Overview

In this implementation of the cash register, there are two components that the user can interact with: the console as the keyboard component (also mimics the BarcodeScanner component, as well as a physical receipt that TicketPrinter outputs to) and the main window (Java Swing) as the display component.

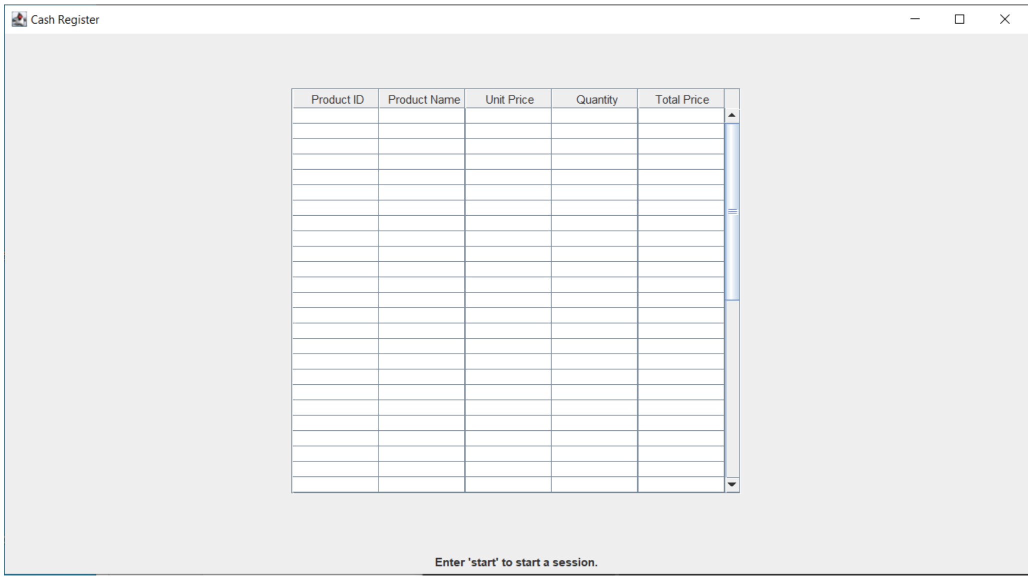
The main flow of a product purchasing use case in the context of commands in this application would be as follows:

```
> start
> scan (as many times as needed)
> done
> verified
> restart
```

While "changemode" + "scan" (for removing a product) would be used as needed.

Opening the Application

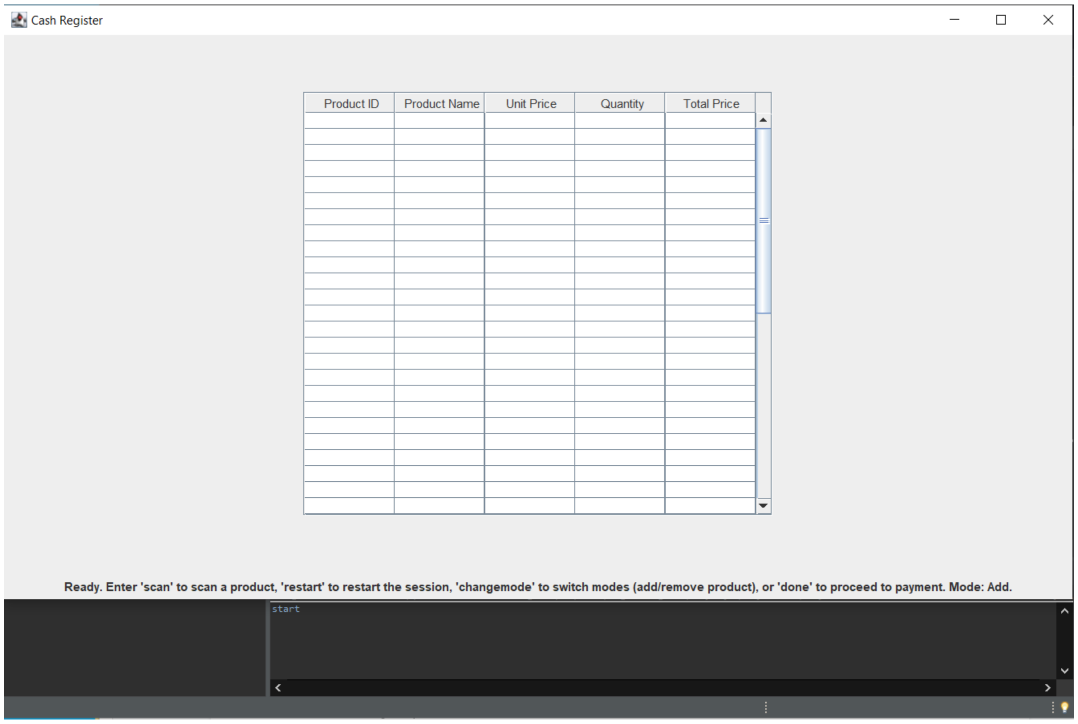
On launching the application, the following window will be displayed:



Enter 'start' to start a session.

