# URL for your Youtube video.

# Your entity relationship diagram, giving any assumptions that it makes about the processes that use the data.

## Assumptions made:

* All users are either buyers or sellers.
* Sellers are buyers with extra privileges such as creating auctions and receive auction notifications.
* Users’ email is used as username for login.
* User’s password only stores the hashed value.
* Notifications are read-only.
* Every item belongs to a category which is selected by seller from the pre-defined set of categories.
* Category is separated from Item table for easier management of categories.
* User cannot add the same item to his/her watch list more than once. Hence WatchList has a composite PK of userId and itemId instead of having its own id.
* Restricted attribute values:
  + There are some restricted attribute values in the database. To implement these restrictions, only certain system processes are allowed to set or update these attributes.
  + accountType is either “Seller” or “Buyer”.
  + itemStatus is either “Open”, “Closed-Won” or “Closed-No-bid”.
  + bidStatus is either “Winning”, “Losing”, “Won” or “Lost”.
  + notificationType is either “Auction Close”, “Auction Update”, “Bid Update”, “Bid Close” or “WatchList Notification”.

# A listing of your database schema (list of table names and attributes) with an explanation of how it translates the ER diagram.

* User (Corresponds to the ‘User’ entity in the ER diagram)
  + id INTEGER AUTO\_INCREMENT PRIMARY KEY
  + firstName VARCHAR(30) NOT NULL
  + lastName VARCHAR(30) NOT NULL
  + password VARCHAR(255) NOT NULL
  + email VARCHAR(50) NOT NULL
  + accountType VARCHAR(6) NOT NULL
* Item (Corresponds to the ‘Item’ entity in the ER diagram)
  + id INTEGER AUTO\_INCREMENT PRIMARY KEY
  + sellerId INTEGER NOT NULL
  + title VARCHAR(255) NOT NULL
  + description VARCHAR(255)
  + itemStatus VARCHAR(20) NOT NULL
  + startTime datetime NOT NULL
  + endTime datetime NOT NULL
  + reservedPrice decimal
  + startingPrice decimal NOT NULL
* Bid (Corresponds to the ‘Bid’ entity in the ER diagram)
  + id INTEGER AUTO\_INCREMENT PRIMARY KEY
  + buyerId INTEGER NOT NULL
  + itemId INTEGER NOT NULL
  + bidStatus VARCHAR(20) NOT NULL
  + bidTime datetime NOT NULL
  + price decimal NOT NULL
* WatchList (Corresponds to the ‘WatchList’ entity in the ER diagram)
  + itemId INTEGER NOT NULL
  + userId INTEGER NOT NULL
  + addedTime datetime NOT NULL
* Category (Corresponds to the ‘Category’ entity in the ER diagram)
  + id INTEGER AUTO\_INCREMENT PRIMARY KEY
  + name VARCHAR(255) NOT NULL
* Item\_Category (Corresponds to the ‘Item\_Category’ entity in the ER diagram)
  + itemId int NOT NULL
  + categoryId int NOT NULL
* Notification (Corresponds to the ‘Notification’ entity in the ER diagram)
  + id INTEGER AUTO\_INCREMENT PRIMARY KEY,
  + userID INTEGER
  + itemId INTEGER
  + notificationType VARCHAR(20) NOT NULL
  + createdTime datetime NOT NULL
  + message VARCHAR(255)

# An analysis showing that the database schema is in third normal form.

* First Normal Form
  + Requirement: every attribute in the schema only stores one piece of data.
  + => Requirement met as our tables do not contains attributes like address or contact numbers.
* Second Normal Form
  + Requirement: no non-PK attribute can be fully determined by a part of PKs
  + => The requirement implies only tables with composite PK can possibly break the rule.
  + => Tables with composite PK in our schema: WatchList and Item\_Category
  + WatchList => the only non-PK attribute is addedTime, which cannot be fully determined by just itemId or userId. Hence WatchList meets the requirement.
  + Item\_Category => there is no non-PK attribute, so it meets the requirement.
* Third Normal Form
  + Requirement:

# A listing and explanation of your database queries.