



Solingen, November 8<sup>th</sup> 2024

# Migrating Win32 GUI to other Environments (EWC)

*Morten Kromberg, CTO (& APL Developer)*

*Neil Kirsopp, JS (& APL) Developer*

# Why EWC?

## 1. Protect existing investments

- ◆ Since 1990, EWC has made it possible for domain experts to be "full stack" developers
- ◆ EWC is perhaps the most important reason why Dyalog has been successful
- ◆ EWC is restricted to the Microsoft Windows desktop, which is fading

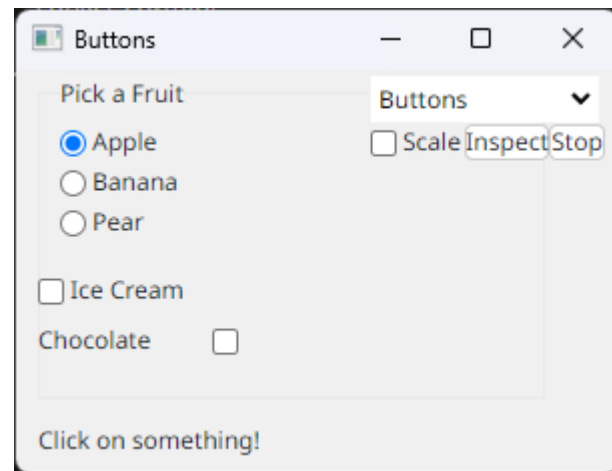
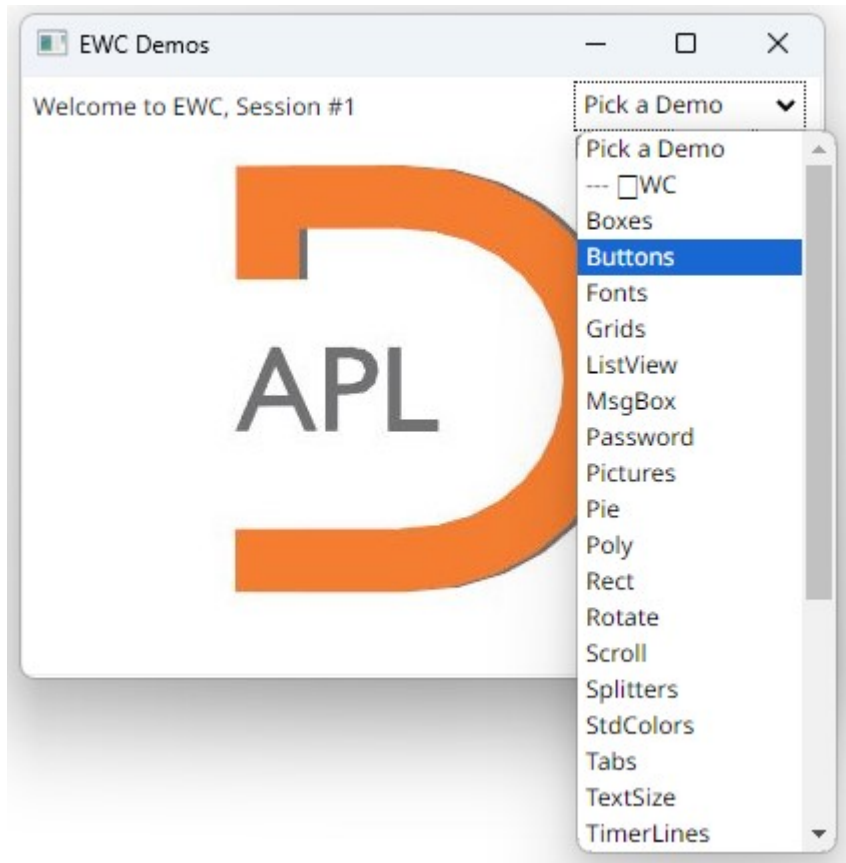
# Why EWC?

## 2. Build New Applications

- ◆ EWC can easily be extended with JavaScript libraries
- ◆ Potential migration path for existing code to "responsive" layout
  - ◆ Replace Posn/Size with Flex CSS
- ◆ "EWC is a uniquely interactive web development environment"

# demo.Run 'Desktop'





```
Editor - [demo.DemoButtons in C:/devt/jswc/demo/DemoButtons.aplf]
File Edit Syntax Window Refactor View
Search...

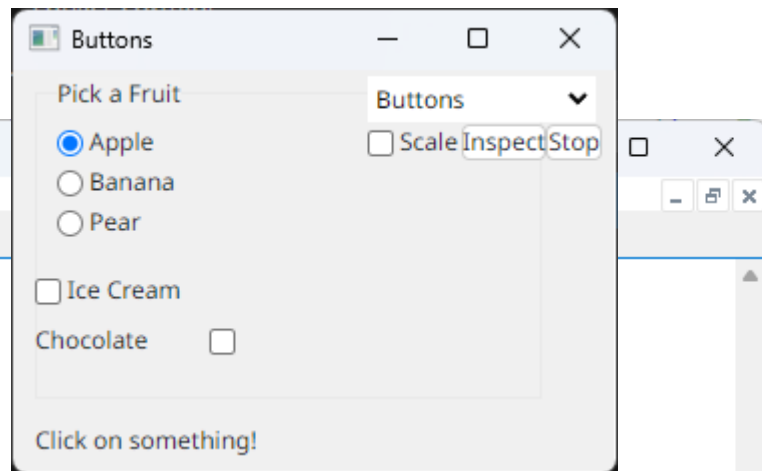
DemoButtons connected;F
EWC.CONNECTED+connected
PW+1000

F+'F1'
F eWC'Form' 'Buttons'(50 50)(200 300)('Coord' 'Pixel')

(F, '.FRUIT')eWC'Group' 'Pick a Fruit'('Posn'(10 10))('Size'(80 280))
(F, '.FRUIT.C1')eWC'Button' 'Apple'(13 10)(23 100)('Style' 'Radio')('Event' 'Select' 'CUpdateButtons')('State' 1)
(F, '.FRUIT.C2')eWC'Button' 'Banana'(33 10)(23 100)('Style' 'Radio')('Event' 'Select' 'CUpdateButtons')
(F, '.FRUIT.C3')eWC'Button' 'Pear'(53 10)(23 100)('Style' 'Radio')('Event' 'Select' 'CUpdateButtons')

(F, '.ICE')eWC'Button' 'Ice Cream'(100 10)(23 100)('Style' 'Check')('Event' 'Select' 'CUpdateButtons')('Align' 'Right')
(F, '.CHOKO')eWC'Button' 'Chocolate'(125 10)(23 100)('Style' 'Check')('Event' 'Select' 'CUpdateButtons')('Align' 'Left')

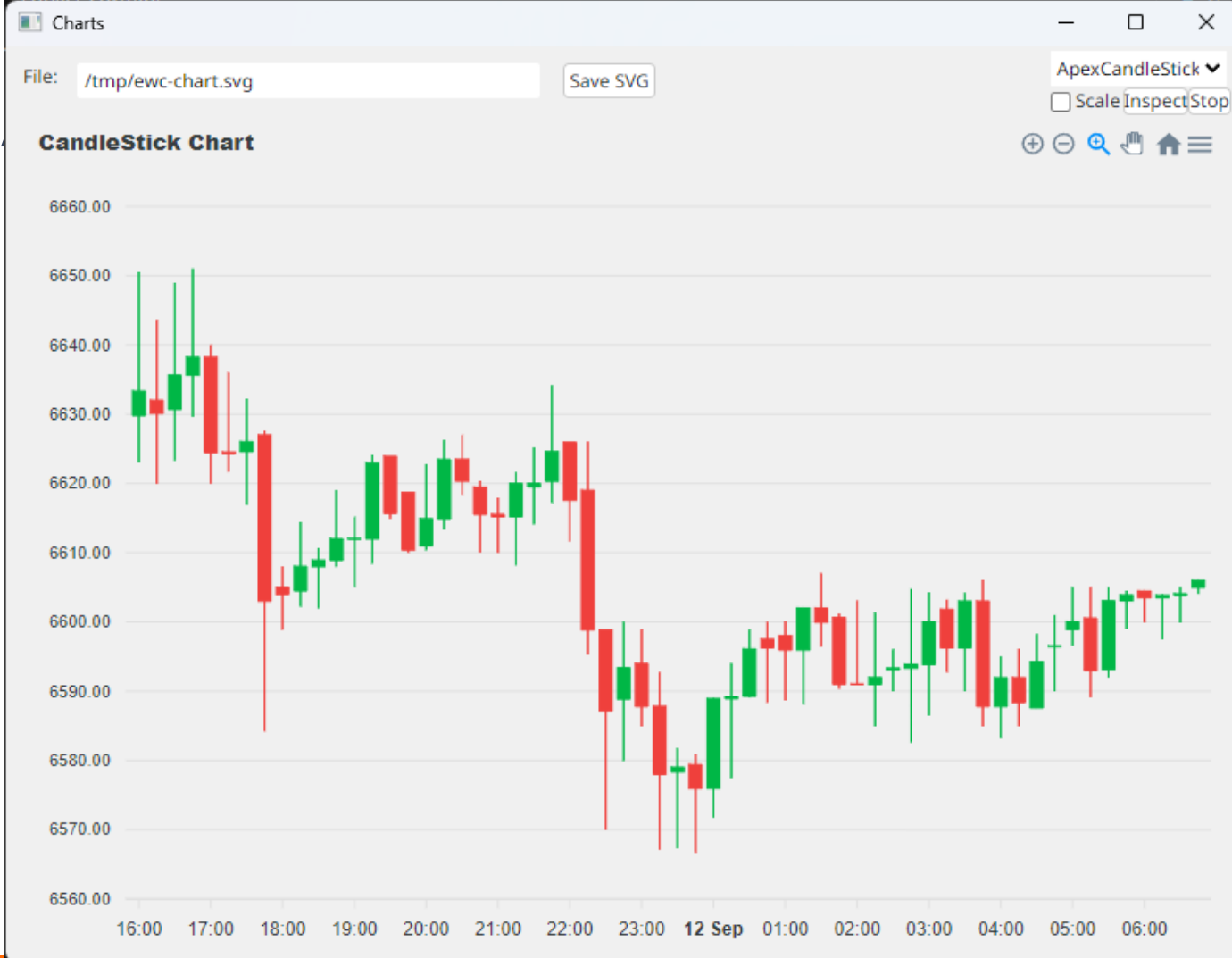
(F, '.STATUS')eWC'Label' 'Click on something!'(175 10)(23 300)
```



