

Sri Lanka Institute of Information Technology

Software Architecture

Assignment 1- SE3030



Group ID: SE3030_WE_01

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Scenario

This is a scenario based in a hotel system. There are 6 producers and 5 consumers.

Manager, Customer, Bartender, Receptionist and Hotel food service (Chef) are the consumers, while

Employee Producer, Login Producer, Room Producer, Bill Producer, Bar and Hotel food service are the publishers.

To achieve best practices of OSGI we have exposed the producer service interfaces only, not the implementations. Consumers can work through the interfaces.

Folder Link: [SE3030 WE 01.zip](#)

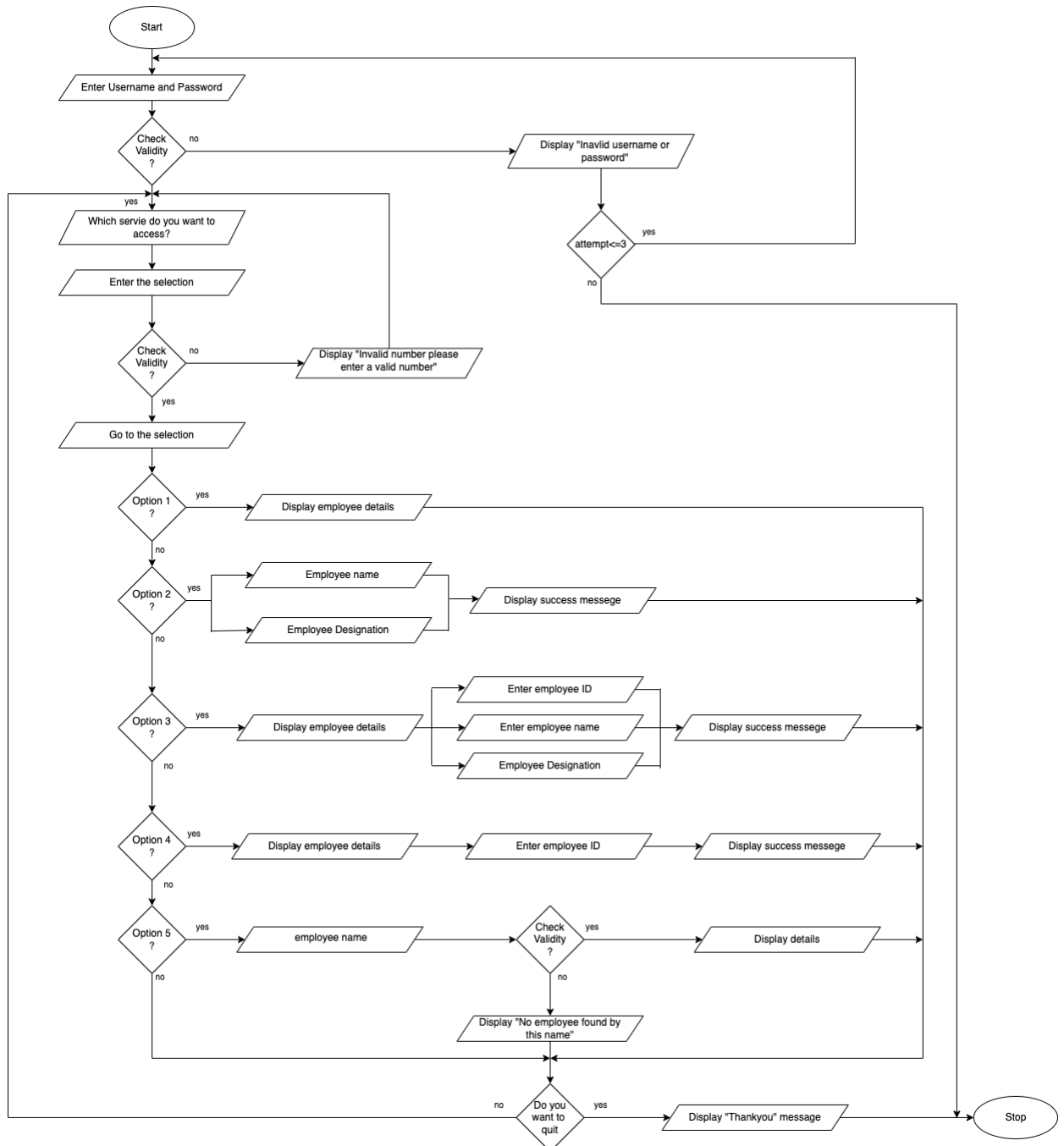
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[my.sharepoint.com/:u:/g/personal/it20228576_my_sliit_lk/EZ0O_cRJcqRDmWYvWlbUtv4Bl_X5pr2pnAMAtA5mL9I6pw?e=vU3AGq](https://mysliit-my.sharepoint.com/:u:/g/personal/it20228576_my_sliit_lk/EZ0O_cRJcqRDmWYvWlbUtv4Bl_X5pr2pnAMAtA5mL9I6pw?e=vU3AGq))

I. IT20123468 - Senaweera T.I.S

1. Flow Chart.

Employee Producer, Login Producer and Manager Consumer



This is the workflow of Login producer, Employee producer and the Manager consumer. Manager has to login to the system by entering a valid username and a password. This part is handled by the functions in Login producer. Each user will have 3 attempts to login. After a successful login manager can access Employee producer, each manager will be given 5 options to choose from. They are,

1. View employee details
2. Add new employee
3. Update employee
4. Delete employee
5. Search employee

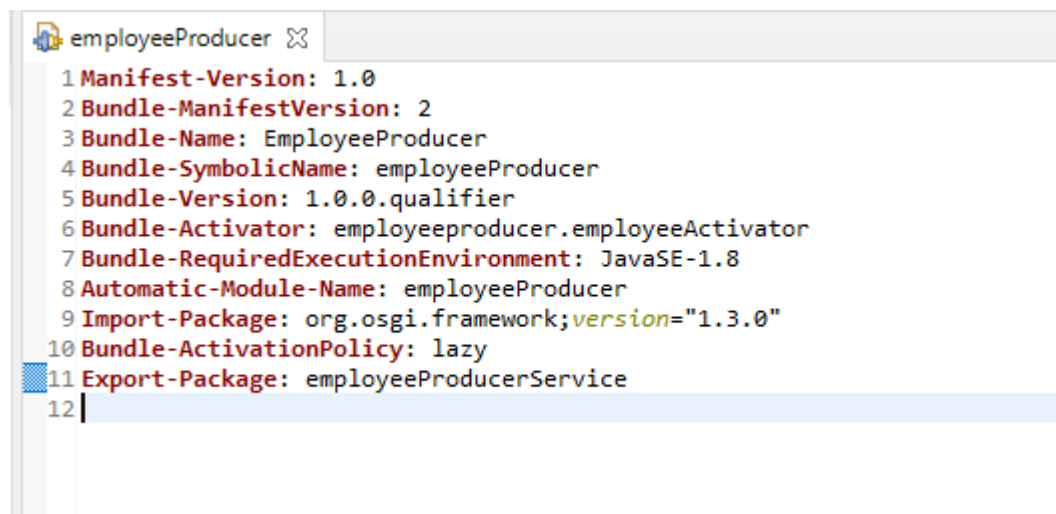
Manager must enter a valid ID from these functions, if not it will be asked to enter a valid function ID. According to manager's input respective function will get triggered.

Manager can iterate through these functions until he/she decides to quit.

Once the manager decides to quit a "Thank you" message will be displayed.

2. Manifest implementation.

1. Employee Producer Manifest

A screenshot of an IDE window titled 'employeeProducer'. The window displays the content of a manifest file. The text is as follows:

