

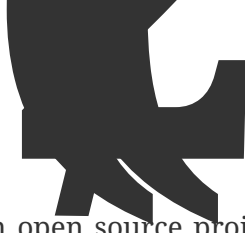
# AdminFaces

Version 1.0.0-RC18



1. Introduction .....	2
2. Admin Theme .....	3
2.1. Prerequisites .....	3
2.2. Usage .....	3
2.3. Architecture .....	5
2.4. Theme classifiers .....	6
2.5. Avoiding theme caching .....	8
2.6. Development .....	9
2.7. Snapshots .....	9
3. Admin Template .....	10
3.1. Features .....	10
3.2. Usage .....	11
3.3. Application template .....	14
3.4. Configuration .....	17
3.5. Admin Session .....	19
3.6. Error Pages .....	21
3.7. Internationalization .....	25
3.8. Control Sidebar .....	26
3.9. BreadCrumbs .....	28
3.10. Snapshots .....	30
4. Admin Starters .....	31
4.1. Demo .....	31
5. Admin Designer .....	32
5.1. What is it? .....	32
5.2. Objectives .....	32
5.3. How it works .....	32
6. Admin Persistence .....	34
6.1. Prerequisites .....	34
6.2. Usage .....	34
6.3. Pagination .....	38
6.4. Pagination filtering .....	39
6.5. Sample application .....	41
7. Admin Mobile .....	42

Read this documentation [in HTML5 here](#).




[AdminFaces](#) is an open source project which brings [Bootstrap](#) and [AdminLTE](#) to your application via a [PrimeFaces](#) theme and a [JSF responsive](#) template.

AdminFaces ecosystem is composed by the following projects:

- [Admin Theme](#): A PrimeFaces theme based on [Bootstrap](#) and [AdminLTE](#) where PrimeFaces components are customized to look like mentioned frameworks.
- [Admin Template](#): A [Java Server Faces admin](#) template which is also based on [Bootstrap](#) and [AdminLTE](#).
- [Admin Showcase](#): A showcase web application, [deployed on openshift](#), which demonstrates AdminFaces main features and components.
- [Admin Designer](#): The same showcase application with Admin Theme and Admin Template bundled (instead of being library dependencies) in order to make it easier to customize the theme and the template.
- [Admin Starter](#): A simple starter project to get you started with AdminFaces.
- [Admin Persistence](#): CRUD operations like a breeze for AdminFaces applications based on [Apache DeltaSpike Data](#) module.
- [Admin Starter Tomcat](#): Admin Starter application for Tomcat.
- [Admin Starter SpringBoot](#): Admin Starter application using [SpringBoot](#) and [JoinFaces](#).
- [Admin Starter Shiro](#): Admin Starter application using [Apache Shiro](#) for authentication.
- [Admin Starter Security](#): Admin Starter application using [JavaEE 8 security API](#) for authentication and authorization.
- [Admin Mobile](#): A simple [Android Studio](#) project which uses [Webview](#) to create an [hybrid web app](#) based on Admin Showcase.

In subsequent chapters we will drive through each project in detail.



Admin theme is a PrimeFaces theme where components are styled to look like AdminLTE ones (which are based on Bootstrap).

The only pre-requisite is PrimeFaces and Font Awesome.

Since PrimeFaces 5.1.1 font awesome comes embedded, you just need to activate it in `web.xml`:

```
<context-param>
  <param-name>primefaces.FONT_AWESOME</param-name>
  <param-value>true</param-value>
</context-param>
```


For or if you need to upgrade FA version you may include it in your pages by using webjars:



```
<h:outputStylesheet library="webjars" name="font-
awesome/4.7.0/css/font-awesome-jsf.css" />
```

and add fontawesome webjar in your classpath:

```
<dependency>
  <groupId>org.webjars</groupId>
  <artifactId>font-awesome</artifactId>
  <version>4.7.0</version>
</dependency>
```



To start using the theme you need the following:

1. Add admin theme to your classpath:

```
<dependency>
  <groupId>com.github.adminfaces</groupId>
  <artifactId>admin-theme</artifactId>
  <version>1.0.0-RC18</version>
</dependency>
```

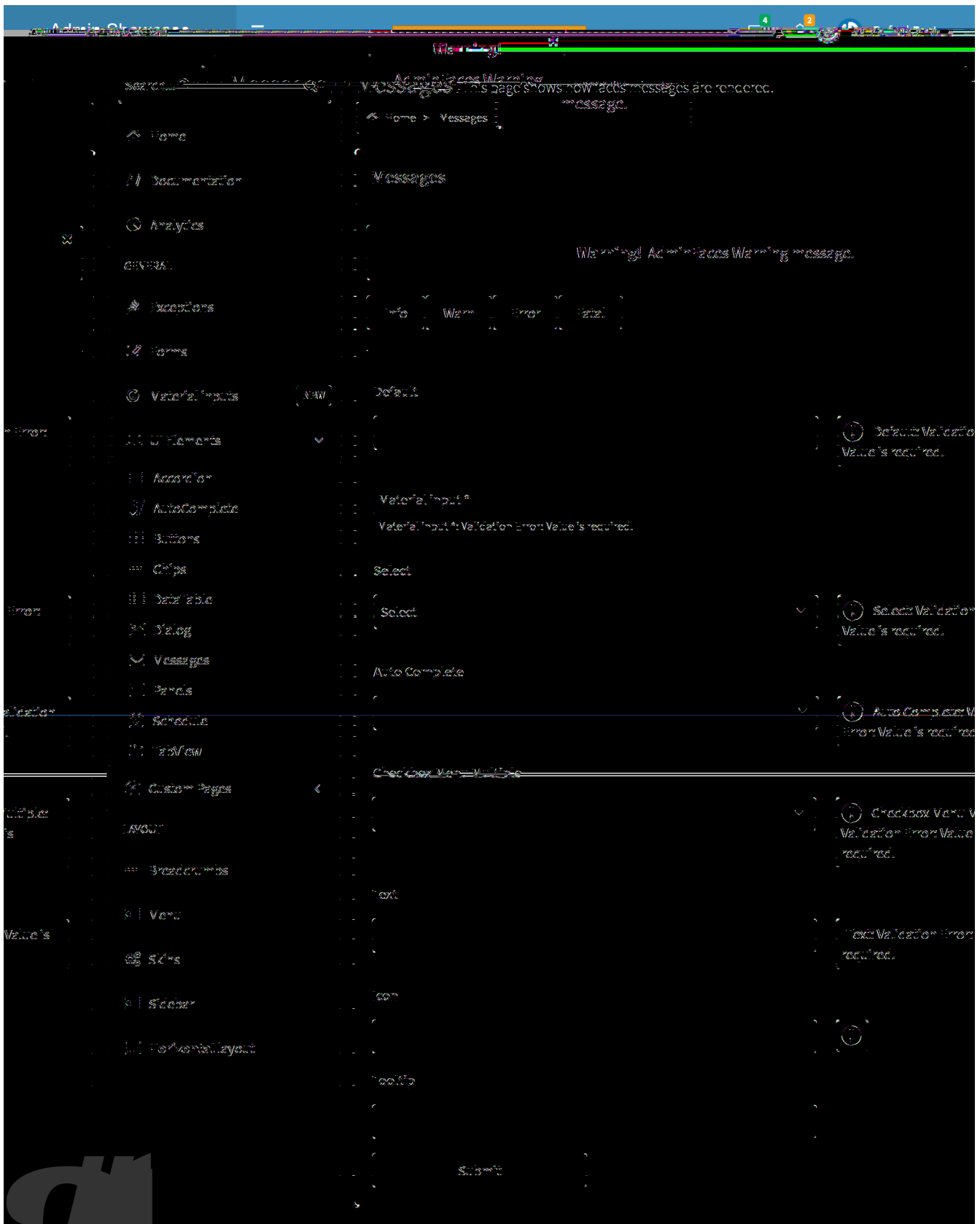
2. Activate the theme in `web.xml`

```
<context-param>
  <param-name>primefaces.THEME</param-name>
  <param-value>admin</param-value>
</context-param>
```



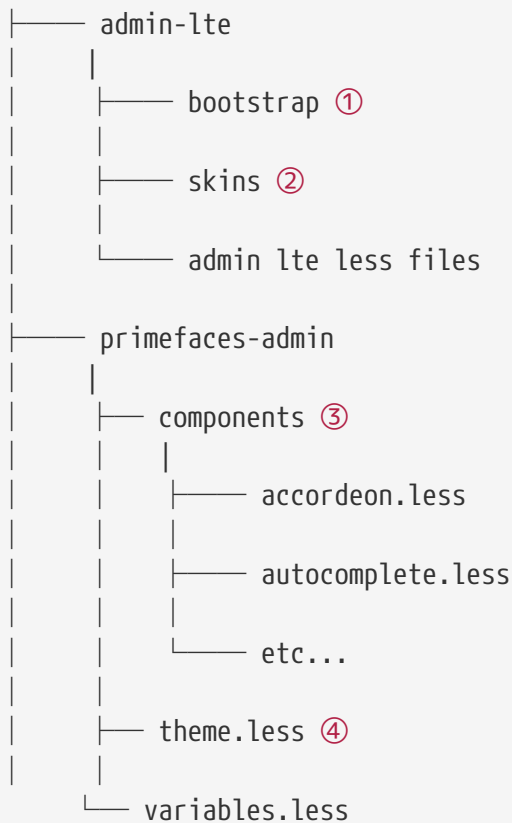
If you use [Admin Template](#) the theme already comes activated.

Now PrimeFaces components are styled like Bootstrap and AdminLTE.



see [showcase forms page](#) to get an idea.

The theme uses [less](#) as css pre-processor. Each PrimeFaces component has its own less file:



- ① Bootstrap variables and [mixins](#) are used as reference in AdminLTE and admin theme less files
- ② Built in skins
- ③ PrimeFaces components
- ④ Components and Admin-LTE less files are included in theme.less

After compilation it will generate the theme.css with Admin-LTE, Bootstrap and Primefaces components.

Bootstrap (from src/META-INF/resources) is included in theme.less but can be removed via [maven classifiers](#)

Bootstrap less is not maintained in this project only it's mixins.

The project uses [maven classifiers](#) to offer multiple **faces** (pump intended) of Admin Theme. Below is the description of classifier and how to use it.

The default theme comes **compressed**, with **Bootstrap (3.3.7)** embedded and uses **JSF resource handling** for loading images and web fonts.



### Maven usage

```
<dependency>
  <groupId>com.github.adminfaces</groupId>
  <artifactId>admin-theme</artifactId>
  <version>1.0.0-RC18</version>
```

The **dev** classifier will bring a theme.css

### Maven usage

```
<dependency>
  <groupId>com.github.adminfaces</groupId>
  <artifactId>admin-theme</artifactId>
  <version>1.0.0-RC18</version>
  <classifier>without-bootstrap</classifier>
```

The **without-bootstrap** classifier will bring a theme.css  
the developer to provide Bootstrap within the application.

so it's up to

### Maven usage

```
<dependency>
  <groupId>com.github.adminfaces</groupId>
  <artifactId>admin-theme</artifactId>
  <version>1.0.0-RC18</version>
  <classifier>without-jsf</classifier>
```

The **without-jsf** classifier will bring a theme.css  
be used on projects (derived from PrimeFaces) without JSF like Prime React, PrimeUI or PrimeNG.


### Maven usage

```
<dependency>
  <groupId>com.github.adminfaces</groupId>
  <artifactId>admin-theme</artifactId>
  <version>1.0.0-RC18</version>
  <classifier>without-jsf</classifier>
</dependency>
```



Since **v1.0.0-RC16** web fonts such as **glyphicons** and **Source Sans Pro** are embedded inside the theme instead of being queried from a **CDN**.

This makes the theme work offline or in environments with limited access to the internet but on the other hand results in a larger jar file, **~1MB** against **~200kb** when fonts are not in the theme.


