

Sri Lanka Institute of Information Technology



Assignment 01 : OSGi Assignment

IT4020 - Modern Topics in IT

Year 4, Semester 1

(2023) – Weekend Batch

Group Details

Group ID - **MTIT-011**

Project Name - **A system for a Sports accessories shop using Microkernel Architecture**

Batch - **2023 -Y4S1**

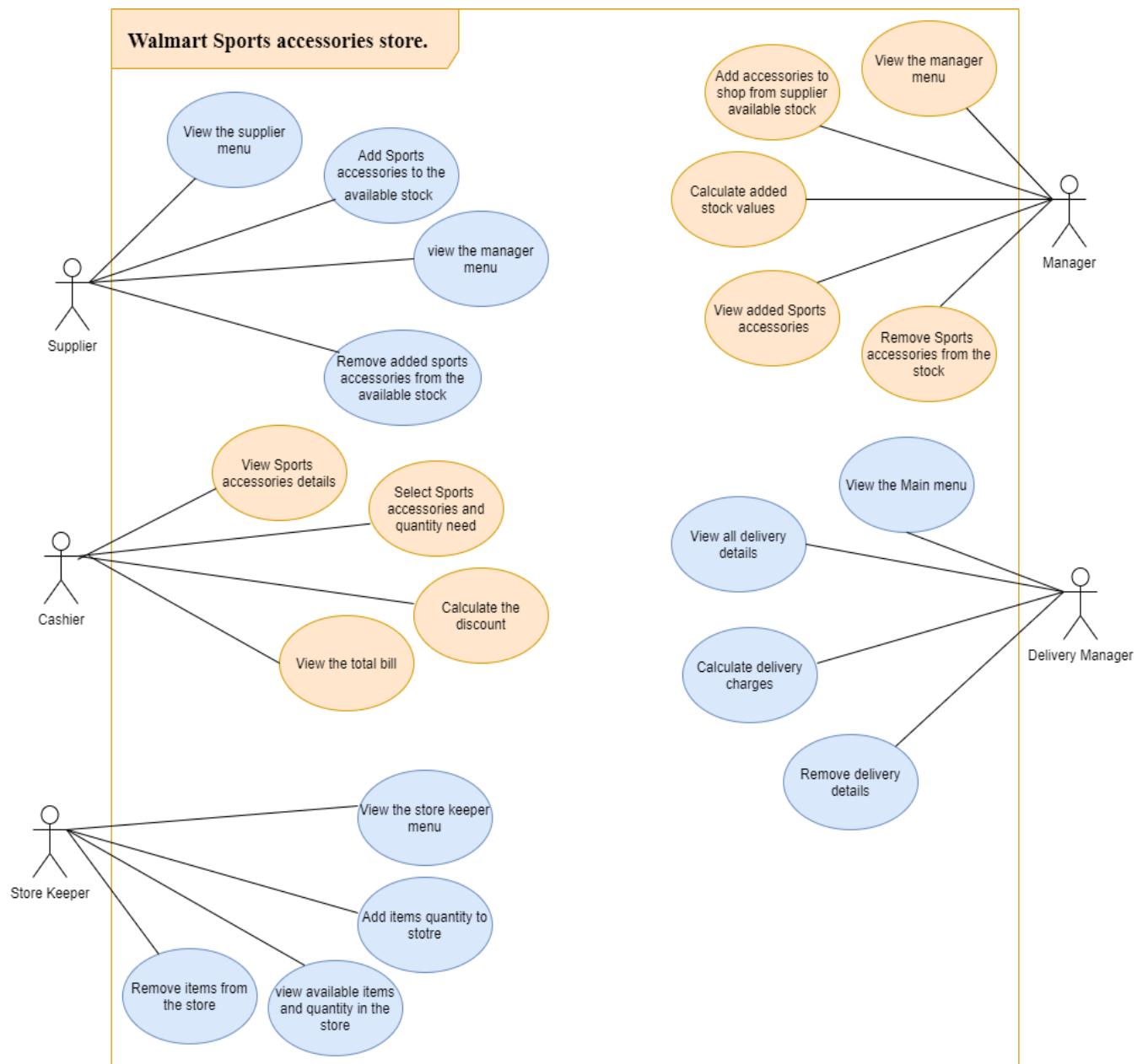
Registration Number	Student Name	Student Part
IT20147396	Peiris B M G	Sports Manager Function
IT20178154	Dilshan P A D S D	Sports Supplier Function
IT20122782	Amani M P N	Sports Storekeeper Function
IT20081416	Ahamed M M Z	Sports Transport Function

The Scenario

Using the Eclipse Equinox OSGi Framework, we created a system for the **Sports accessories shop**. There are many various sports equipment offered at Walmart Sports Accessories, including bats, balls, gloves, racquets, clubs, helmets, skis, fishing gear, workout equipment, table games, souvenirs, and licensed goods. When multiple consumer bundles are developed, they will all behave identically, which is a duplicate implementation of consumer bundles, which is why there should only be one consumer. Eclipse was the IDE in use, and it was written in the Java programming language.

- To offer their goods to their customers, the Sports Manager, Shop cashier, Shop Storekeeper, Company Supplier, and Delivery Person collaborate in this Walmart Sports accessories store. Among them we select only four functions, and they are **Manager, Supplier, Delivery person** and **Storekeeper**.
- In this situation, there are four consumers and four producers, including a manager consumer, a supplier consumer, a storekeeper consumer, and a transport consumer.
- Sports accessories will be supplied to the store by the Supplier Consumer, who will also mark the price and provide discounts on the products.
- The storekeeper's customer will increase and decrease the quantities of each item in stock.
- Delivery costs are calculated by the transport consumer based on the location and distance of the delivery.
- We expose the producer service APIs to follow OSGI standard practices.

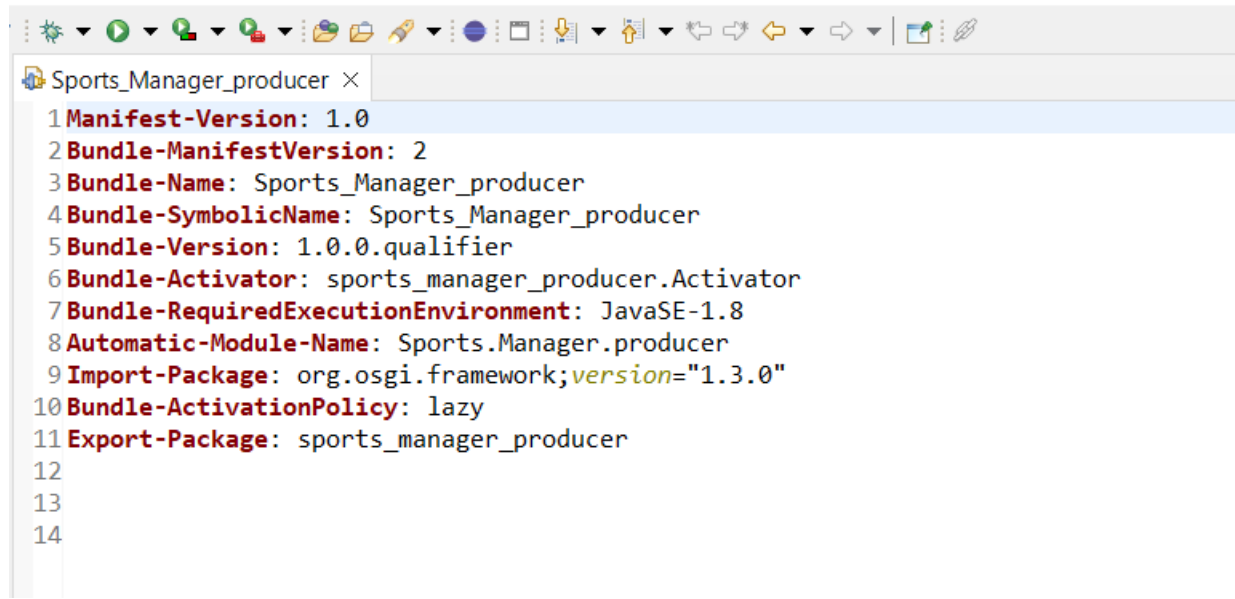
System Use case Diagram of the Sports accessories shop.



b) Manifest implementation (Exported services/ imported services)

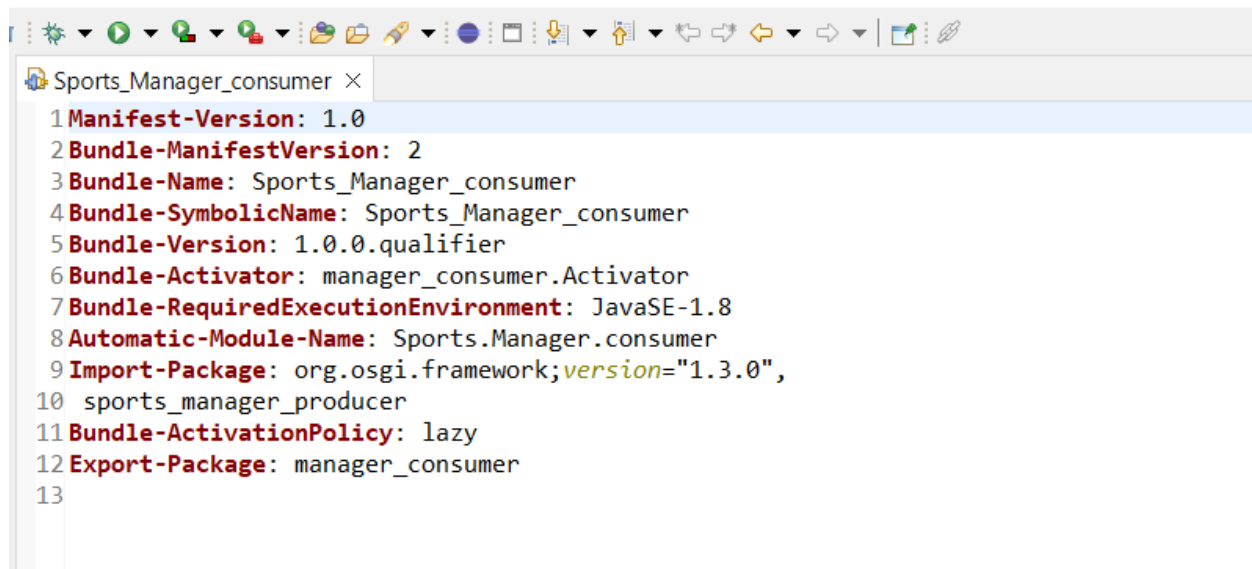
IT20147396	Peiris B M G	Sports Manager Function
------------	--------------	-------------------------

Sports Manager Producer Manifest



```
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: Sports_Manager_producer
4 Bundle-SymbolicName: Sports_Manager_producer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: sports_manager_producer.Activator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: Sports.Manager.producer
9 Import-Package: org.osgi.framework;version="1.3.0"
10 Bundle-ActivationPolicy: lazy
11 Export-Package: sports_manager_producer
12
13
14
```

