

## Architecture Assignment 2

### Use Cases

Use Case	Description
UC-1: Cashier scans in item	When a customer brings in an item to purchase, the cashier scans the barcode. The item's name and price then shows up on the display. It is added to the customer's total.
UC-2: Cashier removes item from the checkout	To correct a mistake, the cashier removes an item from the already-scanned list of items. The item is removed from the display and the price is deducted from the total.
UC-3: Cashier completes the checkout process	Once all the items from the customers are scanned, the cashier presses the 'Done Scanning' button, and a physical receipt is printed.
UC-4: Database fetches product information	When an item's barcode is scanned, the database queries it to retrieve its name and retail price. The database then sends that information to the cashier system for it to be displayed to the cashier.
UC-5: Customer makes purchase	Once a customer is done shopping, they bring their items to the cash register to be scanned. Once complete, they pay and take a physical receipt for their purchase.

## Quality Attributes

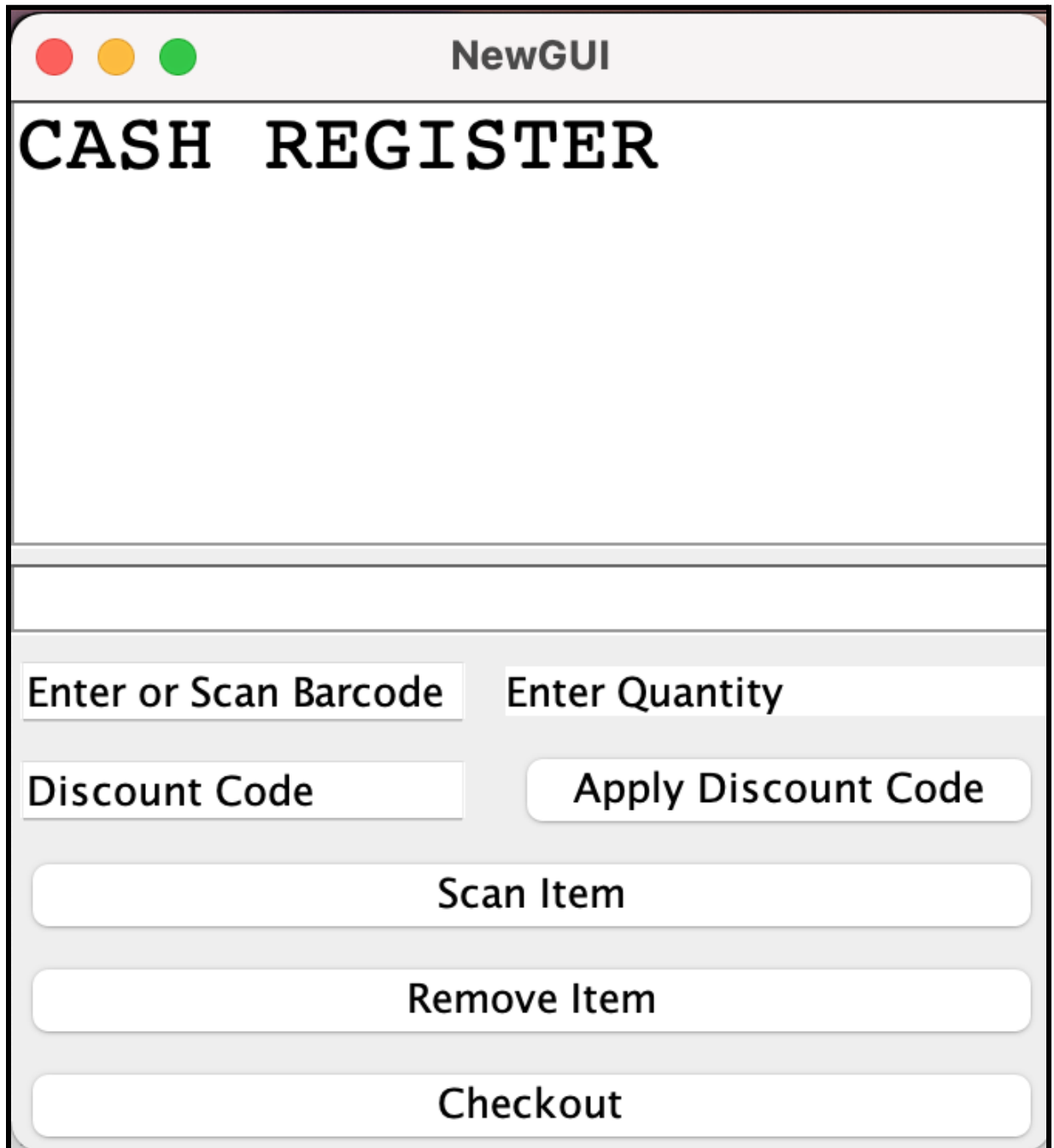
ID	Quality Attribute	Scenario	Associated Use Case
QA-1	Security	Purchases with credit or debit cards are processed according to industry standards. This is to protect customer's personal banking information.	UC-5
QA-2	Performance	From the time the barcode is scanned, to the time it's displayed on the screen takes a maximum of 2 seconds.	UC-
QA-3	Availability, Usability	If a mistake is made in the scanning process, the cashier can remove the last product scanned. This saves time as opposed to rescanning the entire purchase.	UC-
QA-4	Modifiability	Product names and prices are all located in the same excel sheet, allowing for easy additions and modifications to the inventory.	UC-

