# Sri Lanka Institute of Information Technology

## Software Architecture

### Assignment 1- SE3030



Group Details : Y3S1.20(WD) –  **Group_28**

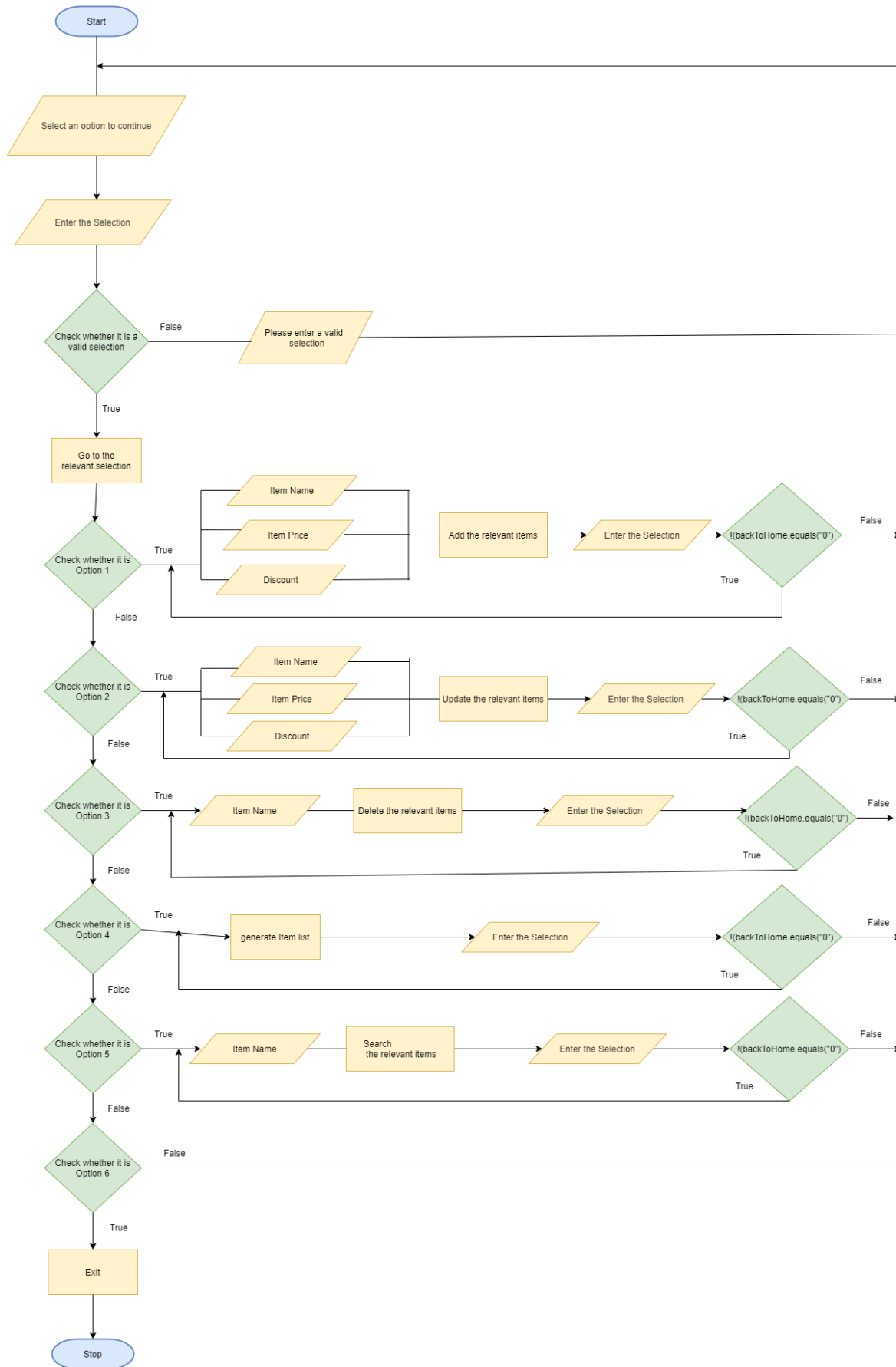| Registration Number | Name |
| --- | --- |
| IT18153828 | Dahanayake H.Y.D |
| IT18040654 | Wickramasinghe S.P |
| IT18111170 | Silva S.H.I |