# The Demo

## Demos of Extensions

- Extras
- RibbonTabs
- Charts
- ApexCandleStick**
- ApexHorizontalBar
- ApexMovAvg
- ApexSineWave
- Flex
- FlexLogin



Style: Query      MsgBox

Buttons: YES/NO/CANCEL       Scale Inspect Stop

Message: Well, what will it be?

Show MsgBox!

demo.Run 'Browser'



Style: Query

MsgBox

Buttons: YES/NO/CANCEL

 Scale  Inspect  Stop

Message: Well, what will it be?

Show MsgBox!

MsgBox Caption



Well, what will it be?

Yes

No

Cancel

Function Table

File Colours Focus

Name	Gender	Score	Expert
Amir	Male	12	<input type="checkbox"/>
Fatima	Female	13	<input checked="" type="checkbox"/>

Expanding on node #15

- Q1
  - Q2
    - Apr
      - May
        - In
        - Out
      - Jun

11 x Calc .....

	A	B	C	D	E	F
1	1	2	3	4	5	6
2	2	4	6	8	10	12
3	3	6	9	12	15	18
4	4	8	12	16	20	24
5	5	10	15	20	25	30
6	6	12	18	24	30	36
7	7	14	21	28	35	42
8	8	16	24	32	40	48
9	9	18	27	36	45	54
10	10	20	30	40	50	60

PolyLine

Poly

Scale  Inspect  Stop

Rect

Rect

Scale  Inspect  Stop

GUI



Scroll ▾

 Scale  Inspect  Stop

	0001	0002	0003	0004	0005	0006	0007	0008	0009	0010
Row 548	548/1	548/2	548/3	548/4	548/5	548/6	548/7	548/8	548/9	548/10
Row 549	549/1	549/2	549/3	549/4	549/5	549/6	549/7	549/8	549/9	549/10
Row 550	550/1	550/2	550/3	550/4	550/5	550/6	550/7	550/8	550/9	550/10
Row 551	551/1	551/2	551/3	551/4	551/5	551/6	551/7	551/8	551/9	551/10
Row 552	552/1	552/2	552/3	552/4	552/5	552/6	552/7	552/8	552/9	552/10
Row 553	553/1	553/2	553/3	553/4	553/5	553/6	553/7	553/8	553/9	553/10
Row 554	554/1	554/2	554/3	554/4	554/5	554/6	554/7	554/8	554/9	554/10
Row 555	555/1	555/2	555/3	555/4	555/5	555/6	555/7	555/8	555/9	555/10
Row 556	556/1	556/2	556/3	556/4	556/5	556/6	556/7	556/8	556/9	556/10
Row 557	557/1	557/2	557/3	557/4	557/5	557/6	557/7	557/8	557/9	557/10

Goto Row 500



Recycle Bin



Adobe Acrobat



Freeplane



Google Chrome



Microsoft Edge



Zoom



Zoom Workplace



20.0 64 U



APLAN



RIDE 4.6

Ubuntu (Stand-alone machine for repros) [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Sep 15 22:57

Activities

Home

File: /tmp/ewc-chart.svg Save SVG

ApexCandleStick  
 ScaleInspectStop

### CandleStick Chart

```

File Edit View Win
+ - * x + * *
| | | | | | | |
55:46.075 D:
55:46.075 D:
55:46.075 D:
55:46.076 T:
2,6608.4
566.77.6
55:46.080 T:
55:46.088 G:
55:46.089 R:
55:46.271 R:
55:46.272 D:
55:46.272 T:
55:46.276 D:
55:46.277 T:
55:46.278 D:
55:46.279 T:
55:46.285 D:
55:46.287 T:
55:46.316 R:
55:46.333 N:
55:46.345 N:
55:46.346 T:
55:46.468 R:
55:46.500 N:
55:46.553 N:
55:46.553 T:
#5: {"WC":{"ID":"F1.STOP","Properties":{"Attach":["Top","Right","Top","Right"],"Caption":"Stop","Event":["Select",""],"Po
** CREATE Button F1.DEVT at addDemoMenu[34] CBRUNDemo[35] processEvent[75]
#5: {"WC":{"ID":"F1.DEVT","Properties":{"Attach":["Top","Right","Top","Right"],"Caption":"Inspect","Event":["Select",""];
#5: {"DeviceCapabilities":{"ViewPort":[640,817],"ScreenSize":[1050,1680],"DPR":1,"PPI":200}}
Mode 0, #.demo.F1 Configure 72 115 600 800
55:46.345 N: Configure HTMLRenderer + 72 115 640 817
55:46.346 T: #5: {"NQ":{"Event":"Configure","ID":"#.demo.F1","Info":{"23,0,600,800},"NoCallback":0}}
55:46.468 R: #5: {"DeviceCapabilities":{"ViewPort":[640,817],"ScreenSize":[1050,1680],"DPR":1,"PPI":200}}
55:46.500 N: Mode 0, #.demo.F1 Configure 72 115 600 800
55:46.553 N: Configure HTMLRenderer + 72 115 640 817
55:46.553 T: #5: {"NQ":{"Event":"Configure","ID":"#.demo.F1","Info":{"23,0,600,800},"NoCallback":0}}

```

emo[34]  
,"Posn":["10,360"],"Size":["23,60"],"Type":  
nt[75]  
":{"align":"Left","text":"CandleStick C  
","y":["6618.69,6618.74,6610,6610.4]},{  
22/")}]  
t":["Select",""],"Items":["Pick a Dem  
tion":"Scale","Event":["Select",""],"

Migration Level 31/1782,6



20.0 64 U



APLAN  
Edition



19.0 64 U



19.0 32 U



18.2 64 U



congarcrash



20.0 64 U



Dyalog  
APL-64 20...

