



Sri Lanka Institute of Information
Technology

SE3030 – Software Architecture

Assignment 01 - FoodZilla

Project ID: CSSE_WE_44

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Introduction

This is an OSGi system implementation of the producer (Publisher) – Consumer situation. Microkernel Architecture was used in this program and this was deployed by Eclipse Equinox. Our Group creates this simple OSGi architecture for Family Restaurant management system. Microkernel Architecture was used to create this Restaurant management system Which was built with Java and Apache Felix OSGI Framework.

There are separate service bundles as producers (Publisher) and to consume that service as a consumer. To get best practices of the OSGi we used producer service interface only not the implementation Consumers can work through the interfaces.

This Micro Kernal architecture is based on the Family Restaurant management system.

In here there are four main categories as Employee management, Food item management, Foodservice management and Reservation management. There is a Producer (Publisher) for each Four Consumers. In Employee management An Employee can be added to the system by inserting basic details of the employee (Name, Age, Phone number and Employee NIC). A selected employee's details can be searched and all employee details can be retrieved from the system. An employee can be deleted from the system as well. In Food item management a food item can be added to the system by inserting basic details of the food item (Food name, Food type and Food category). The all details of the food item can be retrieved from the system. And also there are several methods implemented for Method for get food item from Menu by Id, Method for get food item from Menu by name and Method for get price for food item from Menu by Id. There is a method implemented for deleting food item from Menu by Id. In Foodservice management there are several methods for order food for a particular table, method user can get food price by entering the food id and get all the food that has been ordered. And also, food can be ordered through the system by inserting Food Name, Quantity, Total amount and Table ID. In reservation management there are two main sides as admin and user. User can come up with a reservation. In there a new reservation can be inserted. There are methods to get all the reservations in the system,

get all the reservations to a specific user, method to delete the user and method to get all the priority reservations or all the normal reservation.

1. Employee Management:

- User selects "Employee Management" option from the main menu.
- User selects "Add Employee" option.
- User enters the basic details of the employee and submits the form.
- System saves the employee details and displays a success message.
- User selects "Search Employee" option.
- User enters the employee name or ID and submits the form.
- System displays the matching employee details.
- User selects "Delete Employee" option.
- User enters the employee ID and submits the form.
- System deletes the employee from the system and displays a success message.

2. Food Item Management:

- User selects "Food Item Management" option from the main menu.
- User selects "Add Food Item" option.
- User enters the basic details of the food item and submits the form.
- System saves the food item details and displays a success message.
- User selects "Get Food Item Details" option.
- User enters the food item name or ID and submits the form.
- System displays the matching food item details.
- User selects "Delete Food Item" option.
- User enters the food item ID and submits the form.
- System deletes the food item from the menu and displays a success message.