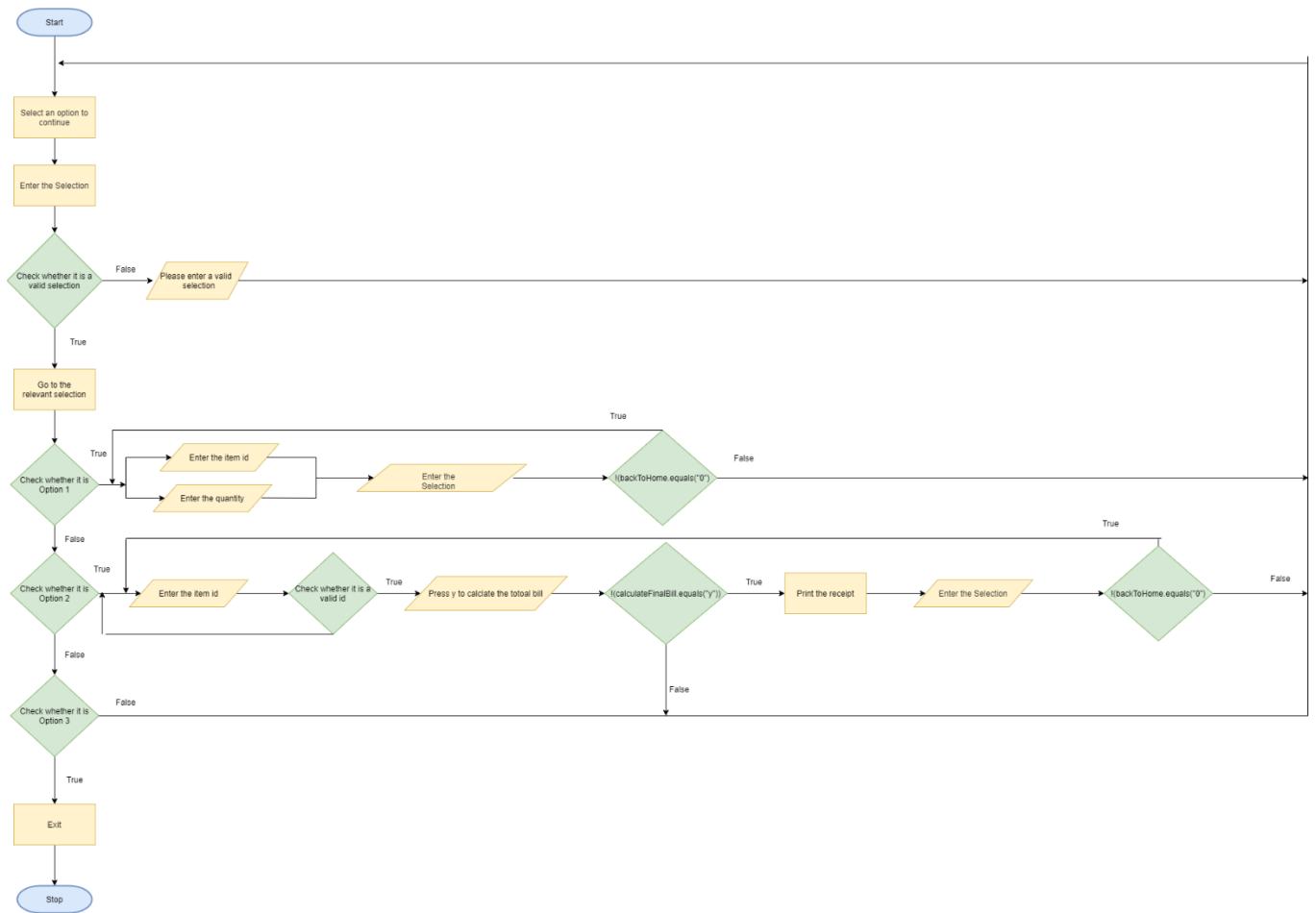# Supermarket service

## a) Explain the Scenario using a diagram

It is a retail situation in which cashier and manager operate together to sell their products to their clients. Two consumers and one producer is present in this situation where it has Manager consumer and Cashier consumer. Then Manager consumer will add goods to supermarkets and offer discounts on goods. The final measured bill will be displayed by the Cashier consumer. To achieve best practices of OSGI we expose the producer service interfaces only not the implementations. Consumers can work through the interfaces.

figure[01]

The following diagram is workflow of supermarket manager consumer. There are 6 options of add item, update, delete, search Items and manger can exit by pressing 6 when necessary. In the process of adding new item to item list, Manager has to input name, price, discount which are then save to list. If manager input any other input rather than mention options system notify to enter valid input. Then the auto generated id and final price will be calculated by system.

```
                        Start

              Select an option to continue

              Enter the Selection

                                    False
      Check whether it is          ────────   Please enter a valid
         valid selection                         selection

              True

         Go to the
      relevant selection
                                      Item Name

      Check whether it is    True     Item Price       Add the relevant items    Enter the Selection    !(backToHome.equals("0"))   False
         Option 1                     Discount                                                                                       True

              False

      Check whether it is    True     Item Name
         Option 2                     Item Price      Update the relevant items   Enter the Selection    !(backToHome.equals("0"))   False
                                      Discount                                                                                       True

              False

      Check whether it is    True     Item Name      Delete the relevant items    Enter the Selection    !(backToHome.equals("0"))   False
         Option 3                                                                                                                    True

              False

      Check whether it is    True     generate Item list                          Enter the Selection    !(backToHome.equals("0"))   False
         Option 4                                                                                                                    True

              False

      Check whether it is    True     Item Name      Search                       Enter the Selection    !(backToHome.equals("0"))   False
         Option 5                                     the relevant items                                                             True

              False

      Check whether it is          False
         Option 6

              True

              Exit

              Stop
```
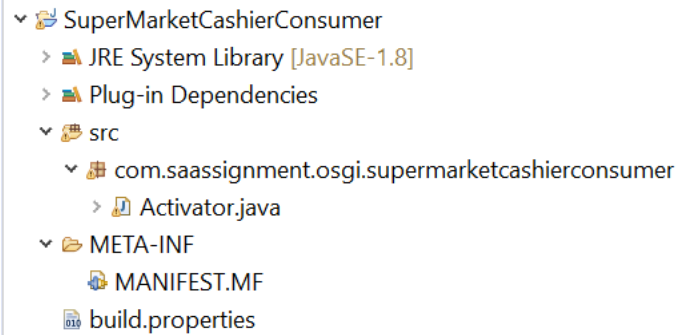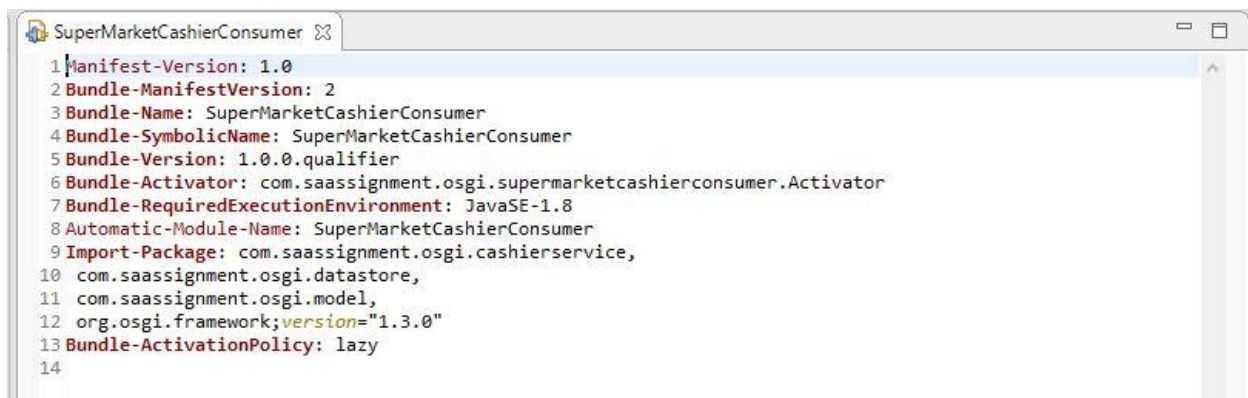
figure[02]



This is the part of the workflow of consumer cashier side. Option 1 describes the view of list items by pressing 1. then by pressing 2 ask cashier to enter quantity then user can generate the bill which gives the total final price to user. User can iterate the process, in the end calculated final bill will be display. If the user wants to exit it can proceed by pressing 3 if option is not related to this, then it shows the notification to enter a valid selection.

b)Manifest implementation

**Cashier Consumer Manifest**

```
∨ 🗁 SuperMarketCashierConsumer
  > ➤ JRE System Library [JavaSE-1.8]
  > ➤ Plug-in Dependencies
  ∨ 🗁 src
    ∨ 🗁 com.saassignment.osgi.supermarketcashierconsumer
      > 🗋 Activator.java
  ∨ 🗁 META-INF
      🗋 MANIFEST.MF
    🗋 build.properties
```