Ubuntu (Stand-alone machine for repros) [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Firefox Web Browser Sep 15 23:04

Home

File Colours

Ticker	Fixed	Price	Quantity	Value	Comments
ABCD	No	1.23	5,123	6,301	
DEFG	Yes	2.34	6,750	15,795	Cannot buy or sell any of these
HIJL	No	3.45	11,231	38,747	

Home CurCell SelText Total value: 60843.2

10 x Calc .....

	A	B	C	D	E	F	G
1	1	2	3	4	5	6	
2	2	4	6	8	10	12	
3	3	6	9	12	15	18	
4	4	8	12	16	20	24	
5	5	10	15	20	25	30	
6	6	12	18	24	30	36	
7	7	14	21	28	35	42	
8	8	16	24	32	40	48	
9	9	18	27	36	45	54	
10	10	20	30	40	50	60	

```
04:01.05...
04:01.05...
04:01.06...
04:01.06...
04:01.06...
04:01.06...
04:01.06...
04:01.06...
04:01.06...
04:01.07...
04:01.13...
04:01.15...
04:01.15...
04:01.16...
04:01.28...
04:01.28...
04:01.28...
04:01.28...
04:01.288 D: *** CREATE Button F1.SCALE at addDemoMenu[32] CBRunDemo[35] processEvent[75]
04:01.288 T: #2: {"WC":{"ID":"F1.SCALE","Properties":{"Attach":["Top","Right","Top","Right"],"Caption":"Scale","Event":["Select",""],"
04:01.291 D: *** CREATE Button F1.STOP at addDemoMenu[33] CBRunDemo[35] processEvent[75]
04:01.291 T: #2: {"WC":{"ID":"F1.STOP","Properties":{"Attach":["Top","Right","Top","Right"],"Caption":"Stop","Event":["Select",""],"Pc
04:01.292 D: *** CREATE Button F1.DEVT at addDemoMenu[34] CBRunDemo[35] processEvent[75]
04:01.292 T: #2: {"WC":{"ID":"F1.DEVT","Properties":{"Attach":["Top","Right","Top","Right"],"Caption":"Inspect","Event":["Select",""]
...,"Items":["Pick a Dem
...,"Size":[23,100],
...210,120],"SelItems":["
...Size":[23,100],"Type"
...2,3,4,5,6,7,8,9,10],[2
...0],"Size":[23,100],"T
...,"Items":["Pick a Dem
```

## EWC User Guide

## Overview

## Introduction

## Implementation

## EWC versus □WC

## Images

## Getting Started

## Installation

## Initialising an EWC session

## Configuration

## Supported Features

## Classes

## ApexChart

## BitMap

## Button

## Circle

## Combo

## Edit

## Ellipse

## Font

## Form

# Initialising an EWC session

Once you have a folder on your machine containing EWC, you can load it into a Dyalog APL session (18.2 or later is required):

```
]link.import # /path/to/ewc
```

Where `/path/to/ewc` is the name of the folder that you created during [installation](#).

## EWC.Init

The function `EWC.Init` takes a right argument of the mode that you want to enable:

- 'Desktop' to run each form in an HTMLRenderer
- 'Browser' to allow a single session from a browser
- 'Multi' to allow multiple sessions from browsers (more about that later)

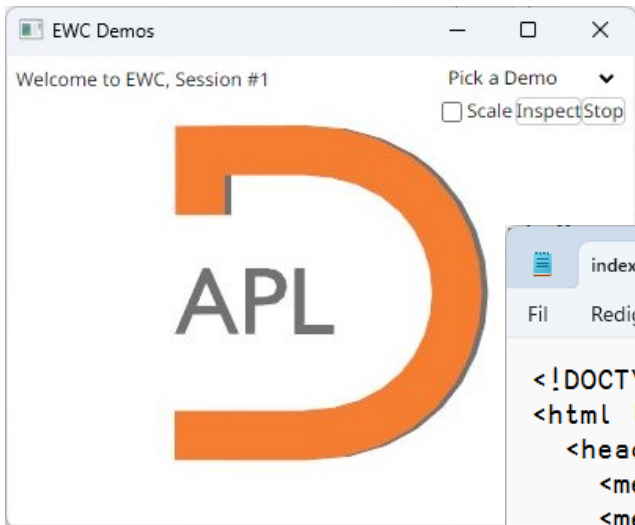
For example:

```
EWC.Init 'Desktop'
```

`EWC.Init` will also create cover-functions `ewc`, `ews` and so on, in the namespace from which `Init` was called. These are intended to be used as replacements for the system functions `□wc`, `□ws`, etc.

# How Does it Work?

- 🟠 Conga server is created listening on port 22322
- 🟠 HTMLRenderer or Web Browser launched at `http://localhost:22322/index.html`

A screenshot of a web browser's source code view for "index.html". The code is HTML and includes a script tag for a JavaScript file. The script tag's src attribute is highlighted with a brown box.

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>EWC</title>
    <script type="module" crossorigin src="/assets/index-a1c67c60.js"></script>
    <link rel="stylesheet" href="/assets/index-5981879a.css">
  </head>
  <body>
    <div id="root"></div>w
  </body>
</html>
```

EWC  
Namespace

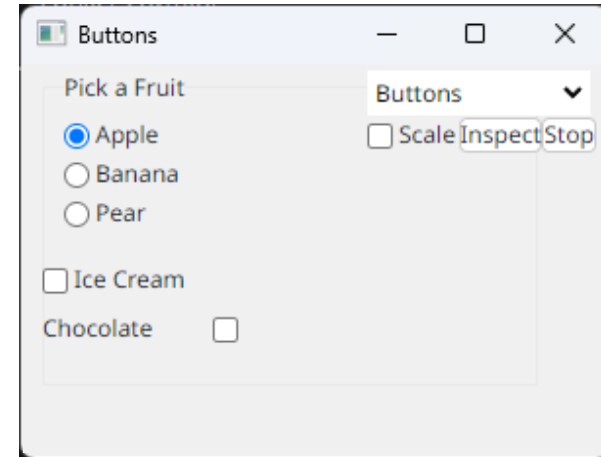


Browser or  
HTMLRenderer

JS / React  
Application