So if you want a thinner theme you can use the  classifier:

```
<dependency>
  <groupId>com.github.adminfaces</groupId>
  <artifactId>admin-theme</artifactId>
  <version>1.0.0-RC16</version>
  <classifier>no-fonts</classifier>
</dependency>
```



Whenever the theme is updated to a new version in the project users may have to clear their browser caches to get the changes of the new theme.

Sometimes a theme update even introduces conflicts and only clearing browser cache fixes them.

To solve this issues you can use a theme classifier called  :

*pom.xml*

```
<dependency>
  <groupId>com.github.adminfaces</groupId>
  <artifactId>admin-theme</artifactId>
  <version>1.0.0-RC18</version>
  <classifier>no-cache</classifier>
</dependency>
```



This classifier  
name in web.xml:

to the name of theme so you need to change the theme

*web.xml*

```
<context-param>
  <param-name>primefaces.THEME</param-name>
  <param-value>admin-1.0.0-RC18</param-value>
</context-param>
```

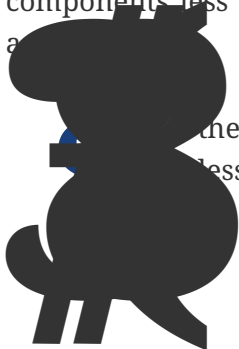


There is also a **no-cache-no-fonts** classifier combining both approaches.



To get your hands dirty with admin theme it is recommended to use [Admin Designer](#) in combination with [Brackets](#) or any tool that **compile less** files to css on save.

Using designer, which is backed by wildfly swarm, plus brackets will let you change the components less files and see the results instantly. see [this video](#) to see Brackets and Designer in



admin-theme.less is already brackets aware so you just need to change any component less file, save it and see the results in Admin Designer.

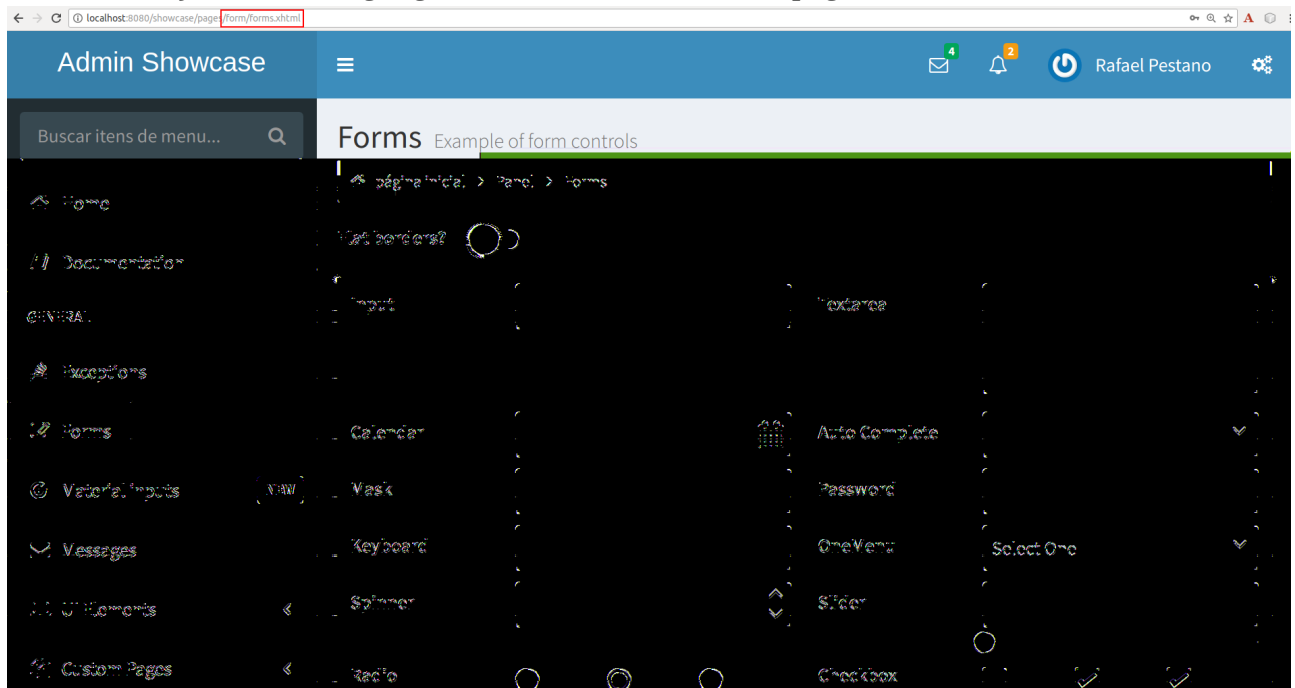
Theme **Snapshots** are published to [maven central](#) on each commit, to use it just declare the repository below on your **pom.xml**:

```
<repositories>
  <repository>
    <snapshots/>
    <id>snapshots</id>
    <name>libs-snapshot</name>
    <url>https://oss.sonatype.org/content/repositories/snapshots</url>
  </repository>
</repositories>
```

AdminLTE is a *Java Server Faces* admin template based on *Bootstrap* and *AdminLTE*

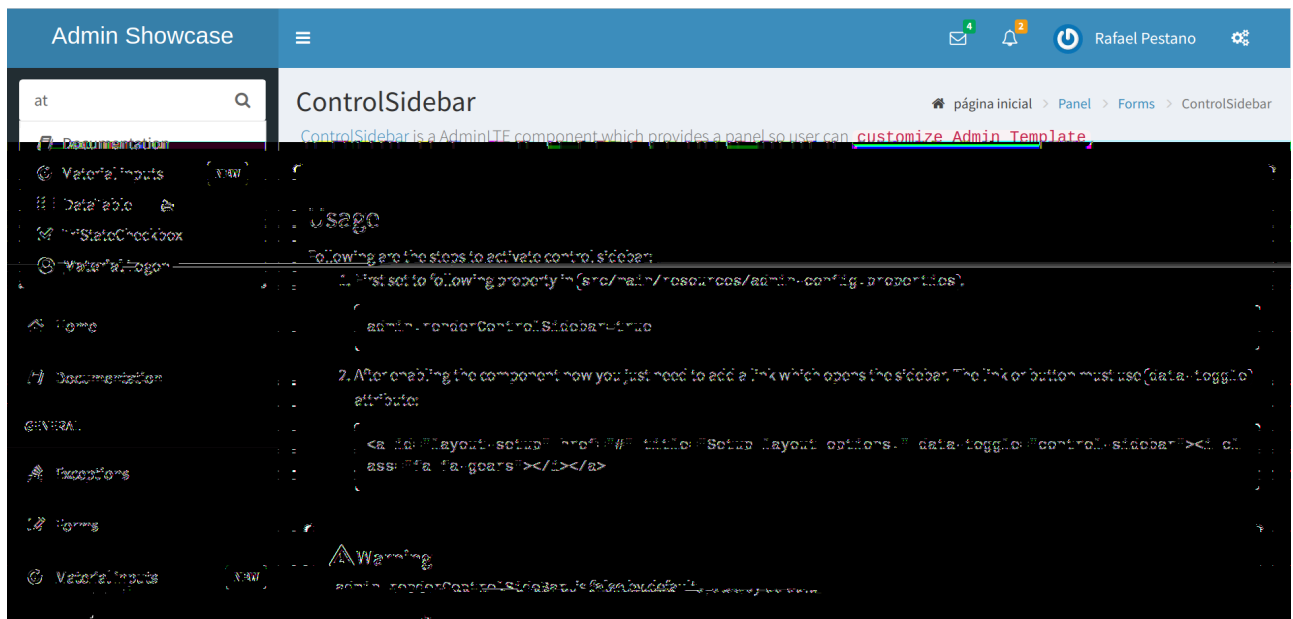
Below is a non exhaustive list of notable features brought out of the box by this template:

- Fully
  - Its based on Bootstrap and AdminLTE two well tested and solid frameworks
- Enhanced mobile experience
  - Material design load bar
  - Material design flat buttons
  - Ripple effect based on [materialize css](#) [27104868 d9bfb33e 5063 11e7 83be 2201a3f8cda5]
  - Touch enabled menu to slide in/out [dd37121e 2296 11e7 855c 8f20b59dcf5f]
  - Auto show and hide navbar based on page scroll
  - Scroll to top
- Automatically activates (highlight) menu based on current page



- Custom [error](#) pages
- Two menu modes, *left* and *horizontal* based menu
- Configurable, see [Configuration](#)
- [Breadcrumb](#) based navigation

- Layout customization via [Control Sidebar](#)
- High resolution and responsive icons based on Glyphicons and FontAwesome
- Menu items search



- Builtin **dark** and **light** skins
- Redirects to previous screen when logging in again after session expiration (or accessing a page via browser without being logged in)



Most of the above features can be disabled via [configuration](#) mechanism.

Add the following dependency to your classpath:

```
<dependency>
  <groupId>com.github.adminfaces</groupId>
  <artifactId>admin-template</artifactId>
  <version>1.0.0-RC18</version>
</dependency>
```

Admin template will bring the following transitive dependencies:



```
<dependency>
  <groupId>com.github.adminfaces</groupId>
  <artifactId>admin-theme</artifactId>
  <version>1.0.0-RC18</version>
</dependency>

<dependency>
  <groupId>org.primefaces</groupId>
  <artifactId>primefaces</artifactId>
  <version>6.2</version>
</dependency>

<dependency>
  <groupId>org.omnifaces</groupId>
  <artifactId>omnifaces</artifactId>
  <version>2.1</version>
</dependency>
```

Which you can override in your pom.xml as needed.

With the template dependency in classpath now you can use `admin` facelets template into your JSF page.



Consider the following sample page:

```
<?xml version="1.0" encoding="UTF-8"?>
<ui:composition xmlns="http://www.w3.org/1999/xhtml"
  xmlns:ui="http://java.sun.com/jsf/facelets"
  xmlns:p="http://primefaces.org/ui"
  template="/admin.xhtml"> ①

  <ui:define name="head">
    <title>Admin Starter</title>
  </ui:define>

  <ui:define name="logo-lg">
    Admin Starter
  </ui:define>

  <ui:define name="logo-mini">
    Admin
  </ui:define>

  <ui:define name="menu">
    <ul class="sidebar-menu">
```

```

        <li>
            <p:link href="/index.xhtml" onclick="clearBreadCrumbs()">
                <i class="fa fa-home"></i>
                <span>Home</span>
            </p:link>
        </li>
        <li class="header">
            General
        </li>
        <li>
            <p:link href="/car-list.xhtml">
                <i class="fa fa-car"></i>
                <span>Cars</span>
            </p:link>
        </li>
    </ul>
</ui:define>

<ui:define name="top-menu">
    <ui:include src="/includes/top-bar.xhtml"/>
</ui:define>

<ui:define name="title">
    <h2 class="align-center">
        Welcome to the <span class="text-aqua"> <i><a href=
"https://github.com/adminfaces/admin-starter" target="_blank"
                                style="text-transform: none
; text-decoration: none"> AdminFaces Starter</a></i></span> Project!
        <br/>
        <small>Integrating <p:link value="Primefaces" href="http://primefaces.org
"/>, <p:link value="Bootstrap"
href="http://getbootstrap.com/"> and
            <p:link value="Admin LTE" href=
"https://almasaeedstudio.com/themes/AdminLTE/index2.html/"> into your
            <p:link value="JSF" href="https://javaserverfaces.java.net/">
application.
        </small>
    </h2>
</ui:define>

<ui:define name="description">
    A page description
</ui:define>

<ui:define name="body">
    <h2>Page body</h2>
</ui:define>

<ui:define name="footer">

