

# World-Wide Developer Conference

## Genero Browser Client - Customization

Neil J Martin

**JW Marriott Cancun Spa & Resort**  
September 26-29, 2017



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# Intro

It's all about me

Neil Martin – [neilm@4js.com](mailto:neilm@4js.com)

I work from the UK office.

My Roles are support / training / consultancy / development.

Currently also working on Genero Cloud.

My background is in developing 4gl applications, I have been using 4gl ( InformixRDS / Four Js BDL / Genero ) for over 25 years!

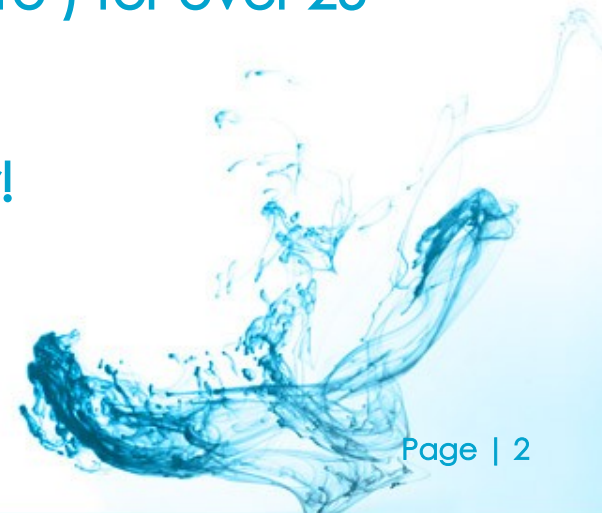
I do NOT consider myself a Web Developer!



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# Overview - About the session

## Goals of this session

- Run GBC default with default demos
- Setup the GBC dev environment
- Run the GBC dev build with default demos
- Create custom build folder for the custom GBC files
- Setup GeneroStudio to build GBC
- A test Application
- Colors and Themes
- Headers and Footers
- Packaging and deploy GBC
- More GBC customizations



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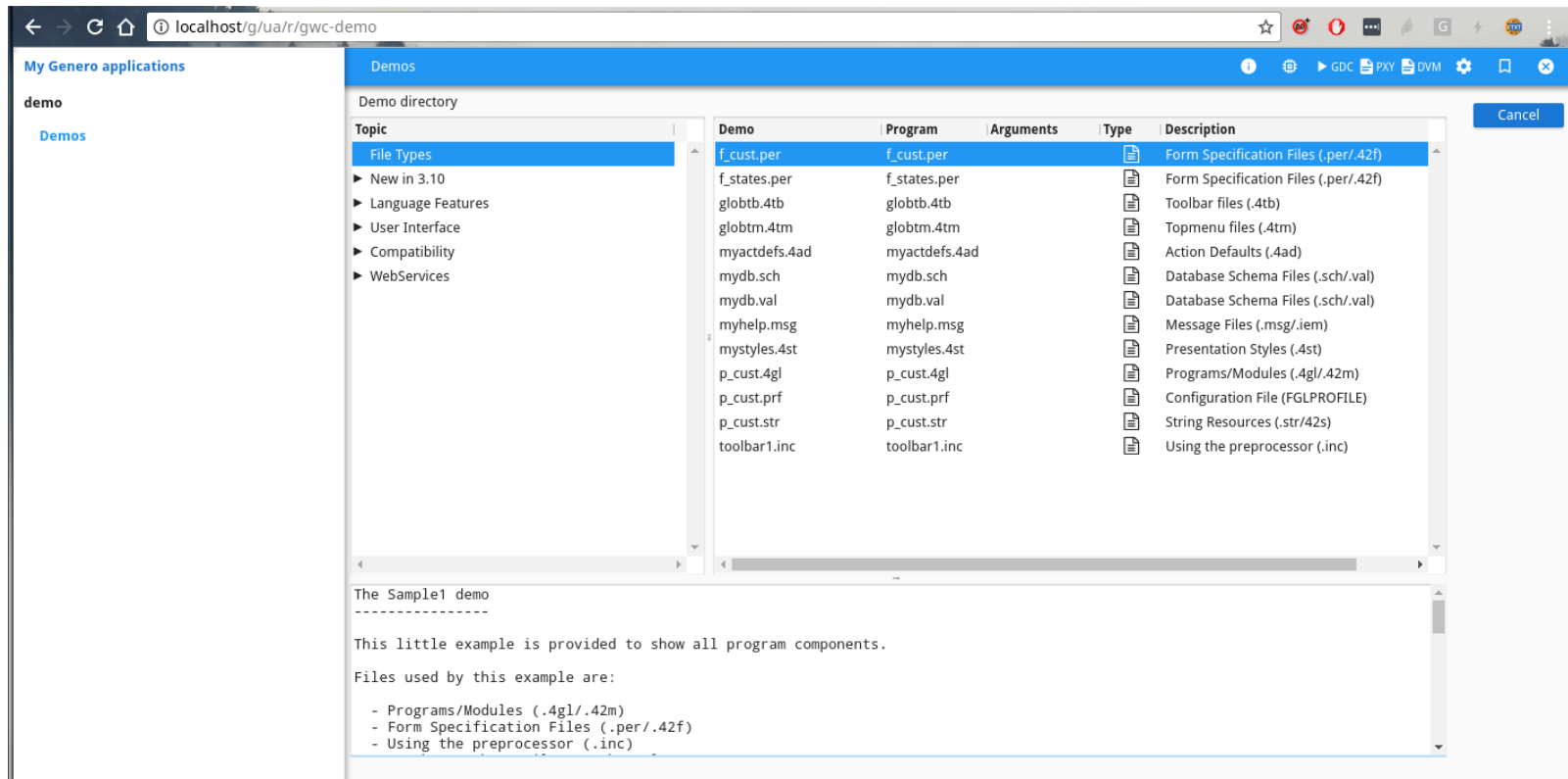
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# GBC Default Test

Basic sanity test

Before we start, let's make sure the current default GBC is working and we can run the default Genero demos!



# Setup the GBC Dev Environment

Tools of the trade

The GBC uses various standard web development tools, these need to be installed in your development environment so you can build the GBC Runtime from the Project sources.

## Manual - Install Tools

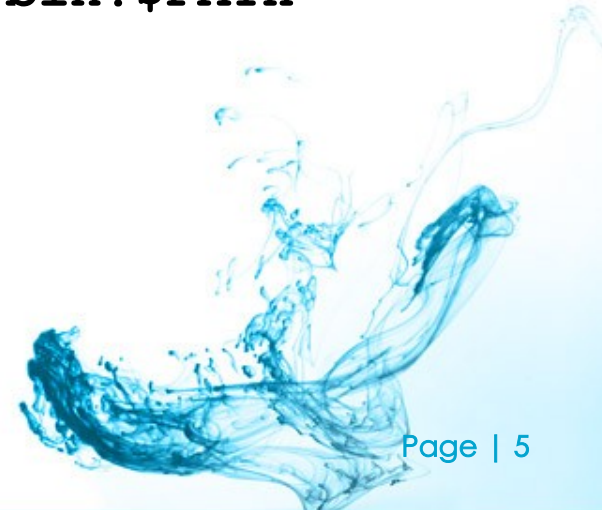
```
$ sudo yum install git unzip  
$ wget https://nodejs.org/dist/v6.11.3/node-v6.11.3-  
linux-x64.tar.xz  
$ tar xvJf node-v6.11.3-linux-x64.tar.xz  
$ export PATH=node-v6.11.3-linux-x64/bin:$PATH  
$ sudo npm install -g grunt-cli
```



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# Setup the GBC Dev Environment

Our first build

Once the require packages are installed you need to set up the GBC project folder

```
$ unzip fjs-gbc-1.00.39-build201709041139-  
project.zip  
$ cd gbc-1.00.39/  
$ npm install  
$ grunt
```

When complete you should have the 'default' custom GBC built.



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# Setup the GBC Dev Environment

Configure for running

Before you can test the 'default' custom GBC you need to make sure the GAS can find it.

There are a couple of ways to tell the GAS how to find your custom GBC.

One method is a symbolic link in `$FGLDIR/web_utilities/gbc`

```
$ ln -s $HOME/gbc-  
1.00.39/dist/customization/default  
$FGLDIR/web_utilities/gbc/mydef
```

Another method is to modify the `as.xcf` for the `"res.path.gbc.user"`.



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# GBC 'Default' Custom Run

The results of all that effort

Test the 'default' custom GBC:

<http://<server>/gas/ua/r/gwc-demo?gbc=mydef>

The screenshot shows a web browser window with the address bar displaying `localhost/g/ua/r/gwc-demo?gbc=mydef`. The application interface has a blue header bar with the text "Applications started: 1 Currently opened window title : Demos". On the left, a sidebar titled "My Genero applications" shows a tree view with "demo" expanded, containing "Demos" and "File Types". The main area is titled "Demos" and contains a "Demo directory" section with a table of files. Below the table is a section titled "The Sample1 demo" with a description and a list of files used by the example.

