

# World-Wide Developer Conference

## Genero Browser Client - Customization

Neil J Martin

**JW Marriott Cancùn 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**



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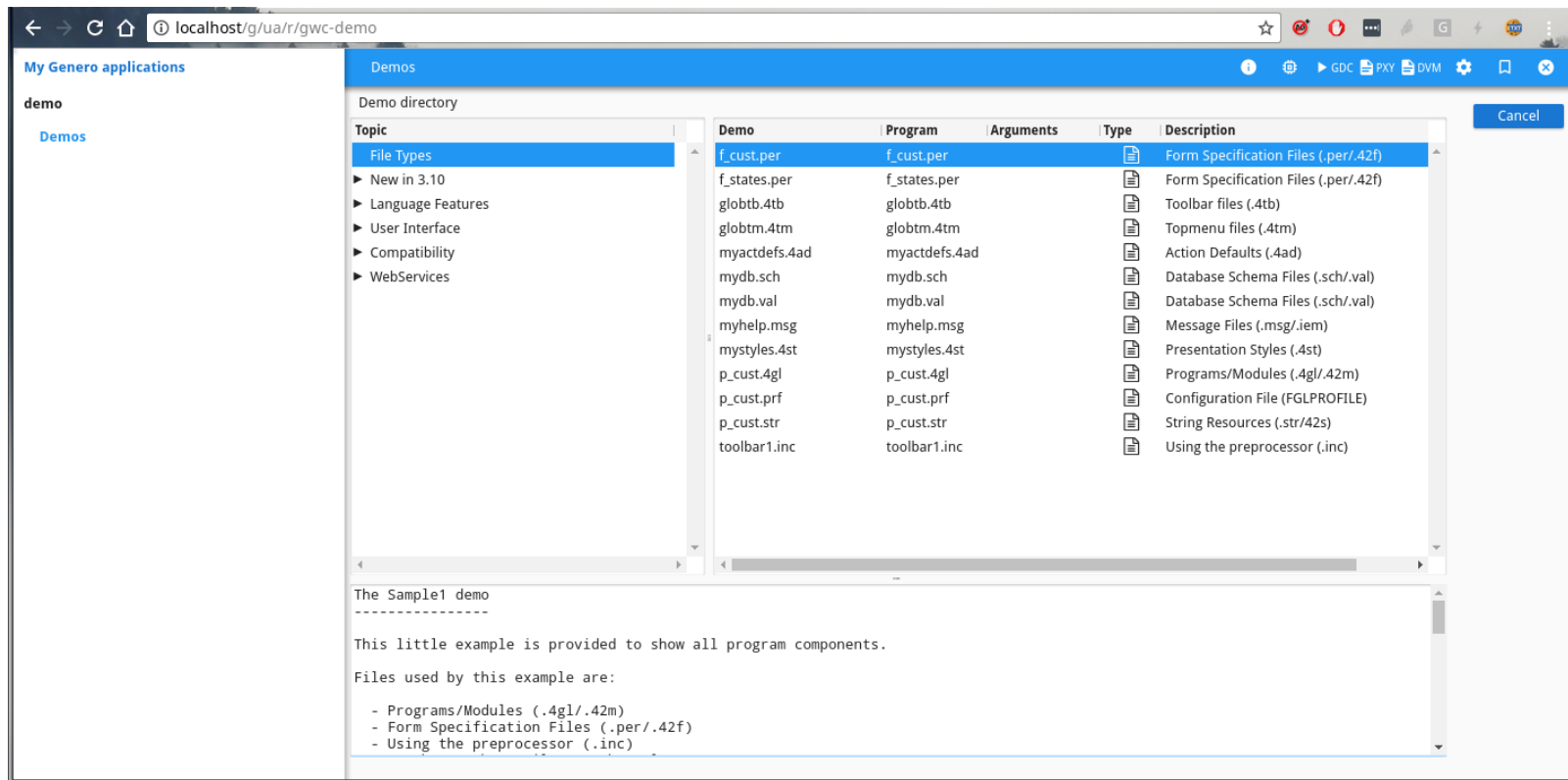
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# GBC Default Test

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.

```
$ 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 various demo files and their descriptions.

