

# 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

**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

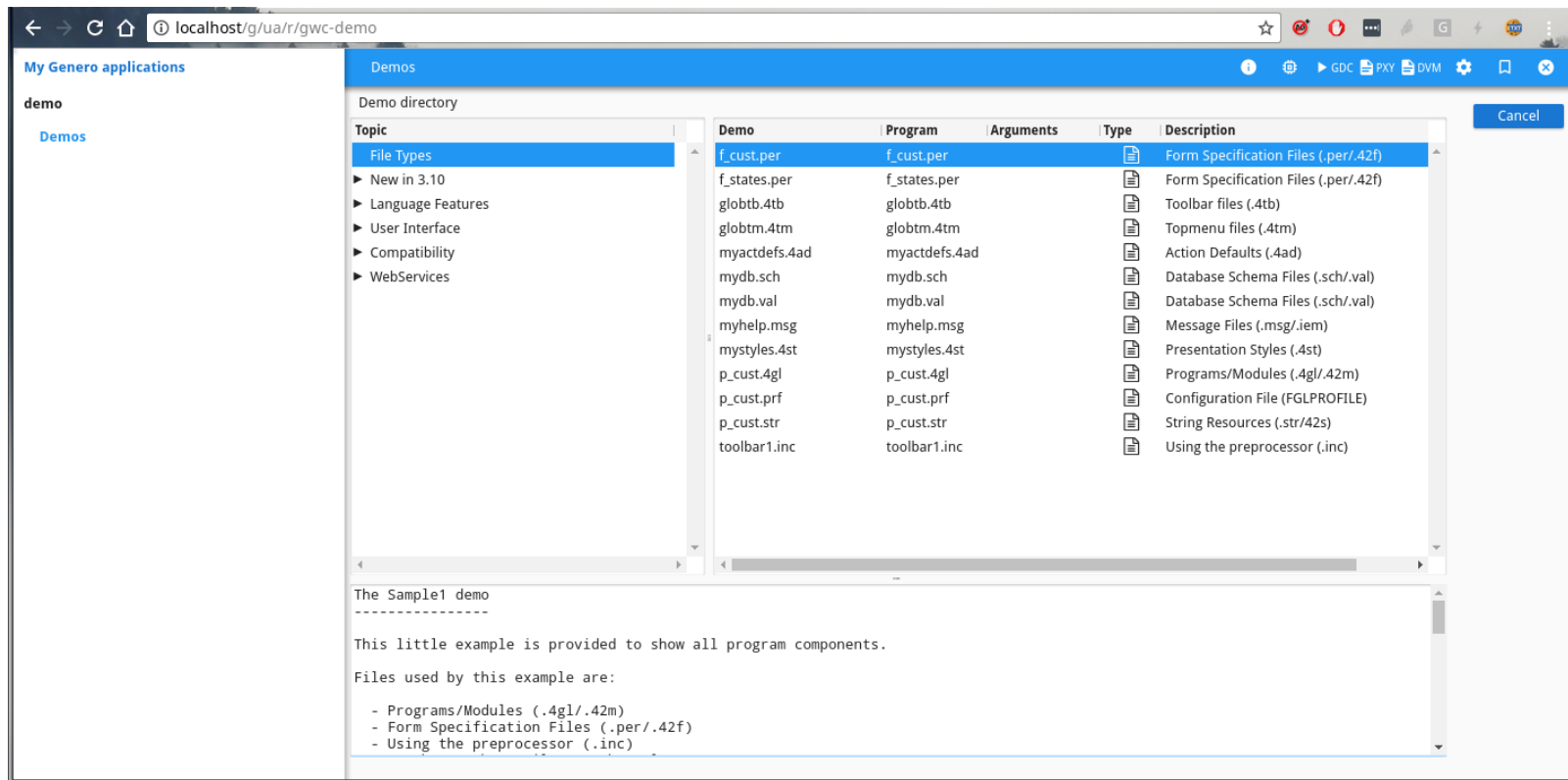
- **Run GBC default with default demos**
- **Setup the GBC dev environment**
- **Run the GBC dev build with default demos**
- **Create custom build folder for the custom GBC files**
- **Setup GeneroStudio to build GBC**
- **A test Application**
- **Colors and Theme**
- **Headers and Footers**
- **Packaging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



