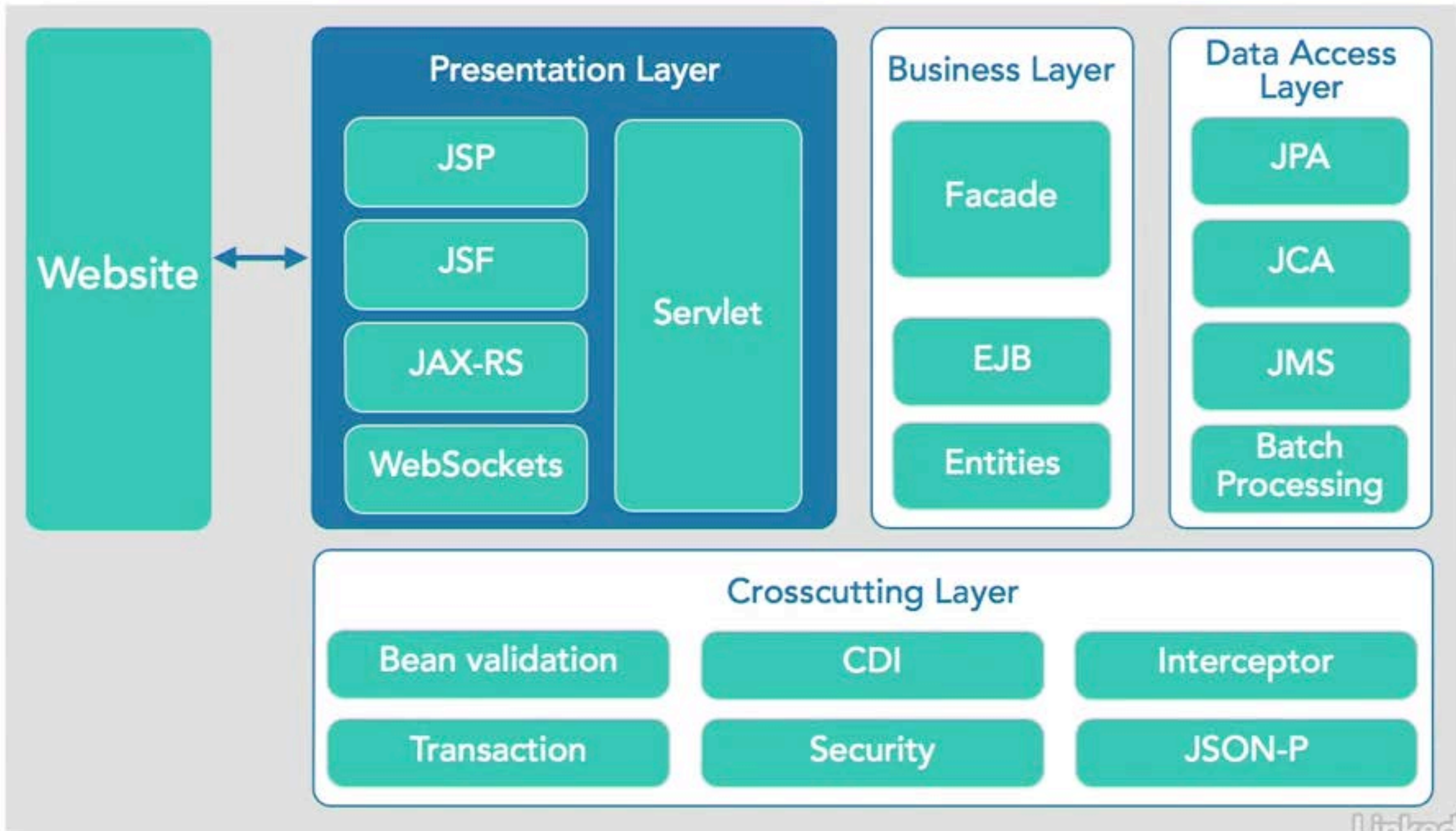# JavaServer Faces Introduction

- JSF API 2.0

- Frontend user interface

JavaServer Faces Introduction

- AJAX support

- Alternative template frameworks

Website ←→ Presentation Layer

Presentation Layer
- JSP
- JSF
- JAX-RS
- WebSockets
- Servlet

Business Layer
- Facade
- EJB
- Entities

Data Access Layer
- JPA
- JCA
- JMS
- Batch Processing

Crosscutting Layer
- Bean validation
- CDI
- Interceptor
- Transaction
- Security
- JSON-P

MVC Design Pattern

- View built using facelets

- Model represented by beans

- Controller is the JSF engine
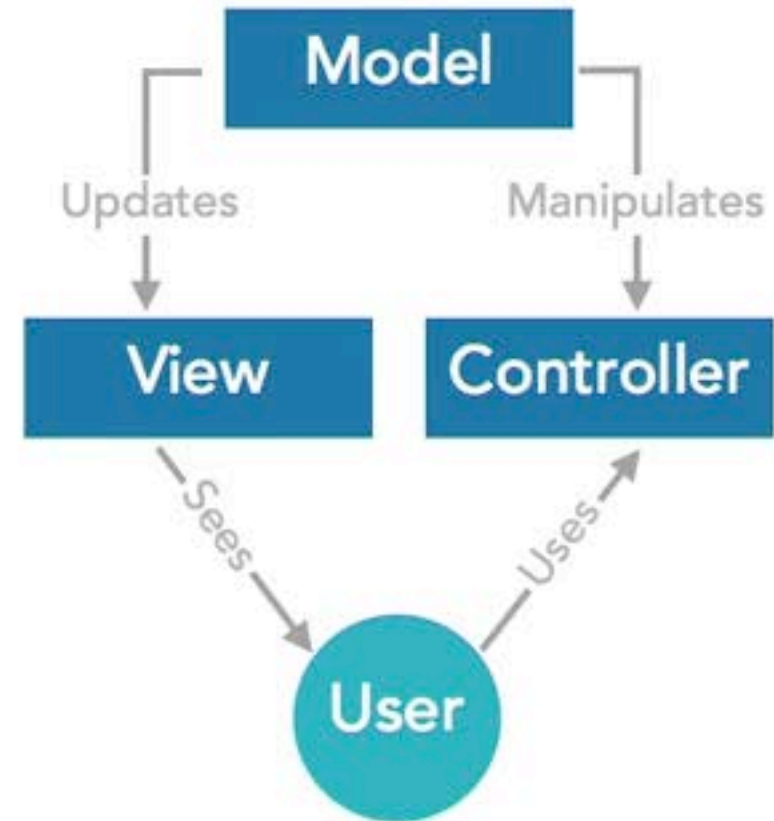
Facelets View Declaration Language

The view

Composite component based

Pluggable component libraries

PrimeFaces

Apache MyFaces

ICEFaces

And many more

Navigation

Simple: pass view name
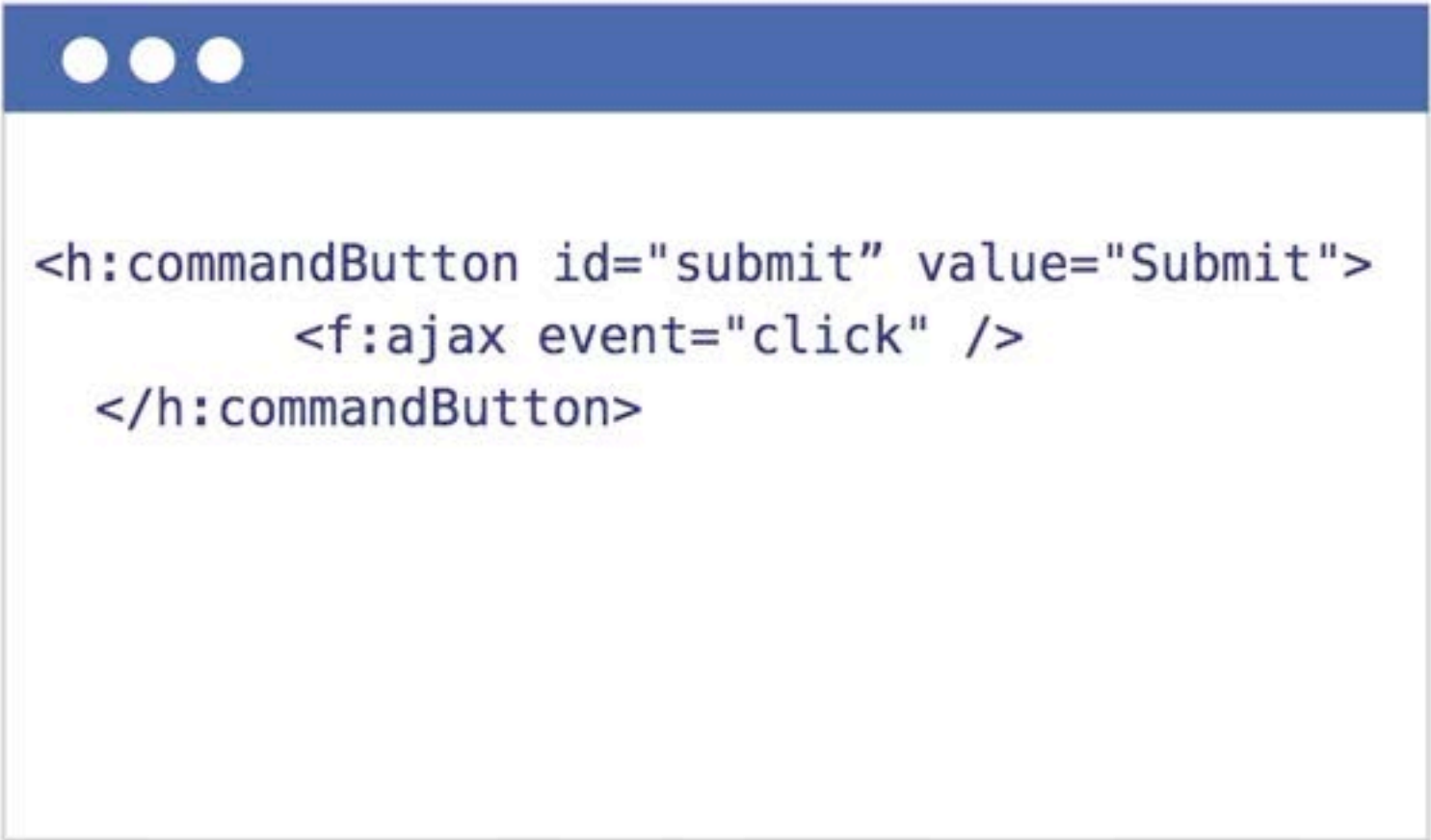
```
<p:commandButton value="Cancel"
action="/admin/dashboard" />
```

