

CNT 4714 – Project 1 – Spring 2024

Title: “Program Assignment 1: Event-Driven Programming”

Points: 100 points

Due Date: **Sunday January 28, 2024 by 11:59 pm (WebCourses time)**

Objectives: To practice event-driven programming using Java-based GUIs. To refresh your basic Java skills. To simulate (albeit at a very high-level) an enterprise application.

Description: Develop a Java application that creates a standalone GUI application that simulates an e-store. We'll call our store Nile Dot Com... we're not quite as big as Amazon.com!¹ The application will allow the user to place in stock items into a shopping cart and once all items are included, total all costs (including tax), produce an invoice, and append a transaction log file.

Your program development must include the following steps:

1. Create a main GUI containing the following components:
 - a. An area that allows the user to input data into the application along with the descriptive text that describes each input area.
 - b. An area that shows the current contents of the shopping cart.
 - c. A total of six buttons as shown below with functionality as described below. The various input fields and buttons on the interface are only accessible at certain points during a user's interaction with the e-store.
2. An input file named “inventory.csv”. This is a comma separated file which contains the data that will be read by the application when the user makes a selection. Each line in this file contains five entries: an item id (a string), a quoted string containing the description of the item, an in stock status (a string), the quantity on hand (an integer), and the unit price for one of the item (a double). A sample file is provided for you on WebCourses. Feel free to create your own input file for testing purposes or augment the provided input file.
3. An output file (append only) named “transactions.csv” must be created that uniquely identifies and logs each user transaction with the e-store. The unique transaction id will be generated as a permutation of the date/time string when the transaction occurred (see below).

Restrictions:

- Your source file shall begin with comments containing the following information:

```
/* Name: <your name goes here>
Course: CNT 4714 – Spring 2024
Assignment title: Project 1 – An Event-driven Enterprise Simulation
Date: Sunday January 28, 2024
*/
```
- We'll assume that a shopping cart can hold at most 5 separate items. You don't need to worry about handling more than 5 separate items/transaction.
- We'll assume that our client's know the sequence of events that need to occur. This will reduce the amount of error detection/correction that you need to implement (see more below).
- Assume the tax rate is 6%. Discount rates as shown below on page X.

¹ Source = <https://www.wonderslist.com/top-10-largest-rivers/>

Input Specification: The file “`inventory.csv`” as described above (see example below as well).

Output Specification: Output is to appear in the specified components of the GUI and various message boxes that appear, plus the contents of the “`transactions.csv`” log file that will be generated.

Deliverables:

Submit all of the following via WebCourses no later than 11:59pm Sunday January 28, 2024. Zip everything into a single folder.

- (1) A working copy of your source code (all `.java` files) and any necessary supporting libraries.
- (2) Include a file that contains (**at least**) the following nine screen shots.
 - a. The initial GUI instance (like number 2 in Additional Information below).
 - b. The GUI after the user has entered an item number (ID) and quantity and clicked the “Find Item #” button (like number 4 below).
 - c. The GUI after the user has added an item from screenshot (b) above but before searching for the next item (like numbers 7 and 9 below).
 - d. The GUI after the user has searched for the next item after the one in (b) above was added to the cart, but before adding this new item to the cart (like number 8 below).
 - e. The GUI and the message dialog box when the user clicks the “View Current Order” button with multiple items (at least two) in the order (like number 10 below).
 - f. The message dialog box when the user clicks the “Check Out” button for an order containing multiple items (like number 11 below).
 - g. The GUI and the message dialog box when the user has entered an item number (ID) and quantity where the quantity is greater than the number in stock (like number 16 below).
 - h. The GUI and the message dialog box when the item the user has selected is out of stock (like number 13 below).
 - i. The GUI and the message dialog box when the item the user has selected is not contained in the inventory file (like 16 below).
- You may include more screenshots than the nine listed above if you think they will illustrate additional features of your application than those already listed above.
- (2) Include your “`transactions.csv`” file as it stands after several different transactions have been recorded. You should have at least **5** different transactions in the file spanning a time period of at least **two hours** with at least **three** of these transactions having **four or five** items in the transaction. (similar to the one shown on the last page of this document).

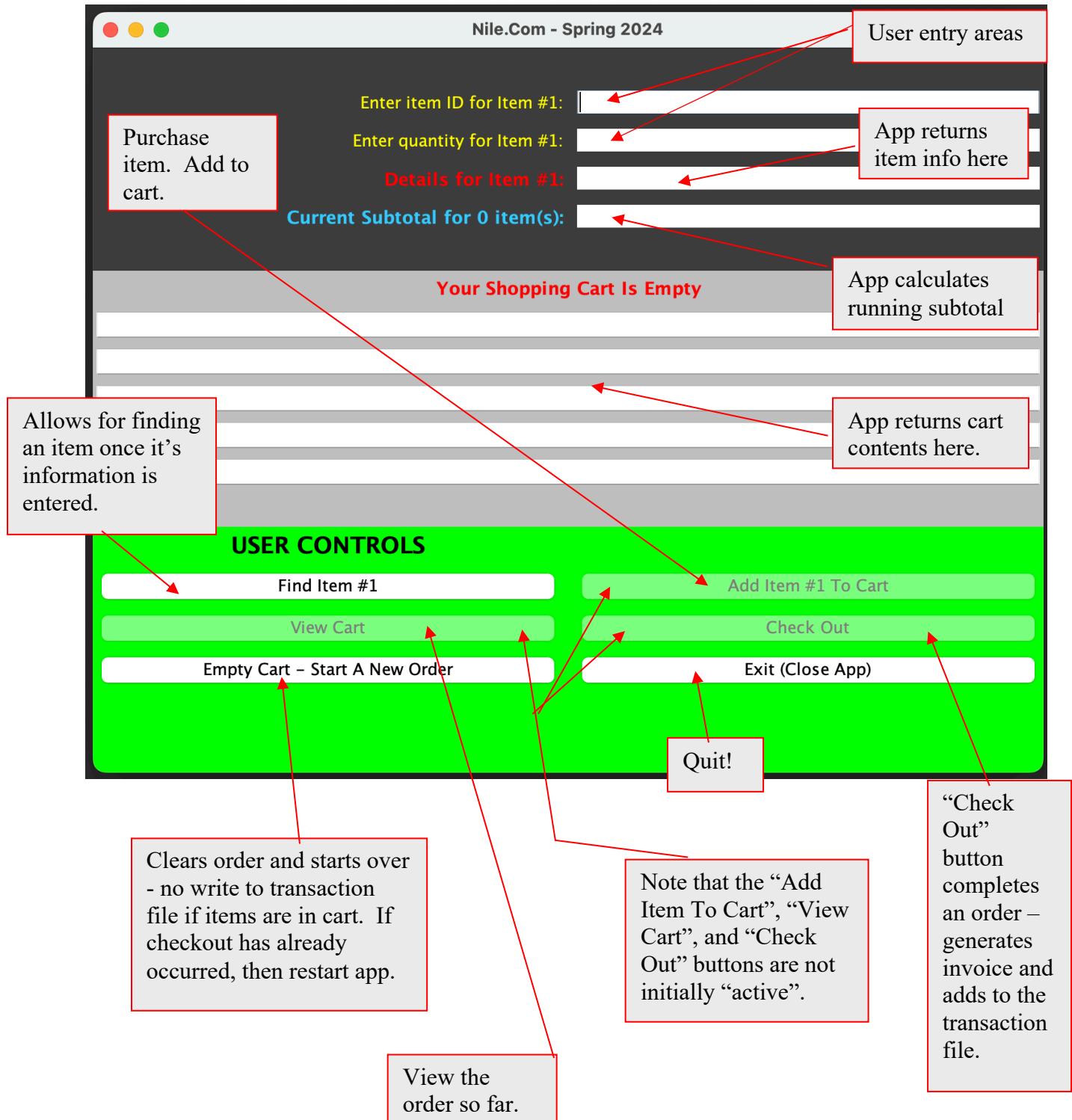
Additional Information:

1. Screen shot of the contents of an example inventory.csv file.

The screenshot shows the Eclipse IDE interface with the title bar "eclipse-workspace-2023-12 - CNT 4714 - Project 1 - Spring 2024". In the top toolbar, there are icons for file operations like Open, Save, and Cut/Paste. Below the toolbar, there are tabs for "NileDotComSP24.java", "inventory.csv", and "transactions.csv". The "inventory.csv" tab is currently selected, displaying its contents. The CSV file contains 42 rows of data, each representing an item with a unique ID, name, description, quantity, price, and other attributes. The data is as follows:

ID	Description	Quantity	Price
1	Stanley #2 Phillips Screwdriver	10	6.95
2	Polar USB mini desk fan	0	10.50
3	Swingline Model B2200 Red stapler	500	18.00
4	Oakley Jawbreaker sunglasses	119	236.00
5	Colnago stem - black 130mm	0	145.99
6	Tamiva McLaren MP4-8 Ford 1/20	0	75.00
7	1/4in - 28tpi SS nuts	2500	1.00
8	Hefty 30 gal with handles - box 40	890	19.00
9	3 ft mini USB cable M-F	444	4.50
10	EZ-ink cartridge set for Epson 4630	0	75.00
11	2024 CSX train calendar	45	12.95
12	Box of 10 Sharpie Roller 0.5mm	6690	6.50
13	3x5 index cards - 100 count	14395	2.25
14	Bell Stratos helmet - size Lg - blue	0	230.00
15	DTM Calendar for 2024	0	14.95
16	12x16 paper cutter with ruler	45	35.95
17	Ritchey 1 inch threaded headset - silver	1	45.00
18	Wilson NCAA official softball - 1 ea	22	5.50
19	Wilson NCAA official softball - 1 doz	234	55.00
20	Tamiva 2oz paint - ferrari red	4	2.39
21	Campagnolo 12 spd crankset - 53/39 175mm	2	750.00
22	Campagnolo 12 spd rear der	2	350.00
23	Gios Torino t-shirt size XXL	1	25.00
24	Brachs butterscotch hard candy - 1 lb	44	4.50
25	The Bourne Identity - blu-ray	8	15.95
26	Top Secret Twenty One - Janet Evanovich	66	8.99
27	1 lb - coffee beans	239	6.50
28	25 lbs peanuts in shell	23	45.00
29	8x10 picture frame	7890	4.95
30	Pledge furniture polish 13oz	2	6.50
31	3M Super 33+ electrical tape	14	3.50
32	3M Super 33+ electrical tape box 10"	22	32.50
33	HP copy paper ultra white - ream	92	13.50
34	Plush teddy bear 8 inch	3	24.00
35	Yamaha KT 100 kart engine	1	950.00
36	Colnago C64 - Mapei frame	1	6500.00
37	Look Keo 2 Max pedals	49	135.00
38	M&Ms dark chocolate w/peanuts - 3oz	46	2.50
39	Sidi Wire 2 carbon shoes - size 48	2	499.99
40	Assos T-Evo shorts	2	299.95
41	Colnago jersey - size 6"	1	120.00
42	Laser Pointer	3	38.80

2. Initial GUI:



Notice the current status of the various labels, input fields, and output areas in the initial GUI and notice how they change over the following pages as the user interacts with the application.

3. GUI after user has entered first item number and the quantity of the item they want to purchase, but before clicking the “Find Item” button.

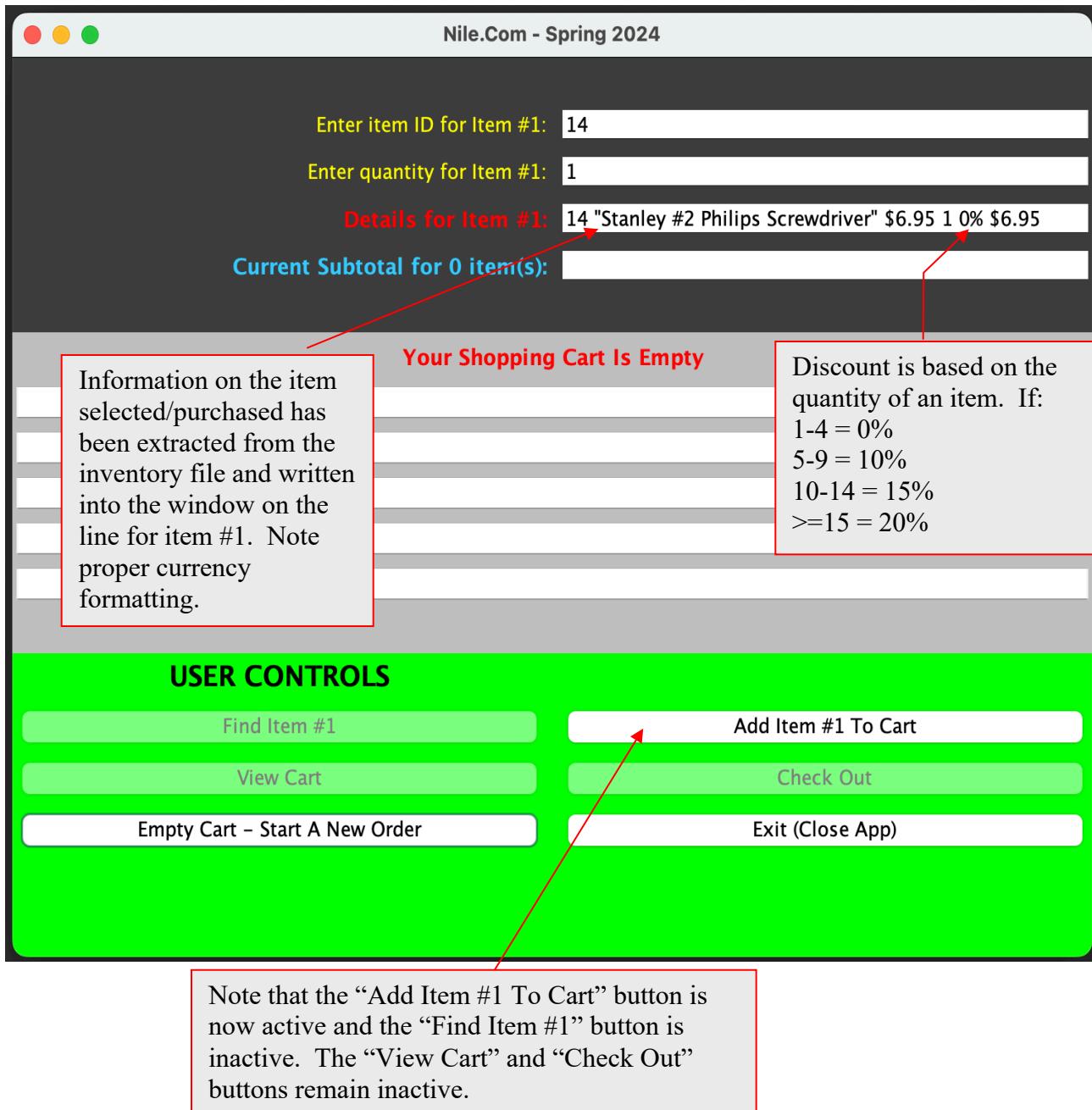
The screenshot shows a Mac OS X style window titled "Nile.Com - Spring 2024". Inside the window, there are several text input fields:

- "Enter item ID for Item #1:
- "Enter quantity for Item #1:
- "Details for Item #1:
- "Current Subtotal for 0 item(s):

A red message "Your Shopping Cart Is Empty" is displayed below the input fields. At the bottom, a green bar labeled "USER CONTROLS" contains the following buttons:

Find Item #1	Add Item #1 To Cart
View Cart	Check Out
Empty Cart – Start A New Order	Exit (Close App)

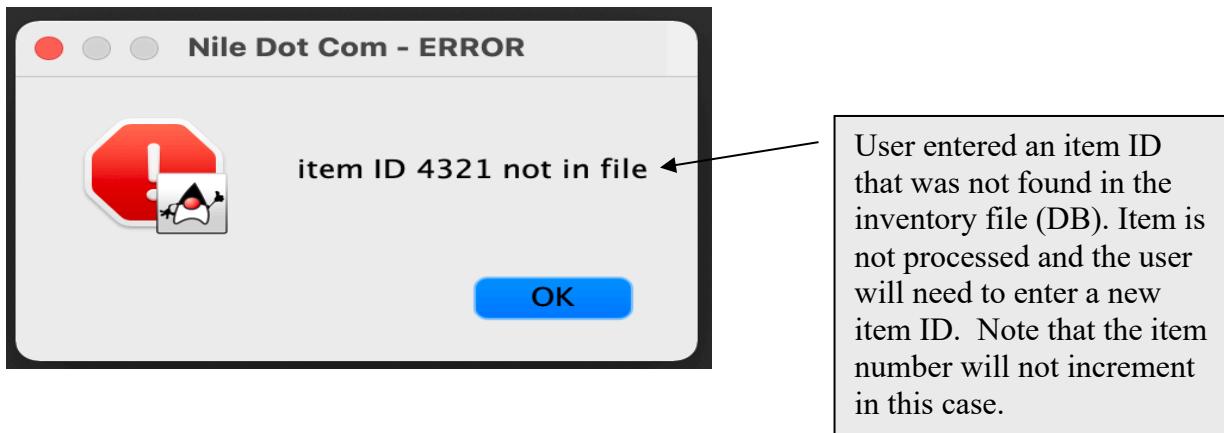
4. GUI after user has selected the first item and clicked the “Find Item #1” button.



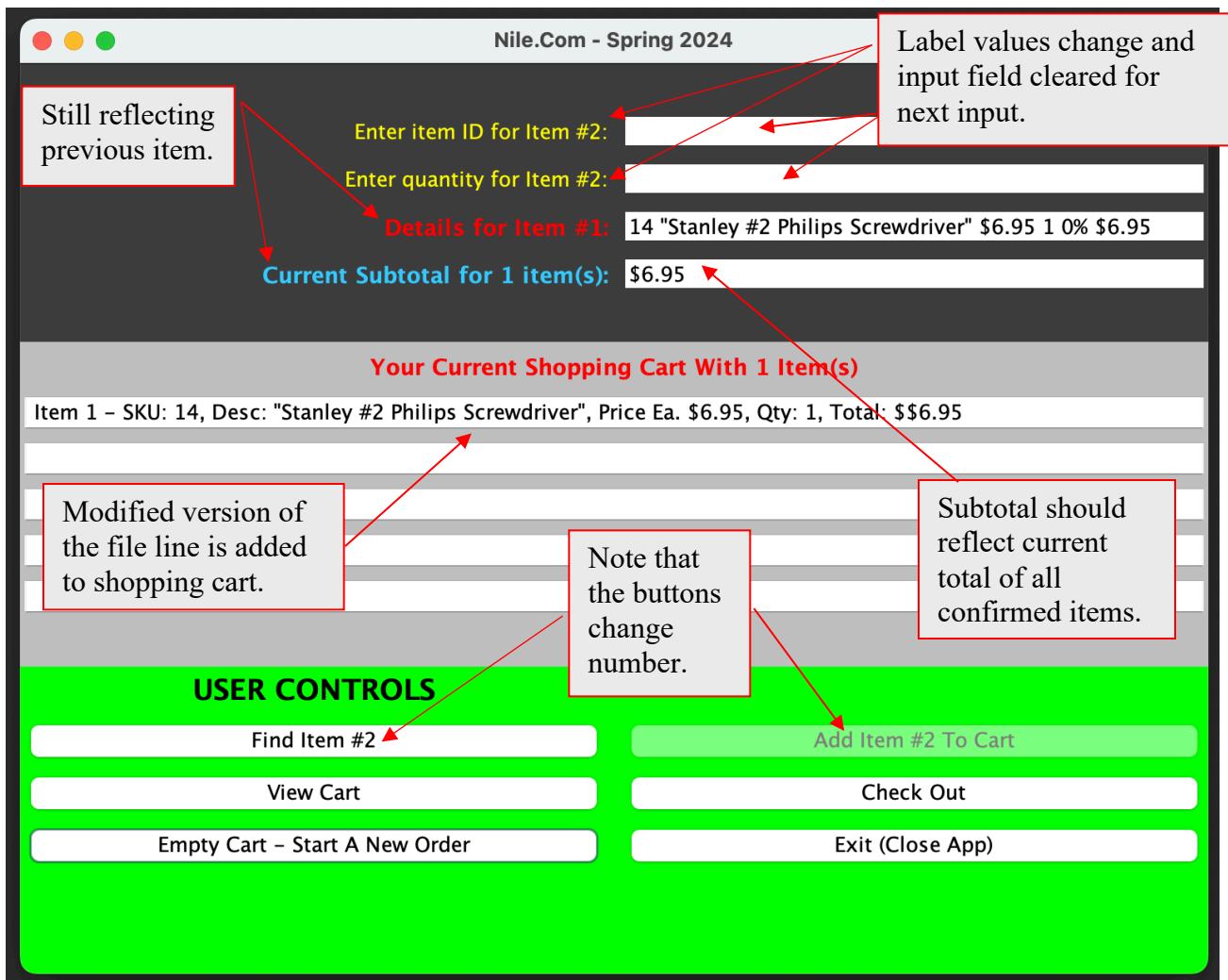
- When the user clicks on the “Find Item #1” button and the item is found in the inventory, but the item is not in stock, then the following message would appear and the user is prompted to enter another product id. (see below as well)



- When the user clicks on the “Find Item #1” button, if the item is not found in the inventory, then the following message would appear on the user’s screen.



