FA16: CMPE-272 Sec 98 - Enterprise Software Platforms

Assignment #5

Requirement:

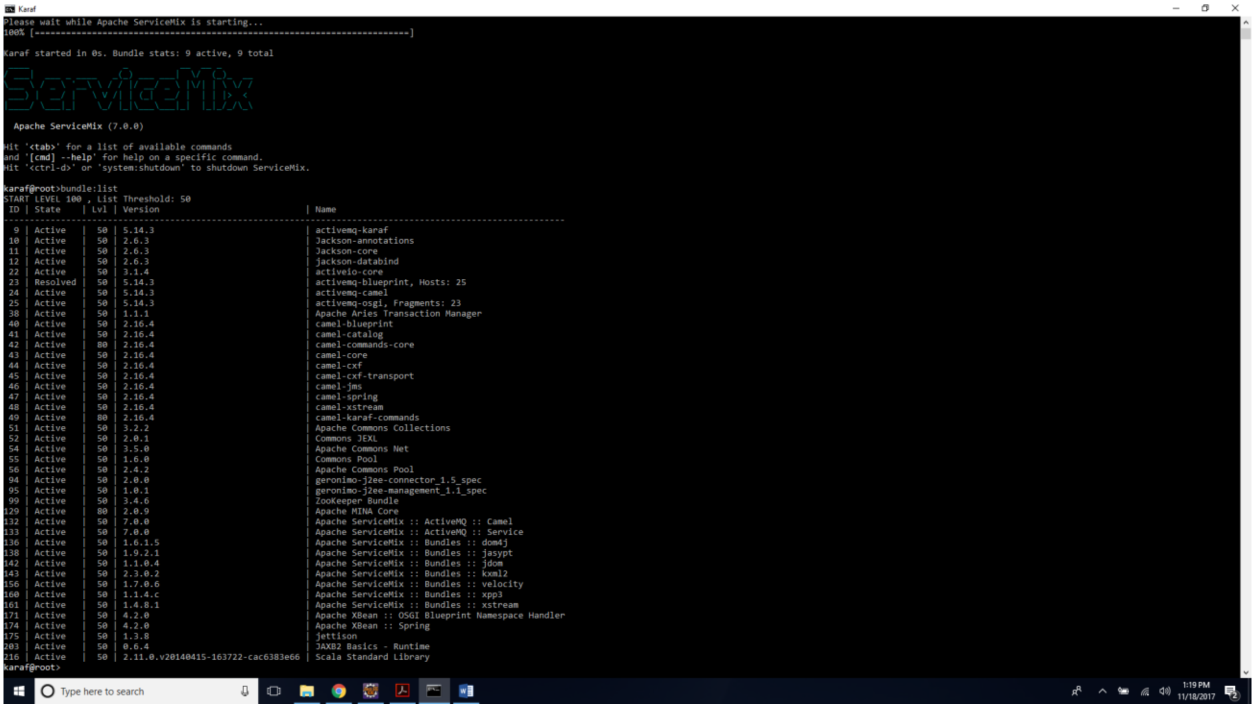
1. Go to the link - http://servicemix.apache.org/docs/7.x/quickstart/quickstart.pdf and complete all the steps from 1-5. Attach screenshots for each step done as per the steps mentioned in the tutorial pdf.
2. Setup a simple JMS application with multi thread, concurrent, consumers and producers as described here: http://activemq.apache.org/hello-world.html

Team Name: Shield

STUDENT NAME	STUDENT ID	GITHUB REPO
Anushri Srinath Aithal	012506897	https://github.com/shriaithal/Shield_dev.git
Anuradha Rajashekar	012409956	https://github.com/AnuradhaIyer/Ansible-Play-book
Nidhi Jamar	010070593	https://github.com/nidhijmr/Shield.git
Ashwini Shankar Narayan	012506910	https://github.com/Ashwinisnv/Shield_Ashwini.git