Initial state

The window will not change until the user enters "start" in the console. Entering "start" triggers the following response (console input is shown at bottom):



Ready. Enter 'scan' to scan a product, 'restart' to restart the session, 'changemode' to switch modes (add/remove product), or 'done' to proceed to payment. Mode: Add.

```
start
```

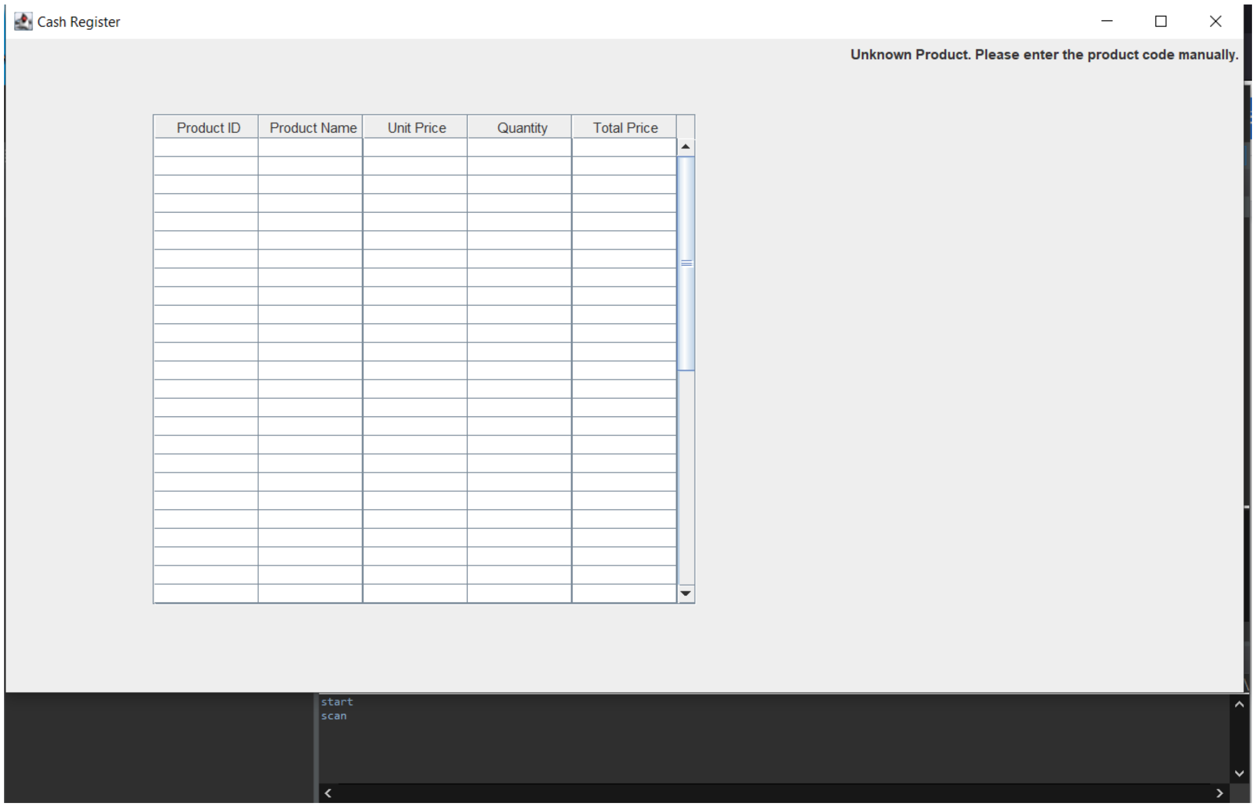
Ready state

At this point the application accepts one of four inputs: "scan", "restart", "changemode", or "done". The behavior of the application in each case is documented below.

Selecting "scan"

Note: In actual deployment this command in the main window will not be present, and instead the scan() method (which actually scans a barcode) will be called by the linked barcode scanner.

Entering "scan" calls the scan() method in the linked BarcodeScanner object. scan() will return either "100", "101" (both products present in the database), or "-1", with a ⅓ chance of each. Since "-1" represents the fact that the scan was unsuccessful, if scan() returns "-1", the user will be prompted to manually enter a product code, as such:

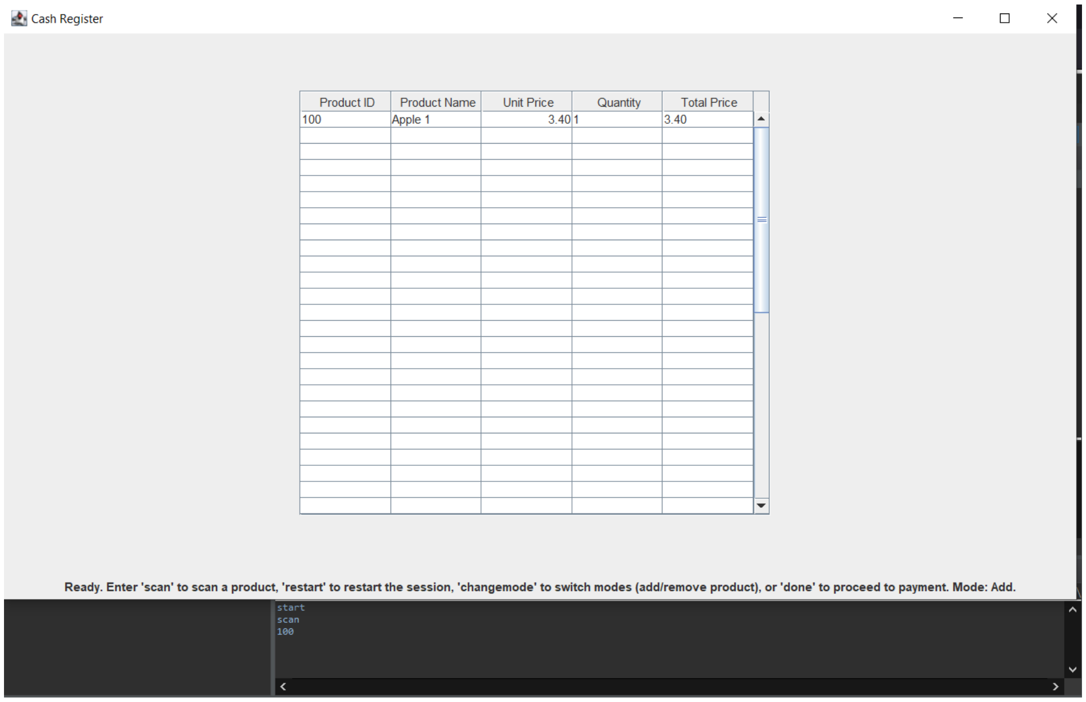


Unknown Product. Please enter the product code manually.

```
start
scan
```

Prompting user to manually enter product code

The user can then enter a product code manually. Entering a product code present in the database results in successfully adding the product:


Cash Register

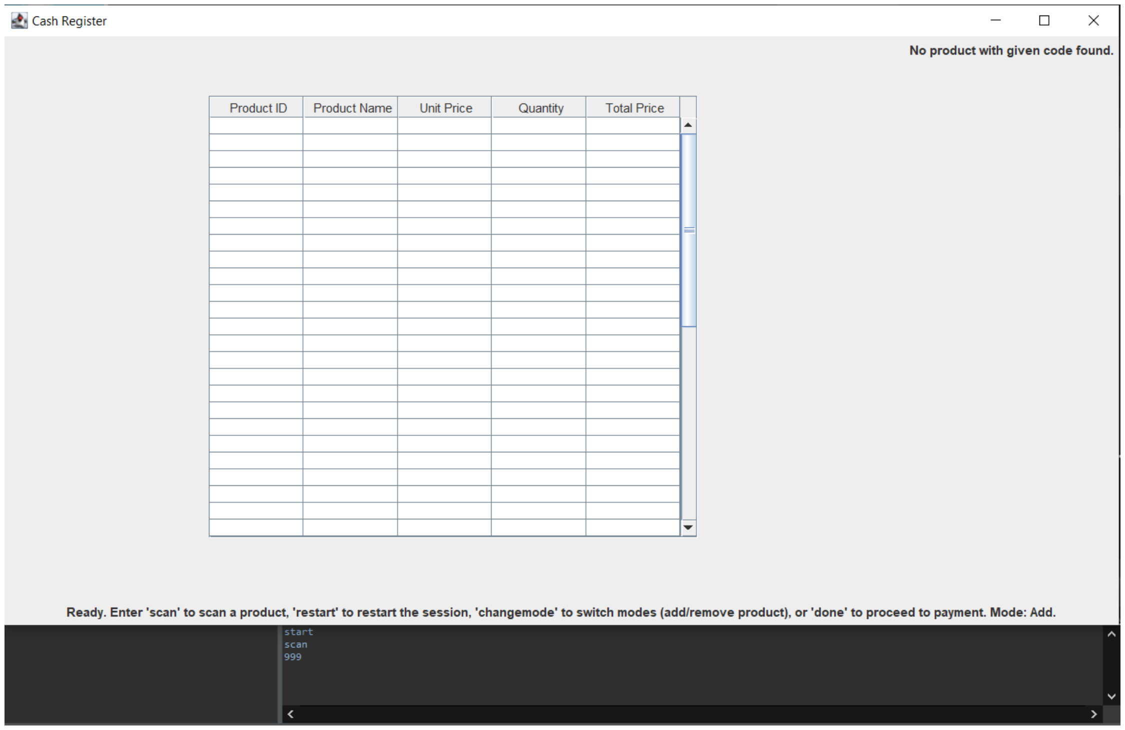
Product ID	Product Name	Unit Price	Quantity	Total Price
100	Apple 1	3.40	1	3.40

Ready. Enter 'scan' to scan a product, 'restart' to restart the session, 'changemode' to switch modes (add/remove product), or 'done' to proceed to payment. Mode: Add.

```
start
scan
100
```

Successfully adding a product manually

Entering a product code not present in the database will return an error message and the application goes back to the ready state:


Cash Register

No product with given code found.