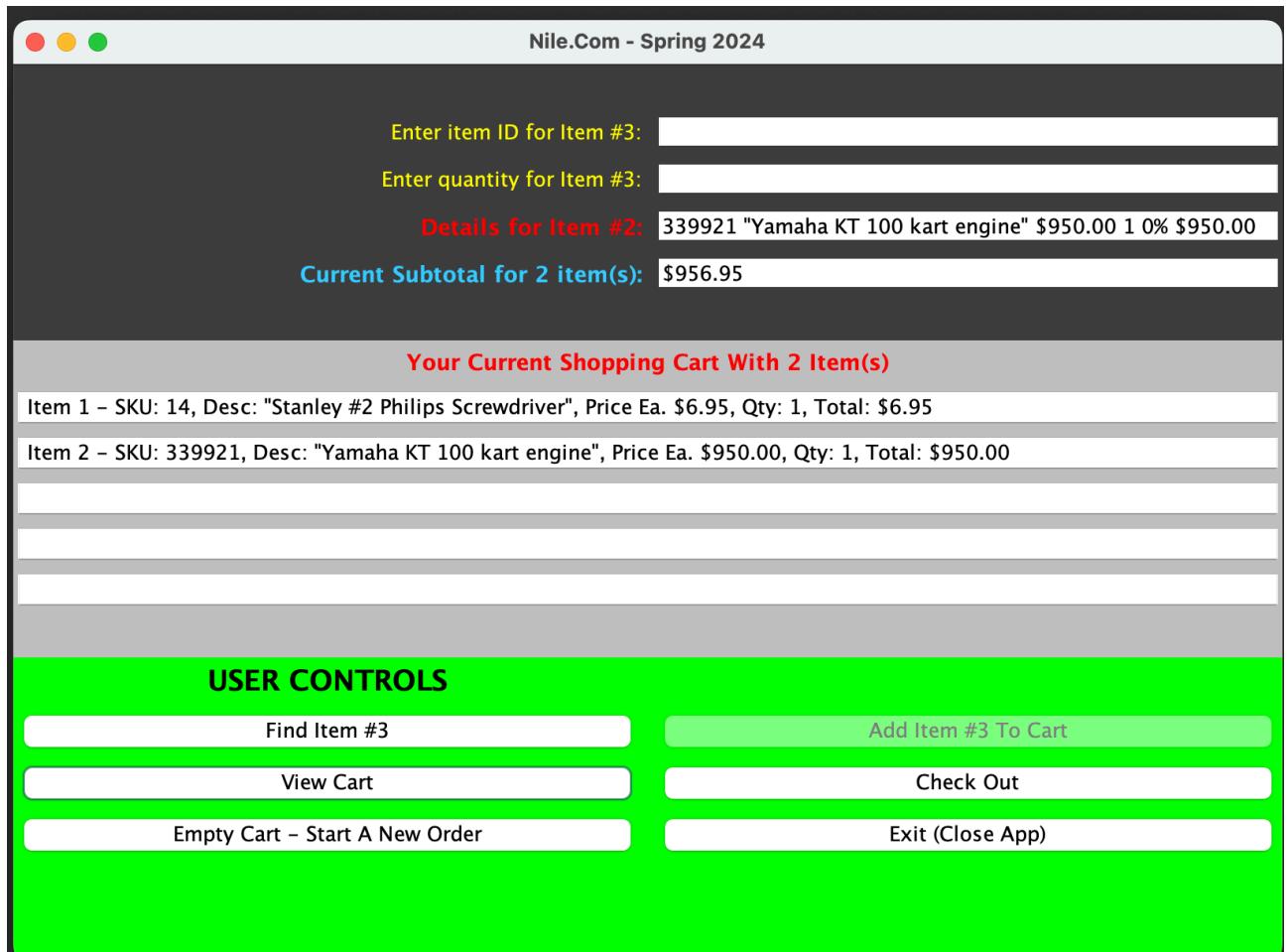
7. When the user clicks the “Add Item #1 To Cart” button, the GUI will be updated as shown:



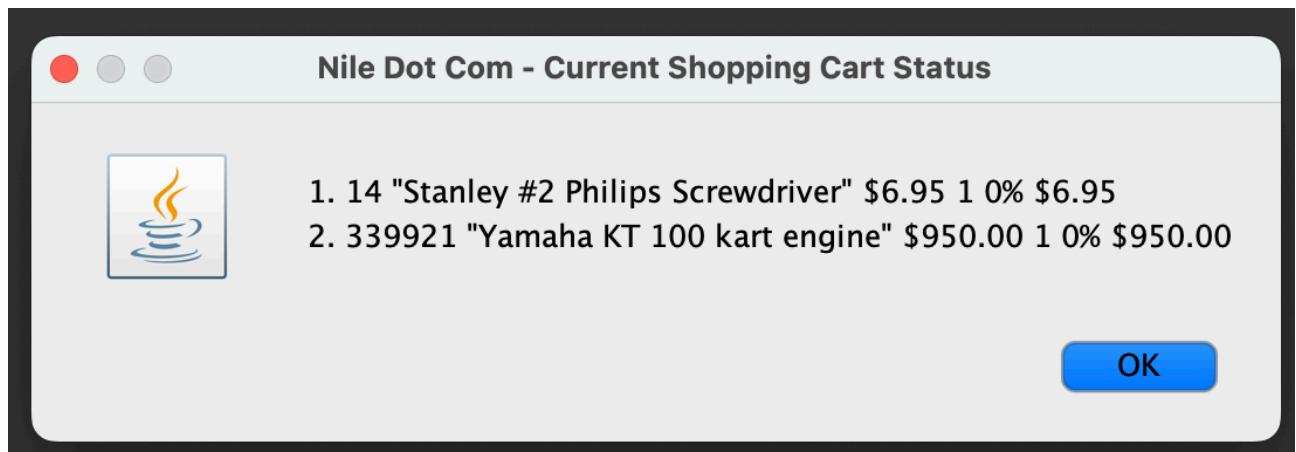
8. User enters and finds (but has not yet added it to the cart) the next item in the order (which we'll make the last one for this order).



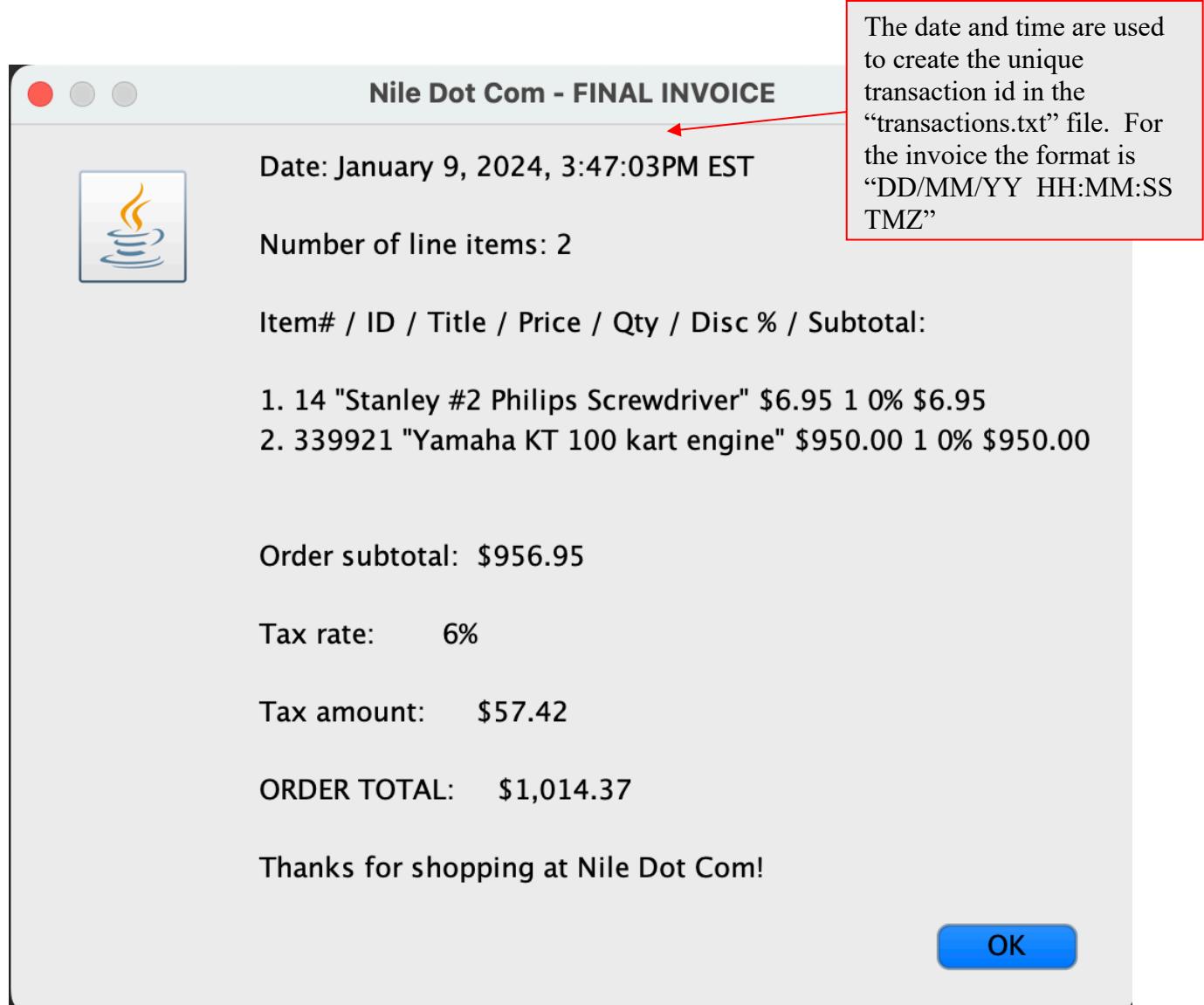
9. The GUI after the user has entered the information for all the items and purchased the last item they wish to order.



