KLE Society's
KLE Technological University

Open Ended Activity Report

On

E2E Supermarket Management

Object Oriented Programming with C++ (19ECSC204)
Object Oriented Programming with C++ Lab (18ECSP203)

Submitted by

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1. Introduction

1.1 Overview of the problem statement

A supermarket is run by staffs, and staffs comprise of either cashiers, or assistants. There are various different products that a supermarket keeps in its inventory, but they be segregated into three categories, namely, furniture, groceries, and clothing items. These items can be restocked by placing an order with the suppliers. When customers come to the supermarket to purchase goods, they can purchase a membership subscription with which they can earn loyalty points. There are three types of membership subscriptions, gold, silver and bronze, and they differ in terms of the points rewarded for each purchase. Our application will simulate the scenario described.

1.2 Features of Application

1. **Store Customer Data**

Any person who comes to the store to purchase groceries will have to provide their details before doing so. Their data is collected so as to track their past purchases and allow them to accumulate membership points.

2. **Enable Transactions**

After customer has added desired products to their cart, they can go for billing, where one of the cashiers will facilitate the transaction.

3. **Ability to Restock Products in the Inventory**

An admin can place an order for procurement of products that will be out of stock soon. A supplier will automatically be assigned to who will deliver the required products.

4. **Get Assistance**

A customer can get to know about the latest deals happening by choosing to get assistance. On doing so, a random assistant will inform the customer of the current promotions happening in the store.

5. **View Purchase History**

Any customer can request to view a list of the products they have purchased previously, associated with a unique transaction ID

2. Design

2.1 Class Diagrams
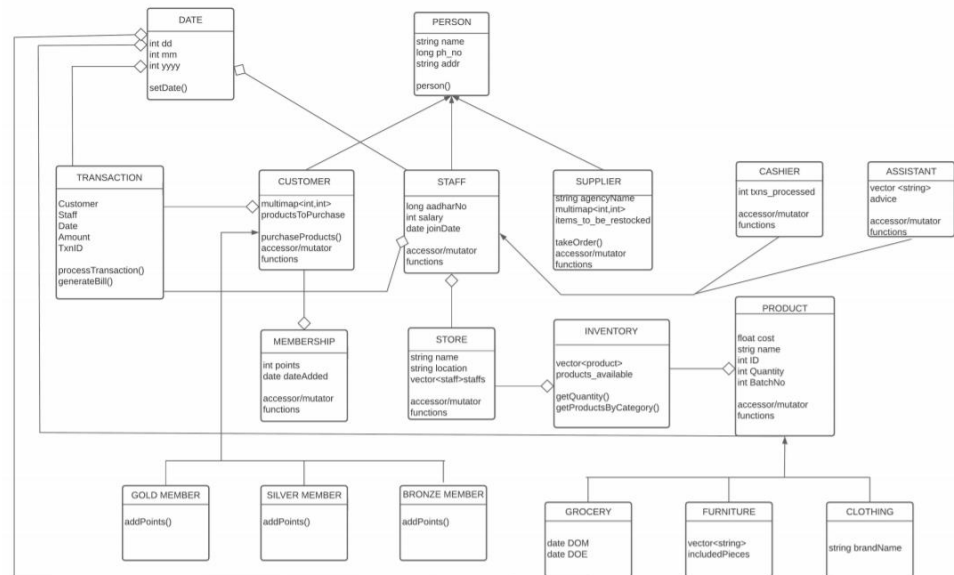
2.2 Description of Each Class

1. **Person**
   - Super class for Customer, Staff, & Supplier

2. **Customer**
   - Sub class of Person.
   - Aggregated with Transaction, and Membership

3. **Staff**
   - Sub class of Person.
   - Super class for Cashier, and Assistant.
   - Aggregated with Store, Transaction, & Date.

4. **Supplier**
   - Sub class of Person.

5. **Cashier**
   - Sub class of Staff.

