CS 564 Project #1
ER Modeling & Schema Design

Shihan Cheng, Yimiao Cao, Jiayuan Huang

Schema Design

```sql
 /// Table to store all items
CREATE TABLE ITEM (
    ItemID INT NOT NULL UNIQUE,
    Name VARCHAR(255) NOT NULL,
    Item_Category,
    Currently DOUBLE,
    Buy_Price DOUBLE,
    First_Bid DOUBLE,
    Number_of_Bids INT NOT NULL,
    Location_ID INT NOT NULL,
    Started datatime NOT NULL,
    Ends datatime NOT NULL,
    Description VARCHAR(255) NOT NULL,
    PRIMARY KEY(Item_ID),
    FOREIGN KEY(Item_ID) REFERENCES ITEM_SELLER(Item_ID),
    FOREIGN KEY(Location_ID) REFERENCES LOCATION(Location_ID)
);


/// Table to store all categories for single item
CREATE TABLE ITEM_CATEGORY (
    Item_ID INT NOT NULL UNIQUE,
    Category_ID INT NOT NULL UNIQUE
    PRIMARY KEY(Item_ID, Category_ID),
    FOREIGN KEY(Item_ID) REFERENCES ITEM(Item_ID),
    FOREIGN KEY(Category_ID) REFERENCES CATEGORY(Category_ID)
);


/// Table to store all categories
CREATE TABLE CATEGORY (
    Category_ID INT NOT NULL UNIQUE,
    Category_Name VARCHAR(255) NOT NULL UNIQUE,
    PRIMARY KEY(Category_ID)
);


 /// Table to store all locations
CREATE TABLE LOCATION (
    Location_ID INT NOT NULL UNIQUE,
    Location_Name VARCHAR(255) NOT NULL UNIQUE
    Country_ID INT NOT NULL UNIQUE,
    PRIMARY KEY(Location_ID),
    FOREIGN KEY(Country_ID) REFERENCES COUNTRY(Country_ID)
);
```

```
/// Table to store all countries
CREATE COUNTRY (
    Country_ID INT NOT NULL UNIQUE,
    Country_Name VARCHAR(255) NOT NULL UNIQUE
);


/// Table to store all bids for all items
CREATE TABLE BID (
    Bid_ID INT NOT NULL UNIQUE,
    Time datetime NOT NULL,
    Amount DOUBLE NOT NULL,
    Bidder_ID VARCHAR(255) NOT NULL UNIQUE,
    PRIMARY KEY(Bid_ID)
    FOREIGN KEY(Bidder_ID) REFERENCES USER(User_ID)
);


/// Table to store all bids for single item
CREATE TABLE ITEM_BID (
    Bid_ID INT NOT NULL UNIQUE,
    Item_ID INT NOT NULL UNIQUE,
    PRIMARY KEY(Bid_ID, Item_ID),
    FOREIGN KEY(Bid_ID) REFERENCES BID(Bid_ID),
    FOREIGN KEY(Item_ID) REFERENCES ITEM(Item_ID)
);


/// Table to store users who sells the item by single item
CREATE TABLE ITEM_SELLER (
    Seller_ID VARCHAR(255) NOT NULL UNIQUE,
    Item_ID INT NOT NULL UNIQUE,
    PRIMARY KEY(Seller_ID)
    FOREIGN KEY(Seller_ID) REFERENCES USER(User_ID)
);



/// Table to store all users
CREATE TABLE USER (
    User_ID INT NOT NULL UNIQUE,
    Rating INT NOT NULL
    Location_ID INT NOT NULL UNIQUE,
    PRIMARY KEY(User_ID),
    FOREIGN KEY(Location_ID) REFERENCES LOCATION(Location_ID)
);
```

ER Modeling

Category:
Category_ID
Category_Name

Country:
Country_ID
Country_Name

Category_ID

Country_ID

Item_Category:
ItemID
Category_ID

Location:
Location_ID
Location_Name
Country_ID

Item:
ItemID
Name
Currently
Buy_Price
First_Bid
Number_Of_Bids
Location_ID
Started
Ends
Description

ItemID

Location_ID

ItemID

Seller_ID

Location_ID

Item_Seller:
Seller_ID
Item_ID

Seller_ID

Item_Bid:
Bid_ID
Item_ID

Bid_ID

Bid:
Bid_ID
Time
Amount
Bidder_ID

Bidder_ID

User:
User_ID
Rating
Location_ID