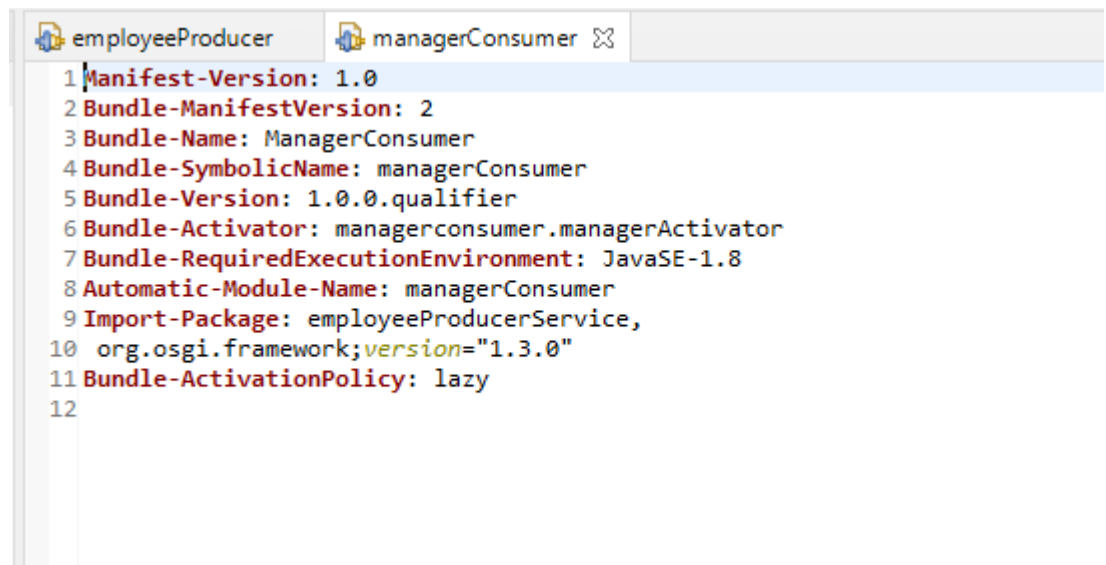
```
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: EmployeeProducer
4 Bundle-SymbolicName: employeeProducer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: employeeproducer.employeeActivator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: employeeProducer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

The line numbers 1 through 12 are on the left side of the code. The text is color-coded: 'Manifest-Version' is red, 'Bundle-ManifestVersion' is red, 'Bundle-Name' is red, 'Bundle-SymbolicName' is red, 'Bundle-Version' is red, 'Bundle-Activator' is red, 'Bundle-RequiredExecutionEnvironment' is red, 'Automatic-Module-Name' is red, 'Import-Package' is red, 'Bundle-ActivationPolicy' is red, and 'Export-Package' is red. The values are in black or blue. The line '12' is highlighted with a blue background.

2. Login Producer Manifest

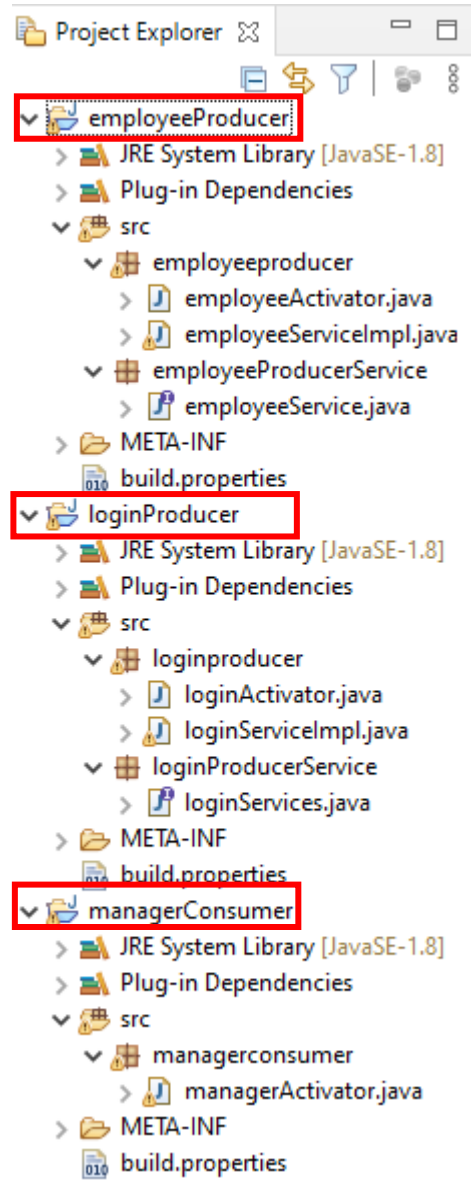
```
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: LoginProducer
4 Bundle-SymbolicName: loginProducer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: loginproducer.loginActivator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: loginProducer
9 Import-Package: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

3. Manager Consumer Manifest



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

3. Bundles.



4. All commands of bundle install and run in OSGi framework.

1. Employee Producer Started

```
osgi> start 1
Start Employee Producer

osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE      org.eclipse.osgi_3.16.100.v20201030-1916
          Fragments=89
1       ACTIVE      employeeProducer_1.0.0.qualifier
2       RESOLVED     loginProducer_1.0.0.qualifier
3       RESOLVED     managerConsumer_1.0.0.qualifier
4       ACTIVE      org.eclipse.equinox.event_1.5.500.v20200616-0800
5       STARTING    org.eclipse.e4.core.di.extensions_0.16.0.v20200507-0938
6       RESOLVED     org.w3c.dom.smil 1.0.1.v200903091627
```

2. Login Producer Started

```
osgi> start 2
Start Login Producer

osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE      org.eclipse.osgi_3.16.100.v20201030-1916
          Fragments=89
1       ACTIVE      employeeProducer_1.0.0.qualifier
2       ACTIVE      loginProducer_1.0.0.qualifier
3       RESOLVED     managerConsumer_1.0.0.qualifier
4       ACTIVE      org.eclipse.equinox.event_1.5.500.v20200616-0800
5       STARTING    org.eclipse.e4.core.di.extensions_0.16.0.v20200507-0938
6       RESOLVED     org.w3c.dom.smil 1.0.1.v200903091627
```

3. Manager Consumer Started

```
osgi> start 3
Start Manager Consumer

osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE      org.eclipse.osgi_3.16.100.v20201030-1916
          Fragments=89
1       ACTIVE      employeeProducer_1.0.0.qualifier
2       ACTIVE      loginProducer_1.0.0.qualifier
3       ACTIVE      managerConsumer_1.0.0.qualifier
4       ACTIVE      org.eclipse.equinox.event_1.5.500.v20200616-0800
5       STARTING    org.eclipse.e4.core.di.extensions_0.16.0.v20200507-0938
6       RESOLVED     org.w3c.dom.smil 1.0.1.v200903091627
```

4. Employee Producer Stopped

```
osgi> stop 1
Stop Employee Producer
osgi> ss
|"Framework is launched."
```

id	State	Bundle
0	ACTIVE	org.eclipse.osgi_3.16.100.v20201030-1916 Fragments=89
1	RESOLVED	employeeProducer_1.0.0.qualifier
2	ACTIVE	loginProducer_1.0.0.qualifier
3	RESOLVED	managerConsumer_1.0.0.qualifier
4	ACTIVE	org.eclipse.equinox.event_1.5.500.v20200616-0800
5	STARTING	org.eclipse.e4.core.di.extensions_0.16.0.v20200507-0938
6	RESOLVED	org.w3c.dom.smil_1.0.1.v200903091627

5. Login Producer Stopped

```
osgi> stop 2
Stop Login Producer
osgi> ss
|"Framework is launched."
```

id	State	Bundle
0	ACTIVE	org.eclipse.osgi_3.16.100.v20201030-1916 Fragments=89
1	RESOLVED	employeeProducer_1.0.0.qualifier
2	RESOLVED	loginProducer_1.0.0.qualifier
3	RESOLVED	managerConsumer_1.0.0.qualifier
4	ACTIVE	org.eclipse.equinox.event_1.5.500.v20200616-0800
5	STARTING	org.eclipse.e4.core.di.extensions_0.16.0.v20200507-0938
6	RESOLVED	org.w3c.dom.smil_1.0.1.v200903091627

6. Manager Consumer Stopped

```
osgi> stop 3
Stop Manager Consumer
osgi> ss
|"Framework is launched."
```

id	State	Bundle
0	ACTIVE	org.eclipse.osgi_3.16.100.v20201030-1916 Fragments=89
1	ACTIVE	employeeProducer_1.0.0.qualifier
2	ACTIVE	loginProducer_1.0.0.qualifier
3	RESOLVED	managerConsumer_1.0.0.qualifier
4	ACTIVE	org.eclipse.equinox.event_1.5.500.v20200616-0800
5	STARTING	org.eclipse.e4.core.di.extensions_0.16.0.v20200507-0938
6	RESOLVED	org.w3c.dom.smil_1.0.1.v200903091627

5. Sample screenshots of its behavior & outputs.

1. Manager Login and Display Employee Details

```
Start Employee Producer
Start Login Producer
Start Manager Consumer

Enter UserName :Ishma

Enter Password :Ishma123

Display Employee Details : 1
Add New Employee Details : 2
Update Employee Details : 3
Delete Employee Details : 4
Search Employee Details : 5
Which service do you want to access :1

Employee Details

ID          Name          Designation
-----
1           Kamal          Bartender
2           Saman          Reception
3           Lakal          Chef

***** END *****

Do you want to quit? (y/n) :y
|
***** Thank you *****
***** Login Again *****
.
```

2. Add New Employee Details

```
Display Employee Details : 1
Add New Employee Details : 2
Update Employee Details : 3
Delete Employee Details : 4
Search Employee Details : 5
Which service do you want to access :2

Add New Employee Details

Enter Employee Name : Oshada

Enter Employee Designation : Waiter

Successfully Added Oshada's Employee Details

Do you want to quit? (y/n) :n

Display Employee Details : 1
Add New Employee Details : 2
Update Employee Details : 3
Delete Employee Details : 4
Search Employee Details : 5
Which service do you want to access :1
|
Employee Details
```

ID	Name	Designation
1	Kamal	Bartender
2	Saman	Reception
3	Lakal	Chef
4	Oshada	Waiter

```
***** END *****
```