Data and Event Binding via EL to CDI
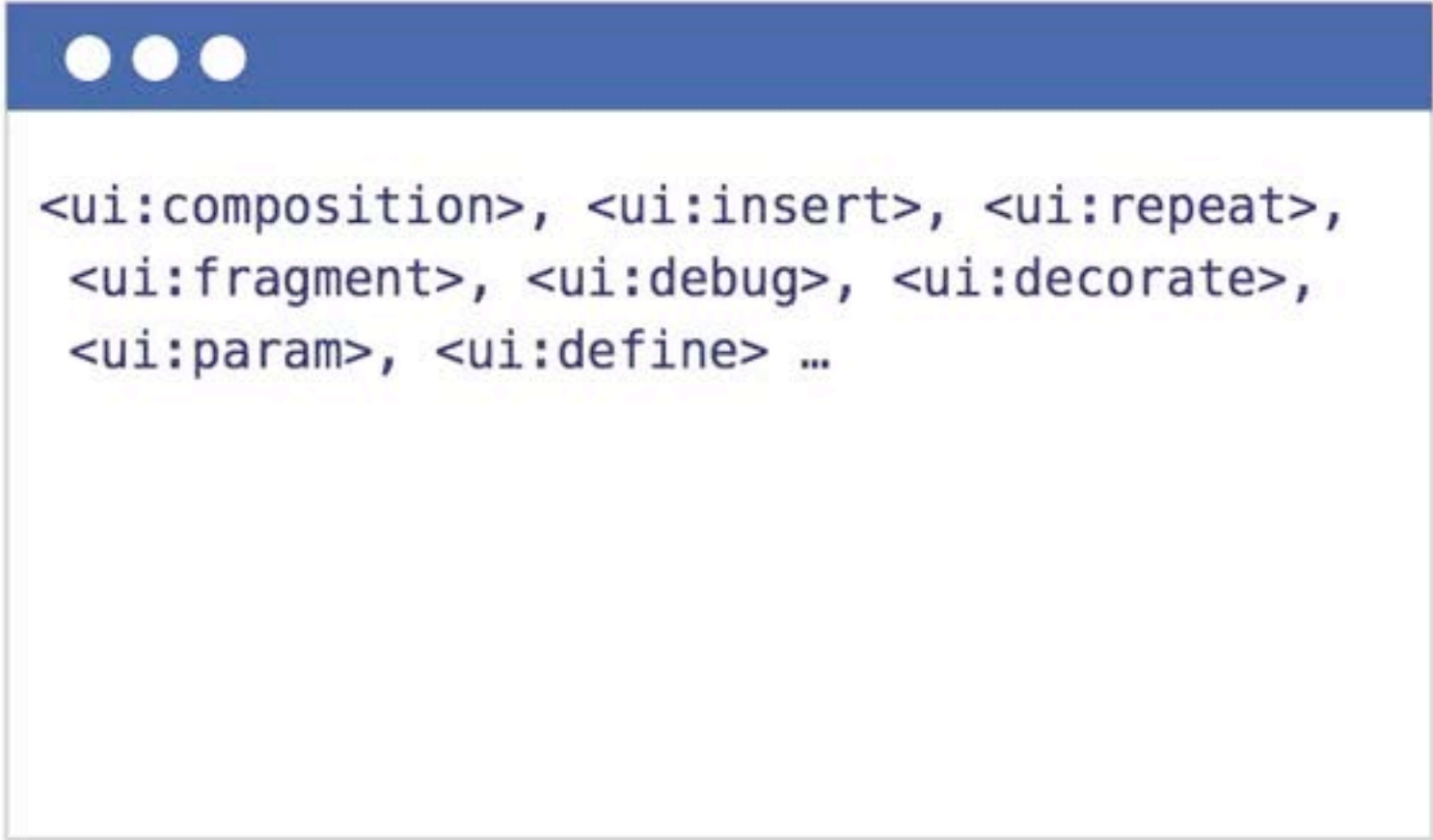
- The model

- Replaces values in the view

- Welcome <p>#{account.name}</p> binds name of account

AJAX and HTML 5

```
<h:commandButton id="submit" value="Submit">
        <f:ajax event="click" />
</h:commandButton>
```

Facelets Tags

```
<ui:composition>, <ui:insert>, <ui:repeat>,
 <ui:fragment>, <ui:debug>, <ui:decorate>,
 <ui:param>, <ui:define> …
```

Core Tags

```
<f:convert>, <f:convertDateTime>,
<f:lengthvalidate>, <f:ajax>,
<f:loadBundle>, <f:selectItem>,
<f:actionListener> …
```

CDI Scopes

- @ViewScoped, @FlowScoped, @FlowDefinition

Cargo Tracker

Applied domain-driven design blueprints for Java EE

Public Tracking Interface

Administration Interface

Mobile Event Logger

localhost:8080/cargo-tracker/public/track.xhtml

Cargo Tracker - Powered by Java EE 7

Tracking ID   Track!

←

Cargo Tracker - Powered by Java EE 7

Tracking ID a **Track!**

ABC123
DEF789
JKL567
MNO456

localhost:8080/cargo-tracker/public/track.xhtml?fwid=cef250314ec307a95eb669c540d1:1

Cargo Tracker - Powered by Java EE 7

Tracking ID ABC123   **Track!**

Cargo **ABC123** is currently **In port New York**

Estimated time of arrival in **Helsinki**: 03/12/2015 12:00 AM PDT

Handling History
- ✔ Received in Hong Kong, at 03/01/2015 12:00 AM PST.
- ✔ Loaded onto voyage 0100S in Hong Kong, at 03/02/2015 12:00 AM PST.
- ✔ Unloaded off voyage 0100S in New York, at 03/05/2015 12:00 AM PST.

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker › src › main › webapp › public › track.xhtml

GlassFish 4.1.1

Project

track.xhtml ×

- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
        - error.xhtml
        - error_404.xhtml
        - index.xhtml
        - mobile.xhtml
    - test
    - weblogic
  - target
  - cargo-tracker.iml
  - eventLogger-flow.NavData
  - faces-config.NavData
  - license.txt
  - nb-configuration.xml
  - nbactions.xml
  - pom.xml
  - readme - CARGOTRACKER-54.t
  - readme.txt

```
html
```

```xhtml
1   <html xmlns="http://www.w3.org/1999/xhtml"
2            xmlns:f="http://xmlns.jcp.org/jsf/core"
3            xmlns:h="http://xmlns.jcp.org/jsf/html"
4            xmlns:ui="http://xmlns.jcp.org/jsf/facelets"
5            xmlns:p="http://primefaces.org/ui">
6       <ui:composition template="/WEB-INF/templates/common/public.xhtml">
7           <ui:define name="title">Track Cargo</ui:define>
8           <ui:define name="content">
9               <script src="http://maps.google.com/maps/api/js?sensor=false" type="text/ja
10              <div class="ui-grid ui-grid-responsive">
11                  <div class="ui-grid-row">
12                      <div class="ui-grid-col-2" id="leftCol"></div>
13                      <div class="ui-grid-col-8" id="mainCol">
14                          <br/>
15                          <h:form id="trackingForm">
16                              <p:outputLabel value="Tracking ID  " />
17                              <p:autoComplete id="trackIdInput" value="#{track.trackingId
18                                      required="true" forceSelection="true"
19                                      completeMethod="#{track.completeTracking}"
20                              <p:commandButton value="Track!"
21                                      actionListener="#{track.onTrackById}"
22                                      ajax="false"/>
23                          </h:form>
```

Compilation completed successfully in 2s 267ms (yesterday 3:06 PM)

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker src main webapp public track.xhtml   GlassFish 4.1.1

Project

cargo-tracker C:\projects\cargo-tr
- .idea
- src
  - main
    - java
    - resources
    - webapp
      - admin
      - booking
      - eventLogger
      - images
      - public
        - about.xhtml
        - track.xhtml
      - resources
      - WEB-INF
      - error.xhtml
      - error_404.xhtml
      - index.xhtml
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- eventLogger-flow.NavData
- faces-config.NavData
- license.txt
- nb-configuration.xml
- nbactions.xml
- pom.xml
- readme - CARGOTRACKER-54.t
- readme.txt

track.xhtml ×

html

```
1   <html xmlns="http://www.w3.org/1999/xhtml"
2         xmlns:f="http://xmlns.jcp.org/jsf/core"
3         xmlns:h="http://xmlns.jcp.org/jsf/html"
4         xmlns:ui="http://xmlns.jcp.org/jsf/facelets"
5         xmlns:p="http://primefaces.org/ui">
6       <ui:composition template="/WEB-INF/templates/common/public.xhtml">
7           <ui:define name="title">Track Cargo</ui:define>
8           <ui:define name="content">
9               <script src="http://maps.google.com/maps/api/js?sensor=false" type="text/ja
10              <div class="ui-grid ui-grid-responsive">
11                  <div class="ui-grid-row">
12                      <div class="ui-grid-col-2" id="leftCol"></div>
13                      <div class="ui-grid-col-8" id="mainCol">
14                          <br/>
15                          <h:form id="trackingForm">
16                              <p:outputLabel value="Tracking ID  " />
17                              <p:autoComplete id="trackIdInput" value="#{track.trackingId
18                                  required="true" forceSelection="true"
19                                  completeMethod="#{track.completeTracking}"
20                              <p:commandButton value="Track!"
21                                  actionListener="#{track.onTrackById}"
22                                  ajax="false"/>
23                          </h:form>
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker ⟩ src ⟩ main ⟩ webapp ⟩ public ⟩ track.xhtml

