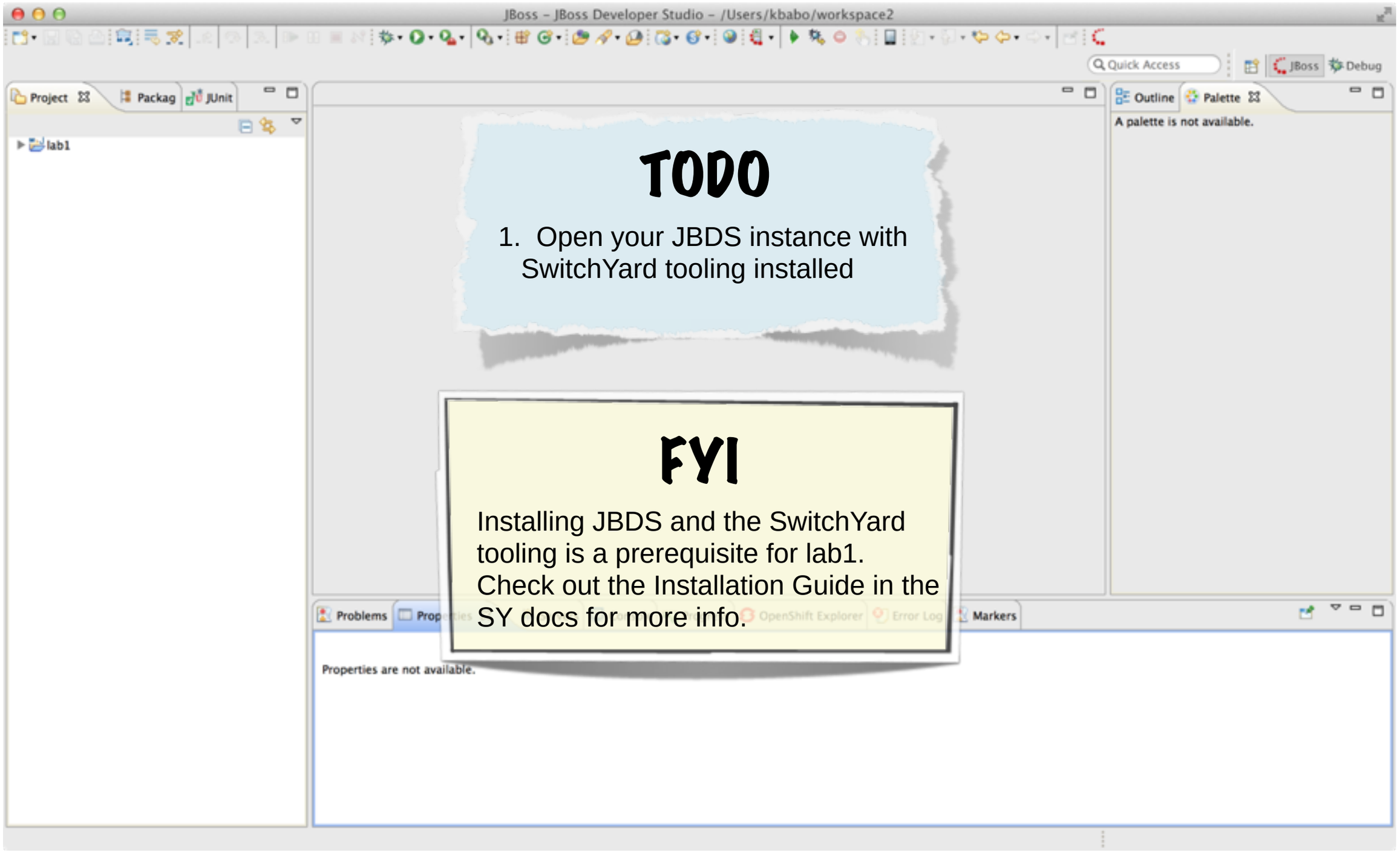
Lab 1

Getting (Getting Started) Started

Lab Goals

- Walk through an existing SwitchYard application
- Get comfortable with the development environment
- Setup the SwitchYard runtime and deploy an application
- Poke around the admin console



https://docs.jboss.org/author/display/SWITCHYARD/Installing+Eclipse+Tooling

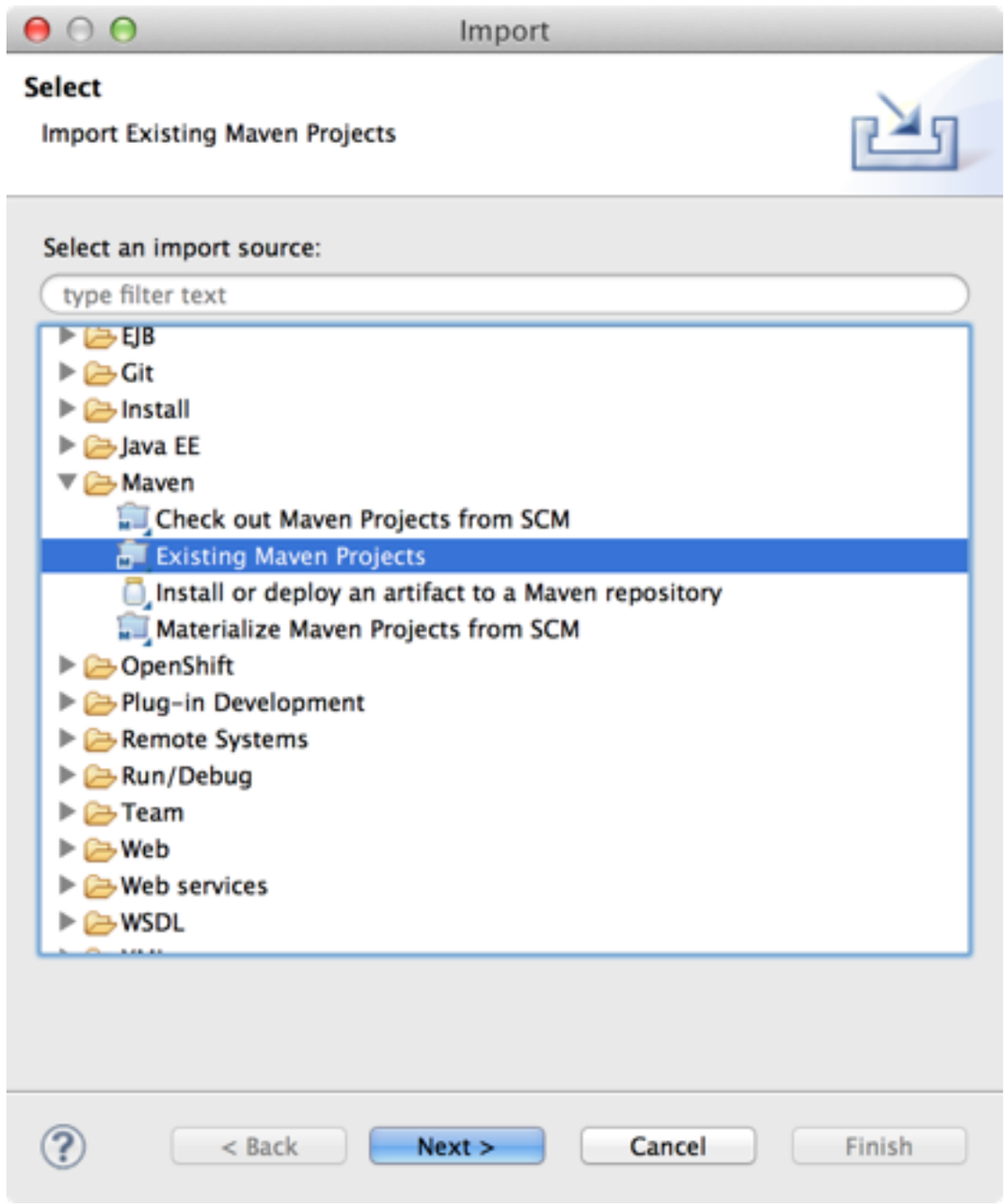
Importing Lab 1

TODO

1. File -> Import ... from the JBDS menu.

2. Select Maven -> Existing Maven Projects

3. Click Next



Importing Lab 1

TODO

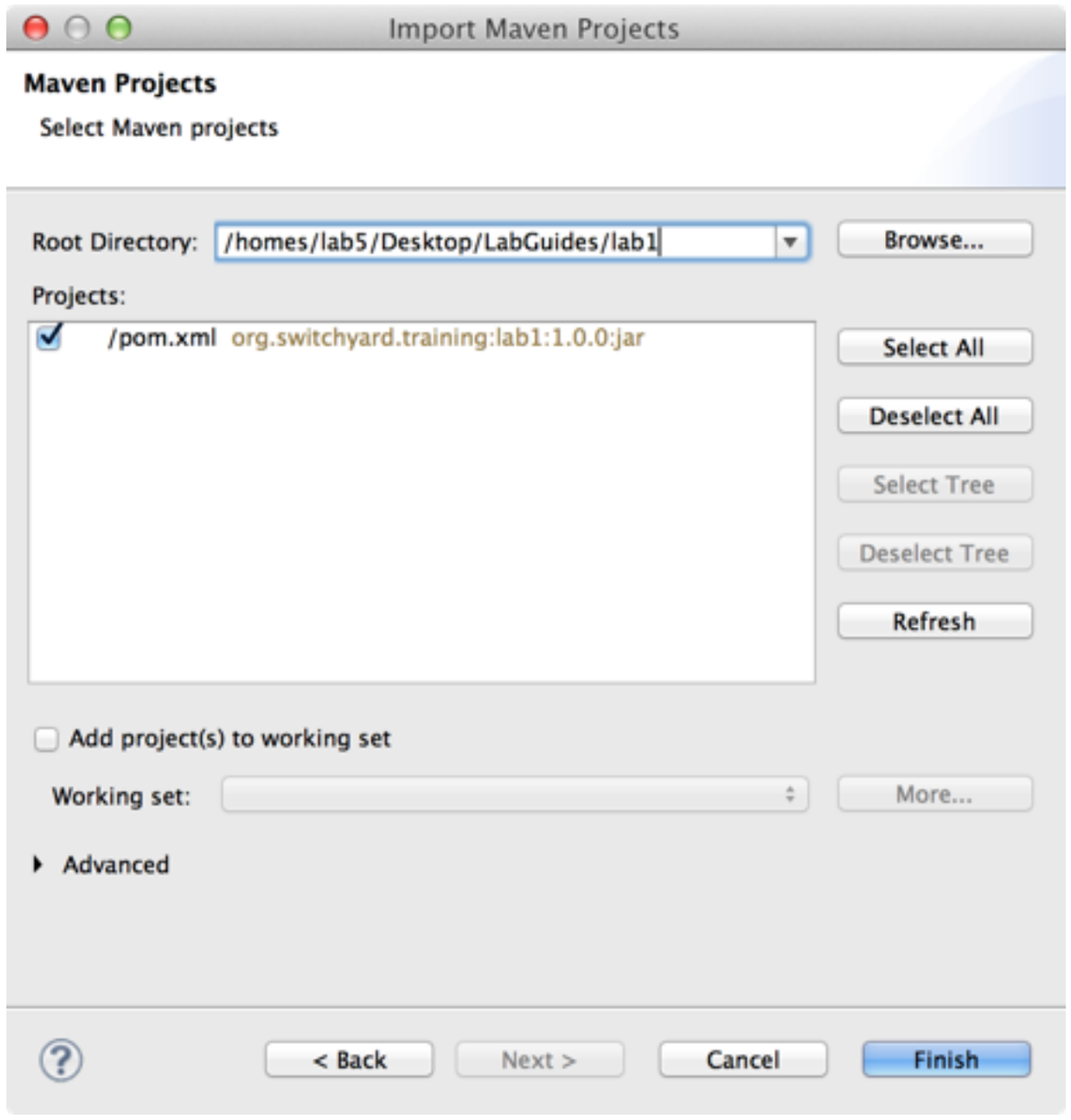
1. Click Browse ... and navigate to the location of lab1. For example:

```
/home/learning/summit2013/lab1
```

2. Make sure the pom.xml is checked for:

```
org.switchyard.training:lab1
```

3. Click Finish



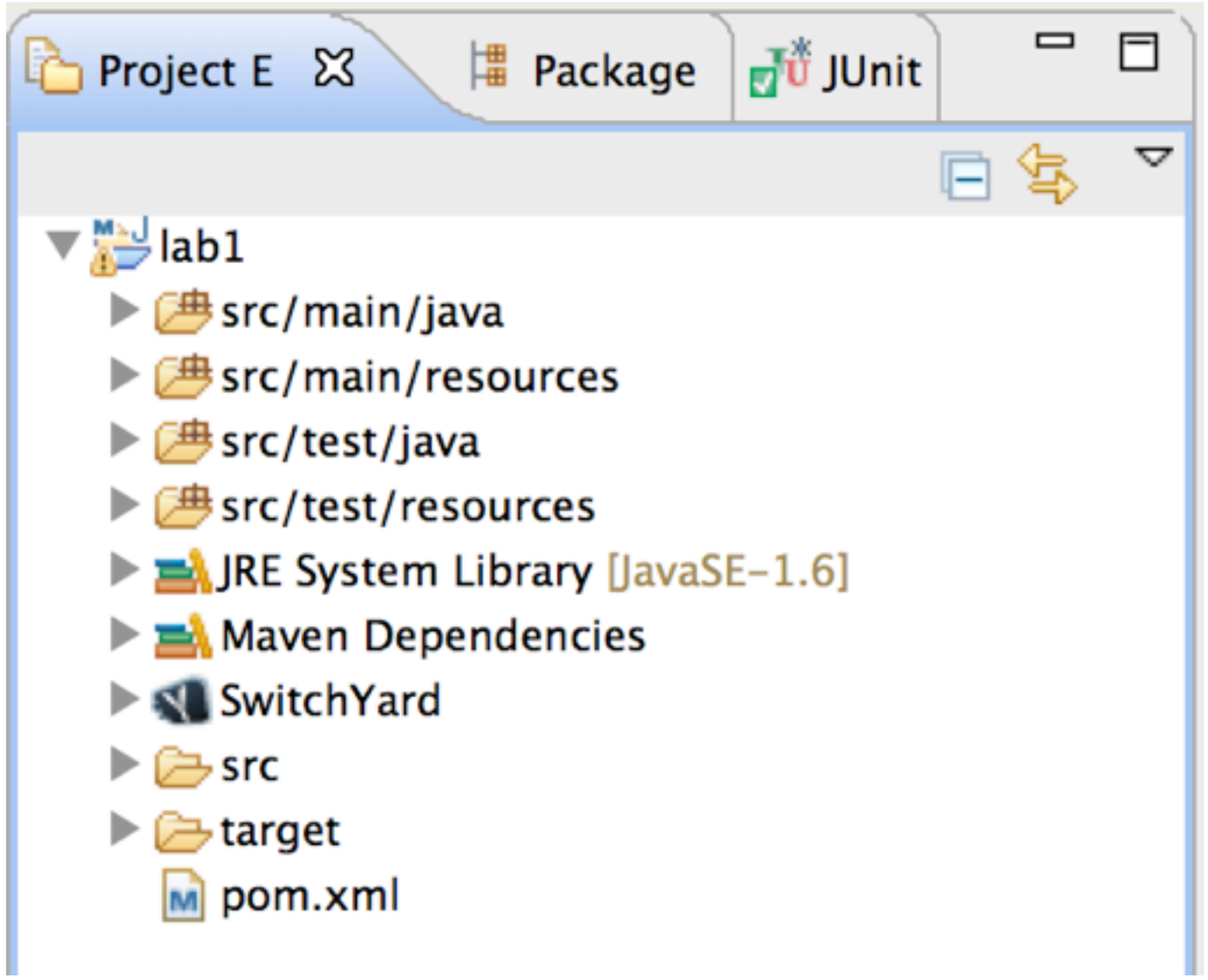
Application Structure

TODO

1. Go to the Project Explorer in the left frame and expand the lab1 project node.

FYI

The next set of slides will examine each section of the project in detail.