3. Food Service Management:

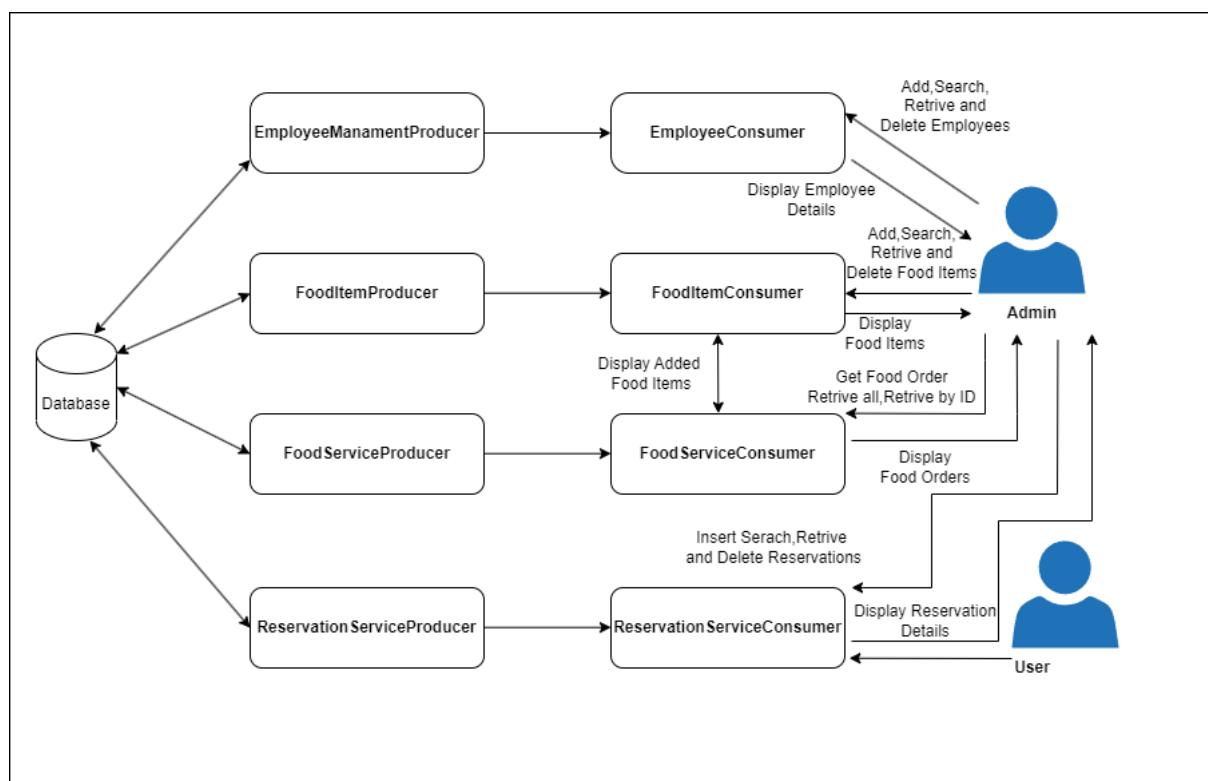
- User selects "Food Service Management" option from the main menu.
- User selects "Order Food" option.

- User enters the table ID, food name, quantity and total amount and submits the form.
- System saves the order details and displays a success message.
- User selects "Get Food Price" option.
- User enters the food item ID and submits the form.
- System displays the price of the food item.
- User selects "View Ordered Food" option.
- User enters the table ID and submits the form.
- System displays the list of all the food items ordered for that table.

4. Reservation Management:

- User selects "Reservation Management" option from the main menu.
- User selects "Make Reservation" option.
- User enters the reservation details and submits the form.
- System saves the reservation and displays a success message.
- User selects "View All Reservations" option.
- System displays the list of all the reservations in the system.
- User selects "View My Reservations" option.
- User enters the user ID and submits the form.
- System displays the list of all the reservations made by that user.
- User selects "Delete Reservation" option.
- User enters the reservation ID and submits the form.
- System deletes the reservation from the system and displays a success message.
- User selects "View Priority Reservations" option.
- System displays the list of all the priority reservations.

Diagrammatic Overview



A) Manifest Implementation

1. Employee Consumer Manifest

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

2. Employee Producer Manifest

```
EmployeeProducer ✕  
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.Activator  
7 Bundle-RequiredExecutionEnvironment: JavaSE-11  
8 Automatic-Module-Name: EmployeeProducer  
9 Export-Package: employeeproducer  
10 Import-Package: org.osgi.framework;version="1.3.0", restuarentdb  
11 Bundle-ActivationPolicy: lazy  
12 Export-Package: employeeproducer  
13
```

3. Food Item Consumer Manifest

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

4. Food Item Producer Manifest

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

5. Food Service Consumer Manifest

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

6. Food Service Producer Manifest

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


7. Reservation Service Producer Manifest

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

8. Reservation Service Consumer Manifest

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

C) All commands of Bundle install and run in OSGi Framework.