```
<< div.ui-grid.ui-grid-responsive  div.ui-grid-row  div#mainCol.ui-grid-col-8  form#trackir
```

Project

- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
        - error.xhtml
        - error_404.xhtml
        - index.xhtml
        - mobile.xhtml
    - test
    - weblogic
  - target
  - cargo-tracker.iml
  - eventLogger-flow.NavData
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  - license.txt
  - nb-configuration.xml
  - nbactions.xml
  - pom.xml
  - readme - CARGOTRACKER-54.t
  - readme.txt

track.xhtml

```
 1  http://www.w3.org/1999/xhtml"
 2  ="http://xmlns.jcp.org/jsf/core"
 3  ="http://xmlns.jcp.org/jsf/html"
 4  i="http://xmlns.jcp.org/jsf/facelets"
 5  ="http://primefaces.org/ui">
 6  sition template="/WEB-INF/templates/common/public.xhtml">
 7  efine name="title">Track Cargo</ui:define>
 8  efine name="content">
 9  script src="http://maps.google.com/maps/api/js?sensor=false" type="text/javascript"></s
10  div class="ui-grid ui-grid-responsive">
11      <div class="ui-grid-row">
12          <div class="ui-grid-col-2" id="leftCol"></div>
13          <div class="ui-grid-col-8" id="mainCol">
14              <br/>
15              <h:form id="trackingForm">
16                  <p:outputLabel value="Tracking ID  " />
17                  <p:autoComplete id="trackIdInput" value="#{track.trackingId}"
18                                  required="true" forceSelection="true"
19                                  completeMethod="#{track.completeTracking}" />
20                  <p:commandButton value="Track!"
21                                   actionListener="#{track.onTrackById}"
22                                   ajax="false"/>
23              </h:form>
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker ❭ src ❭ main ❭ webapp ❭ public ❭ track.xhtml

GlassFish 4.1.1

Project

track.xhtml ×

```
cargo-tracker  C:\projects\cargo-tr
  .idea
  src
    main
      java
      resources
      webapp
        admin
        booking
        eventLogger
        images
        public
          about.xhtml
          track.xhtml
        resources
        WEB-INF
      error.xhtml
      error_404.xhtml
      index.xhtml
      mobile.xhtml
    test
    weblogic
  target
  cargo-tracker.iml
  eventLogger-flow.NavData
  faces-config.NavData
  license.txt
  nb-configuration.xml
  nbactions.xml
  pom.xml
  readme - CARGOTRACKER-54.t
  readme.txt
```

`<< | div.ui-grid-row | div#mainCol.ui-grid-col-8 | form#trackingForm | commandButton`

```html
1   html xmlns="http://www.w3.org/1999/xhtml"
2           xmlns:f="http://xmlns.jcp.org/jsf/core"
3           xmlns:h="http://xmlns.jcp.org/jsf/html"
4           xmlns:ui="http://xmlns.jcp.org/jsf/facelets"
5           xmlns:p="http://primefaces.org/ui">
6       <ui:composition template="/WEB-INF/templates/common/public.xhtml">
7           <ui:define name="title">Track Cargo</ui:define>
8           <ui:define name="content">
9               <script src="http://maps.google.com/maps/api/js?sensor=false" type="text/jav
10              <div class="ui-grid ui-grid-responsive">
11                  <div class="ui-grid-row">
12                      <div class="ui-grid-col-2" id="leftCol"></div>
13                      <div class="ui-grid-col-8" id="mainCol">
14                          <br/>
15                          <h:form id="trackingForm">
16                              <p:outputLabel value="Tracking ID   " />
17                              <p:autoComplete id="trackIdInput" value="#{track.trackingId}
18                                  required="true" forceSelection="true"
19                                  completeMethod="#{track.completeTracking}"
20                              <p:commandButton value="Track!"
21                                  actionListener="#{track.onTrackById}"
22                                  ajax="false"/>
23                          </h:form>
```

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker ⟩ src ⟩ main ⟩ java ⟩ net ⟩ java ⟩ cargotracker ⟩ interfaces ⟩ tracking ⟩ web ⟩ C Track

Project

- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
        - error.xhtml
        - error_404.xhtml
        - index.xhtml
        - mobile.xhtml
    - test
    - weblogic
  - target
  - cargo-tracker.iml
  - eventLogger-flow.NavData
  - faces-config.NavData
  - license.txt
  - nb-configuration.xml
  - nbactions.xml
  - pom.xml
  - readme - CARGOTRACKER-54.t
  - readme.txt

track.xhtml ×   C Track.java ×

Track completeTracking()

```java
 92            if (lastKnowLoc != null && !lastKnowLoc.isEmpty() && !lastKnowLoc.toUpperCase(
 93                    String lastKnownLocName = cargo.getLastKnowLocation().getName();
 94                    markersModel.addOverlay(new Marker(getPortLatLng(lastKnowLoc), "Last k
 95            }
 96
 97            return markersModel;
 98        }
 99
100        public List<String> completeTracking(String query) {
101            List<TrackingId> oldList = cargoRepository.getAllTrackingId();
102            List<String> newList = new ArrayList<>(oldList.size());
103            for (TrackingId oldId : oldList) {
104                newList.add(oldId.getIdString());
105            }
106            return newList;
107        }
108
109        public String getDestinationCoordinates() { return destinationCoordinates; }
112
113        public String getLastKnowCoordinate() { return lastKnowCoordinates; }
116
117        public void onTrackById() {
118
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker ⟩ src ⟩ main ⟩ java ⟩ net ⟩ java ⟩ cargotracker ⟩ interfaces ⟩ tracking ⟩ web ⟩ Track

GlassFish 4.1.1

Project

- track.xhtml ×
- Track.java ×

```
cargo-tracker  C:\projects\cargo-tr
  .idea
  src
    main
      java
      resources
      webapp
        admin
        booking
        eventLogger
        images
        public
          about.xhtml
          track.xhtml
        resources
        WEB-INF
        error.xhtml
        error_404.xhtml
        index.xhtml
        mobile.xhtml
    test
    weblogic
  target
  cargo-tracker.iml
  eventLogger-flow.NavData
  faces-config.NavData
  license.txt
  nb-configuration.xml
  nbactions.xml
  pom.xml
  readme - CARGOTRACKER-54.t
  readme.txt
```

```
Track  completeTracking()

92          if (lastKnowLoc != null && !lastKnowLoc.isEmpty() && !lastKnowLoc.toUpperCase(
93                  String lastKnownLocName = cargo.getLastKnowLocation().getName();
94                  markersModel.addOverlay(new Marker(getPortLatLng(lastKnowLoc), "Last k
95          }
96
97          return markersModel;
98      }
99
100     public List<String> completeTracking(String query) {
101         List<TrackingId> oldList = cargoRepository.getAllTrackingId();
102         List<String> newList = new ArrayList<>(oldList.size());
103         for (TrackingId oldId : oldList) {
104             newList.add(oldId.getIdString());
105         }
106         return newList;
107     }
108
109     public String getDestinationCoordinates() { return destinationCoordinates; }
112
113     public String getLastKnowCoordinate() { return lastKnowCoordinates; }
116
117     public void onTrackById() {
118
```

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker ⟩ src ⟩ main ⟩ java ⟩ net ⟩ java ⟩ cargotracker ⟩ interfaces ⟩ tracking ⟩ web ⟩ C Track

Project

- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
          - error.xhtml
          - error_404.xhtml
          - index.xhtml
          - mobile.xhtml
    - test
    - weblogic
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  - faces-config.NavData
  - license.txt
  - nb-configuration.xml
  - nbactions.xml
  - pom.xml
  - readme - CARGOTRACKER-54.tx
  - readme.txt

track.xhtml ×   C **Track.java** ×

```java
Track
29       * domain model to make it easier to work with in a web page rendering context.
30       * We do not want to apply view rendering constraints to the design of our
31       * domain model, and the adapter helps us shield the domain model classes.
32       * <p/>
33       * In some very simplistic cases, it may be fine to not use even an adapter.
34       */
35      @Named
36      @ViewScoped
37      public class Track implements Serializable {
38
39          private static final long serialVersionUID = 1L;
40
41          @Inject
42          private CargoRepository cargoRepository;
43          @Inject
44          private HandlingEventRepository handlingEventRepository;
45
46          private String trackingId;
47          private CargoTrackingViewAdapter cargo;
48          private String destinationCoordinates;
49          private String lastKnowCoordinates;
50          private MapModel markersModel;
51
```

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker ⟩ src ⟩ main ⟩ java ⟩ net ⟩ java ⟩ cargotracker ⟩ interfaces ⟩ tracking ⟩ web ⟩ Track

track.xhtml ×   Track.java ×