Team GitHub Repository: https://github.com/AnuradhaIyer/Shield.git

Apache ServiceMix Screenshots:



```
Please wait while Apache ServiceMix is starting...
100% [========================================================================]

Karaf started in 0s. Bundle stats: 9 active, 9 total
 ____                  _          __  __ _
/ ___|  ___ _ ____   _(_) ___ ___|  \/  (_)_  __
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  Apache ServiceMix (7.0.0)

Hit '<tab>' for a list of available commands
and '[cmd] --help' for help on a specific command.
Hit '<ctrl-d>' or 'system:shutdown' to shutdown ServiceMix.

karaf@root>bundle:list
START LEVEL 100 , List Threshold: 50
 ID | State    | Lvl | Version                            | Name
--------------------------------------------------------------------------------------------------------
  9 | Active   |  50 | 5.14.3                             | activemq-karaf
 10 | Active   |  50 | 2.6.3                              | Jackson-annotations
 11 | Active   |  50 | 2.6.3                              | Jackson-core
 12 | Active   |  50 | 2.6.3                              | jackson-databind
 22 | Active   |  50 | 3.1.4                              | activeio-core
 23 | Resolved |  50 | 5.14.3                             | activemq-blueprint, Hosts: 25
 24 | Active   |  50 | 5.14.3                             | activemq-camel
 25 | Active   |  50 | 5.14.3                             | activemq-osgi, Fragments: 23
 38 | Active   |  50 | 1.1.1                              | Apache Aries Transaction Manager
 40 | Active   |  50 | 2.16.4                             | camel-blueprint
 41 | Active   |  50 | 2.16.4                             | camel-catalog
 42 | Active   |  80 | 2.16.4                             | camel-commands-core
 43 | Active   |  50 | 2.16.4                             | camel-core
 44 | Active   |  50 | 2.16.4                             | camel-cxf
 45 | Active   |  50 | 2.16.4                             | camel-cxf-transport
 46 | Active   |  50 | 2.16.4                             | camel-jms
 47 | Active   |  50 | 2.16.4                             | camel-spring
 48 | Active   |  50 | 2.16.4                             | camel-xstream
 49 | Active   |  80 | 2.16.4                             | camel-karaf-commands
 51 | Active   |  50 | 3.2.2                              | Apache Commons Collections
 52 | Active   |  50 | 2.0.1                              | Commons JEXL
 54 | Active   |  50 | 3.5.0                              | Apache Commons Net
 55 | Active   |  50 | 1.6.0                              | Commons Pool
 56 | Active   |  50 | 2.4.2                              | Apache Commons Pool
 94 | Active   |  50 | 2.0.0                              | geronimo-j2ee-connector_1.5_spec
 95 | Active   |  50 | 1.0.1                              | geronimo-j2ee-management_1.1_spec
 99 | Active   |  50 | 3.4.6                              | ZooKeeper Bundle
129 | Active   |  80 | 2.0.9                              | Apache MINA Core
132 | Active   |  50 | 7.0.0                              | Apache ServiceMix :: ActiveMQ :: Camel
133 | Active   |  50 | 7.0.0                              | Apache ServiceMix :: ActiveMQ :: Service
136 | Active   |  50 | 1.6.1.5                            | Apache ServiceMix :: Bundles :: dom4j
138 | Active   |  50 | 1.9.2.1                            | Apache ServiceMix :: Bundles :: jasypt
142 | Active   |  50 | 1.1.0.4                            | Apache ServiceMix :: Bundles :: jdom
143 | Active   |  50 | 2.3.0.2                            | Apache ServiceMix :: Bundles :: kxml2
156 | Active   |  50 | 1.7.0.6                            | Apache ServiceMix :: Bundles :: velocity
160 | Active   |  50 | 1.1.4.c                            | Apache ServiceMix :: Bundles :: xpp3
161 | Active   |  50 | 1.4.8.1                            | Apache ServiceMix :: Bundles :: xstream
171 | Active   |  50 | 4.2.0                              | Apache XBean :: OSGI Blueprint Namespace Handler
174 | Active   |  50 | 4.2.0                              | Apache XBean :: Spring
175 | Active   |  50 | 1.3.8                              | jettison
203 | Active   |  50 | 0.6.4                              | JAXB2 Basics - Runtime
216 | Active   |  50 | 2.11.0.v20140415-163722-cac6383e66 | Scala Standard Library
karaf@root>
```
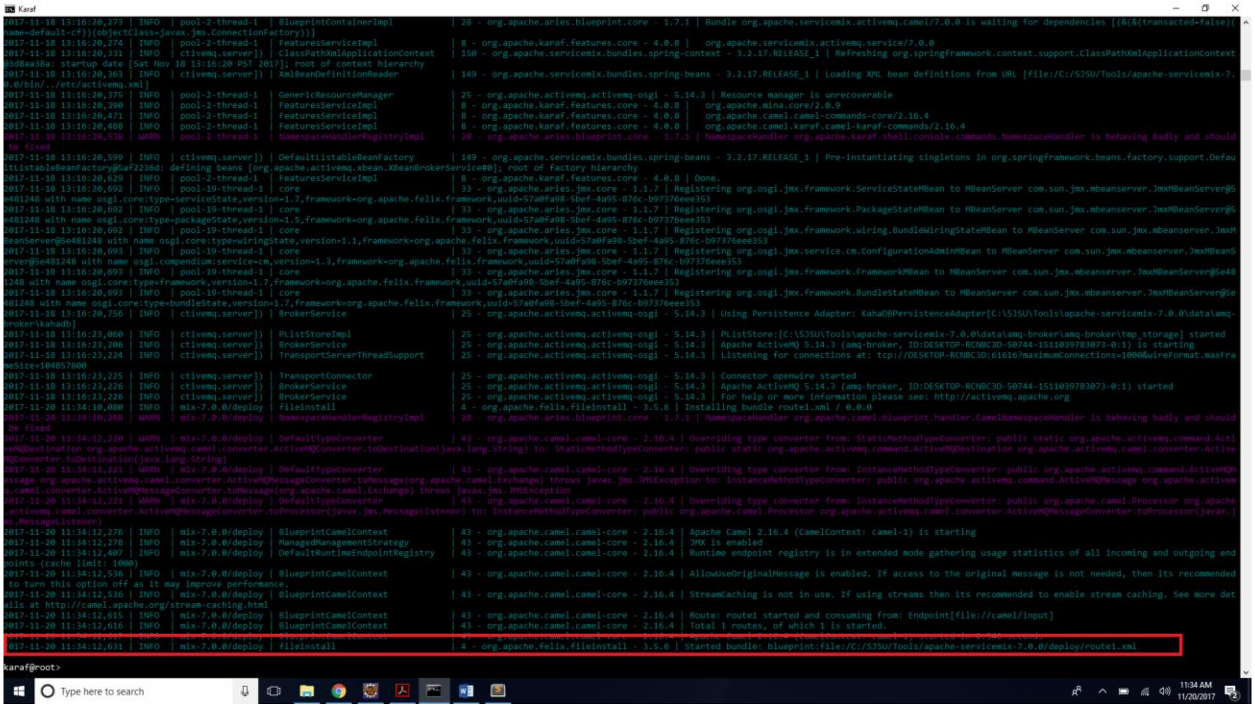
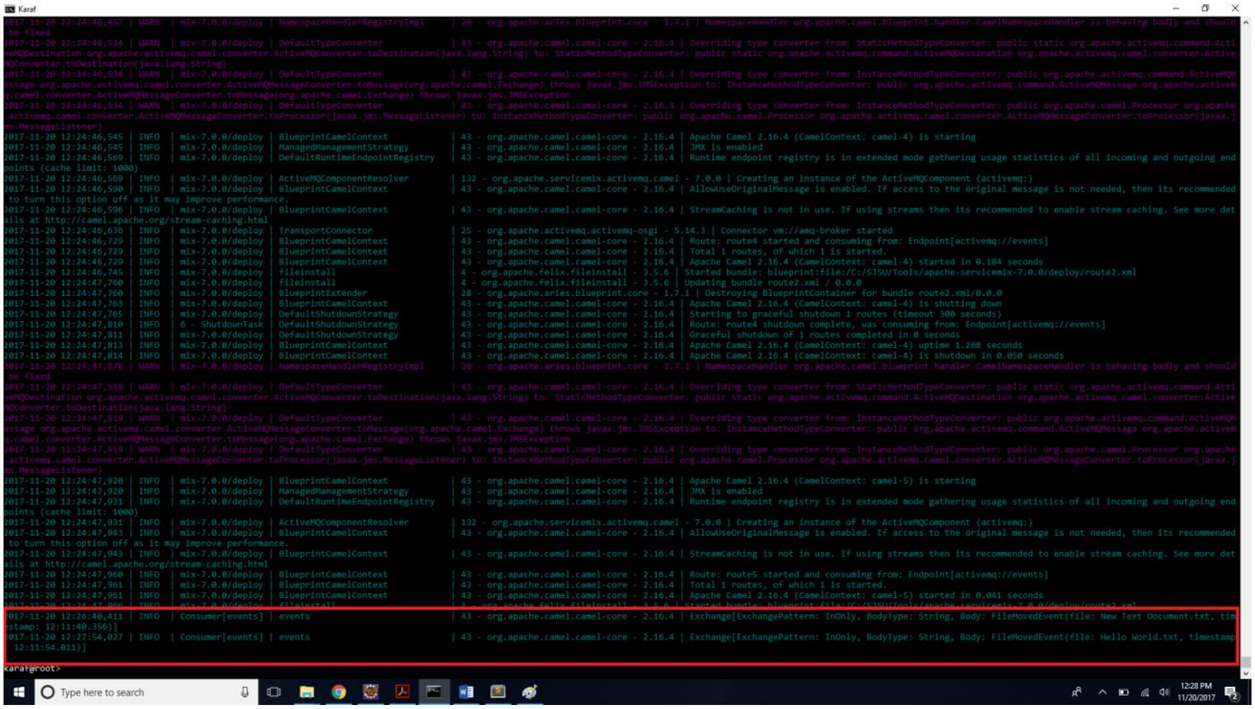

