

## Startup 4: ER DIAGRAMS

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### **Entity Descriptions:**

- User: An app user that is looking to buy, sell or trade items, and contains the user's username and hashed password. It also has a reference to its Profile, the Listing it created and Matched entities.
- Listing: The list of items that the User posts for trade or sale. It also has a reference to User that created that Listing and the Item of that Listing.
- Profile: The User information such as contact info, school information, and a simple biography. It also has a reference to the User entity that the profile belongs to.
- Matched: An entity that represents two users who matched for a particular Listing. It has a reference to the User and Item that it matched.
- Item: An entry that represents a particular book or item that a user wishes to buy, sell or trade. It does not have any reference to any other entity. This is by design to prevent duplicate of the same Item entity in the database and different Listing of the the same items can reference a single Item entity.

### **How Each Page Uses These Entities:**

- Home: Uses Listing to displays items for sale by user and items for sale by other users. Home also uses user's Profile to represent the user's name and picture.
- Matched: Uses the Listing and user's Profile to display the match. Also uses the Listing to algorithmically matches two User together. Can't reveal too much yet, trade secret.
- Message: Uses the user's Profile information such as avatar and username. Also uses the Listing to displays the items the users are bartering for.
- Create Listing: Takes the Item information entered by a user and creates an Item entity if it does not already exist. Combines the Item being sold and Item the user is looking for to create a Listing entity with the current date as a field.

- Search: Uses name, ISBN and price fields in the Item entity to find Items which are relevant to a query from the user.
- User Profile: Represents the user profile information. User profile also represents the items for sale by user. User profile will conglomerate fields and data from the User, Profile, and Listing entities. They will be presented in a neatly, organized fashion.

**Note:** We have *still* not decided to cut any product features at this time.

### **Embedding by Reference**

We store each entity in the database independently of other entity, even though some entities embed other entities. We referenced them by their ID in the database and resolved them then embedded them before sending out to the frontend. From the front end perspective, when it query for a Listing, it will receive a Listing JSON with Item JSON embedded inside of Listing JSON. The server queries for Listing then resolve the reference that Listing has of Item then embed the Item into Listing before sending the Listing JSON to the front end.