```java
Track

29          * domain model to make it easier to work with in a web page rendering context.
30          * We do not want to apply view rendering constraints to the design of our
31          * domain model, and the adapter helps us shield the domain model classes.
32          * <p/>
33          * In some very simplistic cases, it may be fine to not use even an adapter.
34          */
35         @Named
36         @ViewScoped
37         public class Track implements Serializable {
38
39             private static final long serialVersionUID = 1L;
40
41             @Inject
42             private CargoRepository cargoRepository;
43             @Inject
44             private HandlingEventRepository handlingEventRepository;
45
46             private String trackingId;
47             private CargoTrackingViewAdapter cargo;
48             private String destinationCoordinates;
49             private String lastKnowCoordinates;
50             private MapModel markersModel;
51
```

Project

cargo-tracker C:\projects\cargo-tr
  .idea
  src
    main
      java
      resources
      webapp
        admin
        booking
        eventLogger
        images
        public
          about.xhtml
          track.xhtml
        resources
        WEB-INF
        error.xhtml
        error_404.xhtml
        index.xhtml
        mobile.xhtml
    test
    weblogic
  target
  cargo-tracker.iml
  eventLogger-flow.NavData
  faces-config.NavData
  license.txt
  nb-configuration.xml
  nbactions.xml
  pom.xml
  readme - CARGOTRACKER-54.t
  readme.txt

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker ⟩ src ⟩ main ⟩ java ⟩ net ⟩ java ⟩ cargotracker ⟩ interfaces ⟩ tracking ⟩ web ⟩ Track

```
Track  cargoRepository

35      @Named
36      @ViewScoped
37      public class Track implements Serializable {
38
39          private static final long serialVersionUID = 1L;
40
41          @Inject
42          private CargoRepository cargoRepository;
43          @Inject
44          private HandlingEventRepository handlingEventRepository;
45
46          private String trackingId;
47          private CargoTrackingViewAdapter cargo;
48          private String destinationCoordinates;
49          private String lastKnowCoordinates;
50          private MapModel markersModel;
51
52          public String getTrackingId() { return trackingId; }
55
56          public void setTrackingId(String trackingId) {
57              // TODO See if a more global trimming mechanism is needed.
58              if (trackingId != null) {
59                  trackingId = trackingId.trim();
```

Project tree:
- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
        - error.xhtml
        - error_404.xhtml
        - index.xhtml
        - mobile.xhtml
    - test
    - weblogic
  - target
  - cargo-tracker.iml
  - eventLogger-flow.NavData
  - faces-config.NavData
  - license.txt
  - nb-configuration.xml
  - nbactions.xml
  - pom.xml
  - readme - CARGOTRACKER-54.tx
  - readme.txt

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker) src) main) webapp) public) track.xhtml)   GlassFish 4.1.1

Project

cargo-tracker C:\projects\cargo-tr
  .idea
  src
    main
      java
      resources
      webapp
        admin
        booking
        eventLogger
        images
        public
          about.xhtml
          track.xhtml
        resources
        WEB-INF
        error.xhtml
        error_404.xhtml
        index.xhtml
        mobile.xhtml
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    weblogic
  target
  cargo-tracker.iml
  eventLogger-flow.NavData
  faces-config.NavData
  license.txt
  nb-configuration.xml
  nbactions.xml
  pom.xml
  readme - CARGOTRACKER-54.tx
  readme.txt

track.xhtml ×   Track.java ×

`<<` `div.ui-grid-row` `div#mainCol.ui-grid-col-8` `form#trackingForm` `commandButton`

```xhtml
 7          <ui:define name="title">Track Cargo</ui:define>
 8          <ui:define name="content">
 9              <script src="http://maps.google.com/maps/api/js?sensor=false" type="text/jav
10              <div class="ui-grid ui-grid-responsive">
11                  <div class="ui-grid-row">
12                      <div class="ui-grid-col-2" id="leftCol"></div>
13                      <div class="ui-grid-col-8" id="mainCol">
14                          <br/>
15                          <h:form id="trackingForm">
16                              <p:outputLabel value="Tracking ID   " />
17                              <p:autoComplete id="trackIdInput" value="#{track.trackingId}
18                                          required="true" forceSelection="true"
19                                          completeMethod="#{track.completeTracking}" /
20                              <p:commandButton value="Track!"
21                                          actionListener="#{track.onTrackById}"
22                                          ajax="false"/>
23                          </h:form>
24                          <br/>
25                          <h:panelGroup rendered="#{not empty track.cargo}">
26                              <div id="result">
27                                  <p>Cargo <strong>#{track.cargo.trackingId}</strong> is c
28                                  <p>Estimated time of arrival in <strong>#{track.cargo.de
29                                  <f:facet name="nextActivity" rendered="#{track.cargo.nex
```
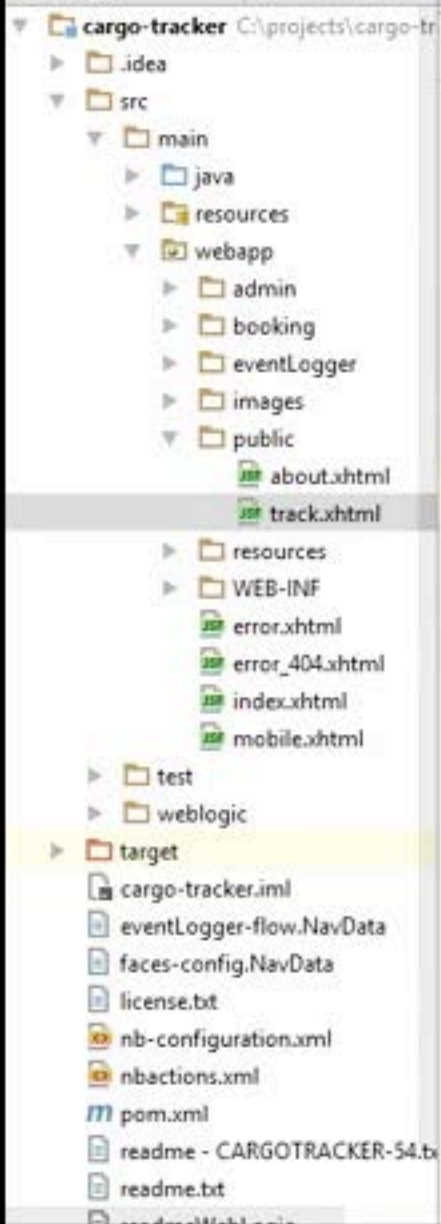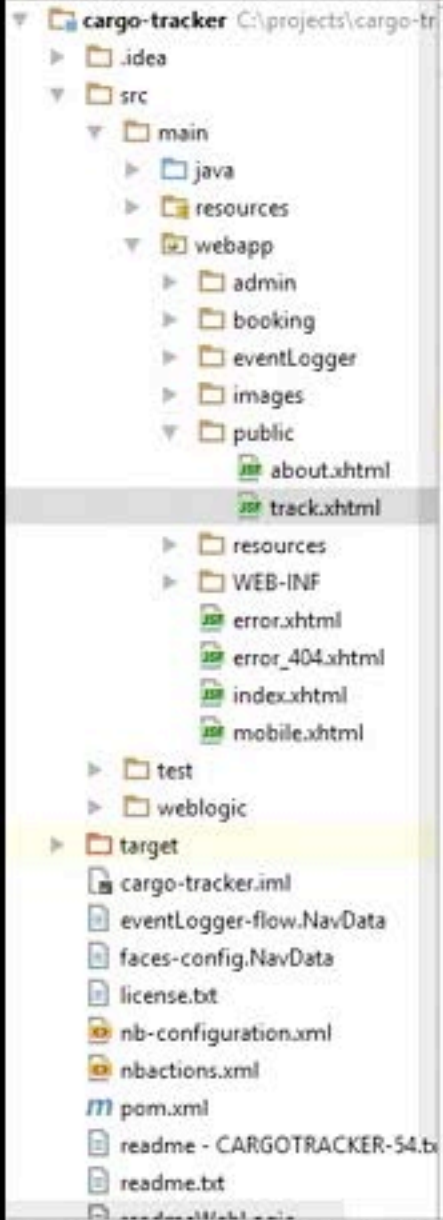
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker ⟩ src ⟩ main ⟩ java ⟩ net ⟩ java ⟩ cargotracker ⟩ interfaces ⟩ tracking ⟩ web ⟩ Track

🔲 Project

📄 track.xhtml ×   © Track.java ×

```
Track  onTrackById()
```

- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
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          - about.xhtml
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        - WEB-INF
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  - license.txt
  - nb-configuration.xml
  - nbactions.xml
  - pom.xml
  - readme - CARGOTRACKER-54.tx
  - readme.txt

```java
105                    }
106            return newList;
107        }
108
109        public String getDestinationCoordinates() { return destinationCoordinates; }
112
113        public String getLastKnowCoordinate() { return lastKnowCoordinates; }
116
117    💡  public void onTrackById() {
118
119            markersModel = new DefaultMapModel();
120
121            Cargo cargo = cargoRepository.find(new TrackingId(trackingId));
122
123            if (cargo != null) {
124                List<HandlingEvent> handlingEvents = handlingEventRepository
125                        .lookupHandlingHistoryOfCargo(new TrackingId(trackingId))
126                        .getDistinctEventsByCompletionTime();
127                this.cargo = new CargoTrackingViewAdapter(cargo, handlingEvents);
128                this.destinationCoordinates = net.java.cargotracker.application.util.Locat
129
130            } else {
131                // TODO See if this can be injected.
```

cargo-tracker) src) main) webapp) public) track.xhtml)   GlassFish 4.1.1

Project

track.xhtml ×   Track.java ×

cargo-tracker C:\projects\cargo-tr
- .idea
- src
  - main
    - java
    - resources
    - webapp
      - admin
      - booking
      - eventLogger
      - images
      - public
        - about.xhtml
        - track.xhtml
      - resources
      - WEB-INF
      - error.xhtml
      - error_404.xhtml
      - index.xhtml
      - mobile.xhtml
  - test
  - weblogic
- target
- cargo-tracker.iml
- eventLogger-flow.NavData
- faces-config.NavData
- license.txt
- nb-configuration.xml
- nbactions.xml
- pom.xml
- readme - CARGOTRACKER-54.t
- readme.txt

<< define | div.ui-grid.ui-grid-responsive | div.ui-grid-row | div#mainCol.ui-grid-col-8 | panel