Fig. 1 Screenshot of Apache ServiceMix Installed.



```
2017-11-18 13:16:20,273 | INFO  | pool-2-thread-1  | BlueprintContainerImpl           | 28 - org.apache.aries.blueprint.core - 1.7.1 | Bundle org.apache.servicemix.activemq.camel/7.0.0 is waiting for dependencies [(&(&(transacted=false)(
name=default-cf))(objectClass=javax.jms.ConnectionFactory))]
2017-11-18 13:16:20,274 | INFO  | pool-2-thread-1  | FeaturesServiceImpl              | 8 - org.apache.karaf.features.core - 4.0.8 |   org.apache.servicemix.activemq.service/7.0.0
2017-11-18 13:16:20,331 | INFO  | ctivemq.server]) | ClassPathXmlApplicationContext   | 150 - org.apache.servicemix.bundles.spring-context - 3.2.17.RELEASE_1 | Refreshing org.springframework.context.support.ClassPathXmlApplicationContext
@3d8aa38a: startup date [Sat Nov 18 13:16:20 PST 2017]; root of context hierarchy
2017-11-18 13:16:20,363 | INFO  | ctivemq.server]) | XmlBeanDefinitionReader          | 149 - org.apache.servicemix.bundles.spring-beans - 3.2.17.RELEASE_1 | Loading XML bean definitions from URL [file:/C:/SJSU/Tools/apache-servicemix-7.
0.0/bin/../etc/activemq.xml]
2017-11-18 13:16:20,375 | INFO  | pool-2-thread-1  | GenericResourceManager           | 25 - org.apache.activemq.activemq-osgi - 5.14.3 | Resource manager is unrecoverable
2017-11-18 13:16:20,390 | INFO  | pool-2-thread-1  | FeaturesServiceImpl              | 8 - org.apache.karaf.features.core - 4.0.8 |   org.apache.mina.core/2.0.9
2017-11-18 13:16:20,471 | INFO  | pool-2-thread-1  | FeaturesServiceImpl              | 8 - org.apache.karaf.features.core - 4.0.8 |   org.apache.camel.camel-commands-core/2.16.4
2017-11-18 13:16:20,488 | INFO  | pool-2-thread-1  | FeaturesServiceImpl              | 8 - org.apache.karaf.features.core - 4.0.8 |   org.apache.camel.karaf.camel-karaf-commands/2.16.4
2017-11-18 13:16:20,538 | WARN  | pool-2-thread-1  | NamespaceHandlerRegistryImpl     | 28 - org.apache.aries.blueprint.core - 1.7.1 | NamespaceHandler org.apache.karaf.shell.console.commands.NamespaceHandler is behaving badly and should
 be fixed
2017-11-18 13:16:20,599 | INFO  | ctivemq.server]) | DefaultListableBeanFactory       | 149 - org.apache.servicemix.bundles.spring-beans - 3.2.17.RELEASE_1 | Pre-instantiating singletons in org.springframework.beans.factory.support.Defau
ltListableBeanFactory@5af2236d: defining beans [org.apache.activemq.xbean.XBeanBrokerService#0]; root of factory hierarchy
2017-11-18 13:16:20,629 | INFO  | pool-2-thread-1  | FeaturesServiceImpl              | 8 - org.apache.karaf.features.core - 4.0.8 | Done.
2017-11-18 13:16:20,692 | INFO  | pool-19-thread-1 | core                             | 33 - org.apache.aries.jmx.core - 1.1.7 | Registering org.osgi.jmx.framework.ServiceStateMBean to MBeanServer com.sun.jmx.mbeanserver.JmxMBeanServer@5
e481248 with name osgi.core:type=serviceState,version=1.7,framework=org.apache.felix.framework,uuid=57a0fa98-5bef-4a95-876c-b97376eee353
2017-11-18 13:16:20,692 | INFO  | pool-19-thread-1 | core                             | 33 - org.apache.aries.jmx.core - 1.1.7 | Registering org.osgi.jmx.framework.PackageStateMBean to MBeanServer com.sun.jmx.mbeanserver.JmxMBeanServer@5
e481248 with name osgi.core:type=packageState,version=1.5,framework=org.apache.felix.framework,uuid=57a0fa98-5bef-4a95-876c-b97376eee353
2017-11-18 13:16:20,692 | INFO  | pool-19-thread-1 | core                             | 33 - org.apache.aries.jmx.core - 1.1.7 | Registering org.osgi.jmx.framework.wiring.BundleWiringStateMBean to MBeanServer com.sun.jmx.mbeanserver.JmxM
BeanServer@5e481248 with name osgi.core:type=wiringState,version=1.1,framework=org.apache.felix.framework,uuid=57a0fa98-5bef-4a95-876c-b97376eee353
2017-11-18 13:16:20,693 | INFO  | pool-19-thread-1 | core                             | 33 - org.apache.aries.jmx.core - 1.1.7 | Registering org.osgi.jmx.service.cm.ConfigurationAdminMBean to MBeanServer com.sun.jmx.mbeanserver.JmxMBeanS
erver@5e481248 with name osgi.compendium:service=cm,version=1.3,framework=org.apache.felix.framework,uuid=57a0fa98-5bef-4a95-876c-b97376eee353
2017-11-18 13:16:20,693 | INFO  | pool-19-thread-1 | core                             | 33 - org.apache.aries.jmx.core - 1.1.7 | Registering org.osgi.jmx.framework.FrameworkMBean to MBeanServer com.sun.jmx.mbeanserver.JmxMBeanServer@5e48
1248 with name osgi.core:type=framework,version=1.7,framework=org.apache.felix.framework,uuid=57a0fa98-5bef-4a95-876c-b97376eee353
2017-11-18 13:16:20,693 | INFO  | pool-19-thread-1 | core                             | 33 - org.apache.aries.jmx.core - 1.1.7 | Registering org.osgi.jmx.framework.BundleStateMBean to MBeanServer com.sun.jmx.mbeanserver.JmxMBeanServer@5e
481248 with name osgi.core:type=bundleState,version=1.7,framework=org.apache.felix.framework,uuid=57a0fa98-5bef-4a95-876c-b97376eee353
2017-11-18 13:16:20,756 | INFO  | ctivemq.server]) | BrokerService                    | 25 - org.apache.activemq.activemq-osgi - 5.14.3 | Using Persistence Adapter: KahaDBPersistenceAdapter[C:\SJSU\Tools\apache-servicemix-7.0.0\data\amq-