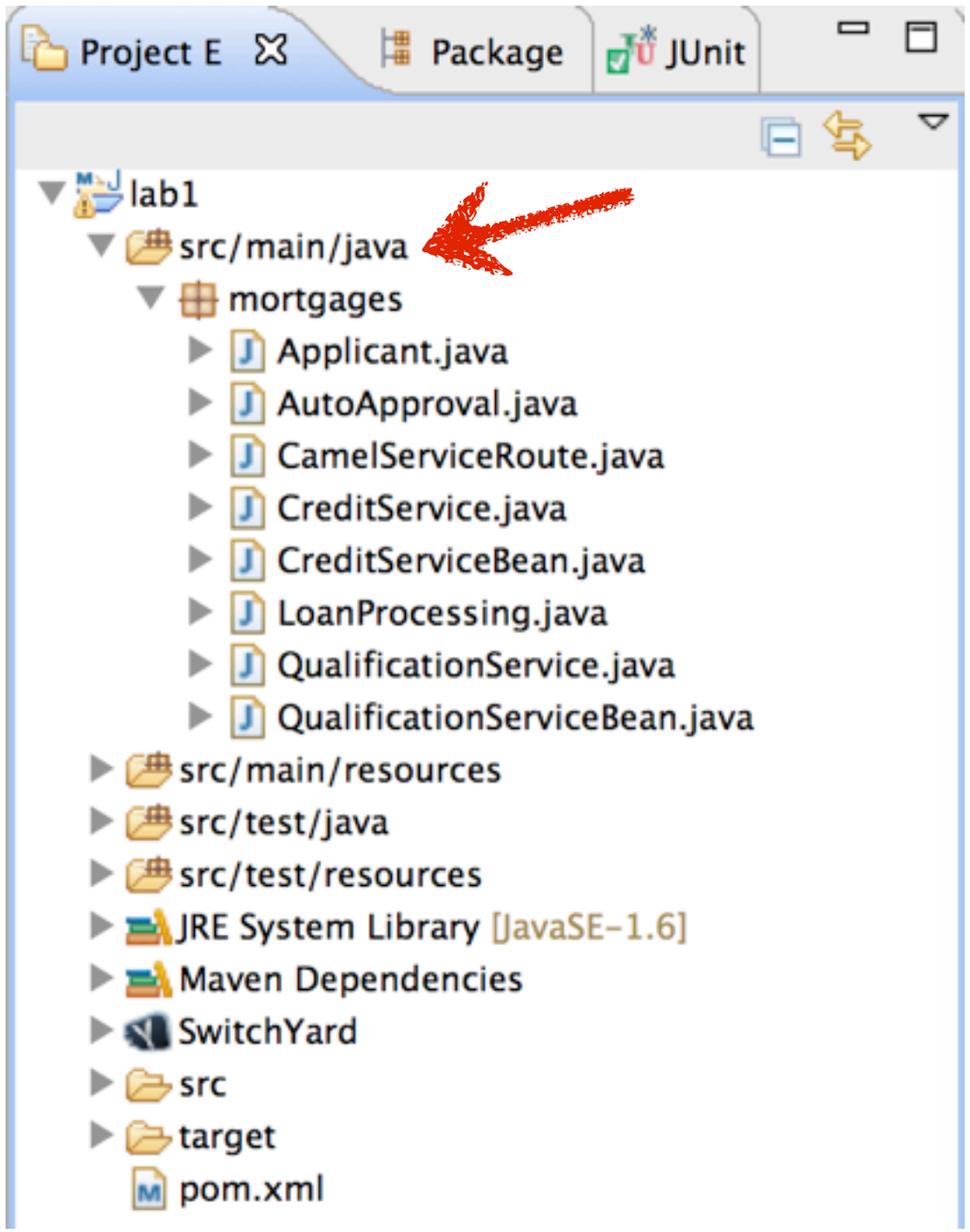
src/main/java

FYI

This is the home of Java files which provide your application's logic. These files are packaged with your application for deployment.

Examples of files you will find here:

- *Java service interfaces*
- *Camel Java DSL routes*
- *CDI Beans*
- *Java Transformers*



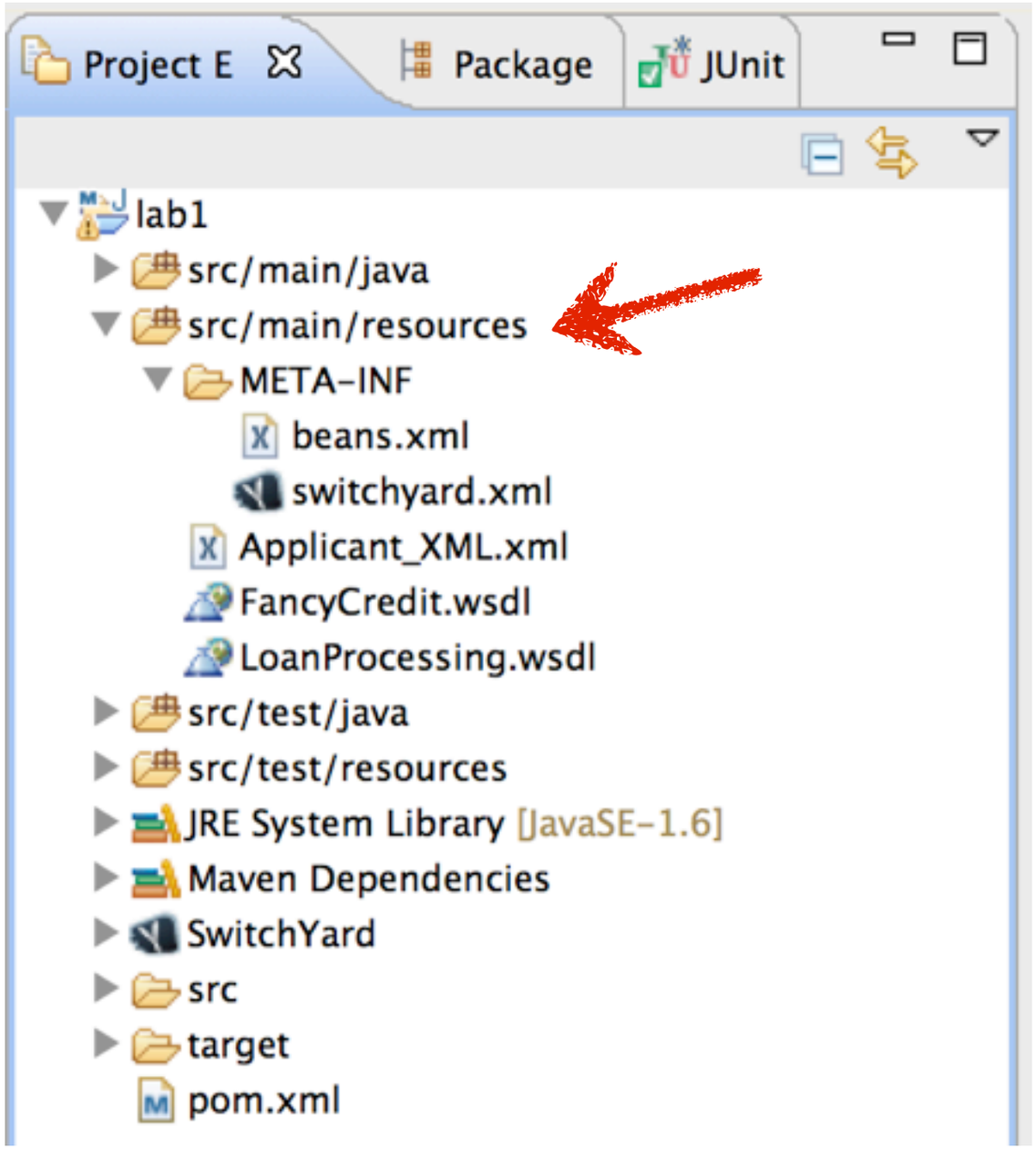
src/main/resources

FYI

Non-Java resources that will be packaged with your application go here.

Examples of files you will find here:

- *SwitchYard application descriptor (switchyard.xml)*
- *Camel XML route definitions*
- *Transformers (XSLT, Smooks)*
- *Drools rule definitions*
- *Process definitions (BPMN 2, BPEL)*
- *WSDL*
- *Schema*



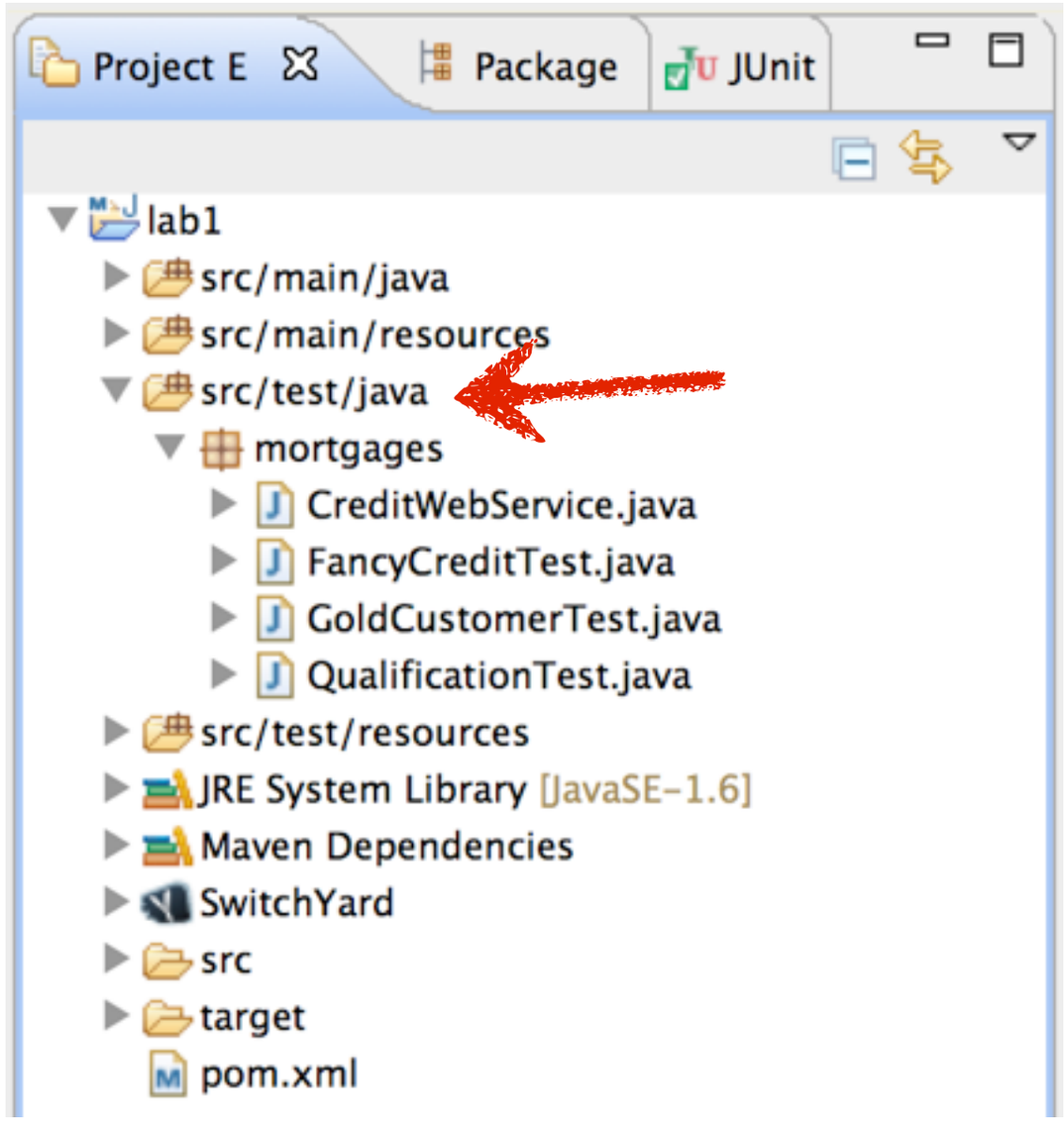
src/test/java

FYI

All Java classes related to testing your application go in src/test/java.

Examples of files you will find here:

- *Service unit tests*
- *Remote test clients*
- *Ancillary test classes (e.g. mock web services)*



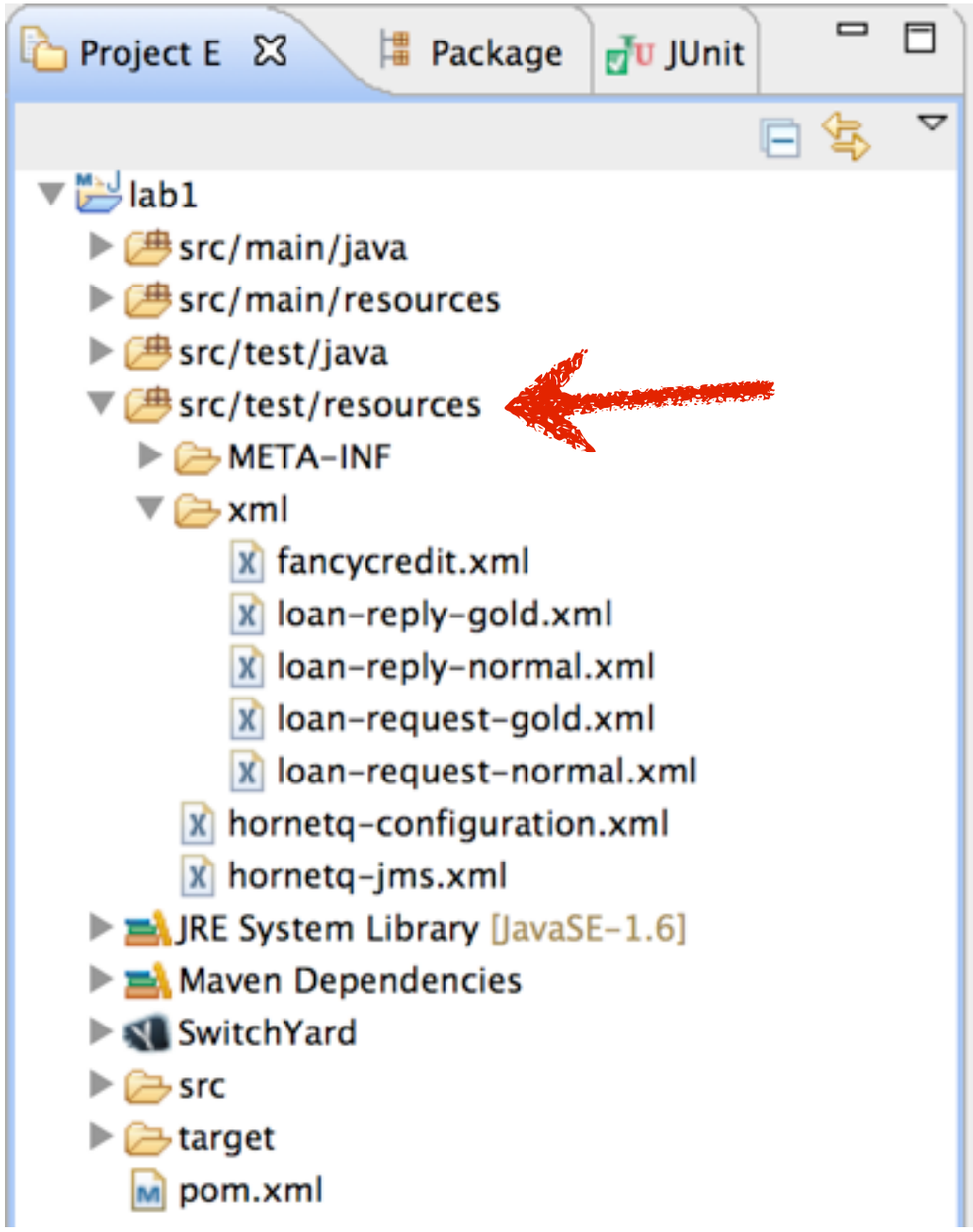
src/test/resources

FYI

Any resources that are used during test execution, but are not included in the application, belong in src/test/resources.