```
10          <div class="ui-grid ui-grid-responsive">
11              <div class="ui-grid-row">
12                  <div class="ui-grid-col-2" id="leftCol"></div>
13                  <div class="ui-grid-col-8" id="mainCol">
14                      <br/>
15                      <h:form id="trackingForm">
16                          <p:outputLabel value="Tracking ID  " />
17                          <p:autoComplete id="trackIdInput" value="#{track.trackingId}
18                                          required="true" forceSelection="true"
19                                          completeMethod="#{track.completeTracking}" /
20                          <p:commandButton value="Track!"
21                                          actionListener="#{track.onTrackById}"
22                                          ajax="false"/>
23                      </h:form>
24                      <br/>
25                      <h:panelGroup rendered="#{not empty track.cargo}">
26                          <div id="result">
27                              <p>Cargo <strong>#{track.cargo.trackingId}</strong> is c
28                              <p>Estimated time of arrival in <strong>#{track.cargo.de
29                              <f:facet name="nextActivity" rendered="#{track.cargo.nex
30
31                              <h:panelGroup rendered="#{track.cargo.misdirected}">
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker › src › main › webapp › public › track.xhtml

Project

- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
        - error.xhtml
        - error_404.xhtml
        - index.xhtml
        - mobile.xhtml
    - test
    - weblogic
  - target
  - cargo-tracker.iml
  - eventLogger-flow.NavData
  - faces-config.NavData
  - license.txt
  - nb-configuration.xml
  - nbactions.xml
  - pom.xml
  - readme - CARGOTRACKER-54.t
  - readme.txt

track.xhtml

```
html  composition
1    html xmlns="http://www.w3.org/1999/xhtml"
2            xmlns:f="http://xmlns.jcp.org/jsf/core"
3            xmlns:h="http://xmlns.jcp.org/jsf/html"
4            xmlns:ui="http://xmlns.jcp.org/jsf/facelets"
5            xmlns:p="http://primefaces.org/ui">
6        <ui:composition template="/WEB-INF/templates/common/public.xhtml">
7            <ui:define name="title">Track Cargo</ui:define>
8            <ui:define name="content">
9                <script src="http://maps.google.com/maps/api/js?sensor=false" type="text/jav
10               <div class="ui-grid ui-grid-responsive">
11                   <div class="ui-grid-row">
12                       <div class="ui-grid-col-2" id="leftCol"></div>
13                       <div class="ui-grid-col-8" id="mainCol">
14                           <br/>
15                           <h:form id="trackingForm">
16                               <p:outputLabel value="Tracking ID   " />
17                               <p:autoComplete id="trackIdInput" value="#{track.trackingId}
18                                               required="true" forceSelection="true"
19                                               completeMethod="#{track.completeTracking}" /
20                               <p:commandButton value="Track!"
21                                               actionListener="#{track.onTrackById}"
22                                               ajax="false"/>
23                           </h:form>
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker ⟩ src ⟩ main ⟩ webapp ⟩ public ⟩ track.xhtml

Project
- cargo-tracker C:\projects\cargo-tr
  - .idea
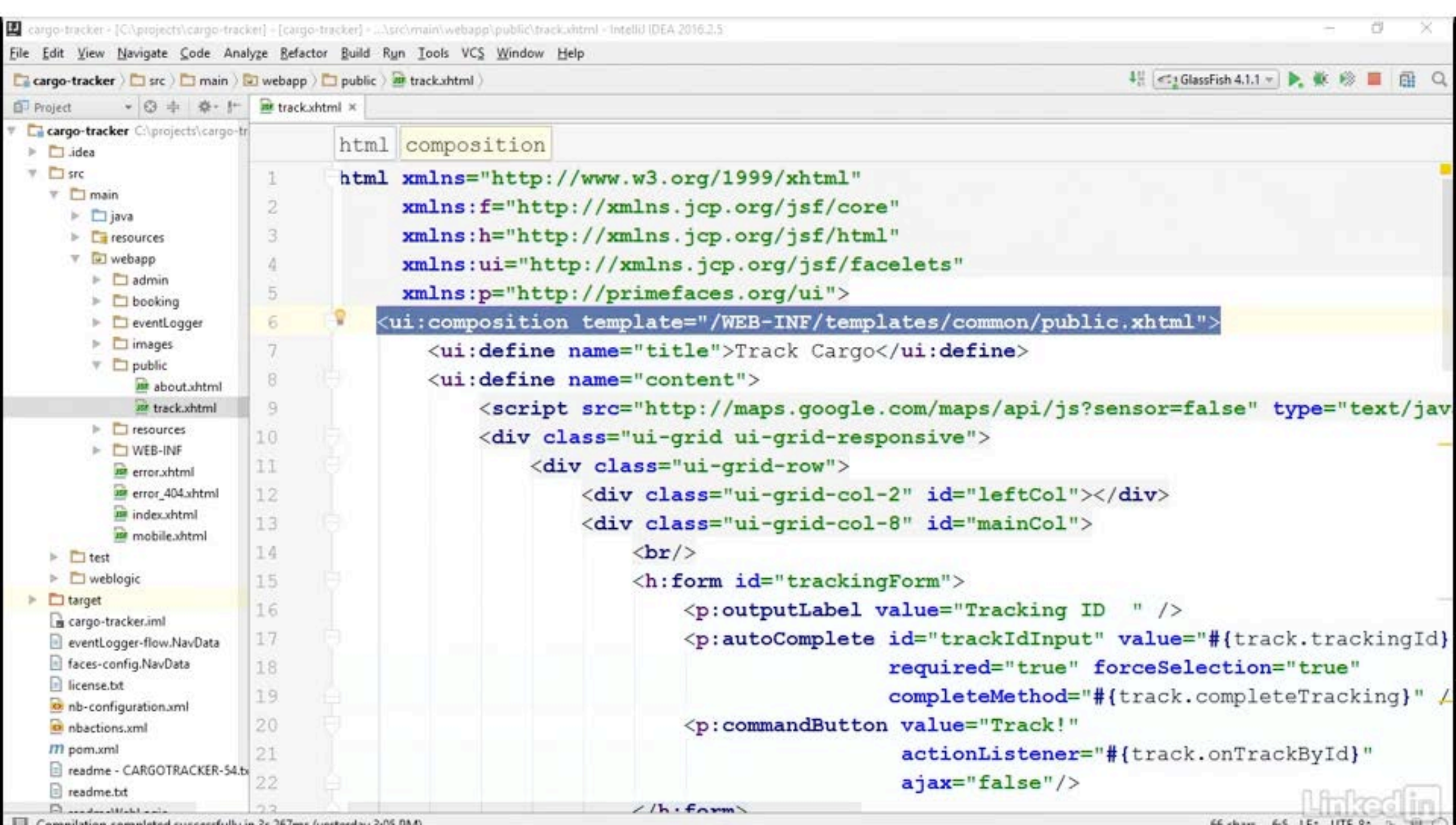 - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
        - error.xhtml
        - error_404.xhtml
        - index.xhtml
        - mobile.xhtml
    - test
    - weblogic
  - target
  - cargo-tracker.iml
  - eventLogger-flow.NavData
  - faces-config.NavData
  - license.txt
  - nb-configuration.xml
  - nbactions.xml
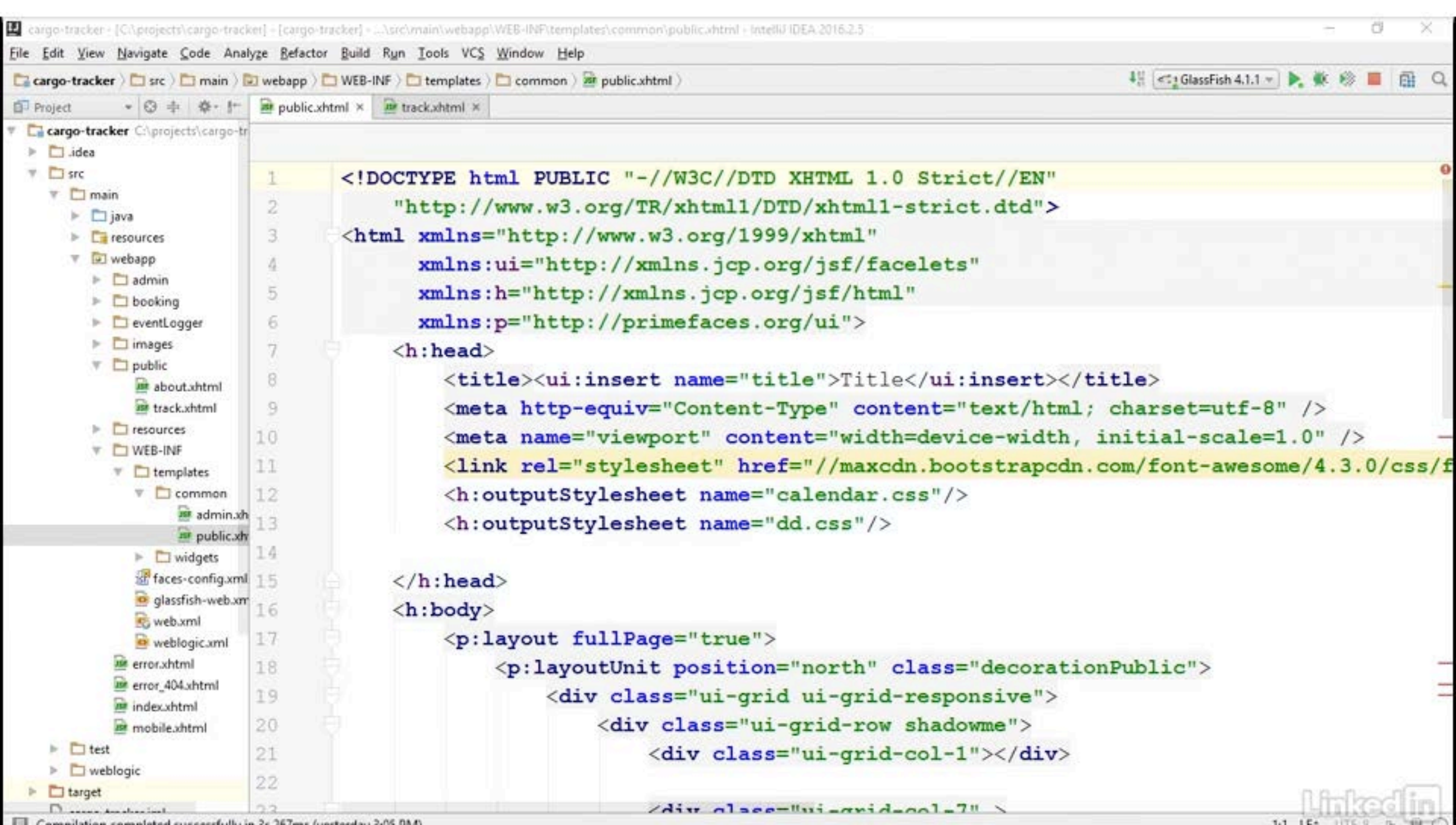 - pom.xml
  - readme - CARGOTRACKER-54.tx
  - readme.txt

track.xhtml ×

html composition