```

```

<a target="_blank"
href="https://github.com/adminfaces/">
    Copyright (C) 2017 - AdminFaces
</a>

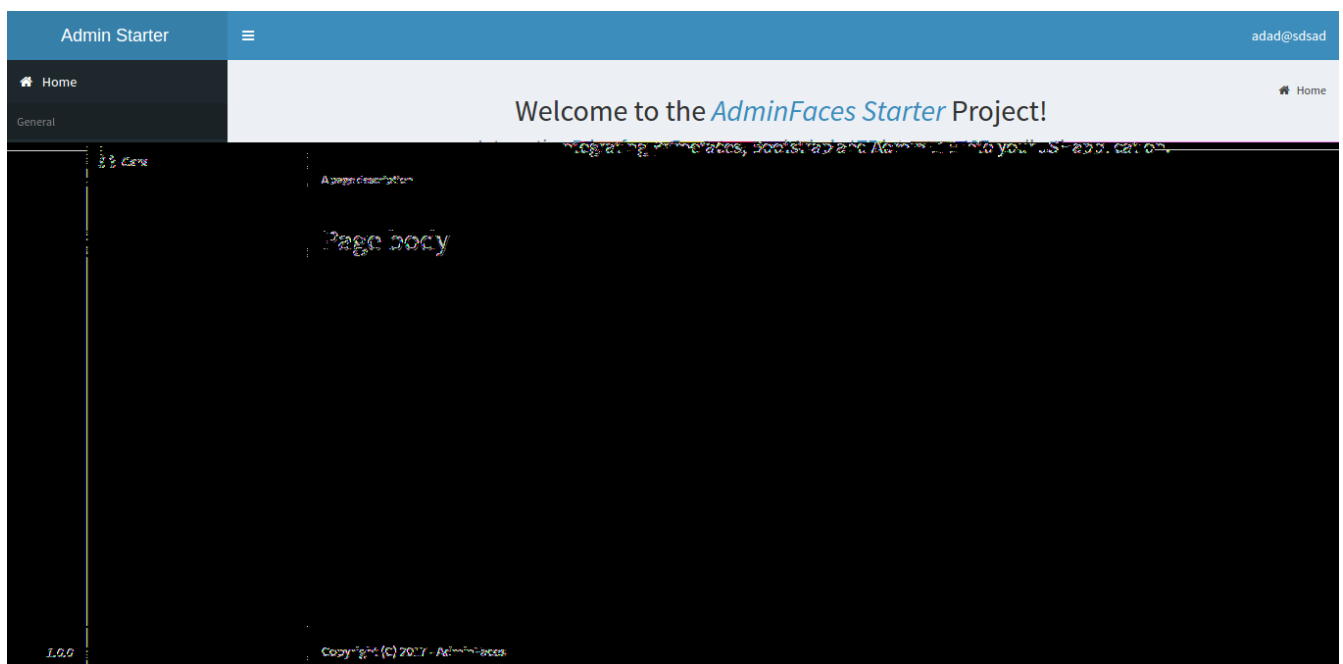
<div class="pull-right hidden-xs" style="color: gray">
    <i>1.0.0</i>
</div>
</ui:define>

</ui:composition>

```

① /admin.xhtml is the location of the template

The above page definition renders as follows:



There are also other regions defined in admin.xhtml template, [see here](#).



A good practice is to define a template on your application which extends the admin template. [See admin-starter application template here](#).

So in your page you use your template instead of admin.

Instead of repeating sections like `<h1>`, `<h2>`, and `<h3>` on every page we can create a template inside our application which uses `admin.xhtml` as template:

/WEB-INF/templates/template.xhtml

```

<?xml version="1.0" encoding="UTF-8"?>
<ui:composition xmlns="http://www.w3.org/1999/xhtml"

```



```

xmlns:ui="http://java.sun.com/jsf/facelets"
xmlns:p="http://primefaces.org/ui"
template="/admin.xhtml">

<ui:define name="head">
    <title>Admin Starter</title>
    <h:outputStylesheet library="css" name="starter.css"/>
</ui:define>

<ui:define name="logo-lg">
    Admin Starter
</ui:define>

<ui:define name="logo-mini">
    Admin
</ui:define>

<ui:define name="menu">
    <ul class="sidebar-menu">
        <li>
            <p:link href="/index.xhtml" onclick="clearBreadCrumbs()">
                <i class="fa fa-home"></i>
                <span>Home</span>
            </p:link>
        </li>
        <li class="header">
            General
        </li>
        <li>
            <p:link href="/car-list.xhtml">
                <i class="fa fa-car"></i>
                <span>Cars</span>
            </p:link>
        </li>
    </ul>
</ui:define>

<ui:define name="top-menu">
    <ui:include src="/includes/top-bar.xhtml"/>
</ui:define>

<ui:define name="footer">
    <a target="_blank"
        href="https://github.com/adminfaces/">
        Copyright (C) 2017 - AdminFaces
    </a>

    <div class="pull-right hidden-xs" style="color: gray">
        <i>1.0.0</i>
    </div>
</ui:define>

```

```
</ui:composition>
```

And now the page can just define its content and title:

/webapp/mypage.xhtml

```
<?xml version="1.0" encoding="UTF-8"?>
<ui:composition xmlns="http://www.w3.org/1999/xhtml"
  xmlns:ui="http://java.sun.com/jsf/facelets"
  xmlns:p="http://primefaces.org/ui"
  template="/WEB-INF/templates/template.xhtml">
```

```
  <ui:define name="title">
```

```
    A page title
```

```
  </ui:define>
```

```
  <ui:define name="description">
```

```
    A page description
```

```
  </ui:define>
```

```
  <ui:define name="body">
```

```
    <h2>Page body</h2>
```

```
  </ui:define>
```

```
</ui:composition>
```

AdminFaces supports two layout modes, one is

and the other is

The user can change layout modes via [control sidebar](#) but to make it work you have to use [to define page template](#):

/webapp/mypage.xhtml

```
<?xml version="1.0" encoding="UTF-8"?>
<ui:composition xmlns="http://www.w3.org/1999/xhtml"
  xmlns:ui="http://java.sun.com/jsf/facelets"
  xmlns:p="http://primefaces.org/ui"
  template="#{layoutMB.template}">
```

```
  <!-- page content -->
```

```
</ui:composition>
```

As a

LayoutMB will load templates from the following locations:

- [webapp/WEB-INF/templates/template.xhtml](#) for the [left menu](#) based template

- `WEB-INF/templates/template-top.xhtml` for horizontal menu layout.

See starter templates for a reference: <https://github.com/adminfaces/admin-starter/tree/master/src/main/webapp/WEB-INF/templates>

Template configuration is made through `admin-config.properties` file present in `src/main/resources` folder.

Here are the default values as well as its description:

```
admin.loginPage=login.xhtml ①
admin.indexPage=index.xhtml ②
admin.dateFormat= ③
admin.breadcrumbSize=5 ④
admin.renderMessages=true ⑤
admin.renderAjaxStatus=true ⑥
admin.disableFilter=false ⑦
admin.renderBreadCrumb=true ⑧
admin.enableSlideMenu=true ⑨
admin.enableRipple=true ⑩
admin.rippleElements= .ripplelink,button.ui-button,.ui-selectlistbox-item,.ui-
multiselectlistbox-item,.ui-selectonemenu-label,.ui-selectcheckboxmenu,\
.ui-autocomplete-dropdown, .ui-autocomplete-item ... (the list goes on) ⑪
admin.skin=skin-blue ⑫
admin.autoShowNavbar=true ⑬
admin.ignoredResources= ⑭
admin.loadingImage=ajaxloadingbar.gif ⑮
admin.extensionLessUrls=false ⑯
admin.renderControlSidebar=false ⑰
admin.controlSidebar.showOnMobile=false ⑱
admin.controlSidebar.leftMenuTemplate=true ⑲
admin.controlSidebar.fixedLayout=false ⑳
admin.controlSidebar.boxedLayout=false
admin.controlSidebar.sidebarCollapsed=false
admin.controlSidebar.expandOnHover=false
admin.controlSidebar.fixed=false
admin.controlSidebar.darkSkin=true
admin.rippleMobileOnly=true
admin.renderMenuSearch=true
admin.autoHideMessages=true
admin.messagesHideTimeout=2500
```

- ① login page location (relative to webapp). It will only be used if you configure [Admin Session](#).
- ② index page location. User will be redirected to it when it access app root (contextPath/).
- ③ Date format used in error page (`500.xhtml`), by default it is JVM default format.
- ④ Number of breadcrumbs to queue before removing the older ones.

- ⑤ When false, p:messages defined in admin template will not be rendered.
- ⑥ When false ajaxStatus, which triggers the loading bar on every ajax request, will not be rendered.
- ⑦ Disables AdminFilter, responsible for redirecting user after session timeout, sending user to logon page when it is not logged in among other things.
- ⑧ When false, the breadCrumb component, declared in admin template, will not be rendered.
- ⑨ If true will make left menu touch enable (can be closed or opened via touch). Can be enable/disable per page with <ui:param name="enableSlideMenu" value="false".
- ⑩ When true it will create a **wave/ripple effect** on elements specified by **rippleElements**.
- ⑪ A list of comma separated list of (jquery) selector which elements will be affected by ripple effect.
- ⑫ Default template skin.
- ⑬ Automatic shows navbar when users scrolls page up on **small screen**. Can be enable/disable per page with <ui:param name="autoShowNavbar" value="false".
- ⑭ Comma separated resources (pages or urls) to be skipped by admin filter. Ex: /rest, /pages/car-list. Note that by default the filter skips pages under **rest**.
- ⑮ image used for the loading popup. It must be under **webapp/resources/images** folder.
- ⑯ Removes extension suffix from breadCrumb links.
- ⑰ When true it will activate **control sidebar** component.
- ⑱ When true control sidebar will be also rendered on mobile devices.
- ⑲ Switches layout between left (default) and top menu.
- ⑳ Toggles fixed layout where navbar is fixed on the page.

Toggles boxed layout which is helpful when working on large screens because it prevents the site from stretching very wide.

When true left sidebar will be collapsed.

When true left sidebar will expand on mouse hover.

When true control sidebar will be fixed on the page.

Changes control sidebar skin between **dark** and **light**.

When true the ripple effect will be enabled only on mobile (small) screens.

Enables or disables menu search.

If true PrimeFaces messages will be hidden after a certain timeout.

Timeout to hide info messages. Note that the timeout is composed by **configured timeout + number of words** in message.



You don't need to declare all values in your admin-config.properties, you can specify only the ones you need in order to change.



Since vRC16 config properties can be passed as Java **system properties**.

Control sidebar entries (admin.controlSidebar.xxx) will be used only for initial default values because they will be stored on browser local storage as soon as user changes them.

AdminSession is a simple session scoped bean which controls whether user is logged in or not.

```
public boolean isLoggedIn(){  
    return isLoggedIn; //always true by default  
}
```

By default the user is logged in and you need to override it (by using [bean specialization](#) or via injection and calling `setIsLoggedIn()` method) to change its value, see [Overriding AdminSession](#).

When isLoggedIn is `false` you got the following mechanisms activated:

1. Access to any page, besides the login, redirects user to login;
2. When session is expired user is redirected to logon and current page (before expiration) is saved. User is redirected back to where it was before session expiration.

It is up to you to decide whether the user is logged in or not.

There are two ways to override AdminSession default value which is [specialization](#) and [injection](#).

A simple way to change AdminSession logged in value is by extending it:

```

import javax.enterprise.context.SessionScoped;
import javax.enterprise.inject.Specializes;
import com.github.adminfaces.template.session.AdminSession;
import org.omnifaces.util.Faces;
import java.io.Serializable;

@SessionScoped
@Specializes
public class LogonMB extends AdminSession implements Serializable {

    private String currentUser;
    private String email;
    private String password;
    private boolean remember;

    public void login() throws IOException {
        currentUser = email;
        addDetailMessage("Logged in successfully as <b>" + email + "</b>");
        Faces.getExternalContext().getFlash().setKeepMessages(true);
        Faces.redirect("index.xhtml");
    }

    @Override
    public boolean isLoggedIn() {

        return currentUser != null;
    }
}

```



Another way is to inject it into your security authentication logic:

```

import com.github.adminfaces.template.session.AdminSession;
import org.omnifaces.util.Messages;
import org.omnifaces.util.Faces;

@SessionScoped
@Named("authorizer")
public class CustomAuthorizer implements Serializable {

    private String currentUser;

    @Inject
    AdminSession adminSession;

    public void login(String username) {
        currentUser = username;
        adminSession.setIsLoggedIn(true);
        Messages.addInfo(null, "Logged in successfully as <b>"+username+"</b>");
        Faces.redirect("index.xhtml");
    }
}

```

As `isLoggedIn` is **true by default** you need to set it to false on application startup so user is redirected to login page. This step is not needed when using [AdminSession Specialization](#).

