

# CompSci 316 Final Report

Group 21: Abhishek Chataut, Alice Hu, Daniel Zeng, Jasper Hu, Muchang Bahng

---

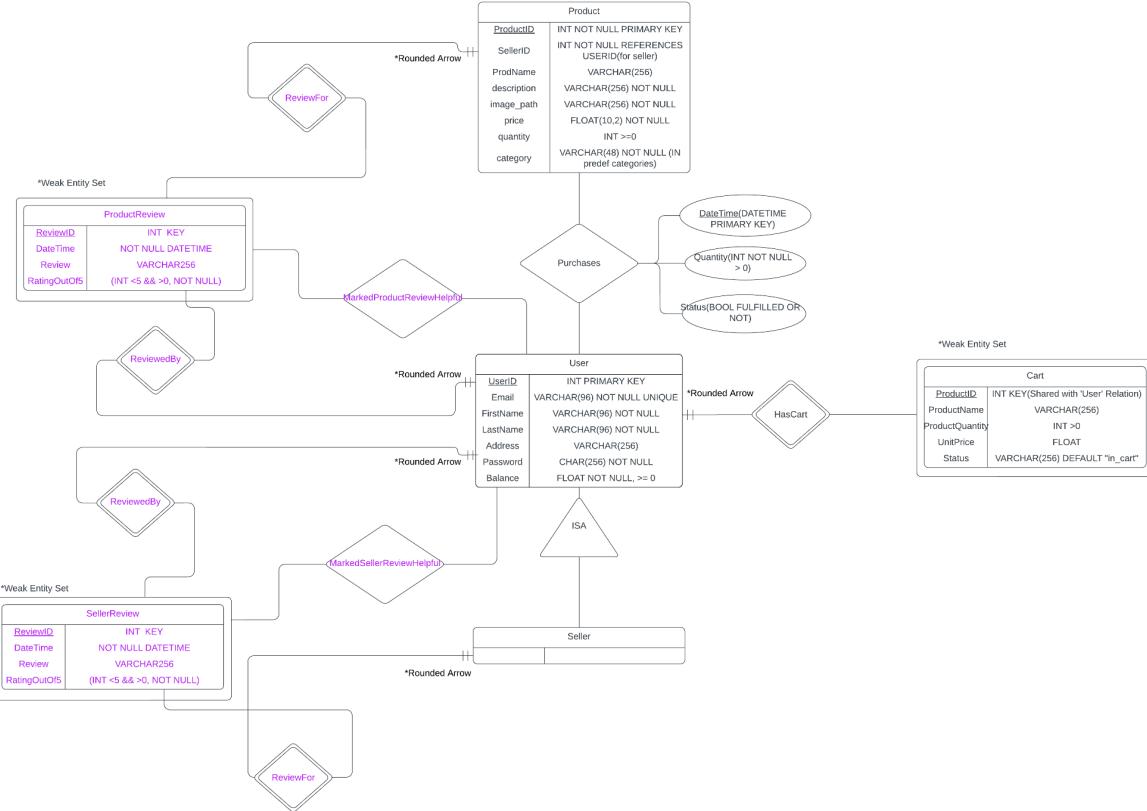
GitHub Repo: [https://github.com/Starfarmer2/316MiniAmazon/blob/main/README\\_MS4.md](https://github.com/Starfarmer2/316MiniAmazon/blob/main/README_MS4.md)

Final Demo Link: <https://youtu.be/cWb1-RL9Uj4>

---

# Part 1: Final Database Design

\*Updates Since Last Milestone Highlighted in Magenta



\*Updates Since Last Milestone Highlighted in Magenta

**Users**(UserID, Email, FirstName, LastName, Address, Password, Balance)

**Carts**(UserID, ProductID, ProductName, Quantity, UnitPrice, Status)

**Sellers**(UserID, Email, FirstName, LastName, Address, Password, Balance)

Using *Entity-In-Most-Specific-Class* Entity-in-all-Superclass (E/R Style) for this

**SellerReviews**(ReviewID, SellerID, ReviewerID, DateTime, RatingOutOf5, Review)

**Products**(ProductID, SellerID, ProdName, Description, ImagePath, Price, Quantity, Category)

Note: We are assuming that each product only corresponds to a single SellerID. If multiple sellers want to list the same type of product, they should each list different ProductIDs with the same product details.