# 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.

```
$ sudo yum install git unzip nodejs
$ 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" contains a "demo" section with a "Demos" link. The main content area is titled "Demos" and features a "Demo directory" section with a tree view showing "File Types" and "New in 3.10". Below this is a table listing demo files:

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)

Below the table, a section titled "The Sample1 demo" contains the following text:

-----  
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)

The footer of the application displays "Place your footer here".



# 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 to leave only the files relating to the header. I.e:

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

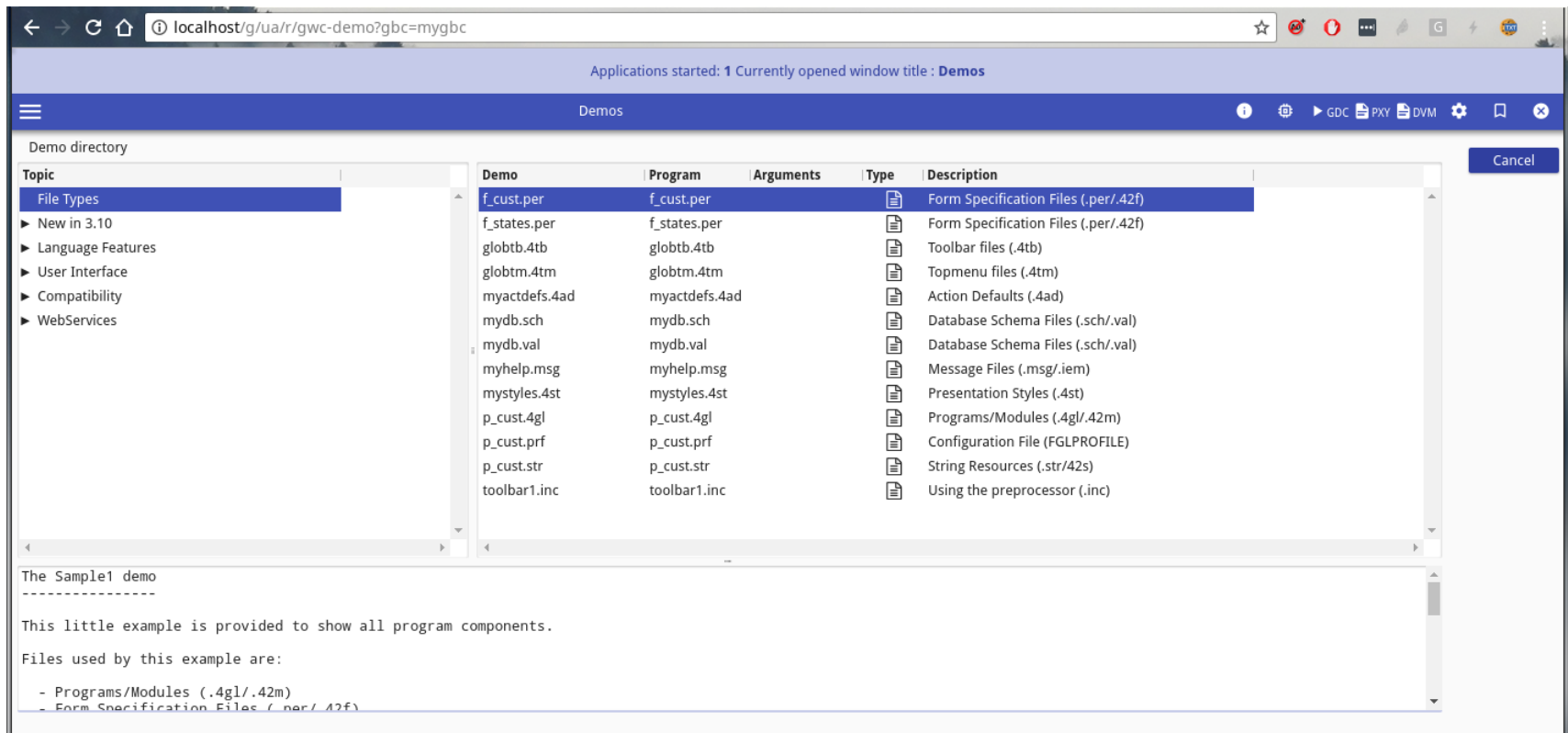


# GBC 'Default' Custom Run

At last, our own colours!

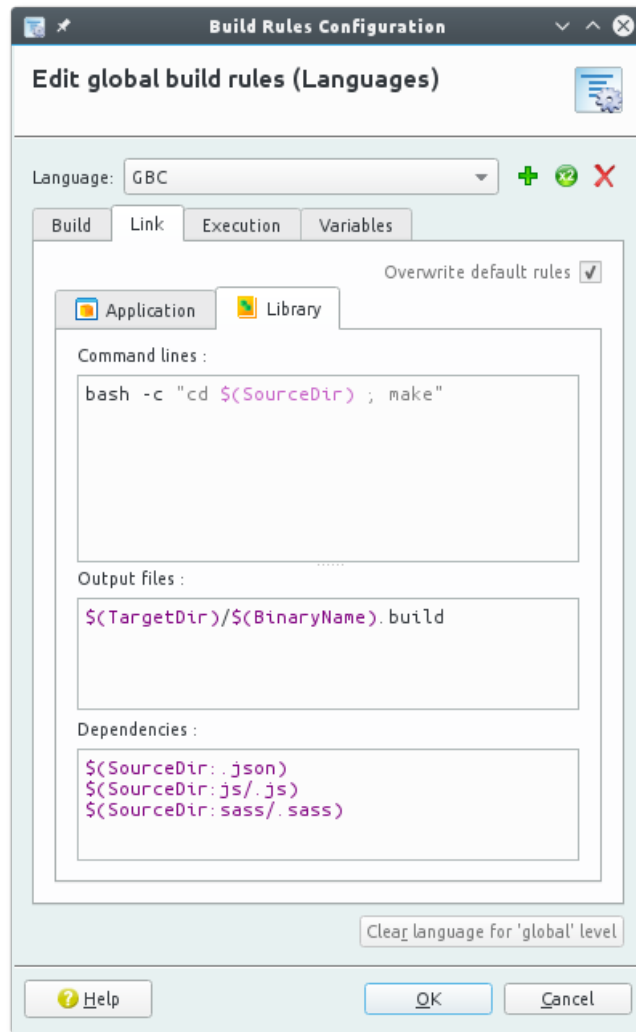
Test the custom GBC:

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



# Genero Studio

## Custom Builds rules



Genero Studio has many useful features that make it worth spending some time to configure so you can also use it to work on and build your custom GBC.



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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 'js' files like 'MyHeaderBarWidget.js', 'MyHeaderBarWidget.tpl.html', and 'MyMainContainerWidget.js'.
- Code Editor:** Displays the 'main.scss' file with SCSS code for a page theme, including a 'body' style, a widget style, a 'header' style, and a 'vanished' style.