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, there is a section titled "The Sample1 demo" with a description: "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 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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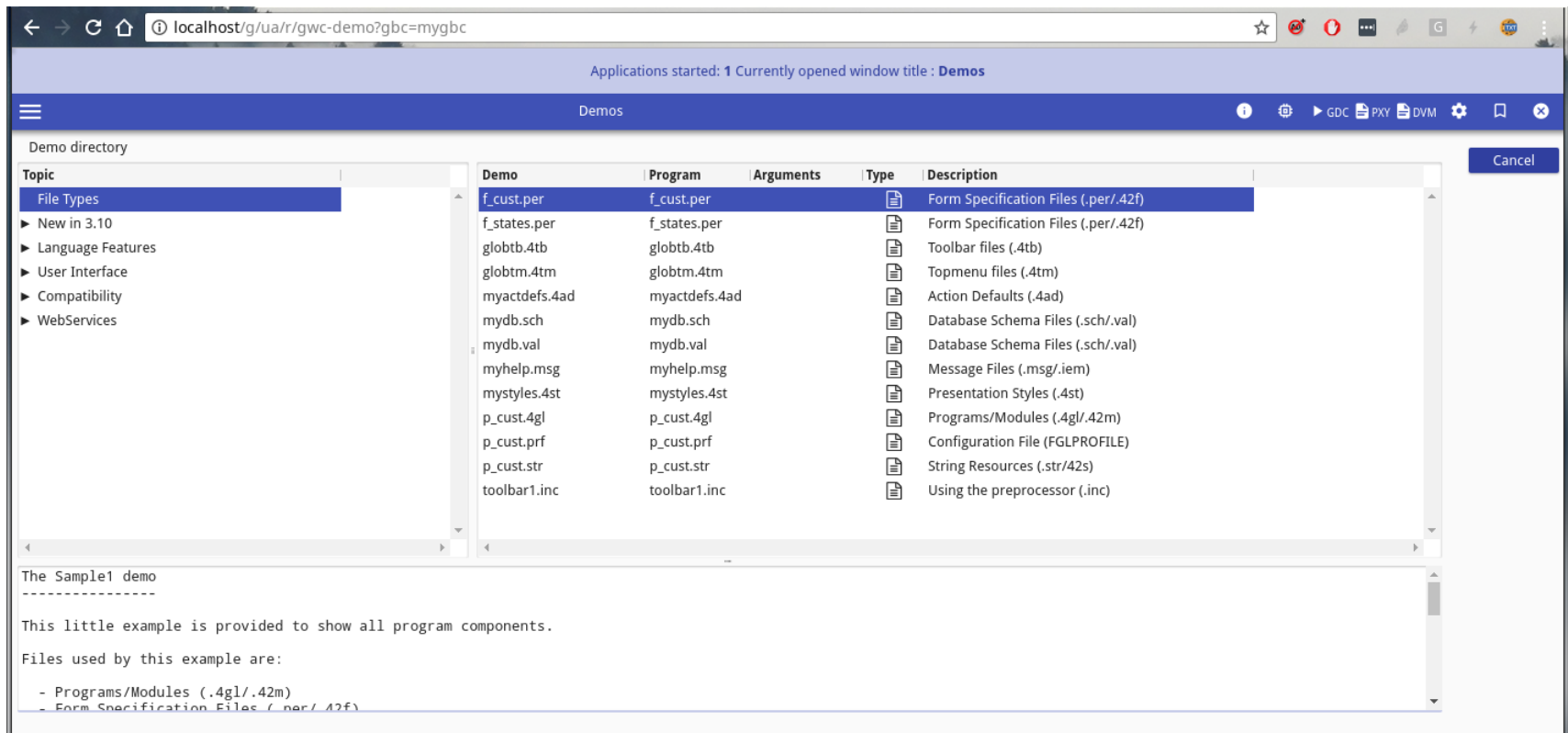


# GBC 'Default' Custom Run

At last, our own colours!