**ProductReviews**(ReviewID, ProductID, ReviewerID, DateTime, RatingOutOf5, Review)

**Purchases**(ProductID, UserID, DateTime, Quantity, Status)

**MarkedProductReviewHelpful**(UserID, ReviewID)

**MarkedSellerReviewHelpful**(UserID, ReviewID)

# Part 2: Final List of Features

Basic Features Table

Part	Features	Status
Account / Purchases	New User Registration	Fully Functional
	Existing users' login	Fully Functional
	System-assigned account ID	Fully Functional
	Users can update information	Fully Functional
	Users can load/withdraw from a balance	Fully Functional
	Users can browse purchases history, sorted in reverse chronological order by default	Fully Functional
	For each purchase in purchase history, users can see a summary of the amount/items/status/detailed order page and link	Fully Functional
	Users can search and filter purchase history	Fully Functional
	User has a public view for a user showing the account number and name as well as any other summary information you deem necessary	Fully Functional
Products	If the user also acts as a seller, show also email, address, and include a section with all reviews for this seller (see Feedback / Messaging).	Fully Functional
	There is a list of predefined product categories, and each product belongs to one category.	Fully Functional
	At the minimum, a product should have a short name, a longer description, an image, and a price.	Fully Functional
	Users can browse and search/filter all products. At the minimum, support browsing by category, searching by keywords in name/description, and sorting by price.	Fully Functional
	For each product in the result list, show a summary (e.g., image, name, average review rating, etc.) and link to the detailed product page.	Fully Functional
	A detailed product page will show all details for the product, together with a list of sellers and their current quantities in stock. – We only allow one seller for a product ID.	Fully Functional
	For each seller, provide an interface for adding a specific quantity of the product from this seller to the user's cart (see Cart / Order). The page should also include a section showing all reviews for this product (see Feedback / Messaging).	Fully Functional
	Users(Sellers) can create new products for sale. The user who created a product will be able to edit the product information.	Fully Functional

<b>Cart / Order</b>	Each user has a cart. The detailed product page (see Products) will provide a way of adding to this cart. Each line item in the cart refers to one product from one seller with a specific quantity.	Fully Functional
	A detailed cart page should list all line items (quantities and unit prices) and the total price. It should also provide ways to change quantities, remove line items, and submit the entire cart as an order.	Fully Functional
	When submitting the order, make sure to check available inventories and balances. Beware that inventories and prices can be constantly changing. For simplicity of this project, we will update inventories and balances at the time of order submission. The buyer's balance will be decremented, and the sellers' balances will be incremented and inventories decremented. Once the order is placed, the cart becomes empty.	Fully Functional
	The cart contents are persistent: i.e., they should remain after users leave the site and log back in.	Fully Functional
	A detailed order page (from the buyer's perspective) should contain all the information that would have been found on the cart page, but with prices "final." In addition, for each line item, it should show if and when that line item has been fulfilled by the seller (see Inventory / Order Fulfillment).	Fully Functional
	The entire order should be marked as fulfilled if all line items are fulfilled. Once submitted, an order cannot be changed by the buyer.	Fully Functional
<b>Inventory/ Order Fulfillment</b>	Inventory page that lists all products for sale by a seller—We interpreted this as the Inventory Management Page, where a seller can see/manage their inventory all from one page, but this page is empty/inaccessible for users who are not sellers.	Fully Functional
	Seller is able to add a new product to inventory	Fully Functional
	For each product in the user's(seller's) inventory, the user can view and change the available quantity for sale by this user, or simply remove it altogether from the inventory.	Fully Functional
	Seller can browse/search the history of orders fulfilled or to be fulfilled, sorted by in reverse chronological order by default.	Fully Functional
	For each order in this list, show a summary (buyer information including address, date order placed, total amount/number of items, and overall fulfillment status), but do not show information concerning other sellers (recall that an order may involve multiple sellers), and provide a mechanism for marking a line item as fulfilled. – We felt that it was more logical to have every line item in the Order Fulfillment page to be batches of a single product, not grouped together by order number. This is because we felt that sellers may have to fulfill different products separately(for example, one item may be stored in a warehouse in Durham, and another item in a warehouse in Chicago).	Fully Functional
<b>Feedback/ Messaging</b>	A user can submit a single rating/review for a product. The submission link will be incorporated in the detailed product page (see Products).	Fully Functional

