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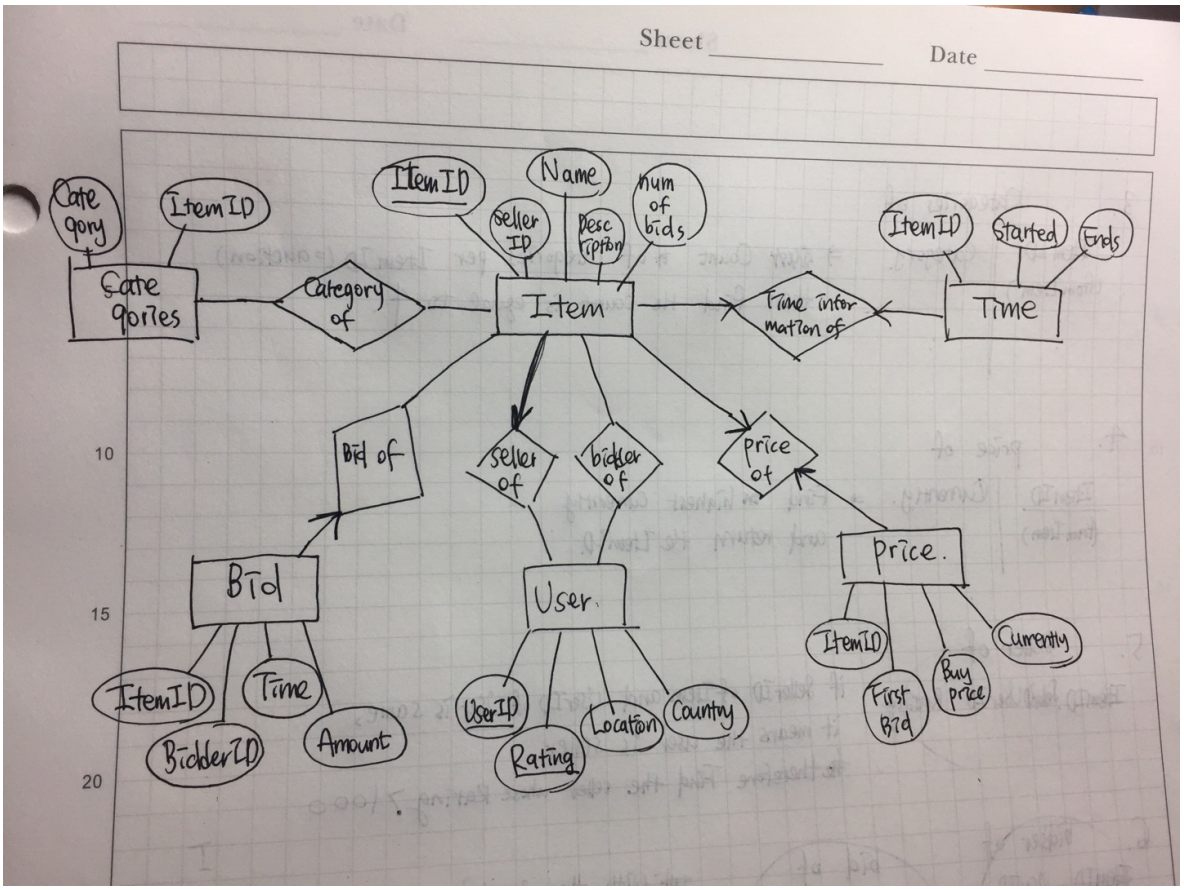
• Provide your relational schema definitions in text form, including the attributes for each relation. Make sure to clearly indicate your chosen keys (including primary and foreign).

```
Item( ItemID int primary key,
              SellerID varchar,
              Name varchar,
              Description text,
              Num_of_Bids int);

Categories ( ItemID int , Category varchar, foreign key
(ItemID ) references Item(ItemID)) ;

Price (ItemID int, First_Bid money, Buy_Price money,
Currently money, foreign key (ItemID ) references
Item(ItemID));

Time( ItemID int, Started time, Ends time, foreign key
(ItemID ) references Item(ItemID));

User( UserID varchar, Rating int, Location varchar, Country
varchar, primary key (UserID, Rating));

Bid( ItemID int, BidderID varchar, Time time , Amount money,
foreign key (ItemID) references Item(ItemID),
foreign key (BidderID) references User(UserID));
```

• An Entity-Relation (ER) diagram that describes your schema. Our advice is to use the ER diagram as a starting point to help determine your schema, rather than the other way around. Make sure to include the actual ER diagram in your design.pdf file.



1. Finding # of users in the database.

Inner join of Seller of and bidder of. is the set Users's UserID.

ItemID / UserID. "

So that just Counting User is enough.

2. Find # of users from NewYork.

seller of / bidder of.

ItemID / ~~User~~ SellerID / Rating / location / Country ⇒ query where country = NewYork.

3. Categories of

ItemID (from Item)	Category.
⋮	⋮

⇒ ~~Find~~ Count # of categories per ItemID (= auction) then find the count is equal to 4.

4. price of

ItemID (from Item)	Currently.

⇒ Find ~~the~~ highest currently and return the ItemID.

5. Seller of

ItemID SellerID UserID Rating

if SellerID of Item and UserID of User is same, it means the user is seller.
~~the~~ therefore Find the seller whose Rating > 1000.

6. bidder of

ItemID UserID ...

bid of.

ItemID. BidderID ...

~~with~~ with these 2 relation, if User is Seller (as in #5), and its UserID is same as BidderID, then the user is both bidder and seller.

7. bid of

ItemID Amount.

Category of

ItemID Category.

→ ~~Find~~ Count categories which belong to the item that its bidding Amount is larger than $100.