Demo	Program	Arguments	Type	Description
f_cust.per	f_cust.per		Form Specification Files (.per/.42f)	
f_states.per	f_states.per		Form Specification Files (.per/.42f)	
globtb.4tb	globtb.4tb		Toolbar files (.4tb)	
globtm.4tm	globtm.4tm		Topmenu files (.4tm)	
myactdefs.4ad	myactdefs.4ad		Action Defaults (.4ad)	
mydb.sch	mydb.sch		Database Schema Files (.sch/.val)	
mydb.val	mydb.val		Database Schema Files (.sch/.val)	
myhelp.msg	myhelp.msg		Message Files (.msg/.iem)	
mystyles.4st	mystyles.4st		Presentation Styles (.4st)	
p_cust.4gl	p_cust.4gl		Programs/Modules (.4gl/.42m)	
p_cust.prf	p_cust.prf		Configuration File (FGLPROFILE)	
p_cust.str	p_cust.str		String Resources (.str/42s)	
toolbar1.inc	toolbar1.inc		Using the preprocessor (.inc)	

The Sample1 demo  
-----  
This little example is provided to show all program components.  
Files used by this example are:  
- Programs/Modules (.4gl/.42m)  
- Form Specification Files (.per/.42f)



# First Customization

First a new build

I recommend testing your application with the default Custom GBC build before doing any customizations.

Next, setup your own sources folder like this:

- Create a new folder in your sources location for your custom GBC files. ( so they are part of your Source Code Control )
- Create a link in the GBC customization build folder to this 'new folder'
- Change the custom.json to build that custom folder
- Make a small change to the theme file and do your first build
- Create a link in \$FGLEDIR/web\_utilities/gbc to this new custom build
- Run the new build in your browser.



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# First Customization

Do the work

```
$ cd $HOME/gbc-1.00.39/
$ cp -r customization/default $MY_SRC_DIR/mygbc
$ ln -s $MY_SRC_DIR/mygbc/ customization/mygbc
$ vi custom.json
    change:      "customization": "customization/default"
    to this:     "customization": "customization/mygbc"
$ grunt          ( make sure we can build our new folder )
$ ln -s $HOME/gbc-1.00.39/dist/customization/mygbc
    $FGLDIR/web_utilities/gbc/mygbc
$ grunt dev      ( This will automatically build after any changes )
```

-> new terminal

```
$ cd $MY_SRC_DIR/mygbc
$ vi theme.scss.json
    do some changes & save them
```



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# The 'default' Customization

## Anatomy of customization

The 'default' customization folder contains these sub-folders:

- js – JavaScript and template html files.
- locales – Localization files for text messages.
- resources – Images.
- sass – scss files. (syntactically awesome stylesheets!)
- and the 'theme.scss.json' file.

I suggest removing most of the demo files from js and sass folders to leave only the files relating to the header.

```
js/MyHeaderBarWidget.js  
js/MyHeaderBarWidget.tpl.html  
js/MyMainContainerWidget.js  
js/MyMainContainerWidget.tpl.html  
sass/customization.scss  
sass/MyMainContainerWidget.scss
```



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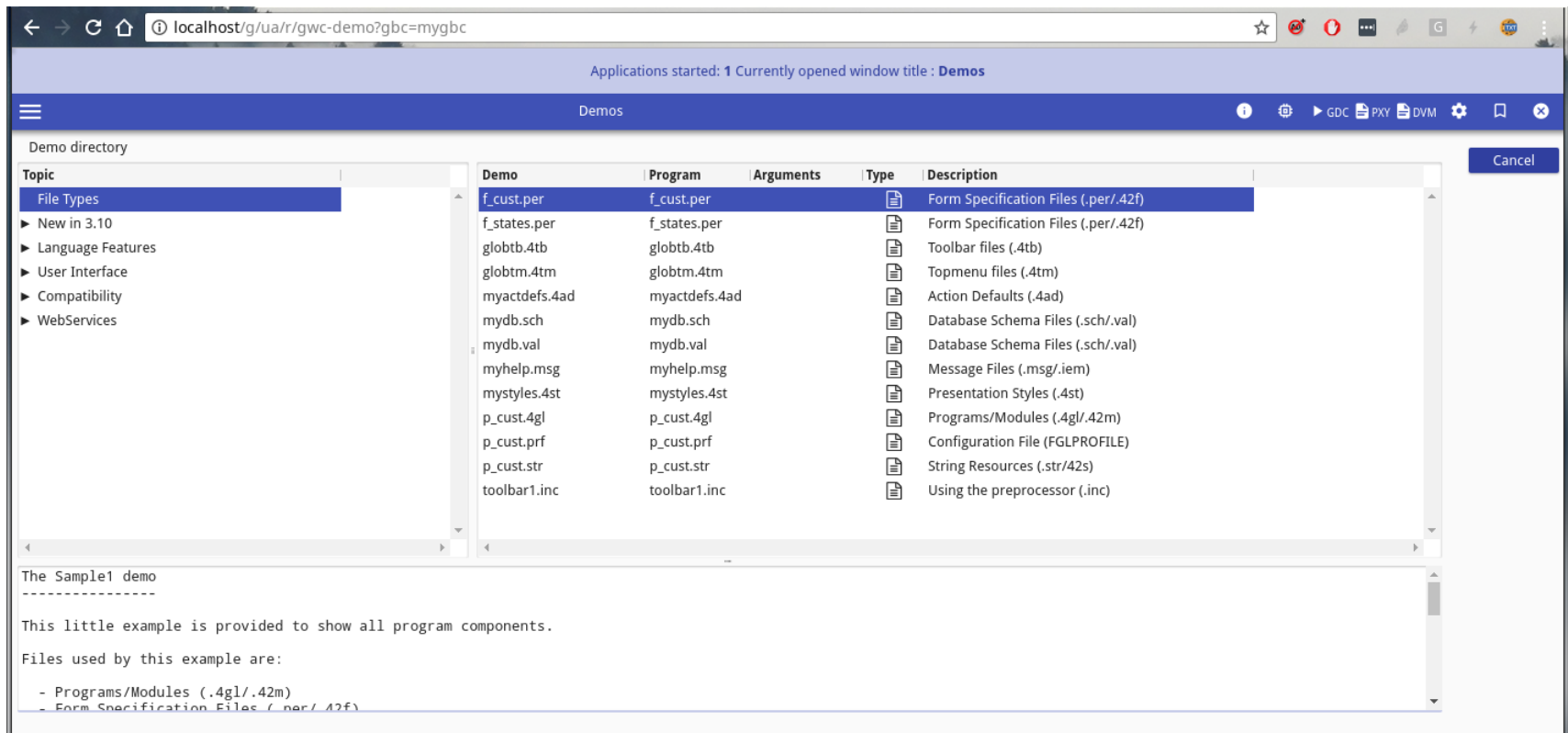


# GBC 'Default' Custom Run

At last, our own colours!

Test the custom GBC:

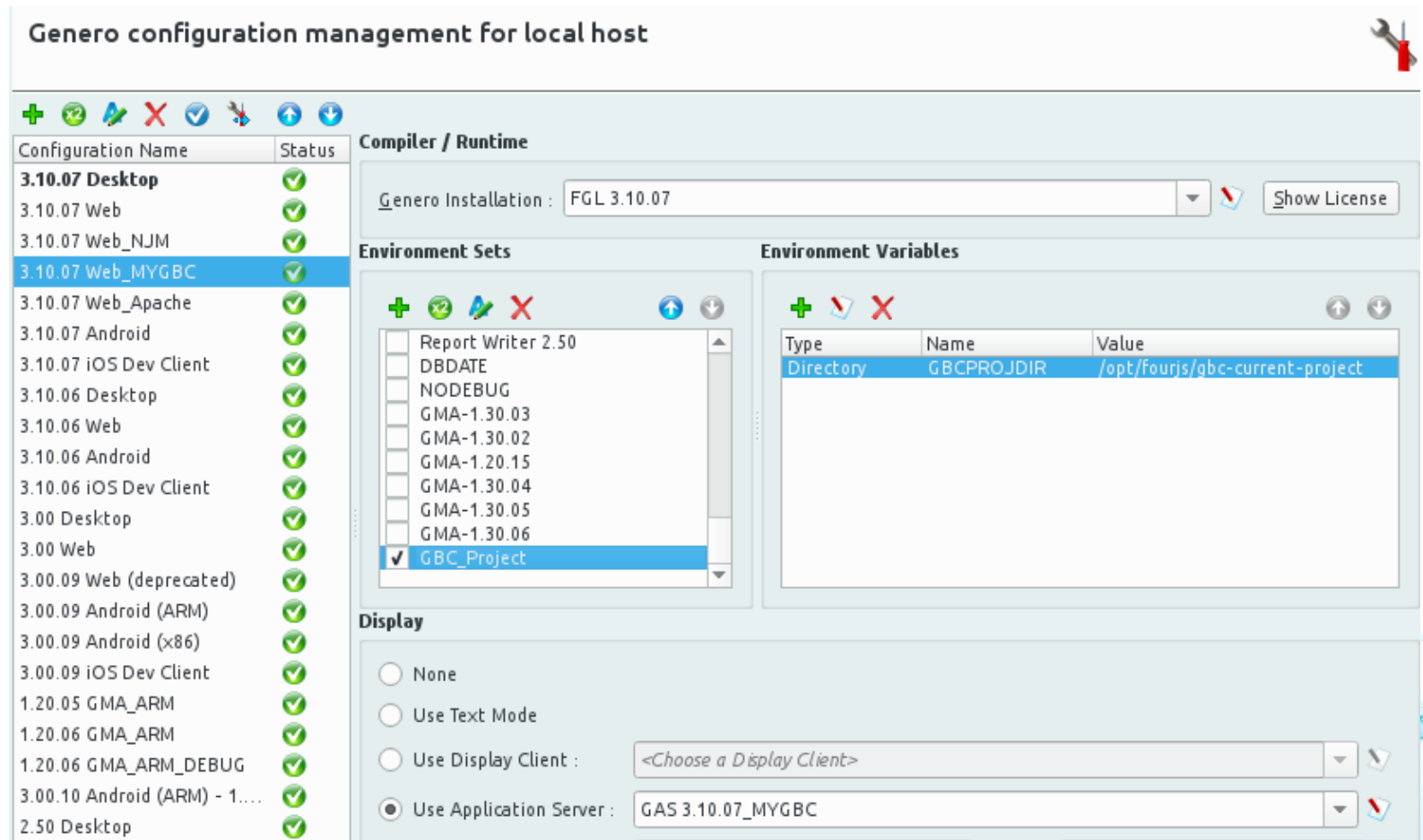
<http://<server>/gas/ua/r/gwc-demo?gbc=mygbc> )



# Genero Studio

Custom Builds rules

Genero Studio can also build your custom GBC.