End user of system who are cashier consumers will display the bill using the method of cashier service impl . This bill then prints and present it to the client. Cashier can also view the item list.

```
SuperMarketCashierConsumer ⊠                                                    ▭ ⊡
 1 Manifest-Version: 1.0
 2 Bundle-ManifestVersion: 2
 3 Bundle-Name: SuperMarketCashierConsumer
 4 Bundle-SymbolicName: SuperMarketCashierConsumer
 5 Bundle-Version: 1.0.0.qualifier
 6 Bundle-Activator: com.saassignment.osgi.supermarketcashierconsumer.Activator
 7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
 8 Automatic-Module-Name: SuperMarketCashierConsumer
 9 Import-Package: com.saassignment.osgi.cashierservice,
10  com.saassignment.osgi.datastore,
11  com.saassignment.osgi.model,
12  org.osgi.framework;version="1.3.0"
13 Bundle-ActivationPolicy: lazy
14
```

This is the manifest file of cashier consumer Here, imported packages from com.saassignment.osgi.cashierservice, com.saassignment.osgi.datastore, com.saassignment.osgi.model framework and version from this we achieve the services provided by cashier producer.

We run this activator after running all of the bundles.

**Manager Consumer Manifest**

```
∨ 🖳 SuperMarketManagerConsumer
  > ⬛ JRE System Library [JavaSE-1.8]
  > ⬛ Plug-in Dependencies
  ∨ 🕮 src
    ∨ 🏛 com.saassignment.osgi.supermarketmanagerconsumer
      > 🗋 Activator.java
  ∨ 📂 META-INF
      🗋 MANIFEST.MF
    📄 build.properties
```
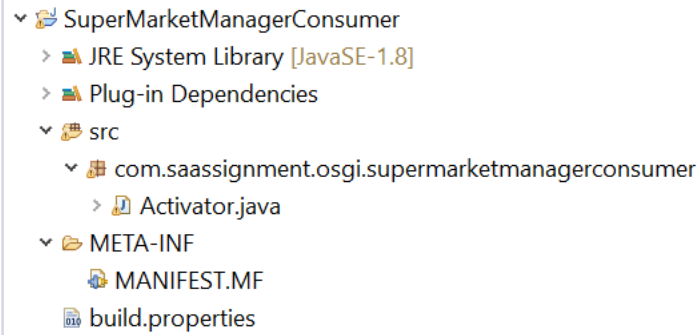
Manager of the supermarket add items and have the privileged to manage the items and they can make discount to relevant items those details will be stored in datastore ItemList in producer.

```
🗋 Activator.java    🗋 SuperMarketManagerConsumer ☒                                    ⬛ ◻
 1 Manifest-Version: 1.0
 2 Bundle-ManifestVersion: 2
 3 Bundle-Name: SuperMarketManagerConsumer
 4 Bundle-SymbolicName: SuperMarketManagerConsumer
 5 Bundle-Version: 1.0.0.qualifier
 6 Bundle-Activator: com.saassignment.osgi.supermarketmanagerconsumer.Activator
 7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
 8 Automatic-Module-Name: SuperMarketManagerConsumer
 9 Import-Package: com.saassignment.osgi.datastore,
10  com.saassignment.osgi.managerservice,
11  com.saassignment.osgi.model,
12  org.osgi.framework;version="1.3.0"
13 Bundle-ActivationPolicy: lazy
14
```

In this manager consumer manifest file, Imported the com.saassignment.osgi.datastore, com.saassignment.osgi.managerservice, com.saassignment.osgi.model, org.osgi.framework from producer.

We run this activator class after running the producer

**Service Producer Manifest**

```
v 📂 SuperMarketServiceProducer
   > ■ JRE System Library [JavaSE-1.8]
   > ■ Plug-in Dependencies
   v 📁 src
      v ⊞ com.saassignment.osgi.cashierservice
         > 🗋 CashierService.java
      v ⊞ com.saassignment.osgi.cashierserviceimpl
         > 🗋 CashierServiceImpl.java
      v ⊞ com.saassignment.osgi.datastore
         > 🗋 DataStore.java
      v ⊞ com.saassignment.osgi.managerservice
         > 🗋 ManagerService.java
      v 🗇 com.saassignment.osgi.managerserviceimpl
         > 🗋 ManagerServiceImpl.java
      v ⊞ com.saassignment.osgi.model
         v 🗋 Item.java
            > ⊙ Item
      v 🗇 com.saassignment.osgi.supermarketserviceproducer
         v 🗋 Activator.java
            > ⊙ Activator
   v 📂 META-INF
      🗋 MANIFEST.MF
   🗋 build.properties
```

This is the producer part of the system. There are two of them which are cashier service and manager service.


In cashier service,

Cashier service is the interface. service impl is the implementation of the interface. It has the calculation algorithms of the bill and implementation of viewing the item list. Cashier service will be export from the bundle. Then supermarket cashier consumer can use that services to do his tasks


In manager service,
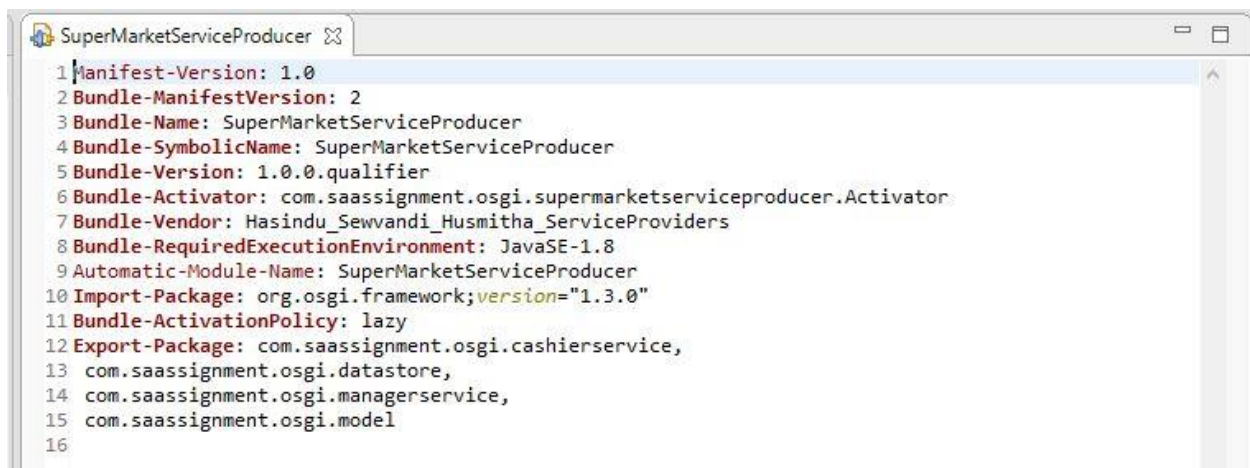
Manger service is the interface and have the CRUD operations to manipulate items The impl class of manager service will implement the services in manager services. Manager service interface will export as a package. Then supermarket manager consumer can use that services to do his tasks.

