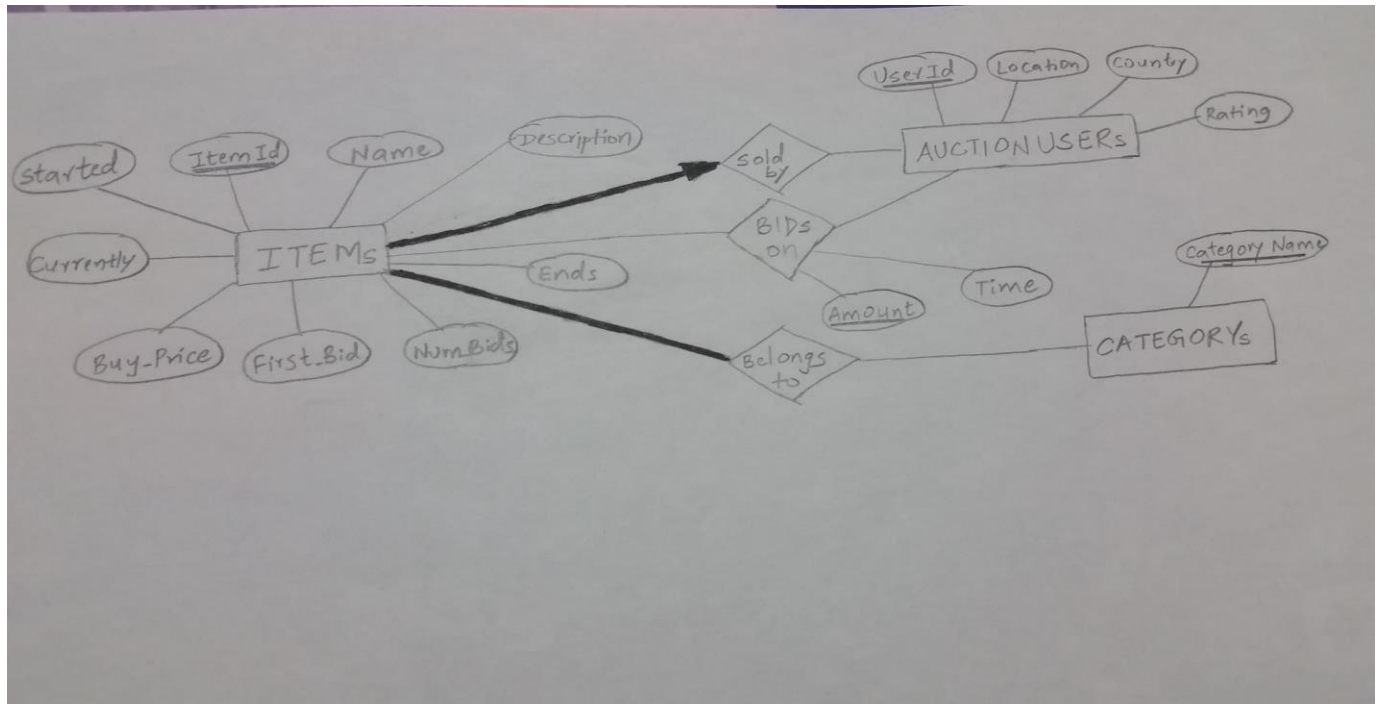


## Relational Schema and ER Diagram

Here is the ER diagram:



All the Buyers and Sellers are congregated in a single Entity Set (AuctionUser). All these Auction Users have entity attributes of UserID, Location, Country and Rating. Every Auction User has to have a unique UserID which serves as the primary key.

This Entity set and attributes are catered to by the Table "AuctionUser" having the following schema

### AuctionUser/

**UserID TEXT PRIMARY KEY,**

**Location TEXT,**

**Country TEXT,**

**Rating INTEGER**

);

Items are sold by AuctionUsers. Each item is specified by a unique ItemID which serves as a primary key. Each unique item can be sold by one Auction user as specified in the relationship model of the ER diagram. To model this we create a table called "Item" which has all entity attributes of an item present

in Auction (ItemID, Name, Description, Started, Ends, First\_Bid, Buy\_Price, Currently) along with UserID from the AuctionUsers Table as the foreign key.

The table “Item” thereby has the following Schema:

**Item**(

**ItemID INTEGER PRIMARY KEY,**

**Name TEXT,**

**Currently REAL,**

**Buy\_Price REAL,**

**First\_Bid REAL,**

**Number\_of\_Bids INTEGER,**

**Started DATETIME,**

**Ends DATETIME,**

**SellerID TEXT,**

**Description TEXT,**

**FOREIGN KEY(SellerID) REFERENCES AuctionUser(UserID)**

**);**

Any of the Auction Users can bid on Items available in Auctions. This entity relationship is modelled by the “Bids” table. It is a many to many relationship as indicated in the diagram. It derives its foreign keys as UserID from the AuctionUsers entity set and ItemID from the Items set. The Bid relationship has its own attributes as well viz. Amount and Time. The primary key for this table (minimum set of attributes that identify uniqueness) is UserID, ItemID and Amount.

The schema for this “Bids” table is represented as:

**Bids**(

**ItemID INTEGER,**

**BidderID TEXT,**

**Amount REAL,**

**Time DATETIME,**

**UNIQUE(ItemID,BidderID,Amount),**

**FOREIGN KEY(BidderID) REFERENCES AuctionUser(UserID)**

***FOREIGN KEY(ItemID) REFERENCES Item(ItemID)***

***);***

Lastly an Item belongs to some set of categories. This is catered to by the “Category” Table. Every item has to belong to one or more categories. This relationship is modelled appropriately in the E/R diagram. From the schema’s perspective, there are 2 attributes for this table, first one is ItemID, which is derived from the Item table (which is foreign key). The second attribute is the category name itself. Together the Category name and ItemID form the primary key for this table.

Schema for the “Category” Table:

**Category/**

***ItemID INTEGER,***

***Category TEXT,***

***UNIQUE(ItemID,Category),***

***FOREIGN KEY(ItemID) REFERENCES Item(ItemID)***

***);***