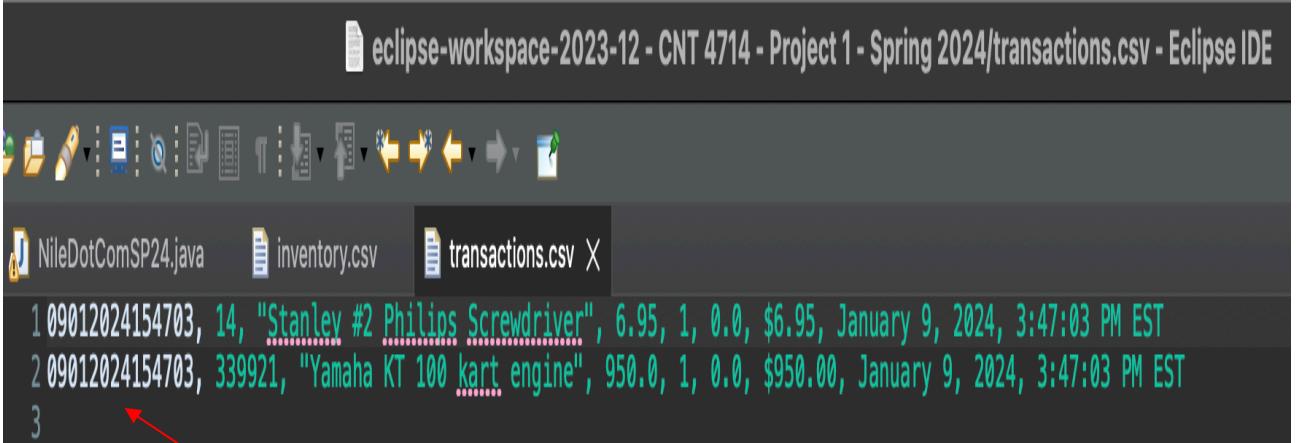
10. When the user clicks the “View Current Order” button, the following message box should appear, which is basically the same thing as occurred on each of the detail lines as the items were added to the cart by the user.



11. When the user clicks the “Check Out” button, the final invoice message should be generated and displayed. In addition, the order details are added to the `transaction.csv` file.



12. The transaction file after order shown above was finished. Note the unique transaction ids based on the date and time.