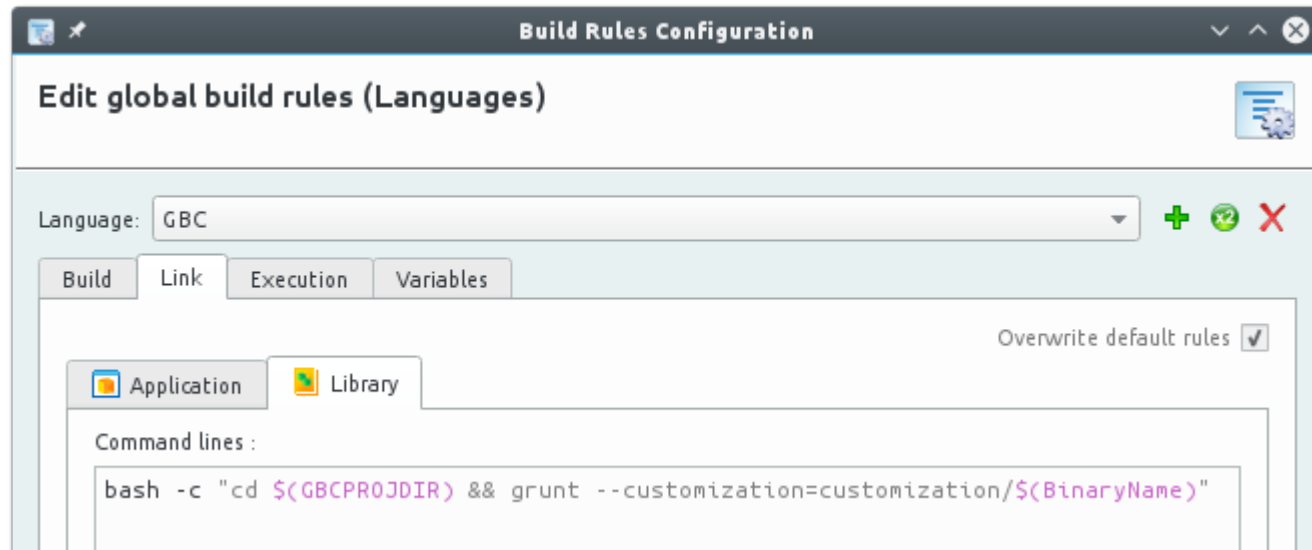
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# Genero Studio

## Custom Builds rules



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# Genero Studio

The screenshot displays the Genero Studio 3.10.06 interface for a project named 'gbc-training.4pw'. The interface includes a menu bar (File, Edit, View, Items, Projects, Build, Debug, Database, SCM, Tools, Window, Help), a toolbar, and several panels.

**Projects Panel:** Shows the project structure. The 'mygbc' directory is selected, containing a 'js' subdirectory with files: 'MyHeaderBarWidget.js', 'MyHeaderBarWidget.tpl.html', and 'MyMainContainerWidget.js'.

**Code Editor:** Displays the 'main.scss' file with the following content:

```
1  
2 body {  
3   background: black;  
4 }  
5  
6 .gbc_ApplicationHostMenuWidget.mt-toolb  
7   z-index: 0;  
8   display: none;  
9 }  
10  
11 header {  
12   background: linear-gradient($gbc-fiel  
13     color: $gbc-secondary-text-color;  
14 }  
15  
16 .gbc_FormWidget {  
17   background: linear-gradient($gbc-head  
18 }  
19  
20 .vanished {  
21   display: none;  
22 }
```

**Properties Panel:** Shows project properties for 'Project'. The 'Source directory' is set to '\$(ProjectDir)/mygbc' and the 'Target directory' is '\$(ProjectDir)/distbin'. The 'Language' is set to 'GBC'.

**Output Panel:** Displays the execution time and progress for various tasks. The total execution time is 2.9s.

Task	Time	Progress
loading tasks	60ms	21%
copy:resources	52ms	2%
templates2js:compile	66ms	2%
sass:development	1.6s	54%
autoprefixer:css	238ms	8%
sass:inlinevars	38ms	1%
concat:cdevgbc	119ms	4%
replace:version	74ms	3%
replace:prod	35ms	1%
Total	2.9s	

The output panel also shows a success message: '\*\*\* Success [16:28:30] \*\*\*'.



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# Test Application

A testing asset

A good idea is to write a small stand-alone test program to run using Custom GBC to see all your changes.

The 'Test' program should use all the GUI elements you use in a similar way to your main application, but with the advantage that you don't have to navigate through various menus and sub programs to get to see any specific UI features you may use.

Another useful feature would be if the program can open and show any of your 42f files.



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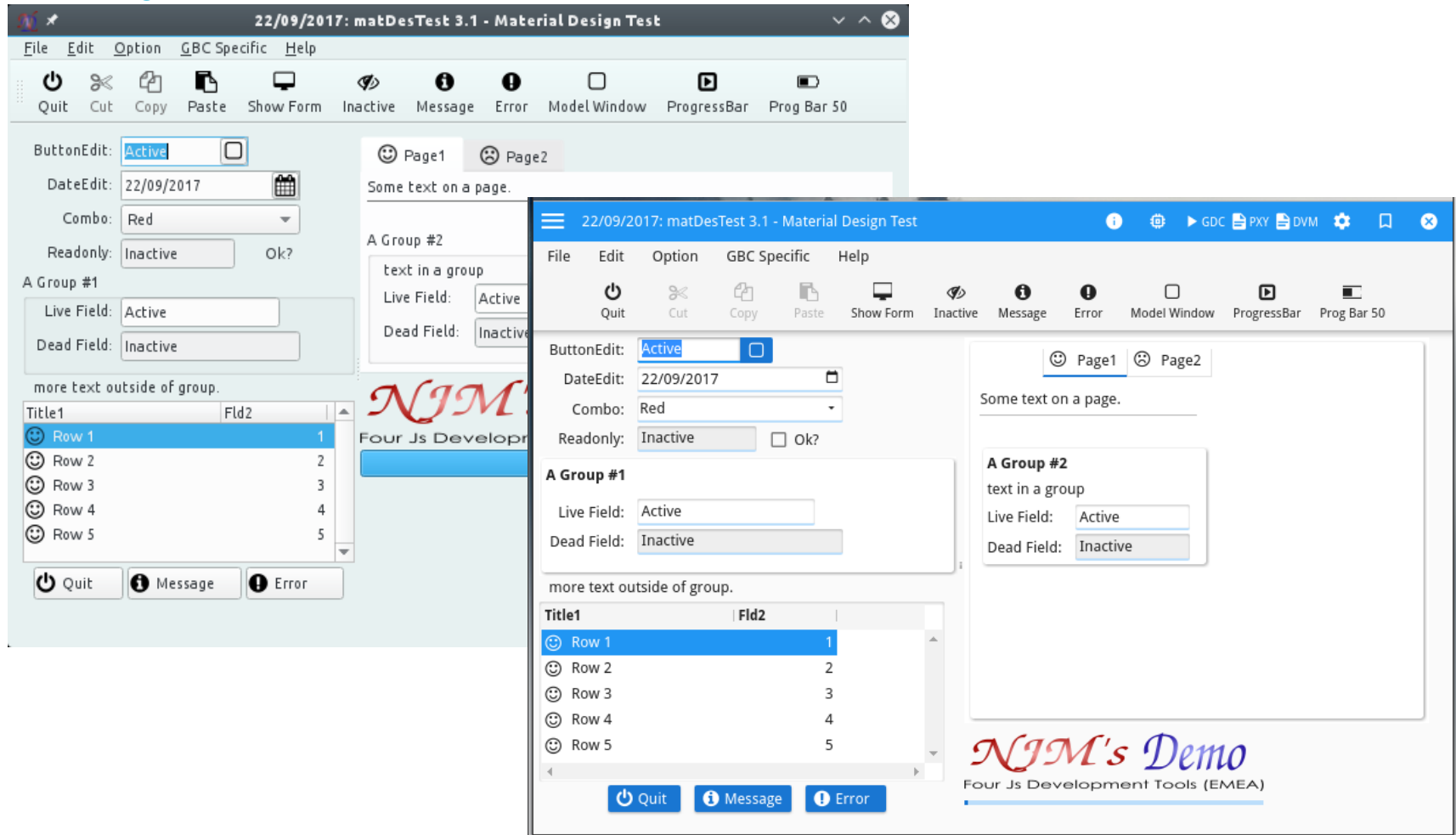
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# Test Application

A testing asset



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# Colors ( Colours )

All the colours of the rainbow

Coloring the GBC should be done by changing the theme json file. I'd recommend removing most color changes from the .4st file so the GBC can use the theme.

