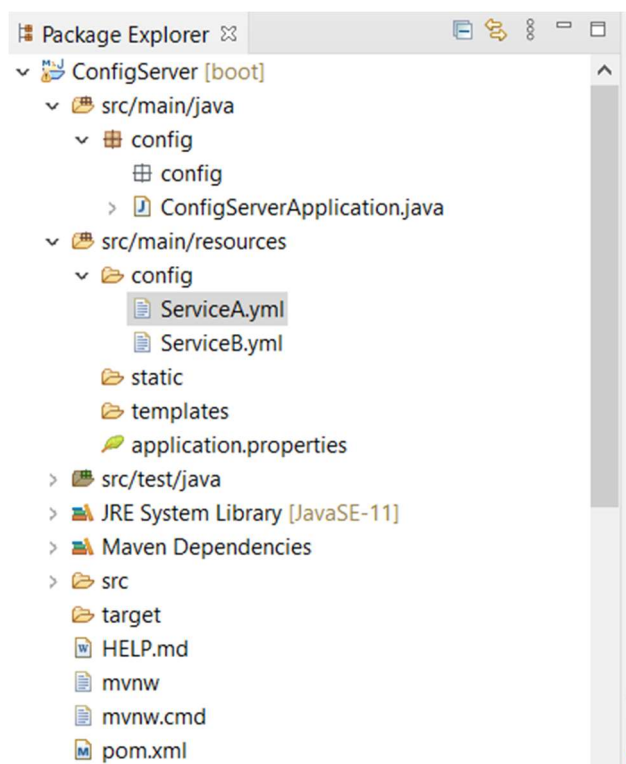


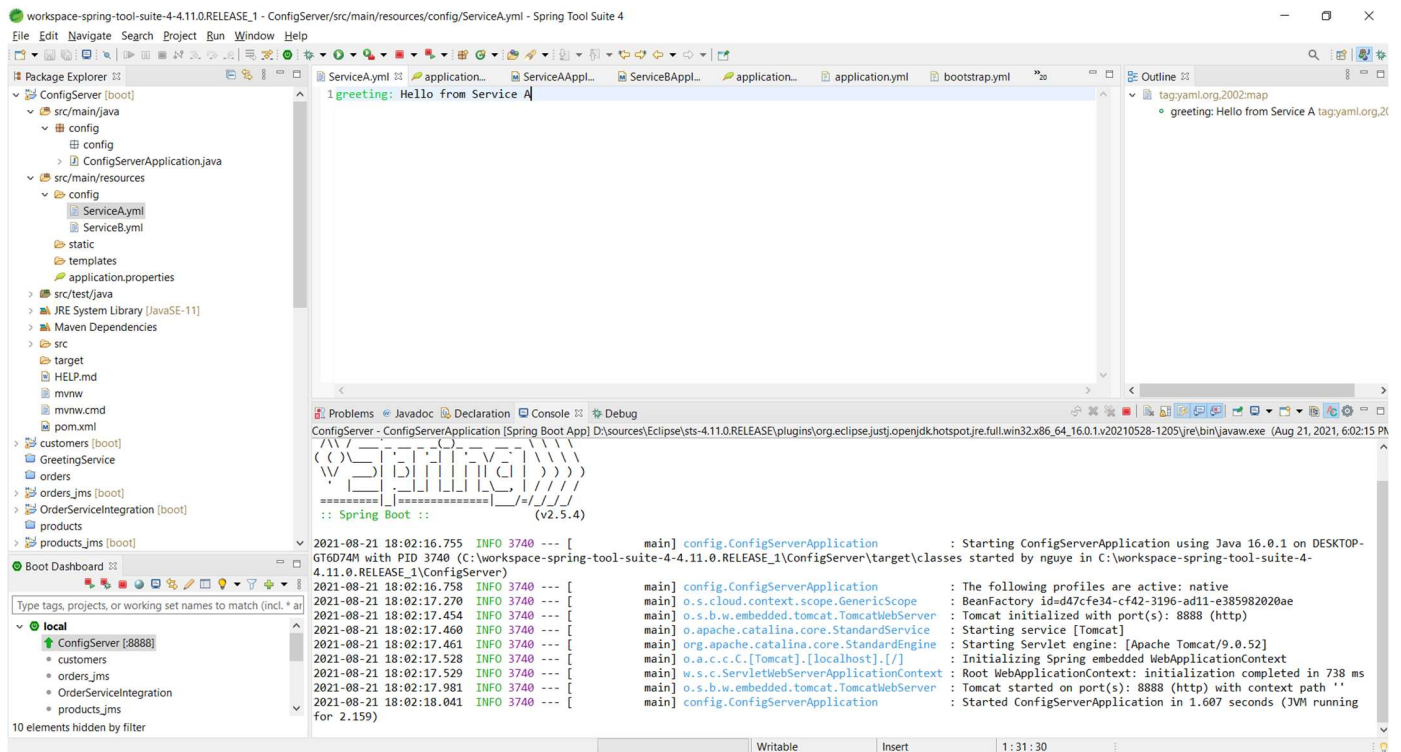
<b>Subject</b>	SWA – CS590
<b>Assignment</b>	Lab 8
<b>Date</b>	8/21/2021
<b>Students</b>	Vo Ngoc Huy Nguyen - 611066
<b>Professor</b>	Rene de Jong

## Lab Assignment 8: Microservice Introduction

### Exercise 1: Spring Boot Config Server

- Run config server





localhost:8888/ServiceA/default

```

{"name":"ServiceA","profiles":["default"],"label":null,"version":null,"state":null,"propertySources":[{"name":"class path resource [config/ServiceA.yml]","source":{"greeting":"Hello from Service A"}}]}