Sports Manager Consumer Manifest



```
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: Sports_Manager_consumer
4 Bundle-SymbolicName: Sports_Manager_consumer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: manager_consumer.Activator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: Sports.Manager.consumer
9 Import-Package: org.osgi.framework;version="1.3.0",
10 sports_manager_producer
11 Bundle-ActivationPolicy: lazy
12 Export-Package: manager_consumer
13
```

Sports Manager Service Bundle



Starting Codes of Manager Consumer and Producer

src

sports_manager_producer

Activator.java

Manager.java

ManagerActivatorService.java

ManagerDataStore.java

ManagerServiceImpl.java

META-INF

MANIFEST.MF

build.properties

Console

Sports_Manager_produce [OSGi Framework] C:\Program Files\Java\jdk-12.0.2\bin\javaw.exe (Feb 24, 2023, 12:18:12 PM)

1097 ACTIVE org.objectweb.asm.tree_9.1.0.v20210209-1849

1098 ACTIVE org.objenesis_2.6.0.v20180420-1519

1099 ACTIVE org.opentest4j_1.2.0.v20211018-1956

1100 ACTIVE org.sat4j.core_2.3.5.v201308161310

1101 ACTIVE org.sat4j.pb_2.3.5.v201404071733

1102 ACTIVE org.slf4j.api_1.7.30.v20200204-2150

Fragments=10

1103 ACTIVE org.sonatype.m2e.mavenarchiver_0.17.5.202002191804

1104 ACTIVE org.tukaani.xz_1.9.0.v20210624-1259

1105 ACTIVE org.uddi4j_2.0.5.v200805270300

1106 ACTIVE org.w3c.css.sac_1.3.1.v200903091627

1107 ACTIVE org.w3c.dom.events_3.0.0.draft20060413_v201105210656

1108 ACTIVE org.w3c.dom.smil_1.0.1.v200903091627

1109 ACTIVE org.w3c.dom.svg_1.1.0.v201011041433

osgi> start 5

Walmart Sports Accessories producer service started !!!!!!!!!!!!!

osgi>

src

sports_manager_producer

Activator.java

Manager.java

ManagerActivatorService.java

ManagerDataStore.java

ManagerServiceImpl.java

META-INF

MANIFEST.MF

build.properties

Console

Sports_Manager_produce [OSGi Framework] C:\Program Files\Java\jdk-12.0.2\bin\javaw.exe (Feb 24, 2023, 12:18:12 PM)

1107 ACTIVE org.w3c.dom.events_3.0.0.draft20060413_v201105210656

1108 ACTIVE org.w3c.dom.smil_1.0.1.v200903091627

1109 ACTIVE org.w3c.dom.svg_1.1.0.v201011041433

osgi> start 5

Walmart Sports Accessories producer service started !!!!!!!!!!!!!

osgi> start 4

Walmart Sports Accessories consumer started !!!!!!!!!!!!!

.....Welcome to Walmart Sports Accessories Store

Now You Can Select an option to continue forward -->>>

Press the number that you need.....

1.Add new sports accessories To the stock

2.Remove sports accessoriesfrom the Stock

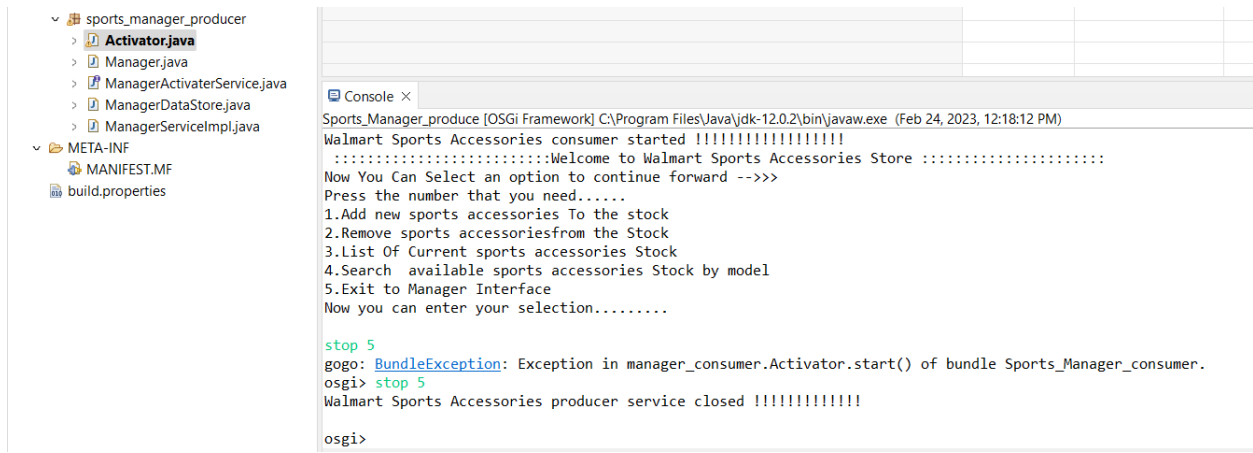
3.List Of Current sports accessories Stock

4.Search available sports accessories Stock by model

5.Exit to Manager Interface

Now you can enter your selection.....

Stop Manager Consumer and Producer

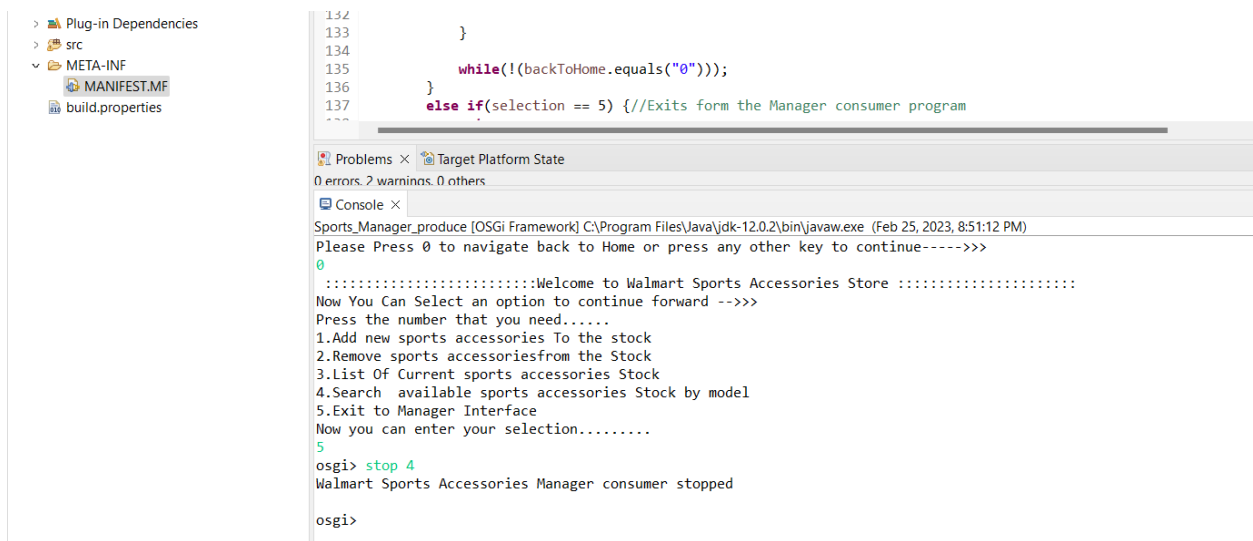


The screenshot shows the Eclipse IDE interface. On the left, the Project Explorer displays the project structure for 'sports_manager_producer', including files like 'Activator.java', 'Manager.java', 'ManagerActivatorService.java', 'ManagerDataStore.java', 'ManagerServiceImpl.java', 'META-INF', 'MANIFEST.MF', and 'build.properties'. The main editor area shows the 'Console' view with the following output:

```
Sports_Manager_produce [OSGi Framework] C:\Program Files\Java\jdk-12.0.2\bin\javaw.exe (Feb 24, 2023, 12:18:12 PM)
Walmart Sports Accessories consumer started !!!!!!!!!!!!!!!
::::::::::::::::::::::::::::Welcome to Walmart Sports Accessories Store ::::::::::::::::::::::
Now You Can Select an option to continue forward -->>>
Press the number that you need.....
1.Add new sports accessories To the stock
2.Remove sports accessoriesfrom the Stock
3.List Of Current sports accessories Stock
4.Search available sports accessories Stock by model
5.Exit to Manager Interface
Now you can enter your selection.....

stop 5
gogo: BundleException: Exception in manager_consumer.Activator.start() of bundle Sports_Manager_consumer.
osgi> stop 5
Walmart Sports Accessories producer service closed !!!!!!!!!!!!!!!

osgi>
```



The screenshot shows the Eclipse IDE interface. On the left, the Project Explorer displays the project structure for 'sports_manager_producer', including files like 'Plug-in Dependencies', 'src', 'META-INF', 'MANIFEST.MF', and 'build.properties'. The main editor area shows the 'Problems' view with '0 errors, 2 warnings, 0 others' and the 'Console' view with the following output:

```
132
133     }
134
135     while(!(backToHome.equals("0")));
136     }
137     else if(selection == 5) { //Exits form the Manager consumer program
138     }
139 }

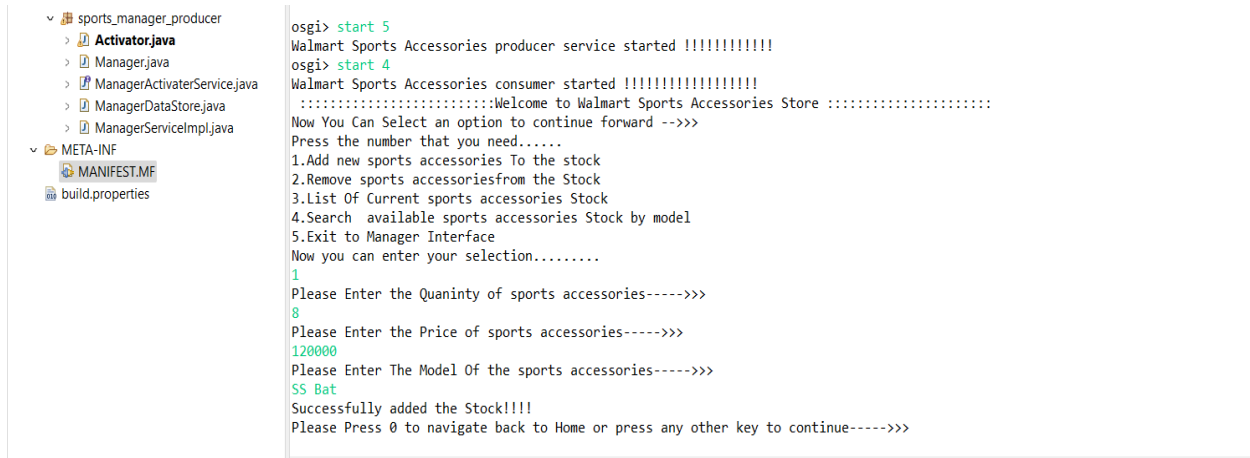
Sports_Manager_produce [OSGi Framework] C:\Program Files\Java\jdk-12.0.2\bin\javaw.exe (Feb 25, 2023, 8:51:12 PM)
Please Press 0 to navigate back to Home or press any other key to continue----->>>
0
::::::::::::::::::::::::::::Welcome to Walmart Sports Accessories Store ::::::::::::::::::::::
Now You Can Select an option to continue forward -->>>
Press the number that you need.....
1.Add new sports accessories To the stock
2.Remove sports accessoriesfrom the Stock
3.List Of Current sports accessories Stock
4.Search available sports accessories Stock by model
5.Exit to Manager Interface
Now you can enter your selection.....
5
osgi> stop 4
Walmart Sports Accessories Manager consumer stopped

osgi>
```


d) Sample screenshots of its behavior & outputs.