Test the custom GBC:

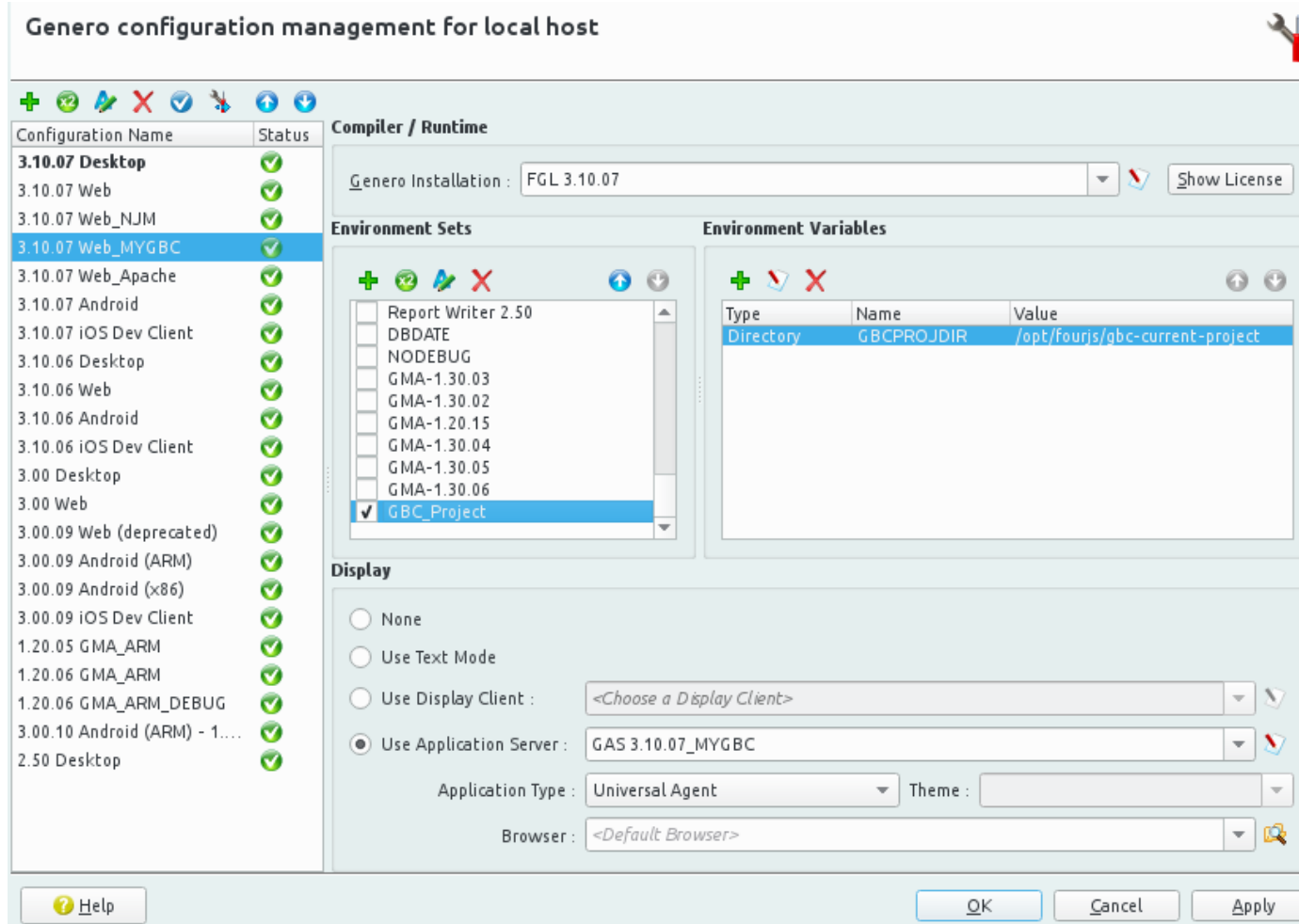
<http://<server>/gas/ua/r/gwc-demo?gbc=mygbc> )



# Genero Studio

Custom Builds rules

Genero Studio can also build your custom GBC.

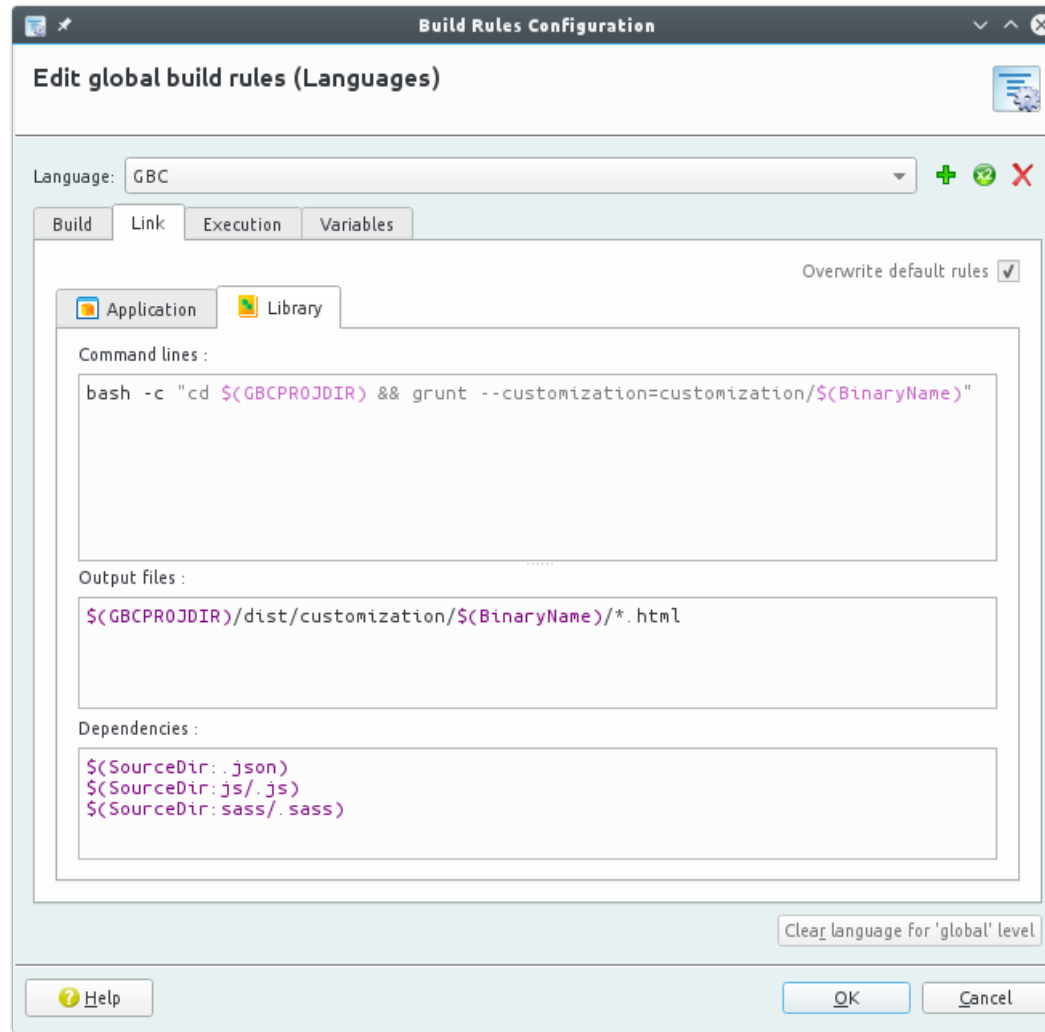


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# Genero Studio

## 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 '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 header style, and a form widget 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' and 'autoprefixer:css'.

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] \*\*\*'.



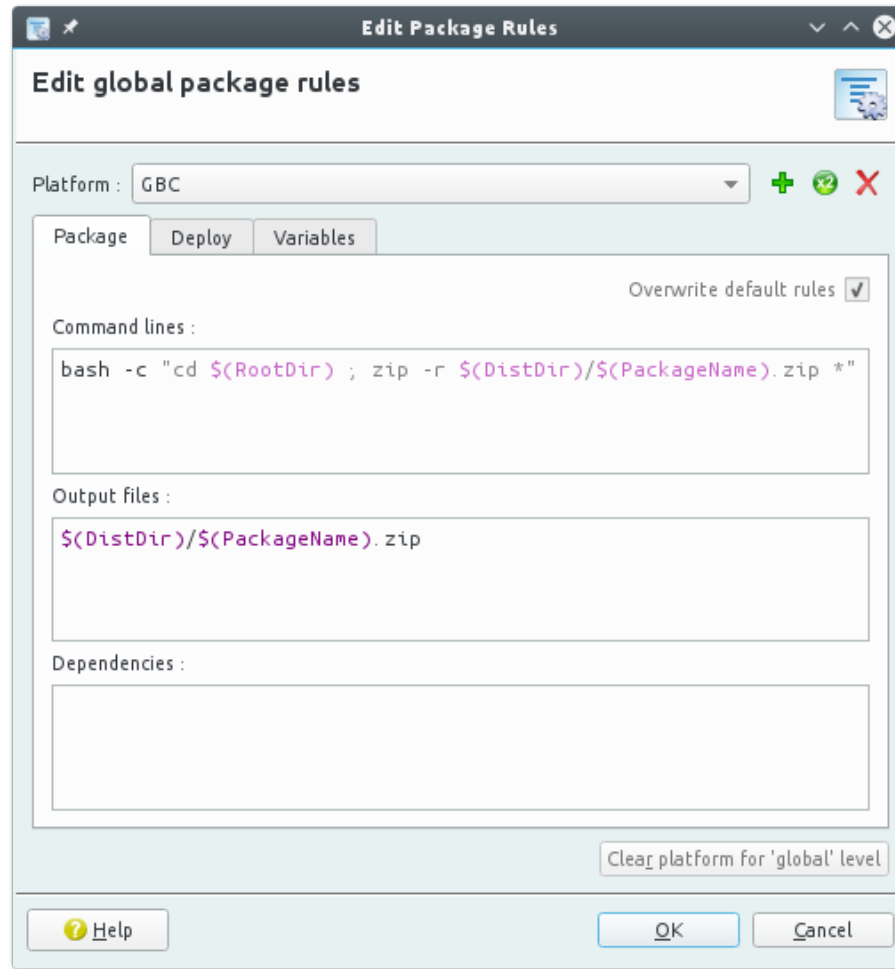
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# Genero Studio