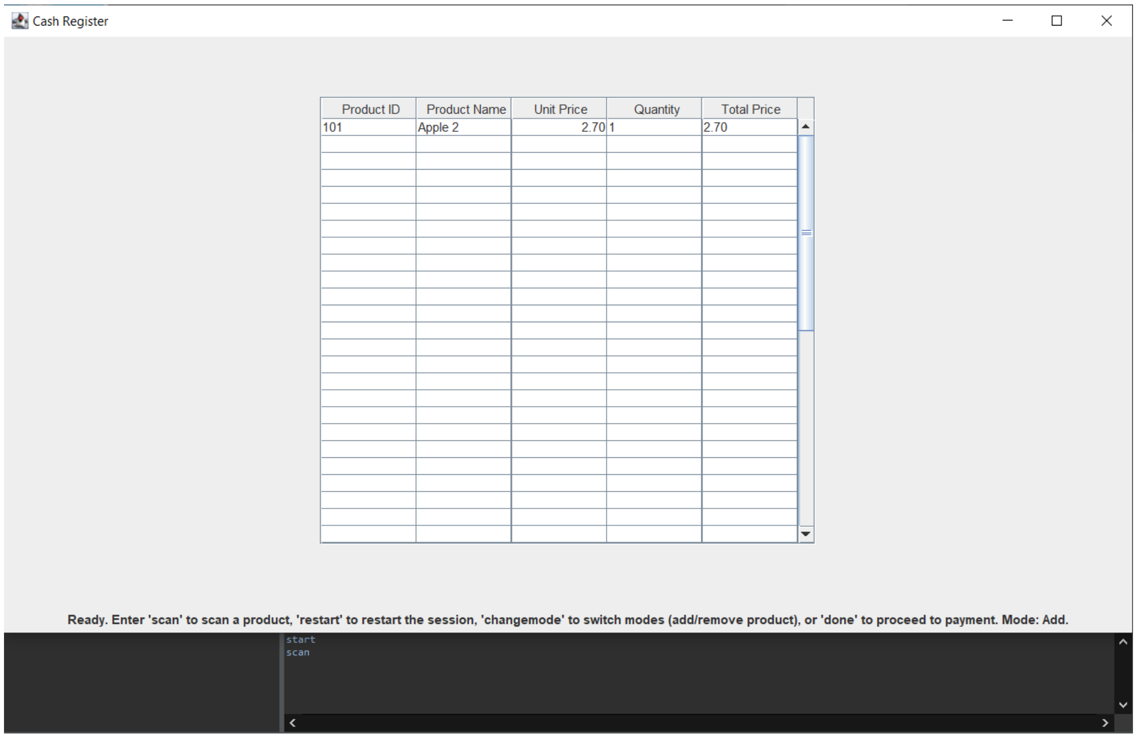
Product ID	Product Name	Unit Price	Quantity	Total Price

Ready. Enter 'scan' to scan a product, 'restart' to restart the session, 'changemode' to switch modes (add/remove product), or 'done' to proceed to payment. Mode: Add.

```
start
scan
999
```

Failing to add a product manually

If scan() returns a product code that exists in the database, the application will act as if it received the code successfully through manual input:



Product ID	Product Name	Unit Price	Quantity	Total Price
101	Apple 2	2.70	1	2.70

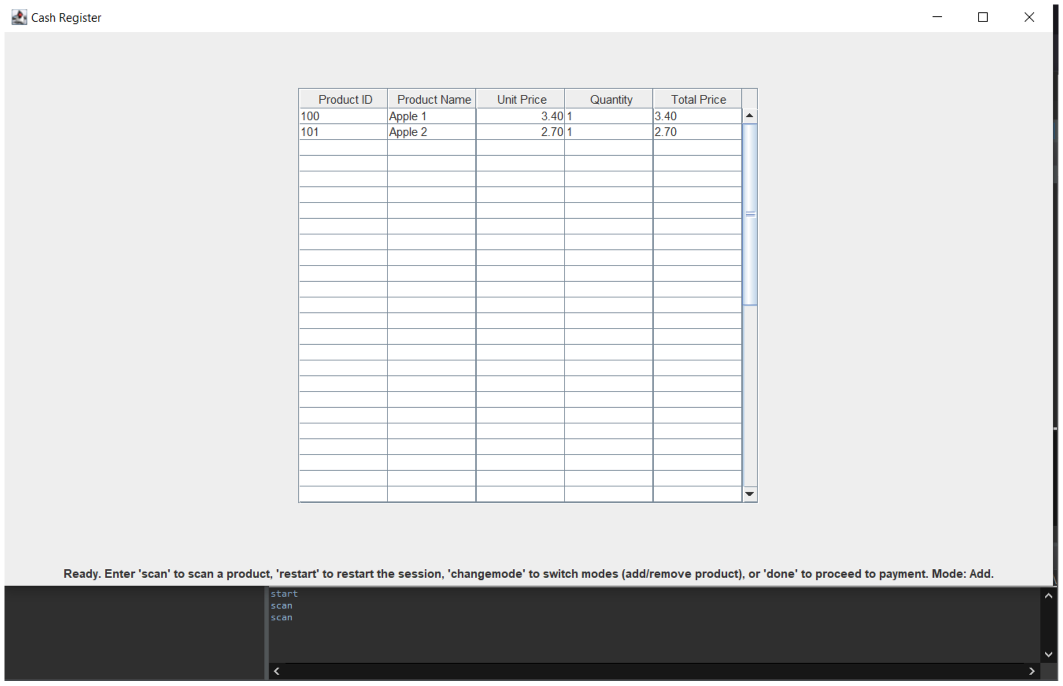
Ready. Enter 'scan' to scan a product, 'restart' to restart the session, 'changemode' to switch modes (add/remove product), or 'done' to proceed to payment. Mode: Add.

```
start
scan
```