```
'F1.STATUS' eWC 'Label' 'Click on something!' (175 10) (23 300)
```

```
→ {"WC":{"ID":"F1.STATUS",  
  "Properties":{"Caption":"Click on something!",  
  "Posn":[175,10],"Size":[23,300],"Type":"Label"}}}
```





EWC User Guide

Overview

Introduction

Implementation

EWC versus JWC

Images

Getting Started

Installation

Initialising an EWC session

Configuration

Supported Features

Classes

ApexChart

BitMap

Button

Circle

Combo

Edit

Ellipse

Font

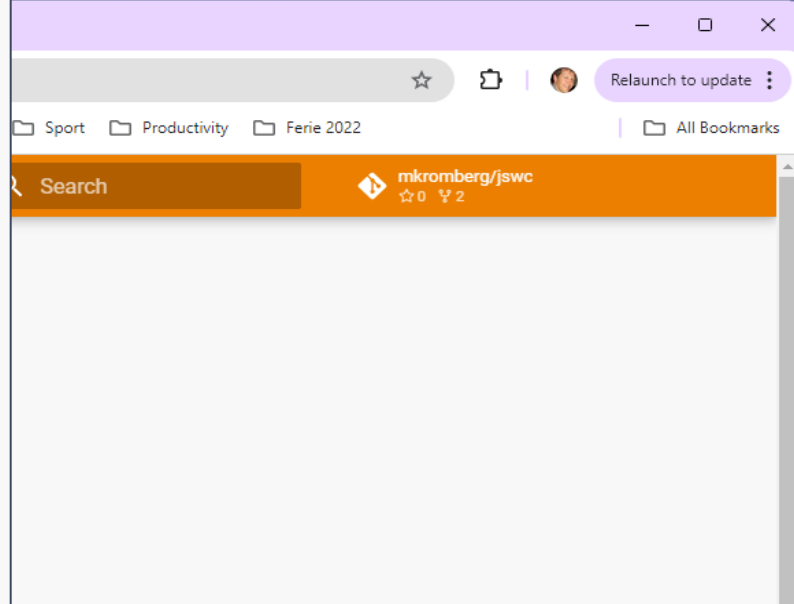
# Classes

EWC has some degree of support for the following JWC classes:

JWC Classes			
BitMap	Grid	Menu	SubForm
Button	Group	MenuBar	TabButton
Circle	Icon	MenuItem	TabControl
Combo	Image	MsgBox	Text
Edit	ImageList	Poly	Timer
Ellipse	Label	Rect	TreeView
Font	List	Scroll	
Form	ListView	Splitter	

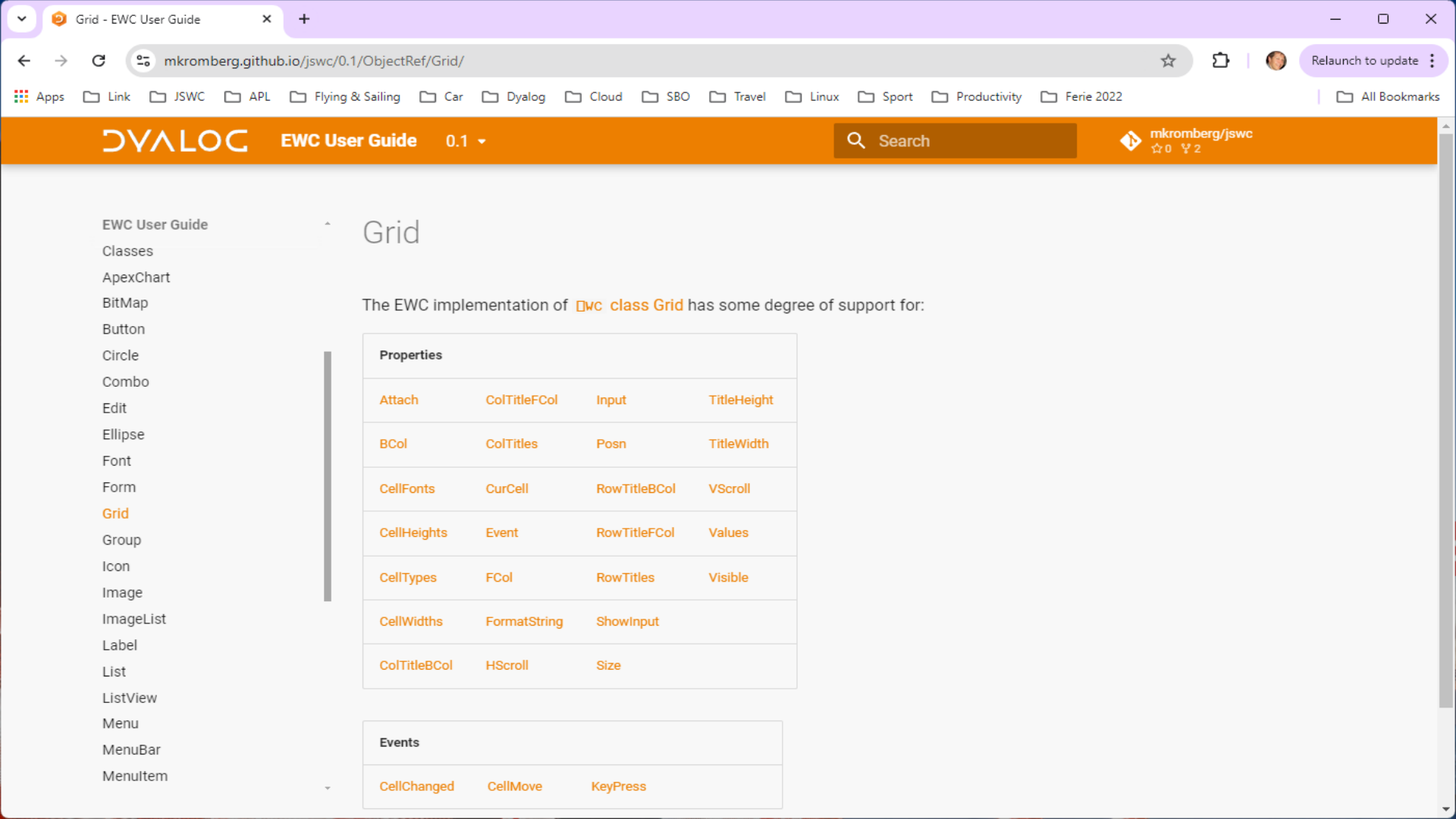
EWC has some degree of support for the following `QWc` classes:

<b>QWc Classes</b>			
BitMap	Grid	Menu	SubForm
Button	Group	MenuBar	TabButton
Circle	Icon	MenuItem	TabControl
Combo	Image	MsgBox	Text
Edit	ImageList	Poly	Timer
Ellipse	Label	Rect	TreeView
Font	List	Scroll	
Form	ListView	Splitter	



EWC adds the following classes not supported by `QWc` :

<b>Additional</b>		
ApexChart	RibbonButton	RibbonGroup
Ribbon	RibbonButtonGroup	RibbonGroupItem



EWC User Guide

Classes

ApexChart

BitMap

Button

Circle

Combo

Edit

Ellipse

Font

Form

Grid

Group

Icon

Image

ImageList

Label

List

ListView

Menu

MenuBar

MenuItem

# Grid

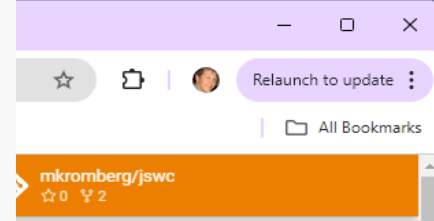
The EWC implementation of `class Grid` has some degree of support for:

Properties			
<a href="#">Attach</a>	<a href="#">ColTitleFCol</a>	<a href="#">Input</a>	<a href="#">TitleHeight</a>
<a href="#">BCol</a>	<a href="#">ColTitles</a>	<a href="#">Posn</a>	<a href="#">TitleWidth</a>
<a href="#">CellFonts</a>	<a href="#">CurCell</a>	<a href="#">RowTitleBCol</a>	<a href="#">VScroll</a>
<a href="#">CellHeights</a>	<a href="#">Event</a>	<a href="#">RowTitleFCol</a>	<a href="#">Values</a>
<a href="#">CellTypes</a>	<a href="#">FCol</a>	<a href="#">RowTitles</a>	<a href="#">Visible</a>
<a href="#">CellWidths</a>	<a href="#">FormatString</a>	<a href="#">ShowInput</a>	
<a href="#">ColTitleBCol</a>	<a href="#">HScroll</a>	<a href="#">Size</a>	

Events		
<a href="#">CellChanged</a>	<a href="#">CellMove</a>	<a href="#">KeyPress</a>

The EWC implementation of `class Grid` has some degree of support for:

Properties			
Attach	ColTitleFCol	Input	TitleHeight
BCol	ColTitles	Posn	TitleWidth
CellFonts	CurCell	RowTitleBCol	VScroll
CellHeights	Event	RowTitleFCol	Values
CellTypes	FCol	RowTitles	Visible
CellWidths	FormatString	ShowInput	
ColTitleBCol	HScroll	Size	



Being added as applications need them.

# Significant Limitations

- Limited set of Classes & Props
- Coord Pixel only
- No direct assignment and reference to properties – must use `□WS` / `□WG`
- No creation using `□NEW`
- Images and ImageLists are handled differently (better!)
- Validation and Error Messages weaker / different
- `□NQ` may not behave exactly as under Windows

# Significant Limitations

- Limited set of Classes & Props
- Coord Pixel only
- ~~● No direct assignment and reference to properties = must use `□WS / □WG`~~
- No creation using `□NEW`
- Images and ImageLists are handled differently (better!)
- Validation and Error Messages weaker / different
- `□NQ` may not behave exactly as under Windows

# Handling Unsupported Features

- ◆ EWC tries to "ignore" use of missing features
- ◆ Get something up and running
  - ◆ Then modify your code or ask Dyalog to add support
- ◆ If you try to create an instance of an unsupported class

