Sri Lanka Institute of Information Technology

Job & Training Exchange Platform

Submitted by

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Git Hub Repository Link: https://github.com/IT21375514/SE3030_SA_OSGI_Assignment_1
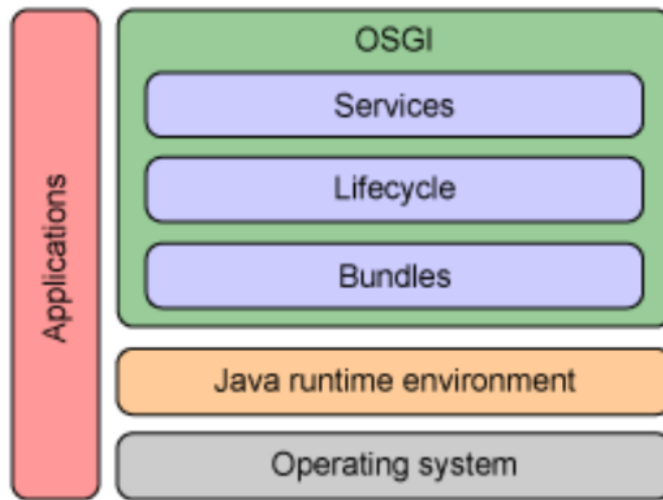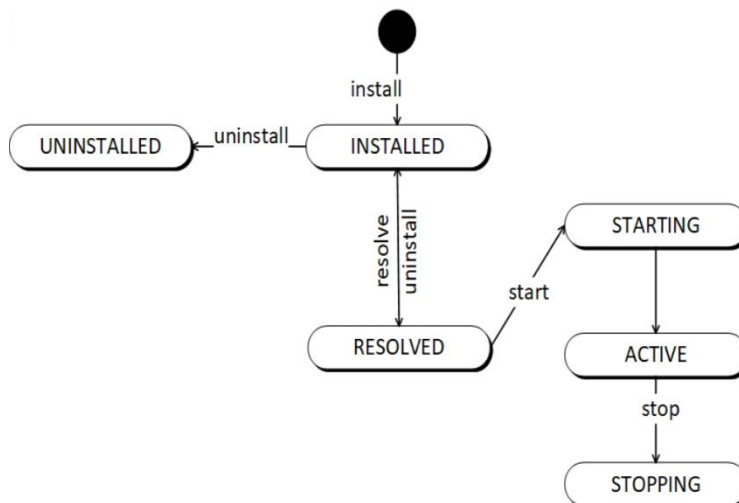
Figure 1: OSGI Architecture

Figure 2: OSGI Behaviors

INTRODUCTION

The Job & Training Exchange Platform is a comprehensive platform designed to facilitate the interaction between companies, job