6. Assistant
- Sub class of staff.

7. Membership
- Aggregated with Customer.

8. Store
- Aggregated with Staff, and Inventory.

9. Inventory
- Aggregated with Store, and Product.

10. Product
- Super class for Furniture, Clothing & Grocery.
- Aggregated with Inventory.

11. Grocery
- Sub class of Product.
- Aggregated with Date.

12. Furniture
- Sub class of Product.

13. Clothing
- Sub class of Product.

14. Gold Member
- Sub class of Customer.

15. Silver Member
- Sub class of Customer.

16. Bronze Member
- Sub class of Customer.

17. Transaction
- Aggregated with Staff, Customer, and Date.

2.3 main () Function :

Data regarding the store will already be kept ready using constructor calls and compile-time initialization. User will be asked to login as a customer or as a staff. Accordingly, a set of pre-determined menu will be presented at each step to facilitate the task that needs to be performed.

3.   Unit Test Plan

3.1 View Product Categories

Description

displays the product catalogue of products available in the store

Expected Input: NA

Expected Output:

Category: vermicilli
Product Name: bambino
Product Id:20
Cost:55
Quantity:24

Actual I/O:

```
You're now a member!

What would you like to do next?
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
1
Displaying all products in the store...

Category:noodles
Product Name:maggi
Product Id:11
Cost:100
Quantity:50

Category:biscuits
Product Name:oreo
Product Id:12
Cost:10
Quantity:45

Category:washingPowder
Product Name:nirma
Product Id:13
```

3.2 Add a product to cart

Description

if the customer wants to add some product he/she needs in the cart

Expected Input : 11

Actual I/O:

```
1
Enter your name:1
Enter your phone number:1
Enter your address:1
You're now a member!

What would you like to do next?
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
2
Enter product ID of the product you wish to add to cart:
11
Enter quantity:2
```

3.3   Ask for assistance:

Description:
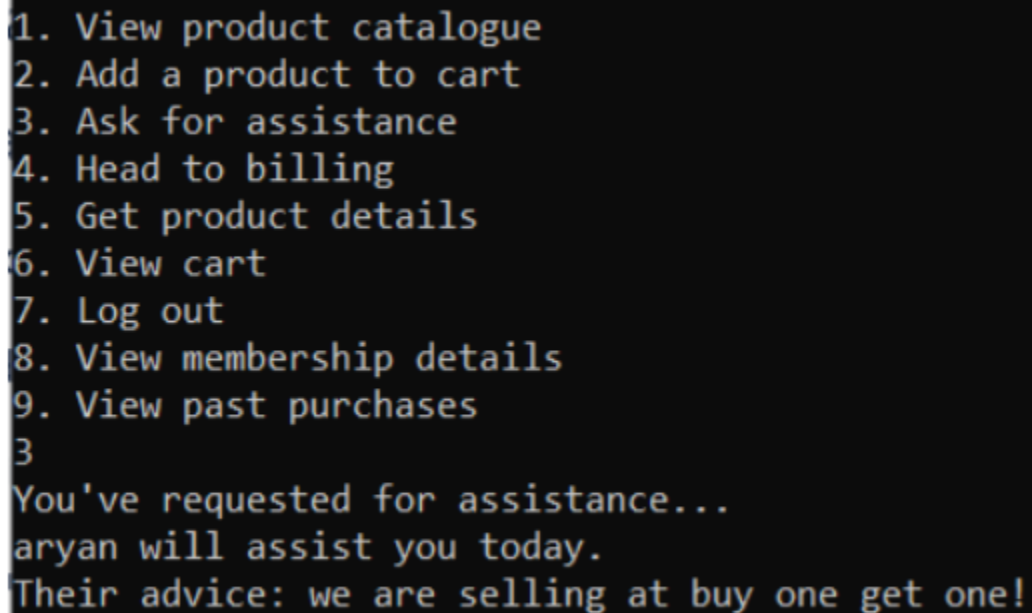
if customer required any help from the staff

Expected Input: NA

Expected Output:

You've requested for assistance...
Raj will assist you today.
Their advice: should check our new snacks!