```
FOO[7] 'W0' eWC 'Widget' 'Hello World' ('Size' (300 400))
40:32.702 W: *** Warning: at FOO[7] - WC W0 - unsupported class "widget"
```

- ◆ The following still creates a form, ignoring the unsupported feature:

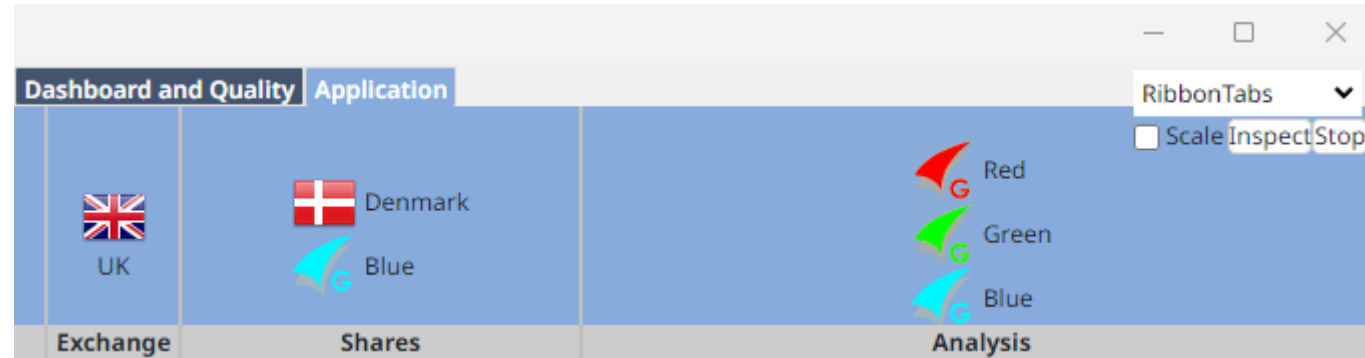
```
FOO[7] 'F0' eWC 'Form' 'Hello World' ('Size' (300 400)) ('Dockable' 1)
38:58.307 W: *** Warning: at FOO[7] - Unsupported on form: Dockable
```

# Extensions

- ◆ Ribbon family of controls
- ◆ ApexCharts
- ◆ "Flex" instead of Posn + Size
- ◆ DIY Extensions  
(KendoUI)



# Ribbons



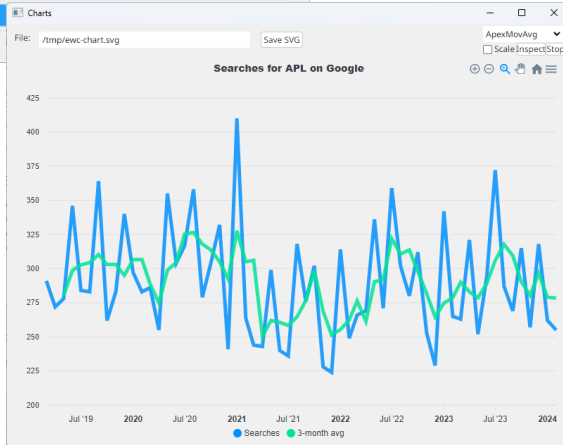
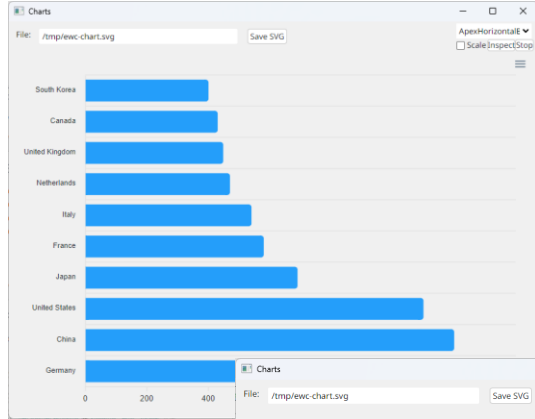
```
(rb, '.Item3')eWC'RibbonGroup' 'Exchange'('Size' 1)bordercol
(rb, '.Item3.GroupItem1')eWC'RibbonGroupItem' 12
(rb, '.Item3.GroupItem1.StockExchangeButton')eWC'RibbonButton' 'UK'('Size' 12)sel('ImageListObj' 'IL32')('ImageIndex' 2)

(rb, '.Item4')eWC'RibbonGroup' 'Shares'('Size' 3)bordercol
(rb, '.Item4.GroupItem1')eWC'RibbonGroupItem' 12
(rb, '.Item4.GroupItem1.ButtonGroup1')eWC'RibbonButtonGroup'('Denmark' 'Blue')('ImageListObj' ('IL32' 'IL'))('ImageIndex'(1 3))sel

(rb, '.Item5')eWC'RibbonGroup' 'Analysis'('Size' 6)bordercol
(rb, '.Item5.GroupItem1')eWC'RibbonGroupItem' 12
(rb, '.Item5.GroupItem1.ButtonGroup1')eWC'RibbonButtonGroup'('Red' 'Green' 'Blue')('ImageIndex'(1 2 3))sel

eNQ'F1.TC.T1' 'Select'
```

# ApexCharts – Four Demos



Migrating Win32 GUI

# ApexCharts Design

- Options are passed straight through (JSON string or APL namespace)
- Series can be in several APL-friendly formats:

```
series+400 430 448 470 540 580 690 1100 1200 1380
```

```
cd+demodata.candledata  
time+1 12 DT (1 DT=4+TS)++\0, (~1+cd)p÷96 A Every 15 minutes from last hour  
series+(cd) time A (Matrix of Open High Low Close values) (X values)
```

```
series+(data 'Searches' months) (smoothed '3-month avg' ((window-1)↓months))  
A Triplets of (yvalues name xvalues)
```

# ApexCharts SVG Property

- The SVG property allows us to retrieve the SVG for the chart
- Use ApexCharts in an invisible HTMLRenderer to generate charts