- Properties Panel:** Shows project properties such as 'Source directory' and 'Target directory'.
- Output Panel:** Displays the execution time and progress of various tasks, including 'sass:development' which is 54% complete.

The output console shows the following execution details:

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 console also shows the 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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# 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 change the colors for a 'material design'. See:

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



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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

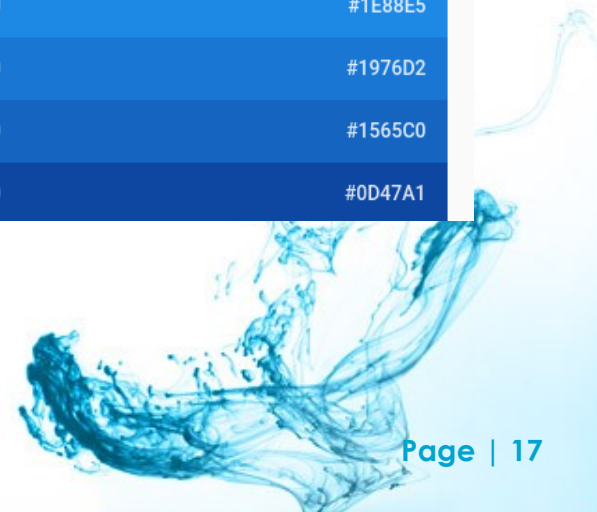
Blue	
500	#2196F3
50	#E3F2FD
100	#BBDEFB
200	#90CAF9
300	#64B5F6
400	#42A5F5
500	#2196F3
600	#1E88E5
700	#1976D2
800	#1565C0
900	#0D47A1



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# Colors ( Colours )

All the colours of the rainbow

The theme file is a JSON file and allows you to use the '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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# More Than Colors

All the colours of the rainbow and more

You can also override the colors and other styles for any element in the GBC by editing or creating a scss file for that element.

For example, look at 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;  
}
```