seekers, job trainers, and training seekers. Utilizing the power of the OSGi (Open Service Gateway Initiative) framework, this portal offers a dynamic and modular architecture to efficiently manage and deliver various services.

- Company Producer
- Job Producer
- Job Trainer Producer
- Training Producer
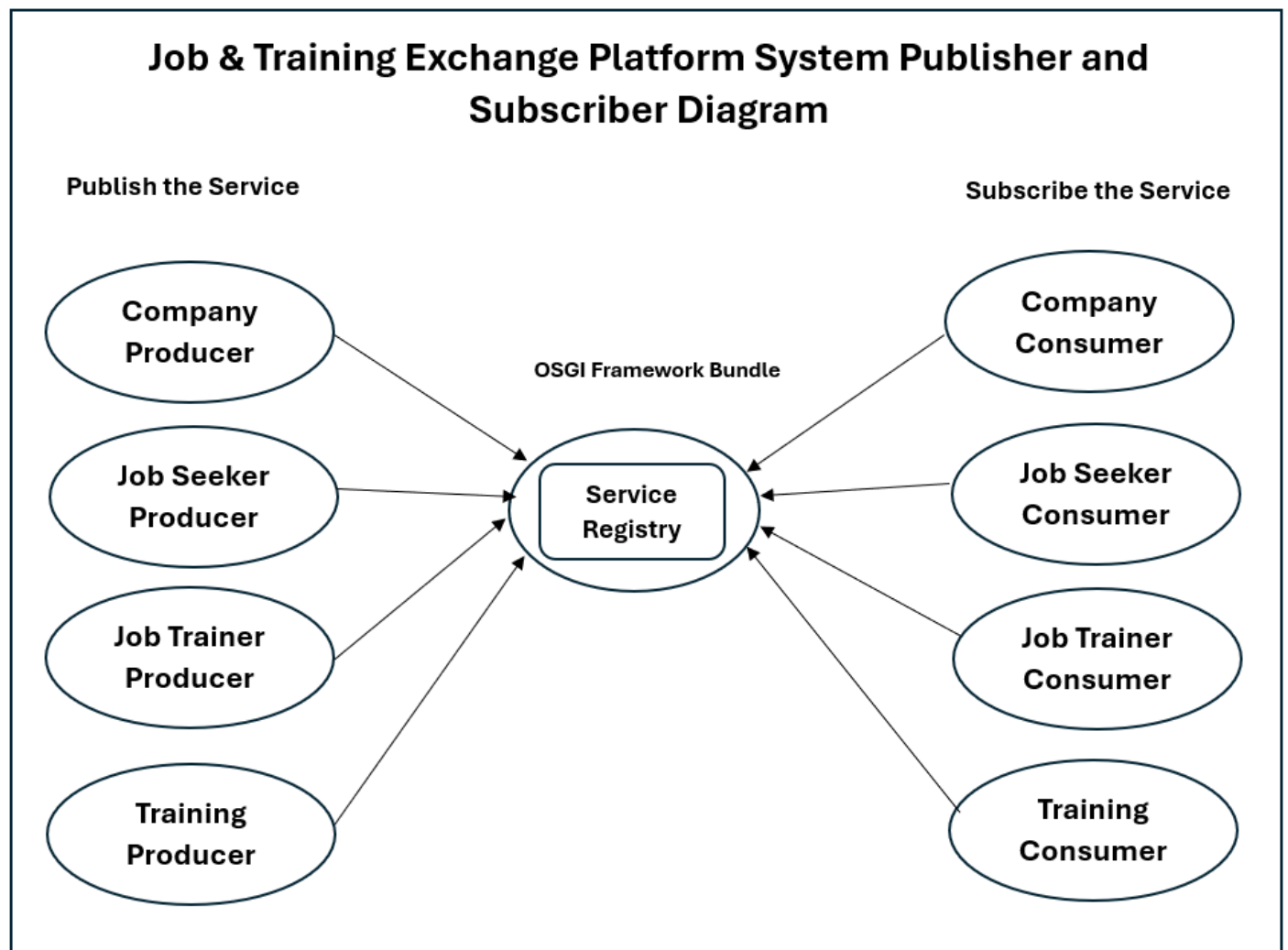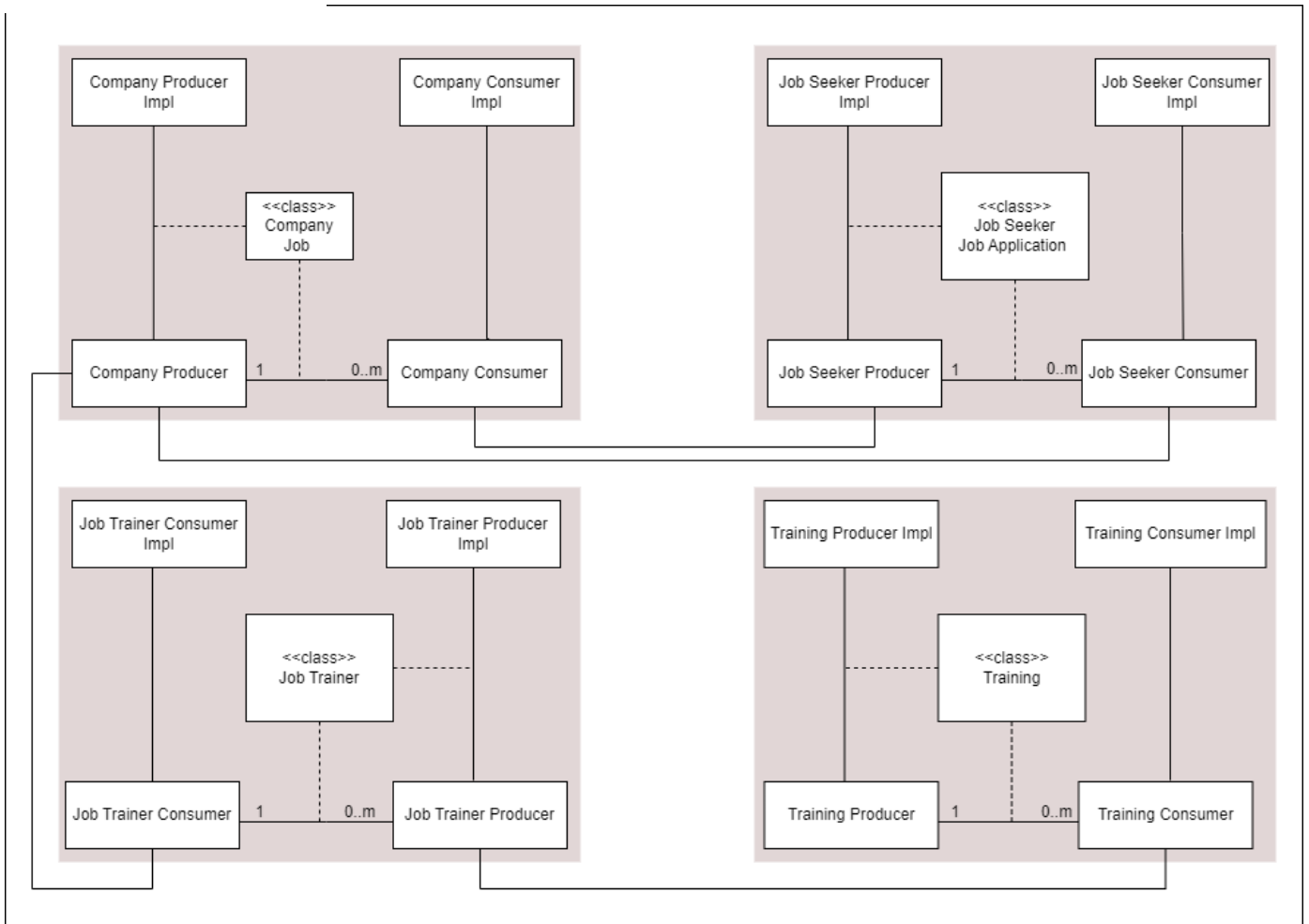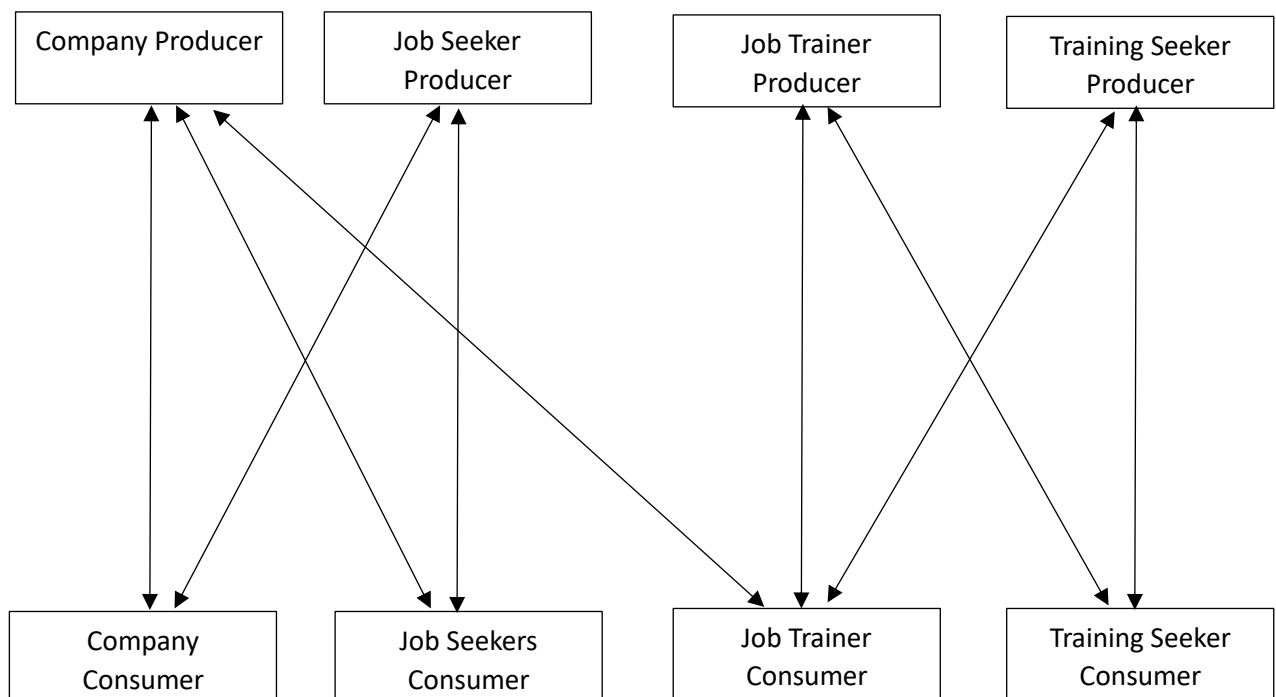
Scenario Explained through diagram.
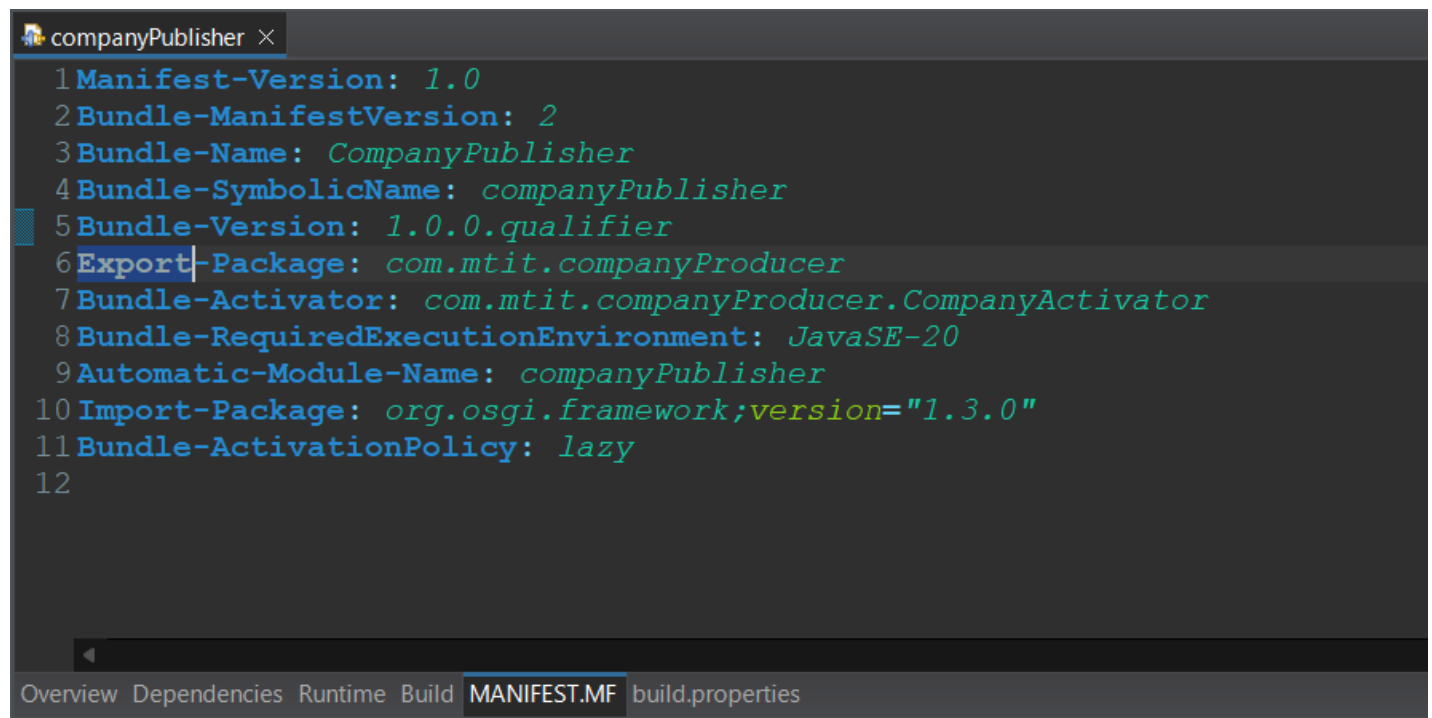
Diagram (i)