```

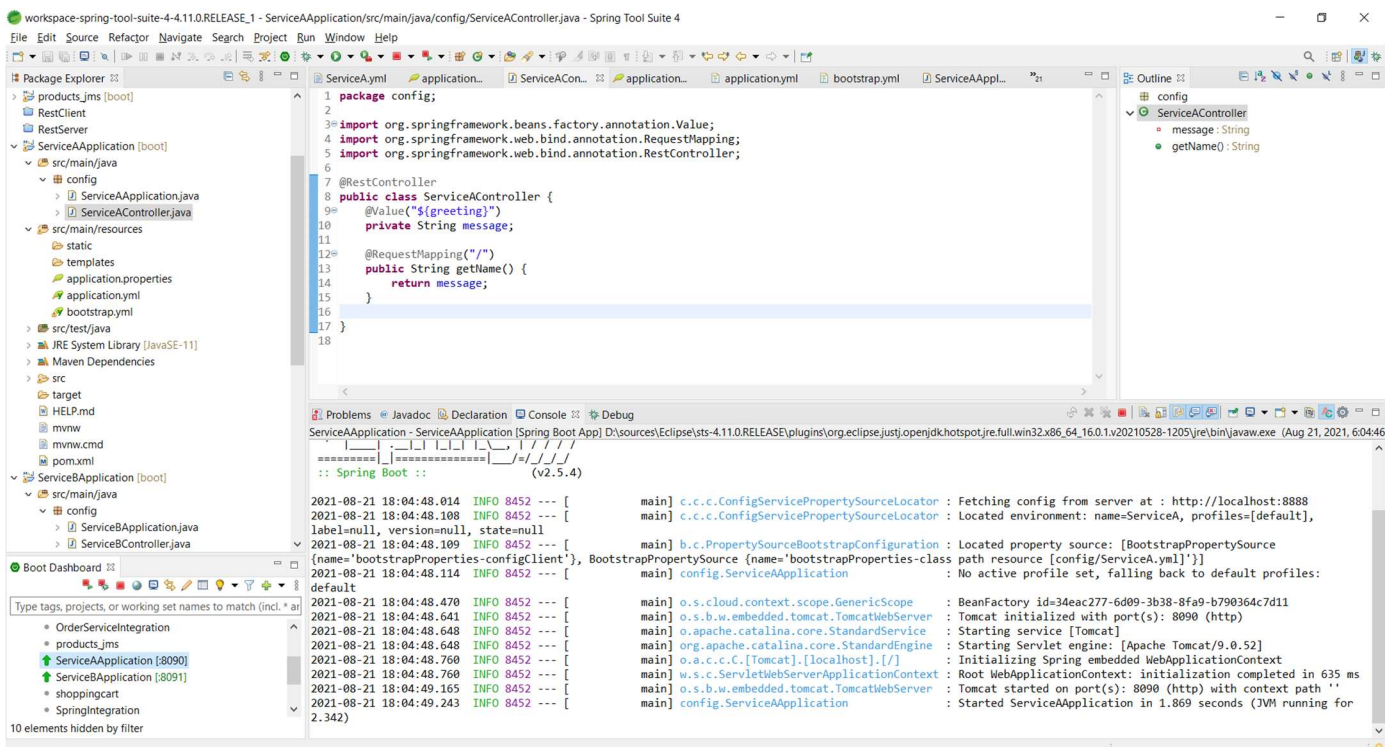
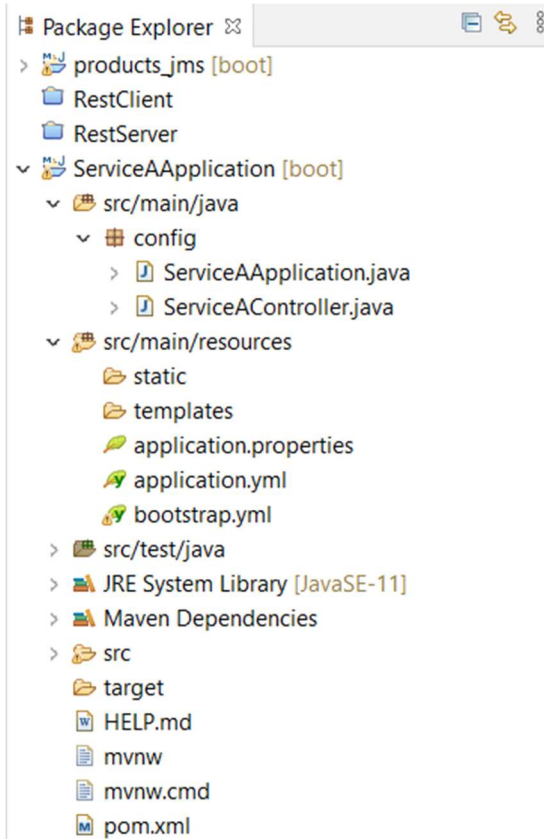
localhost:8888/ServiceB/default

```

{"name":"ServiceB","profiles":["default"],"label":null,"version":null,"state":null,"propertySources":[{"name":"class path resource [config/ServiceB.yml]","source":{"greeting":"Hello from Service B"}}]}

```

- Run config client Application A:



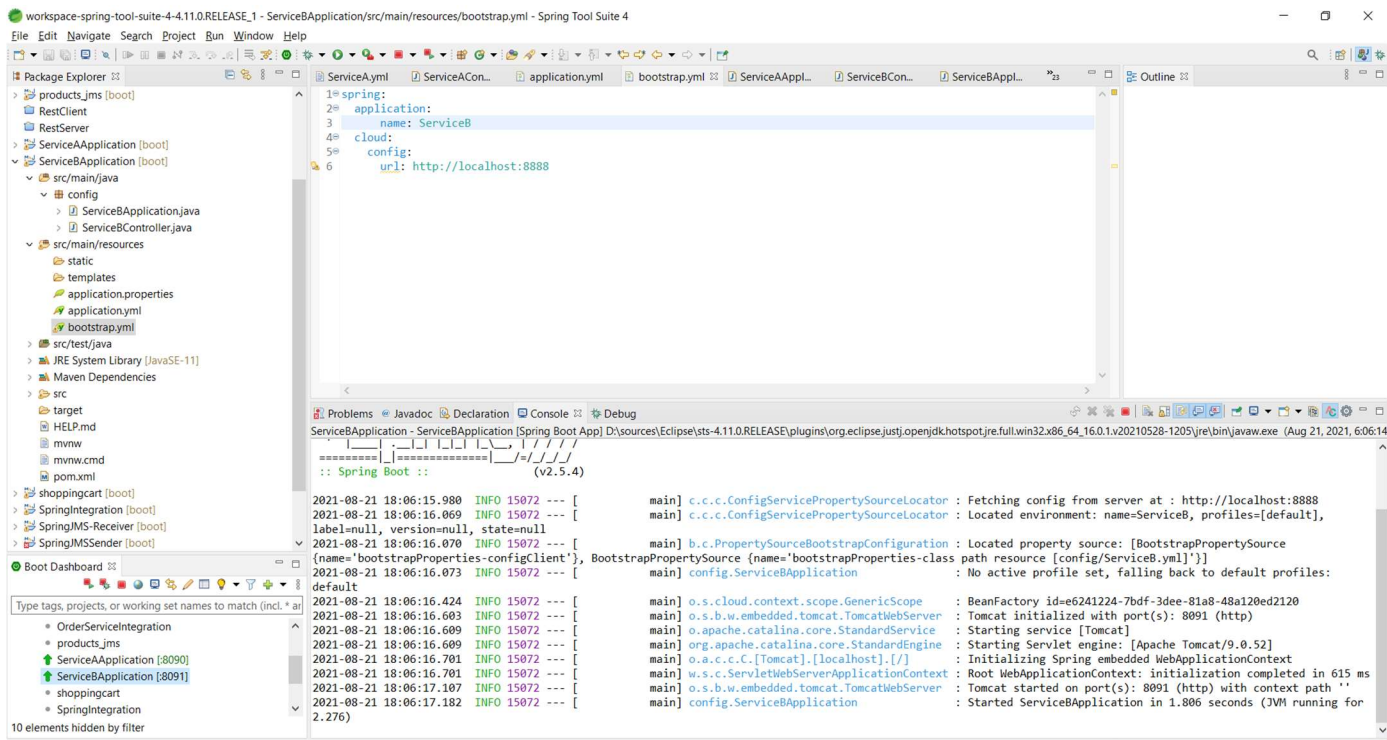
← → ↻ ⓘ localhost:8090

---

Hello from Service A

- Run config client Application B:

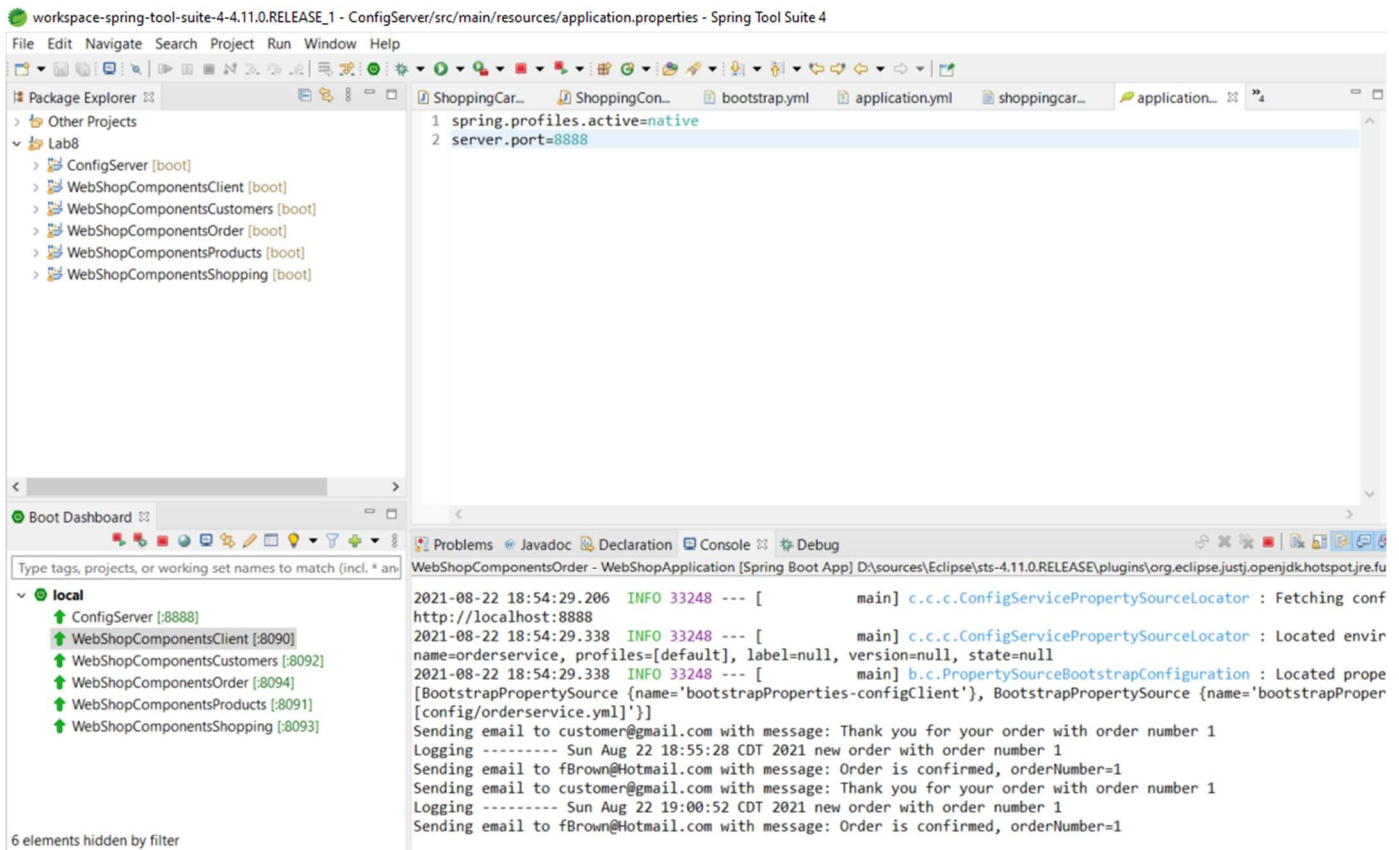
```
> ServiceApplication [boot]
v ServiceBApplication [boot]
  v src/main/java
    v config
      > ServiceBApplication.java
      > ServiceBController.java
  v src/main/resources
    static
    templates
    application.properties
    application.yml
    bootstrap.yml
  > src/test/java
  > JRE System Library [JavaSE-11]
  > Maven Dependencies
  > src
    target
    HELP.md
    mvnw
    mvnw.cmd
    pom.xml
```



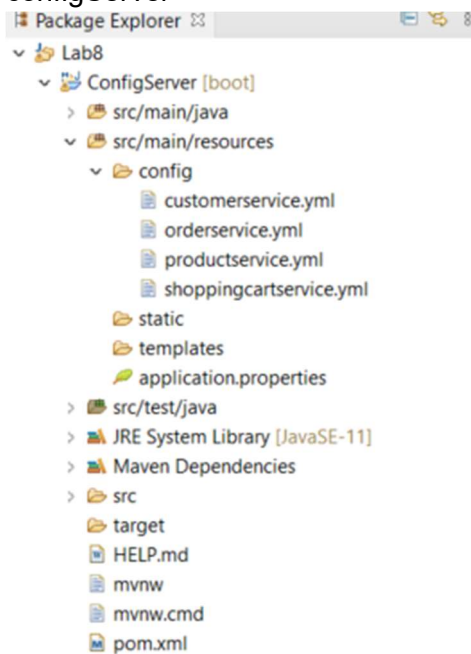
Refer attached sources code for details

## Exercise 2: Config server for our webshop

All projects:

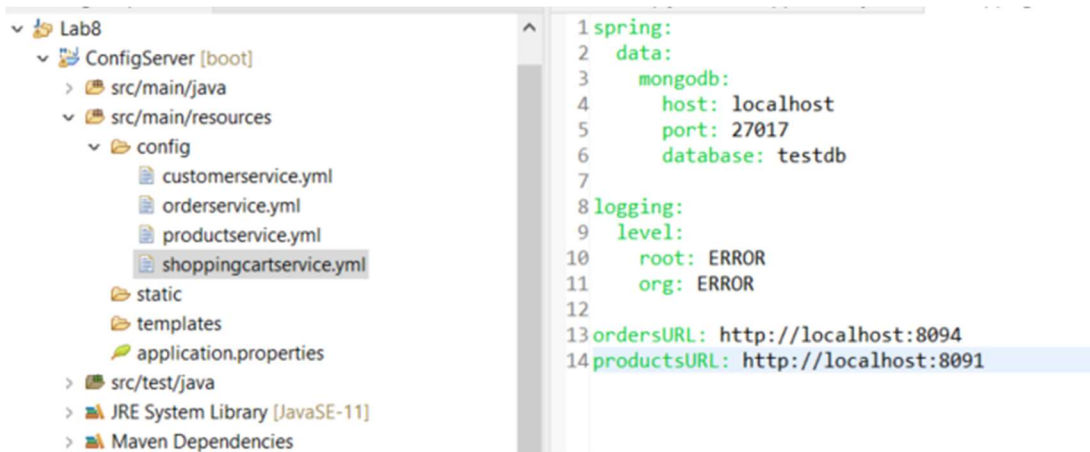
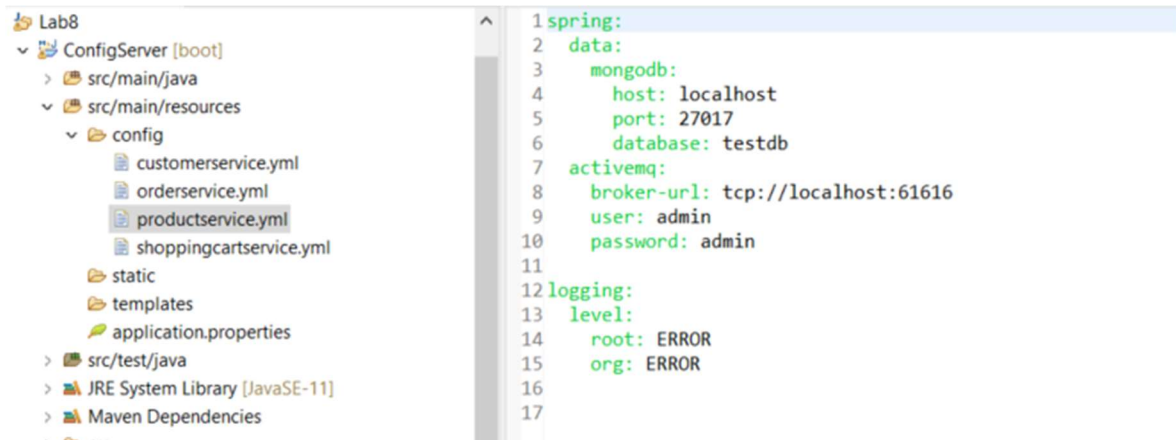
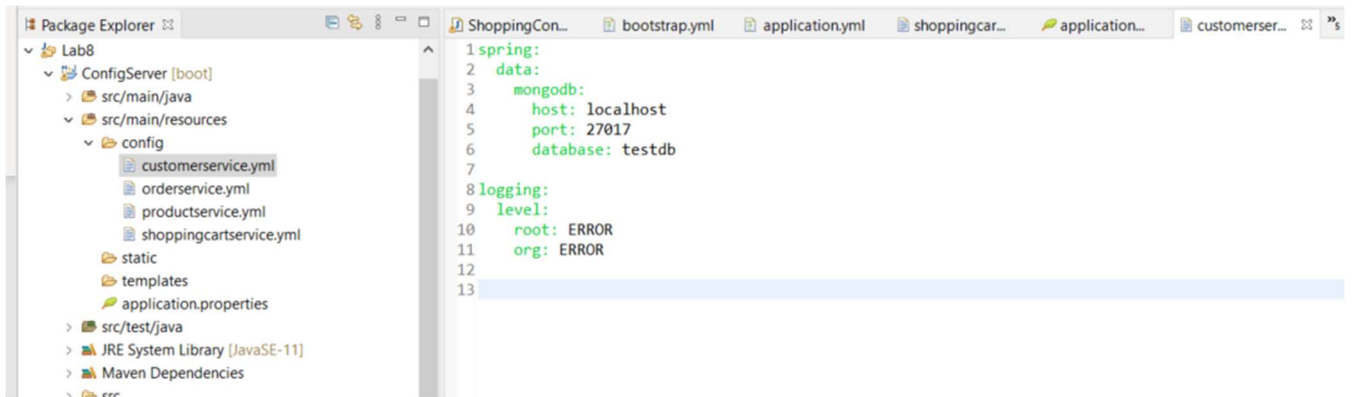