NOTE: The .4st colors will override the GBC theme colors.

The theme file allows us to use 'material design' color names.

See:

<https://material.io/guidelines/style/color.html#color-color-palette>



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# Colors ( Colours )

All the colours of the rainbow

The theme file is a JSON file that allows you to use 'Material Design' color names. After changing this file you must rebuild the GBC using the 'grunt' command.

```
"gbc-header-color"           : "$mt-indigo-200",
"gbc-primary-medium-color"    : "$mt-indigo-900",

"gbc-primary-background-color" : "$mt-indigo-100",
"gbc-primary-color"           : "$mt-indigo-600",
"gbc-primary-light-color"     : "$mt-indigo-900",

"gbc-secondary-background-color" : "$mt-indigo-50",
"gbc-secondary-text-color"      : "$mt-white",
"gbc-secondary-color"          : "$mt-white",

"gbc-field-disabled-background-color" : "$mt-grey-100",
"gbc-field-disabled-background"      : "rgba(0,0,0,0.44)",
"gbc-field-background-color"         : "$mt-white",
"gbc-disabled-color"                 : "$mt-grey-300",

"gbc-separator-color"           : "$mt-white",
"gbc-message-color"             : "$mt-grey-800",
"gbc-error-color"               : "$mt-red-800",
```



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# Colors ( Colours )

All the colours of the rainbow

Style – Color

Deep Purple	
500	#673AB7
50	#EDE7F6
100	#D1C4E9
200	#B39DDB
300	#9575CD
400	#7E57C2
500	#673AB7
600	#5E35B1
700	#512DA8
800	#4527A0
900	#311B92

Indigo	
500	#3F51B5
50	#E8EAF6
100	#C5CAE9
200	#9FA8DA
300	#7986CB
400	#5C6BC0
500	#3F51B5
600	#3949AB
700	#303F9F
800	#283593
900	#1A237E

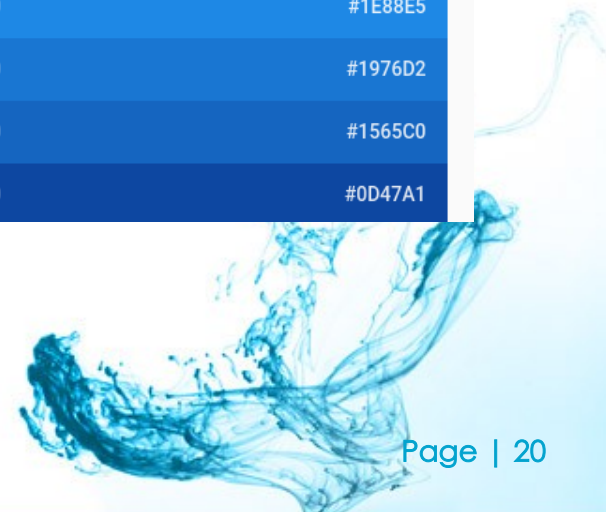
Blue	
500	#2196F3
50	#E3F2FD
100	#BBDEFB
200	#90CAF9
300	#64B5F6
400	#42A5F5
500	#2196F3
600	#1E88E5
700	#1976D2
800	#1565C0
900	#0D47A1



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# More Than Colors

All the colours of the rainbow and more

You can override the colors and styles for any element in the GBC by editing or creating a scss file for that element. For example, the default *MyMainContainerWidget.scss* This is controlling the style of the 'header' object.

```
> header {  
  padding: 1em;  
  background-color: $gbc-primary-light-color;  
  color: $gbc-primary-color;  
  text-align: center;  
}
```

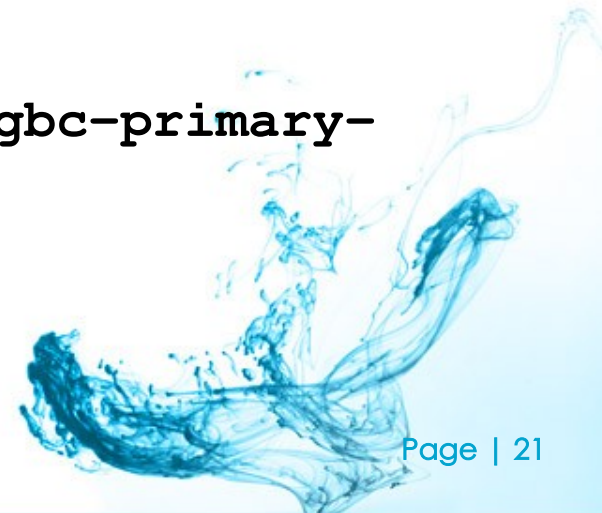
➤ **NOTE:** It's using the theme color name of `$gbc-primary-light-color`



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# Working with SaSS

## Getting Sassy

When you create your .scss files you must add them to the customization.scss file so that included in the build.

```
@import "MyMainContainerWidget";  
@import "MyHeaderBarWidget";  
@import "main";
```

Here I've added 'MyHeaderBarWidget' and 'main' to the customization.scss file.

- NOTE: Any changes to these files require you to rebuild the GBC using the 'grunt' command.



# Headers

Getting a head of ourselves

One of the most common customizations is to add a header and footer that includes your company / application logo.

The GBC Manual contains instructions on doing this and the example 'default' custom theme includes a basic header and footer.

To add a header we would typically use 3 files:

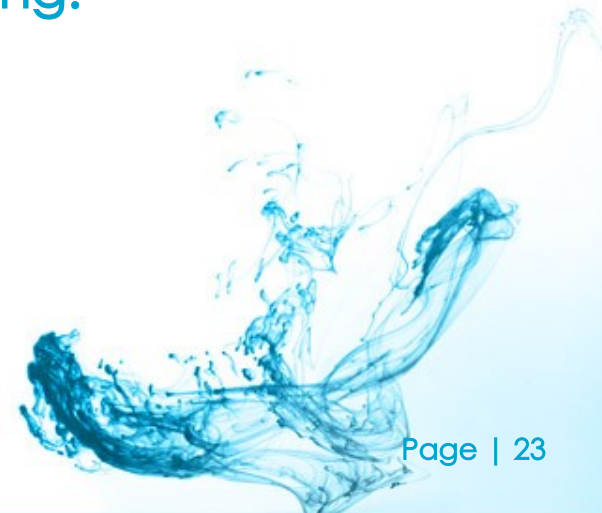
- A .js file for the code required to control the header content.
- A .tpl.html for the basic layout of the heading.
- A .scss for the styles for our heading.



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# Headers

## Heading Layout

My Code adds the Application Text into the header as well as the form title: `js/MyHeadingBarWidget.tpl.html`:

```
<div>
  <table width="100%">
    <tr>
      <td id="logocell" width="20%" align="left">
        
      </td>
      <td width="60%">
        <h1 class="MyHeaderBarWidget-banner"></h1>
        <b id="MyWinTitle" class="MyHeaderBarWidget-title"></b>
      </td>
      <td width="20%" align="right">
        <b id="dyntext">none</b>
        <span style="display: none">Apps: <b class="MyHeaderBarWidget-counter"></b></span>
      </td>
    </tr>
  </table>
</div>
```

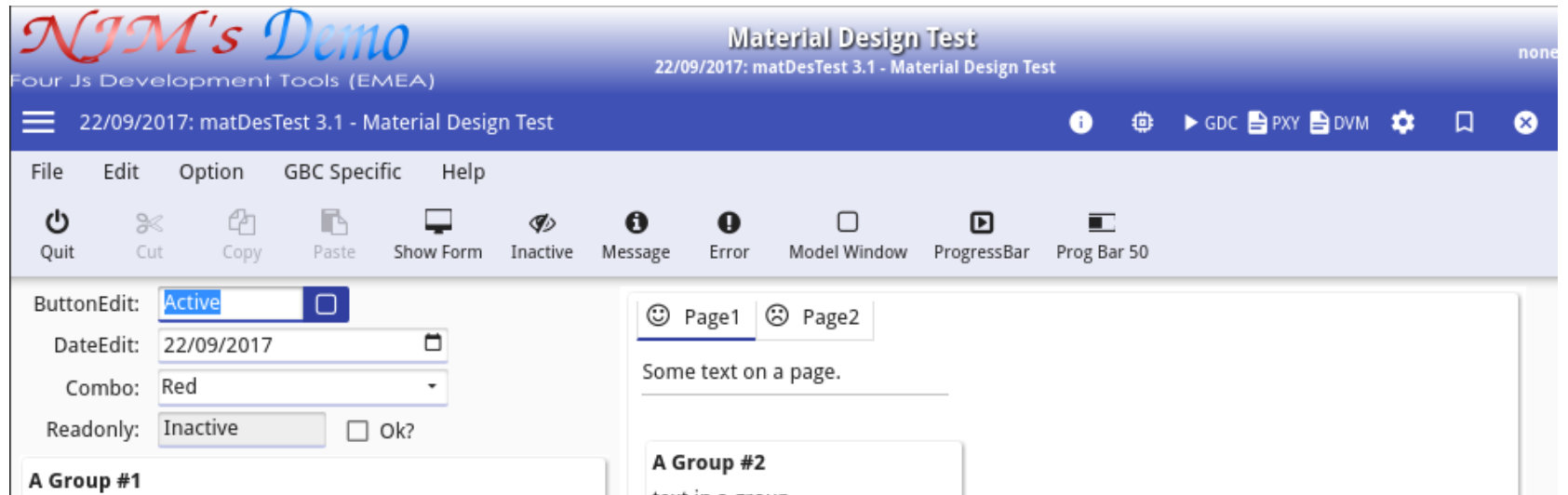
**'MyHeaderBarWidget-banner'** will be the Application Text