Diagram (ii)

Manifest implementation (Exported services/ imported services)

IT21375682 – Shandeep. J

Company Producer – Company Consumer

Companies Producer-Consumer provides a seamless platform for companies to interact with job seekers and other individuals. Company Consumer add information and manage their profiles, as well as to post and manage job listings. Leveraging the OSGi framework, the system efficiently communicates these details to consumers, such as job seekers, allowing them to access and apply for job opportunities. Additionally, by integrating with the Job Seeker Producer component, the system retrieves and delivers job applications, enriching the job-seeking experience for both companies and individuals. Through this cohesive producer-consumer model

Manifest for Company Producer.

```
companyPublisher ×
 1 Manifest-Version: 1.0
 2 Bundle-ManifestVersion: 2
 3 Bundle-Name: CompanyPublisher
 4 Bundle-SymbolicName: companyPublisher
 5 Bundle-Version: 1.0.0.qualifier
 6 Export-Package: com.mtit.companyProducer
 7 Bundle-Activator: com.mtit.companyProducer.CompanyActivator
 8 Bundle-RequiredExecutionEnvironment: JavaSE-20
 9 Automatic-Module-Name: companyPublisher
10 Import-Package: org.osgi.framework;version="1.3.0"
11 Bundle-ActivationPolicy: lazy
12

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

Import package - **Import-Package**: org.osgi.framework;*version*="1.3.0"

Export package - **Export-Package**: com.mtit.companyProducer

Company Producer imported Services.

Company Producer exported Services.

Manifest for Company Consumer.