1. Employee Consumer Stop and Start

```
osgi> stop 3
Employee Producer service stopped

osgi> start 3
Employee Producer service started
Sun Mar 19 22:34:33 IST 2023 WARN: Establishing SSL connection with
DB Connection Successfull
osgi> start 2
Employee Consumer Service started

-----FoodZilla Family Restaurant-----
```

2. Food Item Consumer Stop and Start

```
FoodItem Consumer Service started
FoodItem Producer service started
Resturant Publisher service started
Sun Mar 19 22:43:25 IST 2023 WARN: Establishing SSL connection without se
DB Connection Successfull

-----FoodZilla Family Restaurant - Admin Menu Section -----
```

3. Food Service Consumer Stop and Start

```
Food Service Consumer started
FoodOrder Publisher service started
Resturant Publisher service started
Sun Mar 19 22:53:14 IST 2023 WARN: Establishing SSL connection without server
DB Connection Successfull
```

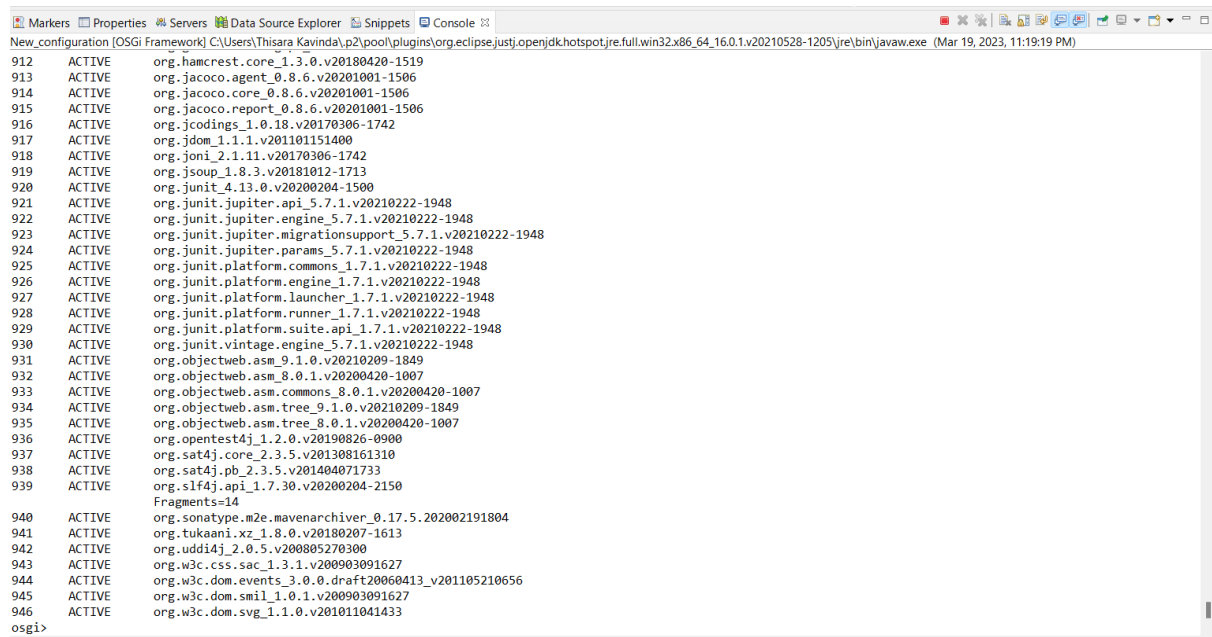
```
-----FoodZilla Family Restaurant - Admin Order Section -----
```

4. Reservation Consumer Stop and Start

```
Reservation Consumer seervice started
Resturant reservation service started
Resturant Publisher service started
Sun Mar 19 22:57:34 IST 2023 WARN: Establishing SSL connection without
DB Connection Successfull
```

```
-----FoodZilla Family Restaurant - Reservation -----
Enter (c) if you are a customer and (a) if you are an admin:
```