# 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.



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# Headers

Getting a head of ourselves

Once we are happy with our basic styles, we can work on the heading by adding a title and logo.



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# Headers

Getting a head of ourselves

**My Code adds a 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>
```



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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

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

Closer to our goal

Here there are few more subtle changed to the styles to limit the size, change group titles, remove some unwanted spaces



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# More Customizations

Multiple Themes: Blues

With basic customizations you can achieve a variety of looks.



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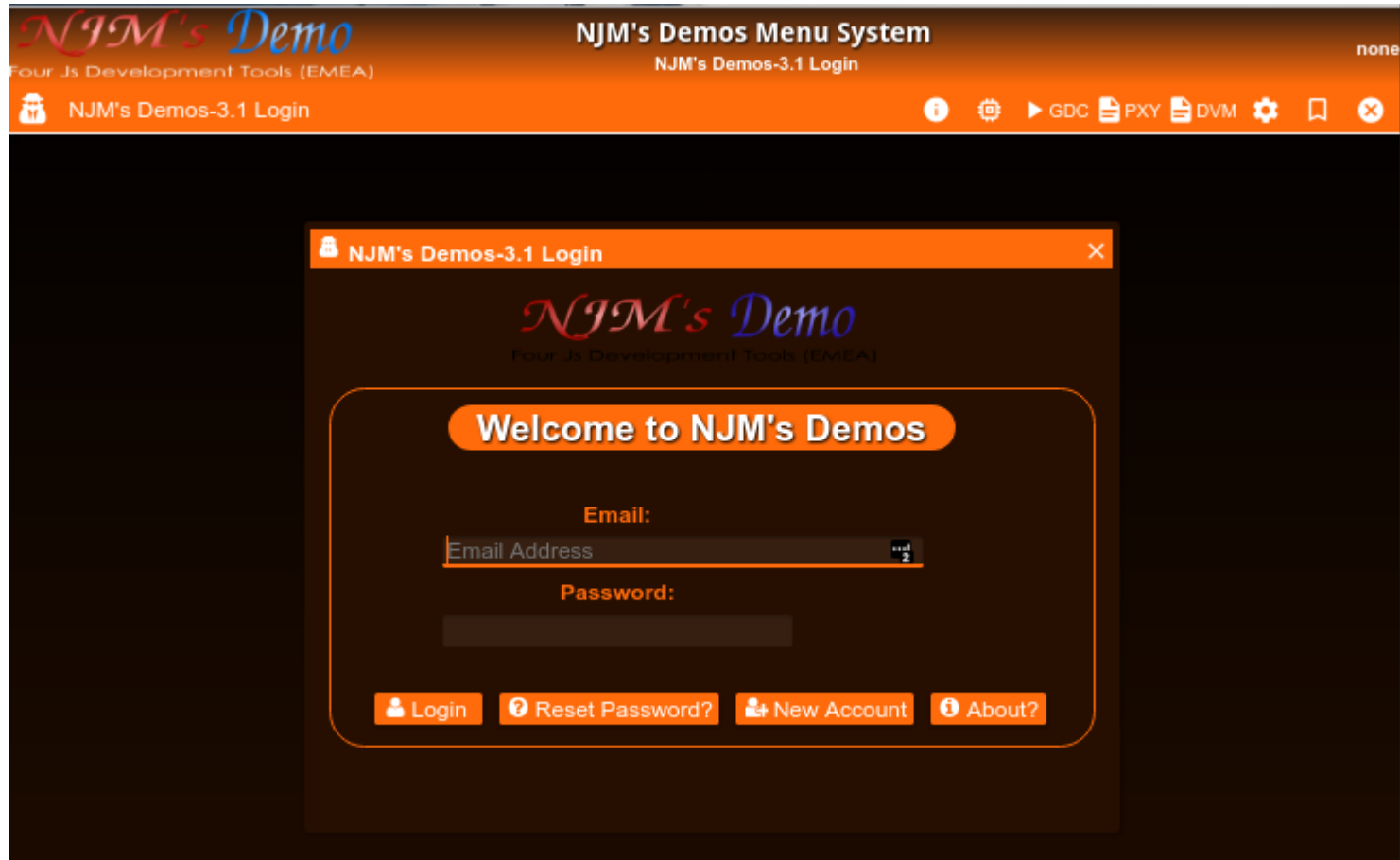
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# More Customizations

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, an "Email Address" input field, a "Password:" label, and a password input field. At the bottom, there are four buttons: "Login", "Reset Password?", "New Account", and "About?". The entire form is enclosed in a white border with a purple shadow.