```
   companySubcriber ×
 1 Manifest-Version: 1.0
 2 Bundle-ManifestVersion: 2
 3 Bundle-Name: CompanySubcriber
 4 Bundle-SymbolicName: companySubcriber
 5 Bundle-Version: 1.0.0.qualifier
 6 Bundle-Activator: com.mtit.companyConsumer.CompanyActivator
 7 Bundle-RequiredExecutionEnvironment: JavaSE-20
 8 Automatic-Module-Name: companySubcriber
 9 Export-Package: com.mtit.companyConsumer
10 Import-Package: com.mtit.companyProducer,
11  com.mtit.jobseekerproducer,
12  org.osgi.framework;version="1.3.0"
13 Bundle-ActivationPolicy: lazy
14 |

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

Import Package - **Import-Package**: com.mtit.companyProducer,

com.mtit.jobseekerproducer,

org.osgi.framework;version="1.3.0"

Export package - **Export-Package**: *com.mtit.companyConsumer*

Company Consumer imported Services.

```
   companySubcriber ×
 Dependencies

Required Plug-ins
Specify the list of plug-ins required for the operation of this plug-in.

                                    Add...
                                    Remove
                                    Up
                                    Down
                                    Properties...
                                    Total: 0

Automated Management of Dependencies

Imported Packages
Specify packages on which this plug-in depends without explicitly identifying
their originating plug-in.

 com.mtit.companyProducer              Add...
 com.mtit.jobseekerproducer            Remove
 org.osgi.framework (1.3.0)            Properties...

                                       Total: 3

Dependency Analysis

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

Company Consumer exported Services.

IT21375514– Sanjayan. C

Job Seeker Producer – Job Seeker Consumer

Job Seeker Producer- Consumer provides a seamless platform for individuals to interact with job opportunities. Job seekers consumers, utilize the system to input their demographic information and manage their profiles. Leveraging OSGi's dynamic service architecture, the system efficiently communicates with the Company Producer, through this integration, job seekers gain access to job listings provided by companies. This producer-consumer model ensures efficient communication between the Job Seeker and Company Producers, enabling job seekers to browse, apply for, and potentially secure employment opportunities.

Manifest for Job Seeker Producer

```
JobSeekerProducer ×
 1 Manifest-Version: 1.0
 2 Bundle-ManifestVersion: 2
 3 Bundle-Name: JobSeekerProducer
 4 Bundle-SymbolicName: JobSeekerProducer
 5 Bundle-Version: 1.0.0.qualifier
 6 Export-Package: com.mtit.jobseekerproducer
 7 Bundle-Activator: com.mtit.jobseekerproducer.JobSeekerProducerActivator
 8 Bundle-RequiredExecutionEnvironment: JavaSE-20
 9 Automatic-Module-Name: JobSeekerProducer
10 Import-Package: org.osgi.framework;version="1.3.0"
11 Bundle-ActivationPolicy: lazy
12

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

Import Package - **Import-Package**: org.osgi.framework;version="1.3.0"

Export package - **Export-Package**: *com.mtit.jobseekerproducer*

Job Seeker Producer Imported services.

Job Seeker Producer Exported services.

Manifest for Job Seeker Consumer.


```
JobSeekerConsumer ×
                    JobSeekerConsumer/META-INF/MANIFEST.MF
 1 Manifest-Version: 1.0
 2 Bundle-ManifestVersion: 2
 3 Bundle-Name: JobSeekerConsumer
 4 Bundle-SymbolicName: JobSeekerConsumer
 5 Bundle-Version: 1.0.0.qualifier
 6 Bundle-Activator: com.mtit.jobseekerconsumer.JobSeekerConsumerActivator
 7 Bundle-RequiredExecutionEnvironment: JavaSE-20
 8 Automatic-Module-Name: JobSeekerConsumer
 9 Export-Package: com.mtit.jobseekerconsumer
10 Import-Package: com.mtit.companyProducer,
11  com.mtit.jobseekerproducer,
12  org.osgi.framework;version="1.3.0"
13 Bundle-ActivationPolicy: lazy
14
```

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

Import Package - **Import-Package**: com.mtit.companyProducer,
                                    com.mtit.jobseekerproducer,
                                  org.osgi.framework;version="1.3.0"

Export package - **Export-Package**: com.mtit.jobseekerconsumer

Job Seeker Consumer Imported services.


```
JobSeekerConsumer ×
Dependencies

Required Plug-ins                                    Imported Packages
Specify the list of plug-ins required for the         Specify packages on which this plug-in depends without explicitly identifying
operation of this plug-in.                            their originating plug-in.

                                    Add...             com.mtit.companyProducer              Add...
                                    Remove             com.mtit.jobseekerproducer            Remove
                                    Up                 org.osgi.framework (1.3.0)            Properties...
                                    Down
                                    Properties...
                                    Total: 0                                                 Total: 3

▸ Automated Management of Dependencies                ▸ Dependency Analysis
```

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

Job Seeker Consumer Exported services.

IT21194894 -Balakrishnan. K. D

Job Trainer Producer – Job Trainer Consumer

Job Trainer Producer – Consumers provides a seamless platform for individuals to interact with training seekers and their company. Job Trainer Consumers utilize the system to input their information. They have the flexibility to modify or delete their details as needed, ensuring accuracy and relevance of their profiles. Through dynamic service communication facilitated by OSGi, the system efficiently interacts with the Company Producer, leveraging this integration, job trainers gain access to the registered company information, enabling them to select and provide training services. This producer-consumer model fosters seamless communication between job trainers and companies within the OSGi environment, streamlining the process of connecting trainers with organizations and facilitating the delivery of training programs.

Manifest file of Job Trainer Producer

```
🔩 JobTrainerProducer ×                                                        ▭ ⬚
 1 Manifest-Version: 1.0
 2 Bundle-ManifestVersion: 2
 3 Bundle-Name: JobTrainerProducer
 4 Bundle-SymbolicName: JobTrainerProducer
 5 Bundle-Version: 1.0.0.qualifier
 6 Bundle-Activator: com.mtit.JobTrainerProducer.JobTrainerActivator
 7 Bundle-Vendor: MTIT
 8 Bundle-RequiredExecutionEnvironment: JavaSE-17
 9 Automatic-Module-Name: JobTrainerProducer
10 Import-Package: org.osgi.framework;version="1.3.0"
11 Export-Package: com.mtit.JobTrainerProducer
12

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

Import/Export Packages -

Import Package - **Import-Package**: org.osgi.framework;version="1.3.0"

Export package - **Export-Package**: com.mtit.JobTrainerProducer

Job Trainer Producer - Imported services

JobTrainerProducer ✕

Dependencies

Required Plug-ins

Specify the list of plug-ins required for the operation of this plug-in.

Add...
Remove
Up
Down
Properties...

Total: 0

▸ **Automated Management of Dependencies**

Imported Packages

Specify packages on which this plug-in depends without explicitly identifying their originating plug-in.

org.osgi.framework (1.3.0)

Add...
Remove
Properties...

Total: 1

▸ **Dependency Analysis**

Overview Dependencies Runtime Build MANIFEST.MF build.properties

Job Trainer Producer - Export services

JobTrainerProducer ✕

Runtime

Exported Packages

Exported packages can be accessed by other OSGi components.

com.mtit.JobTrainerProducer

Add...
Remove
Properties...
Calculate Uses

Package Visibility

The select package is:

○ public API

○ provisional API, generating warnings, except for:

Add...
Remove

Classpath

Specify the libraries and folders that constitute the plug-in classpath. If unspecified, the classes and resources are assumed to be at the root of the plug-in.
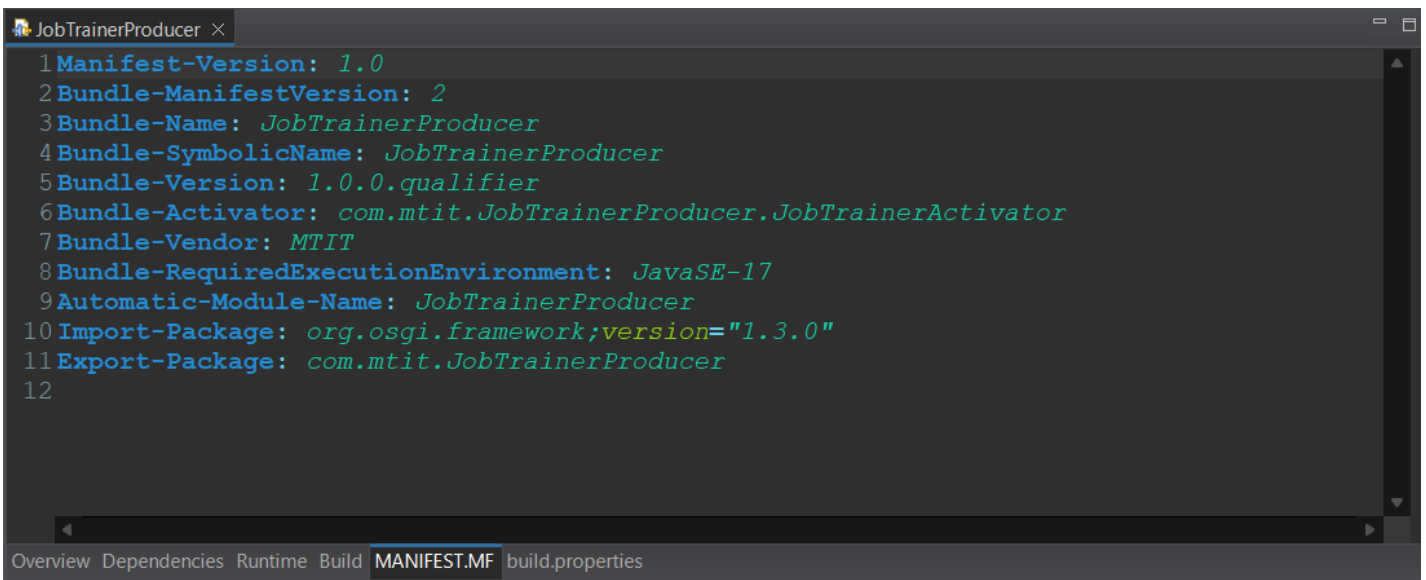
New...
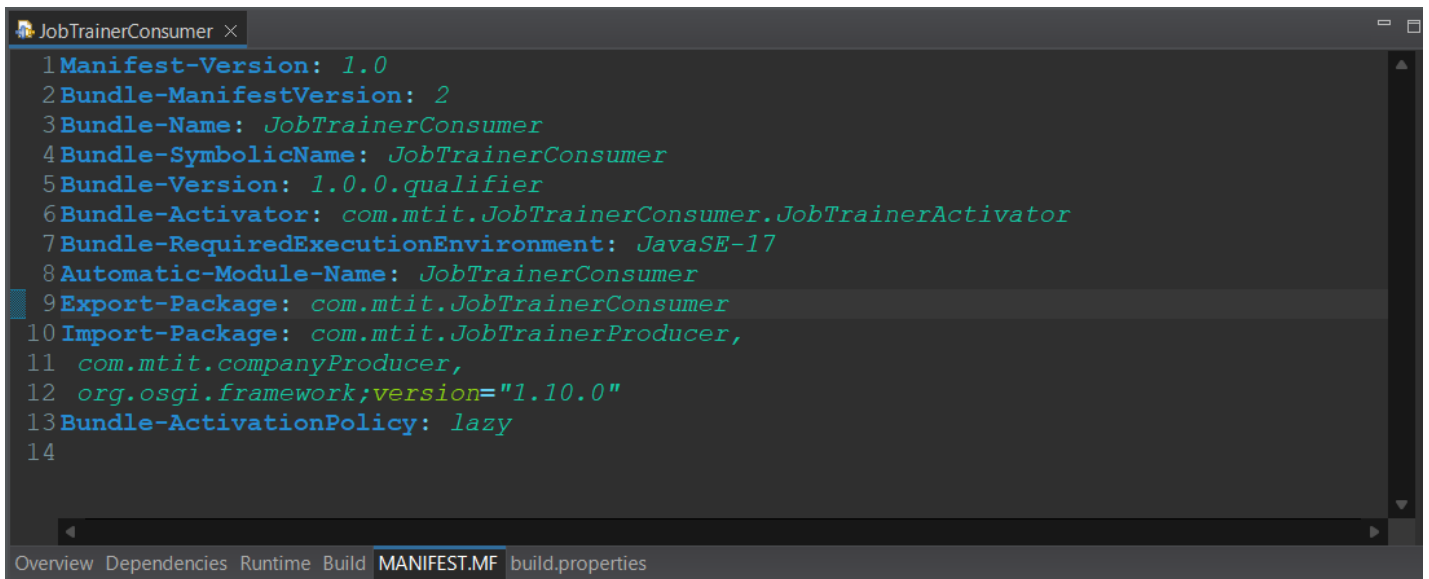
Overview Dependencies Runtime Build MANIFEST.MF build.properties

Manifest file of Job Trainer Consumer