The template comes with custom pages like **403, 404, 500, ViewExpired** and **OptimisticLock**.

**500**

User is going to be redirected to **500** whenever a **500** response code is returned in a request.

The page will also be triggered when a **Throwable** is raised (and not catch).

Here is how 500 page look like:

⚠️ Oops! Something went wrong.  
Go back to [Home](#).

500

## Unexpected error

- **Date/time:** 03/19/2017 23:20:06
- **User agent:** Mozilla/5.0 (X11; Linux x86\_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/54.0.2840.100 Safari/537.36
- **User IP:** 127.0.0.1
- **Request URI:** <http://localhost:8080/showcase/pages/exception/exception.xhtml>
- **Ajax request:** Yes
- **Status code:** 500
- **Exception type:** java.lang.RuntimeException
- **Message:** this is a runtime exception...

```
java.lang.RuntimeException: this is a runtime exception...
    at com.github.adminfaces.showcase.bean.ExceptionMB.throwRuntime(ExceptionMB.java:32)
    at sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:62)
    at sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:62)
    at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:43)
    at java.lang.reflect.Method.invoke(Method.java:498)
```

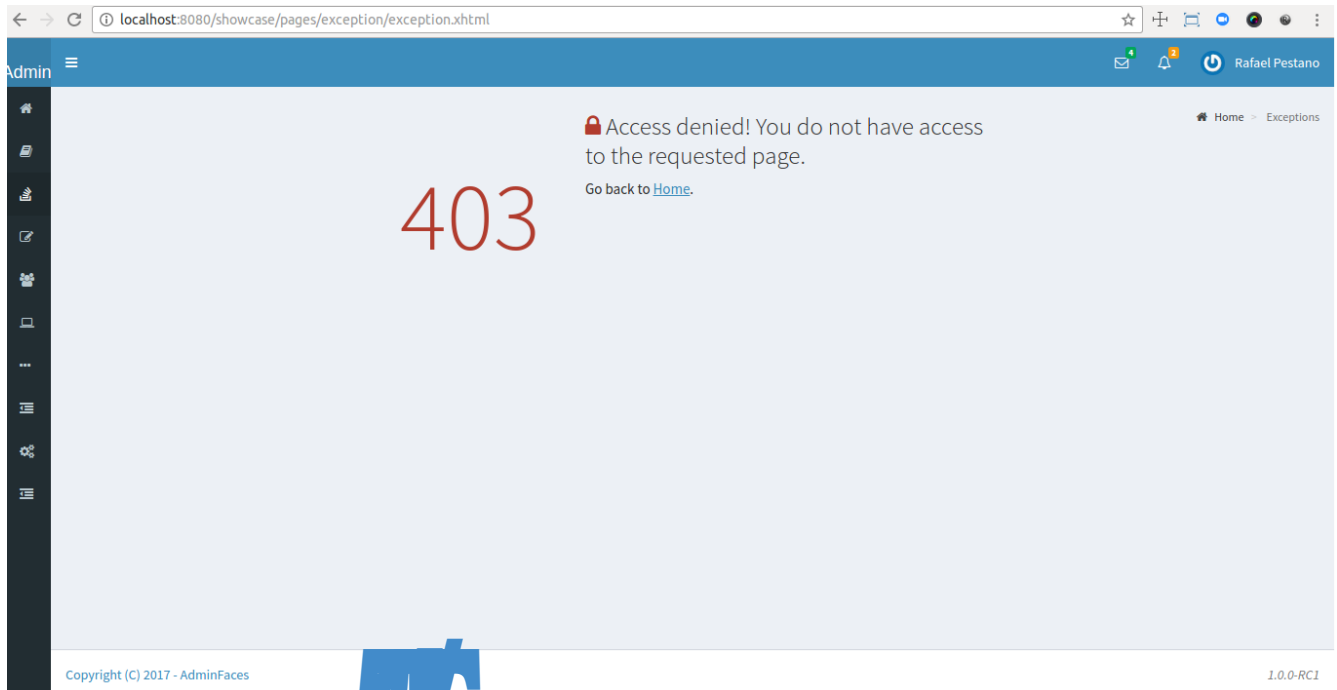
```

1  public static void main(String[] args) throws Exception {
2      // 1. Create a ThreadPoolExecutor
3      ExecutorService executor = new ThreadPoolExecutor(
4          1, // corePoolSize
5          1, // maximumPoolSize
6          0L, // keepAliveTime
7          TimeUnit.SECONDS, // unit
8          new ThreadPoolExecutor.CallerRunsPolicy(), // handler
9          null, // threadFactory
10         null); // workQueue
11
12      // 2. Submit a task
13      Runnable task = () -> {
14          System.out.println("Task executed");
15      };
16      executor.submit(task);
17
18      // 3. Shutdown the executor
19      executor.shutdown();
20
21      // 4. Wait for the task to complete
22      try {
23          executor.awaitTermination(1, TimeUnit.SECONDS);
24      } catch (InterruptedException e) {
25          e.printStackTrace();
26      }
27
28      // 5. Print the status of the executor
29      System.out.println("Executor status: " + executor.isTerminated());
30
31      // 6. Create a new ThreadPoolExecutor with different parameters
32      ExecutorService executor2 = new ThreadPoolExecutor(
33          2, // corePoolSize
34          4, // maximumPoolSize
35          30L, // keepAliveTime
36          TimeUnit.SECONDS, // unit
37          new ThreadPoolExecutor.AbortPolicy(), // handler
38          null, // threadFactory
39          null); // workQueue
40
41      // 7. Submit a task
42      Runnable task2 = () -> {
43          System.out.println("Task2 executed");
44      };
45      executor2.submit(task2);
46
47      // 8. Shutdown the executor
48      executor2.shutdown();
49
50      // 9. Wait for the task to complete
51      try {
52          executor2.awaitTermination(1, TimeUnit.SECONDS);
53      } catch (InterruptedException e) {
54          e.printStackTrace();
55      }
56
57      // 10. Print the status of the executor
58      System.out.println("Executor2 status: " + executor2.isTerminated());
59
60      // 11. Create a new ThreadPoolExecutor with a custom thread factory
61      ThreadFactory threadFactory = new ThreadFactory() {
62          @Override
63          public Thread newThread(Runnable r) {
64              return new Thread(r, "CustomThread");
65          }
66      };
67
68      ExecutorService executor3 = new ThreadPoolExecutor(
69          1, // corePoolSize
70          1, // maximumPoolSize
71          0L, // keepAliveTime
72          TimeUnit.SECONDS, // unit
73          new ThreadPoolExecutor.CallerRunsPolicy(), // handler
74          threadFactory, // threadFactory
75          null); // workQueue
76
77      // 12. Submit a task
78      Runnable task3 = () -> {
79          System.out.println("Task3 executed");
80      };
81      executor3.submit(task3);
82
83      // 13. Shutdown the executor
84      executor3.shutdown();
85
86      // 14. Wait for the task to complete
87      try {
88          executor3.awaitTermination(1, TimeUnit.SECONDS);
89      } catch (InterruptedException e) {
90          e.printStackTrace();
91      }
92
93      // 15. Print the status of the executor
94      System.out.println("Executor3 status: " + executor3.isTerminated());
95
96      // 16. Create a new ThreadPoolExecutor with a custom work queue
97      BlockingQueue<Runnable> workQueue = new LinkedBlockingQueue<>();
98
99      ExecutorService executor4 = new ThreadPoolExecutor(
100         1, // corePoolSize
101         1, // maximumPoolSize
102         0L, // keepAliveTime
103         TimeUnit.SECONDS, // unit
104         new ThreadPoolExecutor.CallerRunsPolicy(), // handler
105         null, // threadFactory
106         workQueue); // workQueue
107
108      // 17. Submit a task
109      Runnable task4 = () -> {
110          System.out.println("Task4 executed");
111      };
112      executor4.submit(task4);
113
114      // 18. Shutdown the executor
115      executor4.shutdown();
116
117      // 19. Wait for the task to complete
118      try {
119          executor4.awaitTermination(1, TimeUnit.SECONDS);
120      } catch (InterruptedException e) {
121          e.printStackTrace();
122      }
123
124      // 20. Print the status of the executor
125      System.out.println("Executor4 status: " + executor4.isTerminated());
126
127      // 21. Create a new ThreadPoolExecutor with a custom thread pool
128      ThreadPoolExecutor threadPool = new ThreadPoolExecutor(
129          1, // corePoolSize
130          1, // maximumPoolSize
131          0L, // keepAliveTime
132          TimeUnit.SECONDS, // unit
133          new ThreadPoolExecutor.CallerRunsPolicy(), // handler
134          null, // threadFactory
135          null); // workQueue
136
137      // 22. Submit a task
138      Runnable task5 = () -> {
139          System.out.println("Task5 executed");
140      };
141      threadPool.submit(task5);
142
143      // 23. Shutdown the executor
144      threadPool.shutdown();
145
146      // 24. Wait for the task to complete
147      try {
148          threadPool.awaitTermination(1, TimeUnit.SECONDS);
149      } catch (InterruptedException e) {
150          e.printStackTrace();
151      }
152
153      // 25. Print the status of the executor
154      System.out.println("ThreadPool status: " + threadPool.isTerminated());
155
156      // 26. Create a new ThreadPoolExecutor with a custom thread pool and work queue
157      BlockingQueue<Runnable> workQueue2 = new LinkedBlockingQueue<>();
158      ThreadPoolExecutor threadPool2 = new ThreadPoolExecutor(
159          1, // corePoolSize
160          1, // maximumPoolSize
161          0L, // keepAliveTime
162          TimeUnit.SECONDS, // unit
163          new ThreadPoolExecutor.CallerRunsPolicy(), // handler
164          null, // threadFactory
165          workQueue2); // workQueue
166
167      // 27. Submit a task
168      Runnable task6 = () -> {
169          System.out.println("Task6 executed");
170      };
171      threadPool2.submit(task6);
172
173      // 28. Shutdown the executor
174      threadPool2.shutdown();
175
176      // 29. Wait for the task to complete
177      try {
178          threadPool2.awaitTermination(1, TimeUnit.SECONDS);
179      } catch (InterruptedException e) {
180          e.printStackTrace();
181      }
182
183      // 30. Print the status of the executor
184      System.out.println("ThreadPool2 status: " + threadPool2.isTerminated());
185
186      // 31. Create a new ThreadPoolExecutor with a custom thread pool and work queue
187      BlockingQueue<Runnable> workQueue3 = new LinkedBlockingQueue<>();
188      ThreadPoolExecutor threadPool3 = new ThreadPoolExecutor(
189          1, // corePoolSize
190          1, // maximumPoolSize
191          0L, // keepAliveTime
192          TimeUnit.SECONDS, // unit
193          new ThreadPoolExecutor.CallerRunsPolicy(), // handler
194          null, // threadFactory
195          workQueue3); // workQueue
196
197      // 32. Submit a task
198      Runnable task7 = () -> {
199          System.out.println("Task7 executed");
200      };
201      threadPool3.submit(task7);
202
203      // 33. Shutdown the executor
204      threadPool3.shutdown();
205
206      // 34. Wait for the task to complete
207      try {
208          threadPool3.awaitTermination(1, TimeUnit.SECONDS);
209      } catch (InterruptedException e) {
210          e.printStackTrace();
211      }
212
213      // 35. Print the status of the executor
214      System.out.println("ThreadPool3 status: " + threadPool3.isTerminated());
215
216      // 36. Create a new ThreadPoolExecutor with a custom thread pool and work queue
217      BlockingQueue<Runnable> workQueue4 = new LinkedBlockingQueue<>();
218      ThreadPoolExecutor threadPool4 = new ThreadPoolExecutor(
219          1, // corePoolSize
220          1, // maximumPoolSize
221          0L, // keepAliveTime
222          TimeUnit.SECONDS, // unit
223          new ThreadPoolExecutor.CallerRunsPolicy(), // handler
224          null, // threadFactory
225          workQueue4); // workQueue
226
227      // 37. Submit a task
228      Runnable task8 = () -> {
229          System.out.println("Task8 executed");
230      };
231      threadPool4.submit(task8);
232
233      // 38. Shutdown the executor
234      threadPool4.shutdown();
235
236      // 39. Wait for the task to complete
237      try {
238          threadPool4.awaitTermination(1, TimeUnit.SECONDS);
239      } catch (InterruptedException e) {
240          e.printStackTrace();
241      }
242
243      // 40. Print the status of the executor
244      System.out.println("ThreadPool4 status: " + threadPool4.isTerminated());
245
246      // 41. Create a new ThreadPoolExecutor with a custom thread pool and work queue
247      BlockingQueue<Runnable> workQueue5 = new LinkedBlockingQueue<>();
248      ThreadPoolExecutor threadPool5 = new ThreadPoolExecutor(
249          1, // corePoolSize
250          1, // maximumPoolSize
251          0L, // keepAliveTime
252          TimeUnit.SECONDS, // unit
253          new ThreadPoolExecutor.CallerRunsPolicy(), // handler
254          null, // threadFactory
255          workQueue5); // workQueue
256
257      // 42. Submit a task
258      Runnable task9 = () -> {
259          System.out.println("Task9 executed");
260      };
261      threadPool5.submit(task9);
262
263      // 43. Shutdown the executor
264      threadPool5.shutdown();
265
266      // 44. Wait for the task to complete
267      try {
268          threadPool5.awaitTermination(1, TimeUnit.SECONDS);
269      } catch (InterruptedException e) {
270          e.printStackTrace();
271      }
272
273      // 45. Print the status of the executor
274      System.out.println("ThreadPool5 status: " + threadPool5.isTerminated());
275
276      // 46. Create a new ThreadPoolExecutor with a custom thread pool and work queue
277      BlockingQueue<Runnable> workQueue6 = new LinkedBlockingQueue<>();
278      ThreadPoolExecutor threadPool6 = new ThreadPoolExecutor(
279          1, // corePoolSize
280          1, // maximumPoolSize
281          0L, // keepAliveTime
282          TimeUnit.SECONDS, // unit
283          new ThreadPoolExecutor.CallerRunsPolicy(), // handler
284          null, // threadFactory
285          workQueue6); // workQueue
286
287      // 47. Submit a task
288      Runnable task10 = () -> {
289          System.out.println("Task10 executed");
290      };
291      threadPool6.submit(task10);
292
293      // 48. Shutdown the executor
294      threadPool6.shutdown();
295
296      // 49. Wait for the task to complete
297      try {
298          threadPool6.awaitTermination(1, TimeUnit.SECONDS);
299      } catch (InterruptedException e) {
300          e.printStackTrace();
301      }
302
303      // 50. Print the status of the executor
304      System.out.println("ThreadPool6 status: " + threadPool6.isTerminated());
305
306      // 51. Create a new ThreadPoolExecutor with a custom thread pool and work queue
307      BlockingQueue<Runnable> workQueue7 = new LinkedBlockingQueue<>();
308      ThreadPoolExecutor threadPool7 = new ThreadPoolExecutor(
309          1, // corePoolSize
310          1, // maximumPoolSize
311          0L, // keepAliveTime
312          TimeUnit.SECONDS, // unit
313          new ThreadPoolExecutor.CallerRunsPolicy(), // handler
314          null, // threadFactory
315          workQueue7); // workQueue
316
317      // 52. Submit a task
318      Runnable task11 = () -> {
319          System.out.println("Task11 executed");
320      };
321      threadPool7.submit(task11);
322
323      // 53. Shutdown the executor
324      threadPool7.shutdown();
325
326      // 54. Wait for the task to complete
327      try {
328          threadPool7.awaitTermination(1, TimeUnit.SECONDS);
329      } catch (InterruptedException e) {
330          e.printStackTrace();
331      }
332
333      // 55. Print the status of the executor
334      System.out.println("ThreadPool7 status: " + threadPool7.isTerminated());
335
336      // 56. Create a new ThreadPoolExecutor with a custom thread pool and work queue
337      BlockingQueue<Runnable> workQueue8 = new LinkedBlockingQueue<>();
338      ThreadPoolExecutor threadPool8 = new ThreadPoolExecutor(
339          1, // corePoolSize
340          1, // maximumPoolSize
341          0L, // keepAliveTime
342          TimeUnit.SECONDS, // unit
343          new ThreadPoolExecutor.CallerRunsPolicy(), // handler
344          null, // threadFactory
345          workQueue8); // workQueue
346
347      // 57. Submit a task
348      Runnable task12 = () -> {
349          System.out.println("Task12 executed");
350      };
351      threadPool8.submit(task12);
352
353      // 58. Shutdown the executor
354      threadPool8.shutdown();
355
356      // 59. Wait for the task to complete
357      try {
358          threadPool8.awaitTermination(1, TimeUnit.SECONDS);
359      } catch (InterruptedException e) {
360          e.printStackTrace();
361      }
362
363      // 60. Print the status of the executor
364      System.out.println("ThreadPool8 status: " + threadPool8.isTerminated());
365
366      // 61. Create a new ThreadPoolExecutor with a custom thread pool and work queue
367      BlockingQueue<Runnable> workQueue9 = new LinkedBlockingQueue<>
```