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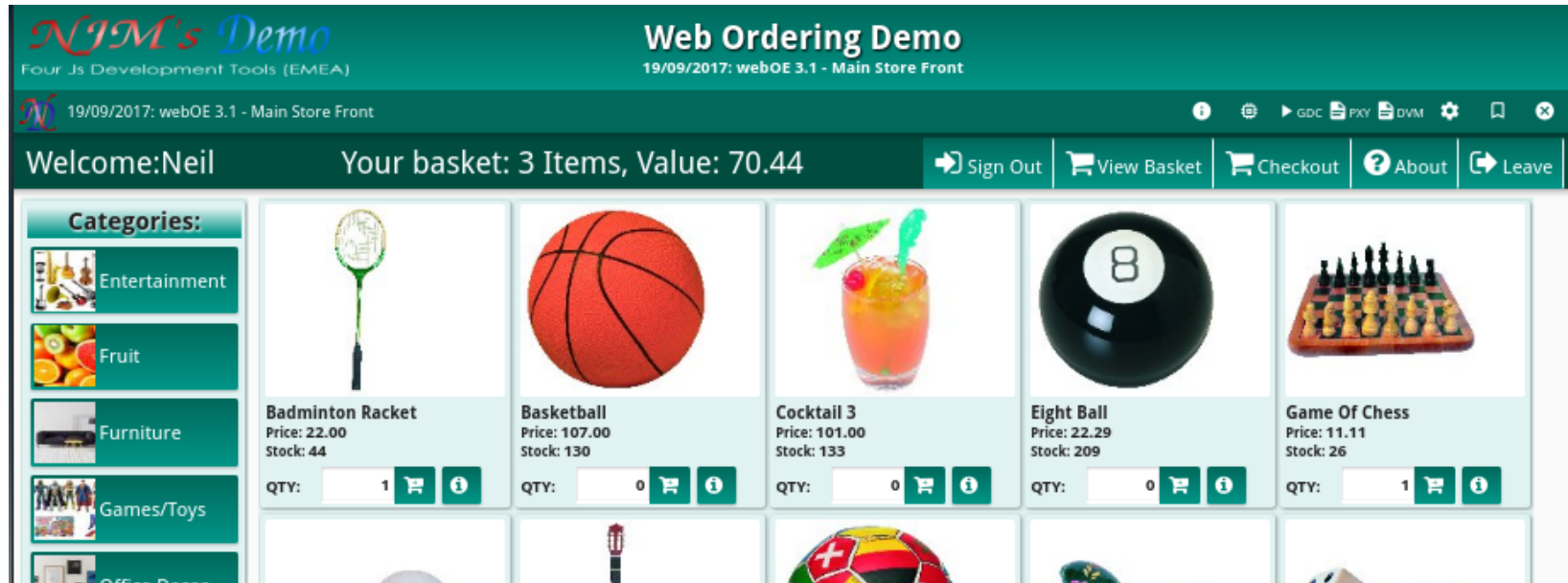
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# More Advanced Customizations

## Custom Toolbar

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



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# More Advanced Customizations

Paging products

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

**NJM's Demo**  
Four Js Development Tools (EMEA)

**Web Ordering Demo**  
19/09/2017: webOE 3.1 - Main Store Front

19/09/2017: webOE 3.1 - Main Store Front

Welcome: Guest Your basket: 0 Items, Value: 0.00 Sign In View Basket Checkout About Leave

**Categories:**

- Entertainment
- Fruit
- Furniture
- Games/Toys
- Office Decor
- Supplies
- Travelling
- WWIII Supplies

**This Sale:**

Total Qty: 0

Total Cost: 0.00

PayPal MasterCard VISA

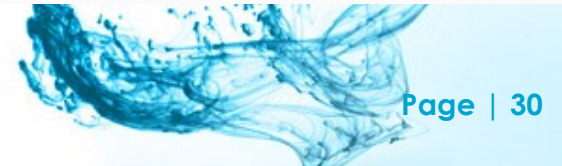
 <b>Badminton Racket</b> Price: 22.00 Stock: 44 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Basketball</b> Price: 107.00 Stock: 130 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Cocktail 3</b> Price: 101.00 Stock: 133 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Eight Ball</b> Price: 22.29 Stock: 209 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Game Of Chess</b> Price: 11.11 Stock: 26 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>