- configServer



Config yml files





The screenshot shows an IDE with two panes. The left pane displays a project tree for 'Lab8'. The right pane shows the content of the 'orderservice.yml' file.

**Project Structure (Left Pane):**

- Lab8
  - ConfigServer [boot]
    - src/main/java
    - src/main/resources
      - config
        - customerservice.yml
        - orderservice.yml
        - productservice.yml
        - shoppingcartservice.yml
      - static
      - templates
      - application.properties
    - src/test/java
    - JRE System Library [JavaSE-11]
    - Maven Dependencies
    - src
    - target
    - HELP.md

**Configuration File Content (Right Pane):**

```
1 spring:
2   data:
3     mongodb:
4       host: localhost
5       port: 27017
6       database: testdb
7   activemq:
8     broker-url: tcp://localhost:61616
9     user: admin
10    password: admin
11
12 logging:
13   level:
14     root: ERROR
15     org: ERROR
16
17 customersURL: http://localhost:8092
18 productsURL: http://localhost:8091
```

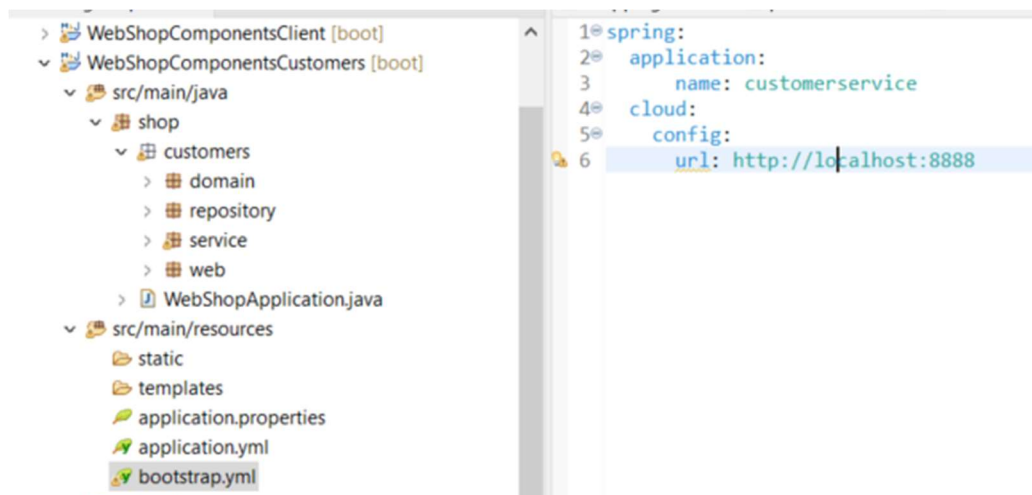
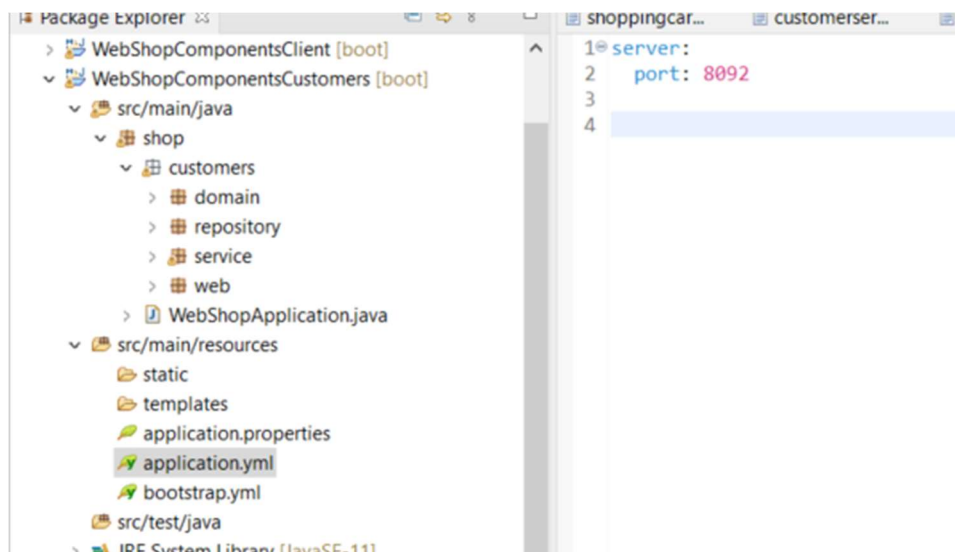
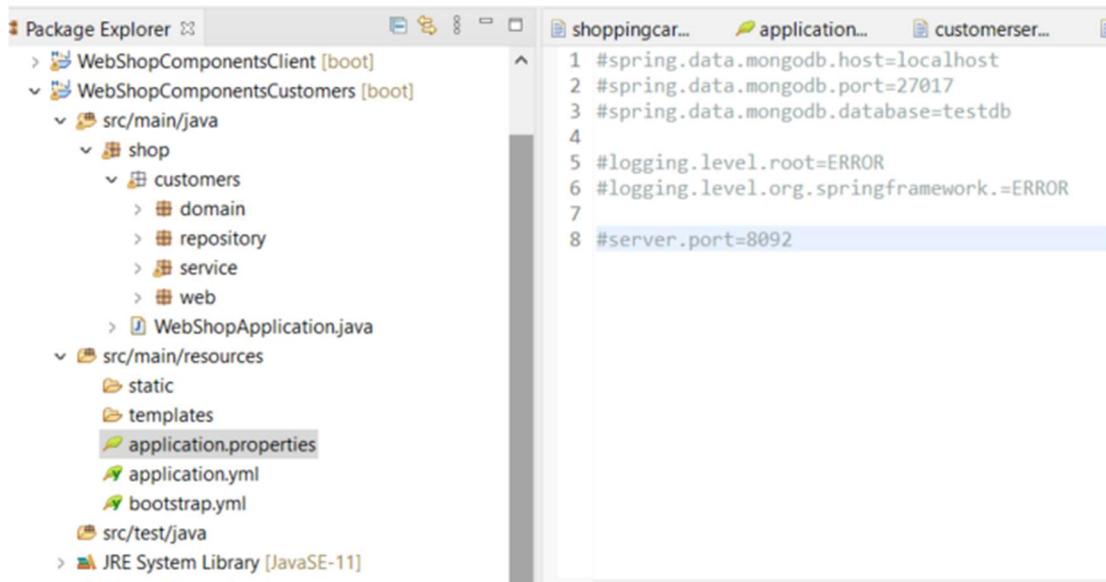
- Customer Service