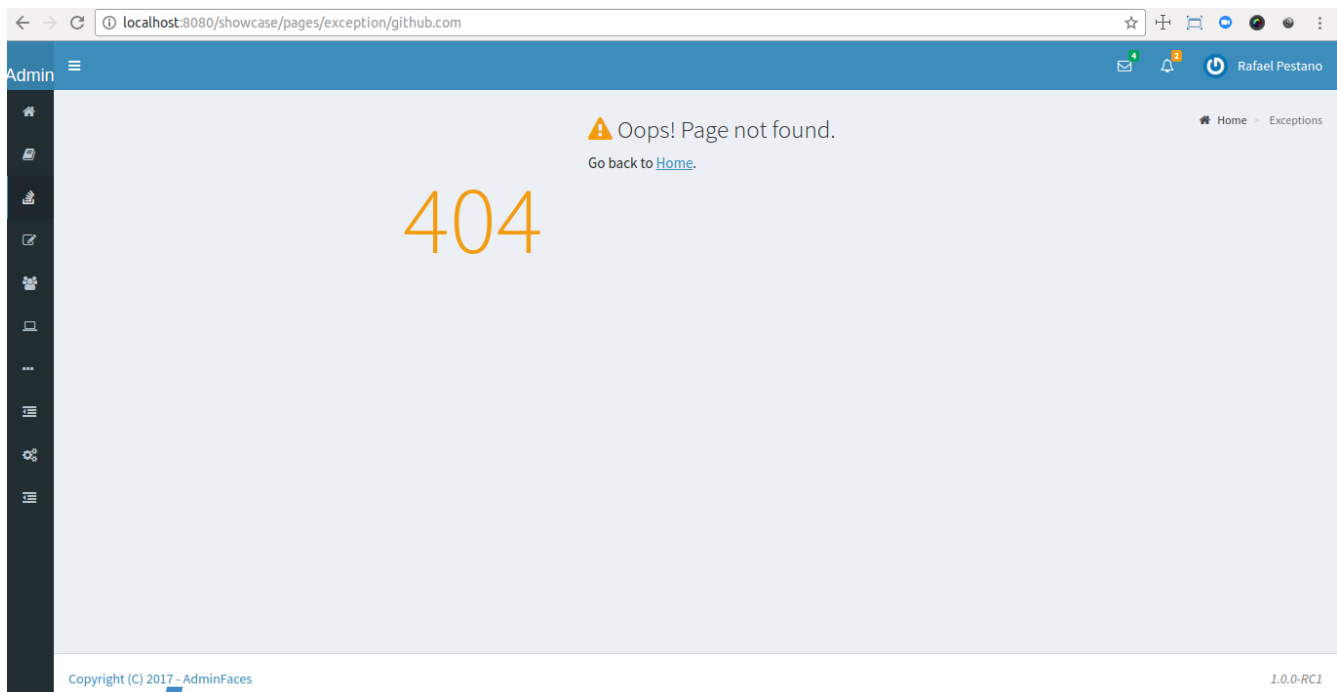
403

User is redirected to  whenever a 403 response code is returned in a request. The page will also be triggered when a `com.github.adminfaces.template.exception.AccessDeniedException` is raised.



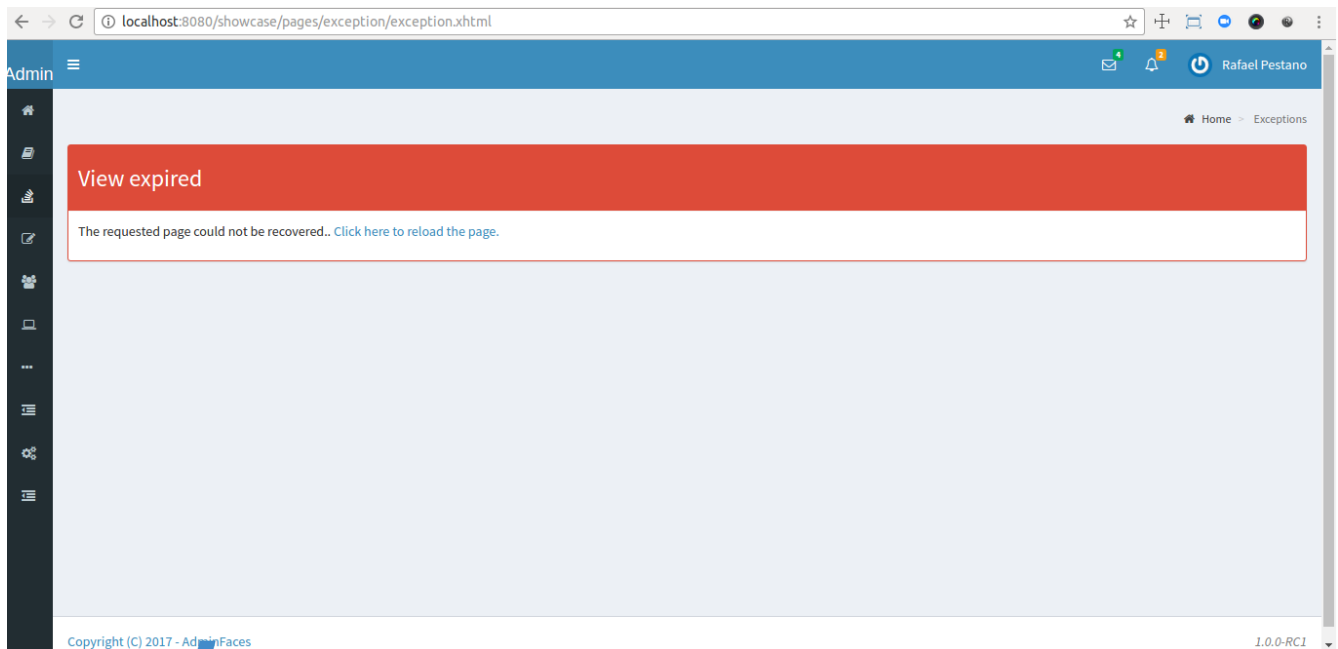
404

User will be redirected to  whenever a 404 response code is returned from a request.