Examples of files you will find here:

- *Test payloads*
- *Expected results for test assertions*
- *JMS destinations used for testing*
- *log settings used for test execution*



SwitchYard!!!!

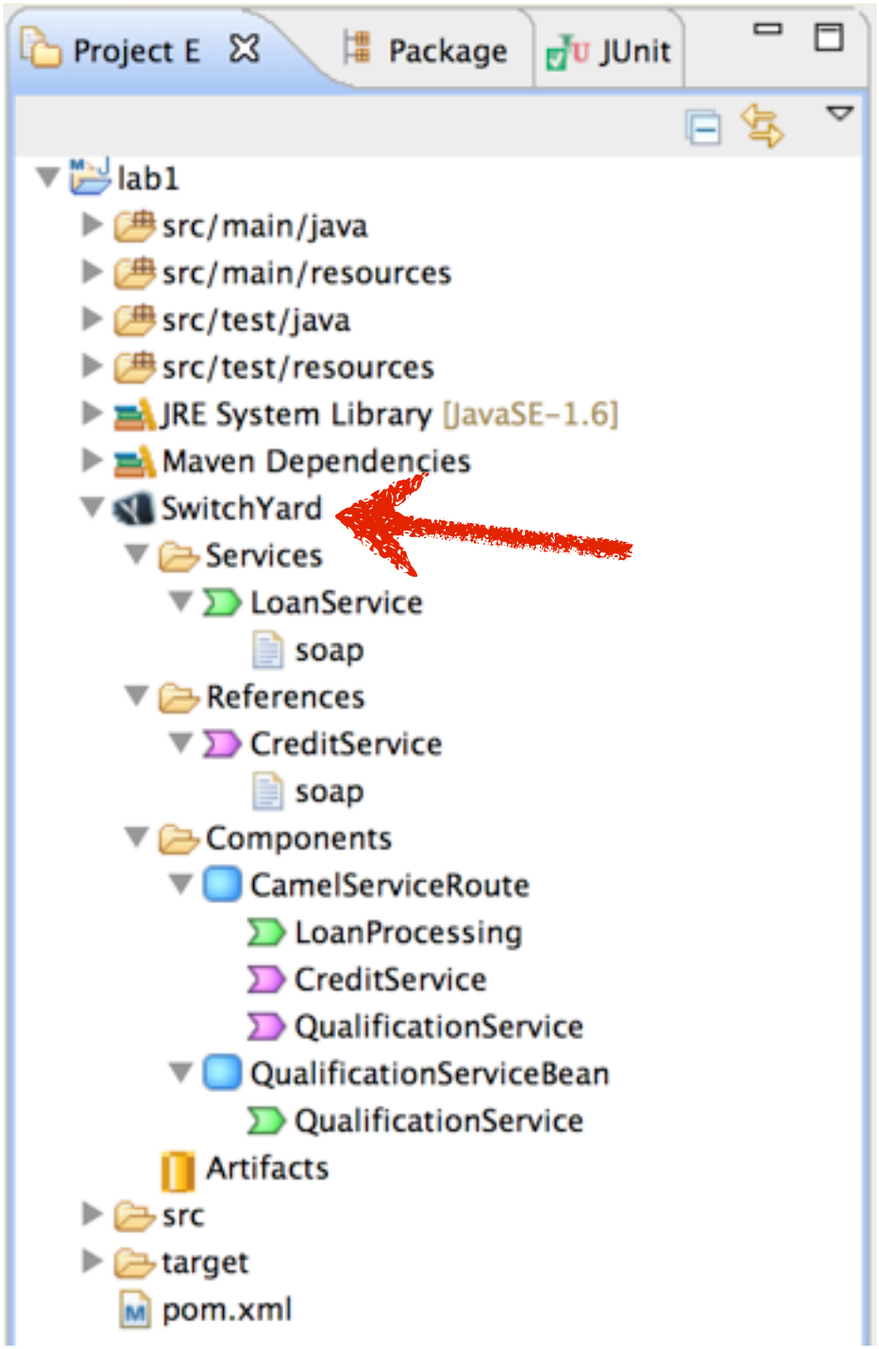
FYI

The SwitchYard node provides two functions in the Project Explorer:

- *An 'outline' style view of the application configuration (services, references, components, etc.)*
- *Shortcut to the SwitchYard visual application editor via a double-click.*

TODO

1. Double-click the SwitchYard node to begin your journey down the rabbit hole!



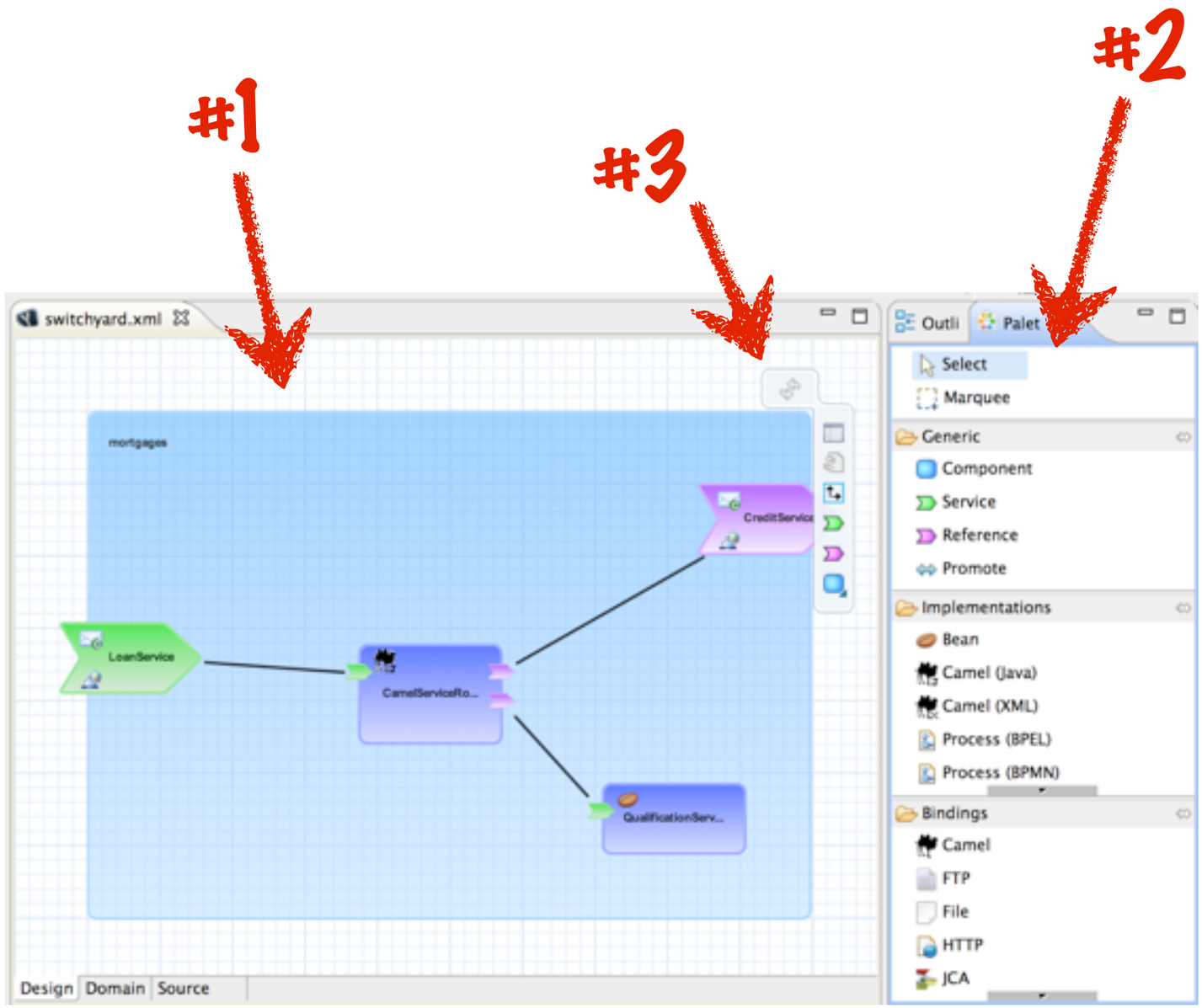
Visual Editor

FYI

*#1 : The **canvas** provides a visual representation of the structure and relationships in a SwitchYard application.*

*#2 : The **palette** provides a set of application building blocks which can be dragged onto the canvas to create an application.*

*#3 : The **button bar** appears when you hover over items on the canvas and provides context-sensitive options for each item.*



Living Large with the Button Bar

FYI

The button bar is really convenient when interacting with the visual editor. Just hover over the portion of the diagram you want to interact with and choose an option from the button bar.

This page provides a key to the more frequently used buttons on the button bar. The properties button is used the most by far, so definitely make note of that one. If the other buttons don't make sense now, don't worry they will soon.

NOTE: the focus for the button bar can be kinda touchy at times when there are multiple areas of focus close together. Do or do not. There is no try.

Opens properties view

Edit the interface for a service or reference.

Promotes a component service.

Generate WSDL from a Java interface.

Adds a reference to a component or composite.

Generate Java interface from a WSDL.

Adds a service to a component or composite.

Create a unit test class for a service.

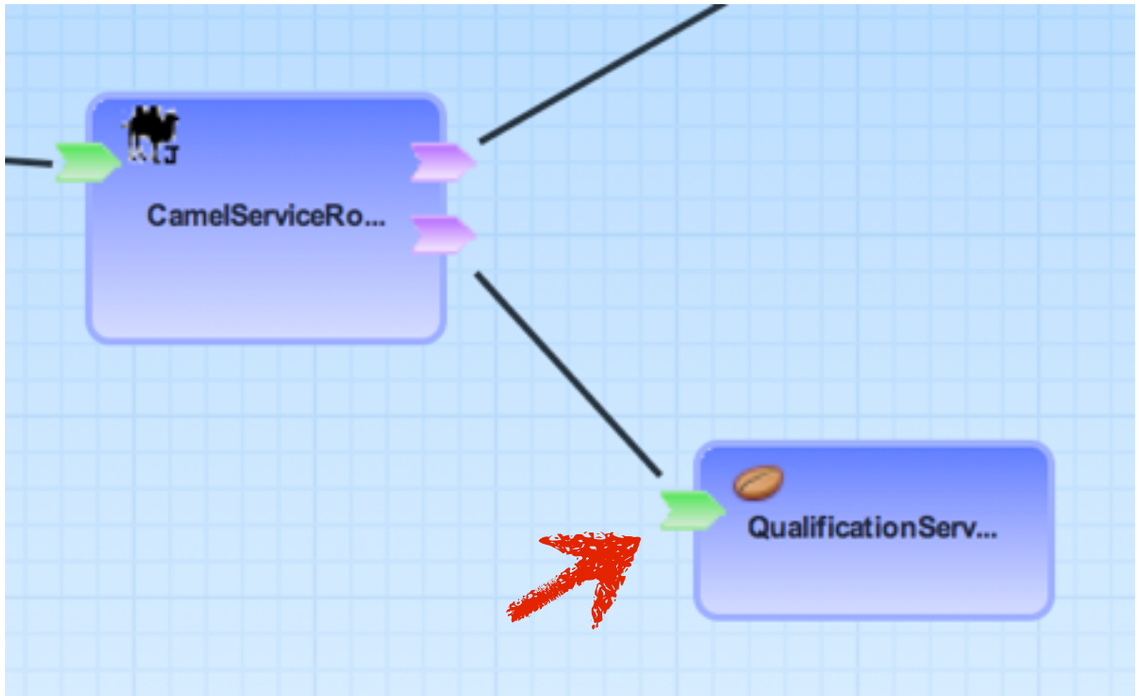
Adds a binding to a composite service or reference.

Component Service

Contract

FYI

All services in a SwitchYard application have a contract. You can view the contract for any service by double-clicking on the green service icon.



TODO

1. Double-click on the green component service icon *(see red arrow)* for QualificationService and view the contract.

QualificationService

interface.java

QualificationService.java

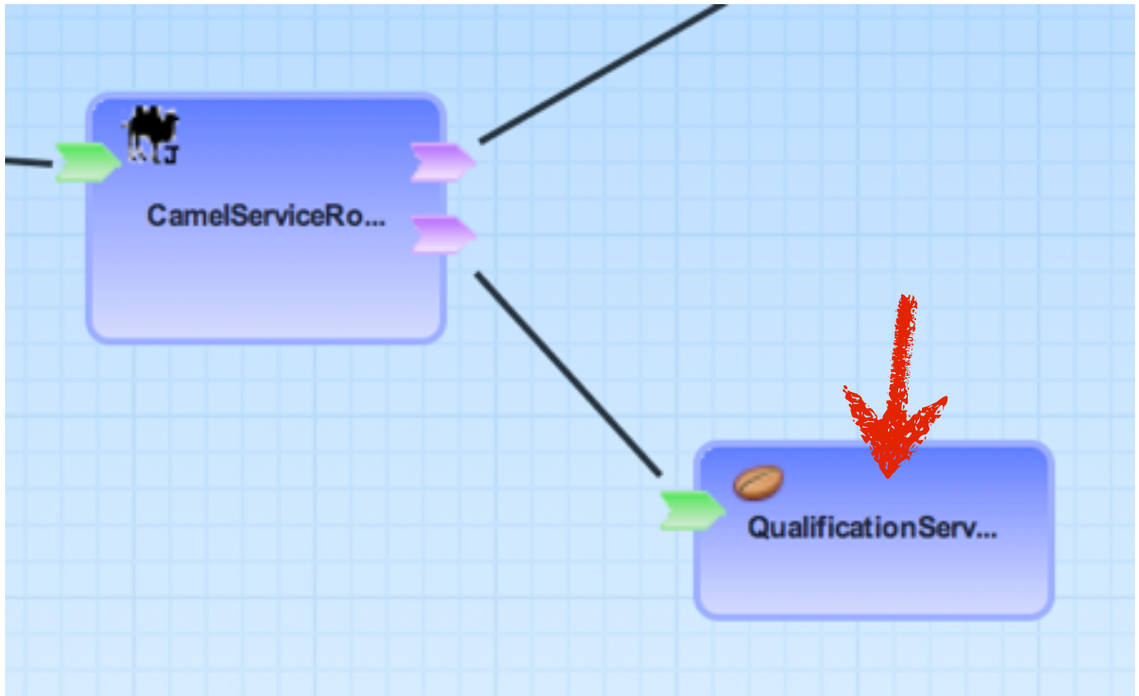
```
1  package mortgages;
2
3  public interface QualificationService {
4
5      Applicant qualify(Applicant applicant);
6  }
7
```

Component Service

Implementation

FYI

Service logic is provided in SwitchYard using an 'implementation'. Implementation types include: Java/CDI, Camel, BPEL, BPMN 2, and Drools.