```
  1 Manifest-Version: 1.0
  2 Bundle-ManifestVersion: 2
  3 Bundle-Name: JobTrainerConsumer
  4 Bundle-SymbolicName: JobTrainerConsumer
  5 Bundle-Version: 1.0.0.qualifier
  6 Bundle-Activator: com.mtit.JobTrainerConsumer.JobTrainerActivator
  7 Bundle-RequiredExecutionEnvironment: JavaSE-17
  8 Automatic-Module-Name: JobTrainerConsumer
  9 Export-Package: com.mtit.JobTrainerConsumer
 10 Import-Package: com.mtit.JobTrainerProducer,
 11  com.mtit.companyProducer,
 12  org.osgi.framework;version="1.10.0"
 13 Bundle-ActivationPolicy: lazy
 14
```

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

Import/Export Packages -

Import Package - **Import-Package**: com.mtit.JobTrainerProducer,
com.mtit.companyProducer,
org.osgi.framework;version="1.10.0"

Export package - **Export-Package**: com.mtit.JobTrainerConsumer

Job Trainer Consumer - Imported services

Dependencies

Required Plug-ins
Specify the list of plug-ins required for the operation of this plug-in.

Add...
Remove
Up
Down
Properties...

Total: 0

Imported Packages
Specify packages on which this plug-in depends without explicitly identifying their originating plug-in.

- com.mtit.companyProducer
- com.mtit.JobTrainerProducer
- org.osgi.framework (1.10.0)

Add...
Remove
Properties...

Total: 3

▸ **Automated Management of Dependencies**
▸ **Dependency Analysis**

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

Job Trainer Consumer - Exported services

IT21361036– Saara M.K.F

Training Seeker Producer – Training Seeker Consumer

Training Seeker Producer – Consumers provides a seamless platform for individuals to interact with Job Trainers. Training seeker consumers, utilize the system to input their information and manage their profiles efficiently. Leveraging the dynamic service communication provided by OSGi, the system interacts seamlessly with the Job Trainer Producer. Through this integration, training seekers gain access to a diverse pool of registered trainers, allowing them to search for trainers based on the type of training they require. Additionally, training seekers can access the Job Trainer Producer to view available trainers.

Manifest file of Training Seeker Producer

```
TrainingProducer ×
 1 Manifest-Version: 1.0
 2 Bundle-ManifestVersion: 2
 3 Bundle-Name: TrainingProducer
 4 Bundle-SymbolicName: TrainingProducer
 5 Bundle-Version: 1.0.0.qualifier
 6 Bundle-Activator: com.mtit.osgi.trainingProducer.TrainingActivator
 7 Bundle-RequiredExecutionEnvironment: JavaSE-11
 8 Automatic-Module-Name: TrainingProducer
 9 Import-Package: org.osgi.framework;version="1.3.0"
10 Export-Package:
11  com.mtit.osgi.trainingProducer
12
13
Overview  Dependencies  Runtime  Build  MANIFEST.MF  build.properties
```

Import/Export Packages -

Import Package - **Import-Package**: org.osgi.framework;version="1.10.0"

Export package - **Export-Package**: com.mtit.trainingProducer
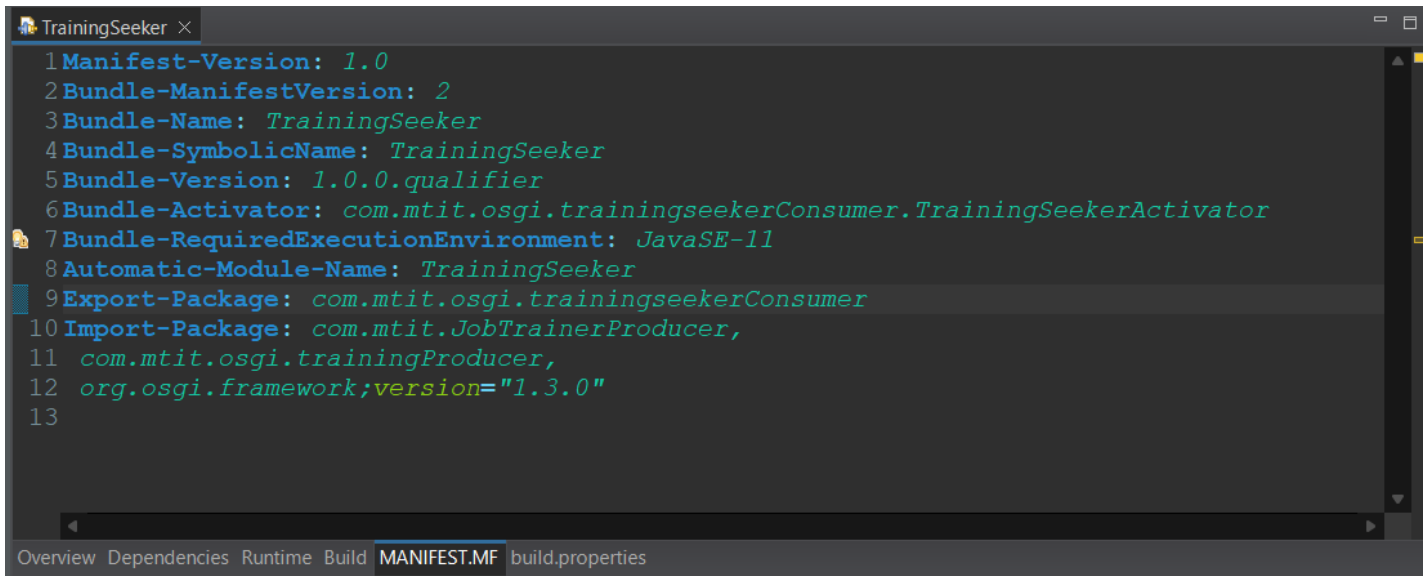
Training Seeker Producer Imported services.
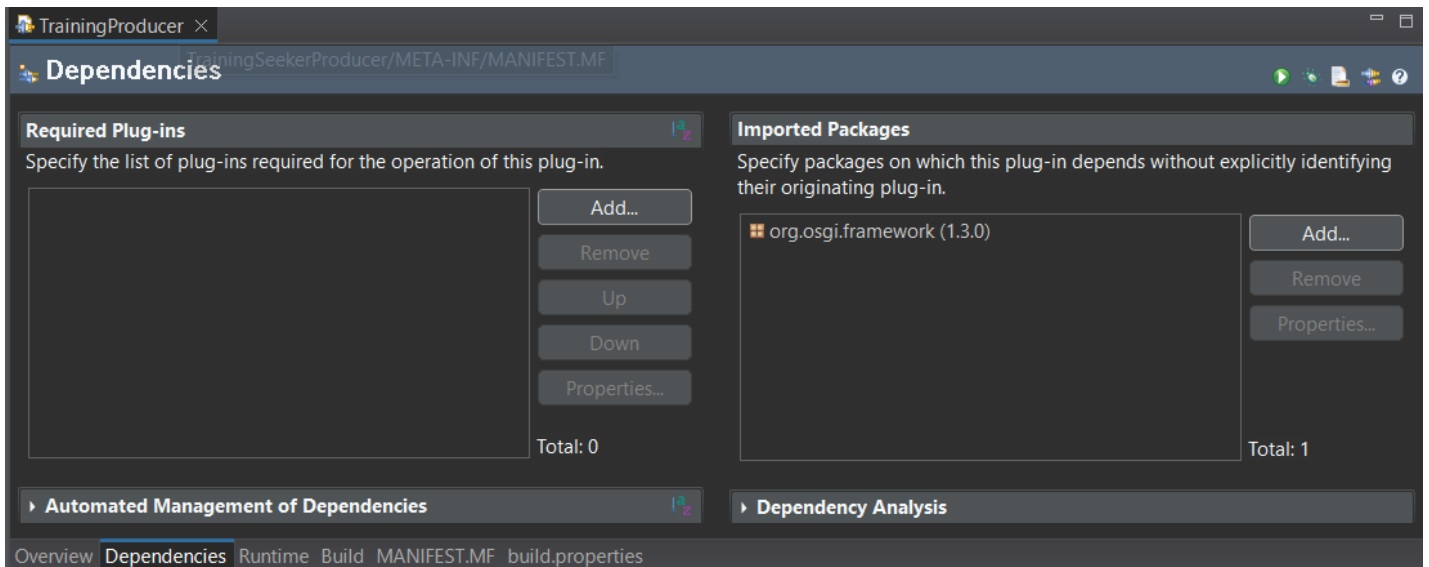
Training Seeker Producer Exported services.
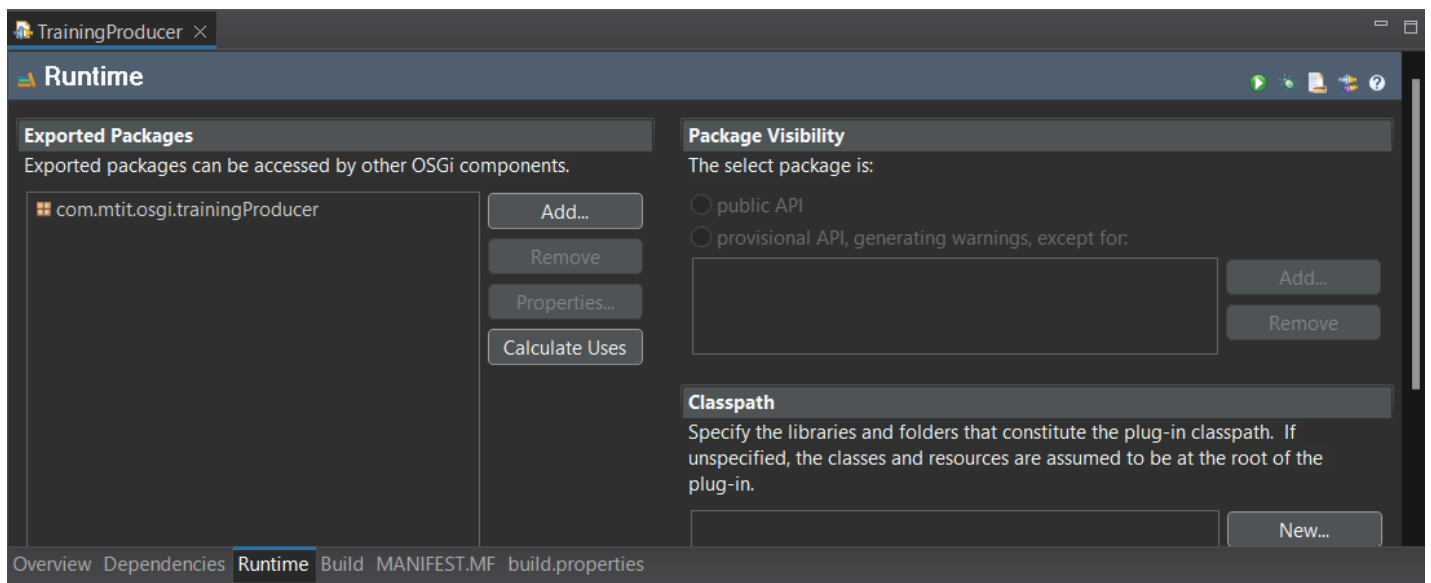
Manifest for Training Seeker Consumer