**'MyHeaderBarWidget-title'** will be the Window Text



# Headers

Getting a head of ourselves



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# Headers

## js/MyHeadingBarWidget.js

```
cls.MyHeaderBarWidget = context.oo.Class(cls.WidgetBase, function($super) {  
  return {  
    __name: "MyHeaderBarWidget",  
    _model: null,  
    _appsCount: null,  
  
    constructor: function() {  
      $super.constructor.call(this);  
      this._appsCount = 0;  
      this._model = new cls.ModelHelper(this);  
      this._model.addNewApplicationListener(this.onNewApplication.bind(this));  
      this._model.addCloseApplicationListener(this.onCloseApplication.bind(this));  
      this._model.addCurrentWindowChangeListener(this.onCurrentWindowChanged.bind(this));  
      elb = this.getElement().querySelector(".MyHeaderBarWidget-banner");  
    },  
  
    onNewApplication: function(application) {  
  
    },  
  
    onCloseApplication: function(application) {  
  
    },  
  
    onCurrentWindowChanged: function(windowNode) {  
      var elt = this.getElement().querySelector(".MyHeaderBarWidget-title");  
      // Set the banner text to the value set by ui.interface.setText()  
      elb.textContent = windowNode.getAncestor("UserInterface").attribute('text');  
      // Set the header sub title to the window text.  
      if (windowNode) {  
        elt.textContent = windowNode.attribute('text');  
      } else {  
        elt.textContent = "<NONE>";  
      }  
    }  
  }  
});
```





# Headers

## Heading Styles

### sass/MyHeadingBarWidget.scss

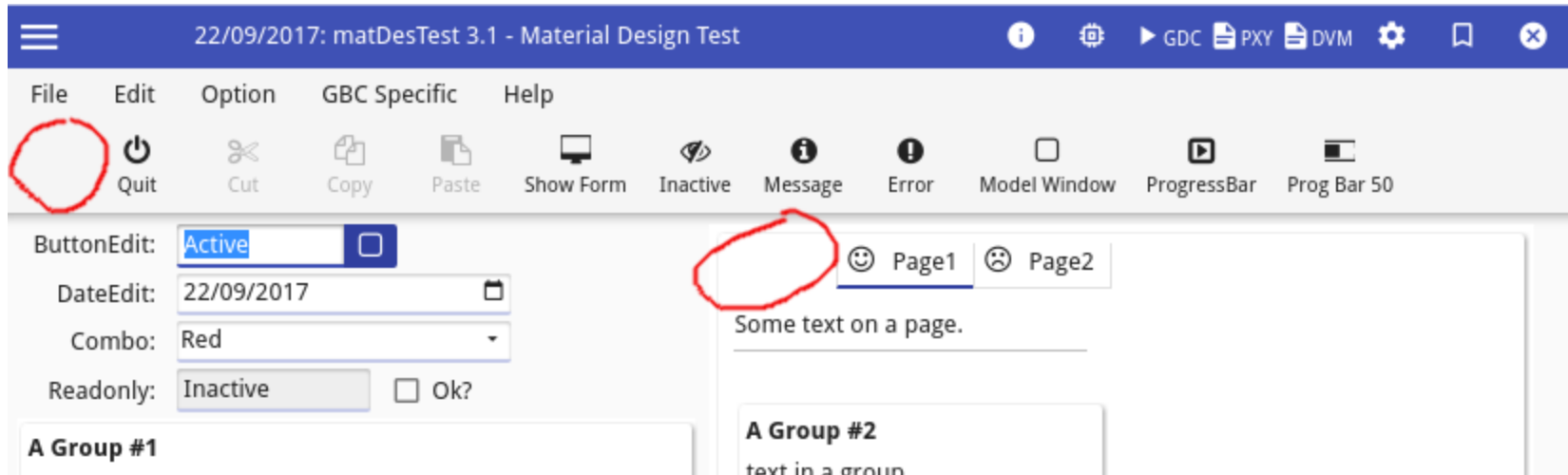
```
.gbc_MyHeaderBarWidget {  
  background: linear-gradient($gbc-field-background-color, $gbc-primary-medium-color);  
  color: $gbc-secondary-text-color;  
  
  h1 {  
    text-align: center;  
    font-size: 1.2em;  
    margin: 0px 5px 0px 0px;  
    text-shadow: 1px 1px 2px black;  
  }  
  
  b {  
    font-size: 0.8em;  
  }  
}  
  
.MyHeaderBarWidget-title {  
  text-align: center;  
}  
  
.gbc_MyMainContainerWidget > header {  
  text-align: center;  
}
```



# More Customizations

Tidy up!

Here I want to remove some unwanted space that's left for next/previous arrows.



I simple add this style to my main.scss file

```
.vanished {  
  display: none;  
}
```



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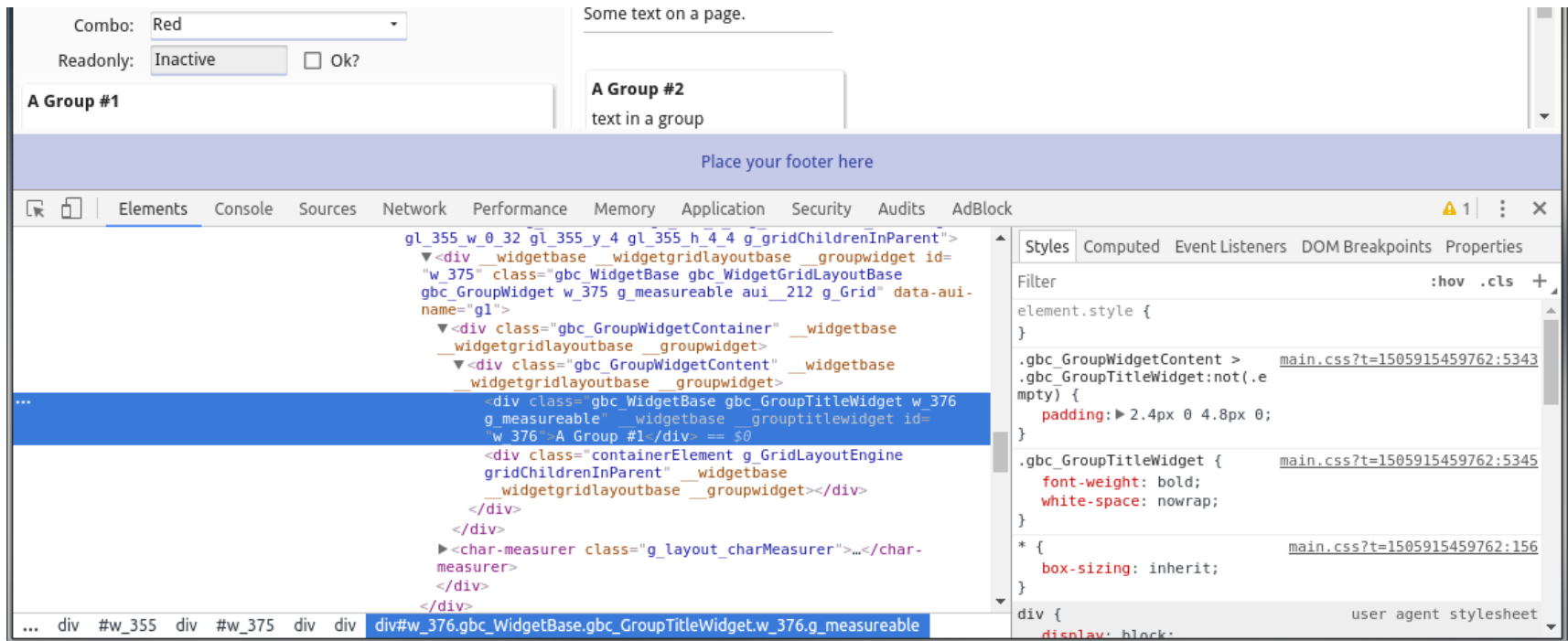
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# Customization – Group Title

## Group Titles

First we need to identify the style class names that have been used by the GBC for the GroupBox object. You use the 'inspect element' feature in Chrome.



