

Drone Grocery Delivery

CS 4400: Introduction to Database systems

Spring 2021: Semester Project

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Version History

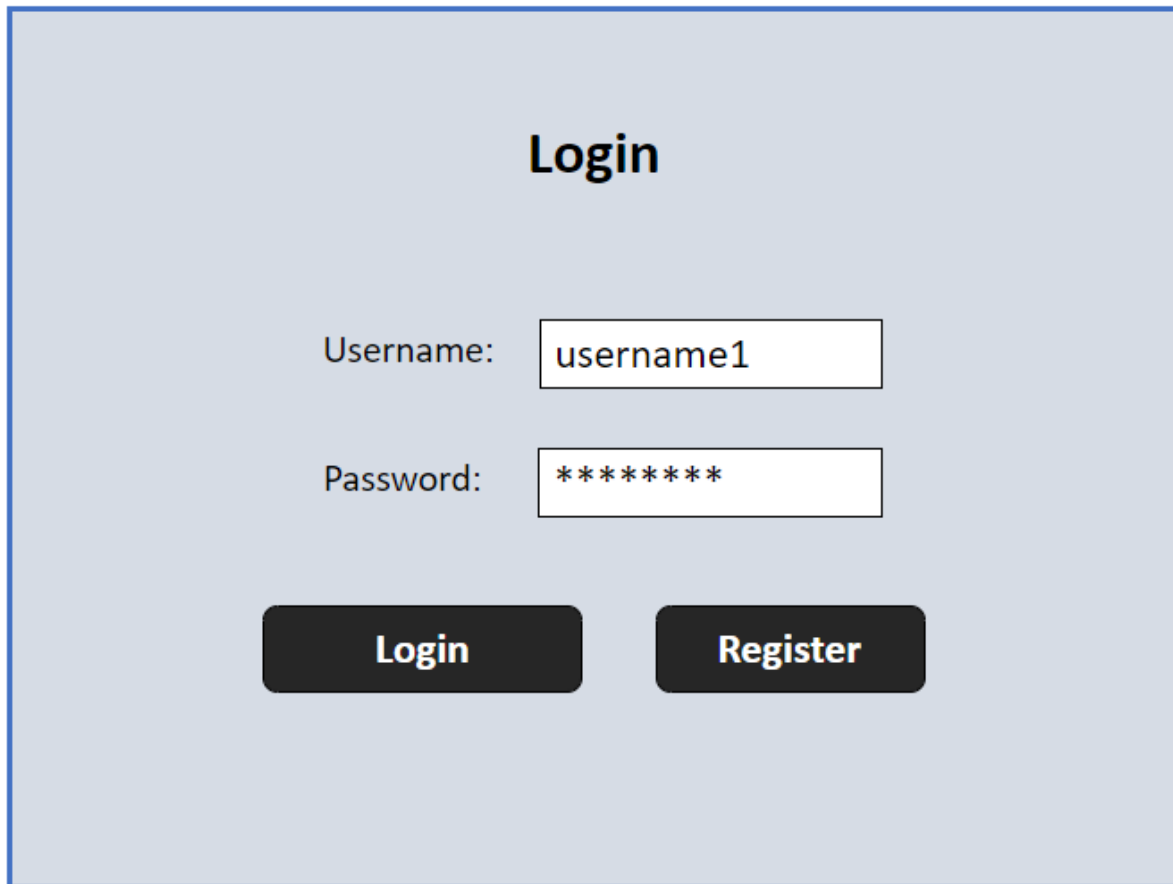
Version	Date	Notes
0	2/9/2021	Initial release
1	2/15/2021	S9: PLU is unique for each item/chain combination, on the previous screen the PLU should read 10097 S11: Drone Techs cannot operate drones in two different zip codes, employee2 was changed to employee 3 for drone 47
2	02/20/2021	S12: Fixed an error on screen 12 to ensure combination of chain name and store name is unique
3	02/25/2021	S17: Two different drone operators were operating the same drone. Kelly Kapoor is now operating 109.
4	03/30/2021	S5: A chain cannot have two stores in the same zip code. S11: The radius filter provides an lower bound to the drone radius (i.e. a filter input of 7 would return all drones with a radius of 7 or higher) S15: Clicking place order changes the order status to "pending". Changed "N/A" or "All" to NULL
5	04/09/2021	S15: Clicking place order on Screen 15, creates an entry in the database with status "Creating" S16: Clicking place order on Screen 16, updates the status to "Pending" and updates any quantities selected.