```
TrainingSeeker ×
 1 Manifest-Version: 1.0
 2 Bundle-ManifestVersion: 2
 3 Bundle-Name: TrainingSeeker
 4 Bundle-SymbolicName: TrainingSeeker
 5 Bundle-Version: 1.0.0.qualifier
 6 Bundle-Activator: com.mtit.osgi.trainingseekerConsumer.TrainingSeekerActivator
 7 Bundle-RequiredExecutionEnvironment: JavaSE-11
 8 Automatic-Module-Name: TrainingSeeker
 9 Export-Package: com.mtit.osgi.trainingseekerConsumer
10 Import-Package: com.mtit.JobTrainerProducer,
11  com.mtit.osgi.trainingProducer,
12  org.osgi.framework;version="1.3.0"
13

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

Import/Export Packages -

Import Package - **Import-Package**: com.mtit.JobTrainerProducer,

com.mtit.osgi.trainingProducer,

org.osgi.framework;version="1.3.0"

Export package - **Export-Package**: com.mtit.trainingConsumer

Training Seeker Consumer Imported services.
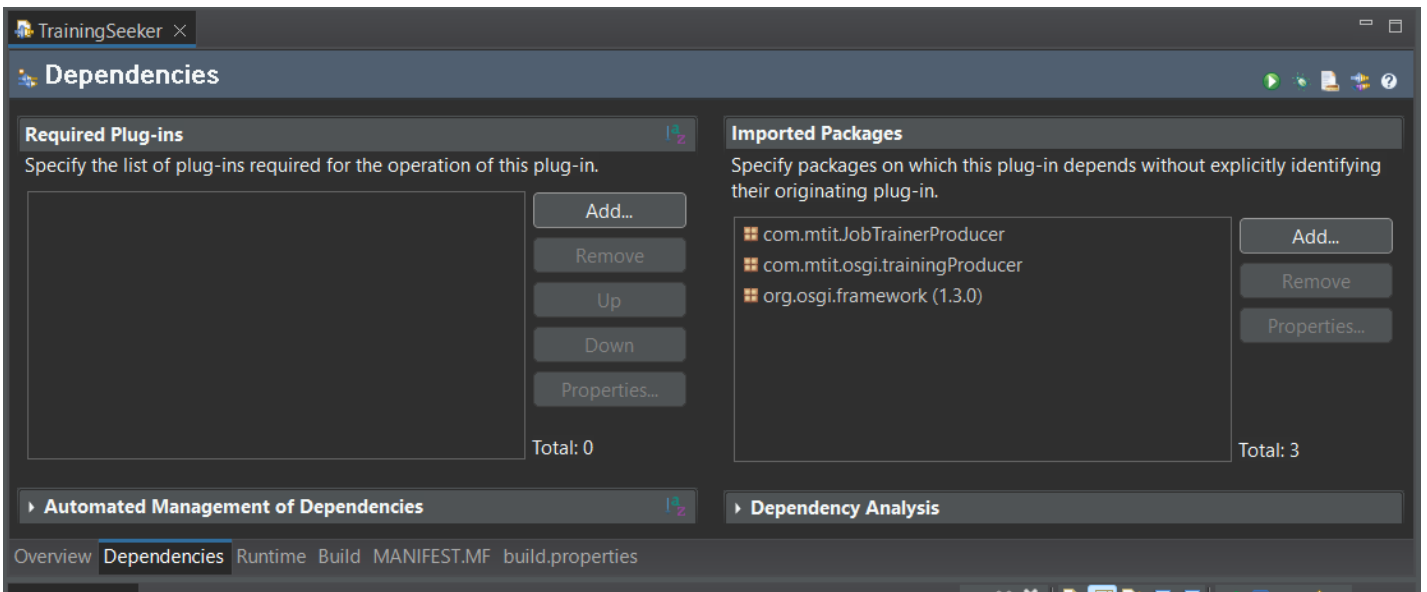
Training Seeker Consumer Exported services.
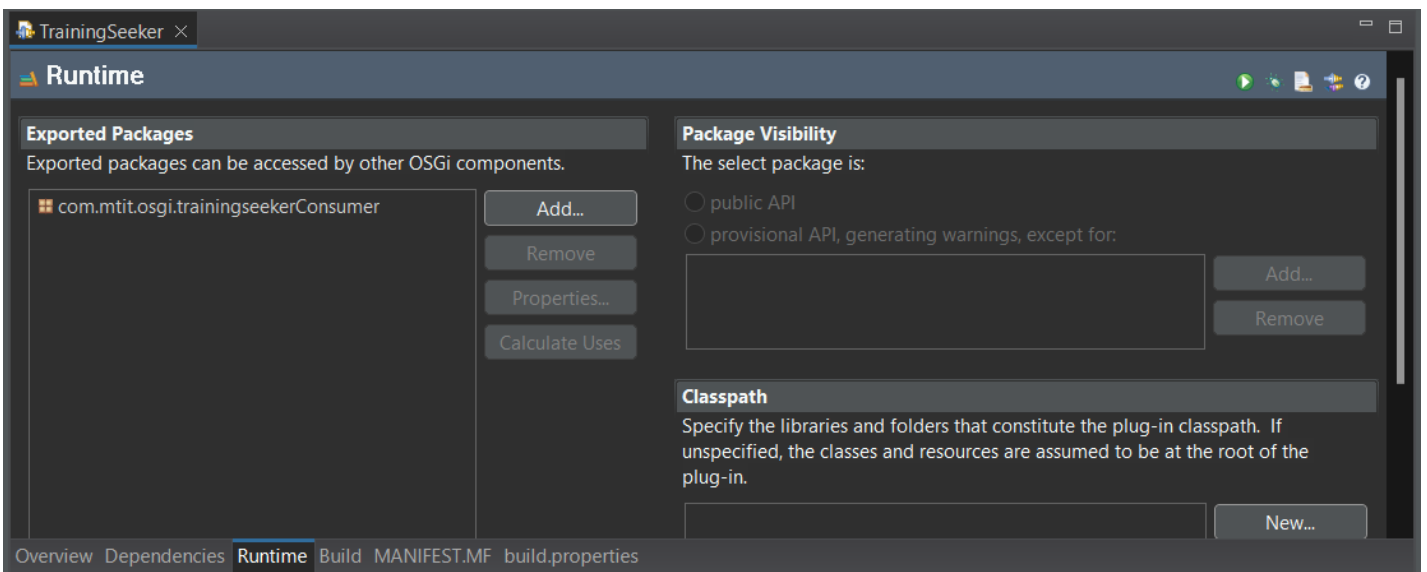
All commands of bundle install and run in OSGi framework. (Step wise mention producer installation and consumer installation & running services)
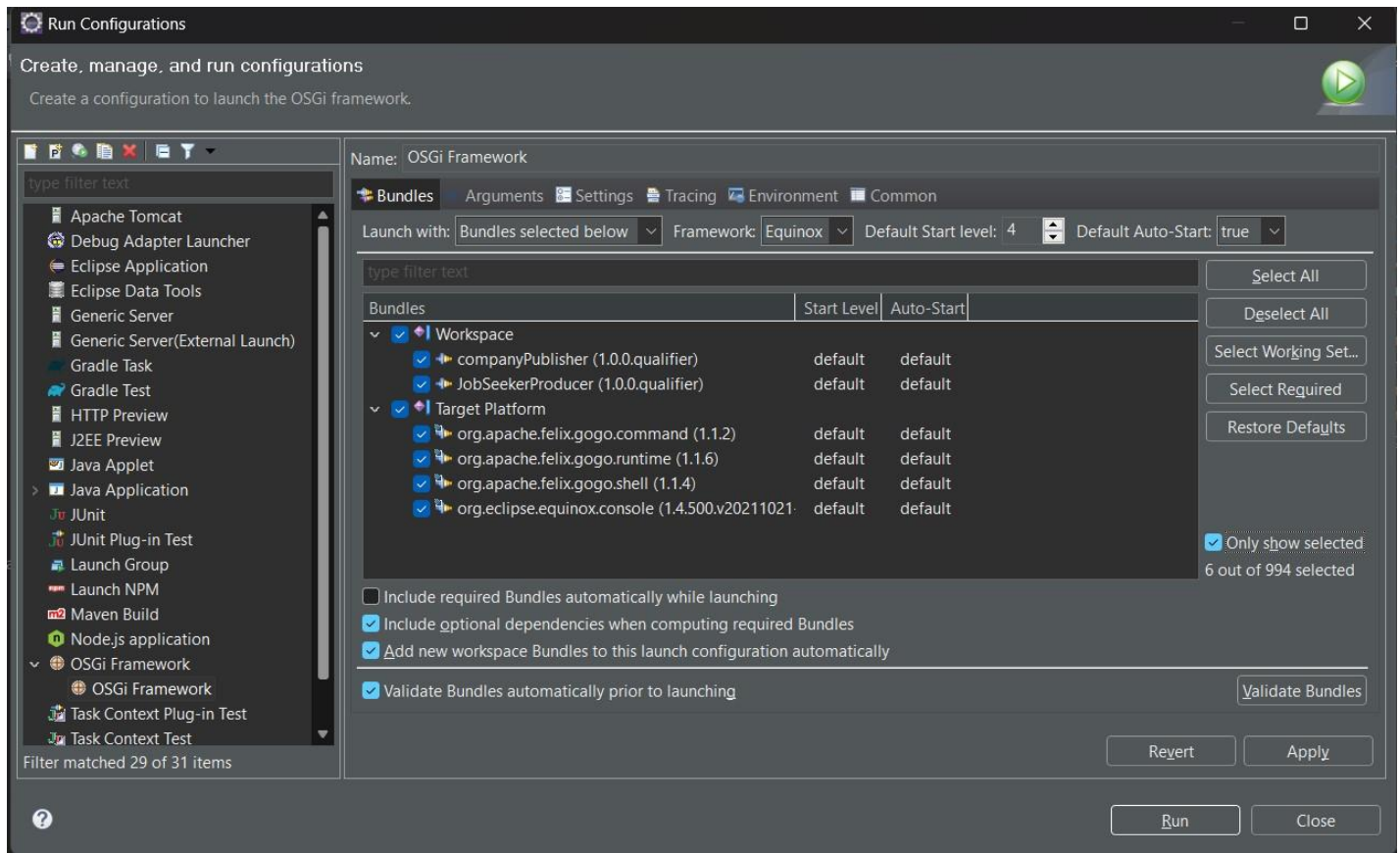
Establish new connections for the Company Producer (Publisher) and the Job Seeker Producer, which are essential relevant producers for the entire system, and initiate the OSGI service.
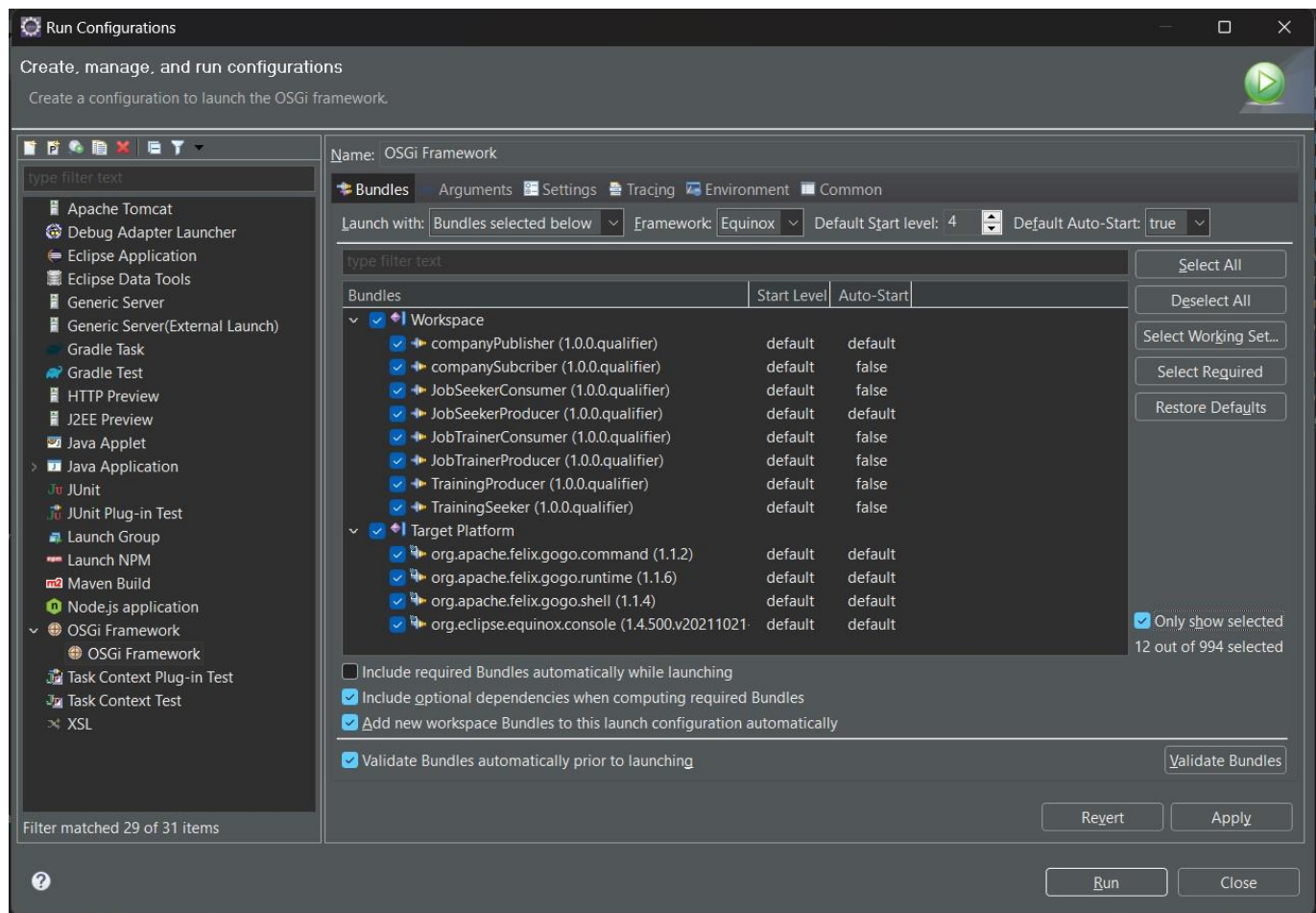
Set up new connections for the for all 4 Producers as defaults for auto-start. Mark 'false' for auto-start for all consumers in the job and training exchange portal system, which will assist users in starting the required plugin only when needed.

```
Company Publisher Started
Job Seeker Producer Started
_____
Welcome to Apache Felix Gogo

g! lb
START LEVEL 6
   ID|State      |Level|Name
    0|Active     |    0|OSGi System Bundle (3.18.400.v20230509-2241)|3.18.400.v20230509-2241
    1|Active     |    4|CompanyPublisher (1.0.0.qualifier)|1.0.0.qualifier
    2|Resolved   |    4|JobTrainerProducer (1.0.0.qualifier)|1.0.0.qualifier
    3|Starting   |    4|JobSeekerConsumer (1.0.0.qualifier)|1.0.0.qualifier
    4|Resolved   |    4|TrainingSeeker (1.0.0.qualifier)|1.0.0.qualifier
    5|Starting   |    4|CompanySubcriber (1.0.0.qualifier)|1.0.0.qualifier
    6|Active     |    4|JobSeekerProducer (1.0.0.qualifier)|1.0.0.qualifier
    7|Starting   |    4|JobTrainerConsumer (1.0.0.qualifier)|1.0.0.qualifier
    8|Resolved   |    4|TrainingProducer (1.0.0.qualifier)|1.0.0.qualifier
    9|Active     |    4|Apache Felix Gogo Runtime (1.1.6)|1.1.6
   10|Active     |    4|Console plug-in (1.4.500.v20211021-1418)|1.4.500.v20211021-1418
   11|Active     |    4|Apache Felix Gogo Shell (1.1.4)|1.1.4
   12|Active     |    4|Apache Felix Gogo Command (1.1.2)|1.1.2

g!
```

The status of the Company Producer and Job Seeker Producer being started will be displayed, and you can use the 'lb' OSGi command to view the listed bundles.

```
g! start 5
Started Company Subscriber
```

To start the Company Subscriber, use the 'start' command of OSGi with the required Company Subscriber ID from the listed bundles.

```
g! stop 5
Stopped Company Subscriber
g! start 3
Job Seeker Consumer Started
```