Actual I/O:

```
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
3
You've requested for assistance...
aryan will assist you today.
Their advice: we are selling at buy one get one!
```
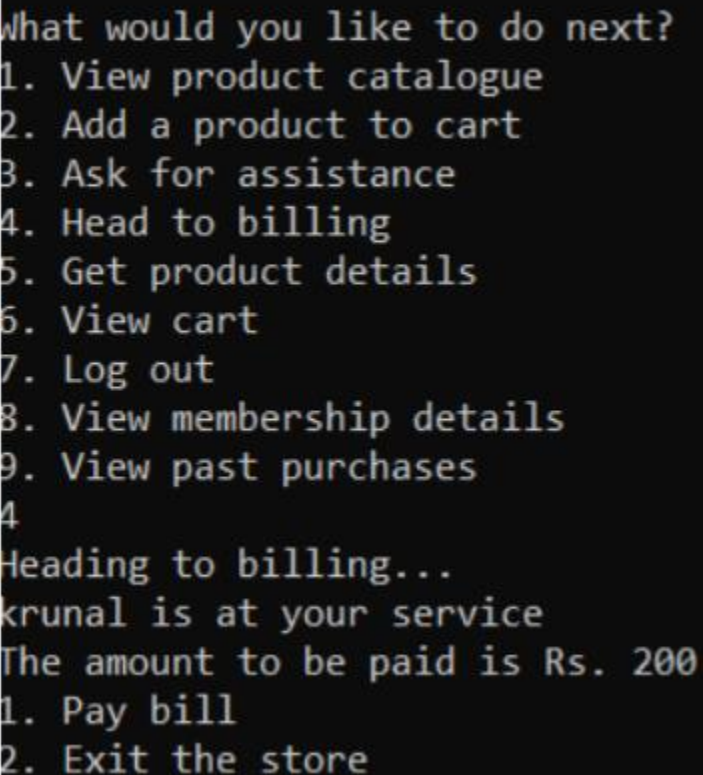
3. 4   Head to billing :

Description:

customer wants to pay the bill after purchasing the products she needs.

Expected Input: NA

Expected Output :

Akansha is at your service
The amount to be paid is Rs. 40

```
What would you like to do next?
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
4

Heading to billing...
krunal is at your service
The amount to be paid is Rs. 200
1. Pay bill
2. Exit the store
```

3.5 Get Specific Product details:

Description:

if the customer needs to know about any product details in the store

Expected Input: 11

Expected Output:

Category: noodles
Product Name: maggi
Product Id:11
Cost:100
Quantity:50

Actual I/O:

```
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
5
Enter product ID of the product you wish to get details of:12
Category:biscuits
Product Name:oreo
Product Id:12
Cost:10
Quantity:45
```

3.6 View Cart:

will show all the products the customer have added in the cart

Expected Input: NA

Expected Output:

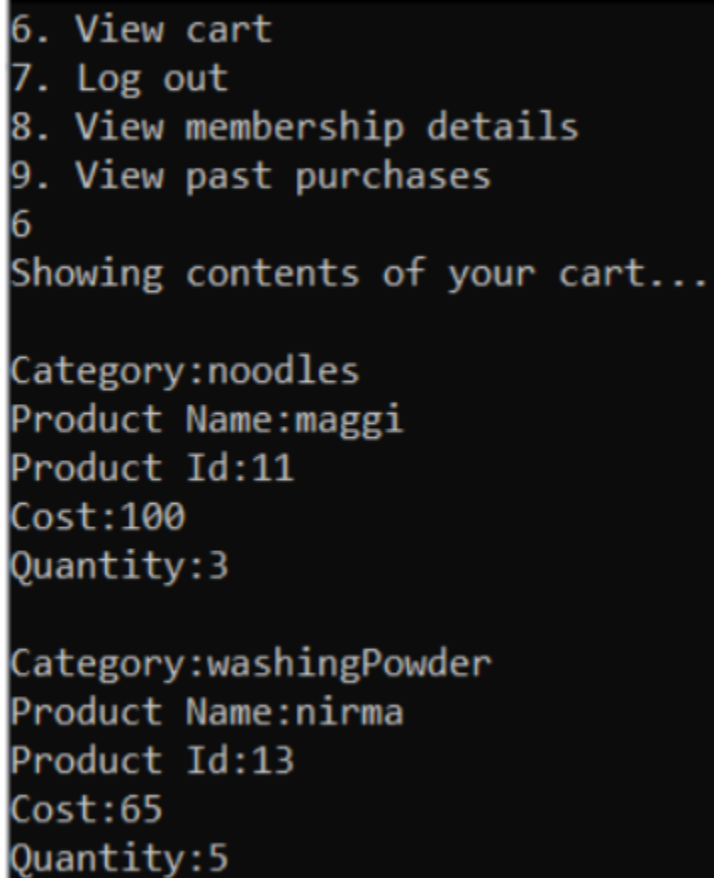Showing contents of your cart...
Category: noodles
Product Name : maggi
Product Id:11
Cost:100
Quantity:3

Actual I/O:

```
6. View cart
7. Log out
8. View membership details
9. View past purchases
6
Showing contents of your cart...

Category:noodles
Product Name:maggi
Product Id:11
Cost:100
Quantity:3

Category:washingPowder
Product Name:nirma
Product Id:13
Cost:65
Quantity:5
```

3.7 View membership details:

Description:
will tell the customer if his/her membership is still active and number of points accumulated.

Expected Input: NA

Expected Output:

Gold subscription is active.
Points accumulated = 0

Actual I/O:

```
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
8
You have requested to view your membership details... fetching...
Gold subscription is active.
Points accumulated = 0
```

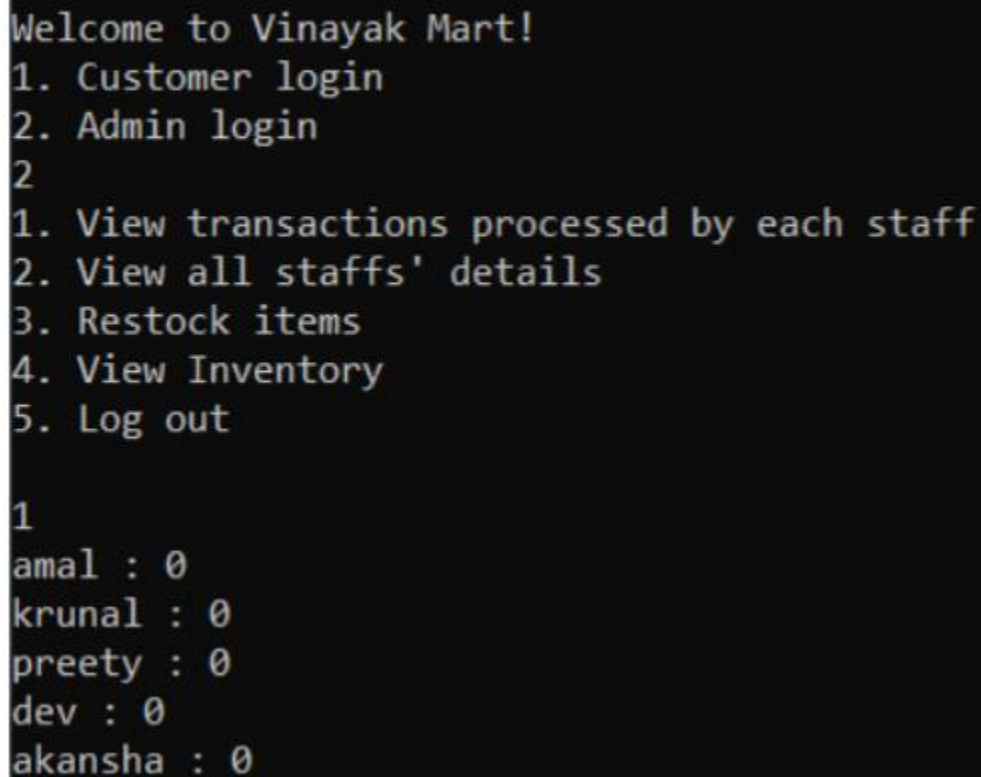**3.8 View transactions processed by each staff:**