broker\kahadb]
2017-11-18 13:16:23,060 | INFO  | ctivemq.server]) | PListStoreImpl                   | 25 - org.apache.activemq.activemq-osgi - 5.14.3 | PListStore:[C:\SJSU\Tools\apache-servicemix-7.0.0\data\amq-broker\amq-broker\tmp_storage] started
2017-11-18 13:16:23,206 | INFO  | ctivemq.server]) | BrokerService                    | 25 - org.apache.activemq.activemq-osgi - 5.14.3 | Apache ActiveMQ 5.14.3 (amq-broker, ID:DESKTOP-RCNBC3D-50744-1511039783073-0:1) is starting
2017-11-18 13:16:23,224 | INFO  | ctivemq.server]) | TransportServerThreadSupport     | 25 - org.apache.activemq.activemq-osgi - 5.14.3 | Listening for connections at: tcp://DESKTOP-RCNBC3D:61616?maximumConnections=1000&wireFormat.maxFra
meSize=104857600
2017-11-18 13:16:23,225 | INFO  | ctivemq.server]) | TransportConnector               | 25 - org.apache.activemq.activemq-osgi - 5.14.3 | Connector openwire started
2017-11-18 13:16:23,226 | INFO  | ctivemq.server]) | BrokerService                    | 25 - org.apache.activemq.activemq-osgi - 5.14.3 | Apache ActiveMQ 5.14.3 (amq-broker, ID:DESKTOP-RCNBC3D-50744-1511039783073-0:1) started
2017-11-18 13:16:23,226 | INFO  | ctivemq.server]) | BrokerService                    | 25 - org.apache.activemq.activemq-osgi - 5.14.3 | For help or more information please see: http://activemq.apache.org
2017-11-20 11:34:10,080 | INFO  | mix-7.0.0/deploy | fileinstall                      | 4 - org.apache.felix.fileinstall - 3.5.6 | Installing bundle route1.xml / 0.0.0
2017-11-20 11:34:10,268 | WARN  | mix-7.0.0/deploy | NamespaceHandlerRegistryImpl     | 28 - org.apache.aries.blueprint.core - 1.7.1 | NamespaceHandler org.apache.camel.blueprint.handler.CamelNamespaceHandler is behaving badly and should
 be fixed
2017-11-20 11:34:12,220 | WARN  | mix-7.0.0/deploy | DefaultTypeConverter             | 43 - org.apache.camel.camel-core - 2.16.4 | Overriding type converter from: StaticMethodTypeConverter: public static org.apache.activemq.command.Acti
veMQDestination org.apache.activemq.camel.converter.ActiveMQConverter.toDestination(java.lang.String) to: StaticMethodTypeConverter: public static org.apache.activemq.command.ActiveMQDestination org.apache.activemq.camel.converter.Active
MQConverter.toDestination(java.lang.String)
2017-11-20 11:34:12,221 | WARN  | mix-7.0.0/deploy | DefaultTypeConverter             | 43 - org.apache.camel.camel-core - 2.16.4 | Overriding type converter from: InstanceMethodTypeConverter: public org.apache.activemq.command.ActiveMQM
essage org.apache.activemq.camel.converter.ActiveMQMessageConverter.toMessage(org.apache.camel.Exchange) throws javax.jms.JMSException to: InstanceMethodTypeConverter: public org.apache.activemq.command.ActiveMQMessage org.apache.activem
q.camel.converter.ActiveMQMessageConverter.toMessage(org.apache.camel.Exchange) throws javax.jms.JMSException
2017-11-20 11:34:12,221 | WARN  | mix-7.0.0/deploy | DefaultTypeConverter             | 43 - org.apache.camel.camel-core - 2.16.4 | Overriding type converter from: InstanceMethodTypeConverter: public org.apache.camel.Processor org.apache
.activemq.camel.converter.ActiveMQMessageConverter.toProcessor(javax.jms.MessageListener) to: InstanceMethodTypeConverter: public org.apache.camel.Processor org.apache.activemq.camel.converter.ActiveMQMessageConverter.toProcessor(javax.j
ms.MessageListener)
2017-11-20 11:34:12,276 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Apache Camel 2.16.4 (CamelContext: camel-1) is starting
2017-11-20 11:34:12,278 | INFO  | mix-7.0.0/deploy | ManagedManagementStrategy        | 43 - org.apache.camel.camel-core - 2.16.4 | JMX is enabled
2017-11-20 11:34:12,407 | INFO  | mix-7.0.0/deploy | DefaultRuntimeEndpointRegistry   | 43 - org.apache.camel.camel-core - 2.16.4 | Runtime endpoint registry is in extended mode gathering usage statistics of all incoming and outgoing end
points (cache limit: 1000)
2017-11-20 11:34:12,536 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | AllowUseOriginalMessage is enabled. If access to the original message is not needed, then its recommended
 to turn this option off as it may improve performance.
2017-11-20 11:34:12,536 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | StreamCaching is not in use. If using streams then its recommended to enable stream caching. See more det
ails at http://camel.apache.org/stream-caching.html
2017-11-20 11:34:12,615 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Route: route1 started and consuming from: Endpoint[file://camel/input]
2017-11-20 11:34:12,616 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Total 1 routes, of which 1 is started.
2017-11-20 11:34:12,617 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Apache Camel 2.16.4 (CamelContext: camel-1) started in 0.340 seconds
2017-11-20 11:34:12,631 | INFO  | mix-7.0.0/deploy | fileinstall                      | 4 - org.apache.felix.fileinstall - 3.5.6 | Started bundle: blueprint:file:/C:/SJSU/Tools/apache-servicemix-7.0.0/deploy/route1.xml

karaf@root>
```