TODO

1. Double-click on the blue component for QualificationService and view the implementation of the service.

QualificationService

implementation.bean

QualificationServiceBean.java

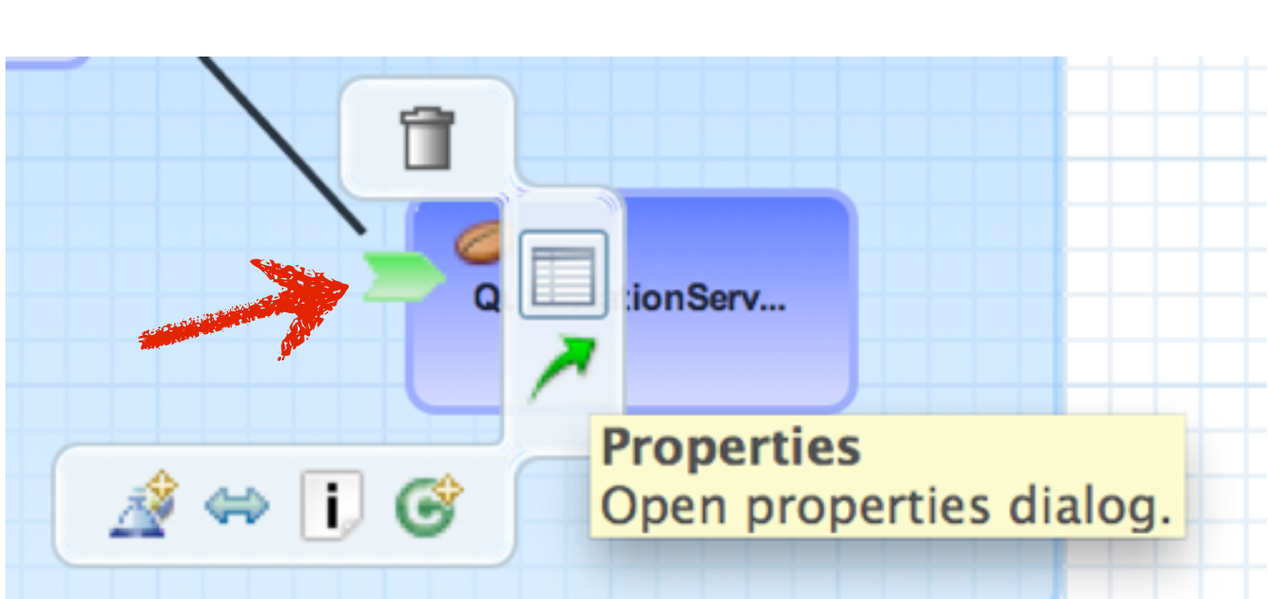
```java
package mortgages;

import org.switchyard.component.bean.Property;

@Service(QualificationService.class)
public class QualificationServiceBean implements QualificationService {

    private static final String EASY = "easy";

    @Property(name = "creditTerms")
    private String creditTerms;

    @Override
    public Applicant qualify(Applicant applicant) {
        if (EASY.equals(creditTerms)) {
            applicant.setApproved(true);
        } else {
            applicant.setApproved(applicant.getCreditScore() >= 600);
        }

        return applicant;
    }

}
```

Component Service

Properties

FYI

The properties view allows you to view the configuration of a service including details on the contract and policy requirements.

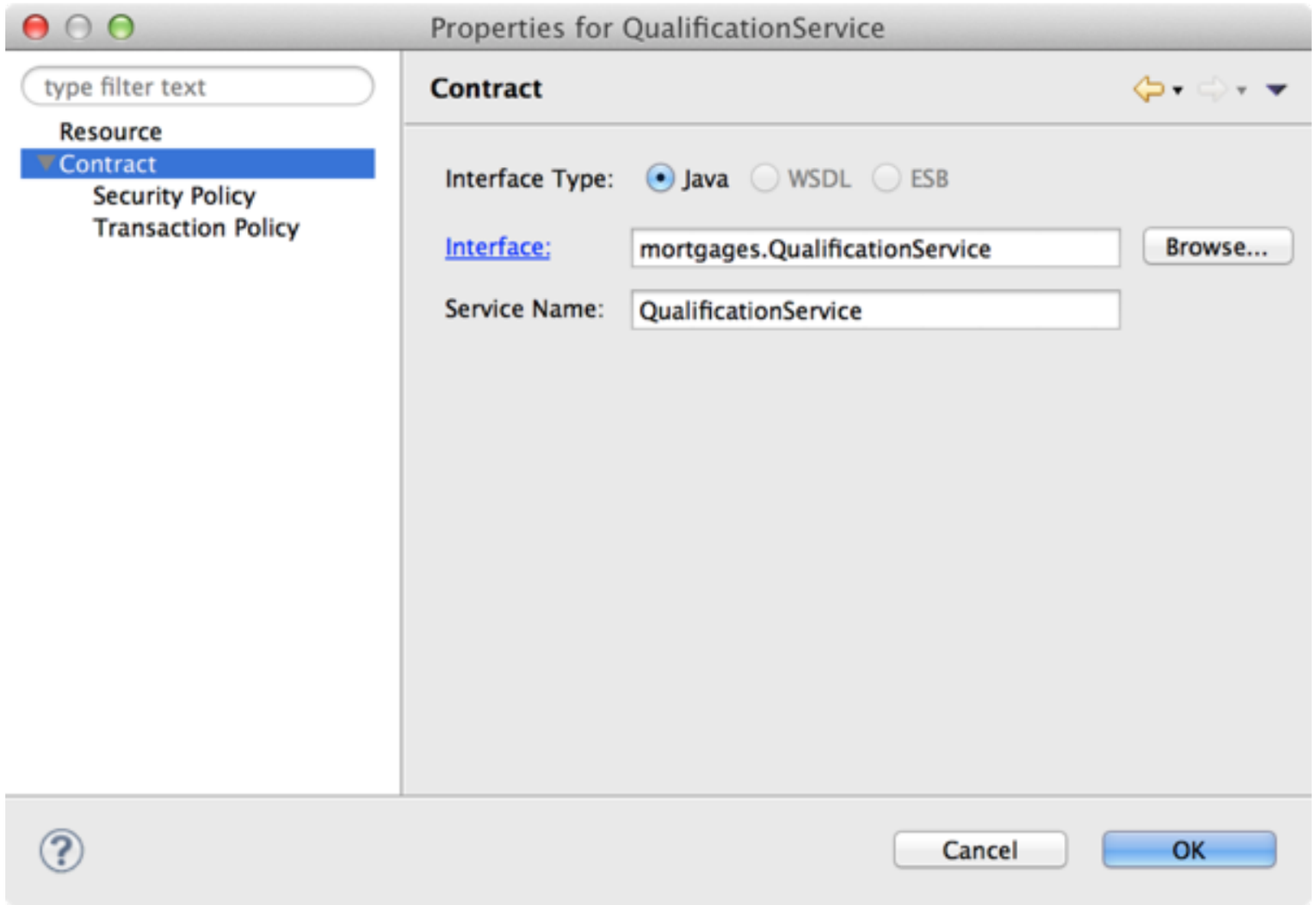


TODO

1. Hover over the green component service on QualificationService.
2. Select the Properties button on the button bar.
3. In the resulting dialog, select Contract in the left frame.

QualificationService

Configuration



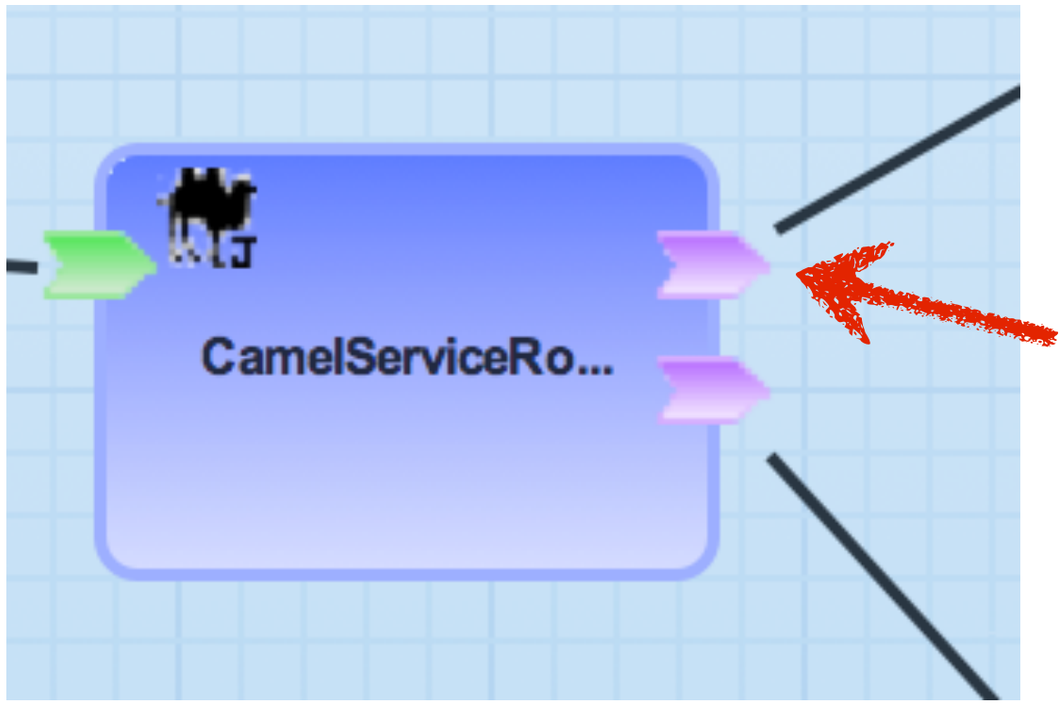
Component Reference

FYI

*Service implementations can invoke other services through **references**. All references have a contract and can be wired to services inside or outside the application.*

TODO

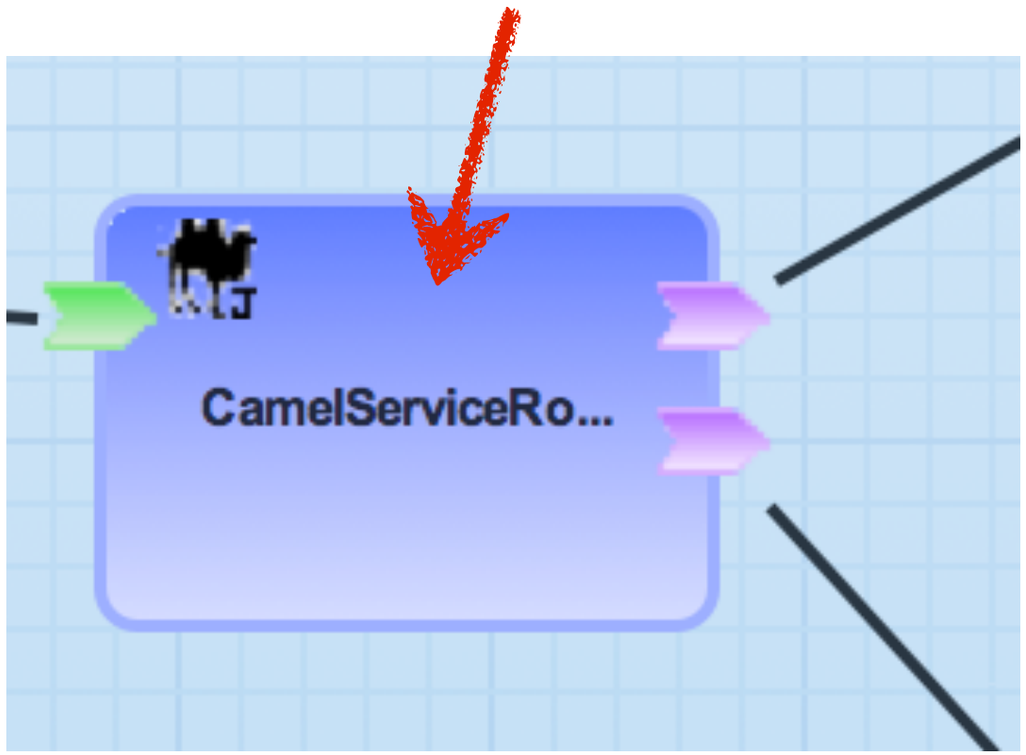
1. View the contract for a reference by double-clicking on the purple reference icon.
2. View the properties for a reference using its button bar.
3. In the resulting dialog, select Contract in the left frame.



Camel Implementation

FYI

The SwitchYard application model is implementation-agnostic, which means the bits in the digram look the same no matter what the implementation type is (which is a good thing).



TODO

1. Double-click on the CamelServiceRoute component to open the service implementation.

Camel Route

implementation.camel

FYI

There's a lot going on in this route, so if you are not familiar with Camel don't sweat the details. One thing to take note of are the following lines:

```
.to("switchyard://CreditService")
.to("switchyard://QualificationService")
```

These map to the service references from the previous slide. All service invocations from an implementation should be done via a reference. SwitchYard uses this information to track service dependencies and decouple services from one another.

CamelServiceRoute.java

```
1  package mortgages;
2
3  import org.apache.camel.builder.RouteBuilder;
4
5  public class CamelServiceRoute extends RouteBuilder {
6
7      /**
8       * The Camel route is configured via this method.  The from:
9       * endpoint is required to be a SwitchYard service.
10      */
11     public void configure() {
12         from("switchyard://LoanProcessing")
13         .log("Request for LoanProcessing : ${body}")
14         .choice()
15             .when(header("{urn:mortgages:1.0}status").isEqualTo("gold"))
16                 .to("bean://AutoApproval")
17             .otherwise()
18                 .filter().simple("${body.creditScore} == 0")
19                 .to("switchyard://CreditService")
20                 .end()
21                 .to("switchyard://QualificationService")
22                 .end()
23             .end()
24         .log("Result of LoanProcessing: ${body}");
25     }
26
27 }
28
```

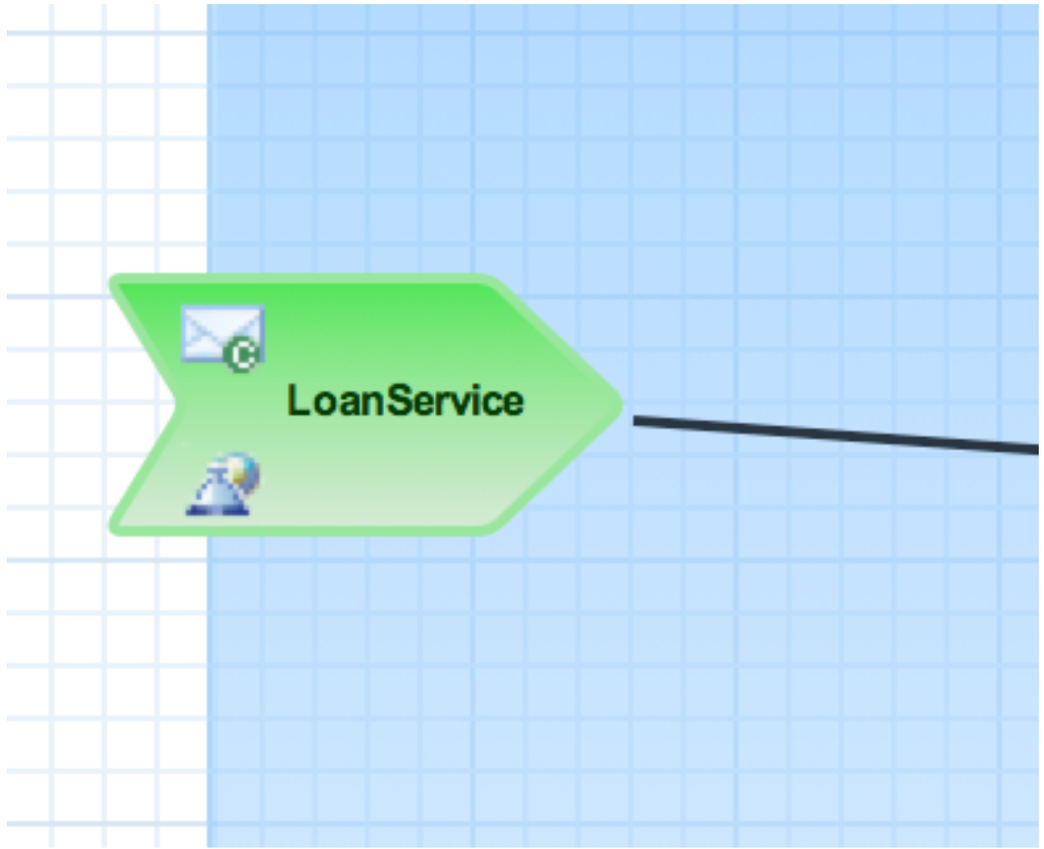
Composite Service

FYI

A composite service promotes a service implementation in your application and makes it available to external consumers through one or more service bindings. All composite services have a contract.