3. Update Employee Details

```
Display Employee Details : 1
Add New Employee Details : 2
Update Employee Details : 3
Delete Employee Details : 4
Search Employee Details : 5
Which service do you want to access :3

Update Employee Details

Employee Details

ID          Name          Designation
-----
1           Kamal          Bartender
2           Saman            Reception
3           Lakal            Chef

***** END *****

Enter Employee ID : 3

Enter Employee Name : Hasal

Enter Employee Designation : Waiter
Successfully Updated 3 Hasal's Employee Details
```

4. Delete Employee Details

```
Display Employee Details : 1
Add New Employee Details : 2
Update Employee Details : 3
Delete Employee Details : 4
Search Employee Details : 5
Which service do you want to access :4
```

Delete Employee Details

Employee Details

ID	Name	Designation
1	Kamal	Bartender
2	Saman	Reception
3	Hasal	Waiter

***** END *****

Enter Employee ID : 2

Successfully Deleted 2's Employee Details

Enter Employee ID : 2

Successfully Deleted 2's Employee Details

Do you want to quit? (y/n) :n

```
Display Employee Details : 1
Add New Employee Details : 2
Update Employee Details : 3
Delete Employee Details : 4
Search Employee Details : 5
Which service do you want to access :1
```

Employee Details

ID	Name	Designation
1	Kamal	Bartender
3	Lakal	Chef

***** END *****

5. Search Employee Details

```
Display Employee Details : 1
Add New Employee Details : 2
Update Employee Details : 3
Delete Employee Details : 4
Search Employee Details : 5
Which service do you want to access :5

Search an Employee

Please Enter a Name: Ishma
|
**** No Employee is Found by this Name ****
```

Employee Details

ID	Name	Designation
1	Kamal	Bartender
3	Lakal	Chef

***** END *****

Do you want to quit? (y/n) :n

```
Display Employee Details : 1
Add New Employee Details : 2
Update Employee Details : 3
Delete Employee Details : 4
Search Employee Details : 5
Which service do you want to access :5
```

Search an Employee

Please Enter a Name: Kamal

ID	Name	Designation
1	Kamal	Bartender

Do you want to quit? (y/n) :

<

6. Manager Login: Wrong UserName or password

```
Start Employee Producer  
Start Login Producer  
Start Manager Consumer
```

```
Enter UserName :abc
```

```
Enter Password :123
```

```
Incorrect Username or Password was Entered  
You have 2 more attempts
```

```
Enter UserName :123
```

```
Enter Password :abc
```

```
Incorrect Username or Password was Entered  
You have 1 more attempts
```

```
Enter UserName :098
```

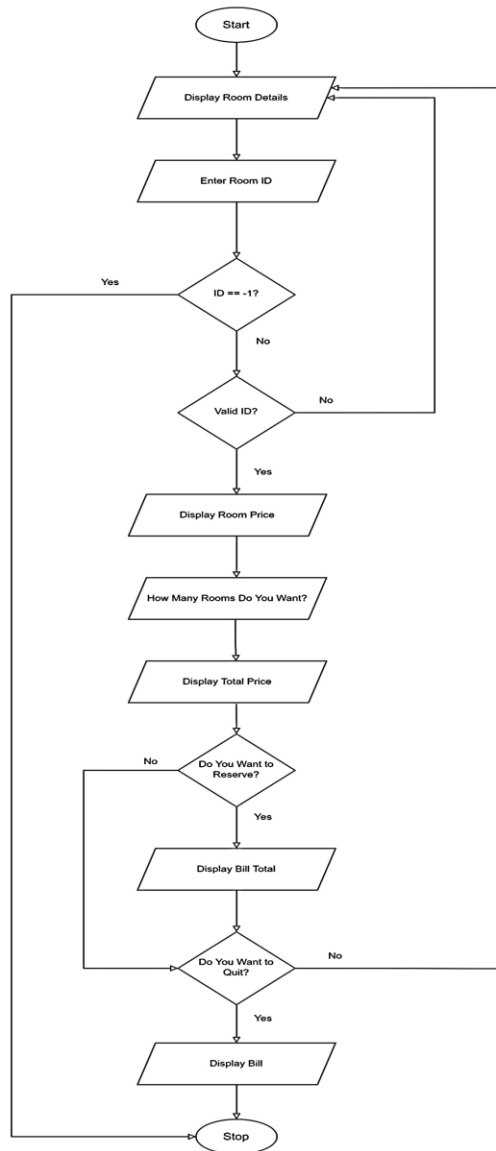
```
Enter Password :cde
```

```
Incorrect Username or Password was Entered  
Try Again Later, Too Many Invalid Attempts!  
osgi>
```

II. IT20228576 - Jayawardena C.P.U

1. Flow Chart.

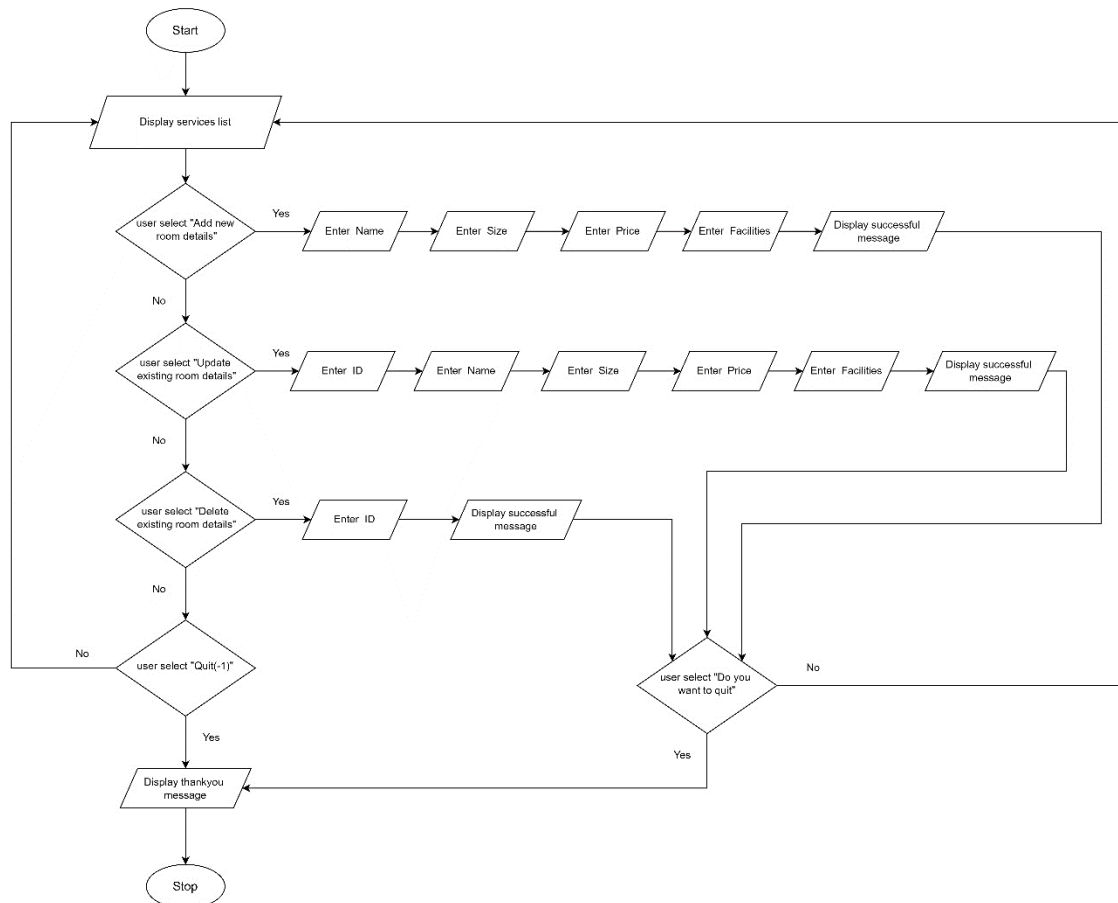
1. Customer Consumer, Room Producer and Bill Producer



In this part, the Customer Consumer can consume the Room Producer and Bill Producer and do reserve one or more types of rooms. For example, when the Customer chooses the number of rooms the customer wants, it will display the room price, ask how many rooms they want, display the total cost. Then, the system will ask for confirmation if the Customer's confirmation cost of that room(s) will add to the bill and ask if the Customer wants to reserve more rooms. Customers can reserve more rooms, which will automatically add to the bill. Lastly, when the customer has done reserving rooms

automatically, if the customer spends more than 40000, it will give a 15% discount and display the bill. Customers can enter -1 and exit.

2. Receptionist Consumer, Room Producer



In this part, the Receptionist Consumer can consume Room Producer and can-do various types of things. For example, when the Receptionist chooses "Add new room detail," the Receptionist can add new room details to the Room Producer. Likewise, when the Receptionist chooses "Update existing room detail," the Receptionist can edit existing room details. Finally, when the Receptionist chooses "Delete existing room detail," the Receptionist can delete current room details. If the reception wants to exit, reception can enter -1 and exit.

