

## Relational Schema

User(UID, FirstName, LastName, Email, Address, Password, Balance)

Seller(SellerID)

Products(ProductID, SellerID, Name, Description, Image, unitPrice, Category, Inventory)

Cart(UID, ProductID, SellerID, Quantity)

Purchases(UID, ProductID, SellerID, OrderDateTime, finalUnitPrice, Quantity,  
FulfillmentStatus, FulfillmentDateTime)

ProductReview(UID, ProductID, Rating, Review, DateTime)

SellerReview(UID, SellerID, Rating, Review, DateTime)

## Overview

- Each user has the following attributes: email (unique), password, ID (primary key), name, and address. Their balances start with 0 which they can add to and subtract from through purchases. A seller is a subsection of users who sell products (a seller ISA user but not every user needs to be a seller). Users have a public view profiles page-- if they are a seller this page includes their avg ratings, products being sold, email, and address but only includes account number for normal users. Users become sellers when they add a product for sale which they can edit the price and quantity of if the item belongs to them.
- Each product belongs to exactly one category and their attributes include a short name, description, an image, price, and a unique id to the product type. Each product has a product page view that shows the list of their sellers, quantities in stock, and allows a user to add items to their cart.
- Each instance of a cart will show the product added, which seller they are from, and how many of them the user desires. It references the products table to find the most updated price and thus calculates the total cart order. Once an order is placed, the items are deleted from the cart table and moved to the purchased table. Inventories and user balances are checked when the order is placed, i.e. on update or add to the purchases table.
- Reviews can be submitted once per product by any user. Reviews can also be submitted for the seller. Seller view pages show both the ratings for their products and for themselves.

- The database will have many views. One view is the search where items can be selected based on name or category and can be ordered by price and rating. There are detailed order pages implemented as views where all items from that specific purchase will be pulled from the purchases table to show an aggregate view. A user can view a summary of every item they have ever purchased and sellers can view a summary of every item they have ever sold

### **Assumptions**

#### User:

- A users balance cannot be less than 0 so if they run out of money, their purchase is not successful
- A seller still has all the same functionalities as a normal user and can also make purchases.
- Two sellers can sell the exact same product with the exact same ID, thus both a seller ID and product ID are necessary to identify them.

#### Products:

- There cannot be a negative number of items in stock, i.e. an item cannot be 'promised' to a buyer. An item cannot be sold for \$0.
- Each product has a unique product id that takes into account the seller. For instance, a 'Duke Pullover' sold by Diana will have a different product id than a 'Duke Pullover' sold by Kristina. We will be able to see all of the products with the same name and different sellers on one page.

#### Cart:

- Each user had EXACTLY ONE cart and each cart belongs to EXACTLY ONE user
- If someone already has a product in their cart and goes back to that same product listing (same seller too) and clicks 'add to cart' on the item again, there will not be a new entry for the item in their cart. Instead, the existing quantity for the product in the cart will be incremented by the number of units the user just added to their cart.

#### Purchases:

- The fulfillment date on an item in purchases can be null if the order has not been fulfilled yet

- Purchases has its own set of prices because these are static; purchases is a running list from cart, so if a price changes on the website, there is still a record of the price at which the product was purchased

Review:

- Ratings can be any float value (with decimals) between 1 and 5 (you cannot give a rating of 0).

## **Preliminary Website Design**

### **Page 1: Home Page**

The top of the website will have a navigation bar that will be persistent through all of the pages. A search bar will be in this navigation bar as well as a clickable profile button which will take user to their Account Details page. To the left of the profile button will be a button that reads 'Create New Product to Sell.' When clicked, this will take the user to the Create New Product for Sale page. An 'Inventory' tab will be available that when clicked will take the seller to their Inventory Page. If the user has not listed any items, the inventory page will read 'You have not listed any items.' The navigation bar will also have a 'Cart' tab that takes users to their Cart Page.

The home page will be a place to search and filter all products. This can be done by using a search bar at the top of the page, under the header. Under the search bar, there will be clickable boxes with different categories listed and examples of products in each category. For example, there may be a box titled 'Winter Attire' with photos of fleece jackets and snow boots that the user could click on, taking them to a category page. There will be a drop-down menu in the top corner titled 'your account.' When you hover over the menu, you will see options to click on 'view profile,' 'account details,' or 'your orders.'