After completing the Company Subscriber bundle requirement, use the 'stop' OSGi command to stop the Company Subscriber with the relevant ID of the bundle, as displayed above. Then, using the 'start' command with the relevant ID, start the Job Seeker Consumer.

```
g! stop 3
Job Seeker Consumer Stopped
g! stop 6
Job Seeker Producer Stopped
g! lb
START LEVEL 6
   ID|State        |Level|Name
    0|Active       |    0|OSGi System Bundle (3.18.400.v20230509-2241)|3.18.400.v20230509-2241
    1|Active       |    4|CompanyPublisher (1.0.0.qualifier)|1.0.0.qualifier
    2|Resolved     |    4|JobTrainerProducer (1.0.0.qualifier)|1.0.0.qualifier
    3|Resolved     |    4|JobSeekerConsumer (1.0.0.qualifier)|1.0.0.qualifier
    4|Resolved     |    4|TrainingSeeker (1.0.0.qualifier)|1.0.0.qualifier
    5|Resolved     |    4|CompanySubcriber (1.0.0.qualifier)|1.0.0.qualifier
    6|Resolved     |    4|JobSeekerProducer (1.0.0.qualifier)|1.0.0.qualifier
    7|Starting     |    4|JobTrainerConsumer (1.0.0.qualifier)|1.0.0.qualifier
    8|Resolved     |    4|TrainingProducer (1.0.0.qualifier)|1.0.0.qualifier
    9|Active       |    4|Apache Felix Gogo Runtime (1.1.6)|1.1.6
   10|Active       |    4|Console plug-in (1.4.500.v20211021-1418)|1.4.500.v20211021-1418
   11|Active       |    4|Apache Felix Gogo Shell (1.1.4)|1.1.4
   12|Active       |    4|Apache Felix Gogo Command (1.1.2)|1.1.2
```

With the "stop" command & relevant bundle id Job Seeker Consumer and Job Seeker Producer are stopped.

```
g! start 2
Job Trainer Producer Started

g! start 7
Job Trainer Consumer Started
```

To start the Job Trainer Producer, use the 'start' command of OSGi with the required Job Trainer Producer ID from the listed bundles.

```
g! stop 7
Job Trainer Consumer Stopped
g! stop 1
Company Publisher Stopped
g! lb
START LEVEL 6
   ID|State       |Level|Name
    0|Active      |    0|OSGi System Bundle (3.18.400.v20230509-2241)|3.18.400.v20230509-2241
    1|Resolved    |    4|CompanyPublisher (1.0.0.qualifier)|1.0.0.qualifier
    2|Active      |    4|JobTrainerProducer (1.0.0.qualifier)|1.0.0.qualifier
    3|Resolved    |    4|JobSeekerConsumer (1.0.0.qualifier)|1.0.0.qualifier
    4|Resolved    |    4|TrainingSeeker (1.0.0.qualifier)|1.0.0.qualifier
    5|Resolved    |    4|CompanySubcriber (1.0.0.qualifier)|1.0.0.qualifier
    6|Resolved    |    4|JobSeekerProducer (1.0.0.qualifier)|1.0.0.qualifier
    7|Resolved    |    4|JobTrainerConsumer (1.0.0.qualifier)|1.0.0.qualifier
    8|Resolved    |    4|TrainingProducer (1.0.0.qualifier)|1.0.0.qualifier
    9|Active      |    4|Apache Felix Gogo Runtime (1.1.6)|1.1.6
   10|Active      |    4|Console plug-in (1.4.500.v20211021-1418)|1.4.500.v20211021-1418
   11|Active      |    4|Apache Felix Gogo Shell (1.1.4)|1.1.4
   12|Active      |    4|Apache Felix Gogo Command (1.1.2)|1.1.2
```

After completing the requirements for the Job Trainer Consumer and Company Publisher bundles, use the 'stop' OSGi command with the relevant IDs of the bundles to stop the Job Trainer Consumer and Company . Their status will be displayed above.

```
g! start 8
Training Producer Started

g! start 4
TrainingSeeker Started
```

To start the Job Training Producer and Training Consumer (Seeker), use the 'start' command of OSGi with the required bundle ID for the Training Producer and Training Consumer (Seeker) from the listed bundles.

```
g! stop 4
TrainingSeeker Stopped
g! stop 8
Training Producer Stopped
g! stop 2
Job Trainer Producer Stopped
g! lb
START LEVEL 6
   ID|State       |Level|Name
    0|Active      |    0|OSGi System Bundle (3.18.400.v20230509-2241)|3.18.400.v20230509-2241
    1|Resolved    |    4|CompanyPublisher (1.0.0.qualifier)|1.0.0.qualifier
    2|Resolved    |    4|JobTrainerProducer (1.0.0.qualifier)|1.0.0.qualifier
    3|Resolved    |    4|JobSeekerConsumer (1.0.0.qualifier)|1.0.0.qualifier
    4|Resolved    |    4|TrainingSeeker (1.0.0.qualifier)|1.0.0.qualifier
    5|Resolved    |    4|CompanySubcriber (1.0.0.qualifier)|1.0.0.qualifier
    6|Resolved    |    4|JobSeekerProducer (1.0.0.qualifier)|1.0.0.qualifier
    7|Resolved    |    4|JobTrainerConsumer (1.0.0.qualifier)|1.0.0.qualifier
    8|Resolved    |    4|TrainingProducer (1.0.0.qualifier)|1.0.0.qualifier
    9|Active      |    4|Apache Felix Gogo Runtime (1.1.6)|1.1.6
   10|Active      |    4|Console plug-in (1.4.500.v20211021-1418)|1.4.500.v20211021-1418
   11|Active      |    4|Apache Felix Gogo Shell (1.1.4)|1.1.4
   12|Active      |    4|Apache Felix Gogo Command (1.1.2)|1.1.2

g!
```

With the use of the 'stop' OSGi command, the Training Seeker (Consumer), Training Producer, and Job Trainer Producer bundles are stopped.

Sample screenshots of its behavior & outputs.

IT21375682 – Shandeep. J

Company Producer – Company Consumer

```
g! start 6
Started Company Subscriber

=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Select the service from below .

Add Company:                    'Add'
View All Companies:             'All'
Add Jobs:                       'Add_Jobs'
Show Jobs:                       'Show_Jobs'
Delete a Company:               'Delete'
Select a Company:               'Select'
Get Job Seeker Applications       'applications'
```

After starting Company Producer (and Job Seeker Producer), start the Company Consumer, and necessary actions will be requested from the user as mentioned above.

```
Add

=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Enter Company ID:
1
Enter Company Name:
SLIIT
Enter Industry:
IT
Enter Location:
MALABE
New company SLIIT added successfully!
```

If the user enters 'ADD' as an option, they can enter the details of the company' data as mentioned above. After entering the data, it will be displayed briefly with a successful data entry message.

```
Add_Jobs

========== OpportunityNet ===========
===== Job and Training Exchange Platform ======

Enter Company ID:
1
Enter Job Title:
Intern
Enter Description:
Undergraduates are appreciated
added succesfully
```

If the user enters 'ADD_JOBS' as an option, they can enter the details of the jobs offered by a
particular company as mentioned above. After entering the data, it will be displayed briefly with a
successful data entry message.

```
Show_Jobs
Enter Company ID to view jobs:
1
===== Displaying Jobs for Company ID: 1 =====
Company ID: 1
Job ID: 1
Job Title: Intern
Description: Undergraduates are appreciated
```

If the user enters 'SHOW_JOBS', the user can view all the job data entered for a particluar company
by inserting Company ID .

```
All

========== OpportunityNet ===========
===== Job and Training Exchange Platform ======

=====Displaying all Companies and Jobs====

Company ID: 1
Company Name: SLIIT
Industry: IT
Location: MALABE
Job Titles:
        - Intern

Company ID: 2
Company Name: TECH
Industry: IT
Location: COLOMBO
Job Titles:
```

The user can view all the company details and the jobs offered by selecting the option 'ALL'.

```
SELECT
Company ID
1
Company Details:
Company ID: 1
Company Name: SLIIT
Industry: IT
Location: MALABE
===== Displaying Jobs for Company ID: 1 =====
Job ID: 1
Job Title: Intern
Description: Undergraduates are appreciated
```

If the user enters 'SELECT', they can view all the job data with corresponding company data for the entered Company ID.

```
g! stop 3
Job Seeker Consumer Stopped
g! start 6
Started Company Subscriber

=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Select the service from below .

Add Company:                    'Add'
View All Companies:             'All'
Add Jobs:                       'Add_Jobs'
Show Jobs:                       'Show_Jobs'
Delete a Company:               'Delete'
Select a Company:               'Select'
Get Job Seeker Applications      'applications'

Stop Service:                   'Stop'

applications
Enter Company ID:
1
Enter Job ID:
1
Company Details:
Company ID: 1
Company Name: SLIIT
Industry: IT
Location: MALABE
===== Displaying Job Applications =====
Seeker Name: Sanjay
NIC: 200131100783
Email: sanjay@yahoo.com
Qualification: HND
-----------------------------
```

After job seekers have applied for jobs, if the Company Consumer enters 'APPLICATIONS', they can view all the job applicants' data along with relevant company data.

```
DELETE

=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Enter Company ID to be deleted:
2
0 job(s) record deleted successfully!
Company record deleted successfully!
```

Users can delete a specific company and the jobs offered data by selecting the 'DELETE' option and entering the Company ID to be deleted. This will display a successful deletion message.