2. Manifest implementation.

1. Bill Producer Manifest

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

2. Room Producer Manifest

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

3. Customer Consumer Manifest

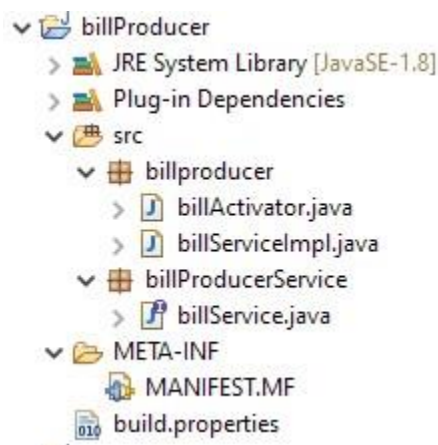
```
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: CustomerConsumer
4 Bundle-SymbolicName: customerConsumer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: customerconsumer.customerActivator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: customerConsumer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

4. Receptionist Consumer Manifest

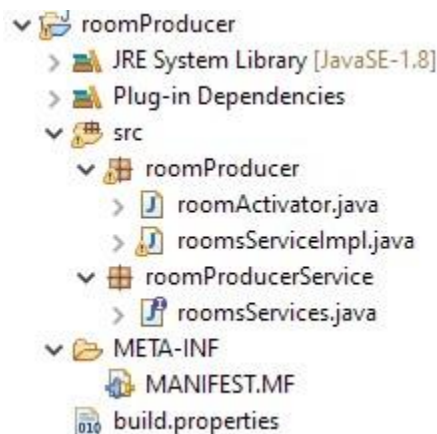
```
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: ReceptionConsumer
4 Bundle-SymbolicName: receptionistConsumer
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: receptionistconsumer.receptionistActivator
7 Bundle-RequiredExecutionEnvironment: JavaSE-1.8
8 Automatic-Module-Name: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

3. Bundles.

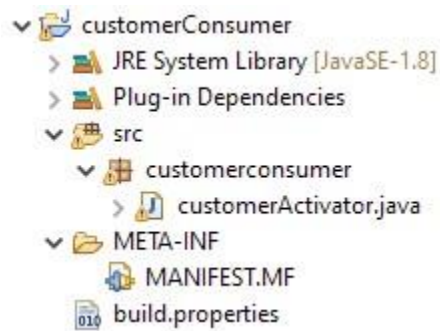
1. Bill Producer



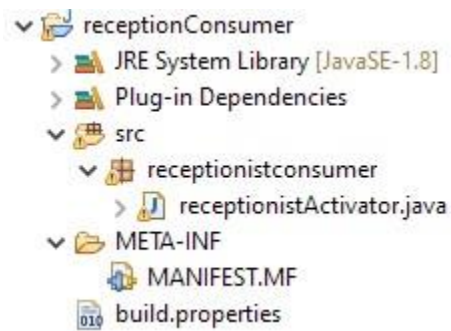
2. Room Producer



3. Customer Consumer



4. Receptionist Consumer



4. All commands of bundle install and run in OSGi framework.

1. Bill Producer Started

```
osgi> start 3
Start Bill Producer

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

id	State	Bundle
0	ACTIVE	org.eclipse.osgi_3.17.200.v20220215-2237 Fragments=145
1	RESOLVED	receptionistConsumer_1.0.0.qualifier
2	RESOLVED	customerConsumer_1.0.0.qualifier
3	ACTIVE	billProducer 1.0.0.qualifier
4	RESOLVED	roomProducer 1.0.0.qualifier

2. Room Producer Started

```
osgi> start 4
Start Room Producer

osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE      org.eclipse.osgi_3.17.200.v20220215-2237
          Fragments=145
1       RESOLVED    receptionistConsumer_1.0.0.qualifier
2       RESOLVED    customerConsumer_1.0.0.qualifier
3       ACTIVE      billProducer_1.0.0.qualifier
4       ACTIVE      roomProducer_1.0.0.qualifier
```

3. Customer Consumer Started

```
osgi> start 2
Start Customer Consumer

*****Spend Over 40000 And Get A 15% Discount*****

-----Room Details-----
ID          Name          Sleeps      Facilities
-----
1           Master          4-Adults    wifi/spa/pool
2           Deluxe           3-Adults    wifi/pool
3           Super            6-Adults    wifi/spa
-----

Enter the room ID you want to reserve :-1
-----
-----Thank you and Good bye!-----
-----Have a nice day!-----

osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE      org.eclipse.osgi_3.17.200.v20220215-2237
          Fragments=145
1       RESOLVED    receptionistConsumer_1.0.0.qualifier
2       ACTIVE      customerConsumer_1.0.0.qualifier
3       ACTIVE      billProducer_1.0.0.qualifier
4       ACTIVE      roomProducer_1.0.0.qualifier
```

4. Receptionist Consumer Started

```
osgi> start 1
Start Receptionist Consumer

-----Room Details-----
ID          Name      Sleeps      Price      Facilities
-----
1           Master     4-Adults    25000      wifi/spa/pool
2           Deluxe     3-Adults    18000      wifi/pool
3           Super      6-Adults    20000      wifi/spa
-----

Add New Room Details      : 1
Update Existing Room Details : 2
Delete Existing Room Details : 3
Quit                      : -1

Which service do you to access :-1

-----Thank you and Good bye!-----
-----Have a nice day!-----

osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE      org.eclipse.osgi_3.17.200.v20220215-2237
Fragments=145
1       ACTIVE      receptionistConsumer_1.0.0.qualifier
2       ACTIVE      customerConsumer_1.0.0.qualifier
3       ACTIVE      billProducer_1.0.0.qualifier
4       ACTIVE      roomProducer_1.0.0.qualifier
```

5. Bill Producer Stopped

```
osgi> stop 3
Stop Bill Producer
osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE      org.eclipse.osgi_3.17.200.v20220215-2237
Fragments=145
1       RESOLVED    receptionistConsumer_1.0.0.qualifier
2       RESOLVED    customerConsumer_1.0.0.qualifier
3       RESOLVED    billProducer_1.0.0.qualifier
4       ACTIVE      roomProducer_1.0.0.qualifier
```


6. Room Producer Stopped

```
osgi> stop 4
Stop Room Producer
osgi> ss
"Framework is launched."
```

id	State	Bundle
0	ACTIVE	org.eclipse.osgi_3.17.200.v20220215-2237 Fragments=145
1	RESOLVED	receptionistConsumer_1.0.0.qualifier
2	RESOLVED	customerConsumer_1.0.0.qualifier
3	RESOLVED	billProducer_1.0.0.qualifier
4	RESOLVED	roomProducer_1.0.0.qualifier

7. Customer Consumer Stopped

```
osgi> stop 2
Stop Customer Consumer
osgi> ss
"Framework is launched."
```

id	State	Bundle
0	ACTIVE	org.eclipse.osgi_3.17.200.v20220215-2237 Fragments=145
1	RESOLVED	receptionistConsumer_1.0.0.qualifier
2	RESOLVED	customerConsumer_1.0.0.qualifier
3	ACTIVE	billProducer_1.0.0.qualifier
4	ACTIVE	roomProducer_1.0.0.qualifier

8. Receptionist Consumer Stopped