	The user cannot submit multiple ratings/reviews for the same product, but can edit/remove any existing ratings/reviews by this user.	
	A user can submit a single rating/review for a seller, provided that the user has ordered something from the seller. Incorporate the submission link in appropriate places in the website, e.g., the detailed order page (see Cart / Order) and the public view of a seller (see Account / Purchases). Again, the user cannot submit multiple ratings/reviews for the same seller, but an existing rating/review can be edited or removed.	Fully Functional
	Each user should be able to list all ratings/reviews authored by this user, sorted in reverse chronological order by default. From this interface the user should be able then select ratings/reviews to update. Incorporate the link to this interface in user account view (see Account / Purchases).	Fully Functional
	Produce summary ratings for products and sellers; pages or sections showing lists of reviews for products and sellers. At the very least, the summary needs include the average and number of ratings; the reviews lists should be sorted by rating or date.	Fully Functional

Additional Features Table

Part	Features	Status	Points (All Additional Features add up to 2 points)
Account / Purchases	Search/filter purchase history by item, by seller, by date etc.	Fully Functional	0.2
	Visualize history of balances, spending amounts and purchases by category, etc.	Fully Functional	0.2
	Add ability to register as seller after creating user account, adds user information to the Sellers table	Fully Functional	0.2
Products	Displaying average ratings; sorting a list of products by average review rating, total sales, available quantity, price, after filtering the top k most expensive products	Fully Functional	0.2
	Filtering a list of products by category	Fully Functional	0.2
	Filtering a list of products by rating and availability of highly rated sellers	Fully Functional	0.2
Carts/Order	Divide the cart into “in cart” and “saved for later” so that a user can check out certain items while keeping the others saved to be purchased at a later time. Items can then be added back into the cart.	fully functional	0.2
Inventory/Order Fulfillment	Add page for inventory management, for registered sellers. Sellers can add new products, edit their current product listings, and delete	Fully Functional	0.2

	their products, changes reflected in appropriate Products relations.		
	Add visualization/analytics to the inventory and/or order fulfillment pages to show popularity and trends of one's products.	Fully Functional	0.2
<b>Feedback/ Messaging</b>	Upvote functionality for rating/reviews to allow certain reviews to be marked as more or less helpful. By default the top 3 most helpful reviews would be shown first, and then the most recent following these.	Fully Functional	0.2

---

# Part 3: MISC

## 1. Dataset size you have used– and whether the data is real, real-like, or synthetic

- This generated dataset consists of the following parameters:
  - i. num\_users = 100
  - ii. num\_sellers = num\_users // 10
  - iii. num\_products = 200
  - iv. num\_purchases = 300
  - v. num\_product\_reviews = 500
  - vi. num\_seller\_reviews = 100
  - vii. num\_cart\_items = 50
  - viii. num\_marks = 10
  - ix. categories = ['personal wellness', 'food', 'athletics']
- This dataset is large enough to run a nontrivial audience of 100 users with no noticeable lag. This dataset was generated using the Python \texttt{faker} package, which provides high syntactic, but not semantic accuracy.