```
    #svg←'F1.BAR' eWG 'SVG'  
29820
```

```
    4 80psvg  
<svg id="SvgjsSvg1006" width="780" height="540" xmlns="http://www.w3.org/2000/  
g" version="1.1" xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:svgjs="http:  
svgjs.dev" class="apexcharts-svg" xmlns:data="ApexChartsNS" transform="transla  
(0, 0)" style="background: transparent;"><foreignObject x="0" y="0" width="780
```

[Training](#)  
[Videos](#)  
[One on One](#)  
[Data](#)  
[Store View](#)  
 Store:   
 Period:   
 MTD   
 Filter

[Team Viewer](#)  
[Sales Associate](#)  
[Goals](#)  
[Settings and Reports](#)  
[Sales Associate Assignment](#)

**\$539,965**  
Goal

**\$58,353**  
MTD Sales

**\$37,181**  
LMTD Sales

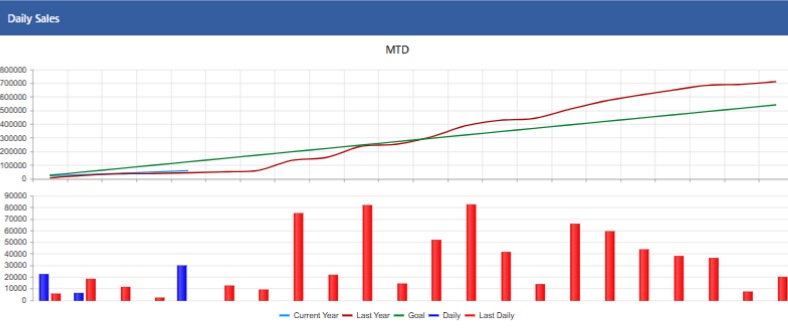
**56.9**  
% Change Sales

**\$22,934**  
Per Day

**35 %**  
MTD New  
**\$768**  
MTD Avg Ticket

**21 %**  
LMTD New  
**\$404**  
LMTD Avg Ticket

**69.9**  
% Change New  
**90.1**  
% Change Average



Leaderboard

[Export to Excel](#)

Name:	Total Sales:	Avg Ticket:	# Tickets:	Gp%:	% New:
Hammett,Jimmy	\$30,098	\$1,746	18	55	22 %
Hammond,Alex	\$9,474	\$1,053	9	72	22 %
Dye,Katie	\$4,940	\$823	6	61	33 %
French,Shemalah	\$3,848	\$273	15	66	40 %
Schwendemann,Brianna	\$3,644	\$548	9	67	33 %
Lunsford,Brandon	\$3,000	\$750	4	63	0 %
Waddell,Jared	\$1,150	\$383	3	58	0 %
Hampton,Kim	\$709	\$236	3	64	67 %
Molinar,Susan	\$651	\$130	5	34	80 %
Wynn,Nate	\$390	\$130	3	70	67 %

10 items per page

Top Vendors

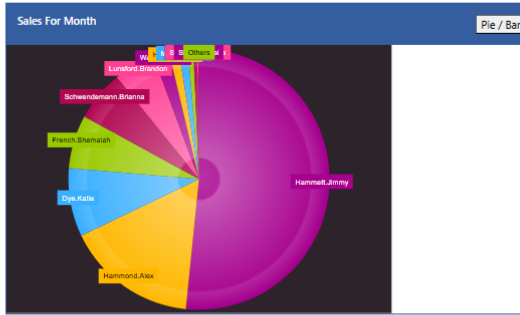
[Export to Excel](#)

Vendors:	\$ Amount:
Nice Diamonds	\$11,500
Gabriel & Co.	\$8,165
Mercury Ring	\$8,000
Surreal Diamonds Llc	\$7,450
Malakan Dia Custom	\$5,900
Repairs	\$3,567
Midas	\$2,275
Ostbye & Anderson	\$1,800
Phil. 4:13	\$1,600
Authentic Gem Imports	\$1,550


Top Categories

[Export to Excel](#)

Categories:	\$ Amount:
190 -Dia -Loose	\$11,500
192 -Dia -Lab Created	\$10,700
140 -Dia Semi-Mt Ring	\$7,975
235 -Col/Neck	\$5,600
291 -Lab Created Dia Lds Ring	\$5,500
100 -Dia Eng Ring	\$3,750
Repairs	\$3,277
120 -Dia Anniv/Wed Ring	\$2,150
525 -Watches	\$1,398
425 -Gold Ear	\$1,300

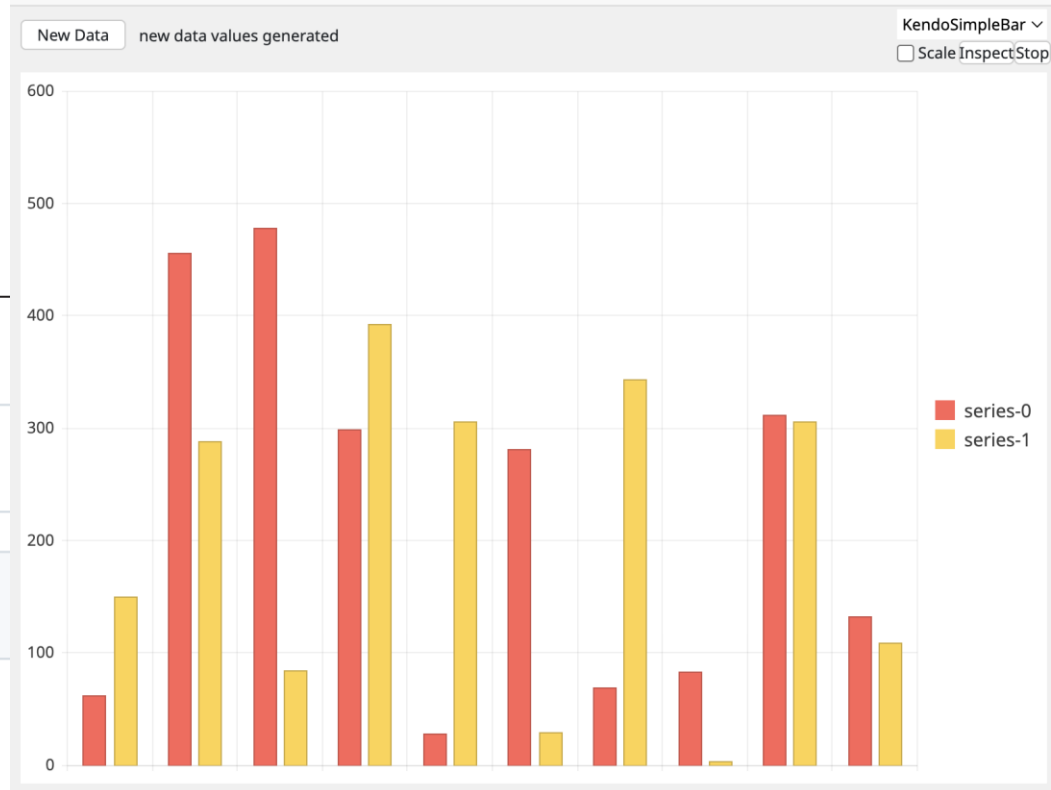


ewc / demo / DemoKendoSimpleBar.aplf 

 cursork Kendo simplest bar chart demo

Code Blame 8 lines (6 loc) · 350 Bytes

```
1 DemoKendoSimpleBar connected;series
2
3 series<+>\?2 10p2
4
5 'F1.eWC'Form 'Charts'(50 50)(600 800)('Coord' 'Pixel')
6 'F1.OUT.eWC'Label 'Click on a bar' (13 100)(23 300)
7 'F1.NEW.eWC'Button 'New Data' (10 10)(23 80)('Event' 'Select' 'CBSimpleBar')
8 'F1.BAR.eWC'KendoChart'(50 10)(540 780)series'bar'('Event' ('click' 'legendclick') 'CBSimpleBar')
```



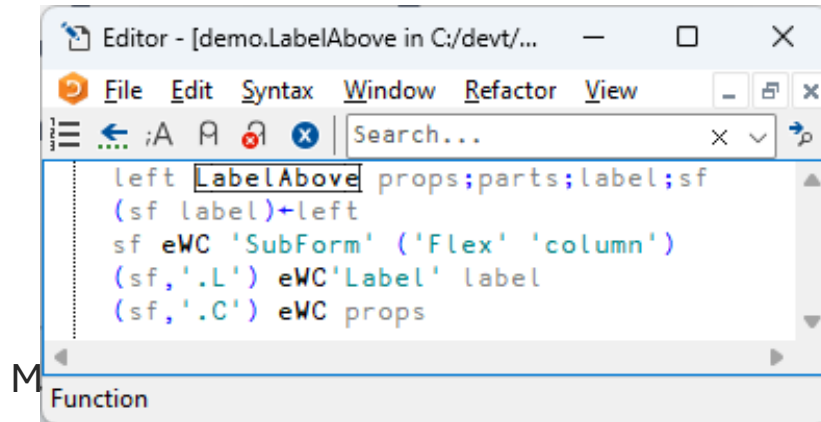
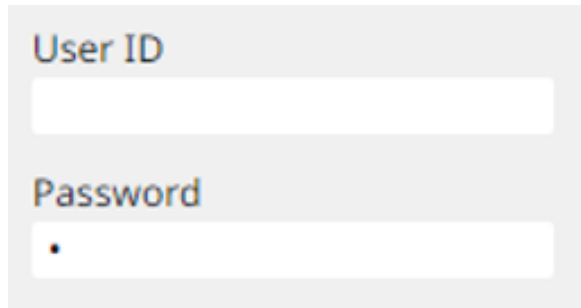
# Flex – Instead of Posn & Size

- ◆ Still VERY experimental – Feedback Please!
- ◆ The Flex property can be set on containers
  - ◆ 'Flex' 'fill'  
Form should fill the available space (Forms only)
  - ◆ 'Flex' 'row'  
Stack controls horizontally (Any container object)
  - ◆ 'Flex' 'column'  
No comment
- ◆ By default, 'fill' sets column orientation
- ◆ CSS property allows you to add additional CSS styling

# SubForm = "StackPanel"

- ◆ A Subform with Flex becomes a "StackPanel"