```
osgi> stop 1
Stop Receptionist Consumer
osgi> ss
"Framework is launched."
```

id	State	Bundle
0	ACTIVE	org.eclipse.osgi_3.17.200.v20220215-2237 Fragments=145
1	RESOLVED	receptionistConsumer_1.0.0.qualifier
2	ACTIVE	customerConsumer_1.0.0.qualifier
3	ACTIVE	billProducer_1.0.0.qualifier
4	ACTIVE	roomProducer_1.0.0.qualifier

5. Sample screenshots of its behavior & outputs.

1. Add Room

Start Receptionist Consumer
Start Room Producer

-----Room Details-----				
ID	Name	Sleeps	Price	Facilities
1	Master	4-Adults	25000	wifi/spa/pool
2	Deluxe	2-Adults	15000	wifi/pool
3	Super	6-Adults	20000	wifi/spa

Add New Room Details : 1
Update Existing Room Details : 2
Delete Existing Room Details : 3
Quit : -1

Which service do you to access :1

Add New Room Details

Enter Name : Normal

Enter Size (Adults) : 2-Adults

Enter Price : 10000

Enter Facilities : wifi

Successfully Added Normal Room Details

Do you want to quit? (y/n) :n

2. Update Room

-----Room Details-----				
ID	Name	Sleeps	Price	Facilities
1	Master	4-Adults	25000	wifi/spa/pool
2	Deluxe	2-Adults	15000	wifi/pool
3	Super	6-Adults	20000	wifi/spa
4	Normal	2-Adults	10000	wifi

Add New Room Details : 1				
Update Existing Room Details : 2				
Delete Existing Room Details : 3				
Quit : -1				
Which service do you to access :2				
Update Room Details				
Enter Room ID : 2				
Enter Name : Deluxe				
Enter Size (Adults) : 3-Adults				
Enter Price : 18000				
Enter Facilities : wifi/pool				
Successfully Updated Deluxe Employee Details				
Do you want to quit? (y/n) :n				

3. Delete Room

-----Room Details-----				
ID	Name	Sleeps	Price	Facilities
1	Master	4-Adults	25000	wifi/spa/pool
2	Deluxe	3-Adults	18000	wifi/pool
3	Super	6-Adults	20000	wifi/spa
4	Normal	2-Adults	10000	wifi

Add New Room Details : 1
Update Existing Room Details : 2
Delete Existing Room Details : 3
Quit : -1

Which service do you to access : 3

Delete Room Details

Enter Room ID : 4

Successfully Deleted Normal Room Details

Do you want to quit? (y/n) : n

4. Exit Room

-----Room Details-----				
ID	Name	Sleeps	Price	Facilities
1	Master	4-Adults	25000	wifi/spa/pool
2	Deluxe	3-Adults	18000	wifi/pool
3	Super	6-Adults	20000	wifi/spa

Add New Room Details : 1
Update Existing Room Details : 2
Delete Existing Room Details : 3
Quit : -1

Which service do you to access : -1

-----Thank you and Good bye!-----
-----Have a nice day!-----

5. Customer Reserve 2 Rooms

Start Customer Consumer

Start Bill Producer

*****Spend Over 40000 And Get A 15% Discount*****

-----Room Details-----

ID	Name	Sleeps	Facilities
1	Master	4-Adults	wifi/spa/pool
2	Deluxe	3-Adults	wifi/pool
3	Super	6-Adults	wifi/spa

Enter the room ID you want to reserve :1

Room number 1 price = Rs.25000

How many rooms do you want to reserve? :2

Room number 1 X 2 price = Rs.50000

Do you want to reserve? (y/n) :y

Adding to the bill....

Succesfully added to the bill Rs.50000

Bill total Rs.50000.0

Do you want to quit? (y/n) :n

Do you want to quit? (y/n) :n

*****Spend Over 40000 And Get A 15% Discount*****

-----Room Details-----

ID	Name	Sleeps	Facilities
1	Master	4-Adults	wifi/spa/pool
2	Deluxe	3-Adults	wifi/pool
3	Super	6-Adults	wifi/spa

Enter the room ID you want to reserve :3

Room number 3 price = Rs.20000

How many rooms do you want to reserve? :1

Room number 3 X 1 price = Rs.20000

Do you want to reserve? (y/n) :y

Adding to the bill....

Succesfully added to the bill Rs.20000

Bill total Rs.70000.0

Do you want to quit? (y/n) :y

Bill printing...

-----Water Vibe Resorts-----

Quantity	Name	Price
2	Master	50000
1	Super	20000

Subtotal price Rs.70000.0

Discount Rs.10500.0

Total price Rs.59500.0

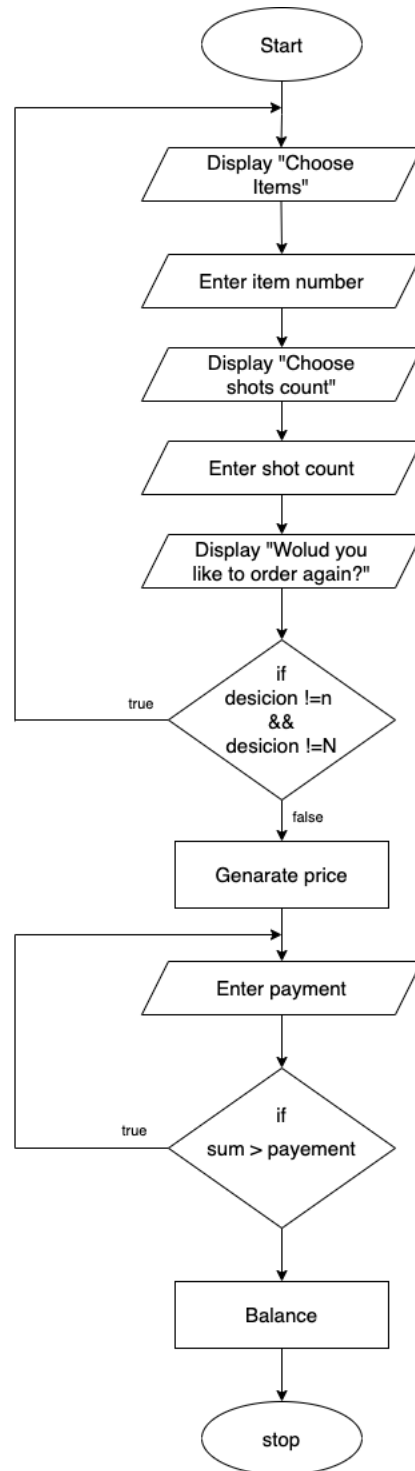
Date and time : 2022/03/24 13:07:25

-----Thank you and Good bye!-----

-----Have a nice day!-----

III. IT20020644 - Ovitigala A.U

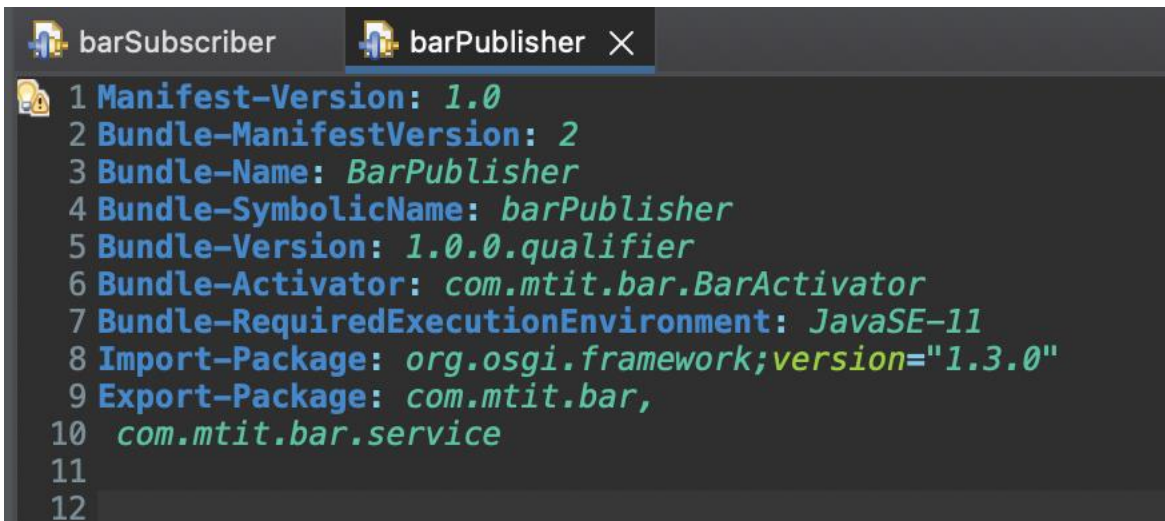
1. Flow Chart.



In this scenario, it represents a bar management, and there are two characters as Bar Publisher and Bartender Consumer. In this case, user can order drinks in the cart until he/she decides to stop the order. After user stops, the bill will be generated automatically. Then the user can enter the payment amount. It must be greater than the drinks bill amount. Then if there is a balance, it will be returned to the user.

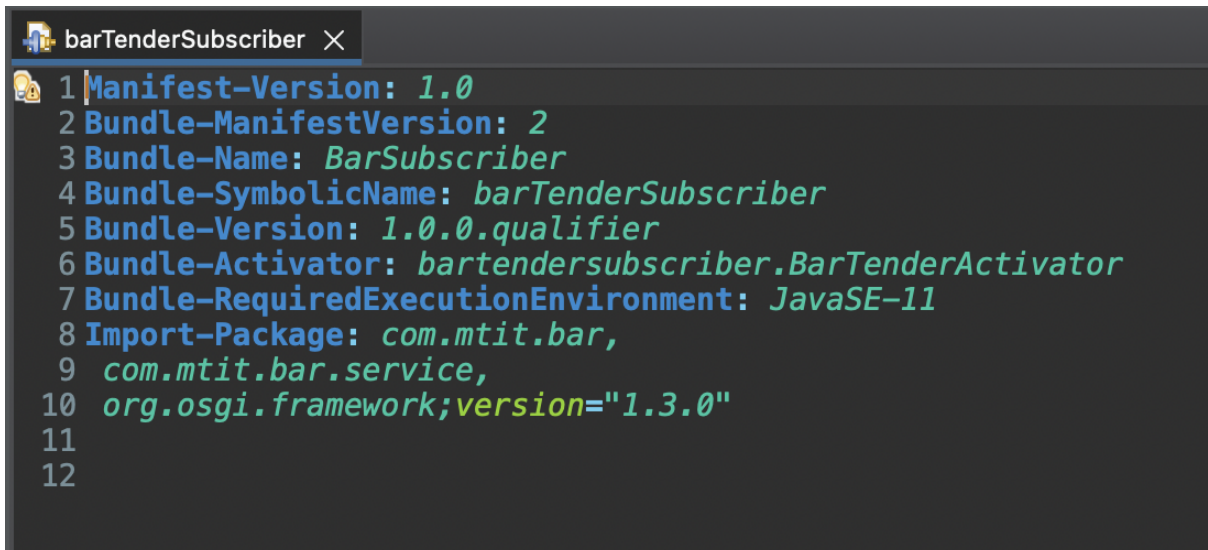
3. Manifest implementation.

1. Bar Producer Manifest



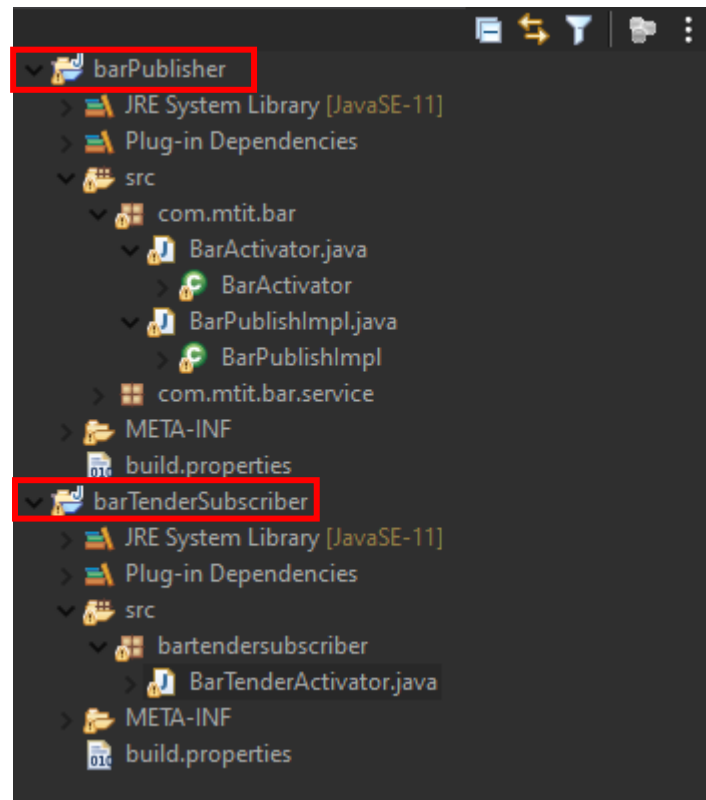
```
barSubscriber  barPublisher X
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: BarPublisher
4 Bundle-SymbolicName: barPublisher
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: com.mtit.bar.BarActivator
7 Bundle-RequiredExecutionEnvironment: JavaSE-11
8 Import-Package: org.osgi.framework;version="1.3.0"
9 Export-Package: com.mtit.bar,
10 com.mtit.bar.service
11
12
```

2. Bartender Consumer Manifest