In the manifest file it imported the osgi framework package and exported the com.saassignment.osgi.cashierservice, com.saassignment.osgi.datastore, com.saassignment.osgi.managerservice, com.saassignment.osgi.model.
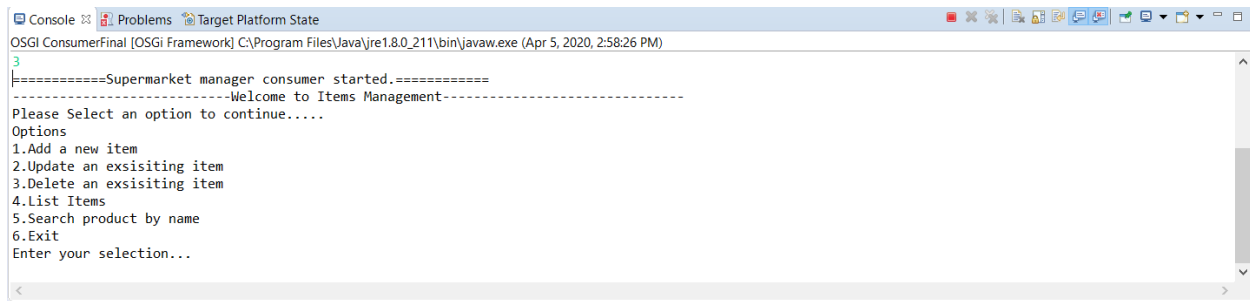
.

Activator has the List of items that's add by the manager. It has the shared data between the consumer and producer. Data add by the manager can be view by the cashier.

Model has the item class which stores the item details.
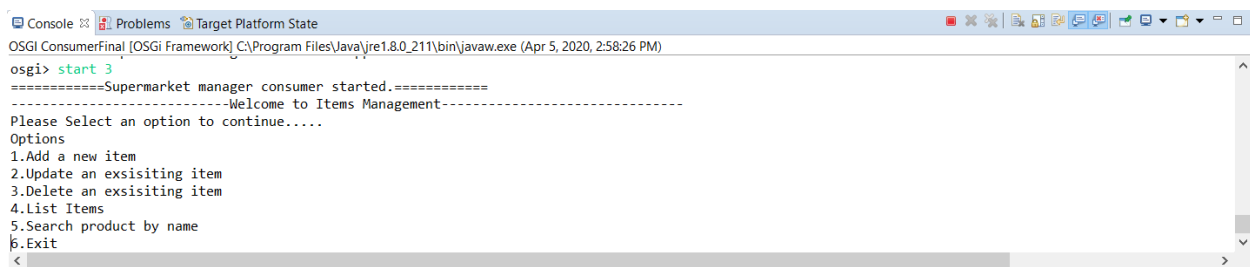
In the supermarket service producer activator class register the cashier service and manager service

```
SuperMarketServiceProducer ⊠

 1 Manifest-Version: 1.0
 2 Bundle-ManifestVersion: 2
 3 Bundle-Name: SuperMarketServiceProducer
 4 Bundle-SymbolicName: SuperMarketServiceProducer
 5 Bundle-Version: 1.0.0.qualifier
 6 Bundle-Activator: com.saassignment.osgi.supermarketserviceproducer.Activator
 7 Bundle-Vendor: Hasindu_Sewvandi_Husmitha_ServiceProviders
 8 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
 9 Automatic-Module-Name: SuperMarketServiceProducer
10 Import-Package: org.osgi.framework;version="1.3.0"
11 Bundle-ActivationPolicy: lazy
12 Export-Package: com.saassignment.osgi.cashierservice,
13  com.saassignment.osgi.datastore,
14  com.saassignment.osgi.managerservice,
15  com.saassignment.osgi.model
16
```

c)All commands of bundle install and run in OSGi framework.

Manager Consumer Stopped
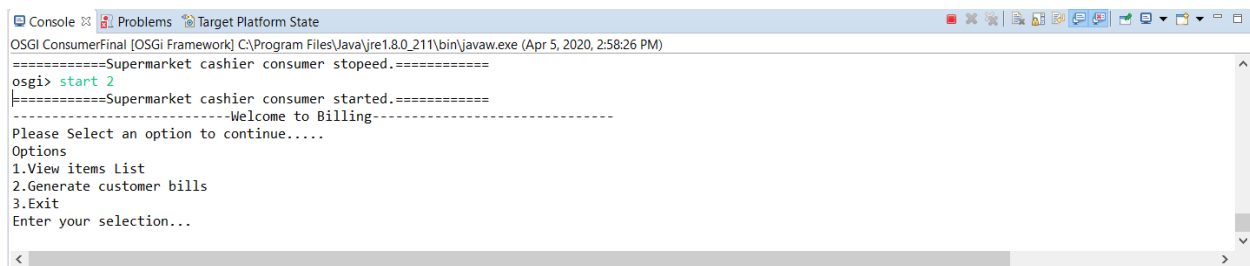
```
Console ⊠  Problems  Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
osgi> start 3
============Supermarket manager consumer started.============
-------------------------Welcome to Items Management-----------------------------
Please Select an option to continue.....
Options
1.Add a new item
2.Update an exsisiting item
3.Delete an exsisiting item
4.List Items
5.Search product by name
6.Exit
```
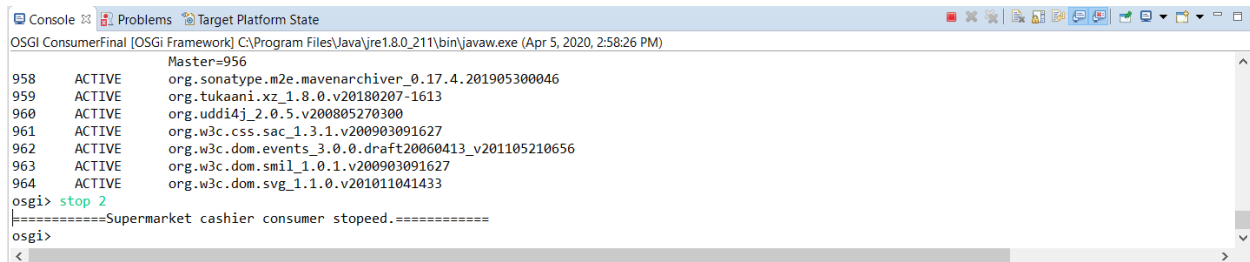
## Manager Consumer Started

```
3
============Supermarket manager consumer started.============
----------------------------Welcome to Items Management----------------------------
Please Select an option to continue.....
Options
1.Add a new item
2.Update an exsisiting item
3.Delete an exsisiting item
4.List Items
5.Search product by name
6.Exit
Enter your selection...
```
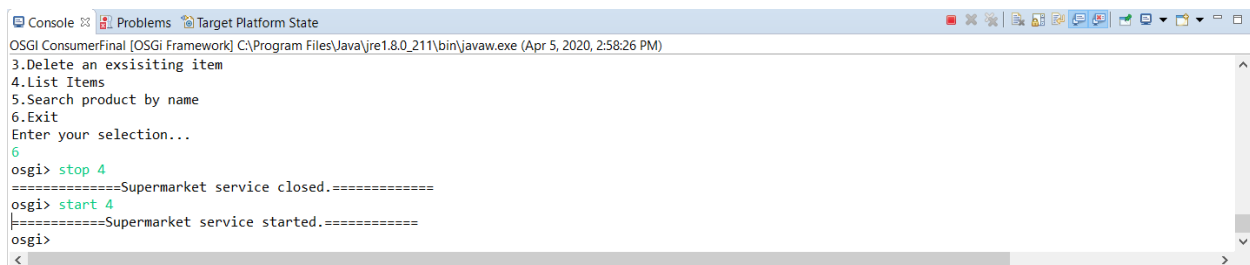
## Start cashier consumer

```
============Supermarket cashier consumer stopeed.============
osgi> start 2
============Supermarket cashier consumer started.============
----------------------------Welcome to Billing----------------------------
Please Select an option to continue.....
Options
1.View items List
2.Generate customer bills
3.Exit
Enter your selection...
```