Fig. 2 Screenshot of deploying camel route to move files from input directory to output directory



```
2017-11-20 12:24:46,457 | WARN  | mix-7.0.0/deploy | NamespaceHandlerRegistryImpl     | 28 - org.apache.aries.blueprint.core - 1.7.1 | NamespaceHandler org.apache.camel.blueprint.handler.CamelNamespaceHandler is behaving badly and should
 be fixed
2017-11-20 12:24:46,534 | WARN  | mix-7.0.0/deploy | DefaultTypeConverter             | 43 - org.apache.camel.camel-core - 2.16.4 | Overriding type converter from: StaticMethodTypeConverter: public static org.apache.activemq.command.Acti
veMQDestination org.apache.activemq.camel.converter.ActiveMQConverter.toDestination(java.lang.String) to: StaticMethodTypeConverter: public static org.apache.activemq.command.ActiveMQDestination org.apache.activemq.camel.converter.Active
MQConverter.toDestination(java.lang.String)
2017-11-20 12:24:46,534 | WARN  | mix-7.0.0/deploy | DefaultTypeConverter             | 43 - org.apache.camel.camel-core - 2.16.4 | Overriding type converter from: InstanceMethodTypeConverter: public org.apache.activemq.command.ActiveMQM
essage org.apache.activemq.camel.converter.ActiveMQMessageConverter.toMessage(org.apache.camel.Exchange) throws javax.jms.JMSException to: InstanceMethodTypeConverter: public org.apache.activemq.command.ActiveMQMessage org.apache.activem
q.camel.converter.ActiveMQMessageConverter.toMessage(org.apache.camel.Exchange) throws javax.jms.JMSException
2017-11-20 12:24:46,534 | WARN  | mix-7.0.0/deploy | DefaultTypeConverter             | 43 - org.apache.camel.camel-core - 2.16.4 | Overriding type converter from: InstanceMethodTypeConverter: public org.apache.camel.Processor org.apache
.activemq.camel.converter.ActiveMQMessageConverter.toProcessor(javax.jms.MessageListener) to: InstanceMethodTypeConverter: public org.apache.camel.Processor org.apache.activemq.camel.converter.ActiveMQMessageConverter.toProcessor(javax.j
ms.MessageListener)
2017-11-20 12:24:46,545 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Apache Camel 2.16.4 (CamelContext: camel-4) is starting
2017-11-20 12:24:46,545 | INFO  | mix-7.0.0/deploy | ManagedManagementStrategy        | 43 - org.apache.camel.camel-core - 2.16.4 | JMX is enabled
2017-11-20 12:24:46,569 | INFO  | mix-7.0.0/deploy | DefaultRuntimeEndpointRegistry   | 43 - org.apache.camel.camel-core - 2.16.4 | Runtime endpoint registry is in extended mode gathering usage statistics of all incoming and outgoing end
points (cache limit: 1000)
2017-11-20 12:24:46,569 | INFO  | mix-7.0.0/deploy | ActiveMQComponentResolver        | 132 - org.apache.servicemix.activemq.camel - 7.0.0 | Creating an instance of the ActiveMQComponent (activemq:)
2017-11-20 12:24:46,590 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | AllowUseOriginalMessage is enabled. If access to the original message is not needed, then its recommended
 to turn this option off as it may improve performance.
2017-11-20 12:24:46,596 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | StreamCaching is not in use. If using streams then its recommended to enable stream caching. See more det
ails at http://camel.apache.org/stream-caching.html
2017-11-20 12:24:46,636 | INFO  | mix-7.0.0/deploy | TransportConnector               | 25 - org.apache.activemq.activemq-osgi - 5.14.3 | Connector vm://amq-broker started
2017-11-20 12:24:46,729 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Route: route4 started and consuming from: Endpoint[activemq://events]
2017-11-20 12:24:46,729 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Total 1 routes, of which 1 is started.
2017-11-20 12:24:46,729 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Apache Camel 2.16.4 (CamelContext: camel-4) started in 0.184 seconds
2017-11-20 12:24:46,745 | INFO  | mix-7.0.0/deploy | fileinstall                      | 4 - org.apache.felix.fileinstall - 3.5.6 | Started bundle: blueprint:file:/C:/SJSU/Tools/apache-servicemix-7.0.0/deploy/route2.xml
2017-11-20 12:24:47,760 | INFO  | mix-7.0.0/deploy | fileinstall                      | 4 - org.apache.felix.fileinstall - 3.5.6 | Updating bundle route2.xml / 0.0.0
2017-11-20 12:24:47,760 | INFO  | mix-7.0.0/deploy | BlueprintExtender                | 28 - org.apache.aries.blueprint.core - 1.7.1 | Destroying BlueprintContainer for bundle route2.xml/0.0.0
2017-11-20 12:24:47,763 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Apache Camel 2.16.4 (CamelContext: camel-4) is shutting down
2017-11-20 12:24:47,765 | INFO  | mix-7.0.0/deploy | DefaultShutdownStrategy          | 43 - org.apache.camel.camel-core - 2.16.4 | Starting to graceful shutdown 1 routes (timeout 300 seconds)
2017-11-20 12:24:47,810 | INFO  | 6 - ShutdownTask | DefaultShutdownStrategy          | 43 - org.apache.camel.camel-core - 2.16.4 | Route: route4 shutdown complete, was consuming from: Endpoint[activemq://events]
2017-11-20 12:24:47,811 | INFO  | mix-7.0.0/deploy | DefaultShutdownStrategy          | 43 - org.apache.camel.camel-core - 2.16.4 | Graceful shutdown of 1 routes completed in 0 seconds
2017-11-20 12:24:47,813 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Apache Camel 2.16.4 (CamelContext: camel-4) uptime 1.268 seconds
2017-11-20 12:24:47,814 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Apache Camel 2.16.4 (CamelContext: camel-4) is shutdown in 0.050 seconds
2017-11-20 12:24:47,878 | WARN  | mix-7.0.0/deploy | NamespaceHandlerRegistryImpl     | 28 - org.apache.aries.blueprint.core - 1.7.1 | NamespaceHandler org.apache.camel.blueprint.handler.CamelNamespaceHandler is behaving badly and should
 be fixed
2017-11-20 12:24:47,918 | WARN  | mix-7.0.0/deploy | DefaultTypeConverter             | 43 - org.apache.camel.camel-core - 2.16.4 | Overriding type converter from: StaticMethodTypeConverter: public static org.apache.activemq.command.Acti
veMQDestination org.apache.activemq.camel.converter.ActiveMQConverter.toDestination(java.lang.String) to: StaticMethodTypeConverter: public static org.apache.activemq.command.ActiveMQDestination org.apache.activemq.camel.converter.Active
MQConverter.toDestination(java.lang.String)
2017-11-20 12:24:47,919 | WARN  | mix-7.0.0/deploy | DefaultTypeConverter             | 43 - org.apache.camel.camel-core - 2.16.4 | Overriding type converter from: InstanceMethodTypeConverter: public org.apache.activemq.command.ActiveMQM
essage org.apache.activemq.camel.converter.ActiveMQMessageConverter.toMessage(org.apache.camel.Exchange) throws javax.jms.JMSException to: InstanceMethodTypeConverter: public org.apache.activemq.command.ActiveMQMessage org.apache.activem
q.camel.converter.ActiveMQMessageConverter.toMessage(org.apache.camel.Exchange) throws javax.jms.JMSException
2017-11-20 12:24:47,919 | WARN  | mix-7.0.0/deploy | DefaultTypeConverter             | 43 - org.apache.camel.camel-core - 2.16.4 | Overriding type converter from: InstanceMethodTypeConverter: public org.apache.camel.Processor org.apache
.activemq.camel.converter.ActiveMQMessageConverter.toProcessor(javax.jms.MessageListener) to: InstanceMethodTypeConverter: public org.apache.camel.Processor org.apache.activemq.camel.converter.ActiveMQMessageConverter.toProcessor(javax.j
ms.MessageListener)
2017-11-20 12:24:47,920 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Apache Camel 2.16.4 (CamelContext: camel-5) is starting
2017-11-20 12:24:47,920 | INFO  | mix-7.0.0/deploy | ManagedManagementStrategy        | 43 - org.apache.camel.camel-core - 2.16.4 | JMX is enabled
2017-11-20 12:24:47,931 | INFO  | mix-7.0.0/deploy | DefaultRuntimeEndpointRegistry   | 43 - org.apache.camel.camel-core - 2.16.4 | Runtime endpoint registry is in extended mode gathering usage statistics of all incoming and outgoing end
points (cache limit: 1000)
2017-11-20 12:24:47,931 | INFO  | mix-7.0.0/deploy | ActiveMQComponentResolver        | 132 - org.apache.servicemix.activemq.camel - 7.0.0 | Creating an instance of the ActiveMQComponent (activemq:)
2017-11-20 12:24:47,943 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | AllowUseOriginalMessage is enabled. If access to the original message is not needed, then its recommended
 to turn this option off as it may improve performance.
2017-11-20 12:24:47,943 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | StreamCaching is not in use. If using streams then its recommended to enable stream caching. See more det
ails at http://camel.apache.org/stream-caching.html
2017-11-20 12:24:47,960 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Route: route5 started and consuming from: Endpoint[activemq://events]
2017-11-20 12:24:47,961 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Total 1 routes, of which 1 is started.
2017-11-20 12:24:47,961 | INFO  | mix-7.0.0/deploy | BlueprintCamelContext            | 43 - org.apache.camel.camel-core - 2.16.4 | Apache Camel 2.16.4 (CamelContext: camel-5) started in 0.041 seconds
2017-11-20 12:24:47,966 | INFO  | mix-7.0.0/deploy | fileinstall                      | 4 - org.apache.felix.fileinstall - 3.5.6 | Started bundle: blueprint:file:/C:/SJSU/Tools/apache-servicemix-7.0.0/deploy/route2.xml
2017-11-20 12:26:40,411 | INFO  | Consumer[events] | events                           | 43 - org.apache.camel.camel-core - 2.16.4 | Exchange[ExchangePattern: InOnly, BodyType: String, Body: FileMovedEvent(file: New Text Document.txt, tim
estamp: 12:11:40.356)]
2017-11-20 12:27:54,027 | INFO  | Consumer[events] | events                           | 43 - org.apache.camel.camel-core - 2.16.4 | Exchange[ExchangePattern: InOnly, BodyType: String, Body: FileMovedEvent(file: Hello World.txt, timestamp
 12:11:54.011)]

karaf@root>
```