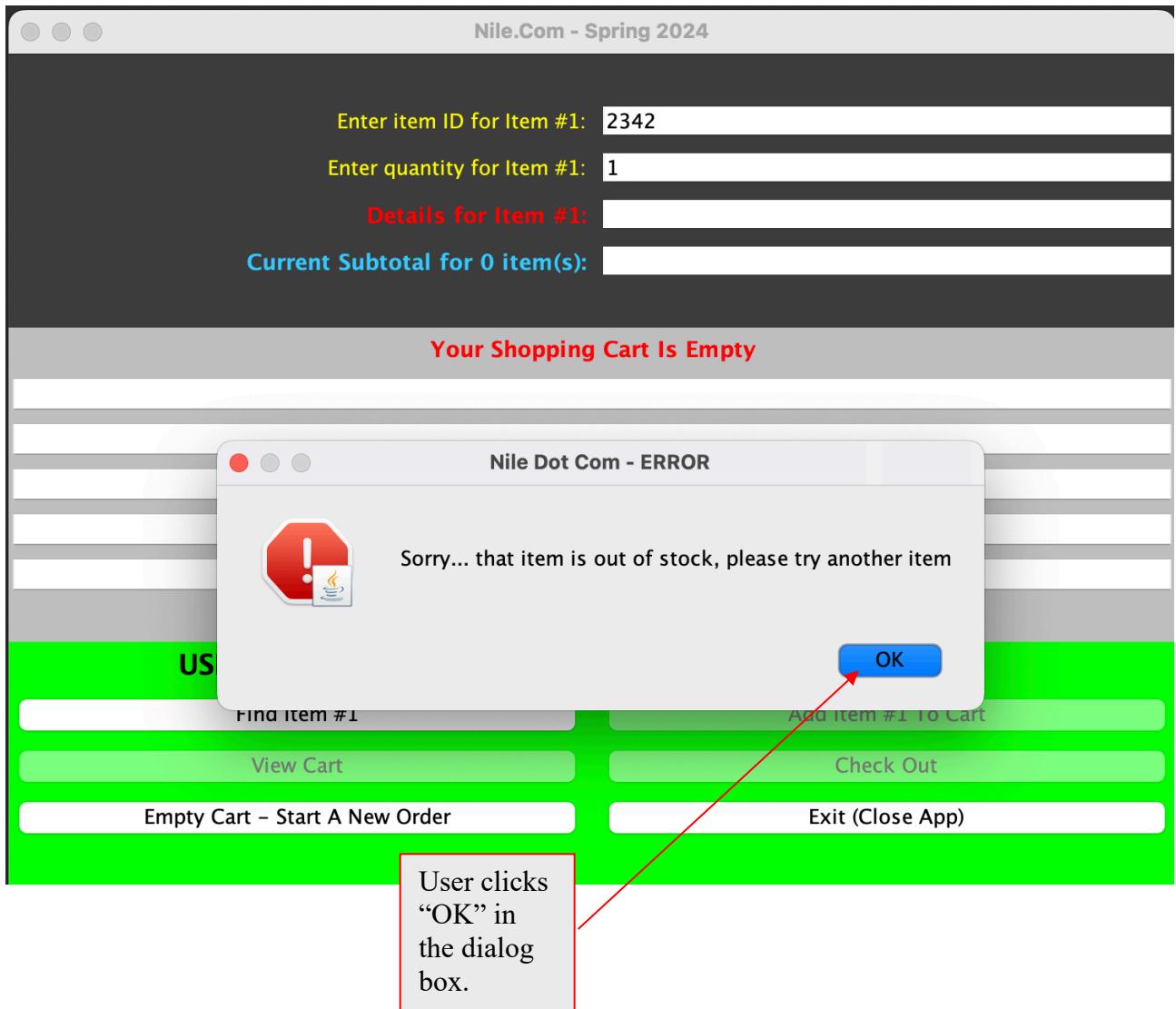


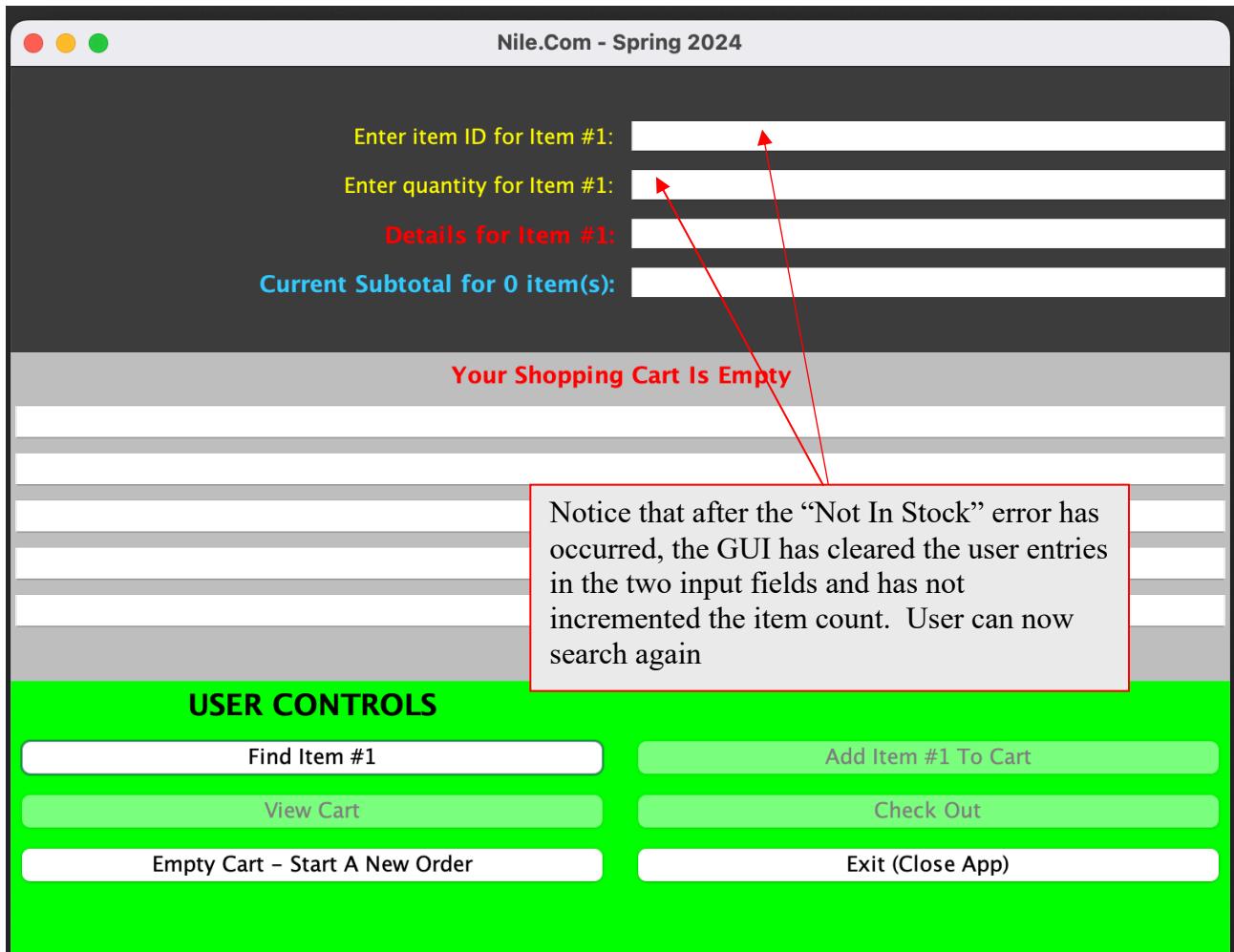
The screenshot shows the Eclipse IDE interface with a CSV file named "transactions.csv" open. The file contains the following data:

Transaction ID	Quantity	Product Description	Unit Price	Count	Amount	Date	Time	
1 09012024154703	14	"Stanley #2 Philips Screwdriver"	6.95	1	0.0	\$6.95	January 9, 2024	3:47:03 PM EST
2 09012024154703	339921	"Yamaha KT 100 kart engine"	950.0	1	0.0	\$950.00	January 9, 2024	3:47:03 PM EST
3								

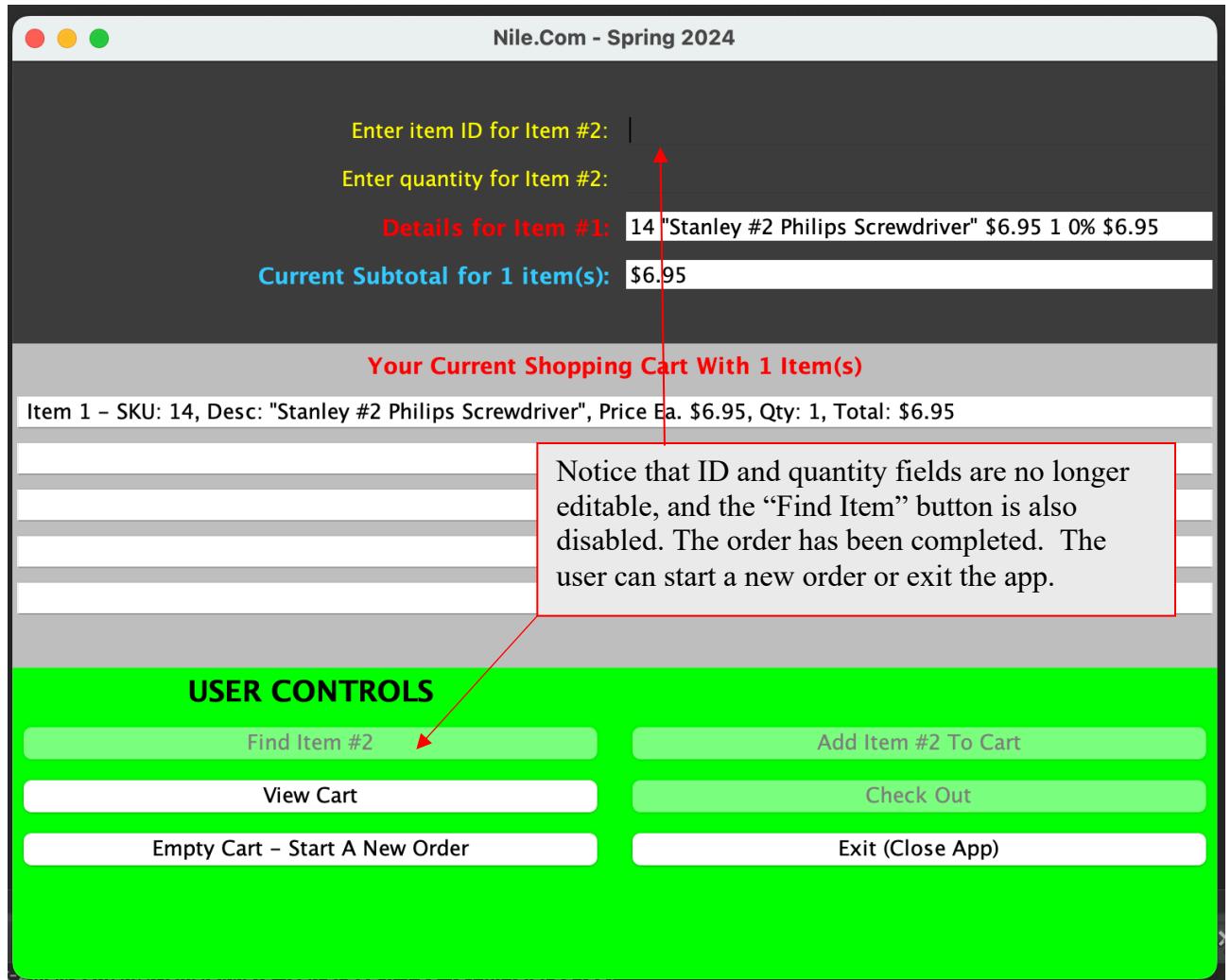
The transaction occurred on 09/01/2024 at 15:47:03 (7:53pm). See the invoice message above. Permutation used here is: DDMMYYYYHHMMSS.

13. If the user enters an item number for an item that is not in stock (it is in the inventory – just not in stock – see number 5 above), the following message dialog should appear. Once the user clicks OK in the dialog box, then they would enter a new item number for another item and continue processing their current transaction. Notice below, that after clicking ok in the dialog box, the GUI is reset to the original item number and the input fields are empty.