### **Page 2: Login Page**

When you first open up our mini-Amazon website, you will see a login button on the home page. After pressing it, there will be a page to sign in using an email and password. Should you not have an account, there will be a button underneath to register. This will direct you to another page.

Users will then be brought back to the 'Home Page' upon a successful login attempt.

### **Page 3: Registration**

This page will have a field to enter a user's details, including name, email and password. There will be a check to see if the user already has an email address associated with an account. If so, they will be given an error message and prompted to go to the login page.

#### **Page 4: Category Pages**

Each category will have its own page in which the user can search and filter products using a search bar at the top and a dropdown menu that gives the choices to sort from high to low or low to high price. In the case of a tie in price, the most recently listed item will be shown first (reverse chronological order).

#### **Page 5: View Profile**

If the user chooses to view their profile and they are only a user (and not a seller), it will just show the user's name, account number, and a clickable list of reviews they made (if any). If the user is a seller it will show also email, address, and a section in which the reviews of this seller are shown.

#### **Page 6: Account Details**

This is where the user has the option to update their account information/details. The user can edit their email, password, first name, last name, and address, but not their unique id. They can add money to their balance under this information. There will be an editable field with the default value \$0.00 that the user can change to any amount they would like to add to their balance. To do so they will click a button next to the editable field that reads 'Add to Balance' and their balance will increase. The balance will be displayed above this editable field.

#### **Page 7: View Product**

When a user clicks on the name or image of a particular product, the user will be taken to a page dedicated to that product. The image of the product will be larger on the page and a list of sellers and the prices at which they are respectively selling the items will be listed vertically to the right of the image. Next to the price, the row displays the amount of inventory each seller has of that item. There will be a box to the far right of each seller row that the user can fill in to choose how many of that particular item from that particular seller they would like to put in their cart. A button next to this box reads 'Add to Cart' and when pushed, will add to the user's cart. Below the image of the product, the average rating (out of 5) of the product will be displayed along with a list of product reviews from this product will be shown with the ratings from each reviewer at the top of each review cell and the description (if included) below it with the ability to scroll through the reviews. Each review will be clickable to create an enlarged view of the review.

#### **Page 8: Cart**

The cart page will show rows of items the user has placed in their cart, with the most recently added items at the top. Each line item refers to one product from one seller and displays the image of the product, the item name and product id, the seller name and id, the unit price, the editable quantity, and the total price of that quantity (in order from left to right). The total price will be displayed to the right of these rows. When you hover over a row, an 'x' will pop up

allowing you to delete the item from cart. A button below the total price will read 'Place Order' which will submit the data to purchases, charge the user's account, and decrement the seller's inventory when pushed. Once the button is pushed, the user will be taken the Order Page.

Under the profile picture in the navigation bar on the Cart Page, there will be a button that reads 'Past Orders' which will take users to their Order Page when clicked.

### **Page 9: Order Page**

The order page will contain everything from the cart page in the same format except the quantities will not be editable and 'final' will appear after each price. Each order (defined by items ordered at the same date and time) will be in separate cells. Additionally, under each line item, there will be a field called 'fulfillment status' which will display that the order has been 'placed,' 'shipped,' 'failed,' or 'fulfilled.' If all items are fulfilled, a large, green 'Order Fulfilled' text will appear at the top of the order cell.

### **Page 10: Create New Product for Sale**

The page will have editable fields for product name, image, description, price, category, and quantity in stock for the seller to fill in. All of these fields are required; at least one category is required. A button in the bottom right of the page will say 'List' and once clicked a product id will be generated for the item and the data will be added to products and displayed in their respective category pages.

### **Page 11: Inventory Page**

#### ***Tab 1: Inventory***

If the user has not listed any items, the inventory page will read 'You have not listed any items.' For those who have listed items, the inventory page that lists all the items currently for sale in a scrollable fashion. Each row will list the product image, product name, and product id, followed by editable boxes labeled 'quantity' and 'price' in that order from left to right. At the far right of each row there will be a 'Delete' button that removes the entire item from the seller's inventory.

In the top right corner under the profile picture and below the navigation bar, there is a button that reads 'Create New Product for Sale' that will bring the user to Create New Product for Sale Page.

#### ***Tab 2: Orders***

The order history sorted in reverse chronological order by the order date/time is listed here. Each order shows buyer information including address, date order placed, total amount/number of items, and overall fulfillment status, but no information about other sellers. At the end of each row there is a check-box labeled 'fulfilled' that the seller can check once an order has been completely fulfilled.