5. All Bundles



```
Markers Properties Servers Data Source Explorer Snippets Console
New_configuration [OSGi Framework] C:\Users\Thisara Kavinda\p2\pool\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64_16.0.1.v20210528-1205\jre\bin\javaw.exe (Mar 19, 2023, 11:19:19 PM)

912 ACTIVE org.hamcrest.core_1.3.0.v20180420-1519
913 ACTIVE org.jacoco.agent_0.8.6.v20201001-1506
914 ACTIVE org.jacoco.core_0.8.6.v20201001-1506
915 ACTIVE org.jacoco.report_0.8.6.v20201001-1506
916 ACTIVE org.jcodings_1.0.18.v20170306-1742
917 ACTIVE org.jdom_1.1.1.v201101151400
918 ACTIVE org.joni_2.1.11.v20170306-1742
919 ACTIVE org.jsoup_1.8.3.v20181012-1713
920 ACTIVE org.junit_4.13.0.v20200204-1500
921 ACTIVE org.junit.jupiter.api_5.7.1.v20210222-1948
922 ACTIVE org.junit.jupiter.engine_5.7.1.v20210222-1948
923 ACTIVE org.junit.jupiter.migrationsupport_5.7.1.v20210222-1948
924 ACTIVE org.junit.jupiter.params_5.7.1.v20210222-1948
925 ACTIVE org.junit.platform.commons_1.7.1.v20210222-1948
926 ACTIVE org.junit.platform.engine_1.7.1.v20210222-1948
927 ACTIVE org.junit.platform.launcher_1.7.1.v20210222-1948
928 ACTIVE org.junit.platform.runner_1.7.1.v20210222-1948
929 ACTIVE org.junit.platform.suite.api_1.7.1.v20210222-1948
930 ACTIVE org.junit.vintage.engine_5.7.1.v20210222-1948
931 ACTIVE org.objectweb.asm_9.1.0.v20210209-1849
932 ACTIVE org.objectweb.asm_8.0.1.v20200420-1007
933 ACTIVE org.objectweb.asm.commons_8.0.1.v20200420-1007
934 ACTIVE org.objectweb.asm.tree_9.1.0.v20210209-1849
935 ACTIVE org.objectweb.asm.tree_8.0.1.v20200420-1007
936 ACTIVE org.opentest4j_1.2.0.v20190826-0900
937 ACTIVE org.sat4j.core_2.3.5.v201308161310
938 ACTIVE org.sat4j.pb_2.3.5.v201404071733
939 ACTIVE org.slf4j.api_1.7.30.v20200204-2150
    Fragments=14
940 ACTIVE org.sonatype.m2e.mavenarchiver_0.17.5.202002191804
941 ACTIVE org.tukaani.xz_1.8.0.v20180207-1613
942 ACTIVE org.uddi4j_2.0.5.v200805270300
943 ACTIVE org.w3c.css.sac_1.3.1.v200903091627
944 ACTIVE org.w3c.dom.events_3.0.0.draft20060413_v201105210656
945 ACTIVE org.w3c.dom.smil_1.0.1.v200903091627
946 ACTIVE org.w3c.dom.svg_1.1.0.v201011041433

osgi>
```

D) Sample Screenshots of its Behaviour & Outputs

1. Employee Add

```
-----FoodZilla Family Restaurant-----
1 - Add Employee
2 - Get all Employees
3 - Search Employee from NIC
4 - Delete Employee from NIC
Choose an option : 1
Enter Employee Name :
Kamal
Enter Employee Age :
23
Enter Employee Phone Number :
0771234567
Enter Employee NIC :
111111111111
Employee successfully inserted ...
```

Do you want to Add Another Employee (y/n)

2. Employee View All

```
-----FoodZilla Family Restaurant-----
1 - Add Employee
2 - Get all Employees
3 - Search Employee from NIC
4 - Delete Employee from NIC
Choose an option : 2
1          Kamal          23          771234567
```