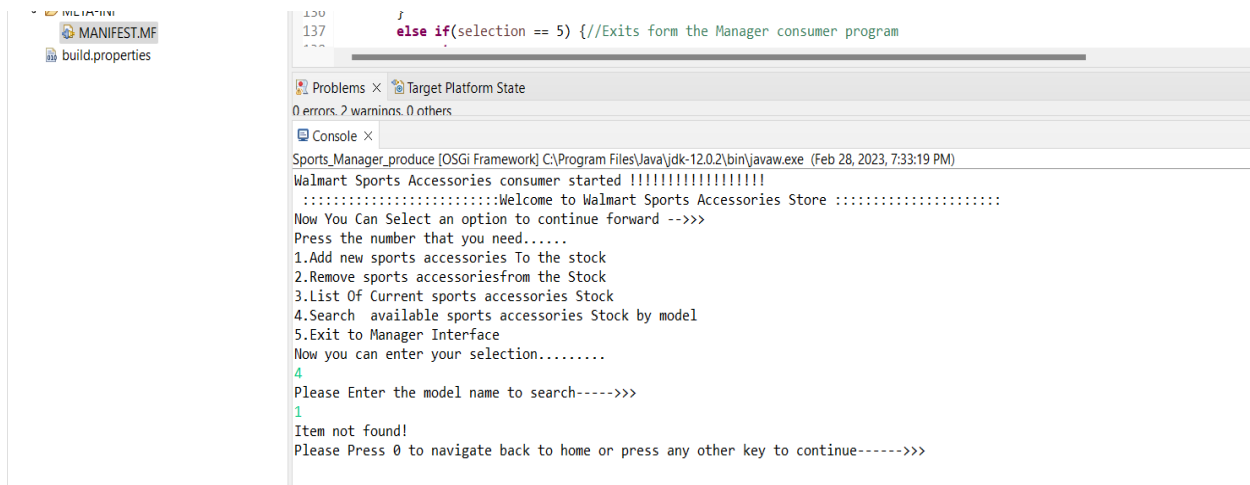
Sports Manager Service Running Screenshots

1 . Add new sports accessories to the stock



```
osgi> start 5
Walmart Sports Accessories producer service started !!!!!!!!!!!!!!!
osgi> start 4
Walmart Sports Accessories consumer started !!!!!!!!!!!!!!!
::::::::::::::::::::::::::::::::::Welcome to Walmart Sports Accessories Store ::::::::::::::::::::::::::::
Now You Can Select an option to continue forward -->>>
Press the number that you need.....
1.Add new sports accessories To the stock
2.Remove sports accessoriesfrom the Stock
3.List Of Current sports accessories Stock
4.Search available sports accessories Stock by model
5.Exit to Manager Interface
Now you can enter your selection.....
1
Please Enter the Quantity of sports accessories----->>>
8
Please Enter the Price of sports accessories----->>>
120000
Please Enter The Model Of the sports accessories----->>>
SS Bat
Successfully added the Stock!!!!
Please Press 0 to navigate back to Home or press any other key to continue----->>>
```

2. Search All stock details



```
137         else if(selection == 5) { //Exits form the Manager consumer program
138             .
139         }

Problems x Target Platform State
0 errors, 2 warnings, 0 others

Console x
Sports_Manager_produce [OSGi Framework] C:\Program Files\Java\jdk-12.0.2\bin\javaw.exe (Feb 28, 2023, 7:33:19 PM)
Walmart Sports Accessories consumer started !!!!!!!!!!!!!!!
::::::::::::::::::::::::::::::::::Welcome to Walmart Sports Accessories Store ::::::::::::::::::::::::::::
Now You Can Select an option to continue forward -->>>
Press the number that you need.....
1.Add new sports accessories To the stock
2.Remove sports accessoriesfrom the Stock
3.List Of Current sports accessories Stock
4.Search available sports accessories Stock by model
5.Exit to Manager Interface
Now you can enter your selection.....
4
Please Enter the model name to search----->>>
1
Item not found!
Please Press 0 to navigate back to home or press any other key to continue----->>>
```

2. Delete sports accessories from the stock

- ✓ META-INF
 - MANIFEST.MF
 - build.properties
- ✓ Sports_Manager_producer
 - ✓ JRE System Library [JavaSE-1.8]
 - ✓ Plug-in Dependencies
 - ✓ src
 - ✓ sports_manager_producer
 - Activator.java
 - Manager.java
 - ManagerActivatorService.java
 - ManagerDataStore.java
 - ManagerServiceImpl.java
 - ✓ META-INF
 - MANIFEST.MF
 - build.properties

```
Console X
Sports_Manager_produce [OSGi Framework] C:\Program Files\Java\jdk-12.0.2\bin\javaw.exe (Feb 24, 2023, 12:45:58 PM)
Press the number that you need.....
1.Add new sports accessories To the stock
2.Remove sports accessoriesfrom the Stock
3.List Of Current sports accessories Stock
4.Search available sports accessories Stock by model
5.Exit to Manager Interface
Now you can enter your selection.....
3
::::::::::::::::::::::::::::Here this is a Walmart Sports Accessories Stock list::::::::::::::::::::::::::::
Quantity:      Price:      Model:      Total Value:
8              120000      SS Bat      960000

2              20000       Ball        40000

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
Please Press 0 to navigate back to home or press any other key to continue !!!!
0
::::::::::::::::::::::::::::Welcome to Walmart Sports Accessories Store ::::::::::::::::::::::
Now You Can Select an option to continue forward -->>>
Press the number that you need.....
1.Add new sports accessories To the stock
2.Remove sports accessoriesfrom the Stock
3.List Of Current sports accessories Stock
4.Search available sports accessories Stock by model
5.Exit to Manager Interface
Now you can enter your selection.....
2
Please Enter the Model name need to delete----->>>
Ball
Successfully Deleted the item!!!!!!
Please Press 0 to navigate back to home or press any other key to continue----->>>
```

4. View list of current sports Items in the stock.

- ✓ META-INF
 - MANIFEST.MF
 - build.properties

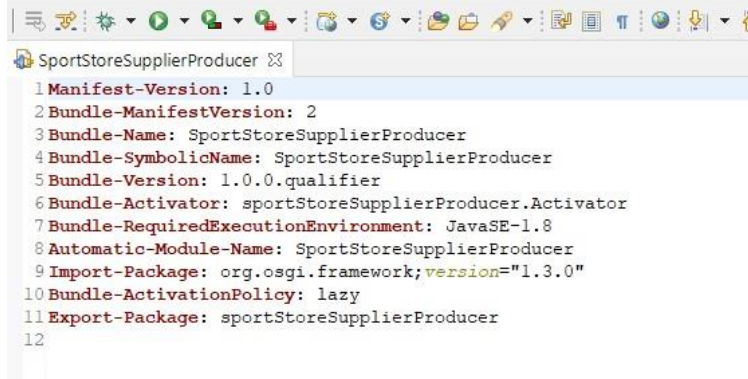
```
Now You Can Select an option to continue forward -->>>
Press the number that you need.....
1.Add new sports accessories To the stock
2.Remove sports accessoriesfrom the Stock
3.List Of Current sports accessories Stock
4.Search available sports accessories Stock by model
5.Exit to Manager Interface
Now you can enter your selection.....
3
::::::::::::::::::::::::::::Here this is a Walmart Sports Accessories Stock list::::::::::::::::::::::::::::
Quantity:      Price:      Model:      Total Value:
8              120000      SS Bat      960000

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
Please Press 0 to navigate back to home or press any other key to continue !!!!
```

b) Manifest implementation (Exported services/ imported services)

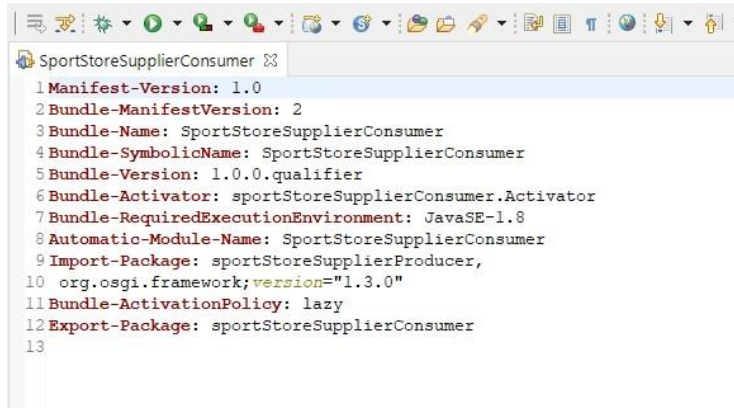
IT20178154	Dilshan P A D S D	Sports Supplier Function
------------	-------------------	--------------------------

Sports Supplier Producer Manifest



```
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: SportStoreSupplierProducer
4 Bundle-SymbolicName: SportStoreSupplierProducer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: sportStoreSupplierProducer.Activator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: SportStoreSupplierProducer
9 Import-Package: org.osgi.framework;version="1.3.0"
10 Bundle-ActivationPolicy: lazy
11 Export-Package: sportStoreSupplierProducer
12
```

Sports Supplier Consumer Manifest



```
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: SportStoreSupplierConsumer
4 Bundle-SymbolicName: SportStoreSupplierConsumer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: sportStoreSupplierConsumer.Activator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: SportStoreSupplierConsumer
9 Import-Package: sportStoreSupplierProducer,
10 org.osgi.framework;version="1.3.0"
11 Bundle-ActivationPolicy: lazy
12 Export-Package: sportStoreSupplierConsumer
13
```