Project Description

General Notes

1. Users must be exactly one of:
 - a. **Customer** – shops from stores and places orders
 - b. **Employee** – works at grocery chain
 - i. **Chain Manager** – manages and oversees chain
 - ii. **Drone Technician** – operates drones and fulfills orders
 - c. **Admin** – manages logistics
2. An employee must be exactly one of:
 - a. Chain Manager
 - b. Drone Technician
3. Admins are special users that have already been prepopulated into the database. They are not able to be registered in the system.
4. Tables presented in each of the screens must have correct corresponding column names. Additionally, columns are NOT sortable unless it is specified in the description.
5. Dropdown lists (▼) must be prepopulated by the database as specified in each screen's corresponding text description.
6. Filtering based on certain columns or fields is only required if specified by the description.
7. All columns that have the double arrows (↑↓) are sortable.
8. All filter items are optional.
 - a. For "range" filters, the starting and ending cutoffs are separately optional (i.e., a start date can be specified without an end date and vice versa).
9. All "range" filters are INCLUSIVE on both ends.
10. Ignore bullets labeled as "System Notes" until phase 3 and phase 4.

Screen 1: Login



A login screen with a light blue background and a dark blue border. The title "Login" is centered at the top in a large, bold, black font. Below the title, there are two input fields. The first is labeled "Username:" and contains the text "username1". The second is labeled "Password:" and contains eight asterisks "*****". Below the input fields, there are two dark blue buttons with white text. The left button is labeled "Login" and the right button is labeled "Register".

Login

Username:

Password:

Login **Register**

Notes:

1. Valid username and password (i.e., exist in the database) are required to log in.
2. All fields are required.

Screen 2: Register

Register

First Name:	<input type="text" value="First"/>	Street:	<input type="text" value="1 North Ave"/>
Last Name:	<input type="text" value="Last"/>	City:	<input type="text" value="Atlanta"/>
Username:	<input type="text" value="username1"/>	State:	<input type="text" value="▼ GA"/>
Password:	<input type="password" value="*****"/>	Zip:	<input type="text" value="30309"/>
Confirm:	<input type="password" value="*****"/>		

Customer

Employee

Card Number

CVV:

Exp:

Register

Register

First Name:	<input type="text" value="First"/>	Street:	<input type="text" value="1 North Ave"/>
Last Name:	<input type="text" value="Last"/>	City:	<input type="text" value="Atlanta"/>
Username:	<input type="text" value="username1"/>	State:	<input type="text" value="▼ GA"/>
Password:	<input type="password" value="*****"/>	Zip:	<input type="text" value="30309"/>
Confirm:	<input type="password" value="*****"/>		

Customer

Employee

Associated Grocery Chain:

Associated Store Name:

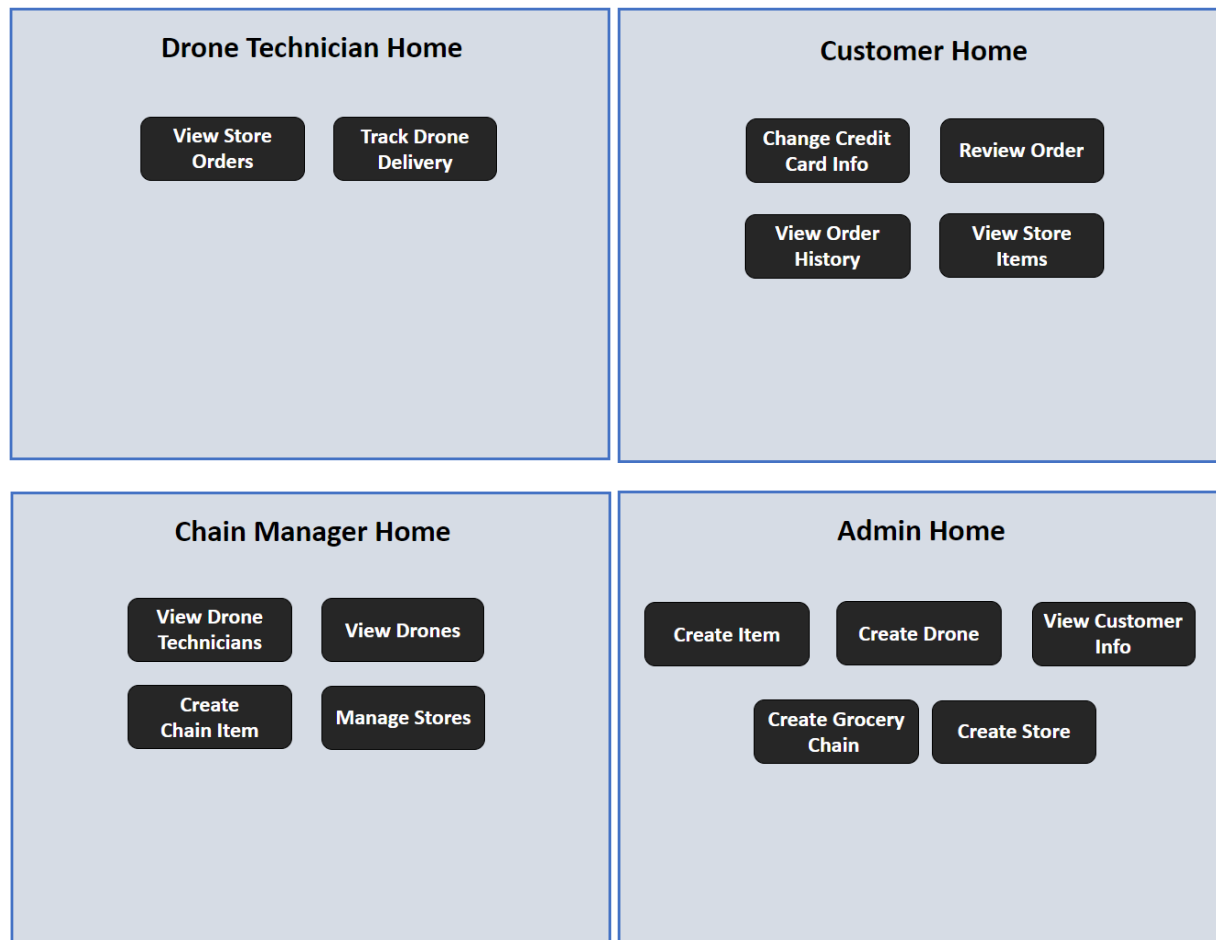
Register

Notes:

1. User will be registered as one of the following: "customer" or "employee."
 - a. The customer-specific and employee-specific fields should be mutually exclusive. In other words, you should not be able to fill them both in and hit register.
2. Username is unique for all users.
3. "First Name", "Last Name", "Username", "Password", "Confirm Password", "Street", "City", "State", and "Zip Code" are required for all users to register.
 - a. Store the hashed passwords instead of the literal passwords in the database.
4. Addresses should be stored as separate components in the database:

- a. Zip code consists of 5 digits.
 - b. States are represented by 2-letter abbreviations.
- 5. All fields are required.
- 6. When an employee registers, the grocery chain and store names that they enter must already exist in the database.
- 7. If an employee registers by entering both chain and store name, they are registered as a drone technician.
- 8. If an employee registers by entering only a chain name, they are registered as a chain manager.
 - a. There can only be one chain manager per chain. Registration should fail if a chain manager tries to register for a chain that already has a chain manager.
- 9. Additional Constraints:
 - a. "Password" and "Confirm Password" should match for a valid registration.
 - i. Password must be at least 8 characters in length.
 - b. If any fields, combinations, or constraints are invalid, registration must fail.