## Stop cashier consumer

```
                    Master=956
958     ACTIVE      org.sonatype.m2e.mavenarchiver_0.17.4.201905300046
959     ACTIVE      org.tukaani.xz_1.8.0.v20180207-1613
960     ACTIVE      org.uddi4j_2.0.5.v200805270300
961     ACTIVE      org.w3c.css.sac_1.3.1.v200903091627
962     ACTIVE      org.w3c.dom.events_3.0.0.draft20060413_v201105210656
963     ACTIVE      org.w3c.dom.smil_1.0.1.v200903091627
964     ACTIVE      org.w3c.dom.svg_1.1.0.v201011041433
osgi> stop 2
============Supermarket cashier consumer stopeed.============
osgi>
```

## Super Market Service Started

```
3.Delete an exsisiting item
4.List Items
5.Search product by name
6.Exit
Enter your selection...
6
osgi> stop 4
============Supermarket service closed.============
osgi> start 4
============Supermarket service started.============
osgi>
```

## Super Market Service Closed

```
1.Add a new item
2.Update an exsisiting item
3.Delete an exsisiting item
4.List Items
5.Search product by name
6.Exit
Enter your selection...
6
osgi> stop 4
==============Supermarket service closed.=============
osgi>
```

## Listing bundles

```
osgi> ss
"Framework is launched."


id      State       Bundle
0       ACTIVE      org.eclipse.osgi_3.15.0.v20190830-1434
                    Fragments=696
1       ACTIVE      org.eclipse.equinox.simpleconfigurator_1.3.300.v20190716-0825
2       ACTIVE      SuperMarketCashierConsumer_1.0.0.qualifier
3       ACTIVE      SuperMarketManagerConsumer_1.0.0.qualifier
4       ACTIVE      SuperMarketServiceProducer_1.0.0.qualifier
5       ACTIVE      Testers_1.0.0.qualifier
6       ACTIVE      ch.qos.logback.classic_1.0.7.v20121108-1250
                    Fragments=587
7       ACTIVE      ch.qos.logback.core_1.0.7.v20121108-1250
8       RESOLVED    ch.qos.logback.slf4j_1.0.7.v201505121915
                    Master=956
9       ACTIVE      com.google.gson_2.8.2.v20180104-1110
10      ACTIVE      com.google.guava_27.1.0.v20190517-1946
11      ACTIVE      com.google.guava_21.0.0.v20170206-1425
12      ACTIVE      com.google.javascript_0.0.20160315.v20161124-1903
13      ACTIVE      com.google.protobuf_2.4.0.v201105131100
14      ACTIVE      com.ibm.icu_64.2.0.v20190507-1337
15      ACTIVE      com.jcraft.jsch_0.1.55.v20190404-1902
16      ACTIVE      com.jcraft.jzlib_1.1.1.v201205102305
17      ACTIVE      com.sun.el_2.2.0.v201303151357
18      ACTIVE      com.sun.jna_4.5.1.v20180403-1933
19      ACTIVE      com.sun.jna.platform_4.5.1.v20180403-1933
20      ACTIVE      com.sun.xml.bind_2.2.0.v201505121915
21      ACTIVE      java_cup.runtime_0.10.0.v201005080400
22      ACTIVE      javaewah_1.1.6.v20160919-1400
23      ACTIVE      javax.activation_1.1.0.v201211130549
24      ACTIVE      javax.annotation_1.2.0.v201602091430
25      ACTIVE      javax.el_2.2.0.v201303151357
26      ACTIVE      javax.inject_1.0.0.v20091030
27      ACTIVE      javax.jws_2.0.0.v201005080400
28      ACTIVE      javax.mail_1.4.0.v201005080615
```