```
'F1.INPUT.CREDS' eWC 'SubForm' ('Flex' 'column')  
'F1.INPUT.CREDS.USERID' 'User ID' LabelAbove 'Edit' ''  
'F1.INPUT.CREDS.PWD' 'Password' LabelAbove 'Edit' '' ('Password' '*')
```





Hello morten

User ID  
morten

Password  
.....

FlexLogin  Scale  
Stop  
Inspect

Data  
73 13 49 80 70 34 64 51 23 89 22 2:

Login  
Chart

Index	Value
1	73
2	13
3	49
4	80
5	70
7	34
8	64
9	51
10	23
10	89
11	22
12	23

Hello morten

User ID  
morten

Password  
.....

FlexLogin  Scale  
Stop  
Inspect

Data  
73 13 49 80 70 34 64 51 23 89 22 2:

Login  
Chart

Index	Value
1	73
2	13
3	49
4	80
5	70
7	34
8	64
9	51
10	23
10	89
11	22
12	23

Hello morten

User ID  
morten

Password  
.....

FlexLogin  Scale  
Stop  
Inspect

Data  
73 13 49 80 70 34 64 51 23 89 22 2:

Login  
Chart

Index	Value
1	73
2	13
3	49
4	80
5	70
7	34
8	64
9	51
10	23
10	89
11	22
12	23

Migrating Wir

# Multi User Mode

Intended for multi-user applications.

```
EWC.Init 'Multi'
```

- Must be called from a namespace which contains a function names `Initialise`
- Initialise MUST create and `edQ` a Form (and `demo.Run` will do this)
- This namespace will be cloned for each new Browser connection, and `Initialise` will be called on a new thread
- Notice each user is suspended in `ΔDQ` in a namespace named `demo_n`.

```
demo.Run 'Multi'  
(two sessions connect)  
  
    )si  
·   ·   #.EWC.ΔDQ[42]  
·   ·   #.demo_1.Initialise[13]  
·   &5  
·   ·   #.EWC.ΔDQ[42]  
·   ·   #.demo_2.Initialise[13]  
·   &6  
·   [#.EWC.[LIB]] #.EWC.Conga.LIB.Wait[8]  
·   [#.EWC.[wss]] #.EWC.wss.Listen[2]  
·   #.EWC.wss.Start[14]  
&4
```

# GUI Testing using Selenium

The image shows a Selenium IDE debugger window with the following code:

```
Debugger
Tools View
[0] r--TestButtons sink;[]TRAP;fruit;addon;t;z;lbl;f_status;fruit_name;c;exp;addon_ids;addons;addon_names;sel_a
[1] r--' o slow=2 o dl=2
[2] :If 0#f_status=#.S.Find'F1.STATUS'
[3] r-'Cannot find F1.STATUS (#136)'
[4] end
[5] :EndIf
[6] addon_ids='F1.ICE' 'F1.CHOKO'
[7] # label follows or precedes control:
[8] addon_names=(('XPath'#.S.Find'//input[@id=","w,"']following-sibling::div | //input[@id=","w,"']precedin
[9] :For fruit :In (c'F1.FRUIT.C'),'i3
[10] {0:# o c=#.S.Find w o c.Selected:c.Click}"addon_ids
[11] :If fruit#'
[12] z=#.S.Click fruit o [DL dl
[13] lbl='XPath'#.S.Find'//input[@id=","fruit,"']following-sibling::div'
[14] fruit_name=lbl.Text
[15] exp='You selected ','fruit_name
[16] res=f_status #.S.WaitFor exp
[17] :If 'Check res
[18] r,='Click on ','fruit,' did not generate expected ","exp," message but "','res,'"
[19] :EndIf
[20] :EndIf
[21] :For addon :In ~1+1(#addon_ids)*2
[22] {0:# o c=#.S.Find w o c.Selected:c.Click}"addon_ids
[23] sel_a=2 z+addon
[24] :For c :In sel_a/addon_ids
[25] :If 1 Check #.S.Click c
[26] r,='could not select addon "','c,'"
[27] :EndIf
[28] [DL dl
[29] :EndFor
[30] exp='You selected ','fruit_name,(0<+/sel_a)'' with ','~5+sel_a/addon_name
[31] res=f_status #.S.WaitFor exp
[32] :If 'Check res
[33] r,c='Status ≠ ','exp,'" - found value "','t,'"
[34] :EndIf
[35] :EndFor
[36] dl*+=slow++1
[37] :EndFor
[38] end:
[39] :If 0<#r
[40] r--1+e(sr),'UCS 10
[41] :EndIf
```

The 'Buttons' dialog box is open, showing a list of fruit options:

- Apple
- Banana
- Pear
- Ice Cream
- Chocolate

Buttons: Scale Inspect Stop

Click on something!

# Current Status

Current selection of features is being driven by the needs of two launch customers...

FILE EDIT HOME DATA DEVELOPER HELP

Access Locks Macros Dashboard Utilities Internet Bond REPOs VAR analysis Yields New Securities Check RII Prima Segment Overall Data Quality Local Data Quality Data Quality

### List of Bonds (Market)

	Security Name (long)	Security Code (A/N)	Security Code (ISIN)	Am fig	Tab10
75	Brazil Rep 5.875% 15/01/2019	US105756BQ28	US105756BQ28	<input type="checkbox"/>	
76	Brazil Rep 7.125% 20/01/2037	US105756BK57	US105756BK57	<input type="checkbox"/>	
77	Brazil Republic 12,5% 05/01/16	us105756bj84	us105756bj84	<input type="checkbox"/>	
78	Brazil 5,625% 07/01/41	US105756BR01	US105756BR01	<input type="checkbox"/>	
79	BTA BANK 10.75% 07/18	XS0532988770	XS0532988770	<input type="checkbox"/>	
80	BTA Finance 8,25% 16	xs0242012796	xs0242012796	<input type="checkbox"/>	
81	BTABANK 7,2% 07/25	XS0532990677	XS0532990677	<input type="checkbox"/>	

- Shares
- Bonds
  - Portfolio
  - Market
    - SPECIFICATION
    - Prices
    - Fairy prices
    - Exchange Rates
    - Indices
      - CPI
      - Average Weighted I
      - G-Curve
      - Precious Metals
      - Unified Rating
      - Echelons
      - Yield analysis
      - Mortgage
    - Services
    - Futures
    - Foreign Exchange
    - Totals
    - Risk

Select field Brazil Rep 5.875% 15/01/2019

### General Bond Specification

General spec. Additional spec. Classifications Pricing/YTM Redemption scheme Ratings History

Security Name: Long: Brazil Rep 5.875% 15/01/2019 Short: BrazilRep5.875%01/19

Security Code: Numeric: S/R: A/N: US105756BQ28 ISIN: US105756BQ28 Reuters: Tick: US105756BQ28

Issue Date: 13/01/09 Expiry Date: 15/01/19

Placing: Price(%): Date of start: 00/00/00 Date of end: 00/00/00

Price Type: w/out Accr.Int. Currency: USD  Convertible

Coupon: Period (M): Semi-Annual Period (D): 180 Type: % min (p.a.): 5,87500 %max (p.a.): Tax (%):  Tax Rate

Security Type:  Approximation  Inflation Indexed  Emissive sec.  Gold Indexed  Subordinated  Mortgage

Accrued Interest Calculation: Start Date: 13/01/09 Year Basis: 30E/360 ISD AI Rounding: By Security Type  Equal Coupon %  Equal Coupon % (Year Based)  Variable Coupon Based (365)

Redemption: Frequency: No Redeem Method: Type: First Date: 00/00/00 Lottery Date: 00/00/00 Tax.Type: P/L: Increase (%):  Amortization  Offer

IRR Calculation:  Offer is in coupon date  Ignore Call Offer

OK Portfolios Internet Tools... Help

[Training](#)  
[Videos](#)  
[One on One](#)  
[Data](#)  
[Store View](#)  
 Store:   
 Period:   
 MTD

[Team Viewer](#)  
[Sales Associate](#)  
[Goals](#)  
[Settings and Reports](#)  
[Sales Associate Assignment](#)

**\$539,965**  
Goal

**\$58,353**  
MTD Sales

**\$37,181**  
LMTD Sales

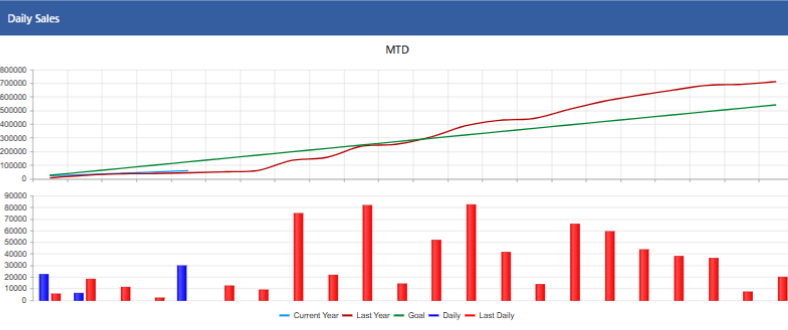
**56.9**  
% Change Sales

**\$22,934**  
Per Day

**35 %**  
MTD New  
**\$768**  
MTD Avg Ticket

**21 %**  
LMTD New  
**\$404**  
LMTD Avg Ticket

**69.9**  
% Change New  
**90.1**  
% Change Average



Leaderboard

[Export to Excel](#)

Name:	Total Sales:	Avg Ticket:	# Tickets:	Gp%:	% New:
Hammett,Jimmy	\$30,098	\$1,746	18	55	22 %
Hammond,Alex	\$9,474	\$1,053	9	72	22 %
Dye,Katie	\$4,940	\$823	6	61	33 %
French,Shemalah	\$3,848	\$273	15	66	40 %
Schwendemann,Brianna	\$3,644	\$548	9	67	33 %
Lunsford,Brandon	\$3,000	\$750	4	63	0 %
Waddell,Jared	\$1,150	\$383	3	58	0 %
Hampton,Kim	\$709	\$236	3	64	67 %
Molinar,Susan	\$651	\$130	5	34	80 %
Wynn,Nate	\$390	\$130	3	70	67 %

10 Items per page 1 of 18 items

Top Vendors

[Export to Excel](#)

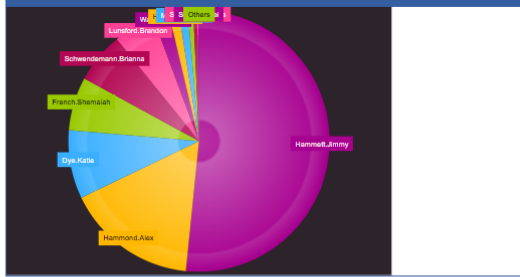
Vendors:	\$ Amount:
Nice Diamonds	\$11,500
Gabriel & Co.	\$8,165
Mercury Ring	\$8,000
Surreal Diamonds Lic	\$7,450
Malakan Dia Custom	\$5,900
Repairs	\$3,567
Midas	\$2,275
Ostbye & Anderson	\$1,800
Phil. 4:13	\$1,600
Authentic Gem Imports	\$1,550

Top Categories

[Export to Excel](#)

Categories:	\$ Amount:
190 -Dia -Loose	\$11,500
192 -Dia -Lab Created	\$10,700
140 -Dia Semi-Mt Ring	\$7,975
235 -Co/Neck	\$5,600
291 -Lab Created Dia Lds Ring	\$5,500
100 -Dia Eng Ring	\$3,750
Repairs	\$3,277
120 -Dia Anniv/Wed Ring	\$2,150
525 -Watches	\$1,398
425 -Gold Ear	\$1,300

Sales For Month



# EWC Status, Continued

- ◆ Initial prototype built using external contractor
- ◆ Now we have Neil full-time
- ◆ Free and Open Source
  - ◆ We will document how to create your own extensions
- ◆ We expect to add features quickly this winter
  - ◆ Send us sample apps / tell us what you need!

# Thank You!

Dashboard and Quality Application

UK Denmark Blue

Exchange Shares Analysis

RibbonTabs

Scale Inspect/Stop

Poly

Scale Inspect/Stop

Rect

Scale Inspect/Stop

Buttons

Pick a Fruit

Apple

Banana

Pear

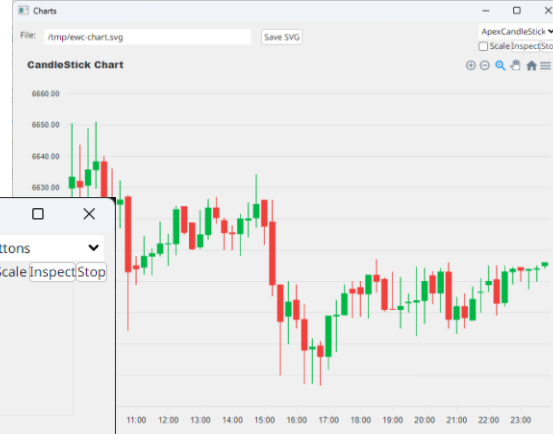
Ice Cream

Chocolate

Click on something!

Buttons

Scale Inspect/Stop



Hello morten

User ID

morten

Password

.....

FlexLogin

Scale

Stop

Inspect

Function Table

File Colours Focus

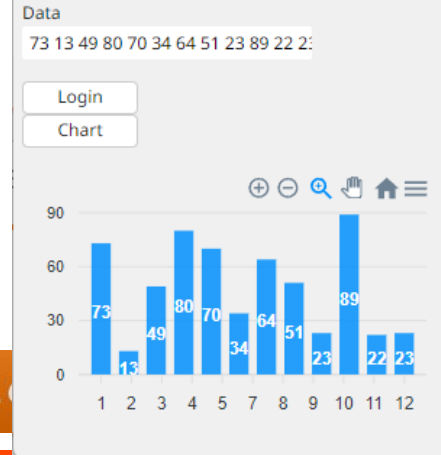
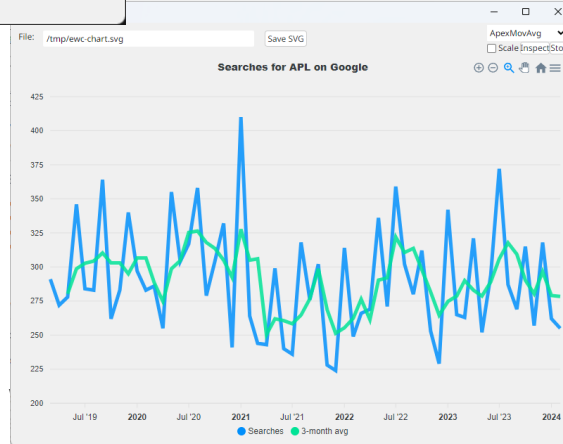
Name	Gender	Score	Expert
Amir	Male	12	<input type="checkbox"/>
Fatima	Female	13	<input checked="" type="checkbox"/>

Expanding on node #15

TreeView

Scale Inspect/Stop

- Q1
- Q2
- Apr
- May
- In
- Out
- Jun







plot\_in\_nb.ipynb U

plot\_in\_nb.ipynb > series←(data 'Searches' months) (smoothed '3-month avg' ((window-1)↓months))

+ Code + Markdown | ▶ Run All ↺ Restart ☰ Clear All Outputs | ☰ Outline ...

```

window←3
A Moving average window size
months←~1 12 □DT 2~10↓,(2018+~6)◦.,~12
data← 60?100
smoothed←window÷~window+/data

```

[6] ✓ 0.4s

```

series←(data 'Searches' months) (smoothed '3-month avg' ((window-1)↓months))
A Triplets of (yvalues name xvalues)

```

[8] ✓ 0.2s

```

options←'{title: { text: "Example data", align: "center"},'
options,←'yaxis:{type:"numeric",stepSize:25, decimalsInFloat: 0},'
options,←'xaxis: { type: "datetime"},'
options,←'animations:{enabled: false}}'

```

[9] ✓ 0.4s



```
'F1'xWC'Form 'Charts'(50 50)(600 800)('Coord' 'Pixel')
AddSaveChartButton 'F1.MOVAVG'
'F1.MOVAVG'xWC'ApexChart'(50 10)(540 780)('Series'series)('Options'options)
```

[12] ✓ 0.3s