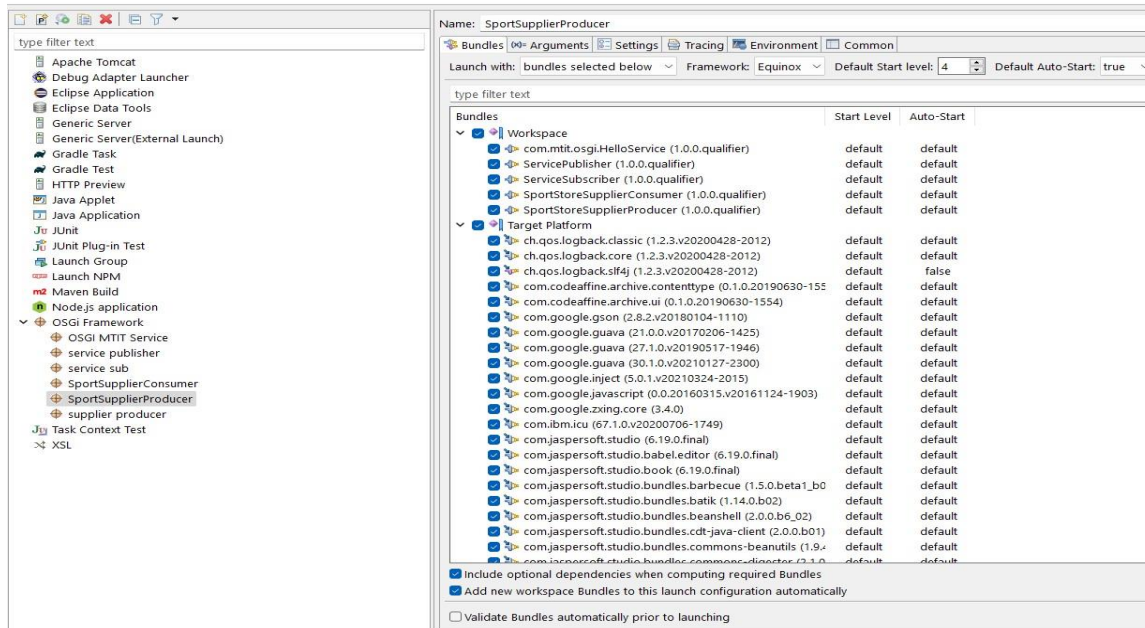
c) All commands of bundle install and run in OSGi framework. (Step wise mention producer installation and consumer installation & running services)

Sports Supplier Service Bundle

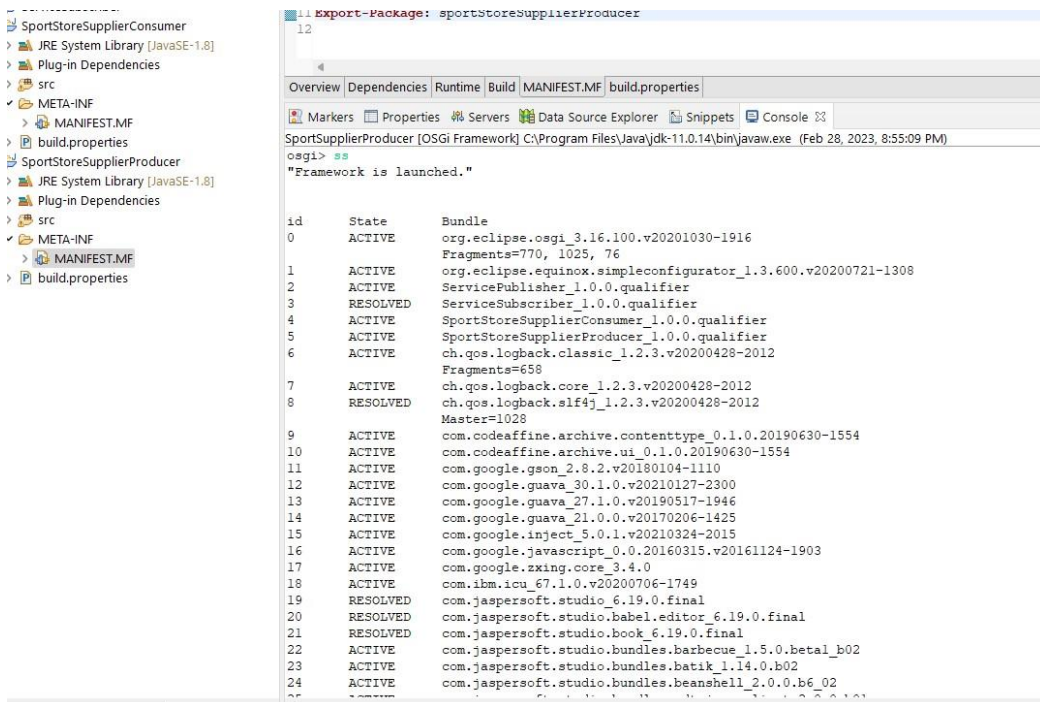
Run Configurations

Create, manage, and run configurations

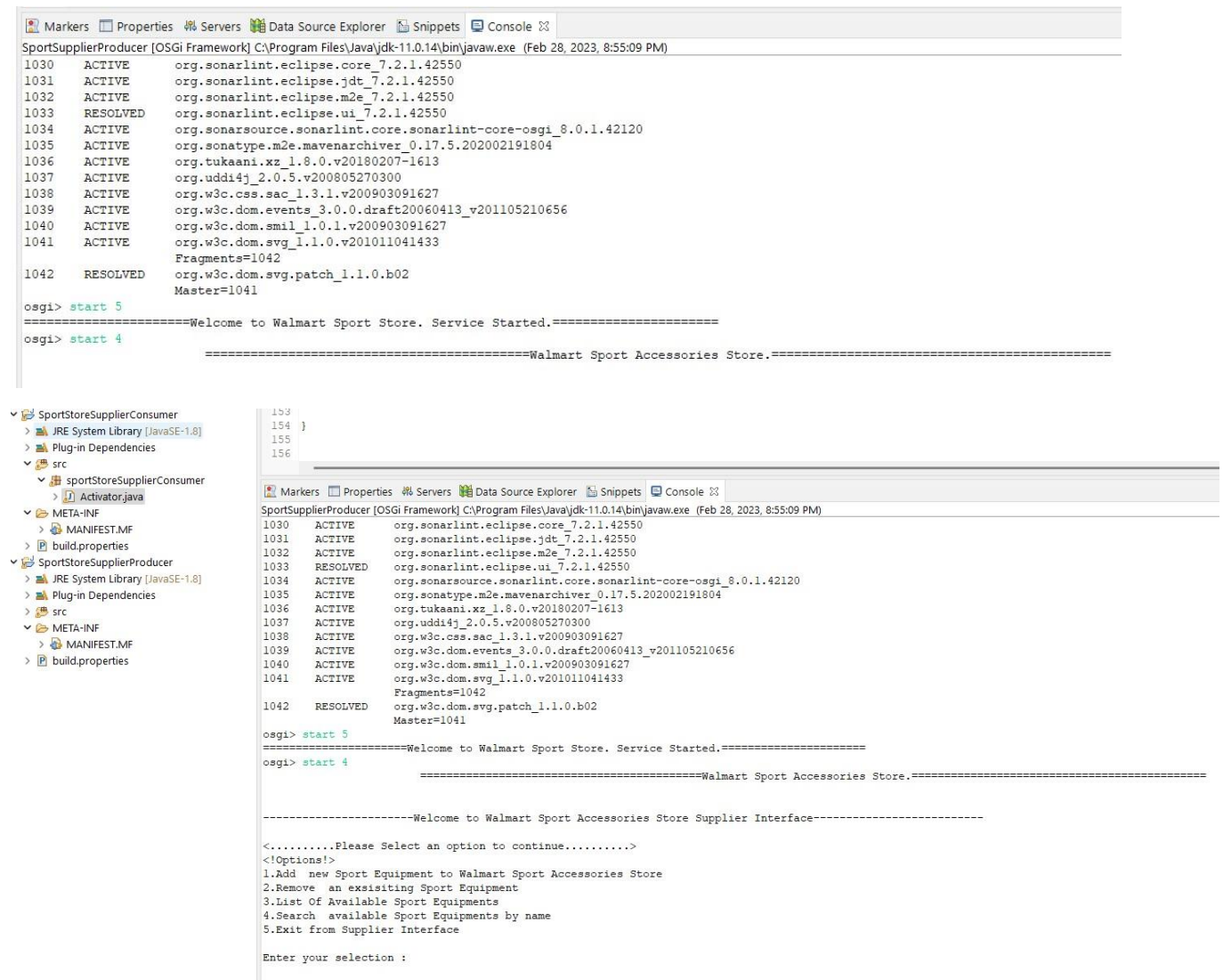
Create a configuration to launch the OSGi framework.



Start Supplier Consumer and Producer



Starting Codes of Supplier Consumer and Producer



The screenshot shows the Eclipse IDE interface. The top toolbar includes Markers, Properties, Servers, Data Source Explorer, Snippets, and Console. The console window displays the following output:

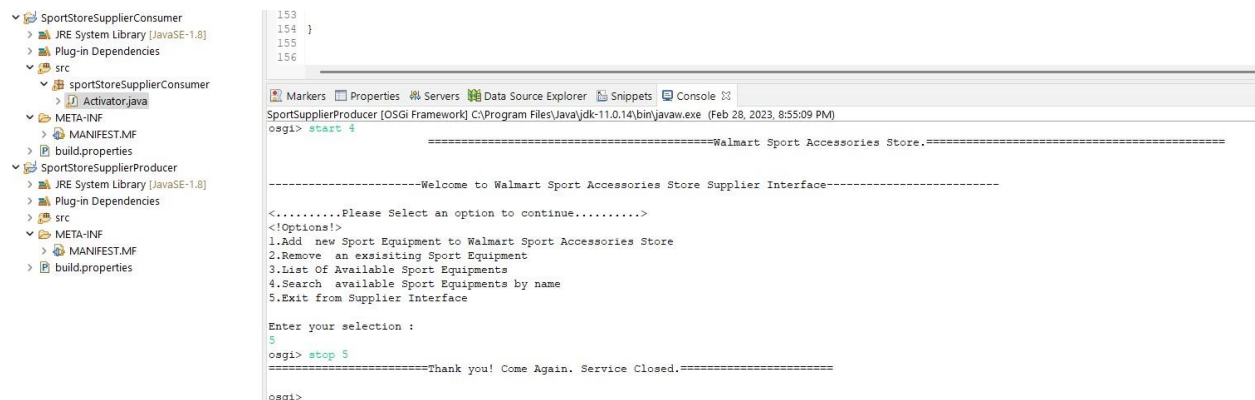
```
SportsupplierProducer [OSGi Framework] C:\Program Files\Java\jdk-11.0.14\bin\javaw.exe (Feb 28, 2023, 8:55:09 PM)
1030 ACTIVE org.sonarlint.eclipse.core_7.2.1.42550
1031 ACTIVE org.sonarlint.eclipse.jdt_7.2.1.42550
1032 ACTIVE org.sonarlint.eclipse.m2e_7.2.1.42550
1033 RESOLVED org.sonarlint.eclipse.ui_7.2.1.42550
1034 ACTIVE org.sonarsource.sonarlint.core.sonarlint-core-osgi_8.0.1.42120
1035 ACTIVE org.sonatype.m2e.mavenarchiver_0.17.5.202002191804
1036 ACTIVE org.tukaani.xz_1.8.0.v20180207-1613
1037 ACTIVE org.uddi4j_2.0.5.v200805270300
1038 ACTIVE org.w3c.css.sac_1.3.1.v200903091627
1039 ACTIVE org.w3c.dom.events_3.0.0.draft20060413_v201105210656
1040 ACTIVE org.w3c.dom.smil_1.0.1.v200903091627
1041 ACTIVE org.w3c.dom.svg_1.1.0.v201011041433
Fragments=1042
1042 RESOLVED org.w3c.dom.svg.patch_1.1.0.b02
Master=1041

osgi> start 5
=====Welcome to Walmart Sport Store. Service Started.=====
osgi> start 4
=====Walmart Sport Accessories Store.=====
```