## System Constraints for the Application

ID	Constraint
CON-1	If the scanned barcode is not available in the database, no product will show up.
CON-2	System must be accessed through a web browser on various operating systems (Windows, OS X, Linux).
CON-3	Database can contain a maximum of 256 different kinds of products. This is due to the barcode size being of 8 digits.
CON-4	Cashier must have sufficient network connection.
CON-5	User account must not be accessed on more than 1 device simultaneously.
CON-6	The cashier can only remove the latest scanned product.

4. Instructions on how to run program:

- 1) Make sure the program is running the TestDriver.java file
- 2) Must set up APACHE POI libraries. Follow video tutorial on this link:  
<https://youtu.be/8173EAjzF6M>
- 3) Run the program. The GUI window should show up and look similar to this:



The screenshot shows a Java Swing window titled "NewGUI". The window has a standard macOS-style title bar with red, yellow, and green window control buttons. The main content area is titled "CASH REGISTER" in a large, bold, black serif font. Below the title, there is a horizontal separator line. Underneath the separator, there are two text input fields: "Enter or Scan Barcode" on the left and "Enter Quantity" on the right. Below these fields, there is another horizontal separator line. Underneath this second separator, there are two more elements: a text input field labeled "Discount Code" on the left, and a button labeled "Apply Discount Code" on the right. Below these, there are three large, rounded rectangular buttons stacked vertically: "Scan Item", "Remove Item", and "Checkout".

- 4) To try the cash register out, please enter the following pieces of information in their respective textboxes:

- a) Enter or Scan Barcode = 11111111, 00000000, or any barcode listed in the database excel file, Shop Items.xlsx
  - b) Enter Quantity = any integer
  - c) Discount Code = any number between 0 and 100. This is converted into a percentage discount.
- 5) To try out the feature, press “remove item”. This should remove the product from the cart.
- 6) Then, press “Apply Discount Code” and “Checkout”. It should look like this:

NewGUI

PURCHASE SUCCESSFUL. TICKET PRINTED.

Item: ToothBrush    Quantity: 15    Unit Price: 1.75

-----

Subtotal: 26.25

Subtotal with tax: 29.66

Amount Taxed: 3.41

HST Tax Percentage: 13.00%

Amount Discounted: 1.19

Discount Percentage: 4.00%

Final sale price: 28.48

00000000

5

4

Apply Discount Code

Scan Item

Remove Item

Checkout

Screenshot of the Database (Excel):

Item Name	Barcode	Item Price
Hot Wheels Car	00001000	1.99
PlayStation 5	00001111	649.99
Air Fryer	01100100	84.25
ToothBrush	11111111	1.75
Hair Brush	11100110	2.88
Basketball	00101101	5.64
Backpack	00001001	10.99
Shoes	11010000	99.99
Chocolate Bar	11010001	0.99

Before and After Removing an Item:

NewGUI

CASH REGISTER

Item: PlayStation 5    Quantity: 5    Unit Price: 649.99

Item: ToothBrush    Quantity: 5    Unit Price: 1.75

00001111

5

Discount Code

Apply Discount Code

Scan Item

Remove Item

Checkout

NewGUI

CASH REGISTER

Item: ToothBrush    Quantity: 5    Unit Price: 1.75

00001111

5

Discount Code

Apply Discount Code

Scan Item

Remove Item

Checkout