Successful scan (code = “101”)

Selecting “restart”

Entering “restart” clears all internally saved data and restores the application to the initial ready state. For example, if the state before entering restart was this:



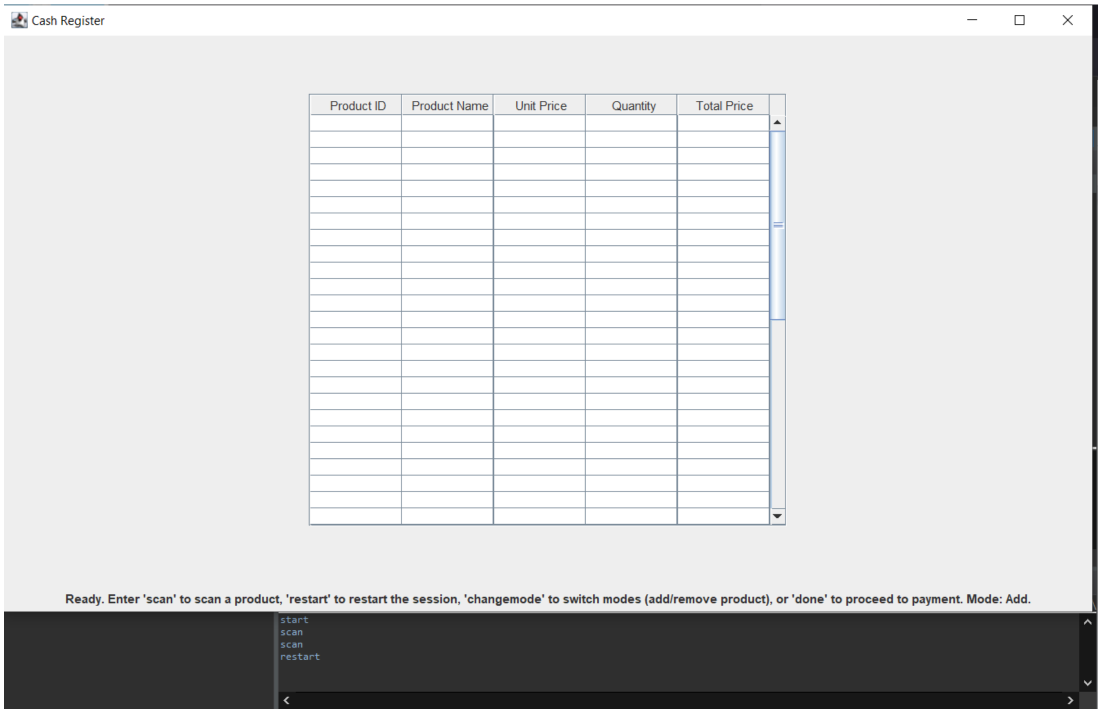
Product ID	Product Name	Unit Price	Quantity	Total Price
100	Apple 1	3.40	1	3.40
101	Apple 2	2.70	1	2.70

Ready. Enter 'scan' to scan a product, 'restart' to restart the session, 'changemode' to switch modes (add/remove product), or 'done' to proceed to payment. Mode: Add.

```
start
scan
scan
```

Before restarting

Entering “restart” would result in the following:



Product ID	Product Name	Unit Price	Quantity	Total Price

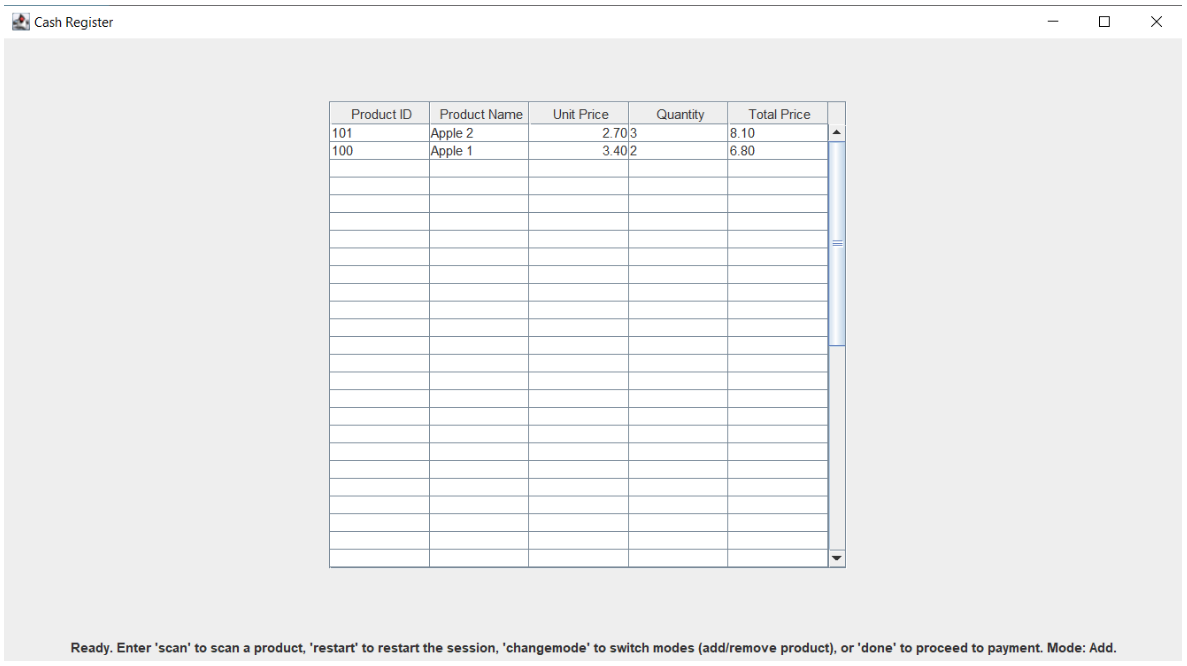
Ready. Enter 'scan' to scan a product, 'restart' to restart the session, 'changemode' to switch modes (add/remove product), or 'done' to proceed to payment. Mode: Add.

```
start
scan
scan
restart
```