## 2. Whether you have hard-coded any value

- No, except for some default values: each user has a default profile picture, each item has a default category (“NoCategory”).

## 3. Whether you have taken care of SQL injection attack and how

Yes. Our code uses parameterized inputs which guarantees that email is only treated as a string and not SQL code. We also have steps that validate input before using it for query like ensuring an email input is a possible valid email with the necessary components.

```
This is part of our code that authenticates users for login.

@staticmethod
def get_by_auth(email, password):
    rows = app.db.execute("""
        SELECT password, userid, email, firstname, lastname, address, balance
        FROM Users
        WHERE email = :email
    """, email=email)

SQL injection input: ac802@duke.edu' OR 1=1 DROP TABLE Users CASCADE; -
Example Vulnerable Code:

@staticmethod
def get_by_auth(email, password):
    rows = app.db.execute(
        f"SELECT password, userid, email, firstname, lastname, address, balance FROM Users WHERE email = '{email}'"
    )
```

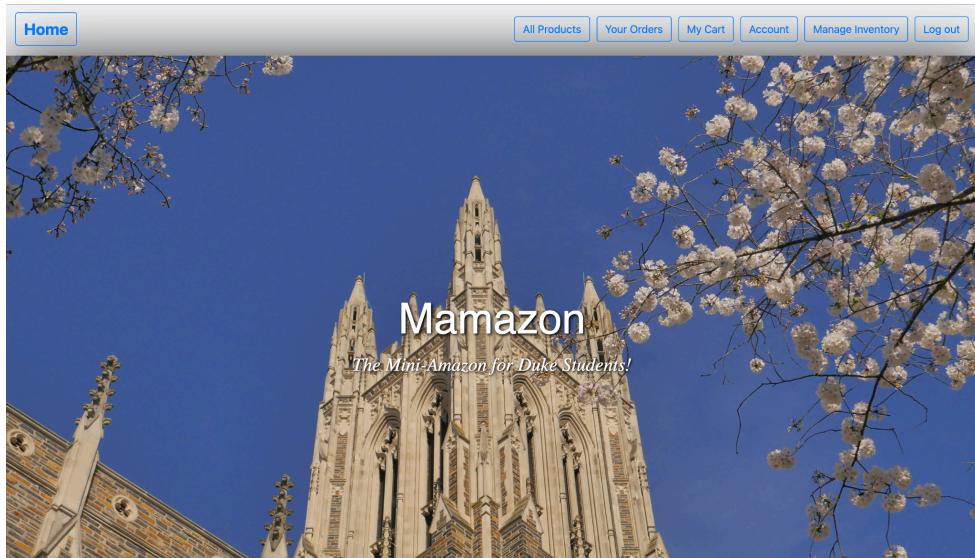
## 4. If you have implemented any additional features

- Yes – See additional features table above

# Appendix

## **Website Design**

Home Page



Login/Register Page

The image shows the login/register page of the Mamazon website. At the top, there is a placeholder image of two people's hands. Below it is a light gray sidebar containing a "Login to Mamazon" button. The main content area has a white background with a rounded rectangular form. It contains fields for "Email" and "Password", each with an input box. Below the password field is a teal-colored button with the text "Congratulations, you are now a registered user!".

## Cart Page

[Home](#)

All Products Your Orders My Cart Account Manage Inventory Log out

### Your Cart

**laptop**  
Price: \$899.99  
Quantity:  
2   
Subtotal: \$1799.98

Total: \$1799.98

**Saved for Later**

**running shoes**  
Price: \$79.99  
Quantity: 2

[Continue Shopping](#)

© 2024 Mamazon. All rights reserved.