The screenshot shows an IDE with a project tree for 'WebShopComponentsCustomers'.

**Project Structure:**

- WebShopComponentsCustomers [boot]
  - src/main/java
    - shop
      - customers
        - domain
        - repository
        - service
        - web
      - WebShopApplication.java
  - src/main/resources
    - static
    - templates
    - application.properties
    - application.yml
    - bootstrap.yml
  - src/test/java
  - JRE System Library [JavaSE-11]
  - Maven Dependencies
  - Referenced Libraries
  - src
  - target
  - mvnw
  - mvnw.cmd





- Product service

- WebShopComponentsProducts [boot]
  - src/main/java
    - shop
      - products
        - domain
        - repository
        - service
        - web
      - WebShopApplication.java
  - src/main/resources
    - static
    - templates
    - application.properties
    - application.yml
    - bootstrap.yml
  - src/test/java
  - JRE System Library [JavaSE-11]
  - Maven Dependencies
  - Referenced Libraries
  - src
  - target

- pom.xml
- WebShopComponentsOrder [boot]
- WebShopComponentsProducts [boot]
  - src/main/java
    - shop
      - products
        - domain
        - repository
        - service
        - web
      - WebShopApplication.java
    - src/main/resources
      - static
      - templates
      - application.properties
      - application.yml
      - bootstrap.yml
    - src/test/java

```

1 #spring.data.mongodb.host=localhost
2 #spring.data.mongodb.port=27017
3 #spring.data.mongodb.database=testdb
4
5 #logging.level.root=ERROR
6 #logging.level.org.springframework.=ERROR
7
8 #server.port=8091
9
10 #spring.activemq.broker-url=tcp://localhost:61616
11 #spring.activemq.user=admin
12 #spring.activemq.password=admin

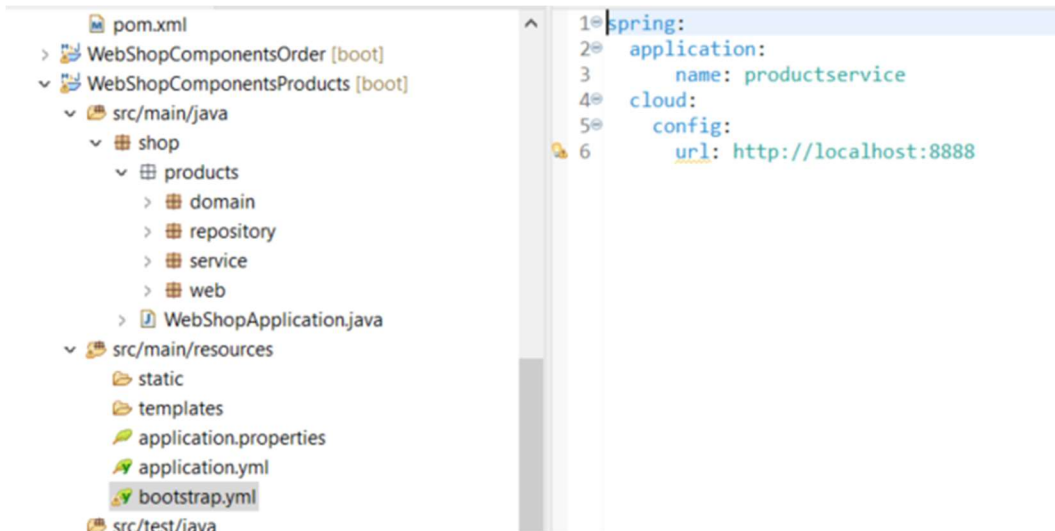
```

- pom.xml
- WebShopComponentsOrder [boot]
- WebShopComponentsProducts [boot]
  - src/main/java
    - shop
      - products
        - domain
        - repository
        - service
        - web
      - WebShopApplication.java
    - src/main/resources
      - static
      - templates
      - application.properties
      - application.yml
      - bootstrap.yml
    - src/test/java