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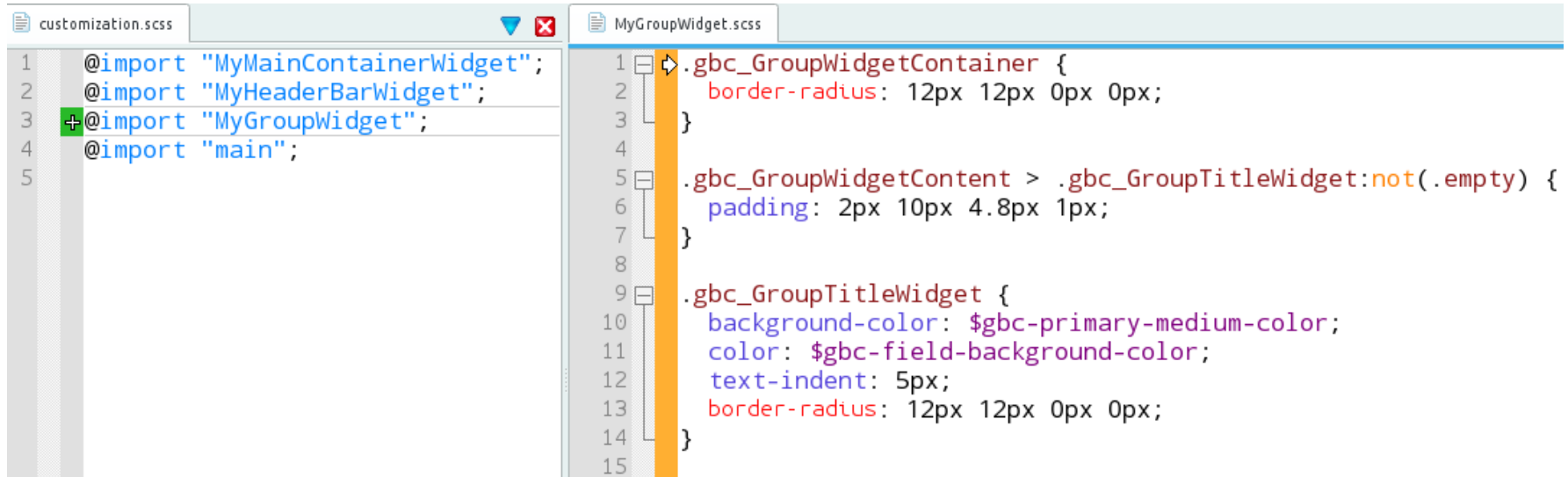
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# Customization – Group Title

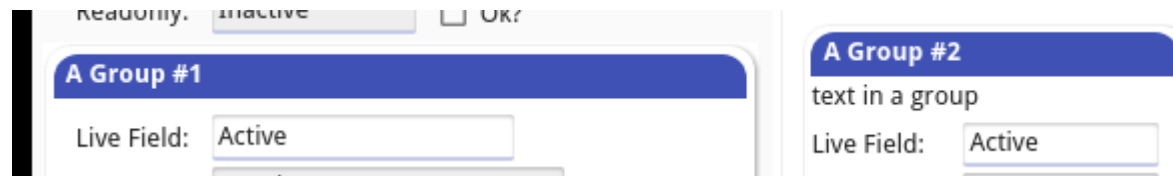
## Group Titles

To change group titles we create a new .scss file and add it to the customization.scss file.



```
1 @import "MyMainContainerWidget";
2 @import "MyHeaderBarWidget";
3 +@import "MyGroupWidget";
4 @import "main";
5
1 .gbc_GroupWidgetContainer {
2   border-radius: 12px 12px 0px 0px;
3 }
4
5 .gbc_GroupWidgetContent > .gbc_GroupTitleWidget:not(.empty) {
6   padding: 2px 10px 4.8px 1px;
7 }
8
9 .gbc_GroupTitleWidget {
10  background-color: $gbc-primary-medium-color;
11  color: $gbc-field-background-color;
12  text-indent: 5px;
13  border-radius: 12px 12px 0px 0px;
14 }
15
```

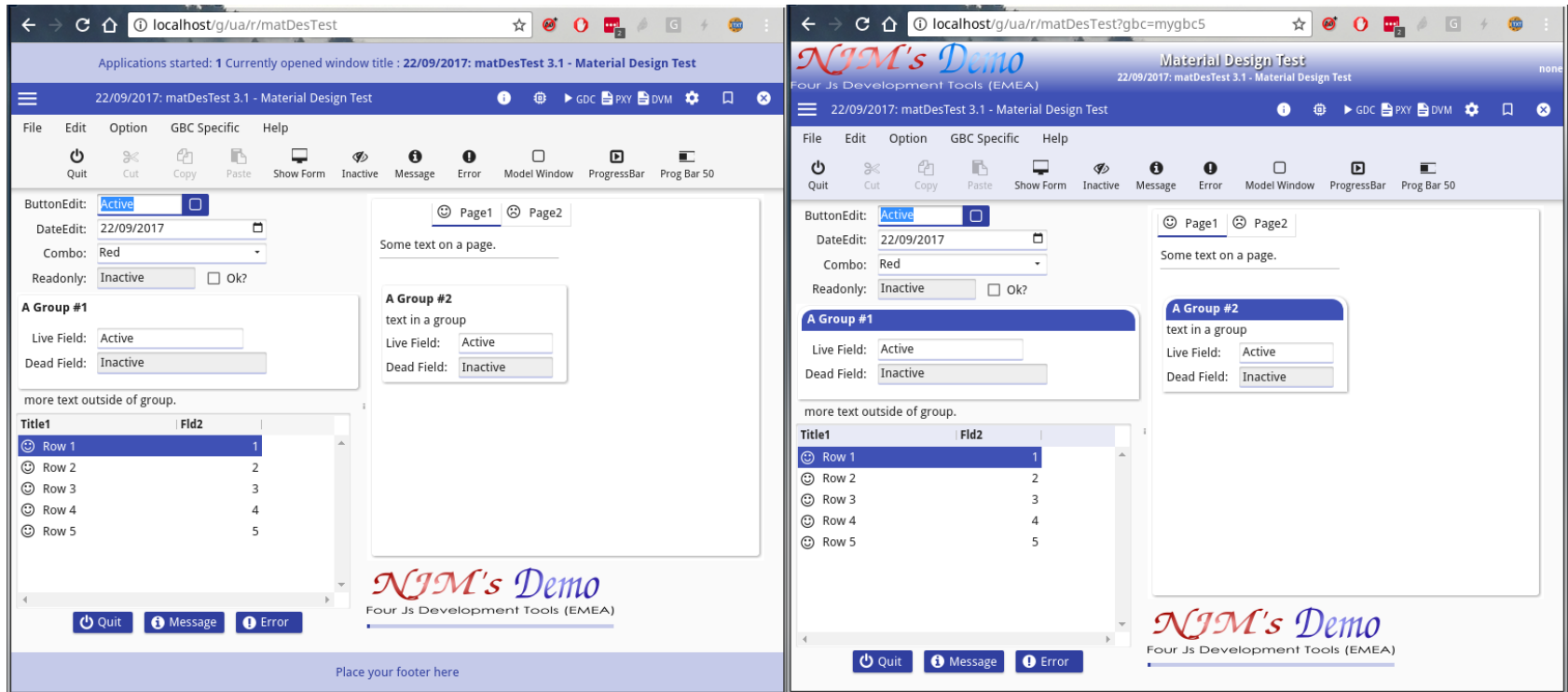
Then we can 'build' the GBC and test our changes.



# Customizations

Our goal

Before / After our changes



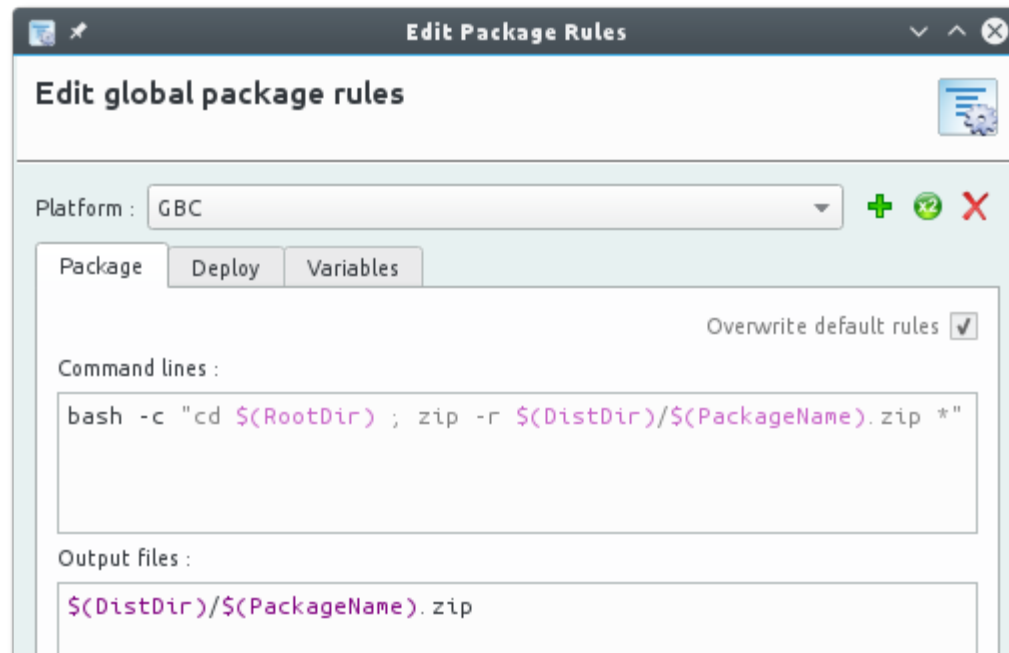
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# Genero Studio