Fig. 3 Screenshot shows “Log info” when “Hello World.txt” is placed in input folder, the file is moved to output folder. The camel route, route1.xml and route2.xml is used deployed to move file from input directory to output directory.

Simple JMS Application

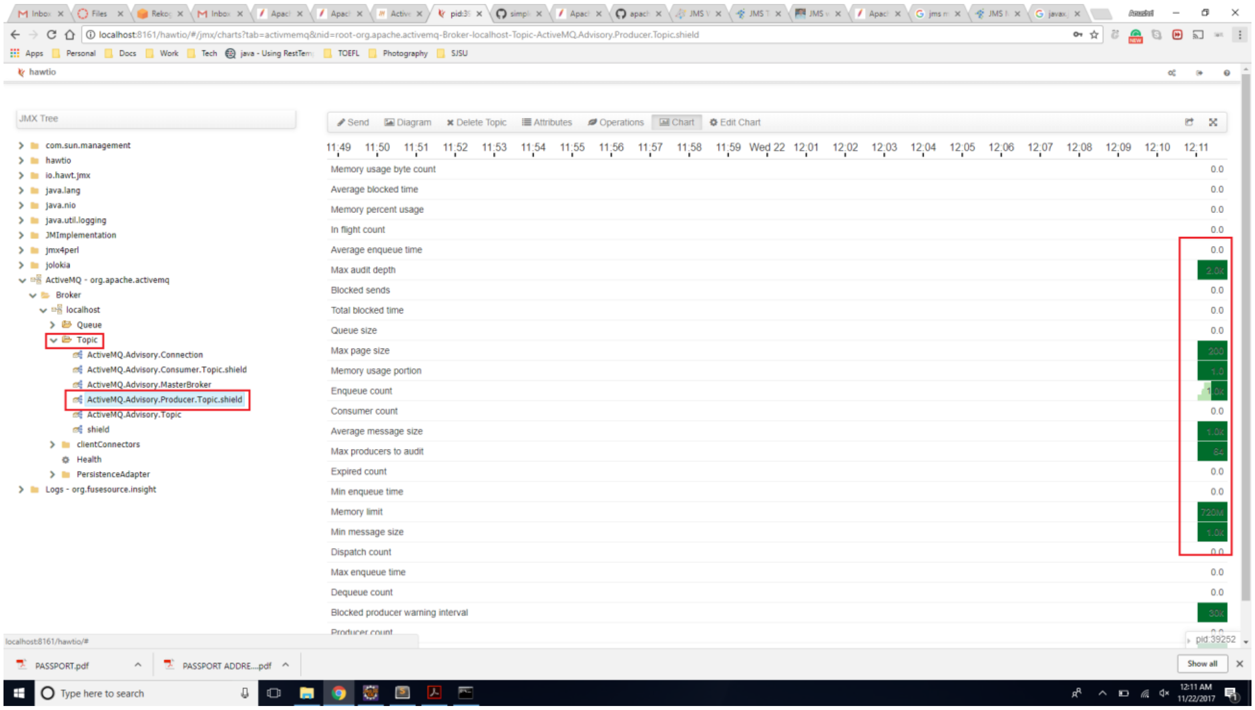
Java Messaging Service provides a mechanism for integrating applications in a flexible manner. It can be used to resolve the producer-consumer problems in enterprise applications.

1. Producer: JMS Message Sender is called the producer. The producer sends messages to a JMS queue/topic.
2. Consumer: JMS Message Recipient is called the consumer. Implements the MessageListener Class. The onMessage(..) method of the class is invoked whenever the producer writes a message to the queue/topic to which the consumer is listening on.
3. Messages: These are the objects that communicate information between JMS producer and consumer.