```
barTenderSubscriber X
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: BarSubscriber
4 Bundle-SymbolicName: barTenderSubscriber
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: bartendersubscriber.BarTenderActivator
7 Bundle-RequiredExecutionEnvironment: JavaSE-11
8 Import-Package: com.mtit.bar,
9 com.mtit.bar.service,
10 org.osgi.framework;version="1.3.0"
11
12
```

3. Bundles.



4. All commands of bundle install and run in OSGi framework.

1. Bar publisher started

```
Console X
b_Publisher [OSGi Framework] /Library/Java/JavaVirtualMachines/temurin-11.jdk/Contents/Home/bin/java (24 Mar 2022, 19:52:10) [pid: 79531]
osgi> start 2
barPublisher Start
osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE     org.eclipse.osgi_3.17.200.v20220215-2237
          Fragments=705
1       ACTIVE     org.eclipse.equinox.simpleconfigurator_1.4.0.v20210315-2228
2       ACTIVE     barPublisher_1.0.0.qualifier
3       ACTIVE     biz.aQute.bnd.util_6.0.0.202110041835
4       ACTIVE     biz.aQute.bndlib_6.0.0.202110041835
5       ACTIVE     ch.qos.logback.classic_1.2.3.v20200428-2012
          Fragments=596
6       ACTIVE     ch.qos.logback.core_1.2.3.v20200428-2012
7       RESOLVED   ch.qos.logback.slf4j_1.2.3.v20200428-2012
          Master=933
8       ACTIVE     com.google.gson_2.8.9.v20220111-1409
9       ACTIVE     com.google.guava_30.1.0.v20210127-2300
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_0.0.20160215.v20161124-1002
```

2. Bar publisher stopped

```
Console X
b_Publisher [OSGi Framework] /Library/Java/JavaVirtualMachines/temurin-11.jdk/Contents/Home/bin/java (24 Mar 2022, 19:52:10) [pid: 79531]
osgi> stop 2
barPublisher Stop

osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE     org.eclipse.osgi_3.17.200.v20220215-2237
          Fragments=705
1       ACTIVE     org.eclipse.equinox.simpleconfigurator_1.4.0.v20210315-2228
2       RESOLVED   barPublisher_1.0.0.qualifier
3       ACTIVE     biz.aQute.bnd.util_6.0.0.202110041835
4       ACTIVE     biz.aQute.bndlib_6.0.0.202110041835
5       ACTIVE     ch.qos.logback.classic_1.2.3.v20200428-2012
          Fragments=596
6       ACTIVE     ch.qos.logback.core_1.2.3.v20200428-2012
7       RESOLVED   ch.qos.logback.slf4j_1.2.3.v20200428-2012
          Master=933
8       ACTIVE     com.google.gson_2.8.9.v20220111-1409
9       ACTIVE     com.google.guava_30.1.0.v20210127-2300
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_0.0.20160215.v20161124-1002
```


3. Bartender subscriber start

```
Overview Dependencies Runtime Build MANIFEST.MF build.properties
Console X
b_Publisher [OSGi Framework] /Library/Java/JavaVirtualMachines/temurin-11.jdk/Contents/Home/bin/java (24 Mar 2022, 19:55:51) [pid: 79594]
osgi> start 3
Start barSubscriber
----- WELCOME TO KURUM-BAR -----

Please choose any of the menu there..
1.) Beer 250.00
2.) Arrack 400.00
3.) Rum 450.00
4.) Gin 420.00
5.) Cocktail 350.00
Choose any item: 2
How many shots? 2
Would you like to order again? Y/N / y/n: n
----- Payment Bill -----

Item          Quantity      Full Amount
Beer           1             250.0
Arrack         2             800.0

Total Purchased items: 2
Total Purchase: 1050.0

Enter Payment: 1200
Here's your change: 150.0
----- Thank you for coming!!!!!! -----

osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE      org.eclipse.osgi_3.17.200.v20220215-2237
          Fragments=706
1       ACTIVE      org.eclipse.equinox.simpleconfigurator_1.4.0.v20210315-2228
2       ACTIVE      barPublisher_1.0.0.qualifier
3       ACTIVE      barTenderSubscriber_1.0.0.qualifier
4       ACTIVE      biz.aQute.bnd.util_6.0.0.202110041835
5       ACTIVE      biz.aQute.bndlib_6.0.0.202110041835
6       ACTIVE      ch.qos.logback.classic_1.2.3.v20200428-2012
          Fragments=597
```


4. Bartender subscriber stopped

```
Overview Dependencies Runtime Build MANIFEST.MF build.properties

Console X
b_Publisher [OSGi Framework] /Library/Java/JavaVirtualMachines/temurin-11.jdk/Contents/Home/bin/java (24 Mar 2022, 19:55:51) [pid: 79594]

osgi> stop 3
Thank you for coming - See you next time
barSubscriber stopped

osgi> ss
"Framework is launched."

id      State      Bundle
0       ACTIVE     org.eclipse.osgi_3.17.200.v20220215-2237
          Fragments=706
1       ACTIVE     org.eclipse.equinox.simpleconfigurator_1.4.0.v20210315-2228
2       ACTIVE     barPublisher_1.0.0.qualifier
3       RESOLVED    barTenderSubscriber_1.0.0.qualifier
4       ACTIVE     biz.aQute.bnd.util_6.0.0.202110041835
5       ACTIVE     biz.aQute.bndlib_6.0.0.202110041835
6       ACTIVE     ch.qos.logback.classic_1.2.3.v20200428-2012
          Fragments=597
7       ACTIVE     ch.qos.logback.core_1.2.3.v20200428-2012
8       RESOLVED    ch.qos.logback.slf4j_1.2.3.v20200428-2012
          Master=934
9       ACTIVE     com.google.gson_2.8.9.v20220111-1409
10      ACTIVE     com.google.quava_30.1.0.v20210127-2300
```

5. Listing bundles

