Assignment 7

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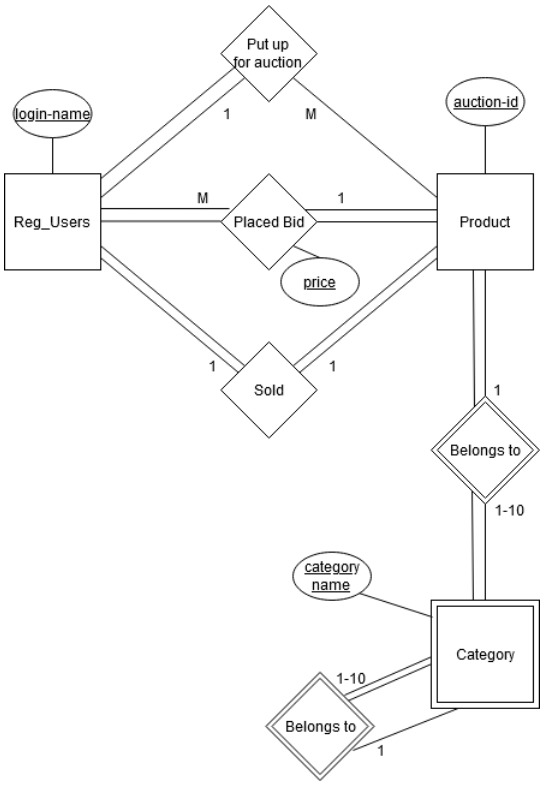
1 Assignment 7

1.1 Conceptual Schema

- MyAuction facilitates the operations for an electronic auctioning system
- For each registered user, **record his/her name, address, email, a unique login-name and password**
- For each product put for auction, record its **name, an (optional) description, one or several categories that it belongs to (e.g., 'books-and-records', 'software', 'automobiles','appliances', etc)**. Each product should have a unique **auction-id**
- Keep track of information about a product for auction such as **who is selling it, the minimum acceptable acc price, auction starting date and its status (i.e., 'under auction','sold', 'withdrawn')**
- Keep track of every bid made by registered users, such as the **bidder's name, the date when the bid was made, and the acc amount of the bid, etc.**
- If a product was sold successfully, we want to know **who bought the product with what bidding price, and when it was sold**
- For each product category, record its **(unique) name**. We want to organize the categories into a hierarchical structure such that one category can contain 0 to 10 subcategories.



only key attributes shown

Entities:

- Users (name, address, $\overline{email}$, login-name, password)
- Product (name, description, categories, auction-id)
- Category (category-name, product, subcategory-names) - weak entity

Relationships:

- Put up for Auction <Registered-Users, Product> 1:N PARTIAL/TOTAL, date, min-acc-price, start-date, status
- Place bid <Registered-Users, Product> N:1 PARTIAL/PARTIAL, date, bid-price
- Sold to <Product, Registered-Users> N:1 PARTIAL/PARTIAL, date, final-price
- Belongs to <subcategory-Category, supercategory-Category> (0-10):1 PARTIAL/TOTAL
- Belongs to <Product, Category> 1:(0-10) PARTIAL/PARTIAL

Assumptions

- A user can bid on an item more than once per day, but cannot bid the same price on the same product more than once
- Prices (including minimum prices) must be positive
- A user may bid less than the maximum bid, as long as their bid is still valid and greater than the minimum acceptable price
- if a product is put up for auction more than once, it will need a new auction-id

1.2 Relational Schema

- Registered-Users (name, address, $\overline{email}$, login-name, password)
- Product (name, description, auction-id, seller-login-name, min-acc-price, start-date, status, end-date, buyer-login-name, final-price)
  - FK (seller-login-name) → Registered-Users (login-id)
  - FK (buyer-login-name) → Registered-Users (login-id)
  - Check(status = 'under auction' or 'sold' or 'withdrawn')
  - Check(min-acc-price is valid and > 0)
  - Check(final-price is valid and >= min-acc-price)
  - Check(name is not null)
  - Check(end-date, buyer-login-name, final-price should be null whenever status = 'under auction' or 'withdrawn')
- Category-Products(category-name, auction-id)
  - FK (auction-id) → Product (auction-id)
- Category-Subcategories(category-name, subcategory-name)
  - Check (category-name != subcategory-name)
- Bid (auction-id, bidder-login-name, price, date)
  - FK (auction-id) → Product (auction-id)
  - FK (bidder-login-name) → Registered-Users (login-name)
  - Check (price is valid and >= product's min-acc price)