CS480 Assignment 1 (Solution)

1 E-R Design

(1) E-R diagram
(2) We create six entities, Person, Bidder, Seller, Item, Store and Category to model corresponding subjects. Bidder and seller are generalized by person, which contains the common information like person ID, email, and feedback rating. We don’t specify an actually bidder and a potential one. Since we have category and store entities, we add attributes “name” to be the primary keys of them separately.

Each entity owns all the attributes required by the problem, and notice that the bidding log and the payment method could be multi-valued. Current price and time remaining of each item can be calculated by other attributes, so they are derived attributes.

Six relations exist: Seller sells her items, each item must have one and only one seller; a bidder places a bid on an item for a bidding price; one bidder can watch at most 30 items and can have any number of stores as favorite stores; an item must belong to at least one category; a category can be a subcategory of another.

Which not modeled in this E-R diagram is the winner of an item, the bidding log, the potential bidder. The items some bidder won and their status are also not modeled in this diagram.

(3) We suppose each item should belong to at least one category, and add an attribute “name” (which is unique to each category) to the entity category. A bidder can bid on zero or one or more items, and an item can have zero or one or more bidders. Each item must have one and only one seller.

2 E-R interpretation.

In the library, each book has a unique ISBN number, a title, author’s name and some topic. Each book is published by at one publisher. Each publisher has a unique name and its address is also recorded. Each book must have some copies, copies of the same book must have different copy numbers, but copies of different books may have the same copy number. The clients of the library are identified by their social security numbers and their names in record. Each client may be a faculty or a student or other people. Each faculty belongs to some department and has an office address, and each student has a major. Other person has an extended address.

When a client checks out some copy of one book, the out time and due time are recorded. When the client returns the book, the back time is recorded. A high level entity checkout includes all info about a check out transaction. A checkout is identified by the book’s ISBN, the copy’s Copy_No., OutTime, and the client’s SSN. If a copy checked out is past due, there will be a recall procedure at notice time. For each checking out transaction, the notice time is different, but for different checking out transactions, the notice time could be the same.