10

OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)

```
42    ACTIVE    org.apache.axis_1.4.0.v201411182050
43    ACTIVE    org.apache.batik.constants_1.11.0.v20190515-0436
44    ACTIVE    org.apache.batik.css_1.11.0.v20190515-0436
45    ACTIVE    org.apache.batik.i18n_1.11.0.v20190515-0436
46    ACTIVE    org.apache.batik.util_1.11.0.v20190515-0436
47    ACTIVE    org.apache.bcel_5.2.0.v201005080400
48    ACTIVE    org.apache.commons.codec_1.10.0.v20180409-1845
49    ACTIVE    org.apache.commons.collections_3.2.2.v201511171945
50    ACTIVE    org.apache.commons.compress_1.18.0.v20181121-2221
51    ACTIVE    org.apache.commons.discovery_0.2.0.v201004190315
52    ACTIVE    org.apache.commons.httpclient_3.1.0.v201012070820
53    ACTIVE    org.apache.commons.io_2.6.0.v20190123-2029
54    ACTIVE    org.apache.commons.jxpath_1.3.0.v200911051830
55    ACTIVE    org.apache.commons.lang_2.6.0.v201404270220
56    ACTIVE    org.apache.commons.lang3_3.1.0.v201403281430
57    ACTIVE    org.apache.commons.logging_1.2.0.v20180409-1502
58    ACTIVE    org.apache.felix.gogo.command_1.0.2.v20170914-1324
59    ACTIVE    org.apache.felix.gogo.runtime_1.1.0.v20180713-1646
60    ACTIVE    org.apache.felix.gogo.shell_1.1.0.v20180713-1646
61    ACTIVE    org.apache.felix.scr_2.1.14.v20190123-1619
62    ACTIVE    org.apache.httpcomponents.httpclient_4.5.6.v20190213-1430
63    ACTIVE    org.apache.httpcomponents.httpclient.win_4.5.6.v20190213-1947
64    ACTIVE    org.apache.httpcomponents.httpcore_4.4.10.v20190123-2214
65    ACTIVE    org.apache.jasper.glassfish_2.2.2.v201501141630
66    ACTIVE    org.apache.log4j_1.2.15.v201012070815
67    ACTIVE    org.apache.lucene.analyzers-common_8.0.0.v20190404-1858
68    ACTIVE    org.apache.lucene.analyzers-common_7.5.0.v20181003-1532
69    ACTIVE    org.apache.lucene.analyzers-common_6.1.0.v20161115-1612
70    ACTIVE    org.apache.lucene.analyzers-smartcn_8.0.0.v20190404-1858
71    ACTIVE    org.apache.lucene.core_8.0.0.v20190404-1858
72    ACTIVE    org.apache.lucene.core_7.5.0.v20181003-1532
73    ACTIVE    org.apache.lucene.core_6.1.0.v20170814-1820
74    ACTIVE    org.apache.lucene.misc_7.5.0.v20181003-1532
75    ACTIVE    org.apache.lucene.queryparser_7.5.0.v20181003-1532
76    ACTIVE    org.apache.lucene.queryparser_6.1.0.v20161115-1612
77    ACTIVE    org.apache.sshd.osgi_2.2.0.v20190425-2127
78    ACTIVE    org.apache.sshd.sftp_2.2.0.v20190425-2127
79    ACTIVE    org.apache.velocity_1.5.0.v200905102220
```

## Uninstall Cashier Consumer

```
osgi> uninstall 2
============Supermarket cashier consumer stopeed.============
osgi> ss
"Framework is launched."


id      State       Bundle
0       ACTIVE      org.eclipse.osgi_3.15.0.v20190830-1434
                    Fragments=696
1       ACTIVE      org.eclipse.equinox.simpleconfigurator_1.3.300.v20190716-0825
3       ACTIVE      SuperMarketManagerConsumer_1.0.0.qualifier
4       ACTIVE      SuperMarketServiceProducer_1.0.0.qualifier
5       ACTIVE      Testers_1.0.0.qualifier
6       ACTIVE      ch.qos.logback.classic_1.0.7.v20121108-1250
                    Fragments=587
7       ACTIVE      ch.qos.logback.core_1.0.7.v20121108-1250
8       RESOLVED    ch.qos.logback.slf4j_1.0.7.v201505121915
                    Master=956
9       ACTIVE      com.google.gson_2.8.2.v20180104-1110
10      ACTIVE      com.google.guava_27.1.0.v20190517-1946
11      ACTIVE      com.google.guava_21.0.0.v20170206-1425
12      ACTIVE      com.google.javascript_0.0.20160315.v20161124-1903
13      ACTIVE      com.google.protobuf_2.4.0.v201105131100
14      ACTIVE      com.ibm.icu_64.2.0.v20190507-1337
15      ACTIVE      com.jcraft.jsch_0.1.55.v20190404-1902
16      ACTIVE      com.jcraft.jzlib_1.1.1.v201205102305
17      ACTIVE      com.sun.el_2.2.0.v201303151357
18      ACTIVE      com.sun.jna_4.5.1.v20180403-1933
19      ACTIVE      com.sun.jna.platform_4.5.1.v20180403-1933
20      ACTIVE      com.sun.xml.bind_2.2.0.v201505121915
21      ACTIVE      java_cup.runtime_0.10.0.v201005080400
22      ACTIVE      javaewah_1.1.6.v20160919-1400
```