## Purchase History Page

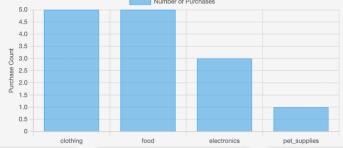
[Home](#)

All Products Your Orders My Cart Account Log out

### Your Purchase History

Search by Product Name Search by Seller Name mm/dd/yyyy mm/dd/yyyy All Statuses

#### Purchases by Category



Category	Number of Purchases
clothing	5
food	5
electronics	3
pet supplies	1

**Product: ice cream**  
Product ID: 2  
Price: \$1.0  
Purchase Time: 2024-11-08 20:32:30.048388  
Quantity: 2  
Status: Completed  
Seller: Muchang Bahng

**Product: ice cream**  
Product ID: 2  
Price: \$1.0  
Purchase Time: 2024-11-08 20:32:35.431353  
Quantity: 2  
Status: Completed  
Seller: Muchang Bahng

**Product: ice cream**  
Product ID: 2  
Price: \$1.0  
Purchase Time: 2024-11-08 20:55:54.412071  
Quantity: 2  
Status: Completed  
Seller: Muchang Bahng

**Product: ice cream**  
Product ID: 2  
Price: \$1.0  
Purchase Time: 2024-11-08 20:55:56.758212  
Quantity: 2  
Status: Completed  
Seller: Muchang Bahng

**Product: ice cream**  
Product ID: 2  
Price: \$1.0  
Purchase Time: 2024-11-08 20:56:06.580743  
Quantity: 2  
Status: Completed  
Seller: Muchang Bahng

## Products Page

[Home](#)

All Products Your Orders My Cart Account Manage Inventory Order Fulfillment Log out

### All Products

wa Search products by seller... Search products by category... Top K most expensive products Price



Watch argue  
ID: 73 **\$480.46**  
Rating: 3.50  
Seller: Kelly Perkins  
[View Details](#) [Add to Cart](#)



Soon watch for others  
ID: 140 **\$302.51**  
Rating: 3.00  
Seller: Kelly Perkins  
[View Details](#) [Add to Cart](#)



Career wall relationship no  
ID: 4 **\$291.48**  
Rating: 3.00  
Seller: Melanie Grant  
[View Details](#) [Add to Cart](#)



Purpose seat water nothing  
ID: 109 **\$258.09**  
Rating: 3.00  
Seller: Ronald Miller  
[View Details](#) [Add to Cart](#)



Half wall  
ID: 78 **\$249.37**  
Rating: 3.00  
Seller: David White  
[View Details](#) [Add to Cart](#)



Want build assume  
ID: 64  
Seller: Kelly Perkins  
[View Details](#) [Add to Cart](#)



Practice happen walk  
ID: 89  
Seller: Kelly Perkins  
[View Details](#) [Add to Cart](#)



Ability always help watch  
ID: 175  
Seller: Melanie Grant  
[View Details](#) [Add to Cart](#)



Trial water exist  
ID: 51  
Seller: Ronald Miller  
[View Details](#) [Add to Cart](#)



Toward discover  
ID: 39  
Seller: David White  
[View Details](#) [Add to Cart](#)

# Product Details Page



## Watch argue

**Category:** athletics

**Price:** \$480.46

**Available Quantity:** 13

**Description:** Necessary food owner identify director forward sound task concern than establish series.

**Quantity:**

**Add to Cart**

### Seller Information

**Seller ID:** 9

**Seller Name:** Kelly Perkins

[View Seller Profile](#)

#### Product Reviews

**3.5** out of 5  
 Based on 2 product reviews

#### Seller Reviews

**2.8** out of 5  
 Based on 13 seller reviews

### Write a Product Review

Rating: Select a rating

Your Review:

**Submit Review**

### Write a Seller Review

Rating: Select a rating

Your Review:

**Submit Review**

### Customer Reviews for this Product

 2024-06-26 12:42

Magazine star well growth.  
By [Kelly Perkins](#)  
1 found this helpful  
[Remove Helpful](#)

 2024-03-04 16:41

Medical manage town ahead only together quickly support.  
By [Jessica Frank](#)  
0 found this helpful  
[Mark Helpful](#)

## Account Page

All Products   Your Orders   My Cart   Account   Manage Inventory

### My Account

**Current Balance**  
\$1000.00

[Deposit](#)   [Withdraw](#)

### My Profile



User ID: 100  
Email: ac802@duke.edu  
First Name: Abhishek  
Last Name: Chataut  
Address: 300 Swift

[Edit Account](#)  
[Change Password](#)  
[Register as a Seller](#)

- If user is not a seller, there is a button added where they can register as seller.
- If user is a seller, that button becomes a button to go to the Manage Inventory Page.