TODO

1. Access the properties view for the composite service using its button bar.

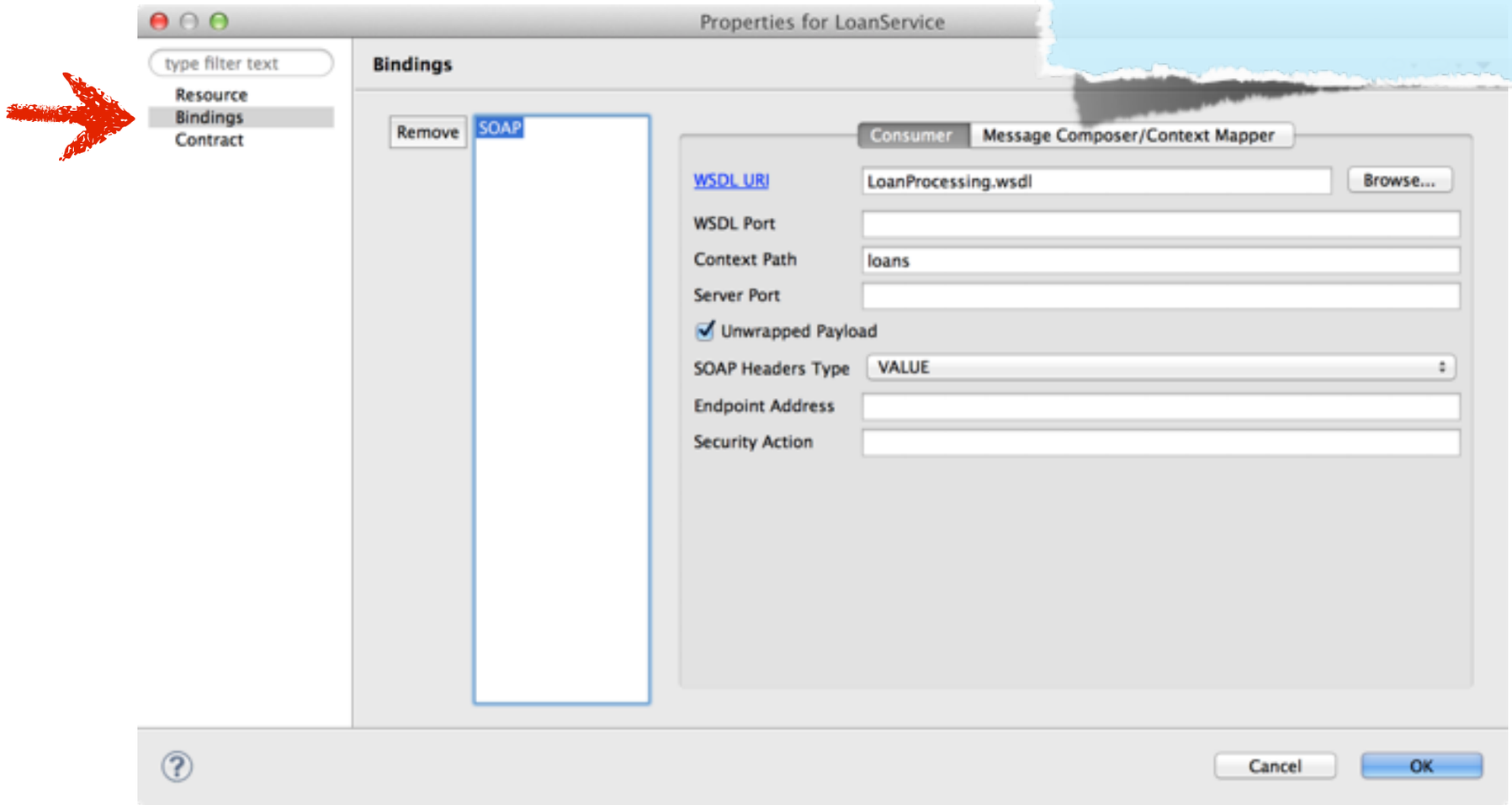


Composite Service

bindings

TODO

1. Select the bindings view in the left frame to view bindings for this service.



Composite Reference

FYI

A composite reference promotes a component reference to allow an implementation to invoke services outside the application through a binding. All composite references have a contract.

TODO

1. Access the properties view for the composite reference using its button bar.

Wiring

FYI

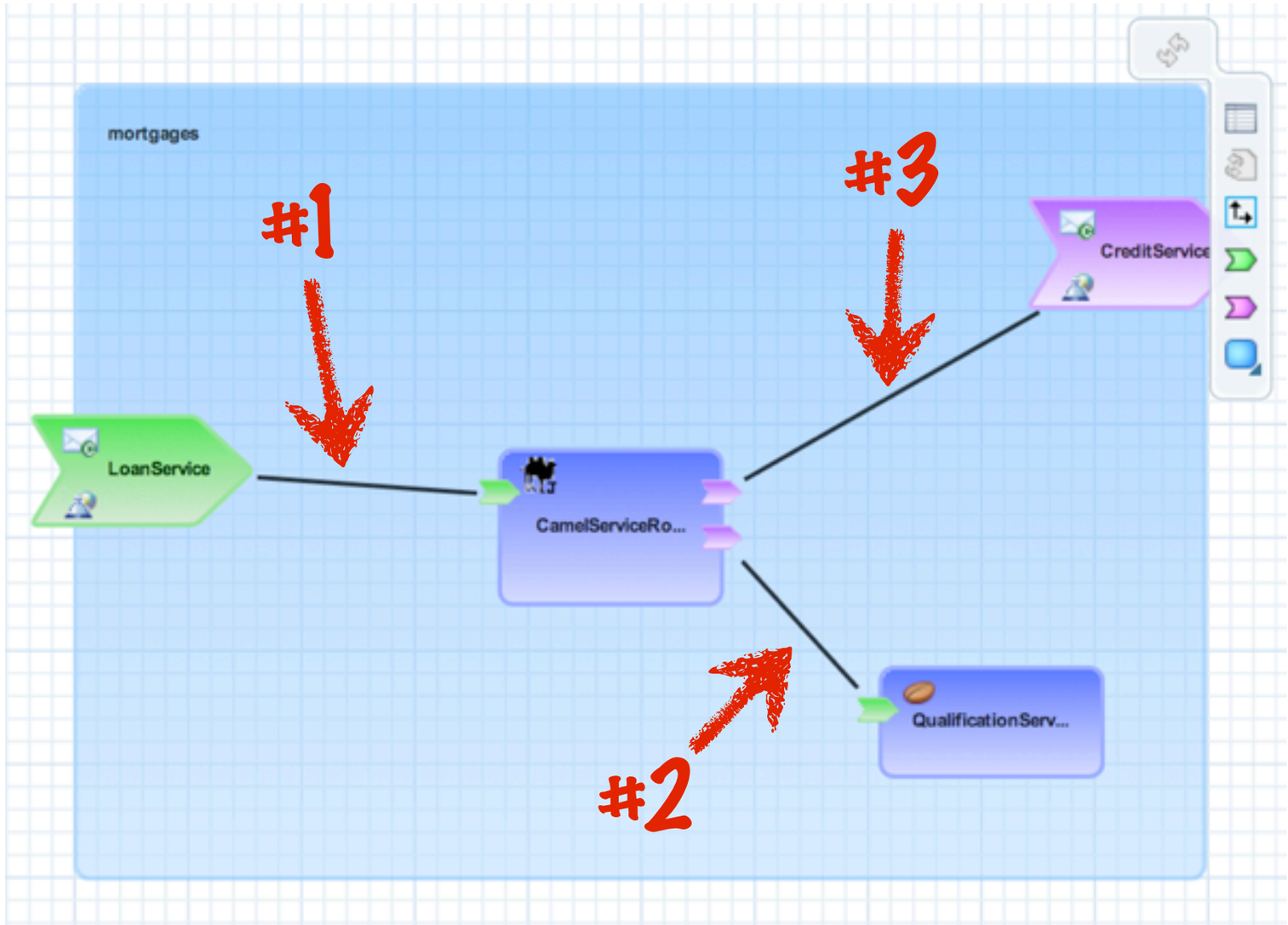
The black connector lines depict wiring which defines the relationship between services and references.

#1 : A component service is wired to a composite service to make it available outside the application through a binding.

#2 : A component reference is wired to a service provided in the local application.

#3 : A component reference is wired to a composite reference to consume an external service through a binding.

Each wire represents a message path where runtime interceptors provide functionality such as transformation, validation, policy enforcement, etc.

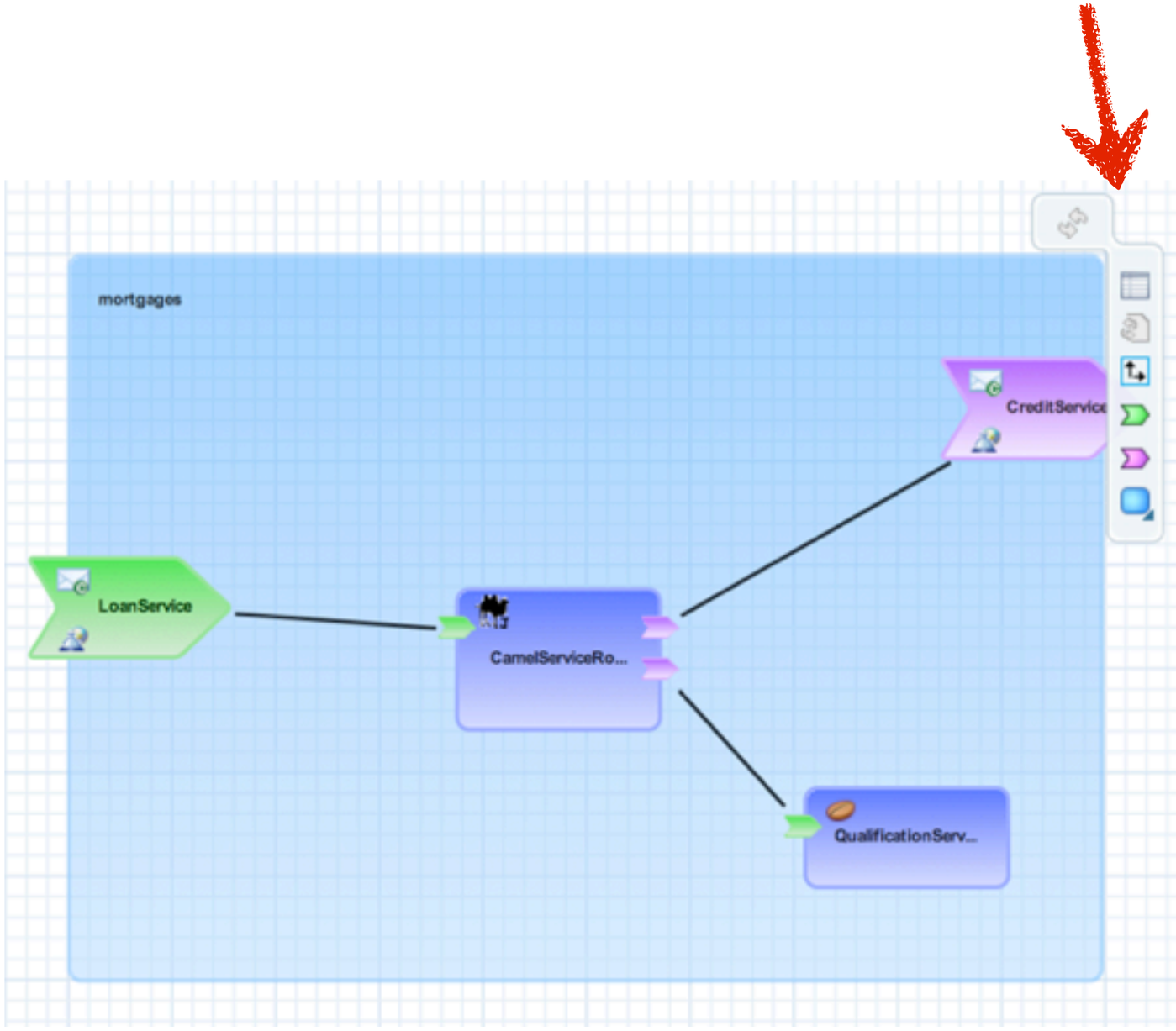


Composite Properties

FYI

The composite properties view provides access to some important aspects of application configuration:

- *Transformers*
- *Validators*
- *Property Definition*
- *Name and namespace*

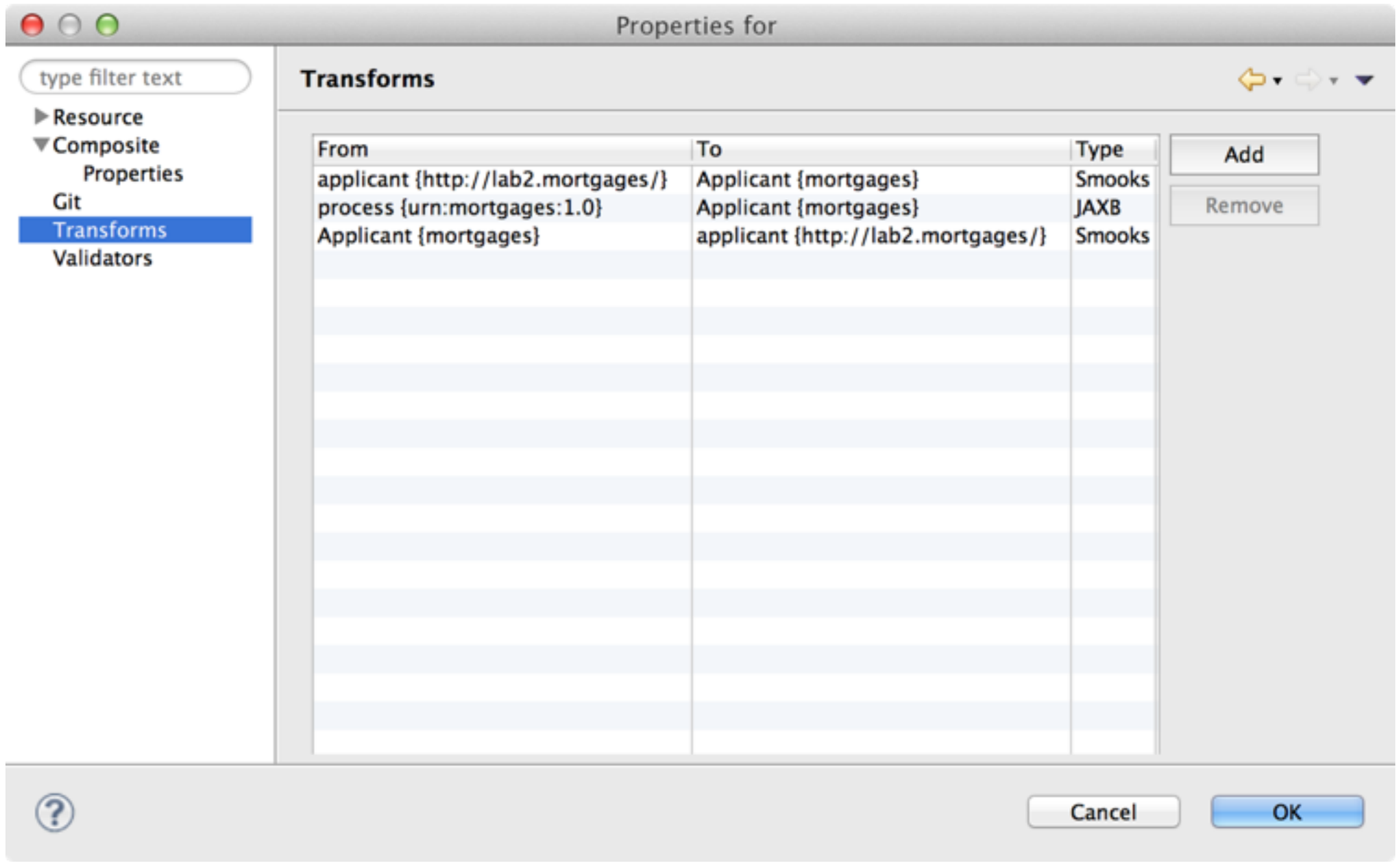


TODO

1. Access the composite button bar on the upper right hand corner of the composite.
2. Select the Properties button.
3. Select Transforms in the left frame to view transformers for the application.

Composite Properties

Transforms



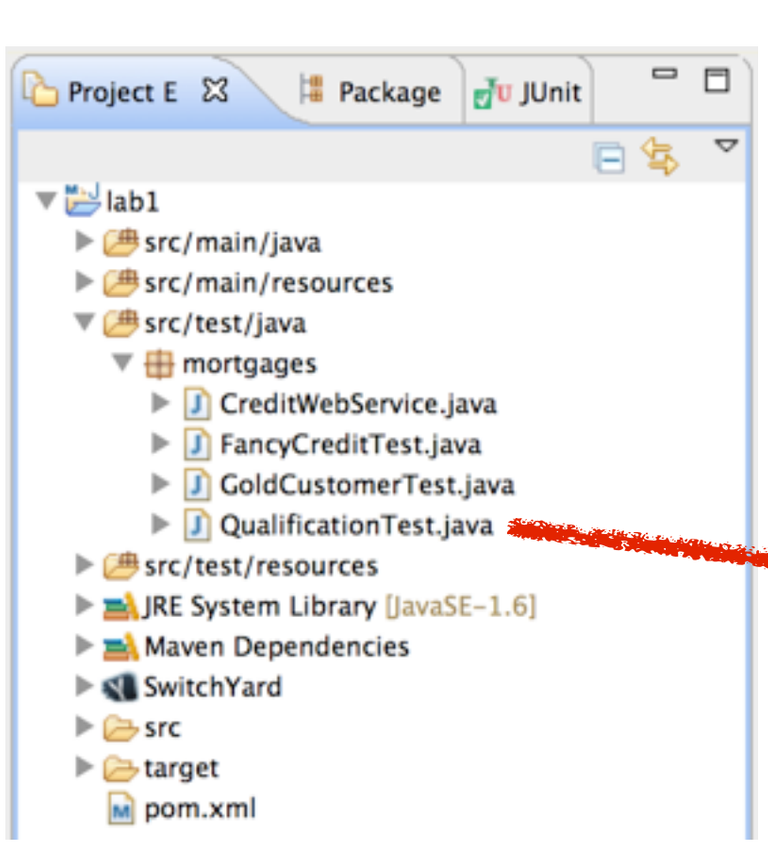
Unit Testing Services

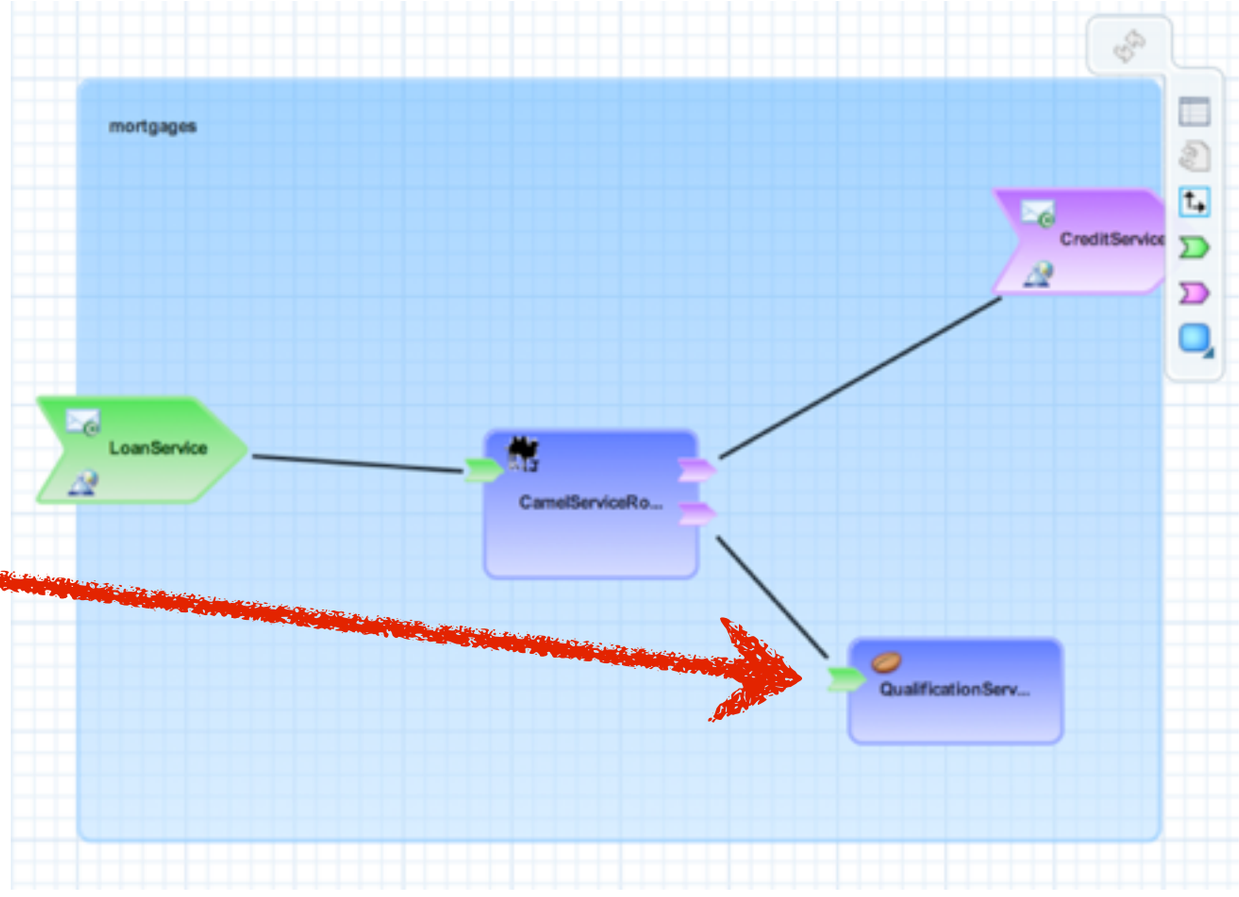
FYI

SwitchYard allows you to unit test individual services in your application as you build it. QualificationTest contains test methods which invoke QualificationService directly to verify that it's behavior matches requirements.

TODO

1. Double-click QualificationTest.java in src/test/java to open it.





QualificationTest

FYI

The @ServiceOperation annotation allows you to inject and invoker for component services directly into unit tests.

TODO

1. Go to the Run menu in the main menu bar and select ‘Run As -> JUnit Test’ to run the unit test.

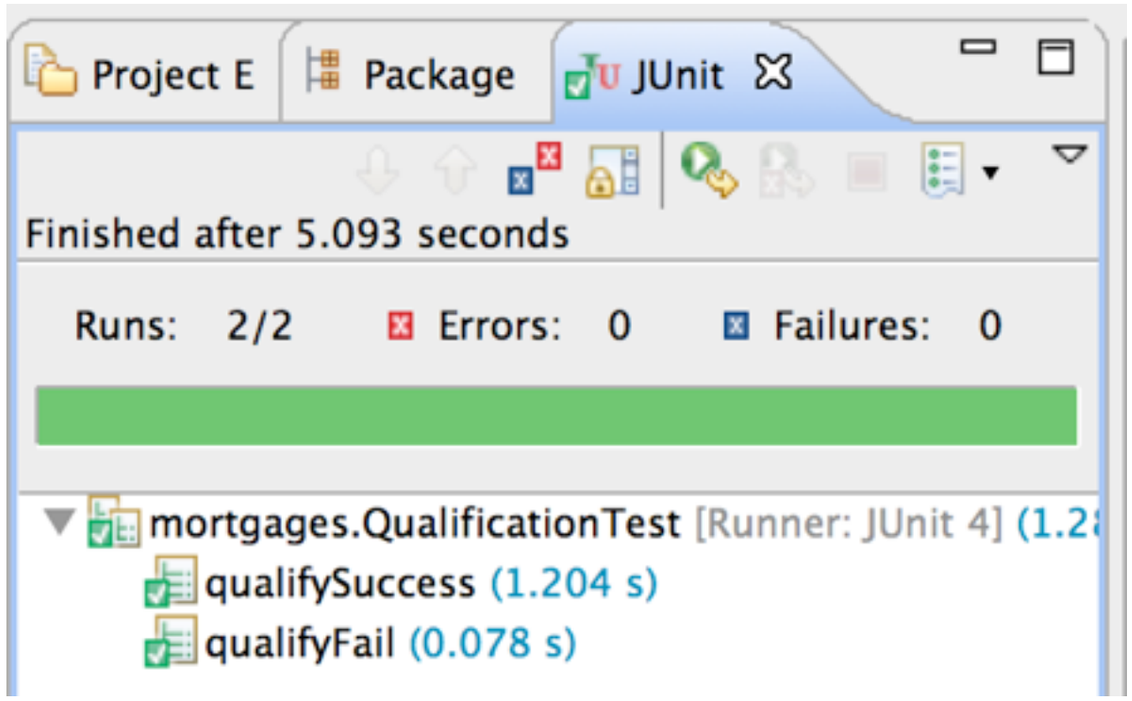
QualificationTest.java

```
1  package mortgages;
2
3  import mortgages.Applicant;
13
14 @RunWith(SwitchYardRunner.class)
15 @SwitchYardTestCaseConfig(
16         config = SwitchYardTestCaseConfig.SWITCHYARD_XML,
17         mixins = CDIMixIn.class)
18 public class QualificationTest {
19
20     @ServiceOperation("QualificationService")
21     private Invoker service;
22
23     @Test
24     public void qualifySuccess() {
25         Applicant request = new Applicant();
26         request.setName("Joan Jones");
27         request.setCreditScore(650);
28
29         Applicant reply = service.operation("qualify").sendInOut(request)
30                 .getContent(Applicant.class);
31
32         // validate the results
33         Assert.assertTrue(reply.isApproved());
34     }
```

Success?

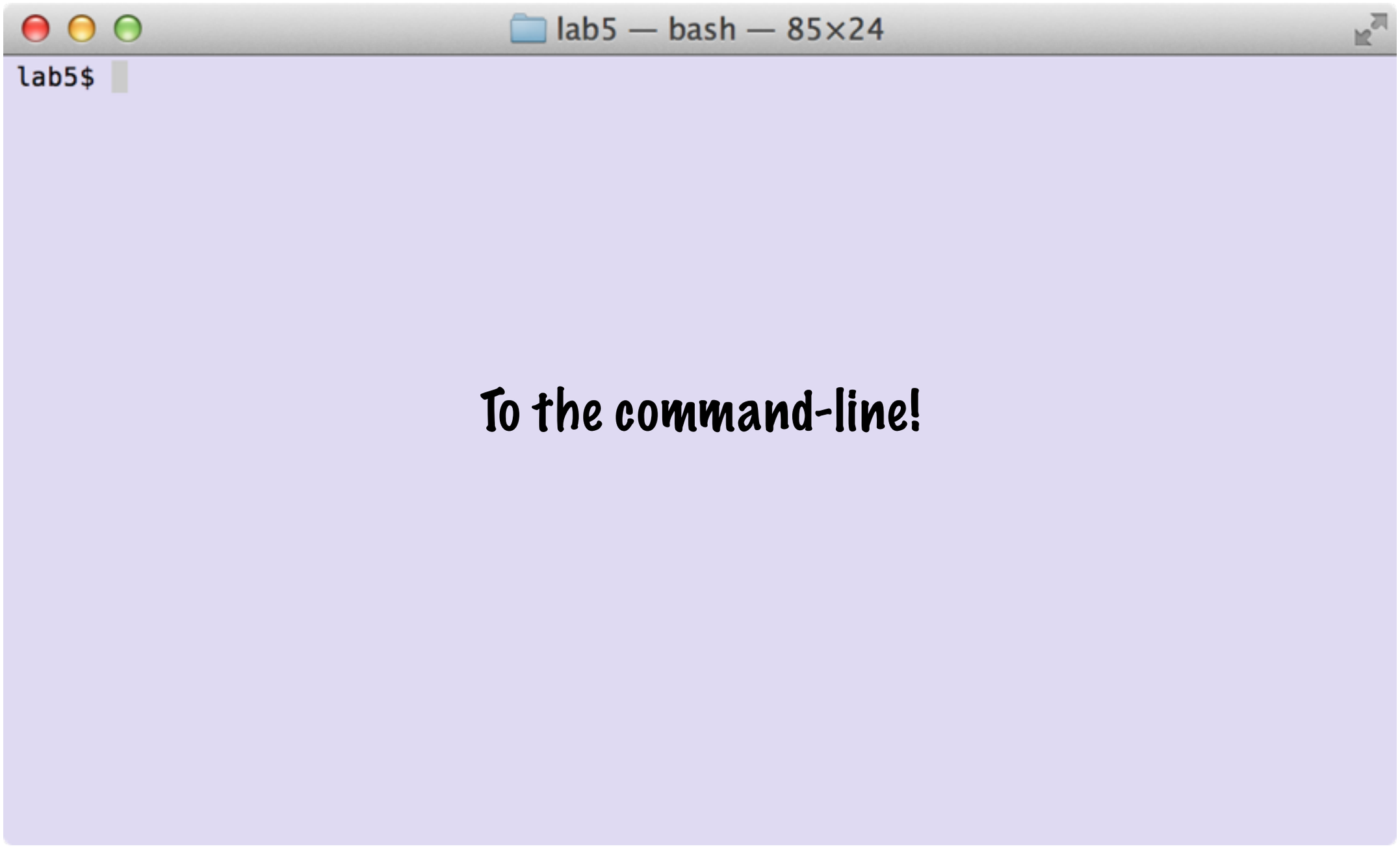
FYI

You should see a nice green bar indicating that the test passed. If you get a red bar indicating test failure, raise your hand and someone will be by to help.