After restarting

Selecting "changemode"

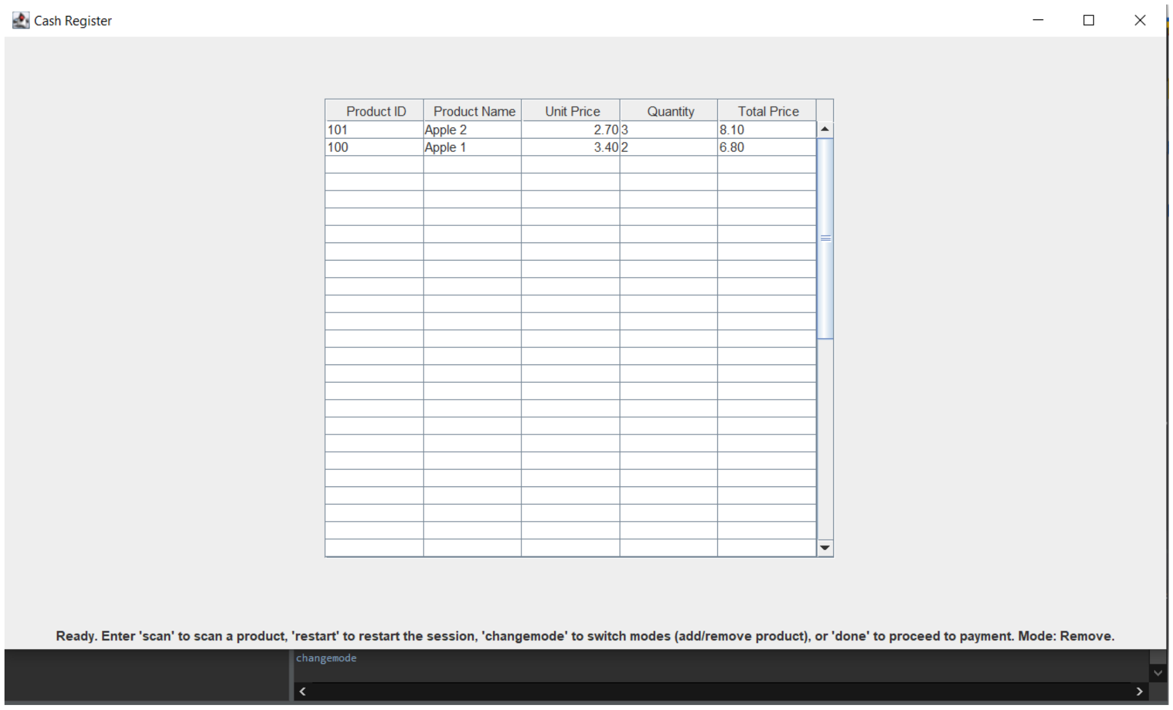
Entering "changemode" switches the application between "Add" mode and "Remove" mode. In "Add" mode, each execution of the "scan" command adds a single occurrence of a product to the list. If "scan" is executed in "Remove" mode, all items with the code returned by scan() will be removed from the list. Manually entering product codes works the same as in the "scan" command in "Add" mode. Below is an example:



Product ID	Product Name	Unit Price	Quantity	Total Price
101	Apple 2	2.70	3	8.10
100	Apple 1	3.40	2	6.80

```
Ready. Enter 'scan' to scan a product, 'restart' to restart the session, 'changemode' to switch modes (add/remove product), or 'done' to proceed to payment. Mode: Add.
```