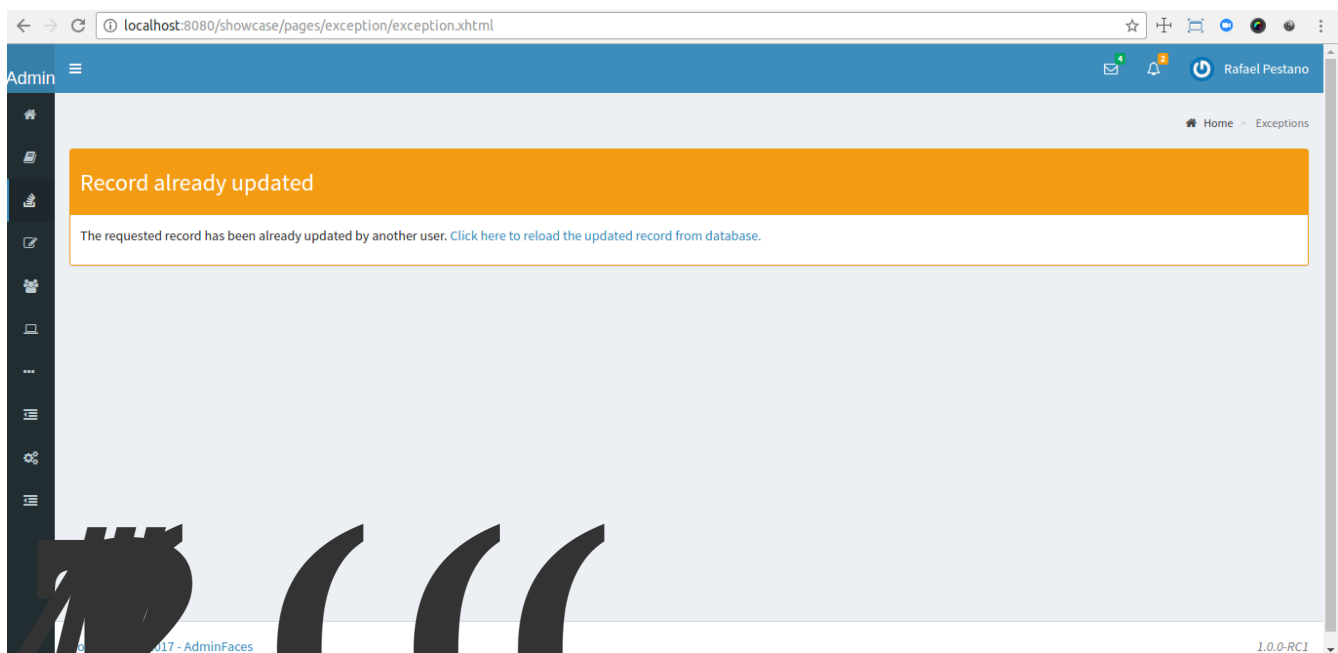
*ViewExpired*

When a JSF `javax.faces.application.ViewExpiredException` is raised user will be redirected to



*OptimisticLock*

When a JP `javax.persistence.OptimisticLockException` is thrown user will be redirected to



You can provide your own custom pages (and other status codes) by configuring them in web.xml, example:

```

<error-page>
  <error-code>404</error-code>
  <location>/404.xhtml</location>
</error-page>
<error-page>
  <error-code>500</error-code>
  <location>/500.xhtml</location>
</error-page>
<error-page>
  <exception-type>javax.lang.Throwable</exception-type>
  <location>/500.xhtml</location>
</error-page>

```

You can override error pages by placing the pages (with same name) described in [Error Pages](#) section, not of your application ([webapp/](#)).

Labels in [error pages](#) and [control sidebar](#) are provided via [JSF resource bundle](#) mechanism.

Following are the default labels in admin resource bundle:

*src/main/resources/admin.properties*

```

#general
admin.version=${project.version}
label.go-back=Go back to

#403
label.403.header=403
label.403.message=Access denied! You do not have access to the requested page.

#404
label.404.header=404
label.404.message=Oops! Page not found

#500
label.500.header=500
label.500.message=Oops! Something went wrong
label.500.title=Unexpected error
label.500.detail=Details

#expired
label.expired.title=View expired
label.expired.message= The requested page could not be recovered.
label.expired.click-here= Click here to reload the page.

```

```
#optimistic
label.optimistic.title=Record already updated
label.optimistic.message= The requested record has been already updated by another
user.
label.optimistic.click-here= Click here to reload the updated record from database.

#controlsidebar
controlsidebar.header=Layout Options
controlsidebar.label.restore-defaults=Restore defaults
controlsidebar.label.menu-horientation=Left menu layout
controlsidebar.txt.menu-horientation=Toggle menu orientation between <b
class=\"sidebar-bold\">left</b> and <b class=\"sidebar-bold\">top</b> menu.
controlsidebar.label.fixed-layout=Fixed Layout
controlsidebar.txt.fixed-layout=Activate the fixed layout, if checked the top bar will
be fixed on the page.
controlsidebar.label.boxed-layout=Boxed Layout
controlsidebar.txt.boxed-layout=Activate the boxed layout.
controlsidebar.label.sidebar-collapsed=Collapsed Sidebar
controlsidebar.txt.sidebar-collapsed=If checked the sidebar menu will be collapsed.
controlsidebar.label.sidebar-expand-hover=Sidebar Expand on Hover
controlsidebar.txt.sidebar-expand-hover=If checked the left sidebar will expand on
hover.
controlsidebar.label.sidebar-slide=Control Sidebar fixed
controlsidebar.txt.sidebar-slide=If checked control sidebar will be fixed on the page.
controlsidebar.label.sidebar-skin=Dark Sidebar Skin
controlsidebar.txt.sidebar-skin=If checked <b class=\"sidebar-bold\">dark</b> skin will
be used for control sidebar, otherwise <b class=\"sidebar-bold\">light</b> skin will be
used.
controlsidebar.header.skins=Skins
```



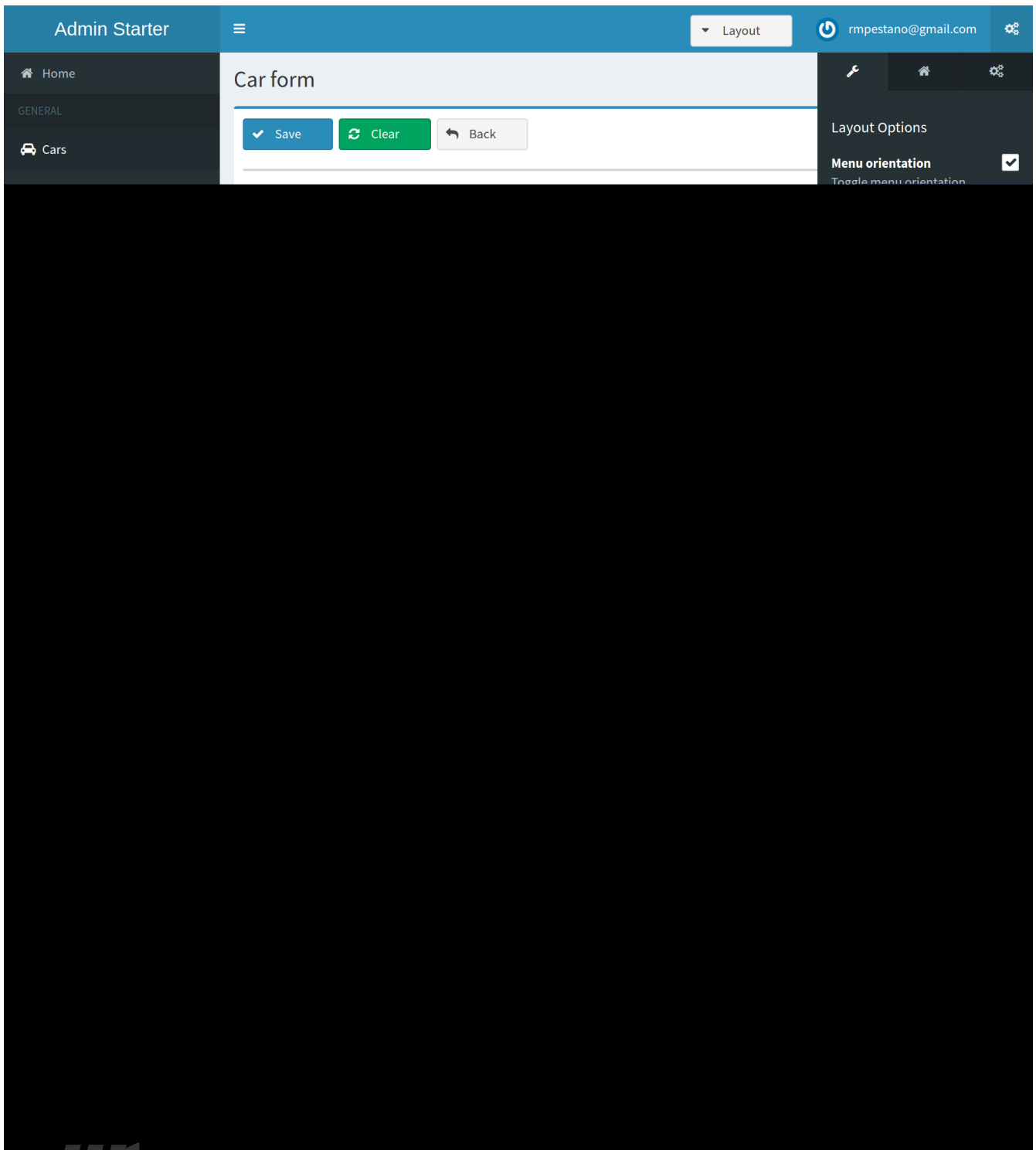
You can provide your own language bundle adding a file named *admin\_YOUR\_LANGUAGE.properties* in your application **resources** folder.

Don't forget to add it as **supported locale** in , see [example here](#).

You can contribute your language locale to AdminFaces, [check here](#) the current supported locales.



ControlSidebar is a component which provides a panel so user can **customize** the template layout:



Options selected by user are stored on **browser local storage** so they are remembered no matter the user logs off the application.

To enable the control sidebar you need to add the following entry in `src/main/resources/admin-config.properties`:

```
admin.renderControlSidebar=true
```

And then add a link or button on your page which opens the sidebar. The link or button must use

`data-toggle` attribute:

```
<a href="#" id="layout-setup" data-toggle="control-sidebar" class="hidden-sm hidden-xs"><i class="fa fa-gears"></i></a>
```

On admin-starter the link is located on [top-bar.xhtml](#).

[Click here](#) to see controlsidebar in action on admin showcase.

By default the control sidebar comes only with the configuration tab but you can define additional tabs by defining `controlsidebar-tabs` and `controlsidebar-content` on your template. An example can be found on [admin-starter template](#).