Account Page for looking at a Seller:

### Amanda's Profile

#### User Information



User ID: 5  
Name: Amanda Smith  
Email: melissayates@hotmail.com

3.1 out of 5  
★★★☆☆  
Based on 9 seller reviews

#### Write a Review for this Seller

You need to purchase from this seller before you can leave a review.

#### Recent Reviews

#### Product Reviews

Product: Break sort  
Rating: ★★★★★  
Review: Write far television report according red it. Who brother boy affect.  
Date: 2024-11-10 05:28

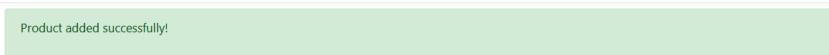
## Manage Inventory Page

The screenshot shows a web application interface for managing inventory. At the top, there is a navigation bar with links: Home, All Products, Your Orders, My Cart, Account, Manage Inventory, and Log out. The main content area has a title "Manage Your Inventory" and a sub-section "Your Products". Below this, there is a button labeled "Add New Product" and a message stating "You don't have any products in your inventory yet." The rest of the page is mostly blank.

## Model for Add Product:

The screenshot shows a modal dialog titled "Add New Product" overlaid on the inventory management page. The modal contains fields for Product Name (set to "Cute Pet"), Price (set to "4"), Quantity (set to "1"), and a file input field for "Image Path(url or image path)" containing "dog.png". There is also a "Choose File" button next to the input field. Below these fields are "Category" (set to "Animals") and "Description" (set to "Nice and does not bite"). At the bottom of the modal is a blue "Add Product" button.

Once Product is Added:



## Manage Your Inventory

### Your Products

Add New Product

Computer Mouse	\$5.99	
Category: NoCategory		
In Stock: 10		
<a href="#">View Details</a>	<a href="#">Edit</a>	<a href="#">Delete</a>

Edit Product Popup:

Product added successfully!

## Edit Product

Product Name	Computer Mouse
Price	5.99
Quantity	10
Description	Good computer mouse
Category	NoCategory
Image Path	NoImage
<a href="#">Update Product</a>	

Delete Product Popup:

Product added successfully!

## Confirm Deletion

Are you sure you want to delete this product?

[Cancel](#) [Delete](#)

Order Fulfillment Page

[Home](#)
All Products
Your Orders
My Cart
Account
Manage Inventory
Order Fulfillment
Log out

## Order Fulfillment

All Statuses
▼
Search

**Order Date:** 2024-12-04 00:36:59

**Product:** abcd

**Product ID:** 15

**Quantity:** 1

**Buyer:** abcd efg

**Buyer Address:** None

**Status:** Pending

Mark as Fulfilled

**Order Date:** 2024-12-03 22:33:10

**Product:** abcd

**Product ID:** 15

**Quantity:** 1

**Buyer:** abcd efg

**Buyer Address:** None

**Status:** Fulfilled

## Seller Management Analytics:

**Analytics**

**Total Purchases by Product**

- abcf 52 units sold - \$780.00 in revenue

**Total Revenue: \$780.00**

**Top 5 Most Purchased Products**

The chart displays a single data point for product 'abcf' with a revenue of \$780.00. The y-axis is labeled 'Revenue (\$)' and ranges from 0 to 800 in increments of 100. The x-axis has a single label 'abcf'.

Product	Revenue (\$)
abcf	780.00