Screen 3: Home Screen(s)



Notes:

1. This screen populates and will contain different functions based on the user type.
2. A customer can:
 - a. Choose store
 - b. Change credit card info
 - c. view order history
 - d. view store items
 - e. view cart
3. A Drone Technician can:
 - a. View store orders
 - b. Track assigned drones
4. A Chain Manager can:
 - a. View drone technicians
 - b. View drone information
 - c. Manage Stores
5. An Admin can:
 - a. View customers
 - b. Create grocery chain

- c. Create store
- d. Create drones
- e. View order summaries

Screen 4: Admin – Create Grocery Chain

Admin Create Grocery Chain

Grocery Chain Name:

Back **Create**

Notes:

1. This screen allows the Admin to create a Grocery Chain.
2. Grocery chain name must be unique and cannot already exist.
3. All fields are required.

Admin Create New Store

Affiliated Grocery Chain:

▼

Moss Market

Grocery Store Location Name:

Midtown

Street:

123 Piedmont Ave

City:

Atlanta

State:

▼

GA

ZIP:

30332

Back

Create

Notes:

1. This screen allows for the admin to create a new store for a grocery chain.
2. You select the associated grocery chain via the drop down.
3. You enter the location name for this specific store within the chain and its address details (street, city, state, zip)
4. Zip code consists of 5 digits.
5. States are represented by 2-letter abbreviations.
6. All fields are required.
7. Note that it is possible for two stores from different chains to have the same location name.
8. A chain cannot have two stores in the same zip code.
9. The combination of chain name and store location name should be unique and cannot already exist in the database.

Admin Create Drone

Drone Id:

Associated Zip Code:

Travel Radius:

Status:

Store Associate:

Notes:

1. This screen allows an admin to create and assign a new drone.
2. Status is “available” by default.
3. All fields are required.
4. Every drone has an associated zip code, and the drone should only be operated to fulfill orders for stores that have a matching zip code.
5. Drone ID should be autoincremented based on the last drone ID created. For example, the drone created before the one on the screen would have a drone ID of 155.
6. Travel radius should be an integer value.
7. Dropdown for zip codes should only display zip codes of existing store locations.
8. Dropdown of store associate should only display the usernames of employees who work for a store in the previously selected zip code.

Screen 7: Admin – Create Item

Admin Create Item

Name:	<input type="text" value="Navel Orange"/>
Type:	<div>▼<input type="text" value="Produce"/></div>
Organic:	<div>▼<input type="text" value="Yes"/></div>
Origin:	<input type="text" value="California"/>

Back

Create

Notes:

1. This screen allows an admin to create a new item.
2. Name must be unique and cannot already exist in the database.
3. All fields are required.
4. “Type” dropdown includes several categories: Dairy, Bakery, Meat, Produce, Personal Care, Paper Goods, Beverages, Other.
5. The dropdown for “organic” has two options: yes and no.

Admin View Customers

Customer:

Username ↑↓	Name ↑↓	Address
Atla123	Aang Avatar	123 Air Temple Rd, Atlanta, Georgia 00000
Moss123	Mark Moss	456 5th Street, Atlanta, Georgia 12345
gpburdell	George Burdell	North Ave NW, Atlanta, Georgia 30332
Mj23	Michael Jordan	23 Baller Ave, Brooklyn, New York 11201
Tsandhu	Tanishq Sandhu	890 Techwood Dr, Atlanta, Georgia 30332

BackResetFilter

Notes:

1. This screen allows an admin to view all registered customers and their addresses.
2. The table can be sorted by username and name.
3. The screen can be filtered by customer first name and last name. Both are optional..
4. The “address” column is comprised of the customer’s street, city, state, and zip code.
5. “Name” column displays the first and last names of customers.