Description:

shows the transaction processed by each staff on daily basis

Expected Input: NA

Expected Output:

amal : 0
krunal : 0
preety : 0
dev : 0

Actual I/O:


```
Welcome to Vinayak Mart!
1. Customer login
2. Admin login
2
1. View transactions processed by each staff
2. View all staffs' details
3. Restock items
4. View Inventory
5. Log out

1
amal : 0
krunal : 0
preety : 0
dev : 0
akansha : 0
```

3.9 View all staff's details:

Description:

will display all the staff details in the store

Expected Input: NA

Expected Output:

Name: akansha
phoneNo: 92338111
address: gokulroad
aadharNumber: 576855939
salary: 12000

Name: riddhi
phoneNo: 98383902
address: dharwad
aadharNumber: 337372772
salary: 13000

Actual I/O:

```
3. Restock items
4. View Inventory
5. Log out

2
Name: amal
phoneNo: 83838391
address: vidyanagar
aadharNumber: 473838282
salary: 10000

Name: krunal
phoneNo: 98838282
address: gokulnagar
aadharNumber: 466363621
salary: 12000

Name: preety
phoneNo: 83839292
address: dharwad
aadharNumber: 234657728
salary: 11000

Name: dev
phoneNo: 92983821
address: stationRoad
aadharNumber: 1248584883
salary: 10000
```

3.10 Restock Items:

Description:

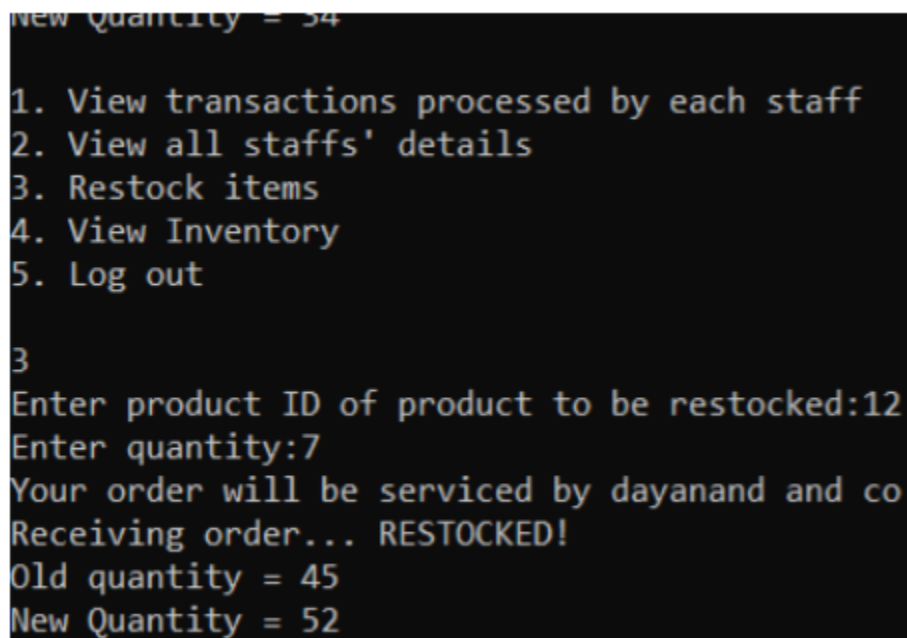products that needs to be restocked

Expected Input: 13

Expected Output:

Your order will be serviced by global food company
Receiving order... RESTOCKED!
Old quantity = 30
New Quantity = 34

Actual I/O:

3.11 View Inventory:

Description:

we can see the products available in the current inventory

Expected input : NA

Expected Output:

Category: Noodles
Product name: Maggi
Product id: 11
Cost:100
Quantity:50

Category: Biscuits
Product name: Oreo
Product id:12
Cost:10
Quantity:52

Category: Washing Powder
Product name: Nirma
Product id:13
Cost:65
Quantity:34

Actual I/O:

```
1. View transactions processed by each staff
2. View all staffs' details
3. Restock items
4. View Inventory
5. Log out

4
Category:noodles
Product Name:maggi
Product Id:11
Cost:100
Quantity:50

Category:biscuits
Product Name:oreo
Product Id:12
Cost:10
Quantity:52

Category:washingPowder
Product Name:nirma
Product Id:13
Cost:65
Quantity:34

Category:chocolates
Product Name:perk
Product Id:14
Cost:5
```

4. **Implementation :**

```
What would you like to do next?
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
1
Displaying all products in the store...

Category:noodles
Product Name:maggi
Product Id:11
Cost:100
Quantity:50

Category:biscuits
Product Name:oreo
Product Id:12
Cost:10
Quantity:45

Category:washingPowder
Product Name:nirma
Product Id:13
Cost:65
Quantity:30
```

```
Quantity:30
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
2
Enter product ID of the product you wish to add to cart:
19
Enter quantity:23
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
```

```
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
3
You've requested for assistance...
vishal will assist you today.
Their advice: unbelievable rates today!
```

```
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
4
Heading to billing...
amal is at your service
The amount to be paid is Rs. 2500
1. Pay bill
2. Exit the store
1
Processing transaction... please wait...
Bill paid successfully!
Your transaction ID is 2
You've earned 500 points for this txn!
```

```
What would you like to do next?
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
5
Enter product ID of the product you wish to get details of:12
Category:biscuits
Product Name:oreo
Product Id:12
Cost:10
Quantity:45
```

```
Quantity:43
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
6
Showing contents of your cart...

Category:biscuits
Product Name:oreo
Product Id:12
Cost:10
Quantity:23

Category:pillow
Product Name:sleepwell
Product Id:19
Cost:100
Quantity:3
```

```
1. View product catalogue
2. Add a product to cart
3. Ask for assistance
4. Head to billing
5. Get product details
6. View cart
7. Log out
8. View membership details
9. View past purchases
8
You have requested to view your membership details... fetching.
Gold subscription is active.
Points accumulated = 0
```

```
Welcome to Vinayak Mart!
1. Customer login
2. Admin login
2
1. View transactions processed by each staff
2. View all staffs' details
3. Restock items
4. View Inventory
5. Log out


1
amal : 0
krunal : 0
preety : 0
dev : 0
akansha : 0

1. View transactions processed by each staff
2. View all staffs' details
3. Restock items
4. View Inventory
5. Log out

2
Name: amal
phoneNo: 83838391
address: vidyanagar
aadharNumber: 473838282
salary: 10000

Name: krunal
phoneNo: 98838282
address: gokulnagar
aadharNumber: 466363621
salary: 12000

Name: preety
phoneNo: 83839292
address: dharwad
aadharNumber: 234657728
salary: 11000
```

```
1. View transactions processed by each staff
2. View all staffs' details
3. Restock items
4. View Inventory
5. Log out

3
Enter product ID of product to be restocked:11
Enter quantity:12
Your order will be serviced by global food company
Receiving order... RESTOCKED!
```

```
1. View transactions processed by each staff
2. View all staffs' details
3. Restock items
4. View Inventory
5. Log out

4
Category:noodles
Product Name:maggi
Product Id:11
Cost:100
Quantity:62

Category:biscuits
Product Name:oreo
Product Id:12
Cost:10
Quantity:45

Category:washingPowder
Product Name:nirma
Product Id:13
Cost:65
Quantity:30

Category:chocolates
Product Name:perk
Product Id:14
Cost:5
```