Initial state

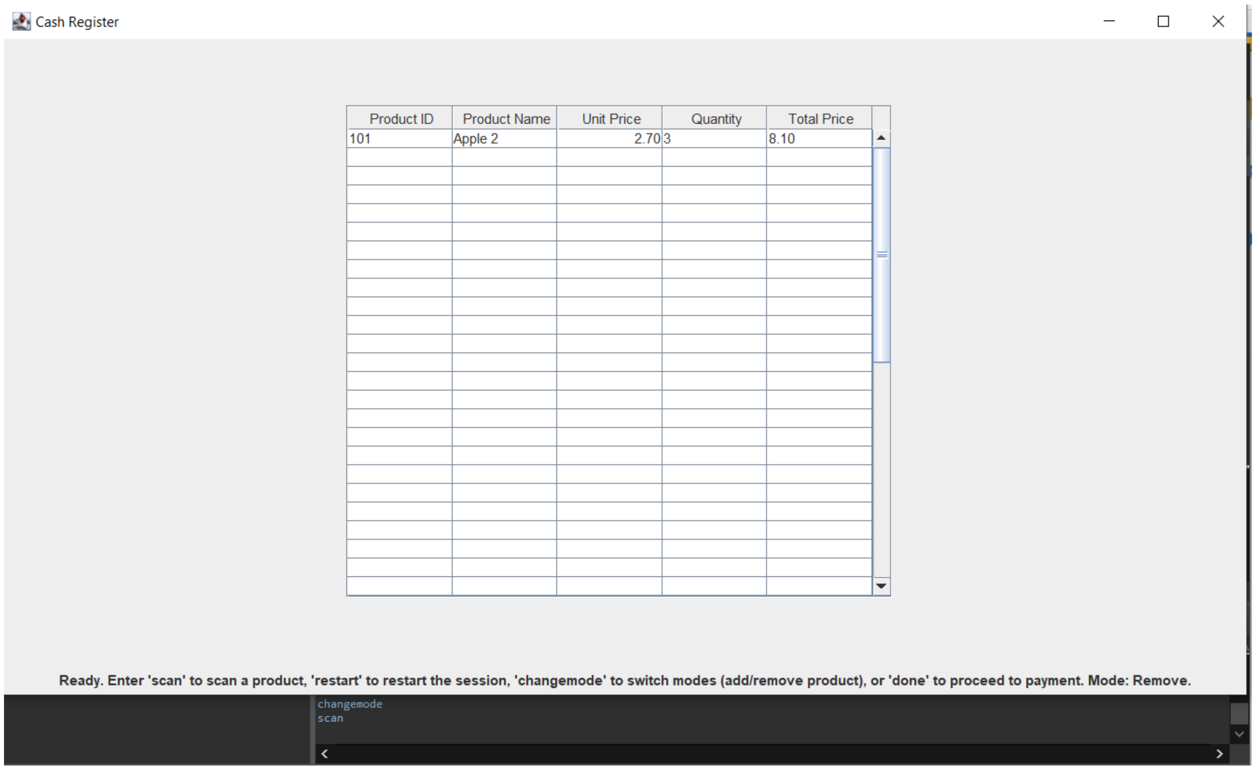


Product ID	Product Name	Unit Price	Quantity	Total Price
101	Apple 2	2.70	3	8.10
100	Apple 1	3.40	2	6.80

```
Ready. Enter 'scan' to scan a product, 'restart' to restart the session, 'changemode' to switch modes (add/remove product), or 'done' to proceed to payment. Mode: Remove.
```

```
changemode
```

changemode executed (message at bottom says "Mode: Remove")



Cash Register

Product ID	Product Name	Unit Price	Quantity	Total Price
101	Apple 2	2.70	3	8.10

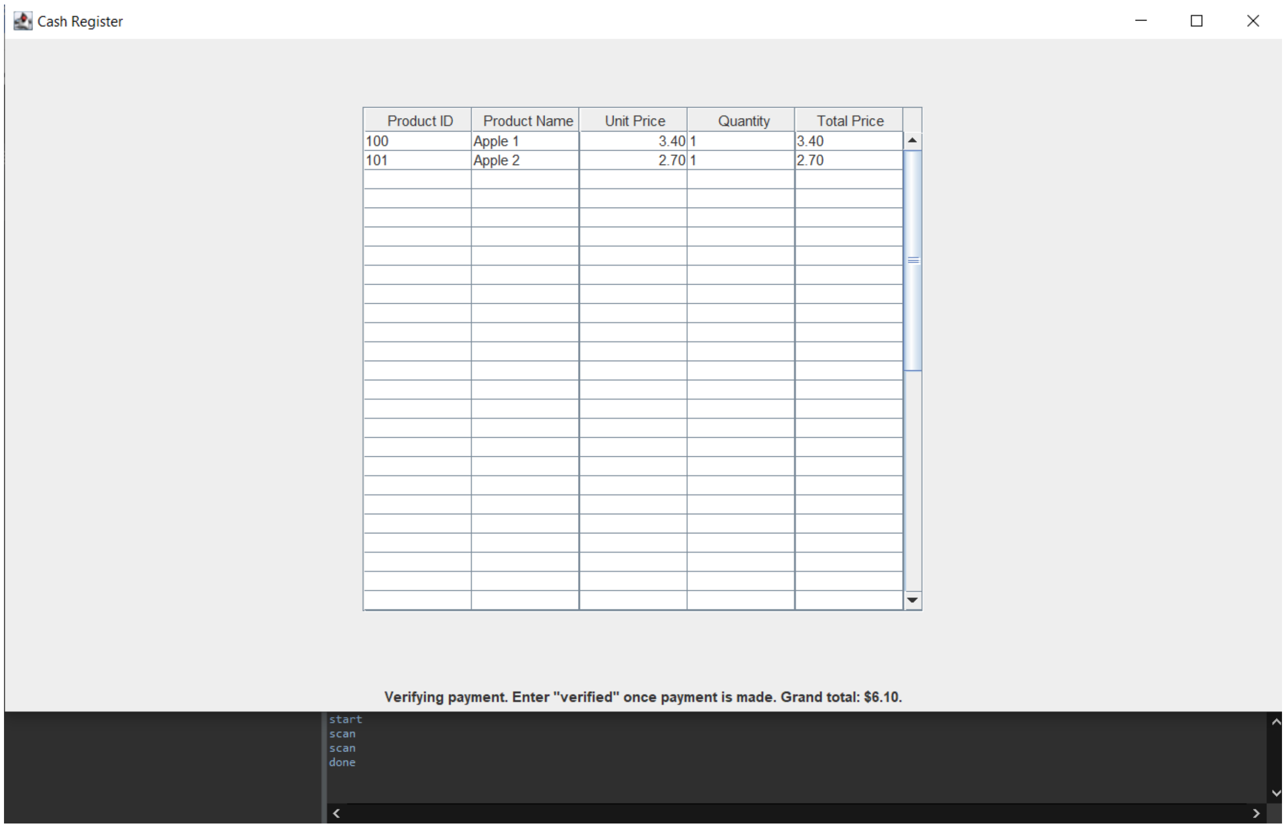
Ready. Enter 'scan' to scan a product, 'restart' to restart the session, 'changemode' to switch modes (add/remove product), or 'done' to proceed to payment. Mode: Remove.

```
changemode
scan
```