```xhtml
1   html xmlns="http://www.w3.org/1999/xhtml"
2        xmlns:f="http://xmlns.jcp.org/jsf/core"
3        xmlns:h="http://xmlns.jcp.org/jsf/html"
4        xmlns:ui="http://xmlns.jcp.org/jsf/facelets"
5        xmlns:p="http://primefaces.org/ui">
6   <ui:composition template="/WEB-INF/templates/common/public.xhtml">
7       <ui:define name="title">Track Cargo</ui:define>
8       <ui:define name="content">
9           <script src="http://maps.google.com/maps/api/js?sensor=false" type="text/jav
10          <div class="ui-grid ui-grid-responsive">
11              <div class="ui-grid-row">
12                  <div class="ui-grid-col-2" id="leftCol"></div>
13                  <div class="ui-grid-col-8" id="mainCol">
14                      <br/>
15                      <h:form id="trackingForm">
16                          <p:outputLabel value="Tracking ID   " />
17                          <p:autoComplete id="trackIdInput" value="#{track.trackingId}
18                                          required="true" forceSelection="true"
19                                          completeMethod="#{track.completeTracking}" /
20                          <p:commandButton value="Track!"
21                                          actionListener="#{track.onTrackById}"
22                                          ajax="false"/>
23                      </h:form>
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker ⟩ src ⟩ main ⟩ webapp ⟩ WEB-INF ⟩ templates ⟩ common ⟩ public.xhtml

Project

- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
          - templates
            - common
              - admin.xh
              - public.xh
            - widgets
          - faces-config.xml
          - glassfish-web.xm
          - web.xml
          - weblogic.xml
        - error.xhtml
        - error_404.xhtml
        - index.xhtml
        - mobile.xhtml
    - test
    - weblogic
  - target

public.xhtml ×   track.xhtml ×

```
1    <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
2         "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
3    <html xmlns="http://www.w3.org/1999/xhtml"
4         xmlns:ui="http://xmlns.jcp.org/jsf/facelets"
5         xmlns:h="http://xmlns.jcp.org/jsf/html"
6         xmlns:p="http://primefaces.org/ui">
7       <h:head>
8          <title><ui:insert name="title">Title</ui:insert></title>
9          <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
10         <meta name="viewport" content="width=device-width, initial-scale=1.0" />
11         <link rel="stylesheet" href="//maxcdn.bootstrapcdn.com/font-awesome/4.3.0/css/f
12         <h:outputStylesheet name="calendar.css"/>
13         <h:outputStylesheet name="dd.css"/>
14
15      </h:head>
16      <h:body>
17         <p:layout fullPage="true">
18             <p:layoutUnit position="north" class="decorationPublic">
19                 <div class="ui-grid ui-grid-responsive">
20                     <div class="ui-grid-row shadowme">
21                         <div class="ui-grid-col-1"></div>
22
23                         <div class="ui-grid-col-7">
```

Compilation completed successfully in 3s 267ms (yesterday 3:06 PM)

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker ⟩ src ⟩ main ⟩ webapp ⟩ WEB-INF ⟩ templates ⟩ common ⟩ public.xhtml

Project

- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
          - templates
            - common
              - admin.xh
              - public.xh
            - widgets
          - faces-config.xml
          - glassfish-web.xm
          - web.xml
          - weblogic.xml
        - error.xhtml
        - error_404.xhtml
        - index.xhtml
        - mobile.xhtml
      - test
    - weblogic
  - target

Tabs: public.xhtml × | track.xhtml ×

```html
html

1   <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
2           "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
3   <html xmlns="http://www.w3.org/1999/xhtml"
4           xmlns:ui="http://xmlns.jcp.org/jsf/facelets"
5           xmlns:h="http://xmlns.jcp.org/jsf/html"
6           xmlns:p="http://primefaces.org/ui">
7   <h:head>
8       <title><ui:insert name="title">Title</ui:insert></title>
9       <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
10      <meta name="viewport" content="width=device-width, initial-scale=1.0" />
11      <link rel="stylesheet" href="//maxcdn.bootstrapcdn.com/font-awesome/4.3.0/css/f
12      <h:outputStylesheet name="calendar.css"/>
13      <h:outputStylesheet name="dd.css"/>
14
15  </h:head>
16  <h:body>
17      <p:layout fullPage="true">
18          <p:layoutUnit position="north" class="decorationPublic">
19              <div class="ui-grid ui-grid-responsive">
20                  <div class="ui-grid-row shadowme">
21                      <div class="ui-grid-col-1"></div>
22
```

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker ⟩ src ⟩ main ⟩ webapp ⟩ WEB-INF ⟩ templates ⟩ common ⟩ public.xhtml

Project

- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
          - templates
            - common
              - admin.xh
              - public.xh
            - widgets
          - faces-config.xml
          - glassfish-web.xm
          - web.xml
          - weblogic.xml
        - error.xhtml
        - error_404.xhtml
        - index.xhtml
        - mobile.xhtml
    - test
    - weblogic
  - target

public.xhtml ×   **track.xhtml** ×

`html` `head`

```
1   <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
2       "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
3   <html xmlns="http://www.w3.org/1999/xhtml"
4       xmlns:ui="http://xmlns.jcp.org/jsf/facelets"
5       xmlns:h="http://xmlns.jcp.org/jsf/html"
6       xmlns:p="http://primefaces.org/ui">
7       <h:head>
8           <title><ui:insert name="title">Title</ui:insert></title>
9           <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
10          <meta name="viewport" content="width=device-width, initial-scale=1.0" />
11          <link rel="stylesheet" href="//maxcdn.bootstrapcdn.com/font-awesome/4.3.0/css/f
12          <h:outputStylesheet name="calendar.css"/>
13          <h:outputStylesheet name="dd.css"/>
14
15      </h:head>
16      <h:body>
17          <p:layout fullPage="true">
18              <p:layoutUnit position="north" class="decorationPublic">
19                  <div class="ui-grid ui-grid-responsive">
20                      <div class="ui-grid-row shadowme">
21                          <div class="ui-grid-col-1"></div>
22
23                          <div class="ui-grid-col-7">
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker src main webapp WEB-INF templates common public.xhtml

Project

public.xhtml ×   track.xhtml ×

cargo-tracker C:\projects\cargo-tr
- .idea
- src
  - main
    - java
    - resources
    - webapp
      - admin
      - booking
      - eventLogger
      - images
      - public
        - about.xhtml
        - track.xhtml
      - resources
      - WEB-INF
        - templates
          - common
            - admin.xh
            - public.xh
          - widgets
        - faces-config.xml
        - glassfish-web.xm
        - web.xml
        - weblogic.xml
      - error.xhtml
      - error_404.xhtml
      - index.xhtml
      - mobile.xhtml
  - test
  - weblogic
- target

```
html  body  layout

31                              <h:commandLink value="About" action="/public/about.xhtm
32                          </h:form>
33                      </div>
34                      <div class="ui-grid-col-1"></div>
35                  </div>
36              </div>
37          </p:layoutUnit>
38
39          <p:layoutUnit position="center" >
40              <div id="body">
41                  <ui:insert name="content">Default Content</ui:insert>
42              </div>
43          </p:layoutUnit>
44
45          <p:layoutUnit position="south" size="50" class="clearCargoBkg" style="margi
46              <center> <!-- TODO: change center CCS -->
47                  <p:separator/>
48                  <p:outputLabel style="center"><a href="http://www.oracle.com/us/leg
49              </center>
50          </p:layoutUnit>
51      </p:layout>
52
53      </h:body>
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker › src › main › webapp › public › track.xhtml   GlassFish 4.1.1