The project structure on the left shows the following hierarchy:

- SportStoreSupplierConsumer
 - JRE System Library [JavaSE-1.8]
 - Plug-in Dependencies
 - src
 - sportStoreSupplierConsumer
 - Activator.java
- SportStoreSupplierProducer
 - JRE System Library [JavaSE-1.8]
 - Plug-in Dependencies
 - src
 - META-INF
 - MANIFEST.MF
 - build.properties

Stop Supplier Consumer and Producer



The screenshot shows the Eclipse IDE interface. The console window displays the following output:

```
osgi> start 4
=====Walmart Sport Accessories Store.=====

-----Welcome to Walmart Sport Accessories Store Supplier Interface-----

<.....Please Select an option to continue.....>
<!Options!>
1.Add new Sport Equipment to Walmart Sport Accessories Store
2.Remove an exsisting Sport Equipment
3.List Of Available Sport Equipments
4.Search available Sport Equipments by name
5.Exit from Supplier Interface

Enter your selection :
5
osgi> stop 5
=====Thank you! Come Again. Service Closed.=====

osgi>
```

The project structure on the left is the same as the previous screenshot.

d) Sample screenshots of its behavior & outputs.

Sports Supplier Service Running Screenshots

1. Add new sports Equipment's to the store and View All Supplier details.

The screenshot displays the Eclipse IDE interface with the project structure on the left and the console output on the right. The project structure shows the following components:

- SportStoreSupplierConsumer**
 - JRE System Library [JavaSE-1.8]
 - Plug-in Dependencies
 - src
 - sportStoreSupplierConsumer
 - Activator.java
 - META-INF
 - MANIFEST.MF
 - build.properties
- SportStoreSupplierProducer**
 - JRE System Library [JavaSE-1.8]
 - Plug-in Dependencies
 - src
 - META-INF
 - MANIFEST.MF
 - build.properties

The console output shows the execution of the application, including the 'start 5' command, the 'start 4' command, and the 'start 3' command, all resulting in successful additions of equipment to the store and a display of the equipment list.

```
153 }
154 }
155 }
156 }

Markers Properties Servers Data Source Explorer Snippets Console
SportSupplierProducer [OSGi Framework] C:\Program Files\Java\jdk-11.0.14\bin\javaw.exe (Feb 28, 2023, 8:55:09 PM)

osgi> start 5
=====Welcome to Walmart Sport Store. Service Started.=====
osgi> start 4
=====Walmart Sport Accessories Store.=====

-----Welcome to Walmart Sport Accessories Store Supplier Interface-----

<.....Please Select an option to continue.....>
<!Options!>
1.Add new Sport Equipment to Walmart Sport Accessories Store
2.Remove an exsisting Sport Equipment
3.List Of Available Sport Equipments
4.Search available Sport Equipments by name
5.Exit from Supplier Interface

Enter your selection :
1
Enter the Equipment Name:
Standford Bat
Enter the Equipment Price:
20000
Enter Discount Percentage (%):
2
<-----Successfully added the item!----->
Press 0 to navigate back to home or press any other key to continue adding equipments
0

153 }
154 }
155 }
156 }

Markers Properties Servers Data Source Explorer Snippets Console
SportSupplierProducer [OSGi Framework] C:\Program Files\Java\jdk-11.0.14\bin\javaw.exe (Feb 28, 2023, 8:55:09 PM)

Enter the Equipment Price:
30000
Enter Discount Percentage (%):
4
<-----Successfully added the item!----->
Press 0 to navigate back to home or press any other key to continue adding equipments
0

-----Welcome to Walmart Sport Accessories Store Supplier Interface-----

<.....Please Select an option to continue.....>
<!Options!>
1.Add new Sport Equipment to Walmart Sport Accessories Store
2.Remove an exsisting Sport Equipment
3.List Of Available Sport Equipments
4.Search available Sport Equipments by name
5.Exit from Supplier Interface

Enter your selection :
3

-----Walmart Sport Item list-----

Equip ID      Equipment Name      Equipment Price      Discount Percentage      Price After the Discount
1             standford bat       20000.0              3.0%                     19400.0
2             Standford Bat       20000.0              2.0%                     19600.0
3             Reebok Bat          30000.0              4.0%                     28800.0

Press 0 to navigate back----->
```

2. Delete sports accessories from the stock

```
-----Welcome to Walmart Sport Accessories Store Supplier Interface-----<.....Please Select an option to continue.....>
<!Options!>
1.Add new Sport Equipment to Walmart Sport Accessories Store
2.Remove an exsisting Sport Equipment
3.List Of Available Sport Equipments
4.Search available Sport Equipments by name
5.Exit from Supplier Interface

Enter your selection :
2
Enter the equipment name:
standford bat
<<<<Successfully Removed the Equipment!>>>>
Press 0 to navigate back to home or press any other key to continue Removing equipments----->
```

3.Search Items in the Stock

▼ SportStoreSupplierProducer
 > JRE System Library [JavaSE-1.8]
 > Plug-in Dependencies
 > src
 ▼ META-INF
 > MANIFEST.MF
 > build.properties

```
Enter your selection :
2
Enter the equipment name:
standford bat
<<<<Successfully Removed the Equipment!>>>>
Press 0 to navigate back to home or press any other key to continue Removing equipments----->
0

-----Welcome to Walmart Sport Accessories Store Supplier Interface-----<.....Please Select an option to continue.....>
<!Options!>
1.Add new Sport Equipment to Walmart Sport Accessories Store
2.Remove an exsisting Sport Equipment
3.List Of Available Sport Equipments
4.Search available Sport Equipments by name
5.Exit from Supplier Interface

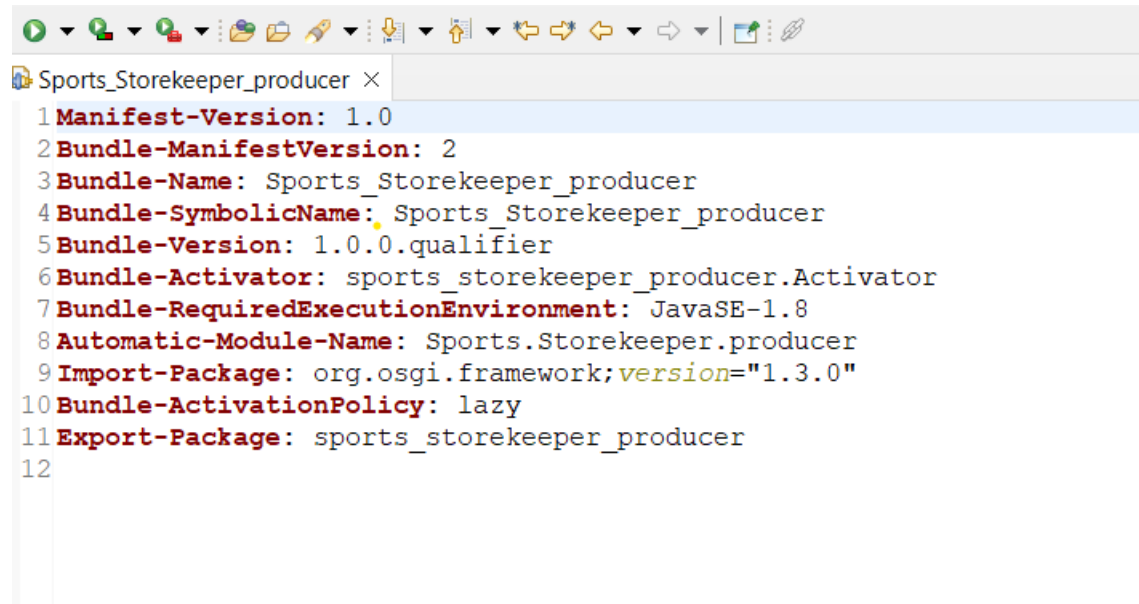
Enter your selection :
4
Enter the Sport equipment name-->
reebok bat
Item found!
Press 0 to navigate back to home or press any other key to search equipments----->

Enter the Sport equipment name-->
Reebok bat
Item found!
Press 0 to navigate back to home or press any other key to search equipments----->
```

b) Manifest implementation (Exported services/ imported services)

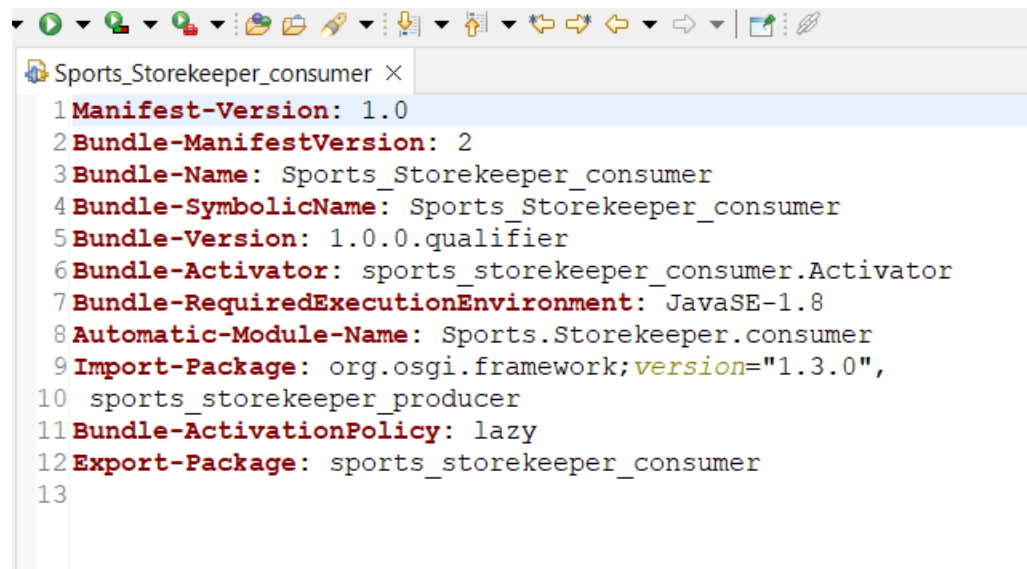
IT20122782	Amani M P N	Sports Store Keeper Function
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Sports Storekeeper Producer Manifest



```
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: Sports_Storekeeper_producer
4 Bundle-SymbolicName: Sports_Storekeeper_producer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: sports_storekeeper_producer.Activator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: Sports.Storekeeper.producer
9 Import-Package: org.osgi.framework;version="1.3.0"
10 Bundle-ActivationPolicy: lazy
11 Export-Package: sports_storekeeper_producer
12
```