## Custom Package rules



**Edit Package Rules**

Platform : GBC

Package Deploy Variables

Overwrite default rules ☒

Command lines :

```
bash -c "cd ${RootDir} ; zip -r ${DistDir}/${PackageName}.zip *"
```

Output files :

```
${DistDir}/${PackageName}.zip
```

Dependencies :

Clear platform for 'global' level

Help OK Cancel



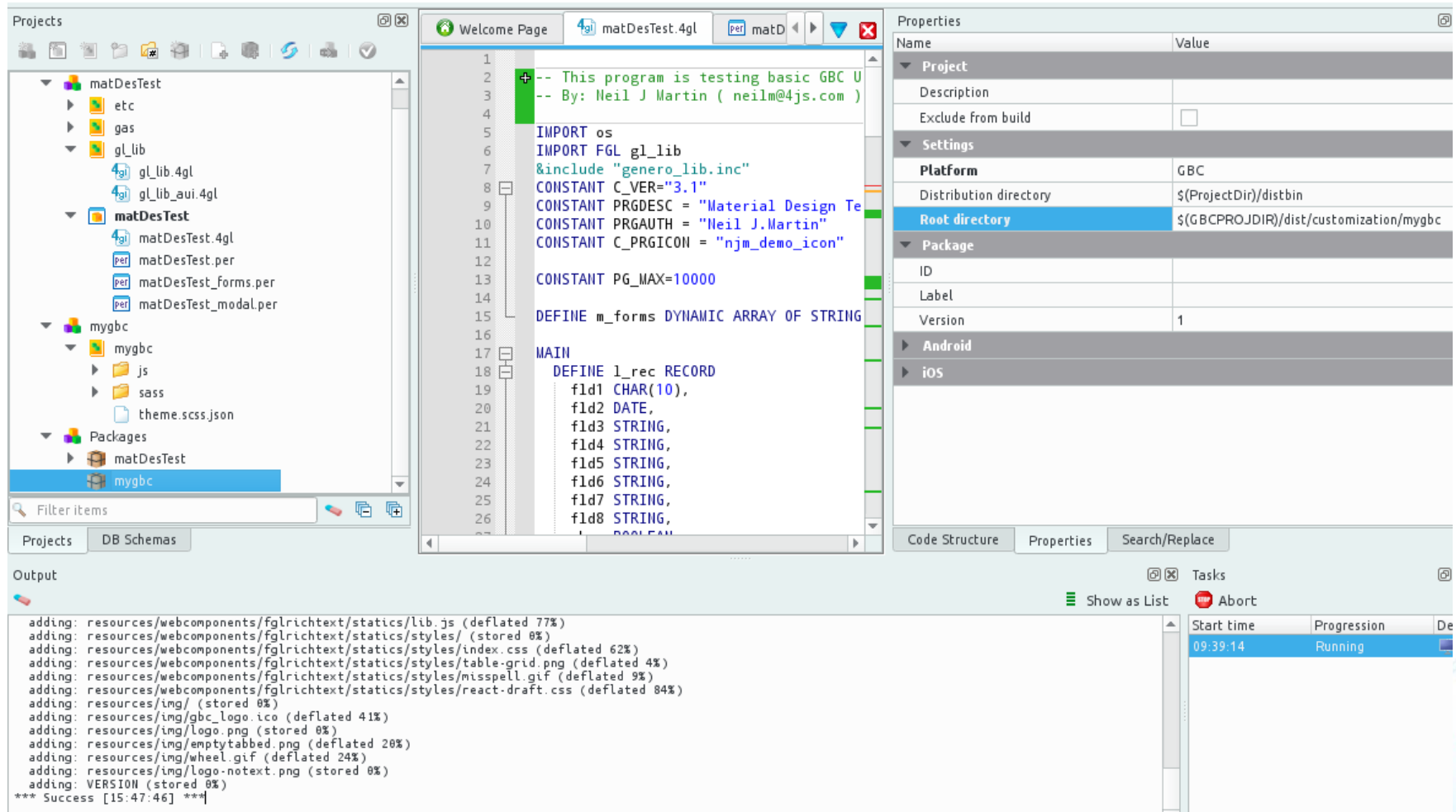
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# Genero Studio

## Custom Package rules



The screenshot displays the Genero Studio IDE interface. On the left, the 'Projects' pane shows a tree view of the 'matDesTest' project, including sub-projects like 'mygbc' and 'Packages'. The central editor shows a GBC program file 'matDesTest.4gl' with the following code:

```
1  +-- This program is testing basic GBC U
2  -- By: Neil J Martin ( neilm@4js.com )
3
4
5  IMPORT os
6  IMPORT FGL gl_lib
7  &include "genero_lib.inc"
8  CONSTANT C_VER="3.1"
9  CONSTANT PRGDESC = "Material Design Te
10 CONSTANT PRGAUTH = "Neil J.Martin"
11 CONSTANT C_PRGICON = "njm_demo_icon"
12
13 CONSTANT PG_MAX=10000
14
15 DEFINE m_forms DYNAMIC ARRAY OF STRING
16
17 MAIN
18   DEFINE l_rec RECORD
19     fld1 CHAR(10),
20     fld2 DATE,
21     fld3 STRING,
22     fld4 STRING,
23     fld5 STRING,
24     fld6 STRING,
25     fld7 STRING,
26     fld8 STRING,
27     ...