```
Console X
b_subscriber [OSGi Framework] /Library/Java/JavaVirtualMachines/temurin-11.jdk/Contents/Home/bin/java (23 Mar 2022, 23:52:31) [pid: 66486]

id      State      Bundle
0       ACTIVE     org.eclipse.osgi_3.17.200.v20220215-2237
          Fragments=142
1       ACTIVE     barPublisher_1.0.0.qualifier
2       ACTIVE     barTenderSubscriber_1.0.0.qualifier
3       ACTIVE     org.eclipse.equinox.p2.core_2.9.0.v20220210-1157
4       ACTIVE     org.eclipse.wst.sse.core_1.2.700.v202112071542
5       ACTIVE     biz.aQute.bnd.util_6.0.0.202110041835
6       ACTIVE     org.eclipse.wst.common.environment_1.0.401.v202007142017
7       ACTIVE     org.eclipse.e4.core.di.extensions_0.17.100.v20210910-0640
8       ACTIVE     org.eclipse.emf.ecore_2.26.0.v20220123-0838
9       ACTIVE     org.eclipse.equinox.p2.repository_2.6.0.v20220215-0840
10      ACTIVE     org.eclipse.osgi.services_3.10.200.v20210723-0643
11      ACTIVE     org.apache.xerces_2.12.2.v20220131-0835
12      ACTIVE     org.eclipse.e4.core.services_2.3.100.v20210910-0640
13      ACTIVE     org.eclipse.equinox.p2.metadata_2.6.100.v20210813-0606
14      ACTIVE     org.tukaani.xz_1.9.0.v20210624-1259
15      ACTIVE     org.eclipse.core.commands_3.10.100.v20210722-1426
16      ACTIVE     org.eclipse.jface.text_3.20.0.v20220218-1549
17      ACTIVE     org.eclipse.wst.common.emfworkbench.integration_1.2.102.v202007161535
18      ACTIVE     org.apache.felix.scr_2.1.24.v20200924-1939
19      ACTIVE     org.eclipse.equinox.preferences_3.9.100.v20211021-1418
20      ACTIVE     org.apache.felix.gogo.command_1.1.2.v20210111-1007
21      RESOLVED    org.eclipse.ui.cocoa_1.2.400.v20191217-1850
          Master=139
22      RESOLVED    org.eclipse.core.filesystem.macosx_1.3.300.v20210427-1937
          Master=88
23      ACTIVE     org.w3c.dom.svg_1.1.0.v201011041433
24      ACTIVE     org.apache.felix.gogo.shell_1.1.4.v20210111-1007
25      ACTIVE     org.eclipse.e4.ui.bindings_0.13.100.v20210722-1426
26      ACTIVE     org.eclipse.e4.ui.css.swt.theme_3.14.0.v20210520-0735
```

5. Sample screenshots of its behavior & outputs.

1. Order item 1

```
Start barSubscriber
----- WELCOME TO KURUM-BAR -----

Please choose any of the menu there..
1.) Beer 250.00
2.) Arrack 400.00
3.) Rum 450.00
4.) Gin 420.00
5.) Cocktail 350.00
Choose any item: 2
How many shots? 1
Would you like to order again? Y/N / y/n: y
```

2. Order item 2

```
Would you like to order again? Y/N / y/n: y
Please choose any of the menu there..
1.) Beer 250.00
2.) Arrack 400.00
3.) Rum 450.00
4.) Gin 420.00 |
5.) Cocktail 350.00
Would you like to order again? Y/N / y/n: n
----- Payment Bill -----

Item          Quantity    Full Amount
Arrack         1          400.0
Gin            5         2100.0

Total Purchased items: 2
Total Purchase: 2500.0
```

4. Payment and balance

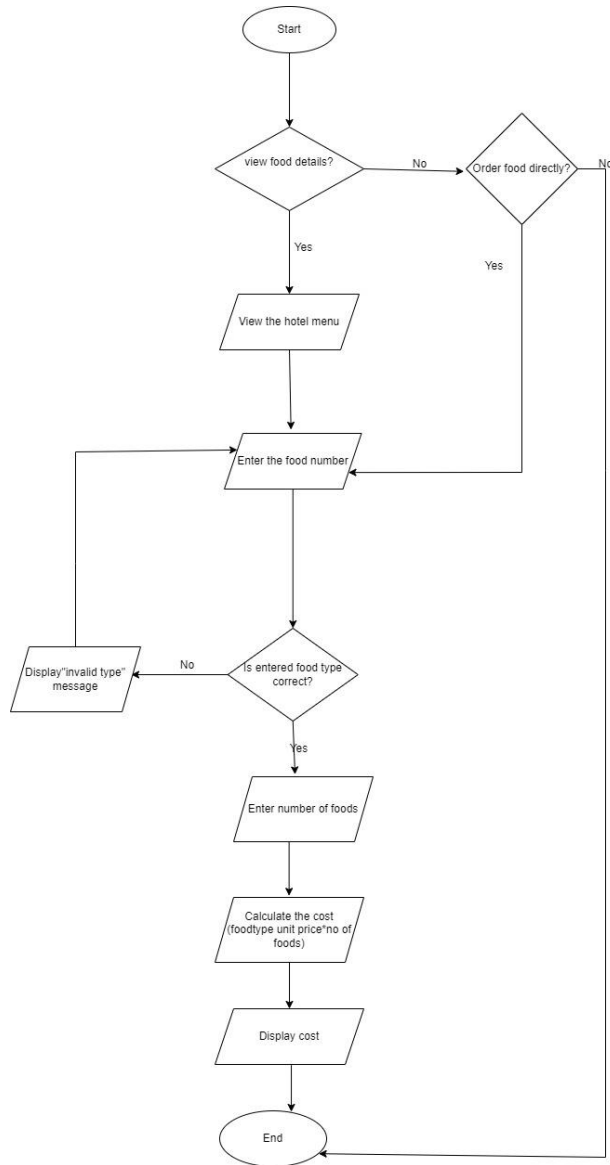
```
Item          Quantity    Full Amount
Arrack         1          400.0
Gin            5         2100.0

Total Purchased items: 2
Total Purchase: 2500.0

Enter Payment: 3000
Here's your change: 500.0
----- Thank you for coming!!!!!! -----
!SESSION 2022-03-24 00:09:35.648 -----
online-buildId:unknown
```

IV. IT20090944 - Udumullaarachchi O.S

1. Flow Chart.



In this section, chef subscribers can submit requests to food producers. As seen in the flowchart above, Chef subscribers can either place direct orders or place orders after seeing the food menu. Chefs can order items by referring to the food type number displayed on the food menu. Additionally, he may order the quantity of foods he wishes to reserve; based on the quantity of foods and the kind of food, the chef subscriber can obtain the total cost of the foods.

2. Manifest implementation.

Chef Subscriber Manifest

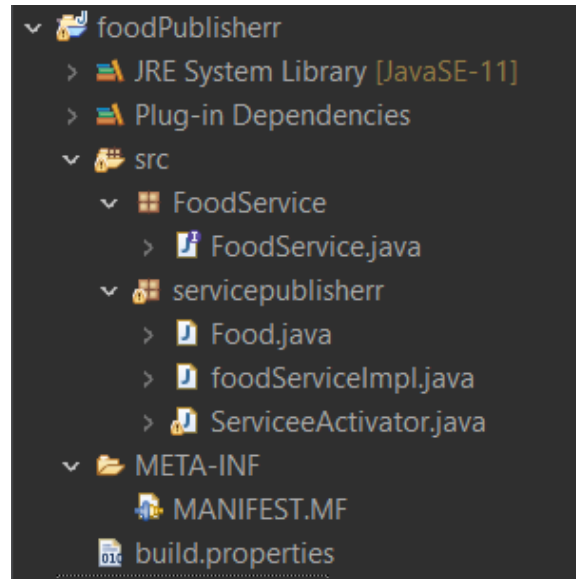
```
chefSubscriber x
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: ServiceSubscriberr
4 Bundle-SymbolicName: chefSubscriber
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: servicesubscriberr.ServiceActivator
7 Bundle-RequiredExecutionEnvironment: JavaSE-11
8 Automatic-Module-Name: ServiceSubscriberr
9 Import-Package: FoodService,
10 org.osgi.framework;version="1.3.0",
11 servicepublisherr
12 Bundle-ActivationPolicy: lazy
13
```

Food Publisher Manifest

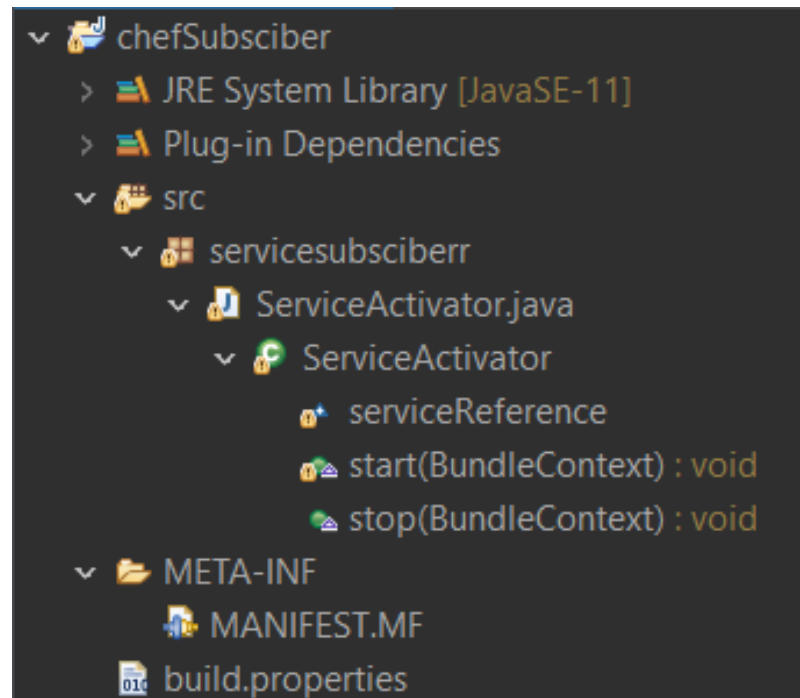
```
chefSubscriber foodPublisherr x
1 Manifest-Version: 1.0
2 Bundle-ManifestVersion: 2
3 Bundle-Name: ServicePublisherr
4 Bundle-SymbolicName: foodPublisherr
5 Bundle-Version: 1.0.0.qualifier
6 Bundle-Activator: servicepublisherr.ServiceActivator
7 Bundle-RequiredExecutionEnvironment: JavaSE-11
8 Automatic-Module-Name: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