## Uninstall manager Consumer

11

```
Console ⊠  Problems  Target Platform State                                                        ■ ✕ ✕ | 🗎 🔧 🔧 🖳 🖳 | ⏭ 🖳 ▾ 🗂 ▾  ⁻ □
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 3:56:05 PM)
osgi> uninstall 3
============Supermarket manager consumer stopped.============
osgi> ss
"Framework is launched."


id      State       Bundle
0       ACTIVE      org.eclipse.osgi_3.15.0.v20190830-1434
                    Fragments=696
1       ACTIVE      org.eclipse.equinox.simpleconfigurator_1.3.300.v20190716-0825
4       ACTIVE      SuperMarketServiceProducer_1.0.0.qualifier
5       ACTIVE      Testers_1.0.0.qualifier
6       ACTIVE      ch.qos.logback.classic_1.0.7.v20121108-1250
                    Fragments=587
7       ACTIVE      ch.qos.logback.core_1.0.7.v20121108-1250
8       RESOLVED    ch.qos.logback.slf4j_1.0.7.v201505121915
                    Master=956
9       ACTIVE      com.google.gson_2.8.2.v20180104-1110
10      ACTIVE      com.google.guava_27.1.0.v20190517-1946
11      ACTIVE      com.google.guava_21.0.0.v20170206-1425
12      ACTIVE      com.google.javascript_0.0.20160315.v20161124-1903
13      ACTIVE      com.google.protobuf_2.4.0.v201105131100
14      ACTIVE      com.ibm.icu_64.2.0.v20190507-1337
15      ACTIVE      com.jcraft.jsch_0.1.55.v20190404-1902
16      ACTIVE      com.jcraft.jzlib_1.1.1.v201205102305
17      ACTIVE      com.sun.el_2.2.0.v201303151357
18      ACTIVE      com.sun.jna_4.5.1.v20180403-1933
19      ACTIVE      com.sun.jna.platform_4.5.1.v20180403-1933
20      ACTIVE      com.sun.xml.bind_2.2.0.v201505121915
21      ACTIVE      java_cup.runtime_0.10.0.v201005080400
22      ACTIVE      javaewah_1.1.6.v20160919-1400
23      ACTIVE      javax.activation_1.1.0.v201211130549
24      ACTIVE      javax.annotation_1.2.0.v201602091430
25      ACTIVE      javax.el_2.2.0.v201303151357
26      ACTIVE      javax.inject_1.0.0.v20091030
27      ACTIVE      javax.jws_2.0.0.v201005080400
28      ACTIVE      javax.mail_1.4.0.v201005080615
```
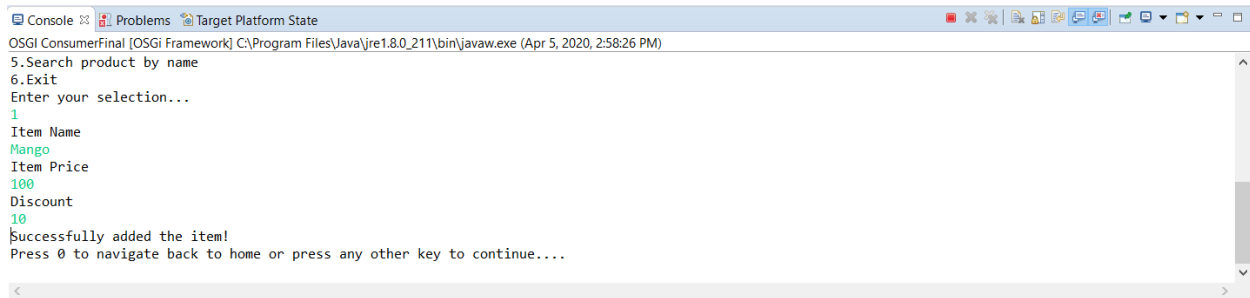
## Uninstall Supermarket Producer

```
Console ⊠  Problems  Target Platform State                                                        ■ ✕ ✕ | 🗎 🔧 🔧 🖳 🖳 | ⏭ 🖳 ▾ 🗂 ▾  ⁻ □
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 3:56:05 PM)
osgi> uninstall 4
==============Supermarket service closed.==============
osgi> ss
"Framework is launched."


id      State       Bundle
0       ACTIVE      org.eclipse.osgi_3.15.0.v20190830-1434
                    Fragments=696
1       ACTIVE      org.eclipse.equinox.simpleconfigurator_1.3.300.v20190716-0825
5       ACTIVE      Testers_1.0.0.qualifier
6       ACTIVE      ch.qos.logback.classic_1.0.7.v20121108-1250
                    Fragments=587
7       ACTIVE      ch.qos.logback.core_1.0.7.v20121108-1250
8       RESOLVED    ch.qos.logback.slf4j_1.0.7.v201505121915
                    Master=956
9       ACTIVE      com.google.gson_2.8.2.v20180104-1110
10      ACTIVE      com.google.guava_27.1.0.v20190517-1946
11      ACTIVE      com.google.guava_21.0.0.v20170206-1425
12      ACTIVE      com.google.javascript_0.0.20160315.v20161124-1903
13      ACTIVE      com.google.protobuf_2.4.0.v201105131100
14      ACTIVE      com.ibm.icu_64.2.0.v20190507-1337
15      ACTIVE      com.jcraft.jsch_0.1.55.v20190404-1902
16      ACTIVE      com.jcraft.jzlib_1.1.1.v201205102305
17      ACTIVE      com.sun.el_2.2.0.v201303151357
18      ACTIVE      com.sun.jna_4.5.1.v20180403-1933
19      ACTIVE      com.sun.jna.platform_4.5.1.v20180403-1933
20      ACTIVE      com.sun.xml.bind_2.2.0.v201505121915
21      ACTIVE      java_cup.runtime_0.10.0.v201005080400
22      ACTIVE      javaewah_1.1.6.v20160919-1400
23      ACTIVE      javax.activation_1.1.0.v201211130549
24      ACTIVE      javax.annotation_1.2.0.v201602091430
25      ACTIVE      javax.el_2.2.0.v201303151357
26      ACTIVE      javax.inject_1.0.0.v20091030
27      ACTIVE      javax.jws_2.0.0.v201005080400
28      ACTIVE      javax.mail_1.4.0.v201005080615
29      ACTIVE      javax.persistence_2.2.1.v201807122140
```

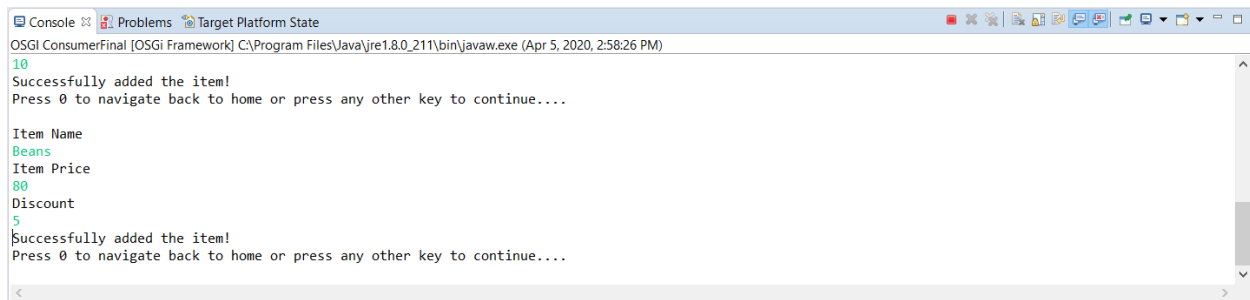d)Sample screenshots of its behavior & outputs.

## Add item 1



```
Console ☒  Problems  Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
5.Search product by name
6.Exit
Enter your selection...
1
Item Name
Mango
Item Price
100
Discount
10
Successfully added the item!
Press 0 to navigate back to home or press any other key to continue....
```

Supermarket Manger consumer add item by selecting number 1

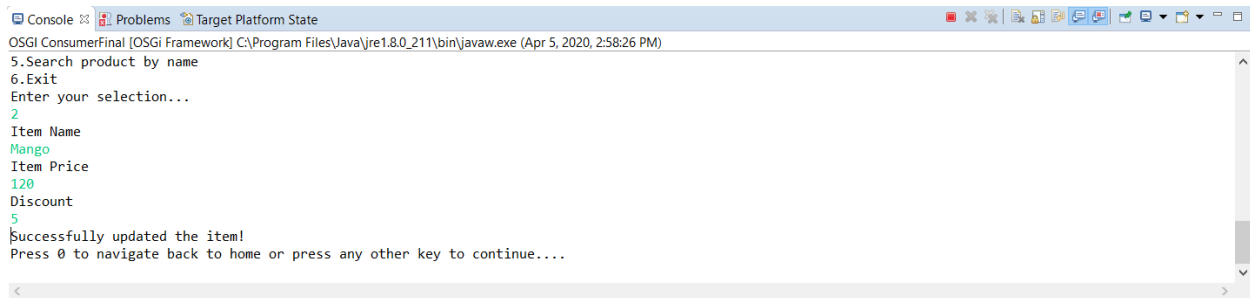## Add item 2



```
Console ☒  Problems  Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
10
Successfully added the item!
Press 0 to navigate back to home or press any other key to continue....

Item Name
Beans
Item Price
80
Discount
5
Successfully added the item!
Press 0 to navigate back to home or press any other key to continue....
```