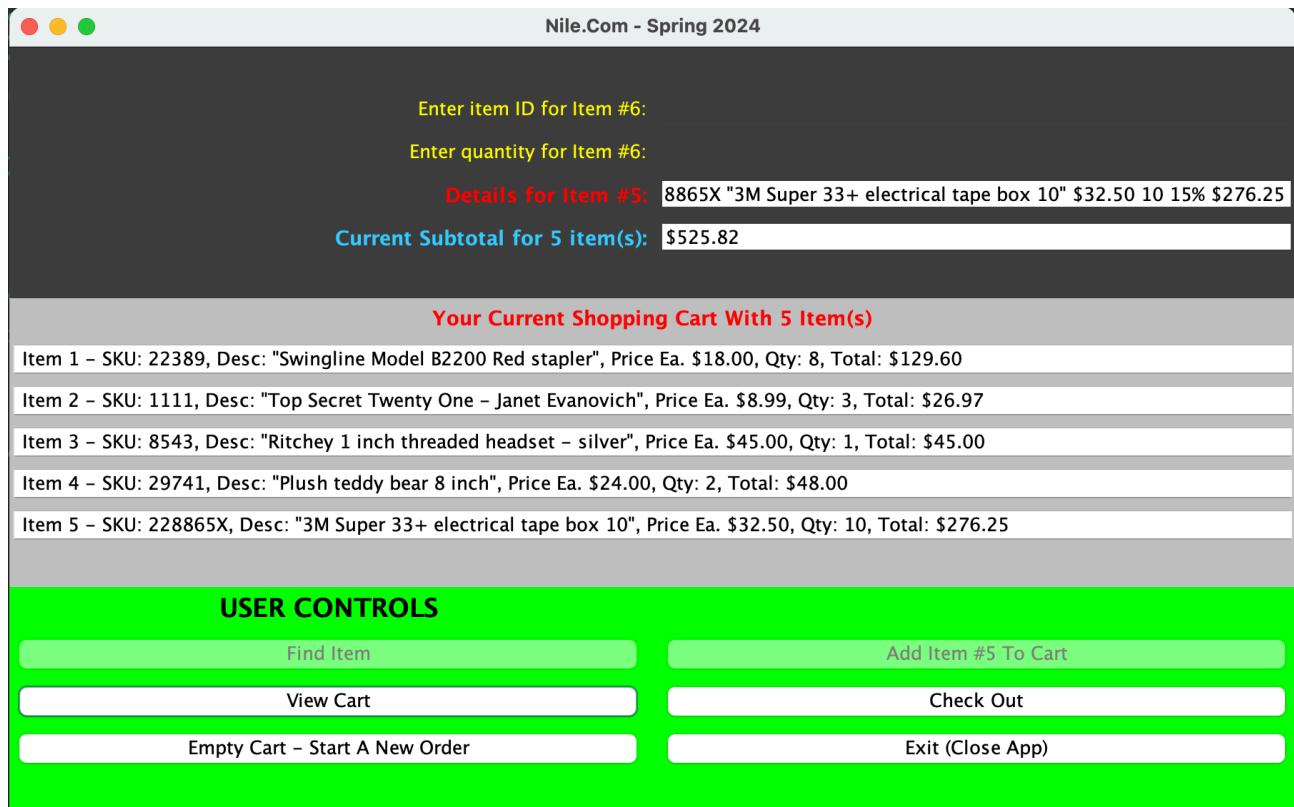




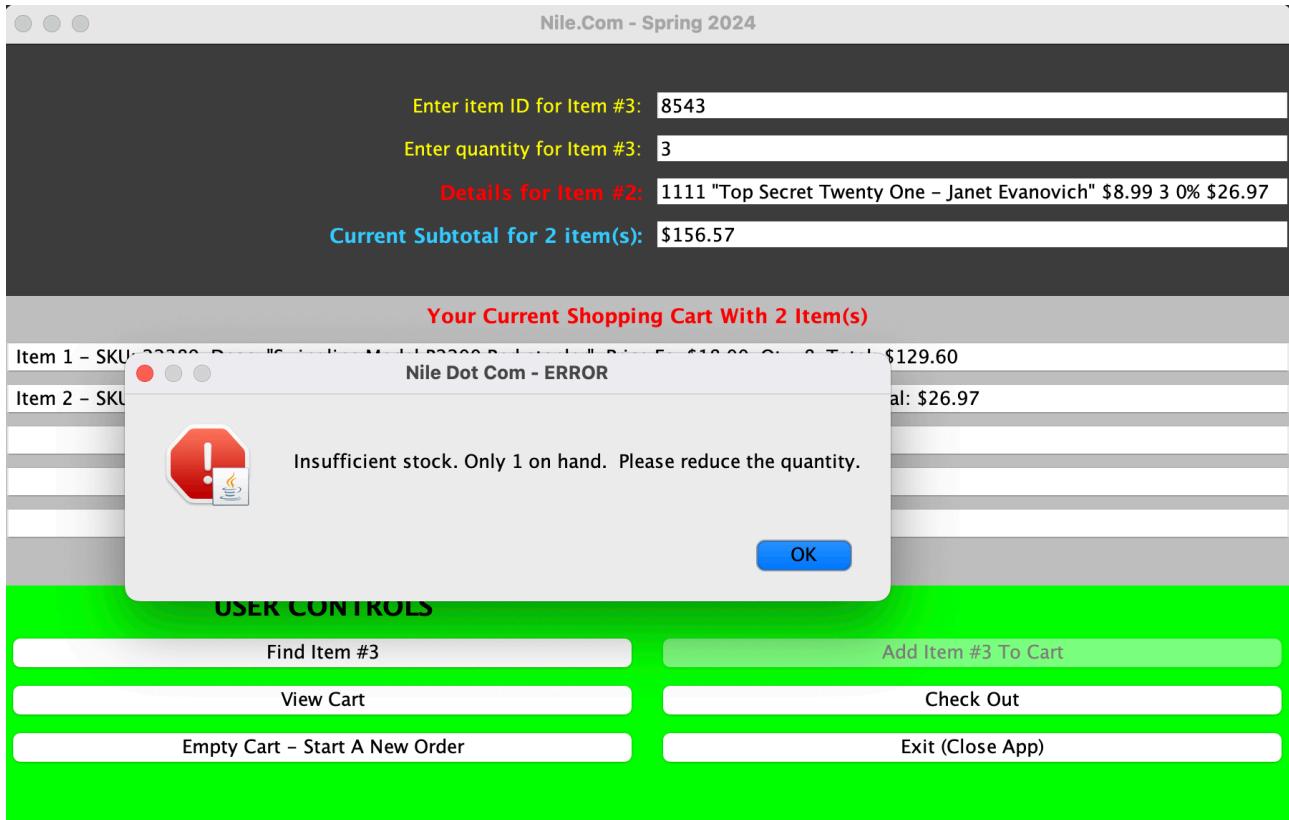
14. The GUI after the user has clicked the “Check Out” button and also clicked “OK” on the invoice dialog box.



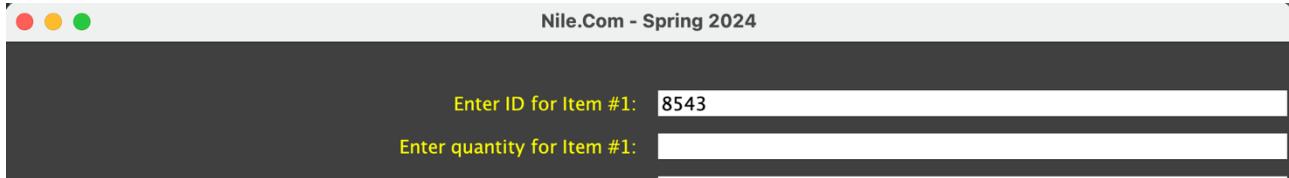
15. User has added 5 items to their shopping cart at this point. Cart is now full, so no more items can be added and the user must either check out or start a new order.