 <b>Golf Ball And Tee</b> Price: 14.50 Stock: 179 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Guitar 2</b> Price: 37.33 Stock: 126 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>International Football</b> Price: 21.67 Stock: 129 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Maracas</b> Price: 3.00 Stock: 167 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Playing Dice</b> Price: 25.00 Stock: 44 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>
 <b>Scuba Diving Flippers</b> Price: 31.00 Stock: 182 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Table Tennis Bats And Ball</b> Price: 4.00 Stock: 175 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Toy Bi Plane</b> Price: 17.29 Stock: 191 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>		



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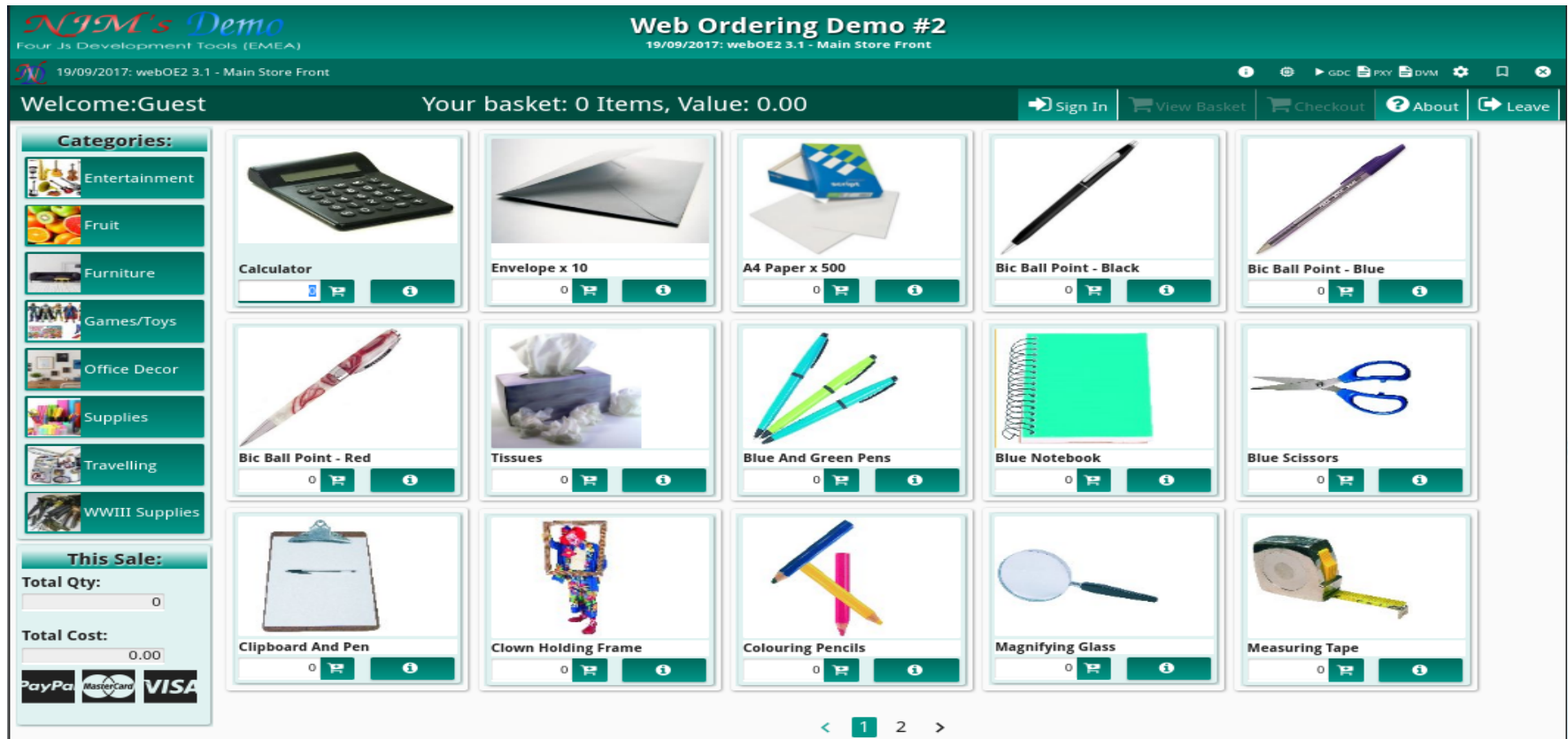
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# More Advanced Customizations

Paging products

This version is using a 'simple' ScrollGrid



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