Supermarket Manger consumer add another item by selecting number 1

## Update Item 1



```
Console ☒  Problems  Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
5.Search product by name
6.Exit
Enter your selection...
2
Item Name
Mango
Item Price
120
Discount
5
Successfully updated the item!
Press 0 to navigate back to home or press any other key to continue....
```

Manager consumer can update the existing item by selecting number 2

## Delete Item 1

13

```
Console ⊠  Problems  Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
1.Add a new item
2.Update an exsisiting item
3.Delete an exsisiting item
4.List Items
5.Search product by name
6.Exit
Enter your selection...
3
Enter the item name:
Mango
Successfully Removed the item!
Press 0 to navigate back to home or press any other key to continue....
```

Manager consumer can delete the existing item by selecting number 3

## List Items

```
Console ⊠  Problems  Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
3.Delete an exsisiting item
4.List Items
5.Search product by name
6.Exit
Enter your selection...
4
|-------------------------------Item list------------------------------------
Item ID:        Item Name:      Item Price:     Discount Percentage:    Item Final Price:
2               Beans           80.0            5.0                     76.0

---------------------------------------------------------------------------
Press 0 to navigate back to home or press any other key to continue....
```

Manger can view the item list by selecting number 4

## Search by product name

```
Console ⊠  Problems  Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
1.Add a new item
2.Update an exsisiting item
3.Delete an exsisiting item
4.List Items
5.Search product by name
6.Exit
Enter your selection...
5
Enter the item name
Beans
Item found!
Press 0 to navigate back to home or press any other key to continue....
```

Manage consumer can search the added items by pressing number 5

## Select an option

```
Console   Problems   Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
============Supermarket cashier consumer started.============
============Supermarket service started.============
----------------------------Welcome to Billing------------------------------
Please Select an option to continue.....
Options
1.View items List
2.Generate customer bills
3.Exit
Enter your selection...
|
```

## Cashier Item List

```
Console   Problems   Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
Enter your selection...
1
---------------------------------Item list-------------------------------------
Item ID:        Item Name:      Item Price:     Discount Percentage:    Item Final Price:
2               Beans           80.0            5.0                     76.0


---------------------------------------------------------------------------------
2               Carrot          80.0            5.0                     76.0


---------------------------------------------------------------------------------
3               Apple           70.0            0.0                     70.0
```

 likewise we added 2 more products Product Id - 2,3

## Billing Item

```
Console   Problems   Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
|--------------------Welcome to next customer's billing --------------------

Enter the item id
2
Enter the quantity
4
Press y to calclate the totoal bill or any other key to continue the billing....
```
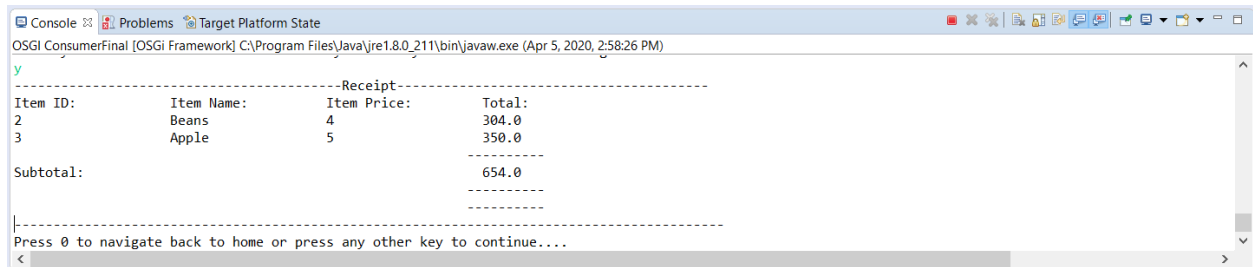
Cashier can enter quantity and item id to calculate bill.

## Continue Billing

```
Console   Problems   Target Platform State
OSGI ConsumerFinal [OSGi Framework] C:\Program Files\Java\jre1.8.0_211\bin\javaw.exe (Apr 5, 2020, 2:58:26 PM)
Enter the item id
3
Enter the quantity
5
Press y to calclate the totoal bill or any other key to continue the billing....
y
-----------------------------------Receipt------------------------------------
Item ID:        Item Name:      Item Price:     Total:
2               Beans           4               304.0
3               Apple           5               350.0
|                                               ----------
```

When we press y it proceed to next step of billing.

**Total bill**

```
                                                              ^
 y
-----------------------------Receipt-----------------------------
Item ID:          Item Name:        Item Price:       Total:
2                 Beans             4                 304.0
3                 Apple             5                 350.0
                                                      ----------
Subtotal:                                             654.0
                                                      ----------
                                                      ----------
|----------------------------------------------------------------
Press 0 to navigate back to home or press any other key to continue....
```
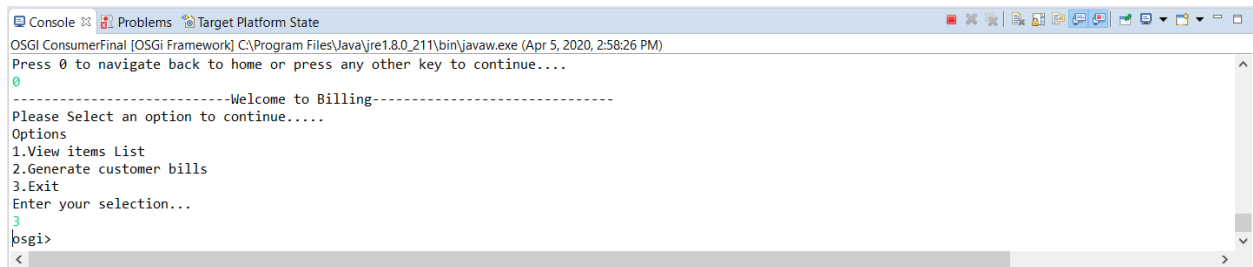
Cashier will get the calculated total bill.

**Exit Cashier**

```
Press 0 to navigate back to home or press any other key to continue....
0
----------------------------Welcome to Billing----------------------------
Please Select an option to continue.....
Options
1.View items List
2.Generate customer bills
3.Exit
Enter your selection...
3
osgi>
```

Cashier can exit the programme by pressing number 3.