Successful scan (code = “100”)

Selecting "done"

Entering "done" finalizes the transaction, displaying the grand total and prompting the user to verify the payment. The user is responsible for verifying the payment outside the application, and needs to enter "verified" to proceed to the next step.



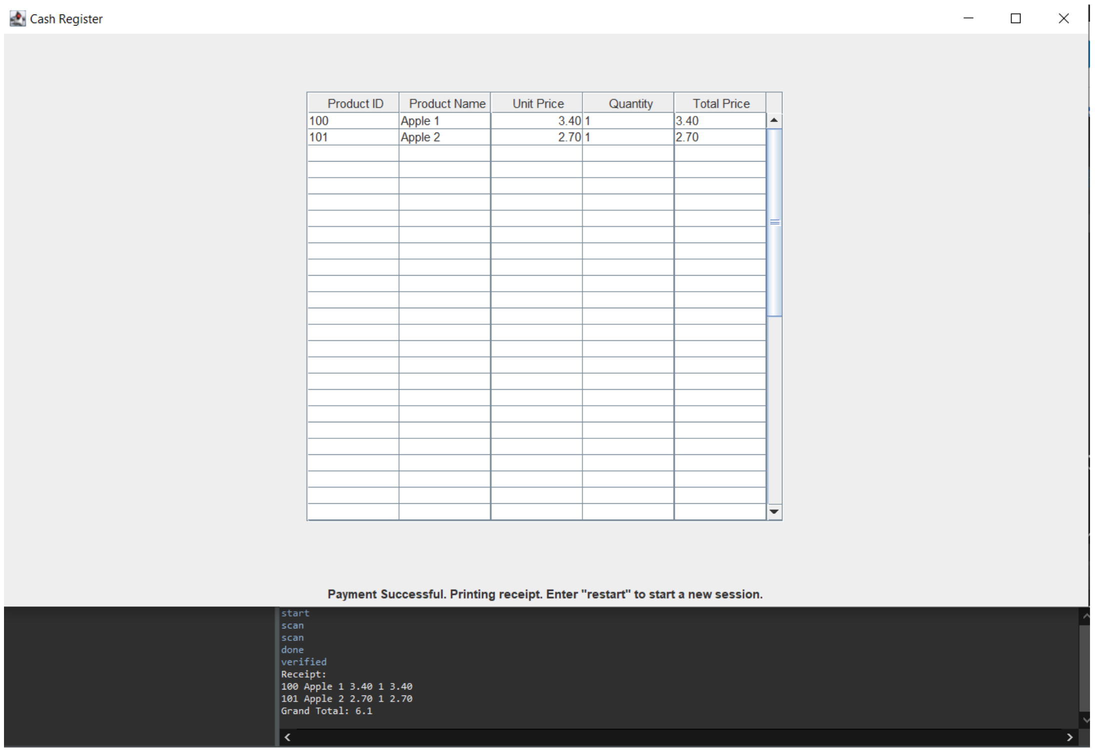
Product ID	Product Name	Unit Price	Quantity	Total Price
100	Apple 1	3.40	1	3.40
101	Apple 2	2.70	1	2.70

Verifying payment. Enter "verified" once payment is made. Grand total: $6.10.

```
start
scan
scan
done
```

Payment verification window

Once the payment is verified, the receipt is printed to the console (would be to a physical receipt in actual deployment) and the user can enter “restart” to close the current session and start a new one. “restart” here behaves identically to the “restart” command in the ready state.



Product ID	Product Name	Unit Price	Quantity	Total Price
100	Apple 1	3.40	1	3.40
101	Apple 2	2.70	1	2.70

Payment Successful. Printing receipt. Enter "restart" to start a new session.

```
start
scan
scan
done
verified
Receipt:
100 Apple 1 3.40 1 3.40
101 Apple 2 2.70 1 2.70
Grand Total: 6.1
```

End of transaction