Screen 9: Chain Manager – Create Chain Item

Chain Manager Create Chain Item

Chain Name:	Moss Market
Item:	▼ Navel Orange
Quantity Available:	500
Limit Per Order:	20
PLU Number:	10098
Price per Unit	\$ 0.88

Back

Create

Notes:

1. This screen allows a chain manager to create an item for their chain.
2. All stores within their chain will have the same “Item”(s) with the same “Limit Per Order”, “PLU Number”, and “Price per Unit”
3. The “Item” dropdown must only include general Item options that have already been created by an Admin.
4. Prices should have 2 decimal places.
5. “Quantity Available,” “Limit Per Order,” and “PLU Number” should have integer values.
6. PLU number must be a unique, 5-digit integer for **each item/chain combination**.
 - a. PLU should be prepopulated.
 - b. PLU should be autoincremented based on the last PLU created. For example, the item created before the one on the screen would have a PLU of **10097**.
7. If there is any quantity of available within the chain, a customer from any store within the chain can order the item.
8. System Notes:
 - a. Chain manager is known.

Screen 10: Chain Manager – View Drone Technicians

Chain Manager View Drone Technicians

Chain: Moss Market

Username:

Location: ▼ NULL

Filter

Username	Name	Location
employee1	Chandler Bing	▼ West Midtown
<u>EmployeeOfTheMonth</u>	Dwight <u>Schrute</u>	▼ Centerville
employee2	Sofia <u>Thefirst</u>	▼ Fairview
katara123	Katrina Smith	▼ Midtown

Back

Reset

Save

Notes:

1. Chain Manager can view all drone technicians that work for their grocery chain.
2. They can reassign an employee to a store location.
3. This screen can be filtered by username and location. Both are optional.
4. Dropdowns for the location column display all the store locations for that chain.
5. When an employee is reassigned, they take their assigned drones with them.
 - a. The zip codes for all the employee's assigned drones should be updated to reflect the zip code of the new location they work at (i.e., a drone's zip code = technician's store's zip code).
6. System Notes:
 - a. Chain Manager is known.

Chain Manager View Drones

Drone ID: Radius:

Filter

Drone ID	Operator	Radius	Zip Code	Status
1	employee1	8	30067	Available
2	katara123	4	30032	Busy
5	employee2	13	30333	Busy
13	sokka456	7	33005	Available
47	employee3	10	32006	Busy

Back

Reset

Notes:

1. This screen allows a chain manager to view all the drones for their chain.
2. The screen can be filtered by drone ID and radius. Both are optional.
 - a. The radius filter provides an lower bound to the drone radius (i.e. a filter input of 7 would return all drones with a radius of 7 or higher)
3. The table can be sorted by drone ID, radius, zip code, and status.
4. System Notes:
 - a. Chain Manager is known.

Screen 12: Chain Manager – Manage Stores

Manage Chain's Stores

Chain: Moss Market

Total Range: min - max

Name: ▼ NULL

Name ↑↓	Address ↑↓	# Orders ↑↓	Employees↑↓	Total ↑↓
Centerville	123 Center Rd Norcross, GA 30003	20	10	\$2204.34
Midtown	170 Monroe Dr Atlanta, GA 30332	14	7	\$1300.75
Fairview	546 Database St Athens, GA 30601	17	6	\$1903.32
Riverside	809 Entity Ave Atlanta, GA 30332	11	5	\$801.05

Back

Reset

Filter

Notes:

1. This screen allows a Chain Manager to manage all stores that are associated with their grocery store chain.
2. **Combination of chain name and store name should be unique.**
3. The “Total” column of the table is the sum of order totals from all orders placed at that store.
4. “# Orders” represents the total number of orders placed at that store.
5. “Employees” represents the total number of employees working at the store –including drone technicians and Chain Managers.
6. The table can be sorted by store name, number of orders, number of employees, and total.
7. The screen can be filtered by store name, minimum total, and maximum total. All fields are optional.
 - a. If the max of the “Total Range” is null, the min acts as a lower bound.
 - b. If the min of the “Total Range” is null, the max acts as an upper bound.
 - c. **If the Name drop down is (NULL), it returns all the stores.**
8. System Notes:
 - a. Chain Manager is known.