ControlSidebar is hidden on mobile devices by default. You can change this on `admin-config.properties`:

```
admin.controlSidebar.showOnMobile=true
```



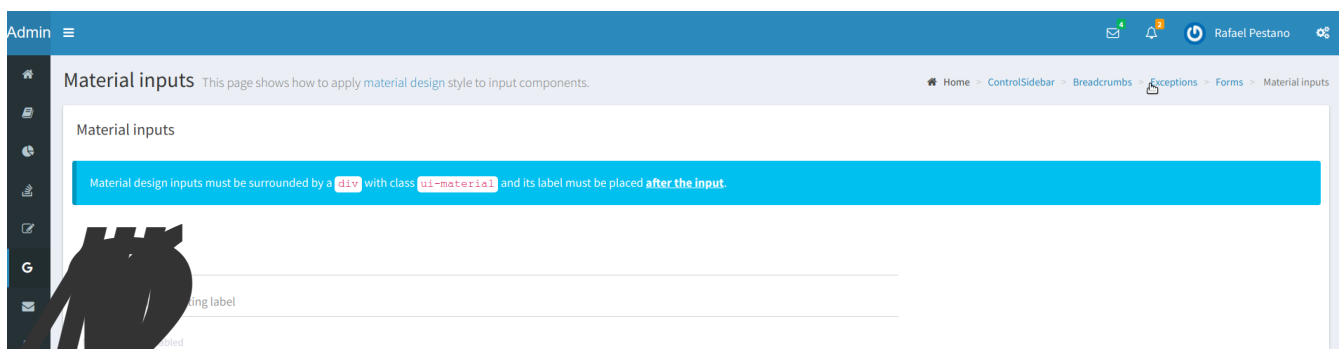
Also don't forget to remove the `hidden-sm hidden-xs` classes from the button/link that opens the sidebar:

```
<a href="#" class="ui-link ui-widget" data-toggle="control-sidebar"><i class="fa fa-gears"></i></a>
```



[Breadcrumbs](#) based navigation indicates the location of the user within the site's hierarchy.

AdminFaces provides a composite component which will manage breadcrumbs as user navigates through the pages.



There are three ways to use the component, via `adm:breadcrumb` **composite component**, by using a `ui:param` or **programmatically**.

1. Using via **composite component**

To use the composite component just declare the `admin namespace` and provide a title and the link, following is `car-form` breadcrumb declaration in `admin starter`:

*car-form.xhtml*

```
<ui:composition xmlns="http://www.w3.org/1999/xhtml"
                 xmlns:adm="http://github.com/adminfaces">

    <ui:define name="body">
        <adm:breadcrumb title="#{empty carFormMB.id ? 'New Car' : 'Car
'.concat(carFormMB.id)}" link="car-form.jsf?id=#{carFormMB.id}"/>
        //other page components
    </ui:define>
</ui:composition>
```

So when user enters the car-form page a breadcrumb will be created based on currently edited car or 'New Car' label will be used when adding a Car:



The `link` is the page where user will be redirected when clicking the breadcrumb link.



If the `link` is not provided then user will be redirected to the page where the breadcrumb is declared.

## 2. Usage via `title ui:param`

An easy way, but not so flexible as above, of creating breadcrumbs is to use the `ui:param name="title"` on the page, following is admin-starter `car-list` page:

```
<ui:composition xmlns="http://www.w3.org/1999/xhtml"
                 xmlns:adm="http://github.com/adminfaces">

    <ui:param name="title" value="Car listing"/>

</ui:composition>
```

When the `title` param is present on the page, a breadcrumb with title as `ui:param value` will be added. The breadcrumb link will redirect user to the page where the `ui:param` is declared.



Declare the param as direct child of `ui:composition` otherwise it will not work in MyFaces JSF implementation if you e.g declare it inside `body` section.

## 3. Adding breadcrumb `programmatically`

To use breadcrumb in Java you need to `@Inject` the `Breadcrumb` component:

```
@Inject
private BreadCrumbMB breadCrumbMB;

public void add(){
    breadCrumbMB.add(new BreadCrumb(link,title));
}
```

You can disable breadCrumbs

or for

.

#### 1. Disable per page

To disable breadCrumbs in a page just declare: `<ui:param name="renderBreadCrumbs" value="false"/>`. For an example see admin starter [index page](#).

#### 2. Disable for all pages

Just declare `admin.renderBreadCrumb=false` entry in `snippets/resources/` folder. For details see [configuration section](#).

Template **Snapshots** are published to [maven central](#) on each commit, to use it just declare the repository below on your `pom.xml`:

```
<repositories>
  <repository>
    <snapshots/>
    <id>snapshots</id>
    <name>libs-snapshot</name>
    <url>https://oss.sonatype.org/content/repositories/snapshots</url>
  </repository>
</repositories>
```



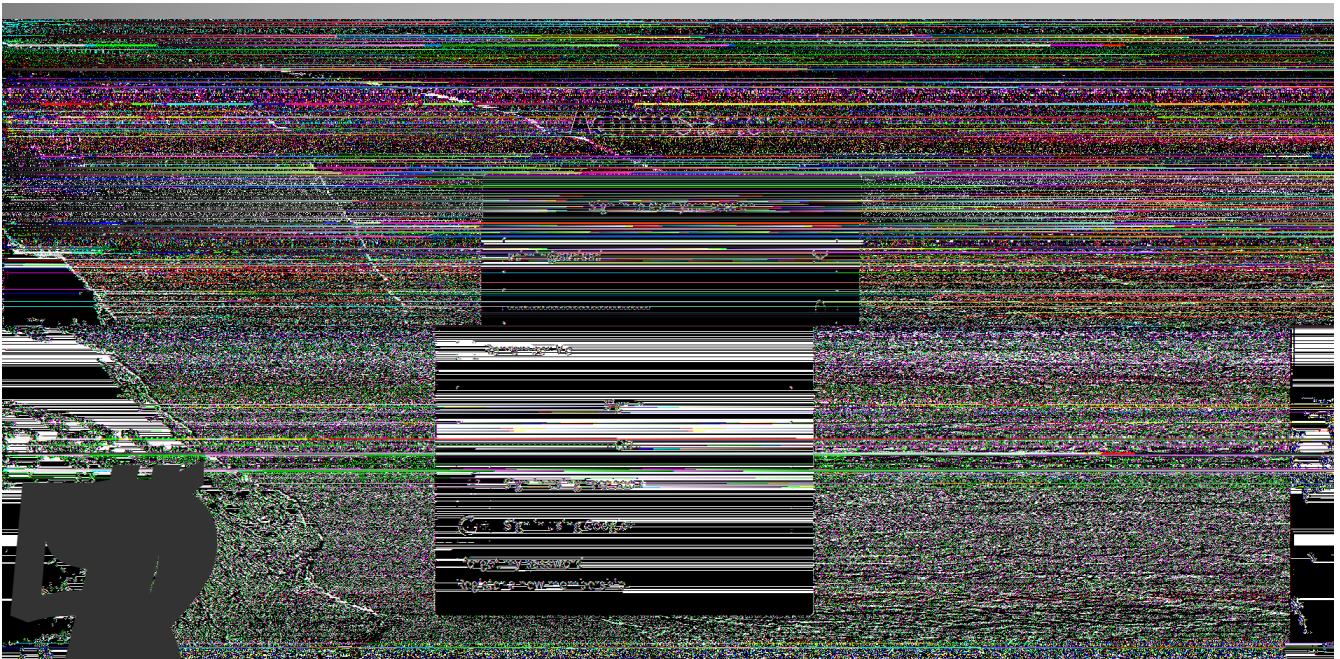


Admin Starters are sample projects to get you started with AdminFaces. Following are current starters, access their github [README](#) for running instructions:

- [Admin Starter](#): The default starter is a simple JavaEE 6(+) application without any persistence layer. You can run it on a JavaEE 6 or newer server and also in [wildfly-swarm](#).
- [Admin Starter Persistence](#): Admin Starter application with persistence layer based on Apache DeltaSpike Data module via [Admin Persistence](#);
- [Admin Starter Tomcat](#): Admin Starter application for Tomcat;
- [Admin Starter SpringBoot](#): Admin Starter application using [SpringBoot](#) and [JoinFaces](#).
- [Admin Starter Shiro](#): Admin Starter application using [Apache Shiro](#) for authentication.



All starters have images published on docker hub so you can easily run them via docker.



A live demo is available on Openshift here: <http://admin-starter-admin-starter.1d35.starter-us-east-1.openshiftapps.com/admin-starter/>

and [Admin Designer](#) is to make it easier to customize Admin theme and Admin Template.

This is the [Admin Showcase](#) application with [admin template](#) and [admin theme](#) bundled inside in the project dependencies.

It is possible to use [Wildfly Swarm](#) to run the [exploded](#) application so one can change the theme or template and the application without needing to restart the application.

The initial idea was to speed AdminFaces development but it turns out that it can easily accept [contributions](#) from non Java developers (like designers and frontend developers) as the project is about front end components and layout.

Also another great feature of Admin Designer is the possibility to use the application as a maven project.

The downloaded project is the [Admin Starter](#) with modified admin theme and template embedded in the project.

This is the most flexible approach but at the same time you [lose the updates on Admin Theme and template projects](#) because you don't depend on them anymore.

In application root directory:

1. First start the application by running the command:

```
./mvnw wildfly-swarm:run (or mvnw.cmd wildfly-swarm:run)
```

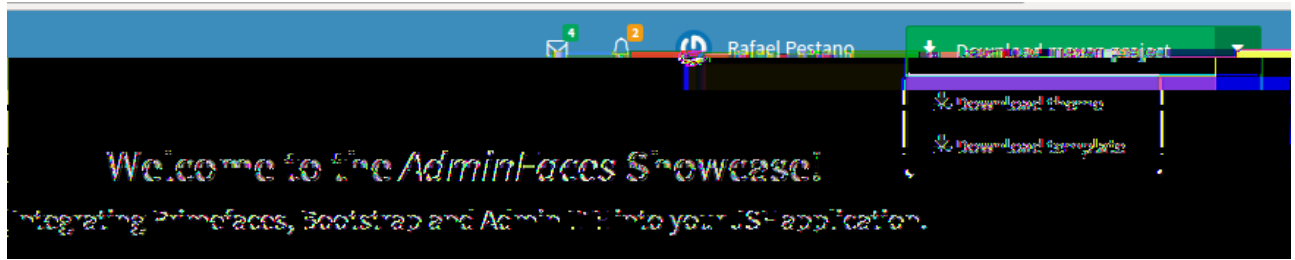
2. Second edit any less file in directory [src/main/resources/less](#).
3. Now to compile the application using:

```
./mvnw compile (or mvnw.cmd compile)
```



If you don't want to compile every time you change a less file, use the flag `-Dlesscss.watch=true`. Or use a tool like [brackets](#) with [less extension](#) installed.

4. Finally when you're done you can download the customized **theme** and **template** as a or as separated jar files;

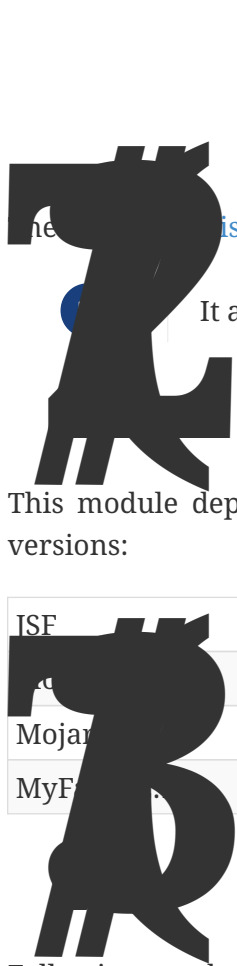


The changes made to less files should be visible in running application <http://localhost:8080/showcase>



There is no need to stop and run the application again.

You can see this workflow in the following video: <https://youtu.be/X1UEpN942s0>



ne [Admin Persistence](#) module aims to simplify CRUD operations on AdminFaces applications.

It actually works without AdminFaces.

This module depends on [JSF](#), [CDI](#) and [JPA](#) and was tested with respective implementations and versions:

JSF	CDI	JPA
PrimeFaces	Weld 2.3	Hibernate 5.0
Mojave	Weld 2.2	Hibernate 4.3
MyFaces	OpenWebBeans 1.7.4	Eclipselink 2.6

Following are the steps you need to follow in order to use [Admin Persistence](#):

1.