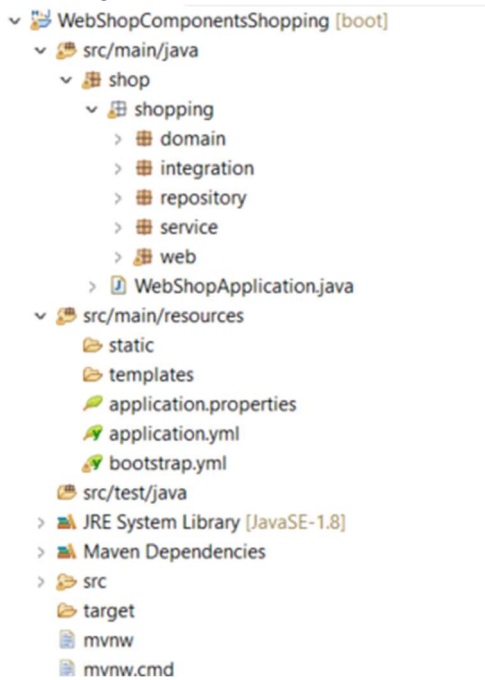
```

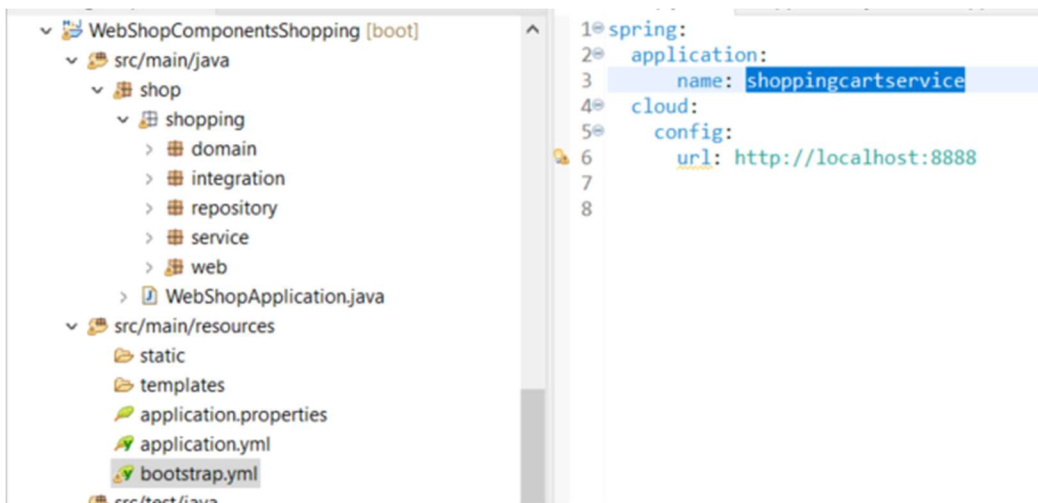
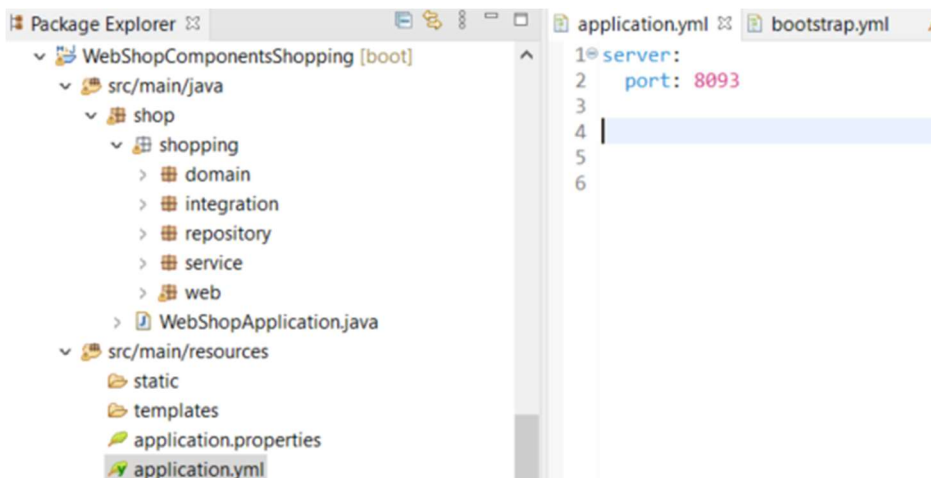
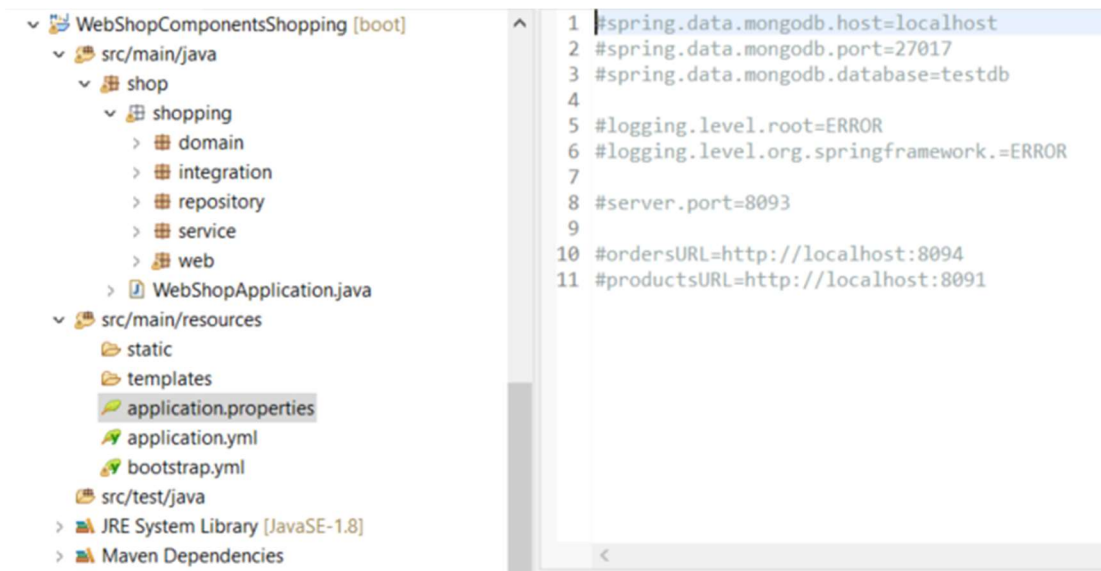
1 server:
2   port: 8091
3
4

```



- ShoppingCart





- Order service

- WebShopComponentsOrder [boot]
  - src/main/java
    - shop
      - order
        - domain
        - integration
        - repository
        - service
        - web
      - WebShopApplication.java
    - src/main/resources
      - static
      - templates
      - application.properties
      - application.yml
      - bootstrap.yml
    - src/test/java
  - JRE System Library [JavaSE-11]
  - Maven Dependencies
  - Referenced Libraries
  - src
  - target

- pom.xml
- WebShopComponentsOrder [boot]
  - src/main/java
    - shop
      - order
        - domain
        - integration
        - repository
        - service
        - web
      - WebShopApplication.java
    - src/main/resources
      - static
      - templates
      - application.properties
      - application.yml
      - bootstrap.yml
    - src/test/java

```

1 #spring.data.mongodb.host=localhost
2 #spring.data.mongodb.port=27017
3 #spring.data.mongodb.database=testdb
4
5 #logging.level.root=ERROR
6 #logging.level.org.springframework.=ERROR
7
8 #server.port=8094
9
10 #customersURL=http://localhost:8092
11 #productsURL=http://localhost:8091
12
13 #spring.activemq.broker-url=tcp://localhost:61616
14 #spring.activemq.user=admin
15
16 #spring.activemq.password=admin

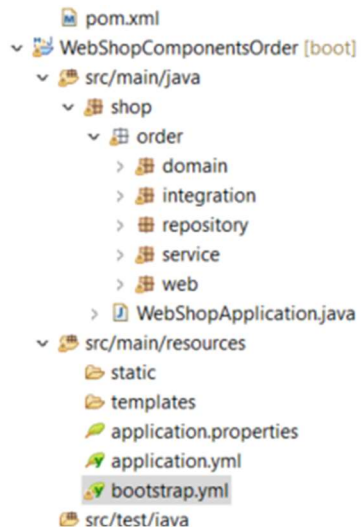
```