Project

public.xhtml ×   track.xhtml ×

```
cargo-tracker C:\projects\cargo-tr
  .idea
  src
    main
      java
      resources
      webapp
        admin
        booking
        eventLogger
        images
        public
          about.xhtml
          track.xhtml
        resources
      WEB-INF
        templates
          common
            admin.xh
            public.xh
          widgets
        faces-config.xml
        glassfish-web.xm
        web.xml
        weblogic.xml
      error.xhtml
      error_404.xhtml
      index.xhtml
      mobile.xhtml
    test
    weblogic
  target
```

html   composition   define

```xml
1   html xmlns="http://www.w3.org/1999/xhtml"
2        xmlns:f="http://xmlns.jcp.org/jsf/core"
3        xmlns:h="http://xmlns.jcp.org/jsf/html"
4        xmlns:ui="http://xmlns.jcp.org/jsf/facelets"
5        xmlns:p="http://primefaces.org/ui">
6     <ui:composition template="/WEB-INF/templates/common/public.xhtml">
7        <ui:define name="title">Track Cargo</ui:define>
8        <ui:define name="content">
9            <script src="http://maps.google.com/maps/api/js?sensor=false" type="text/jav
10           <div class="ui-grid ui-grid-responsive">
11               <div class="ui-grid-row">
12                   <div class="ui-grid-col-2" id="leftCol"></div>
13                   <div class="ui-grid-col-8" id="mainCol">
14                       <br/>
15                       <h:form id="trackingForm">
16                           <p:outputLabel value="Tracking ID  " />
17                           <p:autoComplete id="trackIdInput" value="#{track.trackingId}
18                                   required="true" forceSelection="true"
19                                   completeMethod="#{track.completeTracking}" /
20                           <p:commandButton value="Track!"
21                                   actionListener="#{track.onTrackById}"
22                                   ajax="false"/>
23                       </h:form>
```

Challenge

Challenge: JavaServer Faces

Specify a custom bean name

Change the bean name used in the view to tracker

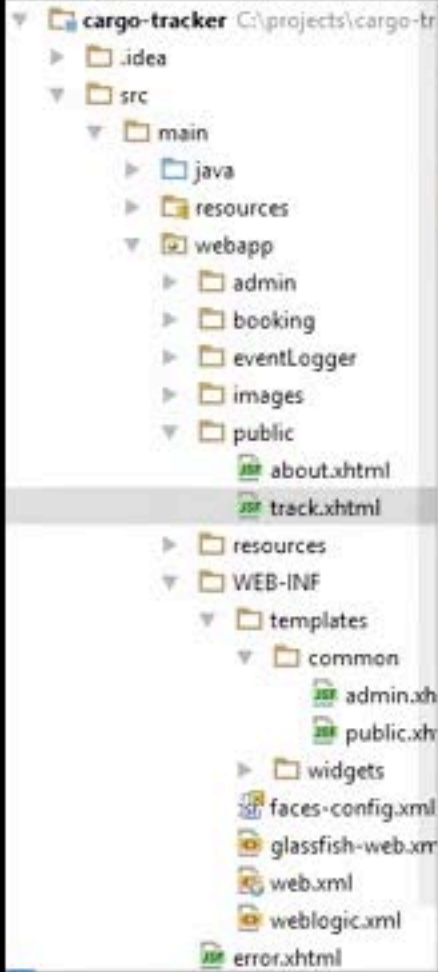**Explore the PrimeFaces website**

Primefaces.org

Replace autocomplete with drop-down

Replace with a drop-down already populated with all tracking IDs

cargo-tracker - [C:\projects\cargo-tracker] - [cargo-tracker] - ...\src\main\java\net\java\cargotracker\interfaces\tracking\web\Track.java - IntelliJ IDEA 2016.2.5

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker src main java net java cargotracker interfaces tracking web C Track

Project

track.xhtml ×   C Track.java ×

Track

```java
29    * domain model to make it easier to work with in a web page rendering context.
30    * We do not want to apply view rendering constraints to the design of our
31    * domain model, and the adapter helps us shield the domain model classes.
32    * <p/>
33    * In some very simplistic cases, it may be fine to not use even an adapter.
34    */
35   @Named
36   @ViewScoped
37   public class Track implements Serializable {
38
39       private static final long serialVersionUID = 1L;
40
41       @Inject
42       private CargoRepository cargoRepository;
43       @Inject
44       private HandlingEventRepository handlingEventRepository;
45
46       private String trackingId;
         CargoTrackingViewAdapter cargo;
         String destinationCoordinates;
49       private String lastKnowCoordinates;
50       private MapModel markersModel;
51
```

Exercise Files > Ch03 > 03_05

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker 〉 src 〉 main 〉 java 〉 net 〉 java 〉 cargotracker 〉 interfaces 〉 tracking 〉 web 〉 © Track 〉

```java
Track

   * domain model to make it easier to work with in a web page rendering context.
   * We do not want to apply view rendering constraints to the design of our
   * domain model, and the adapter helps us shield the domain model classes.
   * <p/>
   * In some very simplistic cases, it may be fine to not use even an adapter.
   */
@Named("T")
@ViewScoped
public class Track implements Serializable {

    private static final long serialVersionUID = 1L;

    @Inject
    private CargoRepository cargoRepository;
    @Inject
    private HandlingEventRepository handlingEventRepository;

    private String trackingId;
    private CargoTrackingViewAdapter cargo;
    private String destinationCoordinates;
    private String lastKnowCoordinates;
    private MapModel markersModel;
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker ⟩ src ⟩ main ⟩ java ⟩ net ⟩ java ⟩ cargotracker ⟩ interfaces ⟩ tracking ⟩ web ⟩ Track

Project

track.xhtml × © Track.java ×