SwitchYard Runtime

- It's time to run SwitchYard. In the next part of the lab, we will
  - Install and configure the SwitchYard Server
  - Add the runtime to JBDS
  - Deploy a SwitchYard application


lab5 — bash — 85×24
lab5$
To the command-line!

Installing SwitchYard

- Unzip EAP 6.1 into a directory of your choice
- Run the SwitchYard installer to install SwitchYard into EAP 6.1

TODO

```
> cd /tmp
> unzip jboss-eap-6.1.0.zip
> unzip switchyard-installer-1.0.0.Final.zip
> cd switchyard-installer-1.0
> ant -DEAP_PATH=/tmp/jboss-eap-6.1
```

https://docs.jboss.org/author/display/SWITCHYARD/Installing+SwitchYard

Configuring SwitchYard

Add a management user

TODO

```
> cd jboss-eap-6.1
> bin/add-user.sh
```

FYI

This user will be used to login to the admin console.

Answer Key

Q1 : <enter>
Q2 : <enter>
Q3 : guest
Q4 : guest-12
Q5 : guest-12
Q6 : yes
Q7 : no

```
soap-6.0-alpha$ bin/add-user.sh

What type of user do you wish to add?
 a) Management User (mgmt-users.properties)
 b) Application User (application-users.properties)
(a):

Enter the details of the new user to add.
Realm (ManagementRealm) :
Username : guest
Password :
Re-enter Password :
About to add user 'guest' for realm 'ManagementRealm'
Is this correct yes/no? y
Added user 'guest' to file '/homes/lab5/Servers/soap-6.0-alpha/standalone/configuration/mgmt-users.properties'
Added user 'guest' to file '/homes/lab5/Servers/soap-6.0-alpha/domain/configuration/mgmt-users.properties'
Is this new user going to be used for one AS process to connect to another AS process?
e.g. for a slave host controller connecting to the master or for a Remoting connection for server to server EJB calls.
yes/no? n
```

Configuring SwitchYard

Add an application user

TODO

```
> bin/add-user.sh
```

FYI

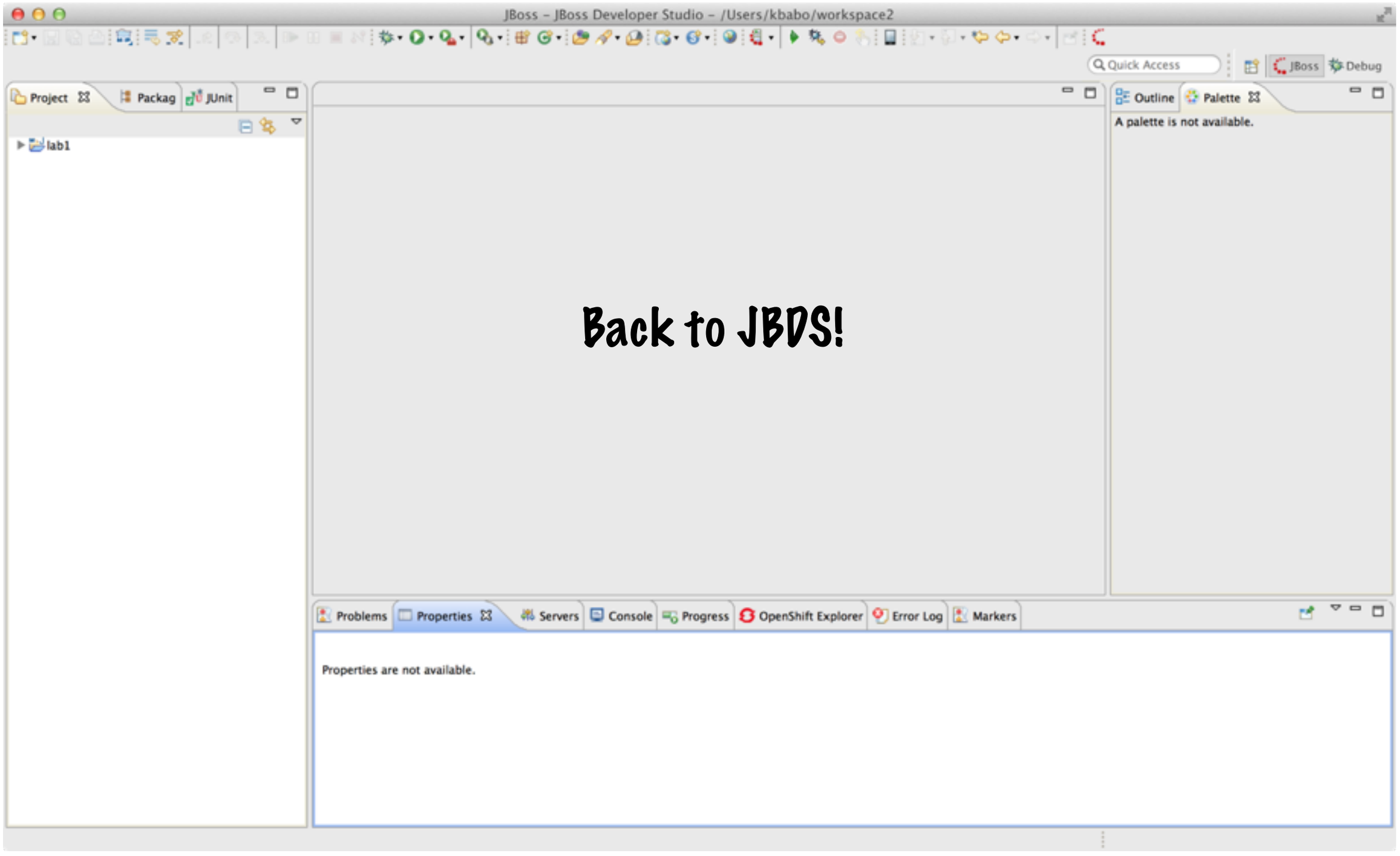
This user will be used to connect to the server from a remote JMS test client.

Answer Key

Q1 : b
Q2 : <enter>
Q3 : guest
Q4 : guest-12
Q5 : guest-12
Q6 : guest
Q7 : yes
Q8 : no

```
soap-6.0-alpha$ bin/add-user.sh

What type of user do you wish to add?
 a) Management User (mgmt-users.properties)
 b) Application User (application-users.properties)
(a): b

Enter the details of the new user to add.
Realm (ApplicationRealm) :
Username : guest
Password :
Re-enter Password :
What roles do you want this user to belong to? (Please enter a comma separated list, or leave blank for none)[  ]: guest
About to add user 'guest' for realm 'ApplicationRealm'
Is this correct yes/no? y
Added user 'guest' to file '/homes/lab5/Servers/soap-6.0-alpha/standalone/configuration/application-users.properties'
Added user 'guest' to file '/homes/lab5/Servers/soap-6.0-alpha/domain/configuration/application-users.properties'
Added user 'guest' with roles guest to file '/homes/lab5/Servers/soap-6.0-alpha/standalone/configuration/application-rol
es.properties'
Added user 'guest' with roles guest to file '/homes/lab5/Servers/soap-6.0-alpha/domain/configuration/application-roles.p
roperties'
Is this new user going to be used for one AS process to connect to another AS process?
e.g. for a slave host controller connecting to the master or for a Remoting connection for server to server EJB calls.
yes/no? n
```

Back to JBDS!

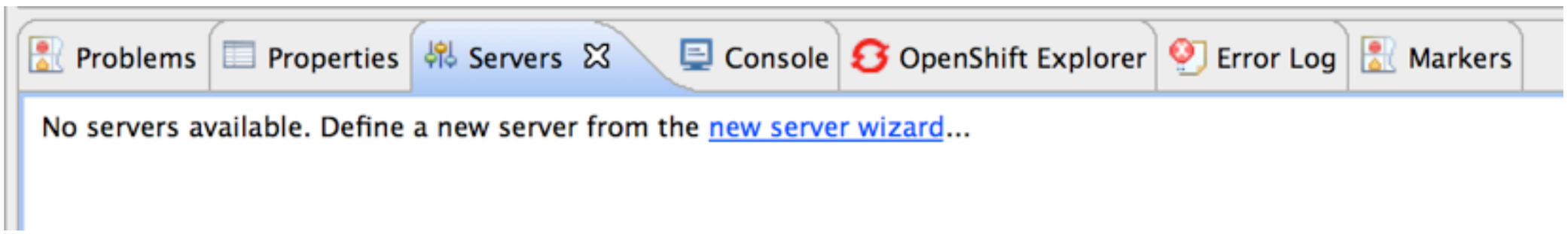

JBoss - JBoss Developer Studio - /Users/kbabo/workspace2
Quick Access
JBoss
Debug
Project
Packag
JUnit
lab1
Outline
Palette
A palette is not available.
Problems
Properties
Servers
Console
Progress
OpenShift Explorer
Error Log
Markers
Properties are not available.

Adding a SwitchYard Server

TODO

1. Select the ‘Servers’ tab in the bottom frame of the workspace.

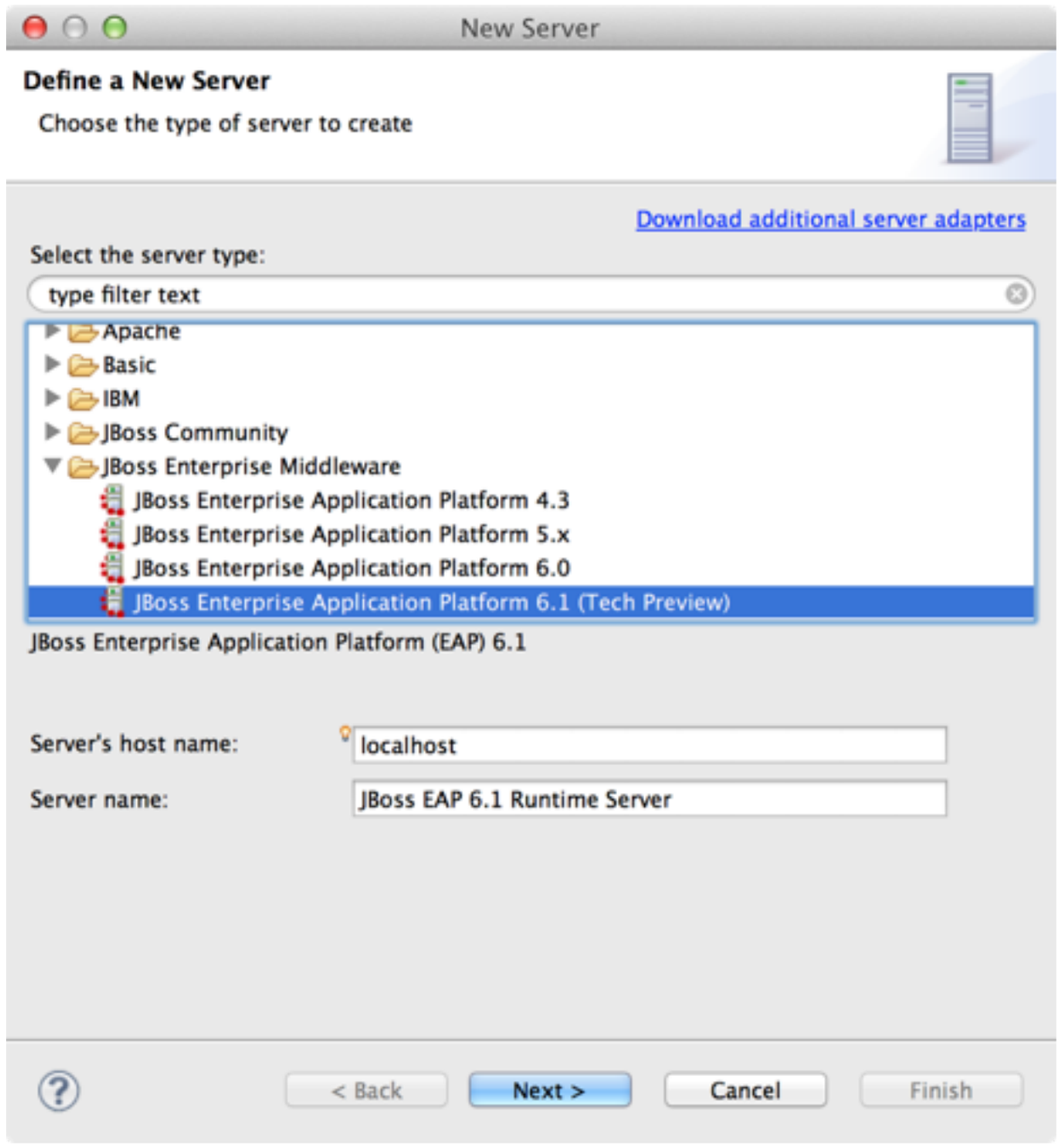
2. Click on ‘new server wizard ...”