Steps to write a simple JMS Application:

1. Setup a broker:
    a. Download apache-activemq-5.9.0.zip and unzip it. Refer this location as ${activemq_home}
    b. Go to ${activemq_home}/bin and run activemq.bat fie.
    c. If any errors, check for port numbers that are busy. Go to ${activemq_home}/conf/activemq.xml. Locate transportConnectors and change the port. Restart activemq.
    d. Check if activemq broker is setup successfully on http://localhost:8161/hawtio
    e. Login using admin/admin.
2. Create an application to establish JMS ActiveMQ connection using JNDI lookup.

3. Create a Topic using JNDI lookup. Topic name is “shield”.
4. Create Producer class to write text messages to Topic “shield”.
5. Create a Consumer class implementing MessageListener class to listen to topic “shield”.



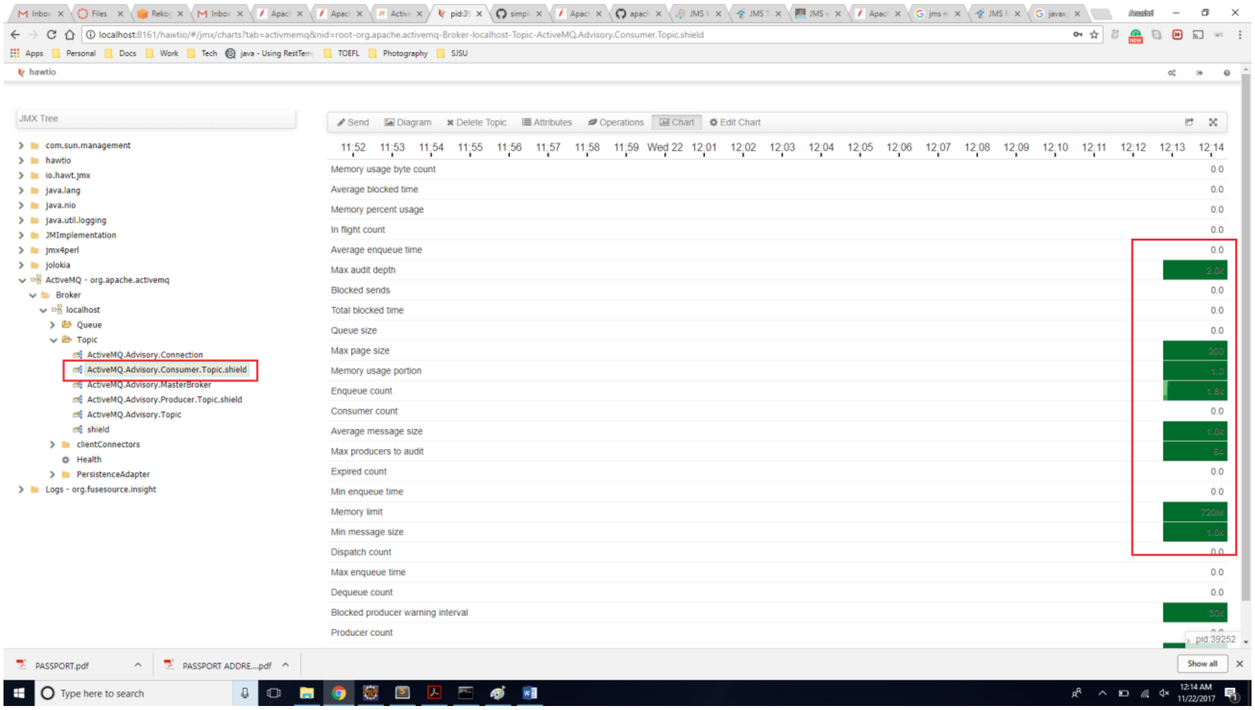
localhost:8161/hawtio/#/jmx/charts?tab=activmemq&nid=root-org.apache.activemq-Broker-localhost-Topic-ActiveMQ.Advisory.Producer.Topic.shield

JMX Tree

- com.sun.management
- hawtio
- io.hawt.jmx
- java.lang
- java.nio
- java.util.logging
- JMImplementation
- jmx4perl
- jolokia
- ActiveMQ - org.apache.activemq
  - Broker
    - localhost
      - Queue
      - Topic
        - ActiveMQ.Advisory.Connection
        - ActiveMQ.Advisory.Consumer.Topic.shield
        - ActiveMQ.Advisory.MasterBroker
        - ActiveMQ.Advisory.Producer.Topic.shield
        - ActiveMQ.Advisory.Topic
        - shield
      - clientConnectors
      - Health
      - PersistenceAdapter
- Logs - org.fusesource.insight

Memory usage byte count	0.0
Average blocked time	0.0
Memory percent usage	0.0
In flight count	0.0
Average enqueue time	0.0
Max audit depth	2.0k
Blocked sends	0.0
Total blocked time	0.0
Queue size	0.0
Max page size	200
Memory usage portion	1.0
Enqueue count	1.0k
Consumer count	0.0
Average message size	1.0k
Max producers to audit	64
Expired count	0.0
Min enqueue time	0.0
Memory limit	720M
Min message size	1.0k
Dispatch count	0.0
Max enqueue time	0.0
Dequeue count	0.0
Blocked producer warning interval	30k
Producer count	0.0

Fig.1 Screenshot of Producer writing to a topic “shield”