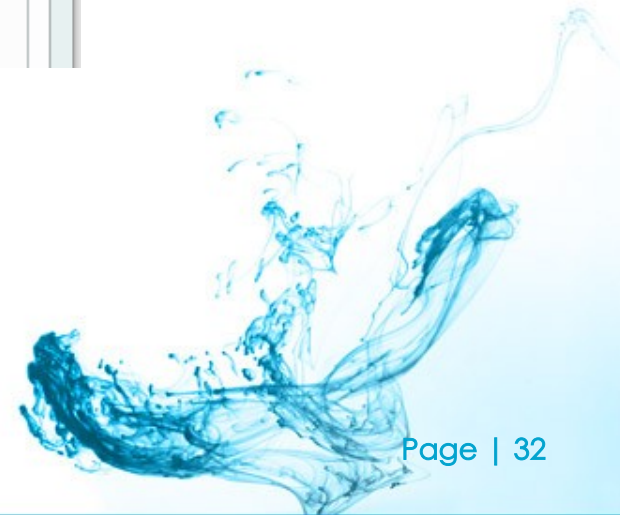
## Custom Package rules



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# Genero Studio

## Custom Package rules

The screenshot displays the Genero Studio 3.10.06 interface. The main window shows the file 'MyMainContainerWidget.tpl.html' with the following content:

```
1 <!--
2 FOURJS_START_COPYRIGHT(D,2016)
3 Property of Four Js*
4 (c) Copyright Four Js 2016, 20
5 * Trademark of Four Js Develop
6 in the United States and els
7
8 This file can be modified by 1
9 product manual.
10 FOURJS_END_COPYRIGHT
11 -->
12 <div>
13 <header>
14 </header>
15 <!-- GBC will be rendered in
16 <div class="containerElement"
17 </div>
18
```

The Properties panel on the right shows the following settings:

Name	Value
<b>Project</b>	
Description	
Exclude from build	<input type="checkbox"/>
<b>Settings</b>	
Platform	GBC
Distribution directory	\$(ProjectDir)/distbin
Root directory	\$(GBCPROJDIR)/dist/customization/mygbc
<b>Package</b>	
ID	
Label	
Version	1
<b>Android</b>	
<b>iOS</b>	

The Output panel at the bottom shows the following log:

```
adding: resources/img/logo_light.png (stored 0%)
adding: resources/img/logo.png (stored 0%)
adding: resources/img/emptytabbed.png (deflated 20%)
adding: resources/img/wheel.gif (deflated 24%)
adding: resources/img/logo-notext.png (stored 0%)
adding: VERSION (stored 0%)
*** Success [17:21:31] ***
```



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# GAS Deployment Portal

## Deploy GBC and GAR files

localhost/g/ws/r/services/DeploymentService/html

Genero Deployment portal

Genero Browser Client(s)

Name	Is default	Undeploying
gbc-njm-current	No AsDefault	↓ Undeploy
gbc-gc-current	No AsDefault	↓ Undeploy
gbc-hivis-current	No AsDefault	↓ Undeploy
gbc-teal-current	No AsDefault	↓ Undeploy
gbc-elite-current	No AsDefault	↓ Undeploy

Deploy a new Genero Browser Client

Select GBC zip file to be uploaded

Choose file

No file chosen

↑ Deploy

Genero Archive(s)

Name	Description	Applications	Services	Operation
njms_demos310_ifx	This archive contains 'njms_demos310_ifx'	<a href="#">njmdemo</a> <a href="#">njmdemo_d</a> <a href="#">njmdemo_e</a> <a href="#">njmdemo_t</a> <a href="#">njmdemodb</a> <a href="#">njmweb</a> <a href="#">njmweb2</a> <a href="#">njmweb2_d</a> <a href="#">njmweb2_e</a> <a href="#">njmweb2_t</a> <a href="#">njmweb_d</a> <a href="#">njmweb_e</a> <a href="#">njmweb_t</a>		Status : Active ✗ Disable   ↓ Undeploy

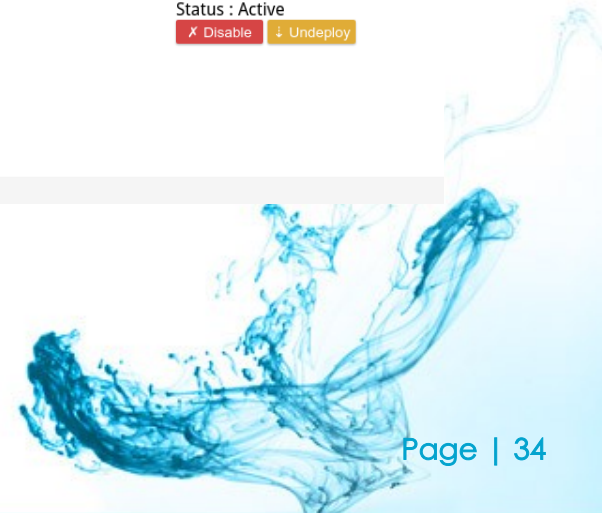
Deploy a new Genero Archive



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# More Customizations

Multiple Themes: Blues

With basic customizations you can achieve a variety of looks.



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# More Customizations

Multiple Themes: Elite

Only the 'theme' file is different from the previous slide.



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# More Customizations

Multiple Themes: Simply Purple

A very simple plain version.

A screenshot of a web browser window titled "NJM's Demos-3.1 Login". The page has a purple header with the text "NJM's Demo" in a stylized font, followed by "Four Js Development Tools (EMEA)". Below this is a "Welcome to NJM's Demos" message. The login form consists of an "Email:" label above a text input field labeled "Email Address", and a "Password:" label above a password input field. At the bottom of the form are four buttons: "Login", "Reset Password?", "New Account", and "About?". The entire form is set against a light purple background within the browser window.

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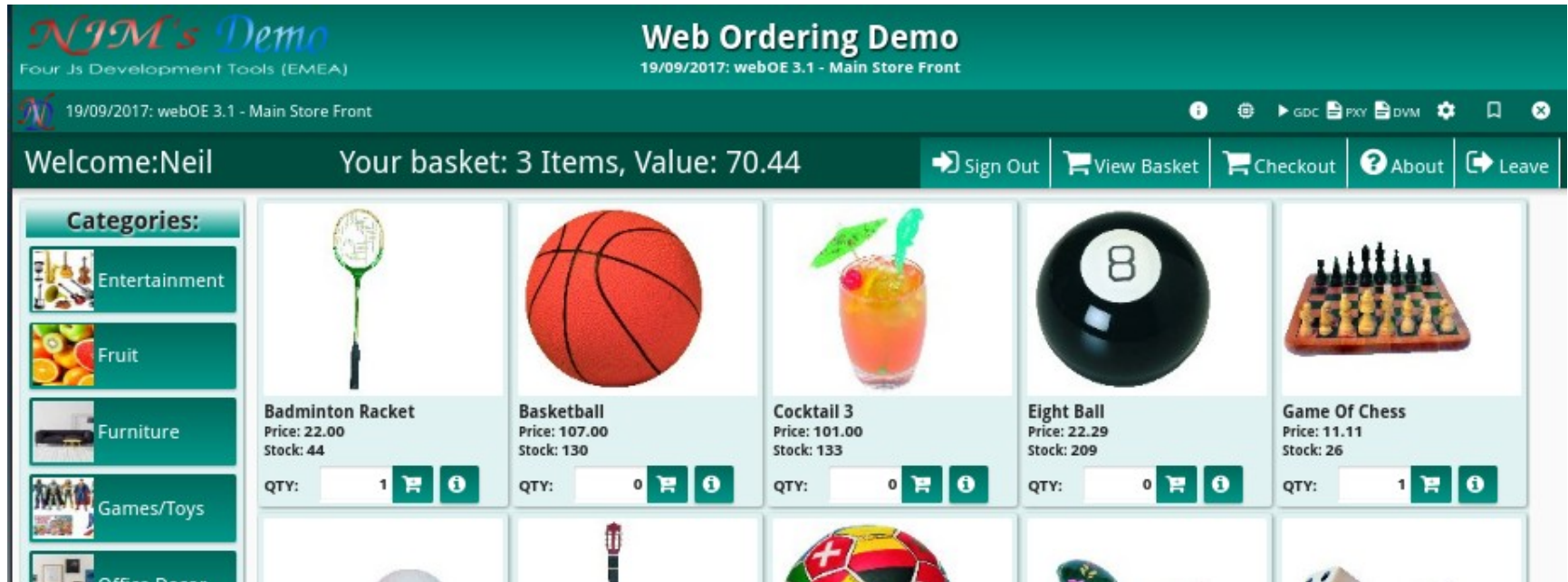
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# More Advanced Customizations

## Custom Toolbar

This screenshot shows a custom 'ToolBar' that included a some fields from the form.