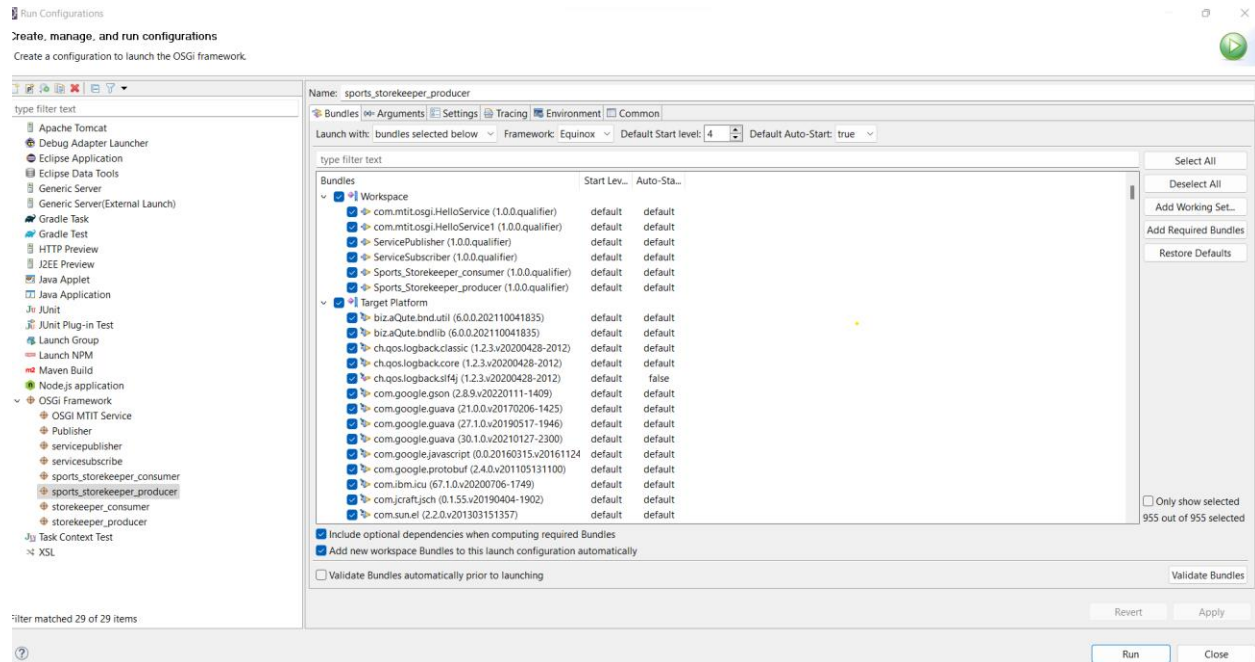
Sports Storekeeper Consumer Manifest



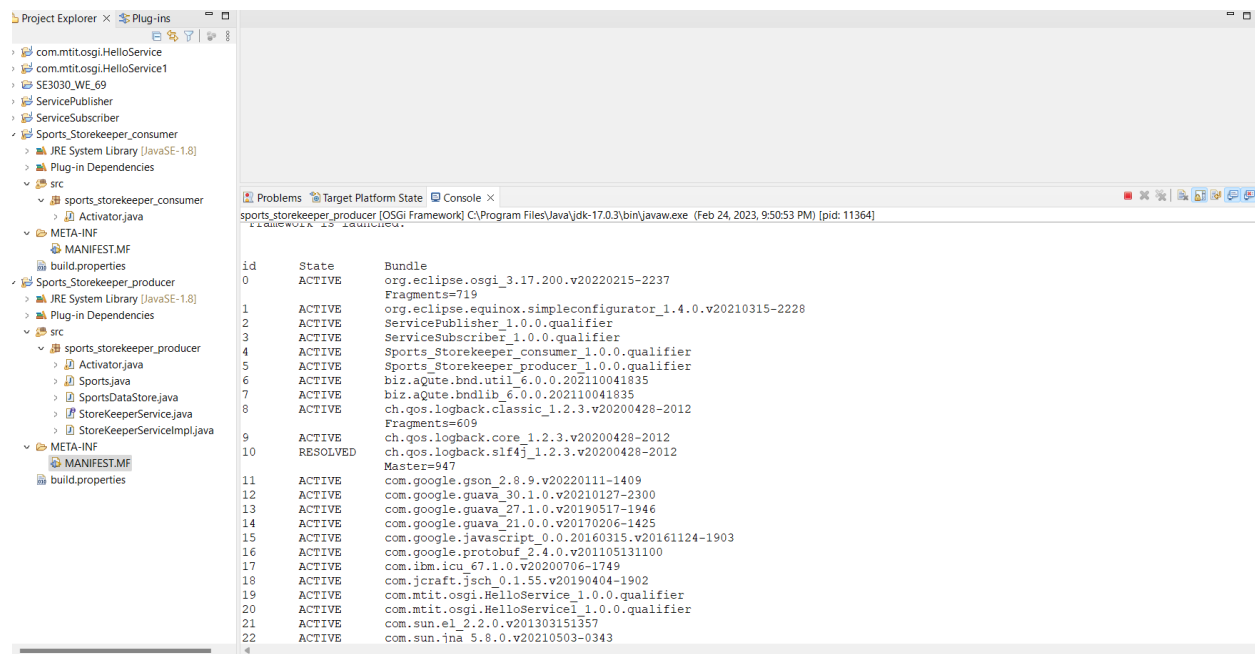
```
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: Sports_Storekeeper_consumer
4 Bundle-SymbolicName: Sports_Storekeeper_consumer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: sports_storekeeper_consumer.Activator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: Sports.Storekeeper.consumer
9 Import-Package: org.osgi.framework;version="1.3.0",
10 sports_storekeeper_producer
11 Bundle-ActivationPolicy: lazy
12 Export-Package: sports_storekeeper_consumer
13
```


c) All commands of bundle install and run in OSGi framework. (Step wise mention producer installation and consumer installation & running services)

Sports Storekeeper Service Bundle



Start Storekeeper Consumer and Producer



Starting Codes of Storekeeper Consumer and Producer

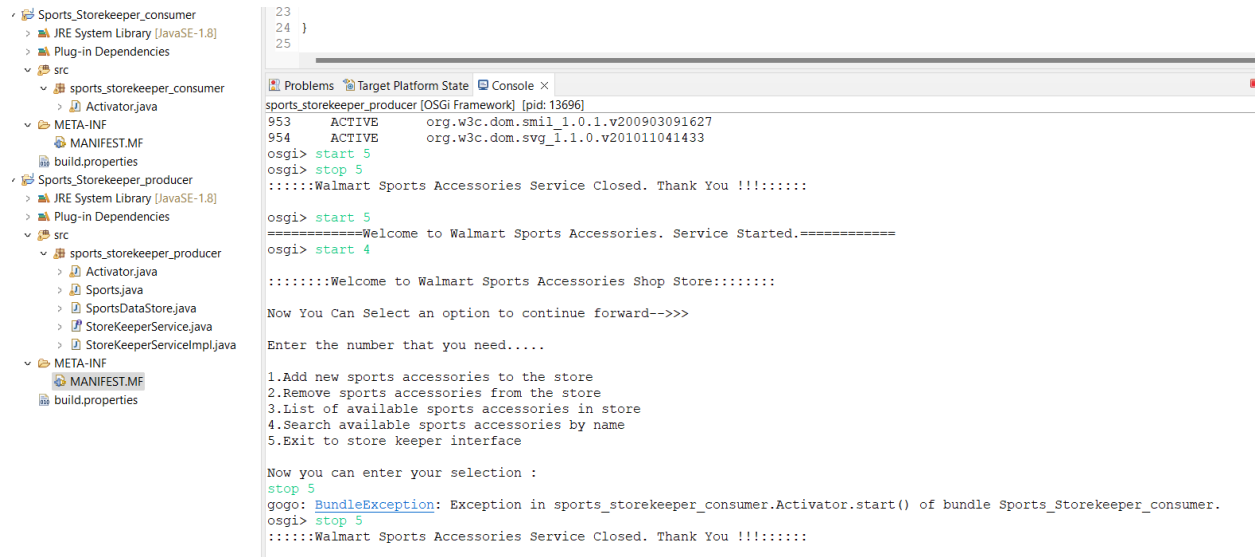
```
Sports_Storekeeper_consumer
> JRE System Library [JavaSE-1.8]
> Plug-in Dependencies
v src
  sports_storekeeper_consumer
  > Activator.java
  META-INF
  MANIFEST.MF
  build.properties
Sports_Storekeeper_producer
> JRE System Library [JavaSE-1.8]
> Plug-in Dependencies
v src
  sports_storekeeper_producer
  > Activator.java
  > Sports.java
  > SportsDataStore.java
  > StoreKeeperService.java
  > StoreKeeperServiceImpl.java
  META-INF
  MANIFEST.MF
  build.properties
```

```
Problems Target Platform State Console x
sports_storekeeper_producer [OSGi Framework] C:\Program Files\Java\jdk-17.0.3\bin\javaw.exe (Feb 24, 2023, 10:24:17 PM) [pid: 17588]
933 ACTIVE org.junit.platform.launcher_1.8.1.v20211018-1956
934 ACTIVE org.junit.platform.runner_1.8.1.v20211018-1956
935 ACTIVE org.junit.platform.suite.api_1.8.1.v20211018-1956
936 ACTIVE org.junit.platform.suite.commons_1.8.1.v20211018-1956
937 ACTIVE org.junit.platform.suite.engine_1.8.1.v20211028-1957
938 ACTIVE org.junit.vintage.engine_5.8.1.v20211018-1956
939 ACTIVE org.objectweb.asm_9.2.0.v20210813-1119
940 ACTIVE org.objectweb.asm_9.1.0.v20210209-1849
941 ACTIVE org.objectweb.asm.commons_9.1.0.v20210209-1849
942 ACTIVE org.objectweb.asm.tree_9.2.0.v20210813-1119
943 ACTIVE org.objectweb.asm.tree_9.1.0.v20210209-1849
944 ACTIVE org.opentest4j_1.2.0.v20211018-1956
945 ACTIVE org.sat4j.core_2.3.5.v201308161310
946 ACTIVE org.sat4j.pb_2.3.5.v201404071733
947 ACTIVE org.slf4j.api_1.7.30.v20200204-2150
Fragments=10
948 ACTIVE org.sonatype.m2e.mavenarchiver_0.17.5.202002191804
949 ACTIVE org.tukaani.xz_1.9.0.v20210624-1259
950 ACTIVE org.uddi4j_2.0.5.v200805270300
951 ACTIVE org.w3c.css.sac_1.3.1.v200903091627
952 ACTIVE org.w3c.dom.events_3.0.0.draft20060413_v201105210656
953 ACTIVE org.w3c.dom.smil_1.0.1.v200903091627
954 ACTIVE org.w3c.dom.svg_1.1.0.v201011041433
osgi> stop 5
=====Thank you! Come Again. Service Closed.=====
osgi> start 5
=====Welcome to Sports Accessories. Service Started.=====
osgi>
```

```
Sports_Storekeeper_consumer
> JRE System Library [JavaSE-1.8]
> Plug-in Dependencies
v src
  sports_storekeeper_consumer
  > Activator.java
  META-INF
  MANIFEST.MF
  build.properties
Sports_Storekeeper_producer
> JRE System Library [JavaSE-1.8]
> Plug-in Dependencies
v src
  sports_storekeeper_producer
  > Activator.java
  > Sports.java
  > SportsDataStore.java
  > StoreKeeperService.java
  > StoreKeeperServiceImpl.java
  META-INF
  MANIFEST.MF
  build.properties
```

```
Problems Target Platform State Console x
sports_storekeeper_producer [OSGi Framework] C:\Program Files\Java\jdk-17.0.3\bin\javaw.exe (Feb 24, 2023, 10:24:17 PM) [pid: 17588]
Fragments=10
948 ACTIVE org.sonatype.m2e.mavenarchiver_0.17.5.202002191804
949 ACTIVE org.tukaani.xz_1.9.0.v20210624-1259
950 ACTIVE org.uddi4j_2.0.5.v200805270300
951 ACTIVE org.w3c.css.sac_1.3.1.v200903091627
952 ACTIVE org.w3c.dom.events_3.0.0.draft20060413_v201105210656
953 ACTIVE org.w3c.dom.smil_1.0.1.v200903091627
954 ACTIVE org.w3c.dom.svg_1.1.0.v201011041433
osgi> stop 5
=====Thank you! Come Again. Service Closed.=====
osgi> start 5
=====Welcome to Sports Accessories. Service Started.=====
osgi> start 4
:::Welcome to Walmart Sports Accessories Shop Store:::
Now You Can Select an option to continue forward-->>>
Enter the number that you need....
1.Add new sports accessories to the store
2.Remove sports accessories from the store
3.List of available sports accessories in store
4.Search available sports accessories by name
5.Exit to store keeper interface
Now you can enter your selection :
```