Screen 13: Customer – Change Credit Card Information

Change Credit Card Information

Username:	<input type="text" value="SpaceCowboy"/>
First Name:	<input type="text" value="Spike"/>
Last Name:	<input type="text" value="Spiegel"/>
Credit Card Number	<input type="text" value="xxx xxx xxx xxx"/>
Security Code	<input type="text" value="xxx"/>
Expiration Date	<input type="text" value="1/24/2023"/>

Notes:

1. This screen allows a customer to update their credit card info.
2. For the card to be approved, first name, last name, and username should match those stored in the database for that customer, and the card should not be expired.
3. All fields are required.
4. A customer can only hold one credit card.
5. System Notes:
 - a. customer is known.

Customer View Order History

Username:	SpaceCowboy
Order ID:	▼ 42
Total Amount:	\$54.53
Total Items:	10
Date Of Purchase:	3/17/2020
Drone ID:	56
Store Associate:	Chandler Bing
Status:	Delivered

Back

Notes:

1. This screen allows a customer to view and track their orders.
2. Dropdown displays order IDs for all orders belonging to that customer.
3. After users select the ID of their order history, the gray fields will be filled with the corresponding order info.
4. Store Associate field displays first and last name of assigned employee.
5. System Notes:
 - a. Customer is known

Screen 15: Customer – View Store Items

Customer View Store Items

Username:

Chain: ▼

Category: ▼

Store: ▼

Items:	Quantity	Items:	Quantity
<input type="radio"/> Bread	▼ <input type="text" value="1"/>	<input type="radio"/> Java Coffee	▼ <input type="text" value="10"/>
<input type="radio"/> Broccoli	▼ <input type="text" value="5"/>	<input type="radio"/> Apples	▼ <input type="text" value="7"/>
<input type="radio"/> Chicken Breast	▼ <input type="text" value="2"/>	<input type="radio"/> Toilet Paper	▼ <input type="text" value="15"/>

Cancel Order

Place Order

Notes:

1. This screen allows the customer to shop from a store.
2. Customer can only shop from one store at a time.
3. A customer can only shop from stores that have the same zip code as their address.
 - a. The dropdowns for “Chain” and “Store” should only display stores that are located at the same zip code as the one the customer entered during registration.
 - b. If there is not a store in the customer’s zip code, “Chain”, “Store”, and Item will show as NULL and there should be a message to the customer stating that there are no stores available to order from.
4. Quantity dropdowns should only display numbers less than or equal to the limit per order that the chain manager set when he/she created the store item.
5. Clicking on the “Place Order” button takes the customer to screen 16.
 - a. Clicking place order changes the order status to “creating”.
6. System Notes:
 - a. Customer is known from log in information and cannot be edited.

Screen 16: Customer – Review Order

Customer Review Order

Chain: Moss Market**Store:** West Midtown

Items	Quantity	Unit Cost
Java Coffee	▼ 2	\$3.14
Toilet Paper	▼ 15	\$1.59
Apples	▼ 7	\$2.65
Bread	▼ 1	\$3.58

Total: \$45.92

Back**Place Order**

Notes:

1. This screen allows a customer to view the items in their cart before placing an order.
2. Customer can update quantities in the cart if necessary.
3. Customer can only shop from one store at a time.
4. When a customer places an order for an item, the quantity that the customer ordered should be subtracted from that store item's inventory.
5. When a customer places an order, an order ID should be generated. It should be autoincremented based on the last order ID created.
6. Order should not go through if the customer's credit card has expired.
7. When a customer selects place order, the status of the order changes to "Pending" and updates any quantities selected.
8. System Notes:
 - a. Customer is known.