3. Employee Delete

```
-----FoodZilla Family Restaurant-----
1 - Add Employee
2 - Get all Employees
3 - Search Employee from NIC
4 - Delete Employee from NIC
Choose an option : 4
Enter NIC :
111111111111
Successfully Deleted!
```

4. Food Item Add

```
-----FoodZilla Family Restaurant - Admin Menu Section -----
1 - Add Food Item into the Menu
2 - Get all food Items in the Menu
3 - Search food Item by Id in the Menu
4 - Search food Item by name in the Menu
5 - Delete food Item in the Menu
Choose an option : 1
----- FoodZilla Family Restaurant : Add Food Item into the Menu -----
Enter Food Name :
Chicken fried rice
Enter Food Type :
rice
Enter Food Price :
630.00
Food Item successfully inserted ...

Do you want to Add Another food item (y/n)
n
```

5. Food Item View All

```
-----FoodZilla Family Restaurant - Admin Menu Section -----
1 - Add Food Item into the Menu
2 - Get all food Items in the Menu
3 - Search food Item by Id in the Menu
4 - Search food Item by name in the Menu
5 - Delete food Item in the Menu
Choose an option : 2

----- Rice -----

1  Chicken fried rice          rice          630.00

----- Soup -----

No Items Available

----- Kottu -----

No Items Available

----- Beverage -----

No Items Available
```

6. Food Item Delete

-----FoodZilla Family Restaurant - Admin Menu Section -----

- 1 - Add Food Item into the Menu
 - 2 - Get all food Items in the Menu
 - 3 - Search food Item by Id in the Menu
 - 4 - Search food Item by name in the Menu
 - 5 - Delete food Item in the Menu
- Choose an option : 5

----- Rice -----

1	Chicken fried rice	rice	630.00
---	--------------------	------	--------

----- Soup -----

No Items Available

----- Kottu -----

No Items Available

----- Beverage -----

No Items Available

Enter Food ID To Delete : 1

Successfully deleted Food Item - foodId

7. Food Service Oder Food and get All Ordered Food

```
-----FoodZilla Family Restaurant - Admin Order Section -----
1 - Order food
2 - Get all oredred food
Choose an option : 1
-----FoodZilla Family Restaurant : Add Food Item into the Menu -----
Enter Food id :
1
Enter quantity:
2
Enter table id :
1
Food ordered successfully ...

Do you want to Add Another order? (y/n)
n

-----FoodZilla Family Restaurant - Admin Order Section -----
1 - Order food
2 - Get all oredred food
Choose an option : 2
1 1 2 0.00
```


8. Reservation Add

```
-----FoodZilla Family Restaurant - Reservation -----
Enter (c) if you are a customer and (a) if you are an admin:
c
-----          FoodZilla Family Restaurant : Reservation          -----
Enter Customer Name :
Nimal
Enter Number of Guest :
3
Enter Customer Phone Number :
0771234567
Enter Reservation Date ( dd/mm/yyyy ) :
23/10/2023
Enter 1 for priority reservation and 0 for normal reservation :
1
Reservation successfully added ...

Do you want to Add Another Reservation(y/n)
n
```

9. Reservation View All

```
-----FoodZilla Family Restaurant - Reservation -----
Enter (c) if you are a customer and (a) if you are an admin:
a
1 - Get all Reservations
2 - Get reservation by name
3 - Delete reservation
4 - Get priority/normal reservations
Choose an option : 1
-----
```

Reservation ID	Customer Name	Number of guests	Phone number	Rservation date	Priority
1	Nimal	3	771234567	23/10/2023	1

10. Reservation Delete

```
-----FoodZilla Family Restaurant - Reservation -----
Enter (c) if you are a customer and (a) if you are an admin:
a
1 - Get all Reservations
2 - Get reservation by name
3 - Delete reservation
4 - Get priority/normal reservations
Choose an option : 3
Enter customer name : Enter reservation date ( dd/mm/yyyy ): 23/10/2023
Successfully deleted reservation
```