Stop Storekeeper Consumer and Producer



The screenshot shows the Eclipse IDE with two projects: `Sports_Storekeeper_consumer` and `Sports_Storekeeper_producer`. The `Sports_Storekeeper_consumer` project structure includes `src` (with `sports_storekeeper_consumer` and `Activator.java`), `META-INF` (with `MANIFEST.MF`), and `build.properties`. The `Sports_Storekeeper_producer` project structure includes `src` (with `sports_storekeeper_producer`, `Activator.java`, `Sports.java`, `SportsDataStore.java`, `StoreKeeperService.java`, and `StoreKeeperServiceImpl.java`), `META-INF` (with `MANIFEST.MF`), and `build.properties`.

The console output shows the following sequence of events:

```
23
24 }
25

sports_storekeeper_producer [OSGi Framework] [pid: 13696]
953 ACTIVE org.w3c.dom.smil_1.0.1.v200903091627
954 ACTIVE org.w3c.dom.svg_1.1.0.v201011041433
osgi> start 5
osgi> stop 5
:::Walmart Sports Accessories Service Closed. Thank You !!!!!:::

osgi> start 5
=====Welcome to Walmart Sports Accessories. Service Started.=====
osgi> start 4

:::Welcome to Walmart Sports Accessories Shop Store:::

Now You Can Select an option to continue forward-->>>

Enter the number that you need....

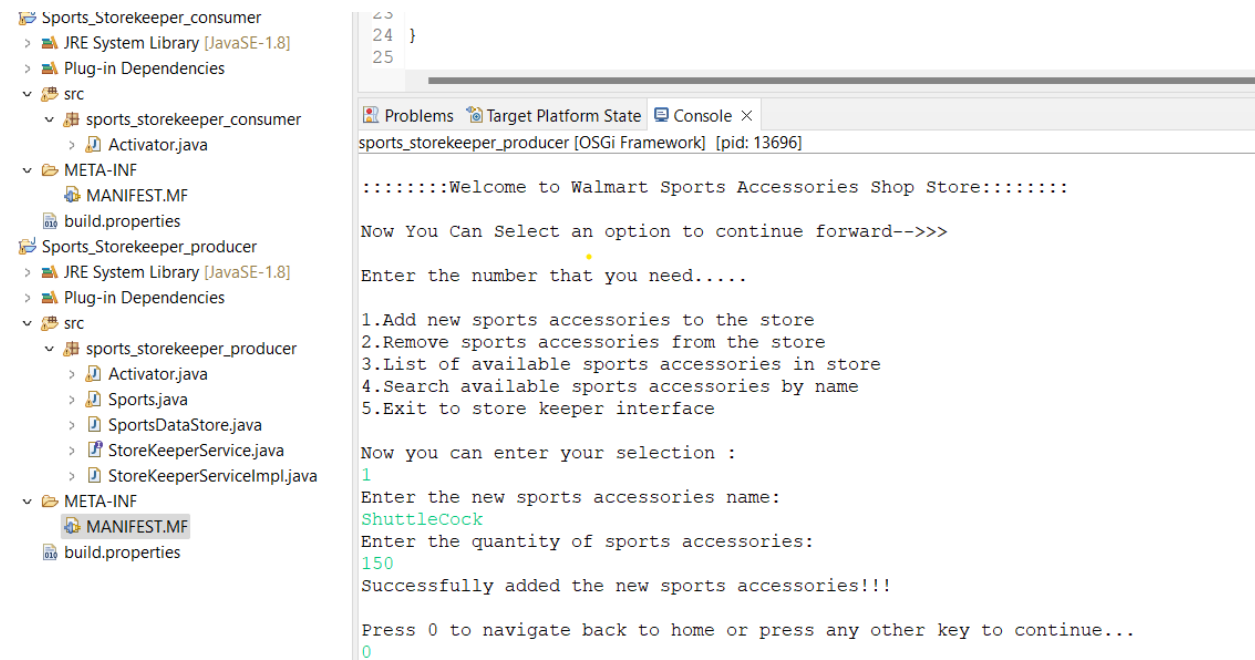
1.Add new sports accessories to the store
2.Remove sports accessories from the store
3.List of available sports accessories in store
4.Search available sports accessories by name
5.Exit to store keeper interface

Now you can enter your selection :
stop 5
gogo: BundleException: Exception in sports_storekeeper_consumer.Activator.start() of bundle Sports_Storekeeper_consumer.
osgi> stop 5
:::Walmart Sports Accessories Service Closed. Thank You !!!!!:::
```

d) Sample screenshots of its behavior & outputs.

Sports Storekeeper Service Running Screenshots

1. Add new sports accessories to the stock.



The screenshot shows the Eclipse IDE with the same project structure as the previous screenshot. The console output shows the following sequence of events:

```
23
24 }
25

sports_storekeeper_producer [OSGi Framework] [pid: 13696]

:::Welcome to Walmart Sports Accessories Shop Store:::

Now You Can Select an option to continue forward-->>>

Enter the number that you need....

1.Add new sports accessories to the store
2.Remove sports accessories from the store
3.List of available sports accessories in store
4.Search available sports accessories by name
5.Exit to store keeper interface

Now you can enter your selection :
1
Enter the new sports accessories name:
ShuttleCock
Enter the quantity of sports accessories:
150
Successfully added the new sports accessories!!!

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

2. Search all stock details.

```
MANIFEST.MF
build.properties

Now you can enter your selection :
1
Enter the new sports accessories name:
Badminton
Enter the quantity of sports accessories:
150
Successfully added the new sports accessories!!!

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

:::Welcome to Walmart Sports Accessories Shop Store:::::

Now You Can Select an option to continue forward-->>>

Enter the number that you need.....

1.Add new sports accessories to the store
2.Remove sports accessories from the store
3.List of available sports accessories in store
4.Search available sports accessories by name
5.Exit to store keeper interface

Now you can enter your selection :
4
Enter the sports accessories name you need search
Badminton
Item found!
Press 0 to navigate back to home or press any other key to continue...
```

3. Delete sports accessories from the stock.

```
Sports_Storekeeper_consumer
  JRE System Library [JavaSE-1.8]
  Plug-in Dependencies
  src
    sports_storekeeper_consumer
      Activator.java
  META-INF
    MANIFEST.MF
    build.properties
Sports_Storekeeper_producer
  JRE System Library [JavaSE-1.8]
  Plug-in Dependencies
  src
    sports_storekeeper_producer
      Activator.java
      Sports.java
      SportsDataStore.java
      StoreKeeperService.java
      StoreKeeperServiceImpl.java
  META-INF
    MANIFEST.MF
    build.properties

23
24 }
25

Problems Target Platform State Console x
sports_storekeeper_producer [OSGi Framework] [pid: 13696]

:::Welcome to Walmart Sports Accessories Shop Store:::::

Now You Can Select an option to continue forward-->>>

Enter the number that you need.....

1.Add new sports accessories to the store
2.Remove sports accessories from the store
3.List of available sports accessories in store
4.Search available sports accessories by name
5.Exit to store keeper interface

Now you can enter your selection :
2
Enter the sports accessories name you need remove:
Badminton Racket
Successfully Removed the sports accessories!!!

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

4. View list of current sports items in the stock.

- ✓ Sports_Storekeeper_consumer
 - > JRE System Library [JavaSE-1.8]
 - > Plug-in Dependencies
 - ✓ src
 - ✓ sports_storekeeper_consumer
 - > Activator.java
 - ✓ META-INF
 - MANIFEST.MF
 - build.properties
- ✓ Sports_Storekeeper_producer
 - > JRE System Library [JavaSE-1.8]
 - > Plug-in Dependencies
 - ✓ src
 - ✓ sports_storekeeper_producer
 - > Activator.java
 - > Sports.java
 - > SportsDataStore.java
 - > StoreKeeperService.java
 - > StoreKeeperServiceImpl.java
 - ✓ META-INF
 - MANIFEST.MF
 - build.properties

```
24 }
25
```

Problems Target Platform State Console ×

sports_storekeeper_producer [OSGi Framework] [pid: 13696]

Now you can enter your selection :

2

Enter the sports accessories name you need remove:

Badminton Racket

Successfully Removed the sports accessories!!!

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

0

:::::::::Welcome to Walmart Sports Accessories Shop Store:::::::::

Now You Can Select an option to continue forward-->>>

Enter the number that you need....