```

The 'Properties' panel on the right shows the project settings for 'matDesTest'. The 'Root directory' is set to '\$(GBCPROJDIR)/dist/customization/mygbc'. The 'Package' section shows the 'ID' and 'Label' fields.

The 'Output' panel at the bottom shows the results of the custom package rule, including the addition of various resources and the final success message:

```
adding: resources/webcomponents/fglrichtext/statics/lib.js (deflated 77%)
adding: resources/webcomponents/fglrichtext/statics/styles/ (stored 0%)
adding: resources/webcomponents/fglrichtext/statics/styles/index.css (deflated 62%)
adding: resources/webcomponents/fglrichtext/statics/styles/table-grid.png (deflated 4%)
adding: resources/webcomponents/fglrichtext/statics/styles/misspell.gif (deflated 9%)
adding: resources/webcomponents/fglrichtext/statics/styles/react-draft.css (deflated 84%)
adding: resources/ing/ (stored 0%)
adding: resources/ing/gbc_logo.ico (deflated 41%)
adding: resources/ing/logo.png (stored 0%)
adding: resources/ing/emptytabbed.png (deflated 20%)
adding: resources/ing/wheel.gif (deflated 24%)
adding: resources/ing/logo-notext.png (stored 0%)
adding: VERSION (stored 0%)
*** Success [15:47:46] ***
```

# 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		Indigo		Blue	
500	#673AB7	500	#3F51B5	500	#2196F3
50	#EDE7F6	50	#E8EAF6	50	#E3F2FD
100	#D1C4E9	100	#C5CAE9	100	#BBDEFB
200	#B39DDB	200	#9FA8DA	200	#90CAF9
300	#9575CD	300	#7986CB	300	#64B5F6
400	#7E57C2	400	#5C6BC0	400	#42A5F5
500	#673AB7	500	#3F51B5	500	#2196F3
600	#5E35B1	600	#3949AB	600	#1E88E5
700	#512DA8	700	#303F9F	700	#1976D2
800	#4527A0	800	#283593	800	#1565C0
900	#311B92	900	#1A237E	900	#0D47A1



# 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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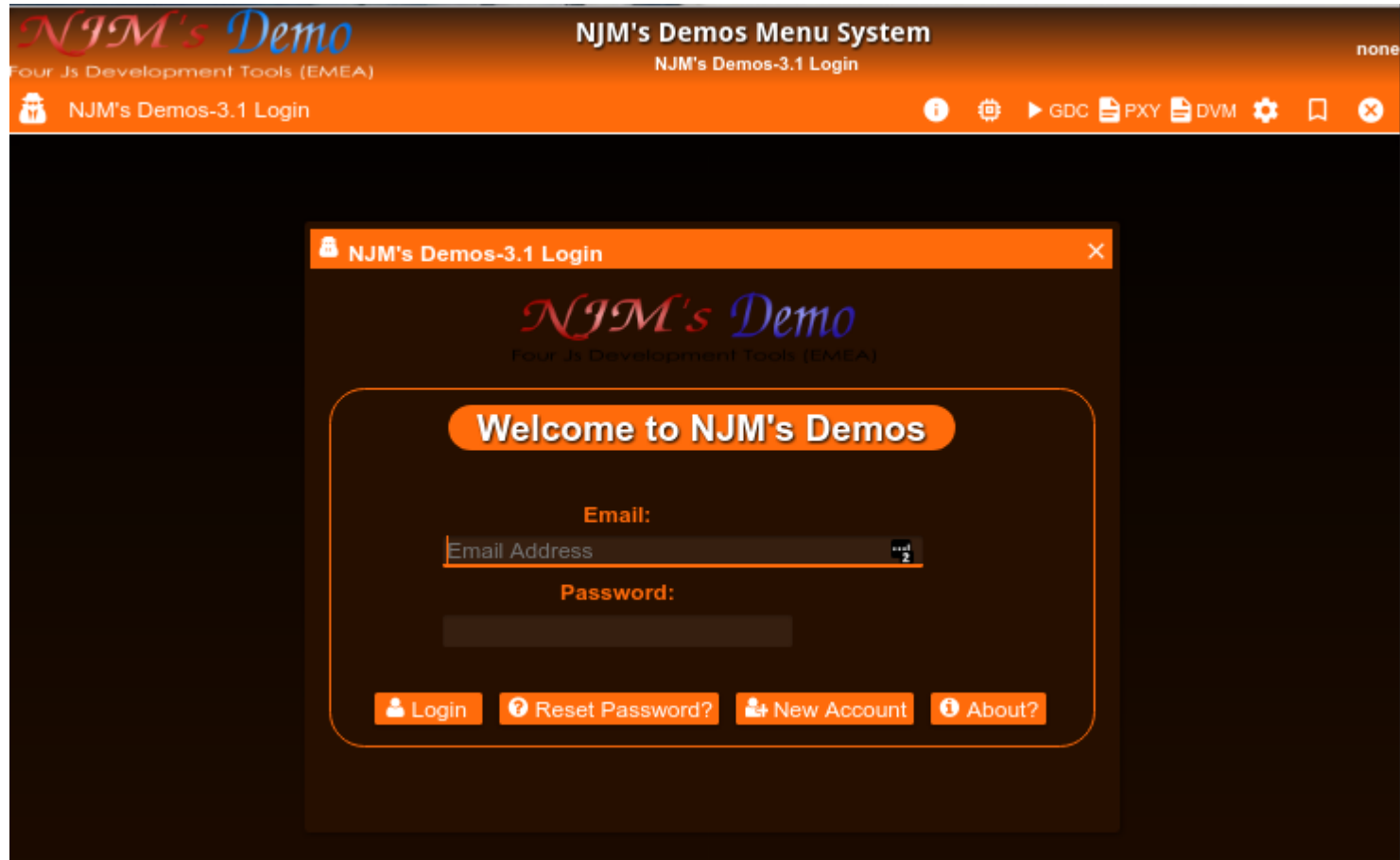
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# More Customizations