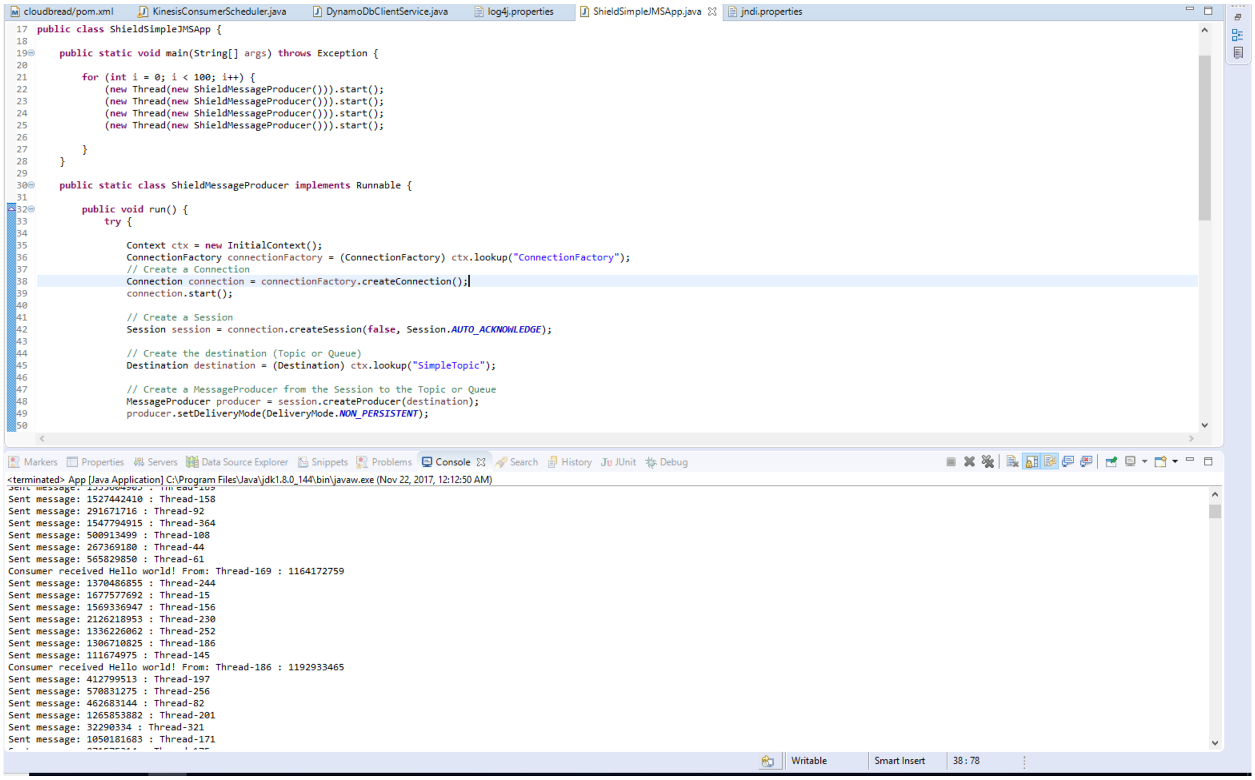
localhost:8161/hawtio/#/jmx/charts?tab=activmemq&nid=root-org.apache.activemq-Broker-localhost-Topic-ActiveMQ.Advisory.Consumer.Topic.shield

JMX Tree

- com.sun.management
- hawtio
- io.hawt.jmx
- java.lang
- java.nio
- java.util.logging
- JMImplementation
- jmx4perl
- jolokia
- ActiveMQ - org.apache.activemq
  - Broker
    - localhost
      - Queue
      - Topic
        - ActiveMQ.Advisory.Connection
        - ActiveMQ.Advisory.Consumer.Topic.shield
        - ActiveMQ.Advisory.MasterBroker
        - ActiveMQ.Advisory.Producer.Topic.shield
        - ActiveMQ.Advisory.Topic
        - shield
      - clientConnectors
      - Health
      - PersistenceAdapter
- Logs - org.fusesource.insight

Memory usage byte count	0.0
Average blocked time	0.0
Memory percent usage	0.0
In flight count	0.0
Average enqueue time	0.0
Max audit depth	2.0k
Blocked sends	0.0
Total blocked time	0.0
Queue size	0.0
Max page size	200
Memory usage portion	1.0
Enqueue count	1.8k
Consumer count	0.0
Average message size	1.0k
Max producers to audit	64
Expired count	0.0
Min enqueue time	0.0
Memory limit	720M
Min message size	1.0k
Dispatch count	0.0
Max enqueue time	0.0
Dequeue count	0.0
Blocked producer warning interval	30k
Producer count	0.0

Fig.2 Screenshot of Consumer listening to message on the same topic “shield”



```java
public class ShieldSimpleJMSApp {

    public static void main(String[] args) throws Exception {

        for (int i = 0; i < 100; i++) {
            (new Thread(new ShieldMessageProducer())).start();
            (new Thread(new ShieldMessageProducer())).start();
            (new Thread(new ShieldMessageProducer())).start();
            (new Thread(new ShieldMessageProducer())).start();

        }
    }

    public static class ShieldMessageProducer implements Runnable {

        public void run() {
            try {

                Context ctx = new InitialContext();
                ConnectionFactory connectionFactory = (ConnectionFactory) ctx.lookup("ConnectionFactory");
                // Create a Connection
                Connection connection = connectionFactory.createConnection();
                connection.start();

                // Create a Session
                Session session = connection.createSession(false, Session.AUTO_ACKNOWLEDGE);

                // Create the destination (Topic or Queue)
                Destination destination = (Destination) ctx.lookup("SimpleTopic");

                // Create a MessageProducer from the Session to the Topic or Queue
                MessageProducer producer = session.createProducer(destination);
                producer.setDeliveryMode(DeliveryMode.NON_PERSISTENT);

```

```
<terminated> App [Java Application] C:\Program Files\Java\jdk1.8.0_144\bin\javaw.exe (Nov 22, 2017, 12:12:50 AM)
Sent message: 1527442410 : Thread-158
Sent message: 291671716 : Thread-92
Sent message: 1547794915 : Thread-364
Sent message: 500913499 : Thread-108
Sent message: 267369180 : Thread-44
Sent message: 565829850 : Thread-61
Consumer received Hello world! From: Thread-169 : 1164172759
Sent message: 1370486855 : Thread-244
Sent message: 1677577692 : Thread-15
Sent message: 1569336947 : Thread-156
Sent message: 2126218953 : Thread-230
Sent message: 1336226062 : Thread-252
Sent message: 1306710825 : Thread-186
Sent message: 111674975 : Thread-145
Consumer received Hello world! From: Thread-186 : 1192933465
Sent message: 412799513 : Thread-197
Sent message: 570831275 : Thread-256
Sent message: 462683144 : Thread-82
Sent message: 1265853882 : Thread-201
Sent message: 32290334 : Thread-321
Sent message: 1050181683 : Thread-171
```

Fig.3 Application console showing producer-consumer generating the messages and being consumed respectively.

Team Members Contribution

STUDENT NAME	STUDENT ID	COMPONENTS/MODULES
Anushri Srinath Aithal	012506897	• Apache ServiceMix Steps 1-5 • Setup a broker instead of using the org.activemq.broker.impl. Main class directly • Use JNDI to lookup a javax.jms.ConnectionFactory rather than creating ActiveMQConnectionFactory directly and use Topic rather than a queue.

Anuradha Rajashekar	012409956	• Apache ServiceMix Steps 1-5 • Use a Topic rather than a queue. • Implement the javax.jms.MessageListener interface rather than calling consumer.receive()
Nidhi Jamar	010070593	• Apache ServiceMix Steps 1-5 • Use a Topic rather than a queue. • Implement the javax.jms.MessageListener interface rather than calling consumer.receive()
Ashwini Shankar Narayan	012506910	• Apache ServiceMix Steps 1-5 • Setup a broker instead of using the org.activemq.broker.impl.Main class directly • Create Publisher class to generate messages to topic.