Screen 17: Drone Technician – View Store Orders

View Store Orders

Dates: -

ID ↑↓	Operator	Date ↑↓	Drone ID ↑↓	Status ↑↓	Total ↑↓	
12	▼ NULL	1/28/2021	▼ NULL	▼ Pending	\$78.61	<input checked="" type="radio"/>
9	Tom Lee	1/26/2021	101	In Transit	\$25.48	<input type="radio"/>
5	Bob Westin	1/25/2021	102	Drone Assigned	\$101.00	<input type="radio"/>
2	Kelly Kapoor	1/25/2021	109	Delivered	\$33.43	<input type="radio"/>

BackResetFilterView Order DetailsSave

Notes:

1. This screen allows a drone technician to view all the orders for their assigned store.
2. A drone technician can assign themselves and one of their drones to an order only if it is pending.
3. Both the drone ID and drone technician should be assigned together. You cannot assign one by itself.
4. Dropdowns in the operator column should only include two options: N/A and the full name of the logged in drone technician.
5. The drone ID dropdown should only display available drones that are assigned to the drone technician who is logged in (i.e., drones that are busy should not be displayed in the dropdown).
6. Using the radio buttons on the right, a drone technician can select one order to view its detailed summary. The “View Order Details” button leads to screen 18.
7. The screen can be sorted by Order ID, date, drone ID, status, and order total.
8. The screen can be filtered by a start date and end date (both are optional).
9. Once a drone technician assigns themselves and one of their drones to an order and clicks save, they can continue to update the order status (drone assigned, in transit, delivered, etc.).
10. Once the order status is “drone assigned”, the assigned drone’s status should be changed to “busy.”
11. System Notes
 - a. Drone technician is known.
 - b. This screen uses radio buttons to enforce that a drone technician can only view details for one order at a time, but your screen can use something else as long as the functionality is the same.

Screen 18: Drone Technician – View Order Details

Order Details

Customer Name:	Spike Spiegel	Address:	321 Happy St Norcross, GA 30003						
Order ID:	42								
Total Amount:	\$7.61								
Total Items:	3	Items:	<table><thead><tr><th>Item</th><th>Count</th></tr></thead><tbody><tr><td>Toilet Paper</td><td>1</td></tr><tr><td>Bread</td><td>2</td></tr></tbody></table>	Item	Count	Toilet Paper	1	Bread	2
Item	Count								
Toilet Paper	1								
Bread	2								
Date Of Purchase:	1/28/2021								
Drone ID:	109								
Store Associate:	Kelly Kapoor								
Status:	Delivered								

Back

Notes:

1. A drone technician can access this screen from screen 17 by selecting a radio button and clicking "View Order Details."
2. The screen displays a summary of a customer's order.
3. If the order status is pending, the "Store Associate" and "Drone ID" fields will be N/A until a drone technician and drone are assigned to the order.
4. Store Associate field displays first and last name of assigned employee.
5. The items table will display the item and the quantity that the customer ordered.

Screen 19: Drone Technician – Track Assigned Drones

My Assigned Drones

Drone ID: Status: NULL

Drone ID ↑↓	Status ↑↓	Radius ↑↓
151	available	7
100	busy	5
128	busy	3
104	available	4

Notes:

1. This screen allows a drone technician to view his/her assigned drones.
2. This can be filtered by drone ID and status. Both are optional.
3. The table can be sorted by drone ID, status, and radius.
4. Note that the zip code attribute for all drones displayed on this screen will be the same since a technician can only work at one store and can only be assigned to a drone whose zip code matches the zip code of the store that they work for (i.e., drone's zip code = technician's store's zip code).
5. System Notes
 - a. Drone technician is known.