New Server

TODO

1. Select JBoss Enterprise Application Platform **6.1**
2. Click Next



New Server

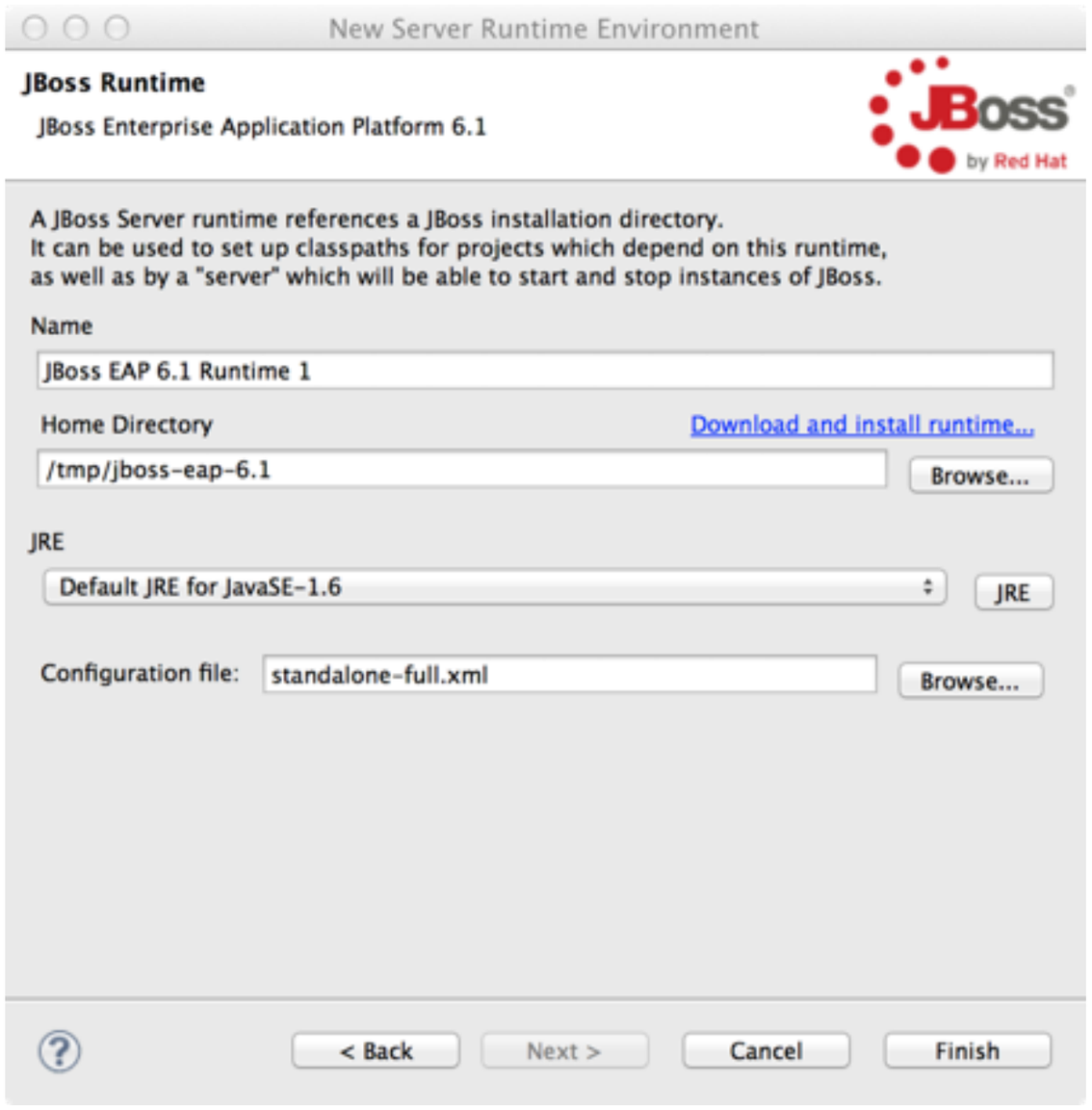
TODO

1. Enter the directory of your EAP 6.1 install

   e.g. `/tmp/jboss-eap-6.1`

2. Specify ‘standalone-full.xml’ for the Configuration File.

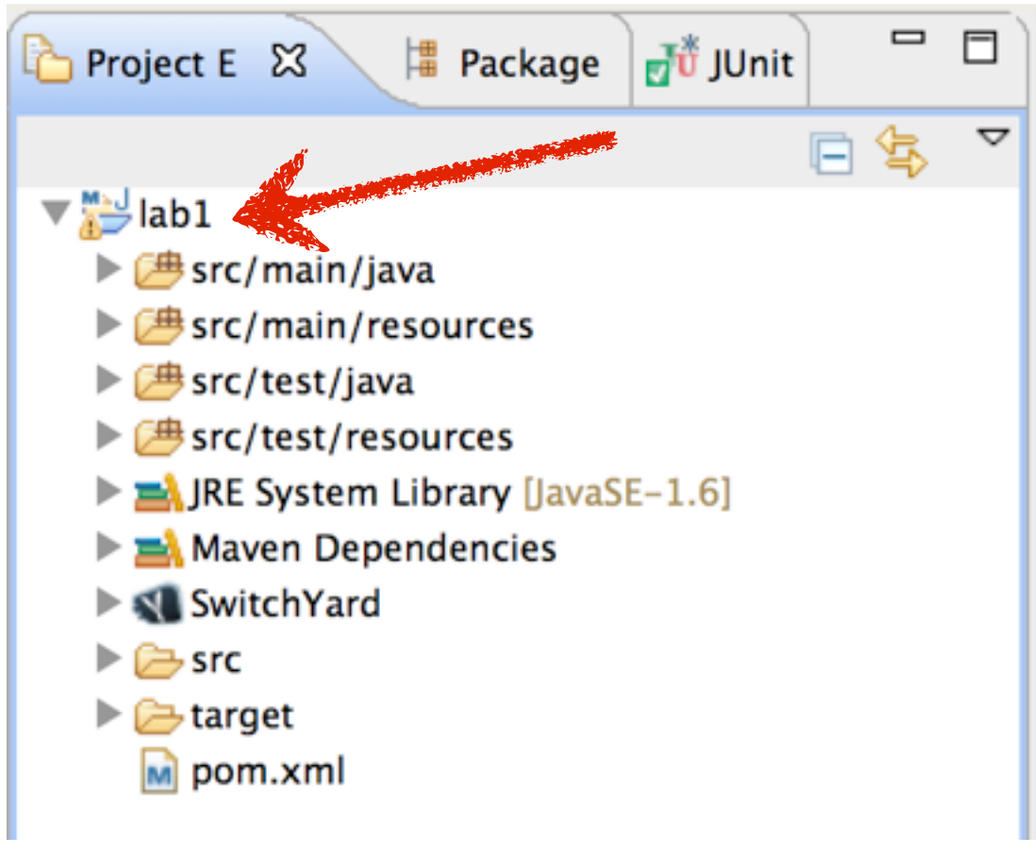
3. Click Finish



Deploy Application

TODO

1. Right-click on the lab1 project and select Run As ... Run on Server

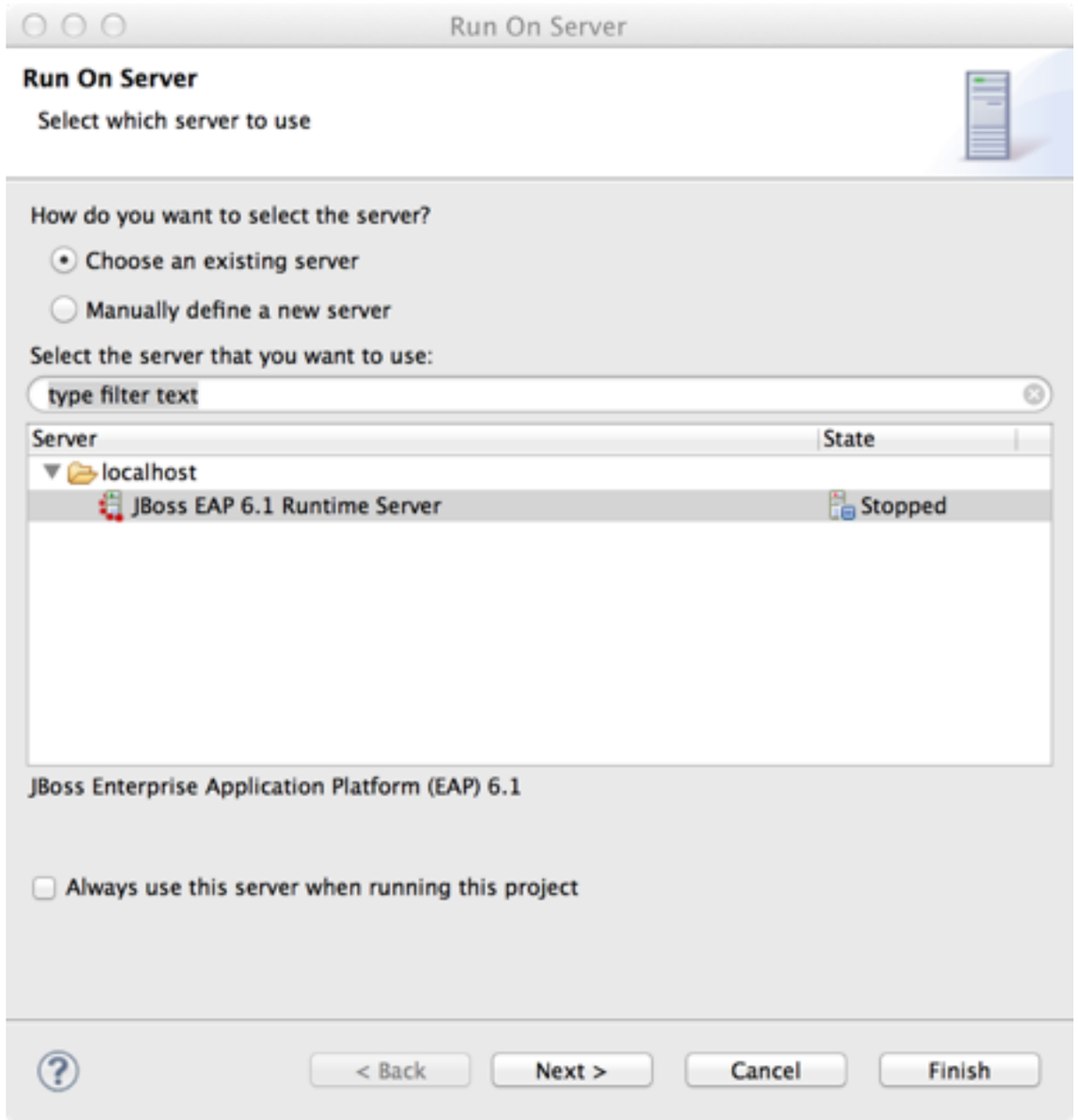


Select Server

TODO

1. Select the JBoss EAP 6.1 Runtime Server

2. Click Finish

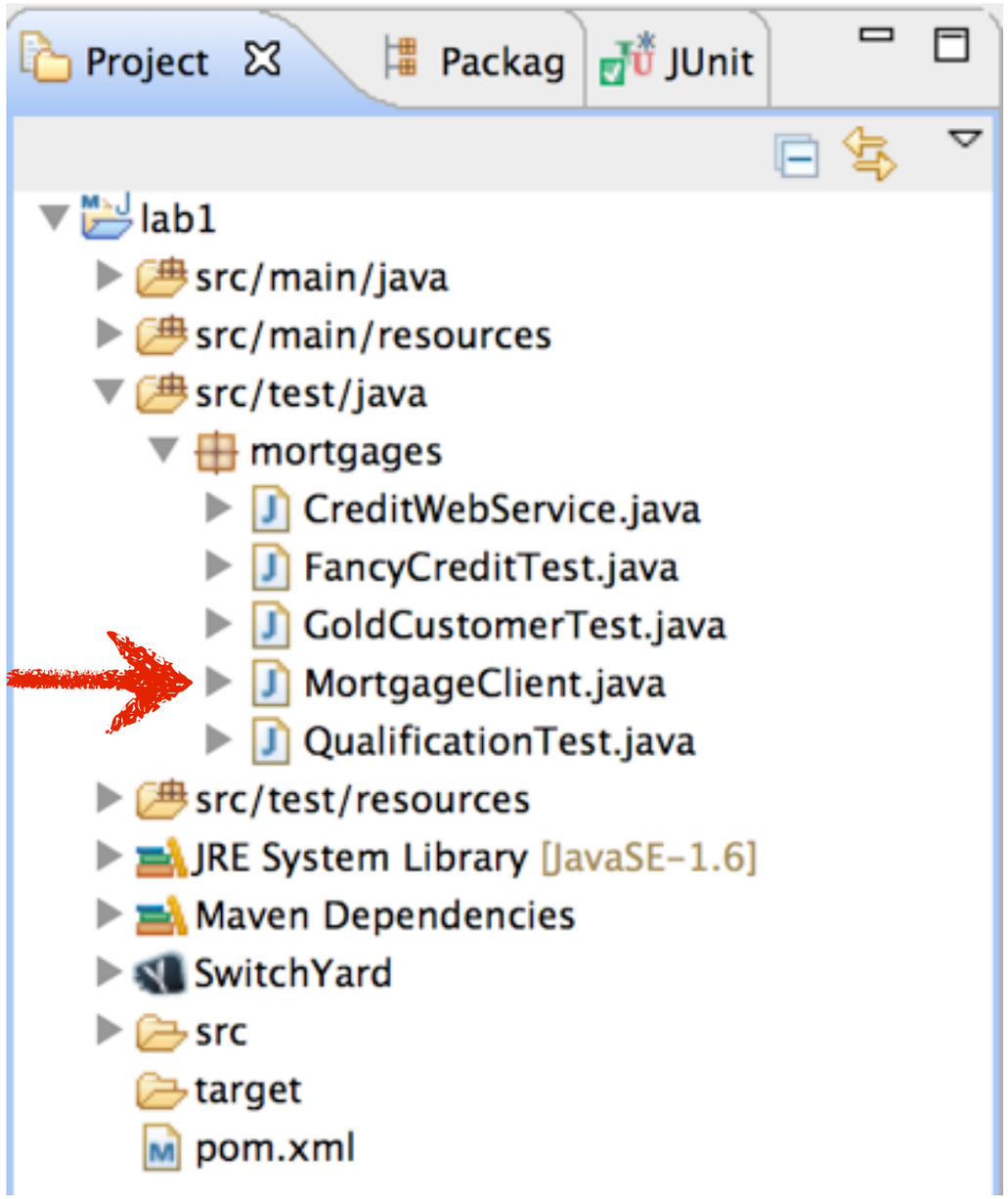


Run Test Client

TODO

1. Open MortgageClient.java from the Project Explorer view.

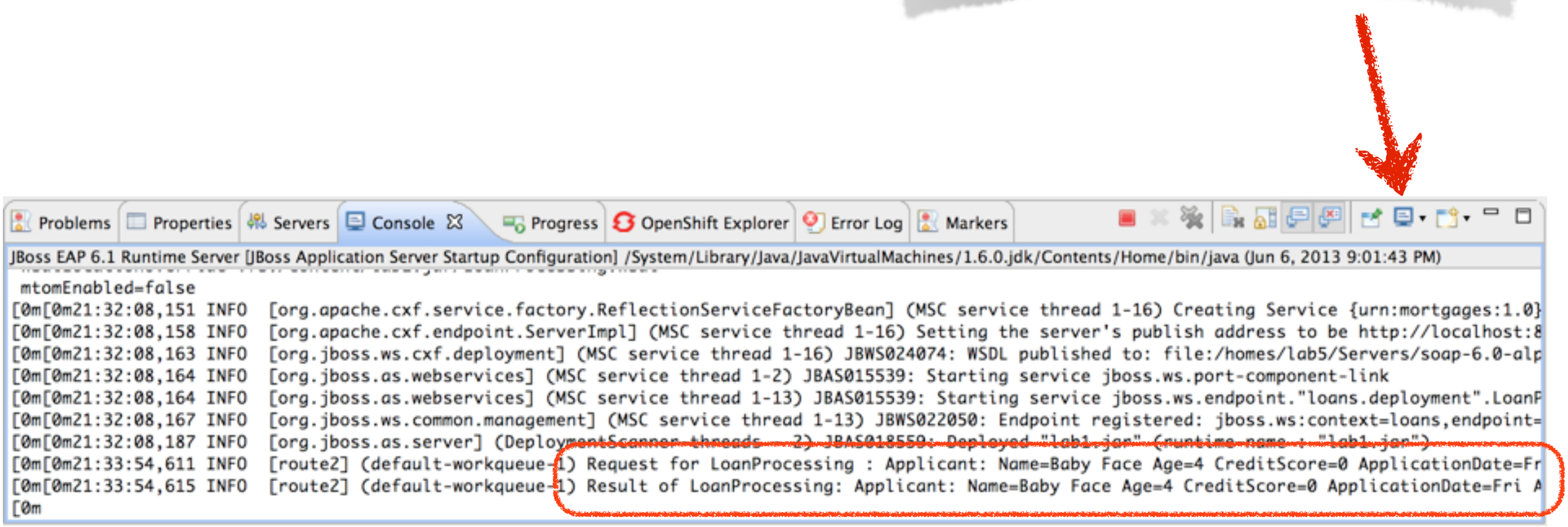
2. Go to the Run menu in the main menu bar and select ‘Run As -> Java Application’



Verify Output

TODO

1. Click here to swap between application output and server output.



Lab 1 Complete!