3. Bundles.

Food Publisher (Food Menu)



Chef Subscriber



4. All commands of bundle install and run in OSGi framework.

Food Publisher Started

```
9      ACTIVE      com.google.guava_27.1.0.v20190517-1946
10     ACTIVE      com.google.guava_21.0.0.v20170206-1425
11     ACTIVE      com.google.javascript_0.0.20160315.v20161124-1903
12     ACTIVE      com.google.protobuf_2.4.0.v201105131100
13     ACTIVE      com.ibm.icu_67.1.0.v20200706-1749
14     ACTIVE      com.jcraft.jsch_0.1.55.v20190404-1902
15     ACTIVE      com.sun.el_2.2.0.v201303151357
16     ACTIVE      com.sun.jna_5.8.0.v20210503-0343
17     ACTIVE      com.sun.jna_4.5.1.v20190425-1842
18     ACTIVE      com.sun.jna.platform_5.8.0.v20210406-1004
19     ACTIVE      com.sun.jna.platform_4.5.1.v20190425-1842
20     ACTIVE      com.sun.xml.bind_2.3.3.v20201118-1818
21     ACTIVE      com.sun.xml.bind_2.2.0.v20201118-1845
22     ACTIVE      foodPublisherr_1.0.0.qualifier
23     ACTIVE      jakarta.el_4.0.0.v20210105-0527
24     ACTIVE      jakarta.enterprise.cdi-api_2.0.2
25     ACTIVE      jakarta.interceptor-api_1.2.5
26     ACTIVE      jakarta.servlet_5.0.0.v20210105-0527
27     ACTIVE      jakarta.servlet-api_4.0.0
28     ACTIVE      jakarta.servlet.jsp_3.0.0.v20210105-0527
```

Chef Subscriber Started

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

id      State      Bundle
0      ACTIVE      org.eclipse.osgi_3.17.100.v20211104-1730
          Fragments=713
1      ACTIVE      org.eclipse.equinox.simpleconfigurator_1.4.0.v20210315-2228
2      ACTIVE      biz.aQute.bndlib_5.1.2.202007211702
3      ACTIVE      ch.qos.logback.classic_1.2.3.v20200428-2012
          Fragments=604
4      ACTIVE      ch.qos.logback.core_1.2.3.v20200428-2012
5      RESOLVED    ch.qos.logback.slf4j_1.2.3.v20200428-2012
          Master=939
6      ACTIVE      chefSubscriber_1.0.0.qualifier
7      ACTIVE      com.google.gson_2.8.8.v20211029-0838
8      ACTIVE      com.google.guava_30.1.0.v20210127-2300
```

Food Publisher Stopped

```
22.01.23.527 [Session:housekeeper-2a07a02-1] DEBUG org.eclipse.jetty.server.session.AbstractSession

osgi> stop 22
Food reservation service publisher stopped

osgi>
!ENTRY org.eclipse.wst.server.core 4 0 2022-03-24 22:02:27.559
!MESSAGE FrameworkEvent ERROR
!STACK 0
java.lang.NoClassDefFoundError: org/eclipse/core/resources/IResourceChangeListener
    at org.eclipse.wst.server.core.internal.ServerPlugin$1.bundleChanged(ServerPlugin.java:334)
    at org.eclipse.osgi.internal.framework.BundleContextImpl.dispatchEvent(BundleContextImpl.java:488)
    at org.eclipse.osgi.framework.eventmgr.EventManager.dispatchEvent(EventManager.java:228)
    at org.eclipse.osgi.framework.eventmgr.EventManager$EventThread.run(EventManager.java:339)
Caused by: java.lang.ClassNotFoundException: An error occurred while automatically activating bundle
    at org.eclipse.osgi.internal.hooks.EclipseLazyStarter.postFindLocalClass(EclipseLazyStarter.java:443)
    at org.eclipse.osgi.internal.loader.classpath.ClasspathManager.findLocalClass(ClasspathManager.java:441)
    at org.eclipse.osgi.internal.loader.ModuleClassLoader.findLocalClass(ModuleClassLoader.java:283)
```

New configuration (1) [OSGi Framework] C:\Program Files\Java\jdk-11.0.11\bin\javaw.exe (Mar 24, 2022, 9:39:43 PM)

4	ACTIVE	ch.qos.logback.core_1.2.3.v20200428-2012
5	RESOLVED	ch.qos.logback.slf4j_1.2.3.v20200428-2012 Master=939
6	ACTIVE	chefSubscriber_1.0.0.qualifier
7	ACTIVE	com.google.gson_2.8.8.v20211029-0838
8	ACTIVE	com.google.guava_30.1.0.v20210127-2300
9	ACTIVE	com.google.guava_27.1.0.v20190517-1946
10	ACTIVE	com.google.guava_21.0.0.v20170206-1425
11	ACTIVE	com.google.javascript_0.0.20160315.v20161124-1903
12	ACTIVE	com.google.protobuf_2.4.0.v201105131100
13	ACTIVE	com.ibm.icu_67.1.0.v20200706-1749
14	ACTIVE	com.jcraft.jsch_0.1.55.v20190404-1902
15	ACTIVE	com.sun.el_2.2.0.v201303151357
16	ACTIVE	com.sun.jna_5.8.0.v20210503-0343
17	ACTIVE	com.sun.jna_4.5.1.v20190425-1842
18	ACTIVE	com.sun.jna.platform_5.8.0.v20210406-1004
19	ACTIVE	com.sun.jna.platform_4.5.1.v20190425-1842
20	ACTIVE	com.sun.xml.bind_2.3.3.v20201118-1818
21	ACTIVE	com.sun.xml.bind_2.2.0.v20201118-1845
22	RESOLVED	foodPublisherr_1.0.0.qualifier
23	ACTIVE	jakarta.el_4.0.0.v20210105-0527
24	ACTIVE	jakarta.enterprise.cdi-api_2.0.2
25	ACTIVE	jakarta.interceptor-api_1.2.5
26	ACTIVE	jakarta.servlet_5.0.0.v20210105-0527

Chef Chef Subscriber Stopped

```
946      ACTIVE      org.w3c.dom.svg_1.1.0.v201011041433
osgi> stop 6
Food reservation service subscriber stopped

osgi>
!ENTRY org.eclipse.wst.server.core 4 0 2022-03-24 22:06:26.097
!MESSAGE FrameworkEvent ERROR
!STACK 0

osgi> ss
"Framework is launched."

id      State      Bundle
0      ACTIVE      org.eclipse.osgi_3.17.100.v20211104-1730
          Fragments=713
1      ACTIVE      org.eclipse.equinox.simpleconfigurator_1.4.0.v20210315-2228
2      ACTIVE      biz.aQute.bndlib_5.1.2.202007211702
3      ACTIVE      ch.qos.logback.classic_1.2.3.v20200428-2012
          Fragments=604
4      ACTIVE      ch.qos.logback.core_1.2.3.v20200428-2012
5      RESOLVED    ch.qos.logback.slf4j_1.2.3.v20200428-2012
          Master=939
6      RESOLVED    chefSubscriber_1.0.0.qualifier
7      ACTIVE      com.google.gson_2.8.8.v20211029-0838
8      ACTIVE      com.google.guava_30.1.0.v20210127-2300
9      ACTIVE      com.google.guava_27.1.0.v20190517-1946
10     ACTIVE      com.google.guava_29.0-jre.v20200517-1946
```

5.Sample screenshots of its behavior & outputs

View food menu

```
====Welcome to the hotel food services====
View Food details : Press '1'
Order Food       : Press '2'
Type as 'exit' to exit.
=====

Enter option: 1

Food number : 001
Food type : Rice
Food cost per day : 550.0

Food number : 002
Food type : Noodles
Food cost per day : 300.0

Food number : 003
Food type : Pasta
Food cost per day : 800.0
```


Select the food number from the menu and enter no of foods that want to reserve

```
=====
Enter option: 2
Enter Food number : 001
Enter no of foods that you want to reserve : 3
```

According to the food number (food type) and no of foods get the total cost for foods.

```
Enter option: 2
Enter Food number : 001
Enter no of foods that you want to reserve : 3
Total cost : 1650.0
```