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 set against a light purple background within the browser window.

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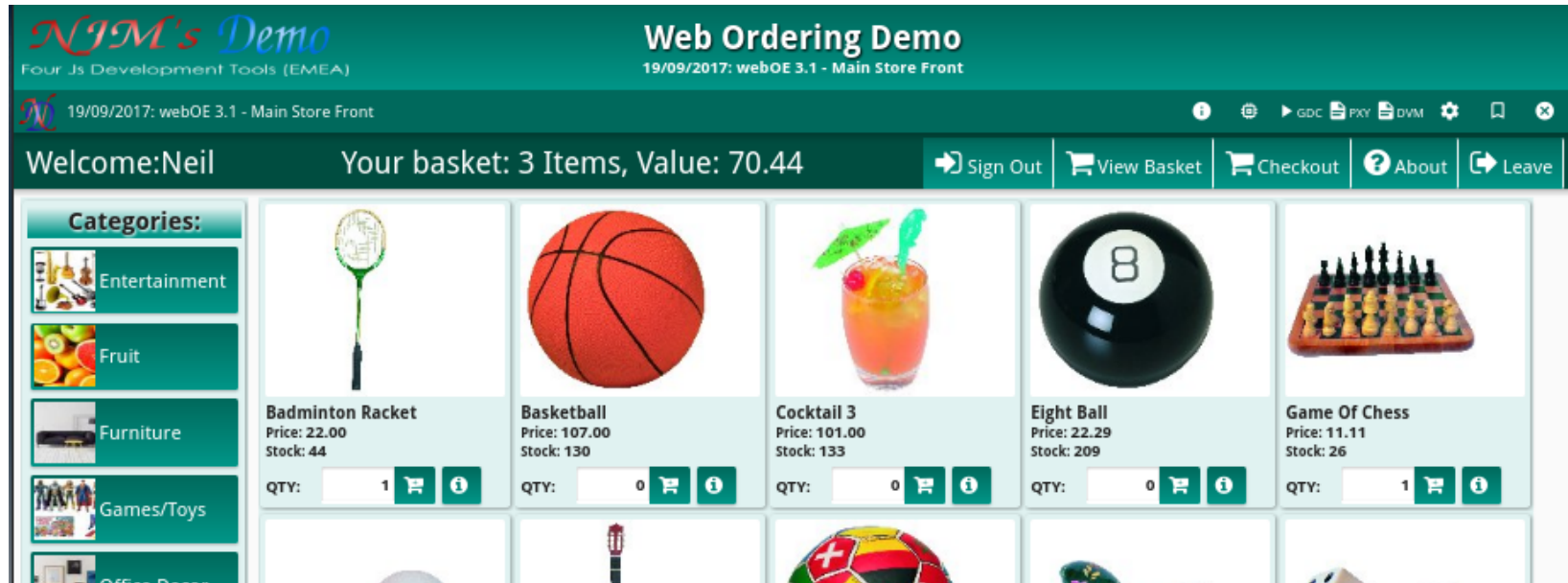
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# More Advanced Customizations

## 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 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

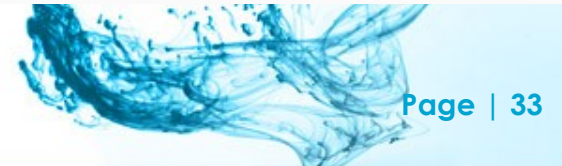
 <b>Badminton Racket</b> Price: 22.00 Stock: 44 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Basketball</b> Price: 107.00 Stock: 130 QTY: <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/>	 <b>Cocktail 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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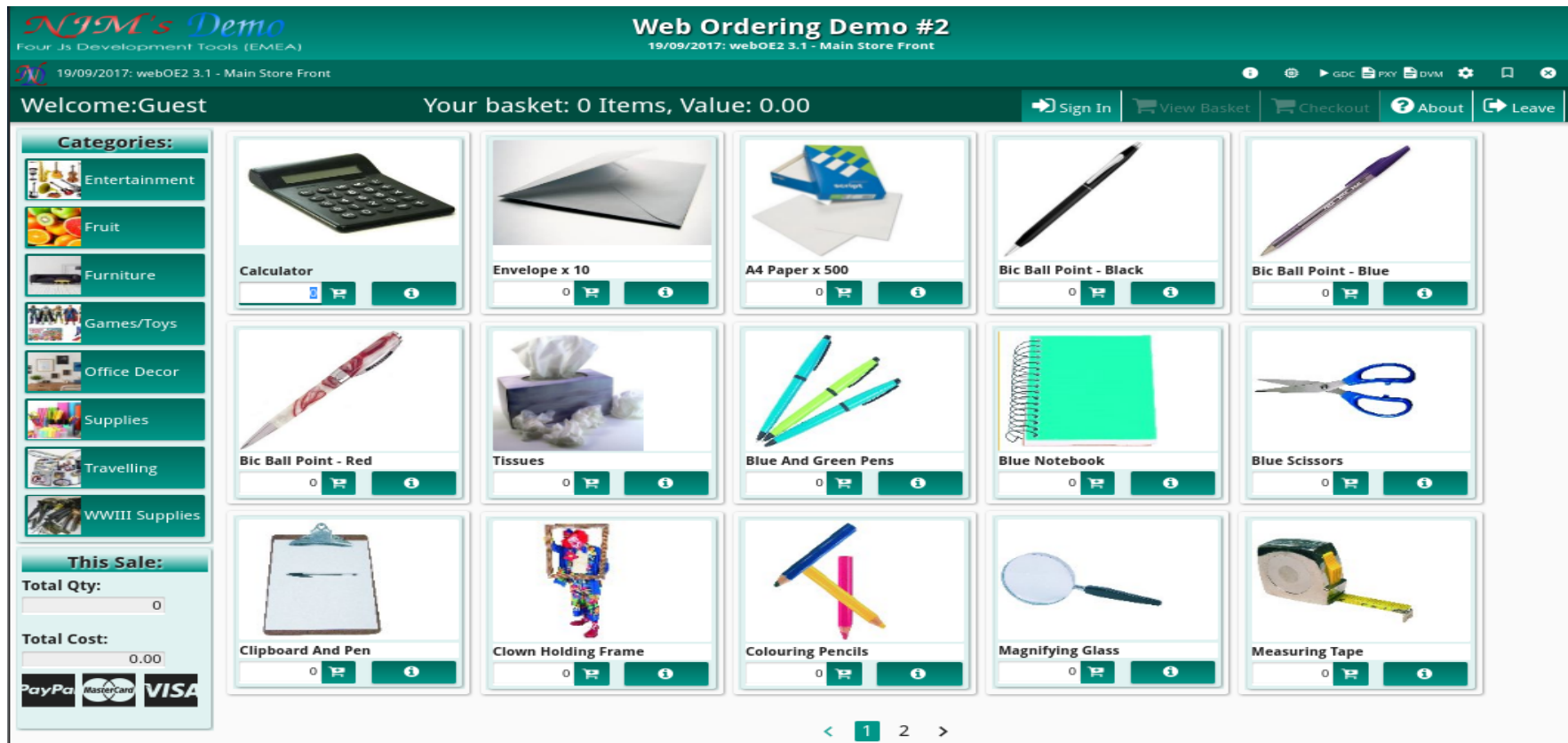
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# More Advanced Customizations

Paging products

This version is using a 'simple' ScrollGrid



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