First include it in your classpath:

```
<dependency>
  <groupId>com.github.adminfaces</groupId>
  <artifactId>admin-persistence</artifactId>
  <version>1.0.0</version>
</dependency>
```

Admin persistence will bring the following transitive dependencies:



```
<dependency>
  <groupId>org.primefaces</groupId>
  <artifactId>primefaces</artifactId>
  <version>6.2</version>
</dependency>

<dependency>
  <groupId>org.apache.deltaspike.core</groupId>
  <artifactId>deltaspike-core-impl</artifactId>
  <version>1.8.0</version>
</dependency>

<dependency>
  <groupId>org.apache.deltaspike.core</groupId>
  <artifactId>deltaspike-core-api</artifactId>
  <version>1.8.0</version>
</dependency>

<dependency>
  <groupId>org.apache.deltaspike.modules</groupId>
  <artifactId>deltaspike-data-module-api</artifactId>
  <version>1.8.0</version>
  <scope>compile</scope>
</dependency>

<dependency>
  <groupId>org.apache.deltaspike.modules</groupId>
  <artifactId>deltaspike-data-module-impl</artifactId>
  <version>1.8.0</version>
  <scope>compile</scope>
</dependency>
```



Of course you can override them in your pom.xml as needed.

2.

As Admin Persistence uses [DeltaSpike typesafe criteria](#) you'll need to generate JPA metamodel. There are various ways to do that, here is a maven plugin example:

```

<plugin>
  <groupId>com.mysema.maven</groupId>
  <artifactId>apt-maven-plugin</artifactId>
  <version>1.1.3</version>
  <executions>
    <execution>
      <id>metamodel</id>
      <goals>
        <goal>process</goal>
      </goals>
      <configuration>
        <outputDirectory>target/generated-
sources/metamodel</outputDirectory>
        <processor>
org.hibernate.jpamodelgen.JPAMetaModelEntityProcessor</processor>
        </configuration>
      </execution>
    </executions>
    <dependencies>
      <dependency>
        <groupId>org.hibernate</groupId>
        <artifactId>hibernate-jpamodelgen</artifactId>
        <version>4.3.8.Final</version>
      </dependency>
    </dependencies>
  </plugin>

```



See [this tutorial](#) for configuring it on your IDE.

3.

Admin persistence needs an exposed **entity manager** as CDI Bean, you can do that by using a CDI producer:

```

@ApplicationScoped
public class EntityManagerProducer {

    @PersistenceContext
    EntityManager em;

    @Produces
    public EntityManager produce() {
        return em;
    }
}

```

4.

Every JPA entity must be typed as a `PersistenceEntity`, it is an interface with only a method, `getId()`:

```
import com.github.adminfaces.persistence.model.PersistenceEntity;

@Entity
@Table(name = "car")
public class Car implements PersistenceEntity {

    @Override
    public Integer getId() {
        return id;
    }

}
```



You can `extend` `PersistenceEntity` to gain `equals()`, `hashCode()` and `toString()`.

5.

Now to create a service which will hold your business logic you need to extend `CrudService`:

```
@Stateless
public class CarService extends CrudService<Car, Integer> {

}
```



Full source code for CarService can be [found here](#).



For some examples of CrudService usage [see integration tests here](#).

6.

Finally on the controller layer (JSF managed beans) you need to extend `CarController` which will enable CRUD support for your JSF pages:

```

@Named
@ViewScoped
public class CarListMB extends CrudMB<Car> implements Serializable {

    @Inject
    CarService carService;

    @Inject
    @Service
    CrudService<Car, Integer> crudService; //generic injection

    @Inject
    public void initService() {
        setCrudService(carService); ①
    }

}

```

① Needed by CrudMB otherwise it will throw an exception asking for CrudService initialization.

You can use `@BeanService` annotation (since 1.0.0-RC9) to provide CrudService:



```

@Named
@ViewScoped
@BeanService(CarService.class)//use annotation instead of setter
injection
public class CarListMB extends CrudMB<Car> implements Serializable {

}

```

Full source code for CarListMB can be [found here](#).

Real pagination involves lots of boilerplate code, in admin-persistence it is a matter of using a Primefaces lazy datatable and bind it to the CrudMB `list` variable:

*xhtml page*

```

<p:dataTable widgetVar="carsTable" var="c" value="#{carListMB.list}"
    rows="5" rowKey="#{c.id}"
    lazy="true" paginator="true"
    <!-- other attributes -->

```





Full source code for this xhtml page can be [found here](#).

For filtering on the lazy datatable you just need to override `configRestrictions` method in the managed bean's service (the service we set with `carService` in `CarListMB`) and add your restrictions based on a filter:

*CarService*

```
protected Criteria<Car, Car> configRestrictions(Filter<Car> filter) {

    Criteria<Car, Car> criteria = criteria();

    //create restrictions based on parameters map
    if (filter.hasParam("id")) {
        criteria.eq(Car_.id, filter.getIntParam("id"));
    }

    if (filter.hasParam("minPrice") && filter.hasParam("maxPrice")) {
        criteria.between(Car_.price, filter.getDoubleParam("minPrice"), filter
.getDoubleParam("maxPrice"));
    } else if (filter.hasParam("minPrice")) {
        criteria.gtOrEq(Car_.price, filter.getDoubleParam("minPrice"));
    } else if (filter.hasParam("maxPrice")) {
        criteria.ltOrEq(Car_.price, filter.getDoubleParam("maxPrice"));
    }

    //create restrictions based on filter entity
    if (has(filter.getEntity())) {
        Car filterEntity = filter.getEntity();
        if (has(filterEntity.getModel())) {
            criteria.likeIgnoreCase(Car_.model, "%" + filterEntity.getModel());
        }

        if (has(filterEntity.getPrice())) {
            criteria.eq(Car_.price, filterEntity.getPrice());
        }

        if (has(filterEntity.getName())) {
            criteria.likeIgnoreCase(Car_.name, "%" + filterEntity.getName());
        }
    }
    return criteria;
}
```

`filter.params` is a hashmap used to add arbitrary parameters and `filter.entity` is for entity specific ones, see [search dialog](#) which populates those attributes:

```
<div class="ui-g-12">
  <p:outputLabel for="model" value="#{msg['label.model']}"/>
</div>
<div class="ui-g-12">
  <p:selectOneMenu id="model" value=
#{carListMB.filter.entity.model}>
    <f:selectItem itemLabel="Chose a model" itemValue=""/>
    <f:selectItems value="#{models}" var="m" itemLabel=
#{m}
                                itemValue="#{m}"/>
  </p:selectOneMenu>
</div>
<div class="ui-g-12">
  <p:outputLabel for="name" value="#{msg['label.name']}"/>
</div>
<div class="ui-g-12">
  <p:inputText id="name" value=
#{carListMB.filter.entity.name}/>
</div>

<div class="ui-g-6 ui-sm-12 ui-g-nopad">
  <div class="ui-g-12">
    <p:outputLabel for="min" value=
#{msg['label.minPrice']}/>
  </div>
  <div class="ui-g-12">
    <p:inputNumber id="min" value=
#{carListMB.filter.params.minPrice}/>
  </div>
</div>

<div class="ui-g-6 ui-sm-12 ui-g-nopad">
  <div class="ui-g-12">
    <p:outputLabel for="max" value=
#{msg['label.maxPrice']}/>
  </div>
  <div class="ui-g-12">
    <p:inputNumber id="max" value=
#{carListMB.filter.params.maxPrice}/>
  </div>
</div>
</div>
```



Any datatable update (ajax or not) will trigger the `configRestrictions`.



Besides filtering the `filter` helper class also holds and information.

By default filters are saved on `Session` so when user goes to another page (e.g a detail) and comes back to list the tables keeps it's previous filters.

You can change this behavior by overriding `keepFiltersInSession` method on your Bean:



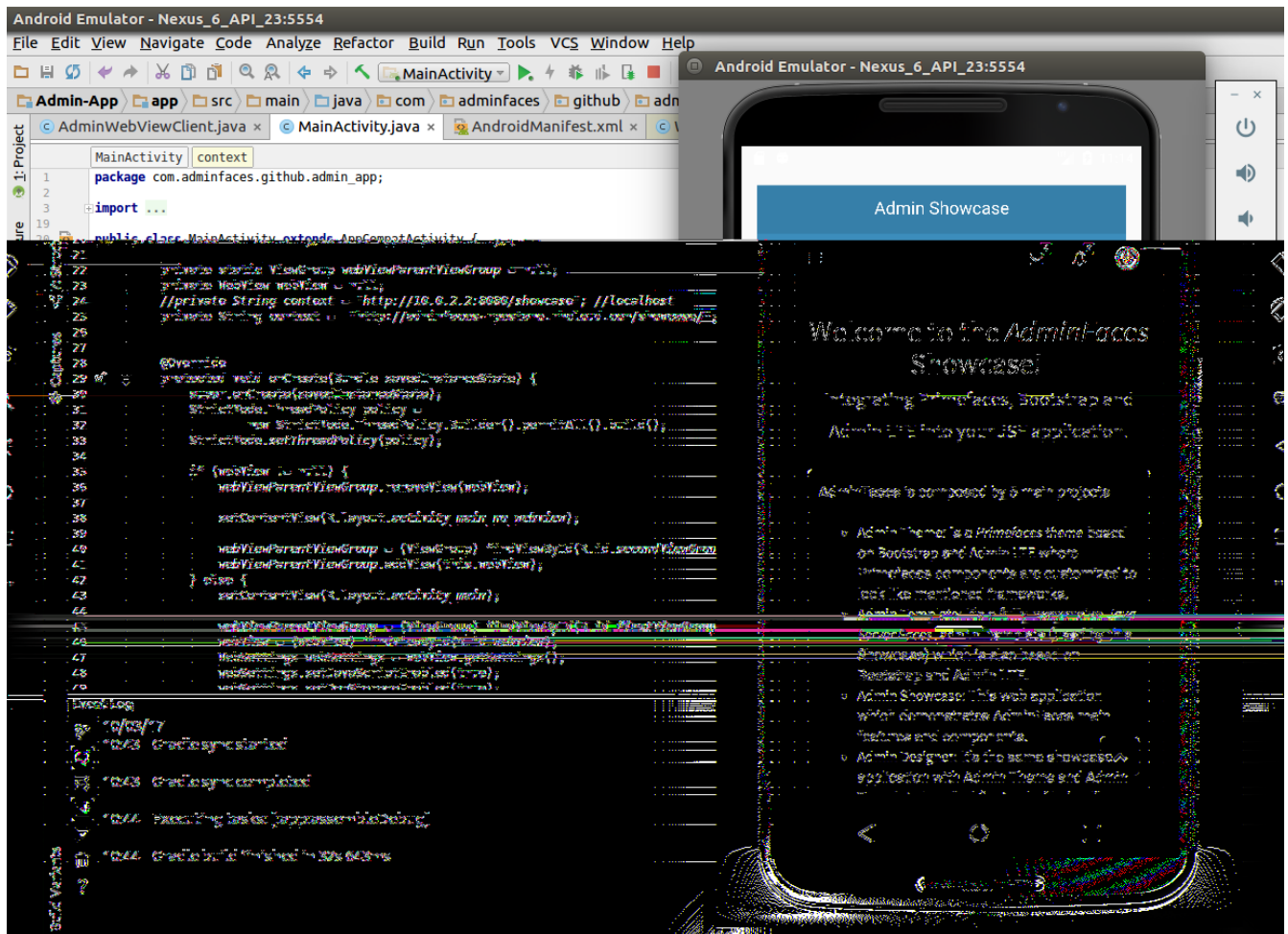
*CarListMB*

```
@Override
public boolean keepFiltersInSession() {
    return false;
}
```

For an example project using Admin Persistence see [admin-starter-persistence](#).



Admin Mobile is a simple [Android Studio](#) project which uses [Webview](#) to create an [hybrid web app](#) based on Admin Showcase.



The app is a proof of concept to check AdminFaces user experience in mobile apps. The following behaviours will be enabled only on this kind of devices:

- Loading bar based on google material design;
  - Go to top link at the bottom right corner of the page;
  - Larger icons on panel, dialog and messages;
  - Some components like growl, tabview and datatable are optimized for mobile devices;
  - Ripple/waves effect based on [materialize](#);
  - Slideout menu
- [dd37121e 2296 11e7 855c 8f20b59dcf5f]