- pom.xml
- WebShopComponentsOrder [boot]
  - src/main/java
    - shop
      - order
        - domain
        - integration
        - repository
        - service
        - web
      - WebShopApplication.java
    - src/main/resources
      - static
      - templates
      - application.properties
      - application.yml
      - bootstrap.yml
    - src/test/java

```

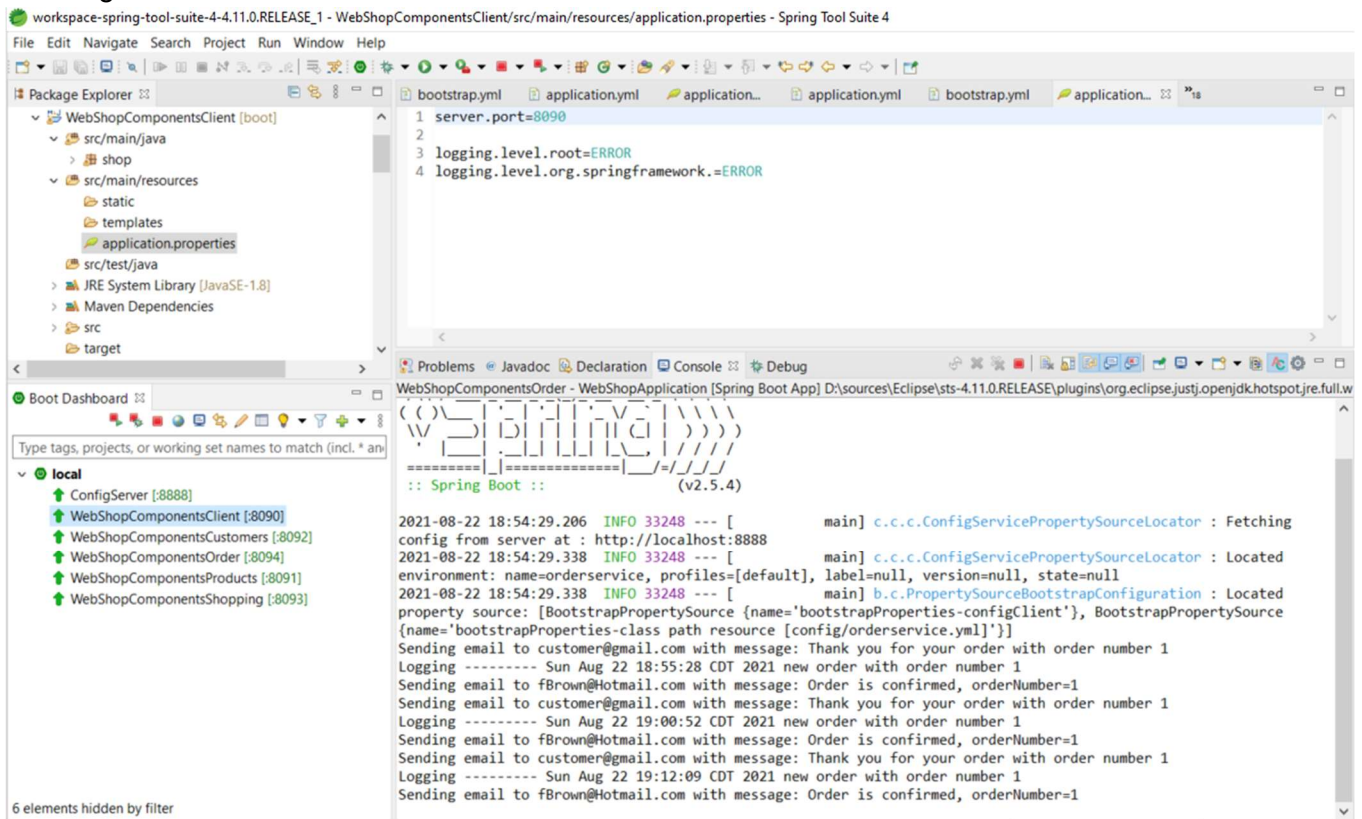
1 server:
2   port: 8094
3
4

```



```
1 spring:
2   application:
3     name: orderservice
4   cloud:
5     config:
6       url: http://localhost:8888
7
8
```

- Running results with Client



Mongo DB database results:



Robo 3T - 12

File View Options Window Help

New release available. Find out what's new in Robo 3T - Download here.

Local Mongo (11)

- System
- carddb
- customersdb
- ordersdb
- productsdb
- test
- testdb
  - Collections (5)
    - customer
    - order
    - product
    - shoppingCart
    - Users
  - testdb2
  - testdb20
  - webshopdb
  - yourdb

db.getCollection('order').find({})

order 0.001 sec.

Key	Value	Type
{ (1) 1 }	{ 6 fields }	Object
_id	1	String
date	2021-08-23 00:12:09.496Z	Date
status	placed	String
customer	{ 5 fields }	Object
customerNumber	101	String
firstname	Frank	String
lastname	Brown	String
email	fBrown@Hotmail.com	String
phone	123456	String
orderlineList	[ 1 element ]	Array
[ 0 ]	{ 2 fields }	Object
quantity	45	Int32
product	{ 3 fields }	Object
productnumber	A33	String
price	250.0	Double
description	TV	String
_class	shop.order.domain.Order	String

## Logs in Mongo DB

```
C:\Windows\system32\cmd.exe - startmongo.bat
2021-08-22T18:47:39.803-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:65060 #236 (24 connections now open)
2021-08-22T18:47:40.180-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:65064 #237 (25 connections now open)
2021-08-22T18:48:14.362-0500 I NETWORK [conn236] end connection 127.0.0.1:65060 (24 connections now open)
2021-08-22T18:48:14.362-0500 I NETWORK [conn235] end connection 127.0.0.1:65061 (24 connections now open)
2021-08-22T18:48:30.878-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:57465 #238 (24 connections now open)
2021-08-22T18:48:30.878-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:57466 #239 (25 connections now open)
2021-08-22T18:48:31.304-0500 I NETWORK [conn238] end connection 127.0.0.1:57465 (24 connections now open)
2021-08-22T18:48:31.304-0500 I NETWORK [conn239] end connection 127.0.0.1:57466 (24 connections now open)
2021-08-22T18:54:25.421-0500 I NETWORK [conn226] end connection 127.0.0.1:51610 (22 connections now open)
2021-08-22T18:54:25.421-0500 I NETWORK [conn227] end connection 127.0.0.1:51611 (22 connections now open)
2021-08-22T18:54:30.552-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:64900 #240 (22 connections now open)
2021-08-22T18:54:30.554-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:64899 #241 (23 connections now open)
2021-08-22T18:54:42.277-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:60483 #242 (24 connections now open)
2021-08-22T18:55:12.882-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:50518 #243 (25 connections now open)
2021-08-22T18:55:12.882-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:50517 #244 (26 connections now open)
2021-08-22T18:56:09.440-0500 I NETWORK [conn232] end connection 127.0.0.1:51649 (25 connections now open)
2021-08-22T18:56:09.440-0500 I NETWORK [conn223] end connection 127.0.0.1:51607 (25 connections now open)
2021-08-22T18:56:09.440-0500 I NETWORK [conn222] end connection 127.0.0.1:51606 (24 connections now open)
2021-08-22T18:56:15.425-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:51830 #245 (24 connections now open)
2021-08-22T18:56:15.426-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:51829 #246 (25 connections now open)
2021-08-22T18:56:23.556-0500 I NETWORK [conn243] end connection 127.0.0.1:50518 (24 connections now open)
2021-08-22T18:56:23.556-0500 I NETWORK [conn244] end connection 127.0.0.1:50517 (24 connections now open)
2021-08-22T18:56:28.573-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:51627 #247 (24 connections now open)
2021-08-22T18:56:28.573-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:51626 #248 (25 connections now open)
2021-08-22T18:56:29.028-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:51632 #249 (26 connections now open)
2021-08-22T18:58:10.081-0500 I NETWORK [conn247] end connection 127.0.0.1:51627 (25 connections now open)
2021-08-22T18:58:10.081-0500 I NETWORK [conn248] end connection 127.0.0.1:51626 (25 connections now open)
2021-08-22T18:58:29.158-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:63163 #250 (25 connections now open)
2021-08-22T18:58:29.159-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:63162 #251 (26 connections now open)
2021-08-22T19:00:31.658-0500 I NETWORK [conn245] end connection 127.0.0.1:51830 (25 connections now open)
2021-08-22T19:00:31.658-0500 I NETWORK [conn246] end connection 127.0.0.1:51829 (25 connections now open)
2021-08-22T19:00:31.658-0500 I NETWORK [conn249] end connection 127.0.0.1:51632 (25 connections now open)
2021-08-22T19:00:31.785-0500 I NETWORK [conn251] end connection 127.0.0.1:63162 (22 connections now open)
2021-08-22T19:00:31.785-0500 I NETWORK [conn250] end connection 127.0.0.1:63163 (22 connections now open)
2021-08-22T19:00:38.057-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:61245 #252 (22 connections now open)
2021-08-22T19:00:38.058-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:61246 #253 (23 connections now open)
2021-08-22T19:00:38.462-0500 I NETWORK [conn252] end connection 127.0.0.1:61245 (22 connections now open)
2021-08-22T19:00:38.463-0500 I NETWORK [conn253] end connection 127.0.0.1:61246 (22 connections now open)
2021-08-22T19:00:45.435-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:51437 #254 (22 connections now open)
2021-08-22T19:00:45.436-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:51438 #255 (23 connections now open)
2021-08-22T19:00:51.879-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:59993 #256 (24 connections now open)
2021-08-22T19:00:51.879-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:59992 #257 (25 connections now open)
2021-08-22T19:00:52.274-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:59998 #258 (26 connections now open)
2021-08-22T19:12:05.428-0500 I NETWORK [conn257] end connection 127.0.0.1:59992 (25 connections now open)
2021-08-22T19:12:05.428-0500 I NETWORK [conn256] end connection 127.0.0.1:59993 (25 connections now open)
2021-08-22T19:12:09.149-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:57553 #259 (25 connections now open)
2021-08-22T19:12:09.150-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:57552 #260 (26 connections now open)
2021-08-22T19:13:25.297-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:50135 #261 (27 connections now open)
2021-08-22T19:13:25.354-0500 I NETWORK [initandlisten] connection accepted from 127.0.0.1:50136 #262 (28 connections now open)
```

