

Assignment 5 Relational Schema Design

Project Group 20:
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General Notes on Design

Based on the constraints of the project, the key objectives in designing a good Entity-Relation model are speed and organization. Scalability was necessary for organizing the many-one relationships found in the Ebay JSON data.

Many-one relationships include users (as sellers) to auctions, users (as bidders) to bids, items to classifications, and items to auctions. (Note that within the given data, each item was sold in exactly one auction, though it could be the case that an item is featured in multiple auctions.) Assuming the enumerated relations are possible, a minimum of five tables would be needed to accurately record all information from the JSON files.

To minimize storage while maintaining organization, the group decided to use five tables and integer-valued primary keys only. After integer IDs associated with desired elements are found, a maximum of four searches would be needed to run any efficient query. When running on the CSL machines, constructing the databases and running the seven queries takes about six seconds total.

Relational Schema Definitions

ITEM (itemID::int, itemName::text)

CLASSIFICATION (classID::int, itemID::int, categoryName::text)

AUCTION (auctionID::int, itemID::int, sellerID::int, numBids::int, startPrice::double, currPrice::double, startTime::datetime, endTime::datetime)

AUCTIONUSER (userID::int, userName::string, bidder::varchar(6), seller::varchar(6), rating::int, location::string, country::string)

BID (bidID::int, auctionID::int bidderID::int, value::double, timeStmp::datetime)

Attributes

Auction

Attribute	Key	Data Type
auctionID	PK	INT
itemID	FK	INT
sellerID	FK	INT
numBids	-	INT
startPrice	-	DOUBLE
currPrice	-	DOUBLE
startTime	-	DATETIME
endTime	-	DATETIME

AuctionUser

Attribute	Key	Data Type
userID	PK	INT
userName	-	TEXT
bidder	-	VARCHAR(6)
seller	-	VARCHAR(6)
rating	-	INT
location	-	TEXT
country	-	TEXT

Bid

Attribute	Key	Data Type
bidID	PK	INT
auctionID	FK	INT
bidderID	FK	INT
value	-	DOUBLE
timeStmp	-	DATETIME

Classification

Attribute	Key	Data Type
classID	PK	INT
itemID	FK	INT
categoryName	-	TEXT

Item

Attribute	Key	Data Type
itemID	PK	INT
itemName	-	TEXT

Diagram

