In the following details, we focus mostly on the needs of the bidders. It is up to you to figure out which information to model in order to satisfy such needs.

The bidder can enter the following information about herself:

- Bidder ID
- Email address
- Shipping address
- Billing address

Other information about the bidder is directly entered and updated by eBay:

- Feedback rating (according to the sellers’ reviews and expressed as a percentage, e.g., 90% of the sellers were satisfied with the bidder)

For each item available, bidders and potential bidders need to be able to see the following information associated with that item:

- Item ID
- Name
- Description
• Photo (optional)
• Bidding start date and time
• Bidding end date and time
• Initial price
• Current price (which is either the initial price, if there are no bids, or the highest bid so far)
• All the categories to which an item belongs (e.g., Antiquities) and its subcategories (e.g., Asian)
• Log of bidding, that is a list of the bidders IDs and for each one the time at which they placed the bid; the list is sorted by the bid amount (actual amount is only shown for the highest current bid).
• Time remaining

The bidder can also:

• See all the items she has won and their status (paid or unpaid)
• Select any ebay store and place a link to that store in a list of favorite stores (in the bidder’s page of favorites)
• Select up to 30 items that the bidder wants to watch and place them in a list (in the bidder’s page of favorites)

The bidder needs to have the following information about the seller:

• Seller ID
• Email address
• Types of payment accepted (e.g., credit card, PayPal)
• Feedback rating (according to the bidders’ reviews and expressed as a percentage, e.g., 90% of the bidders were satisfied).

2 E-R interpretation

Figure 1 shows an E-R diagram for a library application.

Based on the E-R diagram, you are asked to describe all the properties of the data as they were understood by the E-R diagram designer and captured by all the different constructs (aggregation, constraints, etc.).
Figure 1: E-R diagram for a library application
3 What to turn in

For the eBay application turn in:

1. A drawing of the E-R diagram.

2. An explanation of the design choices made, including the real-world characteristics of the problem that may have not been fully expressed by your E-R diagram.

3. List specific choices you have made.¹ Do justify your choices to get partial credit in the case that your choice was not the most appropriate one.

For the library application, turn in:

1. A complete description of the data and their properties and relationships as described by the E-R diagram (2-4 pages). Make sure you identify all the constructs used (aggregation, constructs, etc.) and what they mean in terms of the application at hand.

For full credit, your assignment should look professional and well organized. Note that handwritten answers are not acceptable. Your E-R diagram can be drawn by hand but the picture has to be well organized and all the labels readable.

¹For example, you have to decide whether an item could belong to two different categories, e.g., Art and Toys, which are not related by a category-subcategory relationship. Note that an item that belongs to a subcategory also belongs to any supercategory of that subcategory.