IT21375514– Sanjayan. C

Job Seeker Producer – Job Seeker Consumer

```
g! stop 6
Stopped Company Subscriber
g! start 3
Job Seeker Consumer Started

=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Select the service from below .

Add Job Seeker Details :              'Add'
View  All the Job Seekers :           'All'
View a Job Seeker :                   'Get'
Delete a Job Seeker :                 'Delete'
Update a Job Seeker Details :         'Update'

Get Related Jobs:                     'Jobs'
Apply for a Job:                      'Apply'

Stop Service:                         'Stop'
```

After company data got added, stop the Company Consumer and start the Job Seeker Consumer, then necessary actions will be requested from the user as mentioned above.

```
Add

=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Enter Your NIC :
200131100783
Enter Your Name :
Sanjay
Enter Your Email :
sanjay@yahoo.com
Enter Your Highest Qualifications :
HND
Enter Your Prefered Position :
Intern
Enter Additional Information :
Undergraduate at SLIIT
Enter Your Expected Salary :
30000
New job seeker: Sanjay, with HND qualification, interested in Intern, entered successfully!
```

If the user enters 'ADD' as an option, they can enter the details of the Job Seeker as mentioned above. After entering the data, it will be displayed briefly with a successful data entry message.

```
ALL

========== OpportunityNet ============
===== Job and Training Exchange Platform ======

=====Displaying All Job Seekers Information====


NIC : 200131100783
Name : Sanjay
Email : sanjay@yahoo.com
Highest Qualification : HND
Preferred Position : Intern
Description : Undergraduate at SLIIT
Expected Salary : 30000.0


NIC : 200200100238
Name : Manoj
Email : mano@gmail.com
Highest Qualification : AL
Preferred Position : Associate
Description : Undergraduate at SLIIT
Expected Salary : 20000.0
```

After entering the job seeker data, the user can view all the data entered by selecting the option 'ALL'. This will display all the entered Job Seekers data for the user's view.

```
UPDATE

========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Enter NIC to be Updated:
200131100783
Enter Your Highest Qualifications :
HND
Enter Your Prefered Position :
Intern
Enter Additional Information :
Graduated at SLIIT
Enter Your Expected Salary :
50000
Job Seeker Record Updated Successfully!
```

If the user selects 'UPDATE' as an option, they can enter the NIC of the Job Seeker, whose data needs to be updated as mentioned above. After successful update, it will be displayed briefly with a successful data update message.

```
GET

=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Enter NIC of Job Seeker to Retrive:
200131100783
|
Name : Sanjay
Email : sanjay@yahoo.com
Highest Qualification : HND
Preferred Position : Intern
Description : Graduated at SLIIT
Expected Salary : 50000.0
```

If the user enters 'GET' option, they can get the Job Seeker data for the entered NIC.

```
JOBS

=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Enter Preferred Job Position :
INTERN


=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

=====Displaying All Related Vacancies====

Job No: 1
Job Title: Intern
Description: Undergraduates are appreciated
Company Name: SLIIT
Location: MALABE
```

If the user selects 'JOBS' as an option, they can enter their preferred job position and retrieve all the company data from those currently offering the same position, which has been updated by the Company Consumer.

```
APPLY

=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Enter Job ID :
1
Enter Your NIC :
200131100783
New job seeker: 200131100783 has applied for the Job No 1 successfully!
```

If the user selects 'APPLY' as an option, they can submit the application by entering their NIC along with the relevant Job ID.

```
DELETE

=========== OpportunityNet ============
===== Job and Training Exchange Platform ======

Enter NIC to be deleted:
200200100238
 Job Seeker Record Deleted Successfully!
```

Users can delete a specific Job Seeker Data by selecting the 'DELETE' option and entering the Job Seeker ID to be deleted. This will display a successful deletion message.

IT21194894 -Balakrishnan. K. D

Job Trainer Producer – Job Trainer Consumer

```
g! start 4
Job Trainer Consumer Started


========== OpportunityNet ==========
===== Job and Training Exchange Platform ======


 Job Trainer Record

Select the action from below.

Add Job Training Details:          'Add'
View All Job Training Details:     'All'
Edit Job Training Details:         'Edit'
Get Job Trainer Details:           'Get'
Delete a Job Training Details:     'Delete'
Stop Viewing Details:              'Stop'
Enter your choice:
```

After entering the relevant data for the company, the Job Trainer Consumer will be started, and necessary actions will be requested from the user as mentioned above.

```
add

 Job Trainer Details

Enter Job Trainer ID:
001
Enter Job Trainer Name:
Sudeep
Enter Job Trainer Shift
Morning
Enter Training Type:
Java
Enter Job Trainer Company:
SLIIT
Enter Job Trainer Session Type:
Online
New Trainer: Sudeep at SLIIT in Morning to train Java entered successfully!
```

If the user enters 'ADD' as an option, they can enter the details of the job trainers' data as mentioned above. After entering the data, it will be displayed briefly with a successful data entry message.

```
all

Job Trainer Details

Displaying all Job Trainer Details


ID: 001
Name: Sudeep
Company: SLIIT
Type: Java
Shift: Morning
Session Type: Online
Company Location: Malabe
Industry: IT


ID: 002
Name: Maalini
Company: Virtus
Type: Wordpress
Shift: Evening
Session Type: Online
Company Location: Colombo
Industry: IT
```

After entering the required data, the user can view all the data entered under the Job Trainer by selecting the option 'ALL'. This will display all the entered Job Trainer data for the user's view.

```
Enter your choice:
get

Filter options:
1. Filter by Trainer Name
2. Filter by Training Type
3. Filter by Company
4. Filter by Session Type
5. Return to main menu
Enter your choice:
2
Enter Training Type:
Java
ID: 001
Name: Sudeep
Company: SLIIT
Type: Java
Shift: Morning
Session Type: Online
Company Location: Malabe
Industry: IT

ID: 003
Name: Harini
Company: Virtus
Type: Java
Shift: Morning
Session Type: Online
Company Location: Colombo
Industry: IT
```

If necessary, the user can filter the entered Job Trainer data using the 'get' option based on the four mentioned filter types. This will display the data of the trainers according to the selected filter choice, along with the company's data entered in the company producer (company's location and industry).

```
Enter your choice:
edit
Enter Job Trainer ID to be edited:
001
Current Job Trainer Details:
ID: 001
Name: Sudeep
Shift: Morning
Type: Java
Session type: Online
Company: SLIIT

Enter new Job Trainer Name (leave blank to keep current):
Sudeepa
Enter new Job Trainer Shift (leave blank to keep current):

Enter new Job Trainer Training Type (leave blank to keep current):

Enter new Job Trainer Session Type (leave blank to keep current):
Remote
Enter new Job Trainer Company (leave blank to keep current):

Job Training record updated successfully!
```

The user can edit the record of the Job Trainer when required by choosing the "edit" option and entering the Trainer's ID for the update as input. The current data fields will be displayed, and the user can enter the new value for the part that needs editing. If no editing is required for a certain part, it can be left blank. This will display a successful update message.

```
Enter your choice:
delete
Job Trainer Details

Enter Job Trainer ID to be deleted:
002
  JobTraining Record deleted Successfully!
```

Users can delete a specific data entry by selecting the 'delete' option and entering the Trainer ID to be deleted. This will display a successful deletion message.

IT21361036– Saara M.K.F

Training Seeker Producer – Training Seeker Consumer

```
g! start 5
TrainingSeeker Started

========== OpportunityNet ===========
===== Job and Training Exchange Platform ======

Training Seekers Details

-----Select an action from below:-----

Add Training Seeker Details:      'add'
View All Training Seekers' Details: 'view'
Edit Training Seeker Details:     'edit'
Get Training Details:             'get'
Delete Training Seeker Details:   'delete'

Stop :                            'Stop'

Enter your selection:
```

After entering the relevant data for the Job Trainer, the Training Seeker Consumer will be started, and necessary actions will be requested from the user as mentioned above.

```
Enter your selection:
add

---Add Training Details---

Enter Training Seeker ID:
0021
Enter Training Seeker Name:
Karan
Enter Training Seeker Email:
karan@gmail.com
Enter Training For:
C#
New Training Seeker has been added!
 Training Seeker Karan added by Trainer null at Training Type karan@gmail.com for C#
```

If the user enters 'ADD' as an option, they can enter the details of the training seeker's data as mentioned above. After entering the data, it will be displayed briefly with a successful data entry message.

```
Enter your selection:
view

|
All Training Seekers' Details

Training Seeker Name: Karan
Training Seeker Email: karan@gmail.com
Training For: C#

Training Seeker Name: Philip
Training Seeker Email: philli@outlook.com
Training For: C#
```

After entering the required data, the user can view all the data entered under the Training Seeker by selecting the option 'View'. This will display all the entered Training Seekers data for the user's view.

```
Enter your selection:
get

Filter options:
1. Filter by Training Seeker Name
2. Filter by Training For
3. Return to main menu
Enter your choice:
1
Enter Training Seeker Name:
Karan
Trainer Seeker ID:    0021
Trainer Seeker Name: Karan
Trainer Seeker Email:karan@gmail.com
Training For (type): C#
```

If necessary, using the 'get' option, the user can filter the entered Training Seekers' data based on the Training seeker's name. This will display the data row corresponding to the entered name of the Training seeker.

```
Enter your selection:
get

Filter options:
1. Filter by Training Seeker Name
2. Filter by Training For
3. Return to main menu
Enter your choice:
2


========== Training Seeker ===========

Enter Preferred Training Type:
C#

========== Preferred Trainers ===========
Displaying Trainers for Preferred Training Type: C#

Trainer ID: 002
Trainer Name: Amala
Training Type: C#
Company: Virtus
Session Type: On-Site
```

Based on the second criteria of filtering, the user can enter the training type (for which they need training) and retrieve the Trainer's data with the corresponding training type entered from the Job Trainer's producer and display it.

```
Enter your selection:
edit

Edit Training Seeker Details
Enter Training Seeker's ID to be edited:
0021
Current Training Seeker Name: Karan
Enter New Training Seeker Name (or press Enter to keep current):

Current Training Email: karan@gmail.com
Enter New Training Email (or press Enter to keep current):

Current Training For: C#
Enter New Training For (or press Enter to keep current):
Java
Training Seeker's Record Updated Successfully!
```

The user can edit Training Seeker records by selecting "edit" and entering the ID. The current fields will display, each requiring user input on a new line. Users can enter new values for edits or leave them blank. A successful update message will confirm changes.

```
Enter your selection:
delete

Delete Training Details
Enter Training ID to be deleted:
0021
Training Seeker's Record Deleted Successfully!
```

Users can delete a specific data entry by selecting the 'delete' option and entering the Training seeker's ID to be deleted. This will display a successful deletion message.