- 1.Add new sports accessories to the store
- 2.Remove sports accessories from the store
- 3.List of available sports accessories in store
- 4.Search available sports accessories by name
- 5.Exit to store keeper interface

Now you can enter your selection :

3

=====Sports accessories in the store=====

Accessories ID: Accessories Name: quantity:

2 ShuttleCock 150

=====

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

b) Manifest implementation (Exported services/ imported services)

IT20081416	Ahamed M M Z	Sports Transport Function
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Transport Manager Producer Manifest

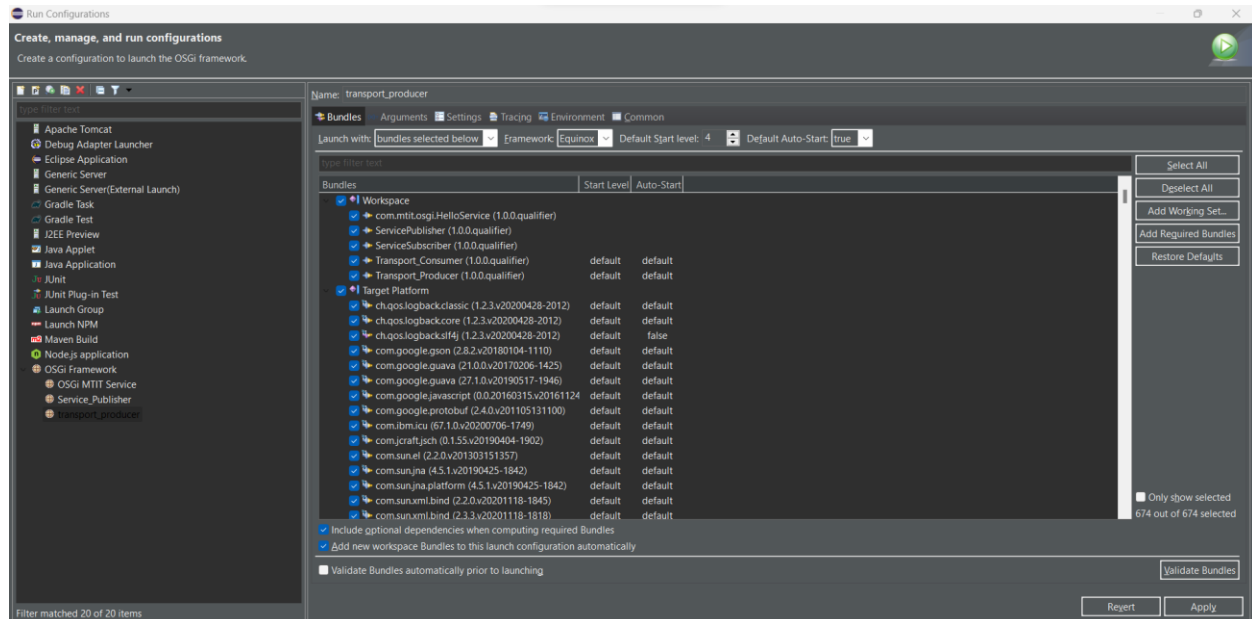
```
Transport_Producer x
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: Transport_Producer
4 Bundle-SymbolicName: Transport_Producer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: transport_producer.Activator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: Transport.Producer
9 Import-Package: org.osgi.framework;version="1.3.0"
10 Bundle-ActivationPolicy: lazy
11 Export-Package: transport_producer
12
```

Transport Manager Consumer Manifest

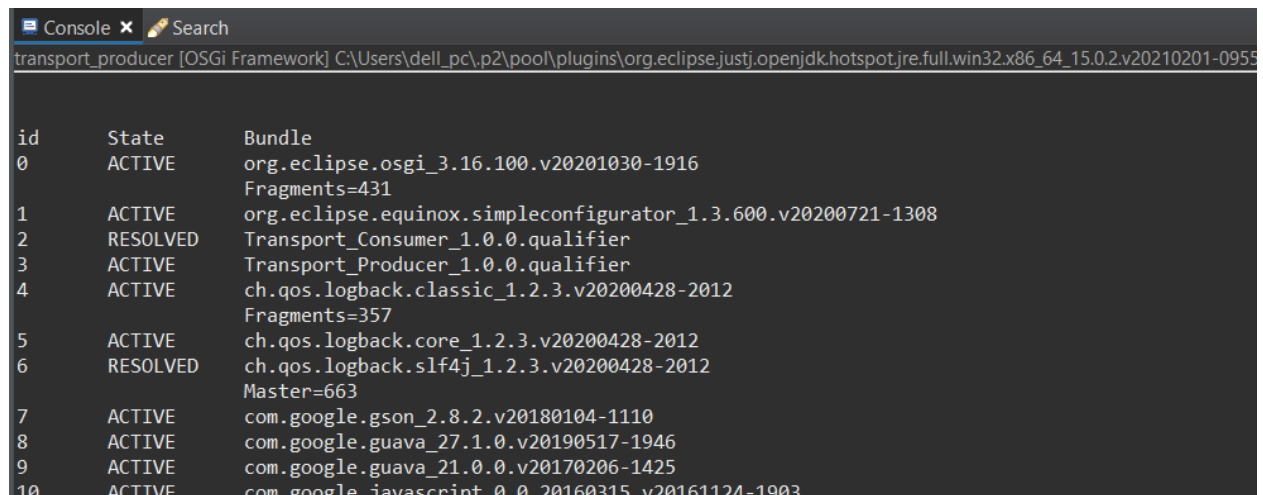
```
Transport_Consumer x
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: Transport_Consumer
4 Bundle-SymbolicName: Transport_Consumer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: transport_consumer.Activator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: Transport.Consumer
9 Import-Package: org.osgi.framework;version="1.3.0",
10 transport_producer
11 Bundle-ActivationPolicy: lazy
12
```

c) All commands of bundle install and run in OSGi framework. (Step wise mention producer installation and consumer installation & running services)

Transport Service Bundle



Start Transport Consumer and Producer



Starting Codes of Transport Consumer and Producer

```
Console x Search
transport_producer [OSGi Framework] C:\Users\dell_pc\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_15.0.2.v20210201-0955\jre\bin\javaw.exe
659 ACTIVE org.objectweb.asm.tree_8.0.1.v20200420-1007
660 ACTIVE org.opentest4j_1.2.0.v20190826-0900
661 ACTIVE org.sat4j.core_2.3.5.v201308161310
662 ACTIVE org.sat4j.pb_2.3.5.v201404071733
663 ACTIVE org.slf4j.api_1.7.30.v20200204-2150
    Fragments=6
664 ACTIVE org.sonatype.m2e.mavenarchiver_0.17.5.202002191804
665 ACTIVE org.tukaani.xz_1.8.0.v20180207-1613
666 ACTIVE org.uddi4j_2.0.5.v200805270300
667 ACTIVE org.w3c.css.sac_1.3.1.v200903091627
668 ACTIVE org.w3c.dom.events_3.0.0.draft20060413_v201105210656
669 ACTIVE org.w3c.dom.smil_1.0.1.v200903091627
670 ACTIVE org.w3c.dom.svg_1.1.0.v201011041433
osgi>
osgi> start 3
----- Walmart Sports Accessories Producer Started -----
osgi>
```

```
Console x Search
transport_producer [OSGi Framework] C:\Users\dell_pc\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_15.0.2.v20210201-0955\jre\bin

osgi> start 3
----- Walmart Sports Accessories Producer Started -----
osgi> start 2
----- Walmart Sports Accessories Consumer Started -----
----- Welcome to Walmart Sports Accessories System -----
Select an option from the menu
***** MENU *****
1 => Insert transport details to the system
2 => Remove an existing transport detail from the system
3 => List of transport with charges
4 => Search transport by Name
5 => Exit

Please enter your selection:
```

Stop Transport Consumer and Producer

```
Console x Search
transport_producer [OSGi Framework] C:\Users\dell_pc\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_15.0.2.v20210201-0955\jre\bin
specify a different content area for the platform.
    at org.eclipse.core.internal.runtime.DataArea.assertLocationInitialized(DataArea.java:73)
    at org.eclipse.core.internal.runtime.DataArea.getStateLocation(DataArea.java:136)
    at org.eclipse.core.internal.runtime.InternalPlatform.getStateLocation(InternalPlatform.java:472)
    at org.eclipse.core.runtime.Plugin.getStateLocation(Plugin.java:259)
    at org.eclipse.core.internal.resources.LocalMetaArea.<init>(LocalMetaArea.java:63)
    at org.eclipse.core.resources.ResourcesPlugin.start(ResourcesPlugin.java:481)
    at org.eclipse.osgi.internal.framework.BundleContextImpl$2.run(BundleContextImpl.java:814)
    at org.eclipse.osgi.internal.framework.BundleContextImpl$2.run(BundleContextImpl.java:1)
    at java.base/java.security.AccessController.doPrivileged(AccessController.java:554)
    at org.eclipse.osgi.internal.framework.BundleContextImpl.startActivator(BundleContextImpl.java:806)
    ... 54 more

osgi> stop 3
----- Walmart Sports Accessories Producer Closed -----
```


d) Sample screenshots of its behavior & outputs.

Delivery Manager Service Running Screenshots

1 . Add new transport details.

```
Console x Search
transport_producer [OSGi Framework] C:\Users\dell_pc\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_15.0.2.v20210201-0955\jre\bin\java.exe
----- Walmart Sports Accessories Consumer Started -----
----- Welcome to Walmart Sports Accessories System -----
Select an option from the menu
***** MENU *****
1 => Insert transport details to the system
2 => Remove an existing transport detail from the system
3 => List of transport with charges
4 => Search transport by Name
5 => Exit

Please enter your selection:
1
Enter the name of transport
t_001
Enter the transport location
Kandy
Enter the distance to location (Km)
10

Transport details added successfully!
Enter 0 to go to main menu or enter any other value to continue....
```

2 . View transport details with the delivery charges

```
Console x Search
transport_producer [OSGi Framework]
Select an option from the menu
***** MENU *****
1 => Insert transport details to the system
2 => Remove an existing transport detail from the system
3 => List of transport with charges
4 => Search transport by Name
5 => Exit

Please enter your selection:
3
----- Transport Details -----
Item ID Transport Name Transport Location Transport Charges(Rs.)
1 t_001 Kandy 200.0
2 t_002 Malabe 100.0
-----
Enter 0 to go to main menu or enter any other value to continue....
```

3 . Search transport

```
Console x Search
transport_producer [OSGi Framework]

-----
Enter 0 to go to main menu or enter any other value to continue....
0
----- Welcome to Walmart Sports Accessories System -----
Select an option from the menu
***** MENU *****
1 => Insert transport details to the system
2 => Remove an existing transport detail from the system
3 => List of transport with charges
4 => Search transport by Name
5 => Exit

Please enter your selection:
4
Enter the name of transport:
t_001
Transport found!
Enter 0 to go to main menu or enter any other value to continue....
```

4 . Remove transport

```
Console x Search
transport_producer [OSGi Framework]
Transport not found!
Enter 0 to go to main menu or enter any other value to continue....
0
----- Welcome to Walmart Sports Accessories System -----
Select an option from the menu
***** MENU *****
1 => Insert transport details to the system
2 => Remove an existing transport detail from the system
3 => List of transport with charges
4 => Search transport by Name
5 => Exit

Please enter your selection:
2
Enter the name of transport:
t_001
Transport removed Successfully!
Enter 0 to go to main menu or enter any other value to continue....
```