## Logs in ActiveMQ

```
ActiveMQ
D:\sources\Eclipse\activeMQ\apache-activemq-5.15.3-bin\apache-activemq-5.15.3\bin\win64>activemq.bat
wrapper --> Wrapper Started as Console
wrapper Launching a JVM...
jvm 1 | Wrapper (Version 3.2.3) http://wrapper.tanukisoftware.org
jvm 1 | Copyright 1999-2006 Tanuki Software, Inc. All Rights Reserved.
jvm 1 |
jvm 1 | Java Runtime: Oracle Corporation 11.0.10 C:\Program Files\Java\jdk-11.0.10
jvm 1 | Heap sizes: current=192512K free=181248K max=1048576K
jvm 1 | JVM args: -Dactivemq.home=... -Dactivemq.base=... -Djavax.net.ssl.keyStorePassword=password -Djavax.net.ssl.trustStorePassword=password -Djavax.net.ssl.keyStore=.../conf/broker.ks -Djavax.net.ssl.trustStore=.../conf/broker.ts -Dcom.sun.management.jmxremote -Dorg.apache.activemq.UseDedicatedTaskRunner=true -Djava.util.logging.config.file=logging.properties -Dactivemq.conf=.../conf -Dactivemq.data=.../data -Djava.security.auth.login.config=.../conf/login.config -Xmx1024m -Djava.library.path=.../bin/win64 -Dwrapper.key=bhQVgeoX8vvtPe5 -Dwrapper.port=32000 -Dwrapper.jvm.port.min=31000 -Dwrapper.jvm.port.max=31999 -Dwrapper.pid=25200 -Dwrapper.version=3.2.3 -Dwrapper.native_library=wrapper -Dwrapper.cpu.timeout=10 -Dwrapper.jvmid=1
jvm 1 |
jvm 1 | Extensions classpath:
jvm 1 | [..\lib\...\lib\camel,..\lib\optional,..\lib\web,..\lib\extra]
jvm 1 | ACTIVEMQ_HOME: ..\..
jvm 1 | ACTIVEMQ_BASE: ..\..
jvm 1 | ACTIVEMQ_CONF: ..\..\conf
jvm 1 | ACTIVEMQ_DATA: ..\..\data
jvm 1 | Loading message broker from: xbean:activemq.xml
jvm 1 | INFO | Refreshing org.apache.activemq.xbean.XBeanBrokerFactory$1@5206df3a: startup date [Sun Aug 22 17:50:05 CDT 2021]; root of context hierarchy
jvm 1 | INFO | Using Persistence Adapter: KahaDBPersistenceAdapter[D:\sources\Eclipse\activeMQ\apache-activemq-5.15.3-bin\apache-activemq-5.15.3\bin\win64\..\data\kahadb]
jvm 1 | INFO | KahaDB is version 6
jvm 1 | INFO | PLISTore[D:\sources\Eclipse\activeMQ\apache-activemq-5.15.3-bin\apache-activemq-5.15.3\bin\win64\..\data\localhost\tmp_storage] started
jvm 1 | INFO | Apache ActiveMQ 5.15.3 (localhost, ID:DESKTOP-GT6D74M-54838-1629672606667-0:1) is starting
jvm 1 | INFO | Listening for connections at: tcp://DESKTOP-GT6D74M:61616?maximumConnections=1000&wireFormat.maxFrameSize=104857600
jvm 1 | INFO | Connector openssl started
jvm 1 | INFO | Listening for connections at: amqp://DESKTOP-GT6D74M:5672?maximumConnections=1000&wireFormat.maxFrameSize=104857600
jvm 1 | INFO | Connector amqp started
jvm 1 | INFO | Listening for connections at: stomp://DESKTOP-GT6D74M:61613?maximumConnections=1000&wireFormat.maxFrameSize=104857600
jvm 1 | INFO | Connector stomp started
jvm 1 | INFO | Listening for connections at: mqtt://DESKTOP-GT6D74M:1883?maximumConnections=1000&wireFormat.maxFrameSize=104857600
jvm 1 | INFO | Connector mqtt started
jvm 1 | WARN | ServletContext@0.e.j.s.ServletContextHandler@49296f61{/null,STARTING) has uncovered http methods for path: /
jvm 1 | INFO | Listening for connections at: ws://DESKTOP-GT6D74M:61614?maximumConnections=1000&wireFormat.maxFrameSize=104857600
jvm 1 | INFO | Connector ws started
jvm 1 | INFO | Apache ActiveMQ 5.15.3 (localhost, ID:DESKTOP-GT6D74M-54838-1629672606667-0:1) started
jvm 1 | INFO | For help or more information please see: http://activemq.apache.org
jvm 1 | WARN | Store limit is 102400 mb (current store usage is 0 mb). The data directory: D:\sources\Eclipse\activeMQ\apache-activemq-5.15.3-bin\apache-activemq-5.15.3\bin\win64\..\data\kahadb only has 7176 mb of usable space. - resetting to maximum available disk space: 7176 mb
jvm 1 | WARN | Temporary Store limit is 51200 mb (current store usage is 0 mb). The data directory: D:\sources\Eclipse\activeMQ\apache-activemq-5.15.3-bin\apache-activemq-5.15.3\bin\win64\..\data only has 7176 mb of usable space. - resetting to maximum available disk space: 7176 mb
jvm 1 | INFO | No Spring WebApplicationInitializer types detected on classpath
jvm 1 | INFO | ActiveMQ WebConsole available at http://0.0.0.0:8161/
jvm 1 | INFO | ActiveMQ Jolokia REST API available at http://0.0.0.0:8161/api/jolokia/
jvm 1 | INFO | Initializing Spring FrameworkServlet 'dispatcher'
jvm 1 | INFO | No Spring WebApplicationInitializer types detected on classpath
jvm 1 | INFO | jolokia-agent: Using policy access restrictor classpath:/jolokia-access.xml
```

Refer attached sources code for details