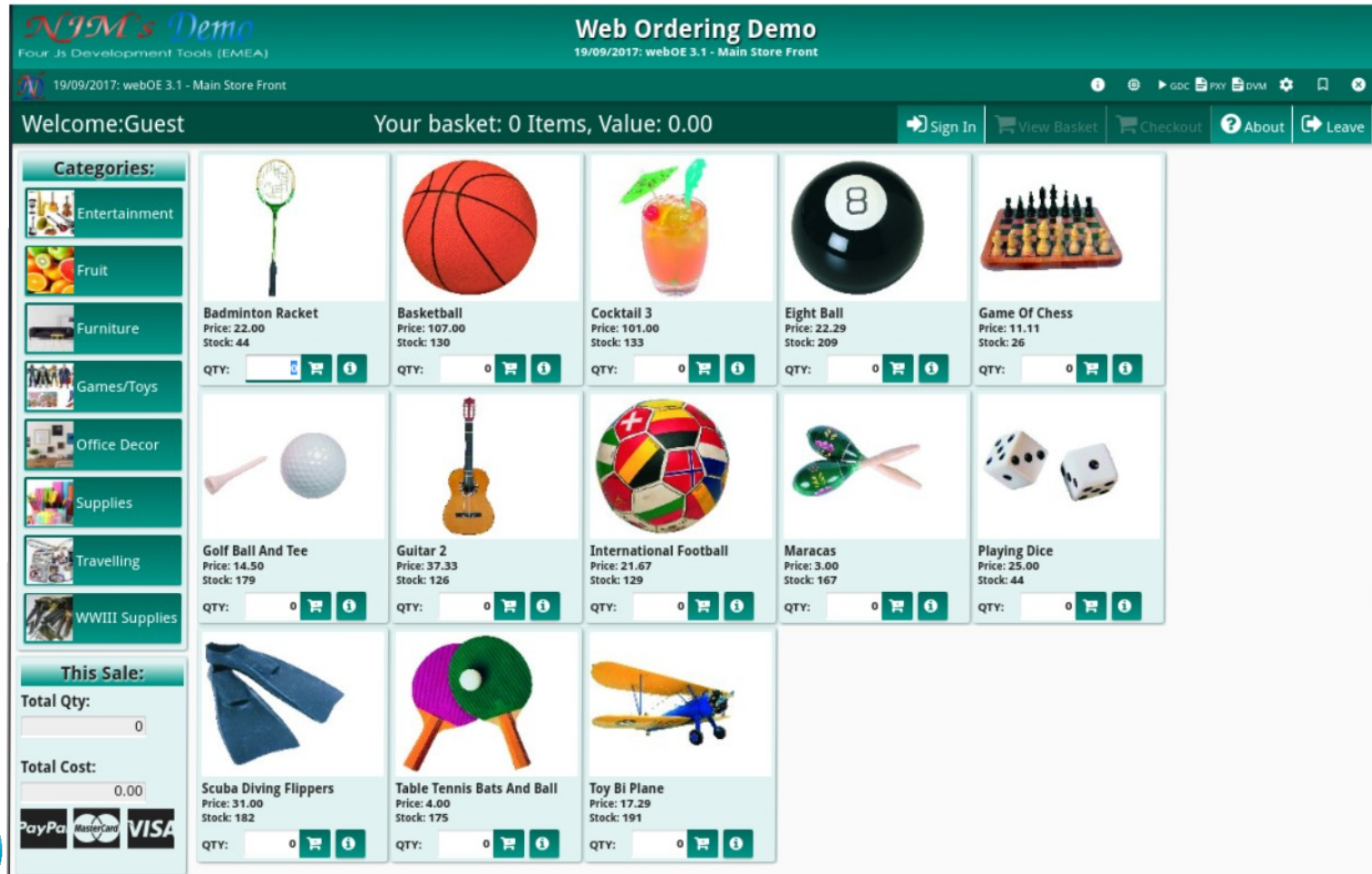




# More Advanced Customizations

Paging products

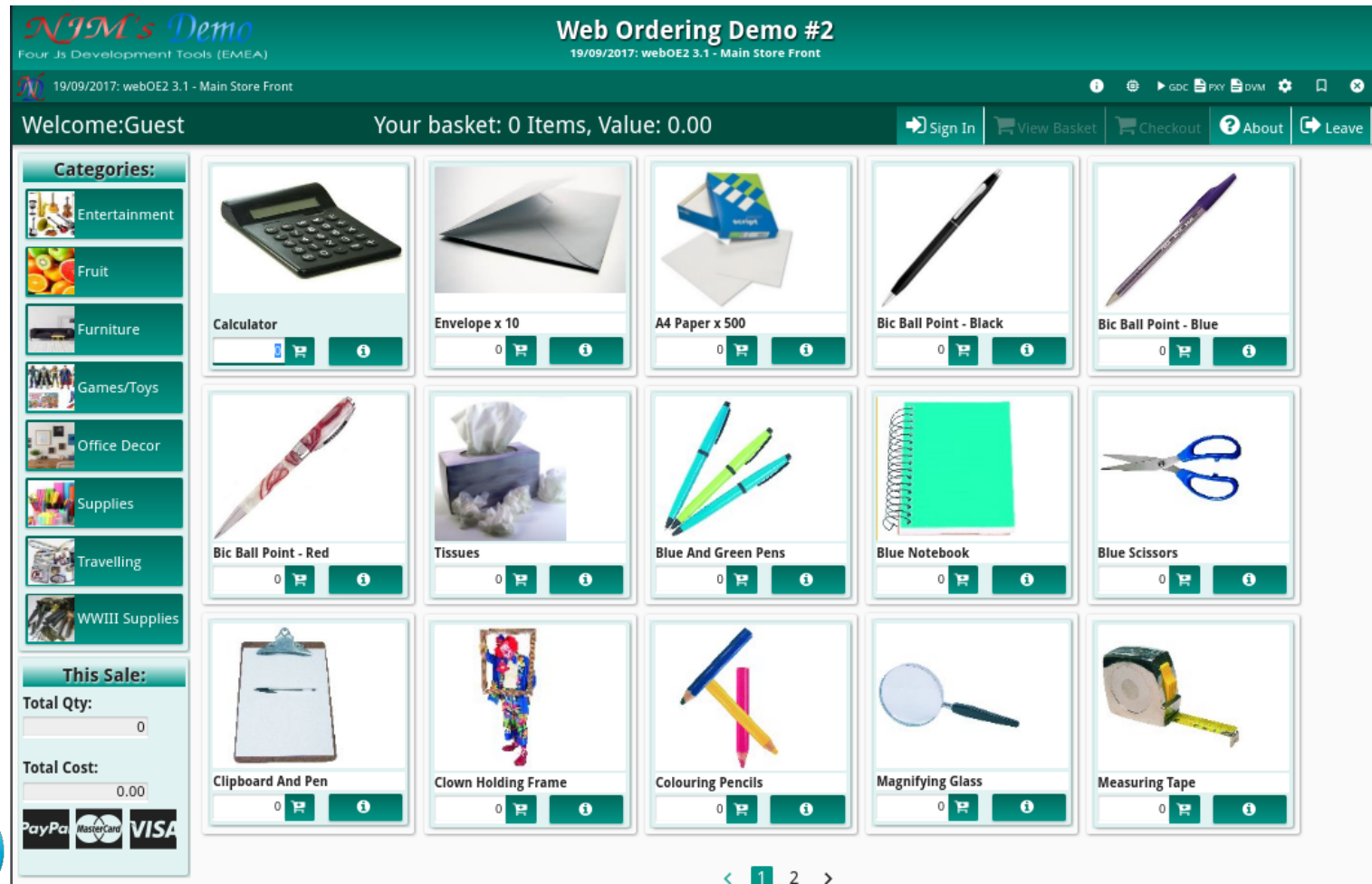
There are couple ways to do a responsive design for listing 'items', this example is using JS and a dynamic form layout.



# More Advanced Customizations

Paging products

This version is using a 'simple' ScrollGrid

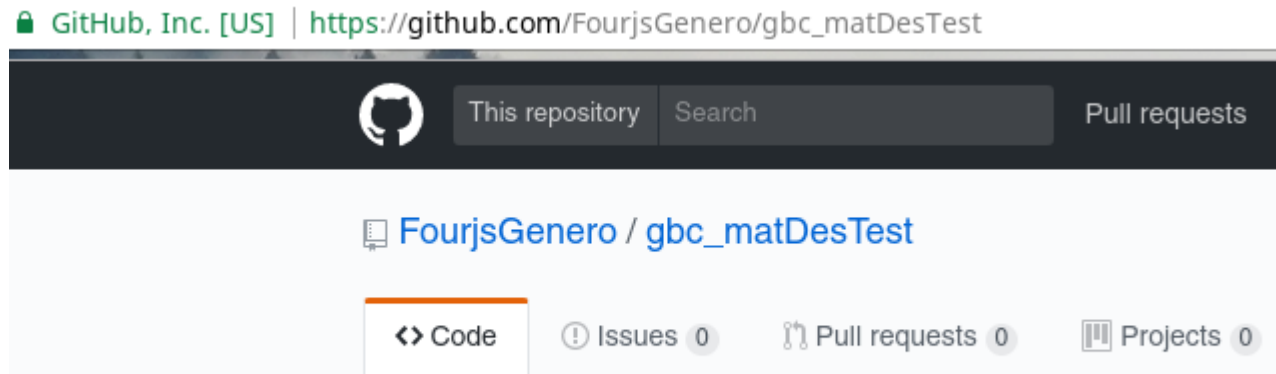


# Try it for yourself

My test project

The matDesTest Genero program, Studio project and my example customized GBC are available from the Four Js github page.

[https://github.com/FourjsGenero/gbc\\_matDesTest](https://github.com/FourjsGenero/gbc_matDesTest)



Simple Genero Application to test custom GBC builds



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