```java
                 Track

29      * domain model to make it easier to work with in a web page rendering context.
30      * We do not want to apply view rendering constraints to the design of our
31      * domain model, and the adapter helps us shield the domain model classes.
32      * <p/>
33      * In some very simplistic cases, it may be fine to not use even an adapter.
34      */
35     @Named("tracker")
36     @ViewScoped
37     public class Track implements Serializable {
38
39         private static final long serialVersionUID = 1L;
40
41         @Inject
42         private CargoRepository cargoRepository;
43         @Inject
44         private HandlingEventRepository handlingEventRepository;
45
46         private String trackingId;
47         private CargoTrackingViewAdapter cargo;
48         private String destinationCoordinates;
49         private String lastKnowCoordinates;
50         private MapModel markersModel;
51
```
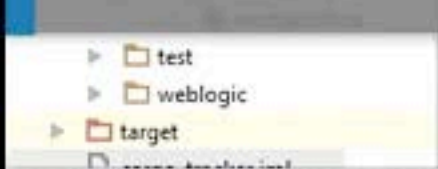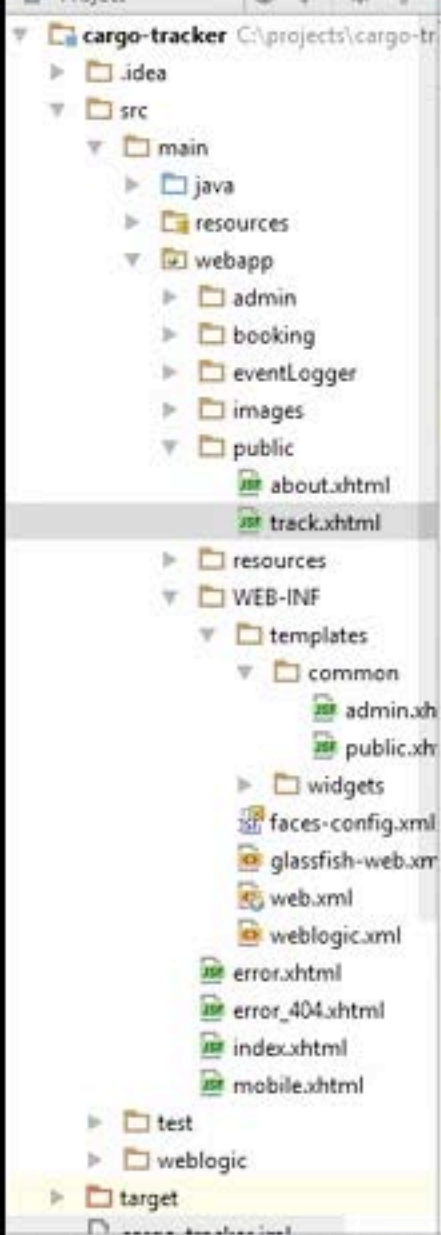
Project tree:
- cargo-tracker C:\projects\cargo-tr
  - .idea
  - src
    - main
      - java
      - resources
      - webapp
        - admin
        - booking
        - eventLogger
        - images
        - public
          - about.xhtml
          - track.xhtml
        - resources
        - WEB-INF
          - templates
            - common
              - admin.xh
              - public.xh
            - widgets
          - faces-config.xml
          - glassfish-web.xm
          - web.xml
          - weblogic.xml
        - error.xhtml
        - error_404.xhtml
        - index.xhtml
        - mobile.xhtml
    - test
    - weblogic
  - target

File   Edit   View   Navigate   Code   Analyze   Refactor   Build   Run   Tools   VCS   Window   Help

cargo-tracker ⟩ src ⟩ main ⟩ webapp ⟩ public ⟩ track.xhtml   GlassFish 4.1.1

Project   track.xhtml ×   Track.java ×

cargo-tracker C:\projects\cargo-tr   << | div.ui-grid-row | div#mainCol.ui-grid-col-8 | form#trackingForm | outputLabel
  .idea
  src   track   ☐ Match Case ☐ Regex ☐ Words   26 matches
    main
      java   9   script src="http://maps.google.com/maps/api/js?sensor=false" type="text/javascript"></sc
      resources   10   div class="ui-grid ui-grid-responsive">
      webapp   11   <div class="ui-grid-row">
        admin   12   <div class="ui-grid-col-2" id="leftCol"></div>
        booking   13   <div class="ui-grid-col-8" id="mainCol">
        eventLogger   14
        images   15   <h:form id="trackingForm">
        public   16   <p:outputLabel value="Tracking ID " />
          about.xhtml   17   <p:autoComplete id="trackIdInput" value="#{track.trackingId}"
          track.xhtml   18   required="true" forceSelection="true"
        resources   19   completeMethod="#{track.completeTracking}" />
        WEB-INF   20   <p:commandButton value="Track!"
          templates   21   actionListener="#{track.onTrackById}"
            common   22   ajax="false"/>
              admin.xh   23   </h:form>
              public.xh   24
          widgets   25   <h:panelGroup rendered="#{not empty track.cargo}">
          faces-config.xml   26   <div id="result">
          glassfish-web.xm   27   <p>Cargo #{track.cargo.trackingId} is currently <str
          web.xml   28   <p>Estimated time of arrival in <strong>#{track.cargo.destination}</s
          weblogic.xml   29   <f:facet name="nextActivity" rendered="#{track.cargo.nextExpectedAct
        error.xhtml
        error_404.xhtml
        index.xhtml
        mobile.xhtml
      test
      weblogic
    target

cargo-tracker - [C:\projects\cargo-tracker] - [cargo-tracker] - ...\src\main\webapp\public\track.xhtml - IntelliJ IDEA 2016.2.5   —   □   ✕

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

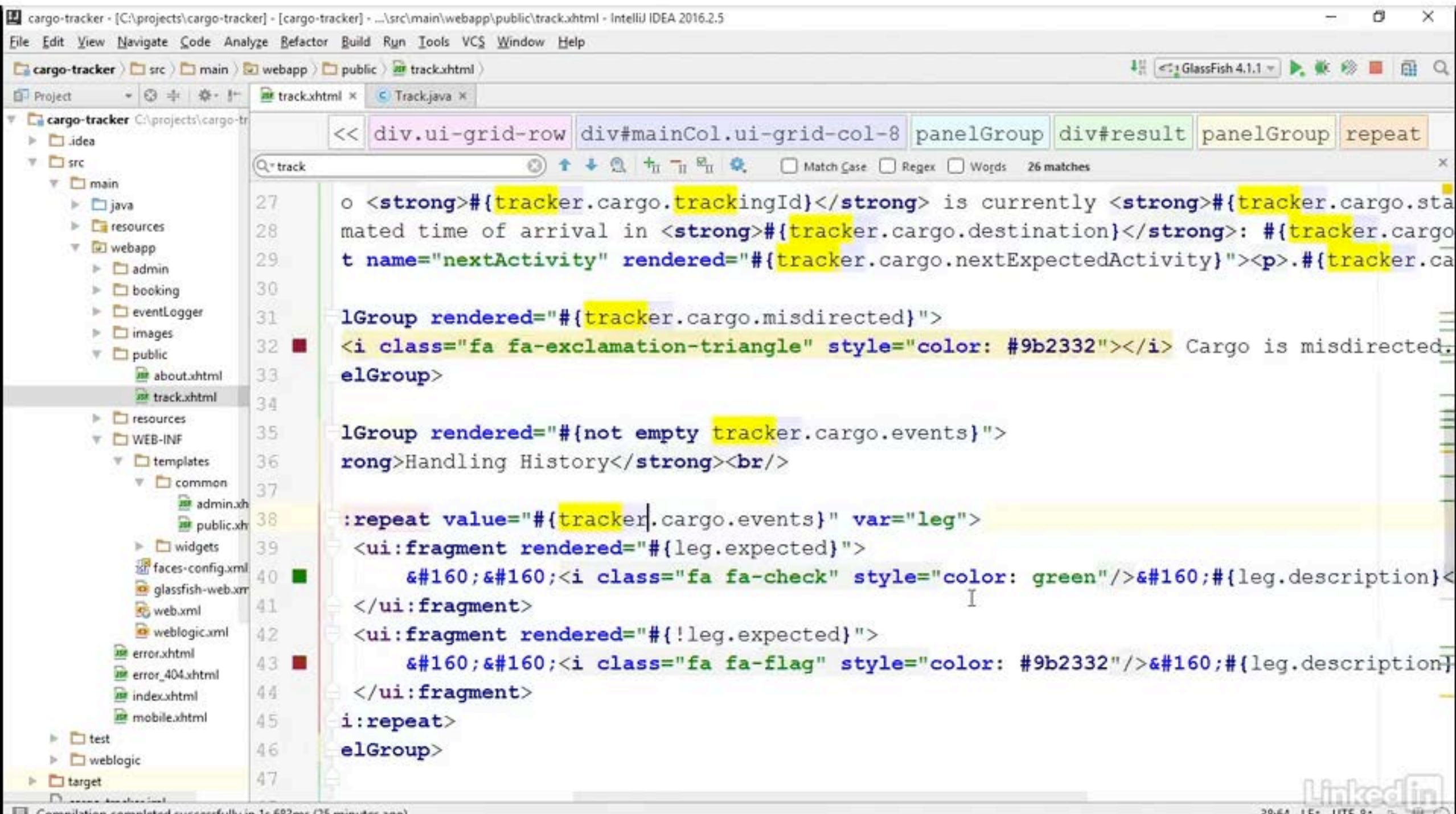cargo-tracker › src › main › webapp › public › track.xhtml   GlassFish 4.1.1

Project

```
cargo-tracker  C:\projects\cargo-tr
  .idea
  src
    main
      java
      resources
      webapp
        admin
        booking
        eventLogger
        images
        public
          about.xhtml
          track.xhtml
        resources
      WEB-INF
        templates
          common
            admin.xh
            public.xh
          widgets
        faces-config.xml
        glassfish-web.xm
        web.xml
        weblogic.xml
      error.xhtml
      error_404.xhtml
      index.xhtml
      mobile.xhtml
    test
    weblogic
  target
```

track.xhtml ×   Track.java ×

<< | div.ui-grid-row | div#mainCol.ui-grid-col-8 | panelGroup | div#result | panelGroup | repeat

🔍 track   ↑ ↓ ⊕ ⊣ ⊢ ⊟ ⚙   ☐ Match Case ☐ Regex ☐ Words   26 matches

```
27    o <strong>#{tracker.cargo.trackingId}</strong> is currently <strong>#{tracker.cargo.sta
28    mated time of arrival in <strong>#{tracker.cargo.destination}</strong>: #{tracker.cargo
29    t name="nextActivity" rendered="#{tracker.cargo.nextExpectedActivity}"><p>.#{tracker.ca
30
31    lGroup rendered="#{tracker.cargo.misdirected}">
32    <i class="fa fa-exclamation-triangle" style="color: #9b2332"></i> Cargo is misdirected.
33    elGroup>
34
35    lGroup rendered="#{not empty tracker.cargo.events}">
36    rong>Handling History</strong><br/>
37
38    :repeat value="#{tracker.cargo.events}" var="leg">
39     <ui:fragment rendered="#{leg.expected}">
40          <i class="fa fa-check" style="color: green"/> #{leg.description}<
41     </ui:fragment>
42     <ui:fragment rendered="#{!leg.expected}">
43          <i class="fa fa-flag" style="color: #9b2332"/> #{leg.description]
44     </ui:fragment>
45    i:repeat>
46    elGroup>
47
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

cargo-tracker › src › main › webapp › public › track.xhtml

GlassFish 4.1.1

Project

cargo-tracker C:\projects\cargo-tr
- .idea
- src
  - main
    - java
    - resources
    - webapp
      - admin
      - booking
      - eventLogger
      - images
      - public
        - about.xhtml
        - track.xhtml
      - resources
      - WEB-INF
        - templates
          - common
            - admin.xh
            - public.xh
          - widgets

track.xhtml ×   Track.java ×

<< `div.ui-grid.ui-grid-responsive` `div.ui-grid-row` `div#mainCol.ui-grid-col-8` `form#trackin`

track   Match Case Regex Words   26 matches

```
 6   tion template="/WEB-INF/templates/common/public.xhtml">
 7   ine name="title">Track Cargo</ui:define>
 8   ine name="content">
 9   ript src="http://maps.google.com/maps/api/js?sensor=false" type="text/javascript"></scr
10   v class="ui-grid ui-grid-responsive">
11     <div class="ui-grid-row">
12         <div class="ui-grid-col-2" id="leftCol"></div>
13         <div class="ui-grid-col-8" id="mainCol">
14             <br/>
15             <h:form id="trackingForm">
16                 <p:outputLabel value="Tracking ID  " />
17                 <p:autoComplete id="trackIdInput" value="#{tracker.trackingId}"
18                                 required="true" forceSelection="true"
```

Run GlassFish 4.1.1

Server   GlassFish Log ×

Deployment

cargo-tracker:war

Output

Attempting to start domain... Please look at the server log for more details......
Detected server admin port: 4848
Detected server http port: 8080
Connected to server
[2016-10-25 11:34:00,735] Artifact cargo-tracker:war: Artifact is being deployed, please wait...
[2016-10-25 11:34:24,860] Artifact cargo-tracker:war: Artifact is deployed successfully
[2016-10-25 11:34:24,860] Artifact cargo-tracker:war: Deploy took 24,125 milliseconds

Cargo Tracker

Applied domain-driven design blueprints for Java EE

Public Tracking Interface

Administration Interface

Mobile Event Logger