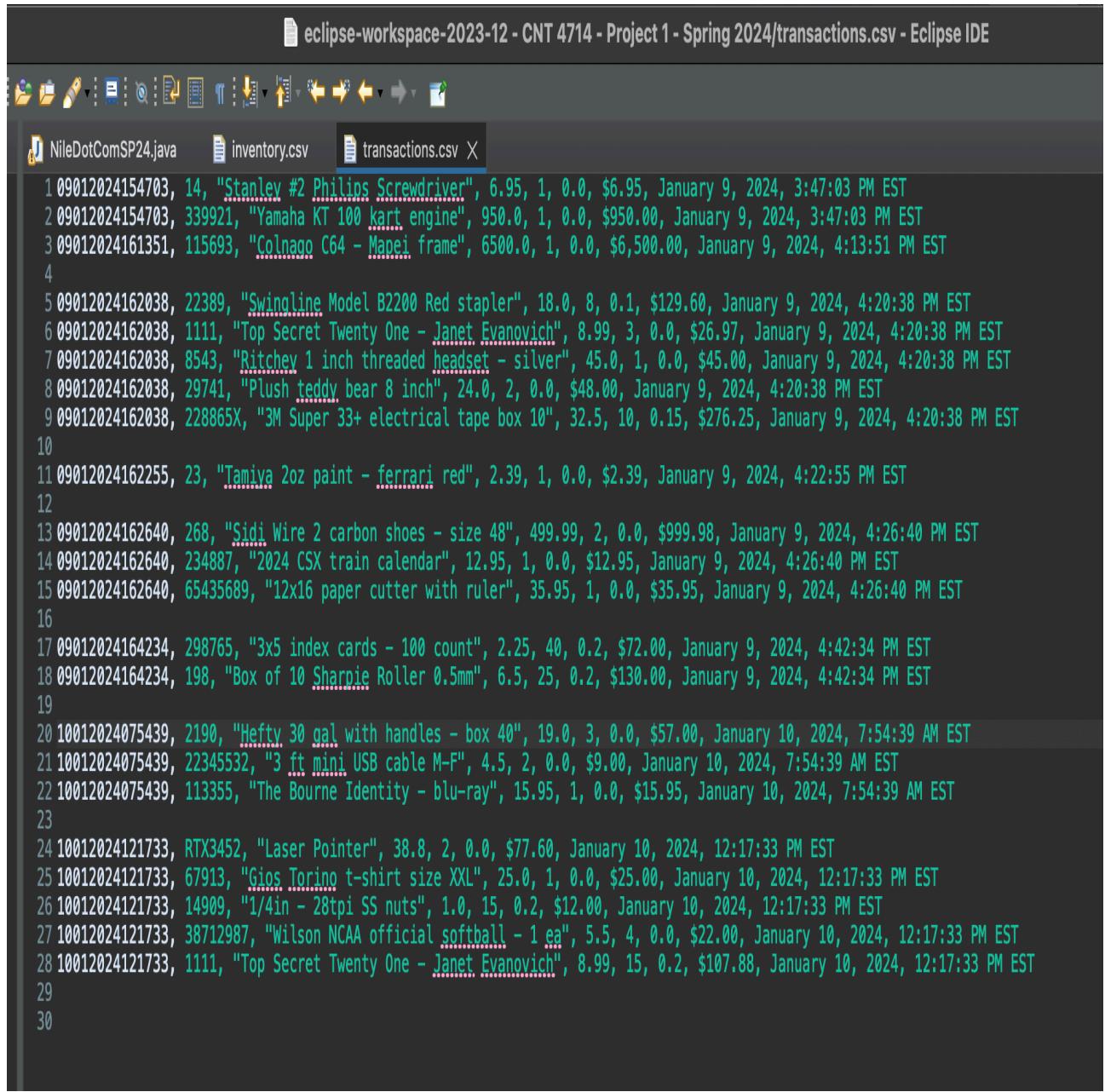
16. The situation may also arise where there is not a sufficient quantity in stock of an item that the user would like to add to the cart. When this situation arises, you should print the following message to the user.



Once the user click the OK button on the dialog box, the GUI will clear the quantity field for a new quantity to be entered, but leave the item number intact (see cropped image below).



17. The transaction file after several orders have been completed. Note the unique transaction ids based on the date and time for every separate transaction. This file shows seven separate transactions spanning different days.



The screenshot shows the Eclipse IDE interface with the title bar "eclipse-workspace-2023-12 - CNT 4714 - Project 1 - Spring 2024/transactions.csv - Eclipse IDE". The editor tab bar has three tabs: "NileDotComSP24.java", "inventory.csv", and "transactions.csv" (which is currently selected). The main editor area displays the following CSV data:

Line	ID	Quantity	Product Description	Unit Price	Order Date	Time			
1	09012024154703	14	Stanley #2 Phillips Screwdriver	6.95	1	0.0	\$6.95	January 9, 2024	3:47:03 PM EST
2	09012024154703	339921	Yamaha KT 100 kart engine	950.0	1	0.0	\$950.00	January 9, 2024	3:47:03 PM EST
3	09012024161351	115693	Colnago C64 - Mapei frame	6500.0	1	0.0	\$6,500.00	January 9, 2024	4:13:51 PM EST
4									
5	09012024162038	22389	Swingline Model B2200 Red stapler	18.0	8	0.1	\$129.60	January 9, 2024	4:20:38 PM EST
6	09012024162038	1111	Top Secret Twenty One - Janet Evanovich	8.99	3	0.0	\$26.97	January 9, 2024	4:20:38 PM EST
7	09012024162038	8543	Ritchey 1 inch threaded headset - silver	45.0	1	0.0	\$45.00	January 9, 2024	4:20:38 PM EST
8	09012024162038	29741	Plush teddy bear 8 inch	24.0	2	0.0	\$48.00	January 9, 2024	4:20:38 PM EST
9	09012024162038	228865X	3M Super 33+ electrical tape box 10"	32.5	10	0.15	\$276.25	January 9, 2024	4:20:38 PM EST
10									
11	09012024162255	23	Tamiya 2oz paint - ferrari red	2.39	1	0.0	\$2.39	January 9, 2024	4:22:55 PM EST
12									
13	09012024162640	268	Sidi Wire 2 carbon shoes - size 48"	499.99	2	0.0	\$999.98	January 9, 2024	4:26:40 PM EST
14	09012024162640	234887	2024 CSX train calendar	12.95	1	0.0	\$12.95	January 9, 2024	4:26:40 PM EST
15	09012024162640	65435689	12x16 paper cutter with ruler	35.95	1	0.0	\$35.95	January 9, 2024	4:26:40 PM EST
16									
17	09012024164234	298765	3x5 index cards - 100 count	2.25	40	0.2	\$72.00	January 9, 2024	4:42:34 PM EST
18	09012024164234	198	Box of 10 Sharpie Roller 0.5mm	6.5	25	0.2	\$130.00	January 9, 2024	4:42:34 PM EST
19									
20	10012024075439	2190	Hefty 30 gal with handles - box 40"	19.0	3	0.0	\$57.00	January 10, 2024	7:54:39 AM EST
21	10012024075439	22345532	3 ft mini USB cable M-F	4.5	2	0.0	\$9.00	January 10, 2024	7:54:39 AM EST
22	10012024075439	113355	The Bourne Identity - blu-ray	15.95	1	0.0	\$15.95	January 10, 2024	7:54:39 AM EST
23									
24	10012024121733	RTX3452	Laser Pointer	38.8	2	0.0	\$77.60	January 10, 2024	12:17:33 PM EST
25	10012024121733	67913	Gios Torino t-shirt size XXL	25.0	1	0.0	\$25.00	January 10, 2024	12:17:33 PM EST
26	10012024121733	14909	1/4in - 28tpi SS nuts	1.0	15	0.2	\$12.00	January 10, 2024	12:17:33 PM EST
27	10012024121733	38712987	Wilson NCAA official softball - 1 ea	5.5	4	0.0	\$22.00	January 10, 2024	12:17:33 PM EST
28	10012024121733	1111	Top Secret Twenty One - Janet Evanovich	8.99	15	0.2	\$107.88	January 10, 2024	12:17:33 PM EST
29									
30									