

# Enhancing Expo Displayfile Guide

## Overview

This guide will show basic techniques to change the look and feel Monarch Migrated application Pages, to make them more appealing.

During the description of the steps to apply the different techniques, the public repository in GitHub will be used

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Reference public GitHub repository:

*<https://github.com/ASNA/SunFarm>*

The repository was created with a fresh new Monarch Migration. As enhancements were being applied, the required changes were committed, such that by using git History tooling, the changes may be seen in real code.

## Assumptions

Familiarity with the ASNA **Customer Sample IBMi program** is required. This program has been provided by ASNA as sample RPG/CL code in several products, with the names: M4CUST, M5CUST and/or IronMonger.

## Scope

This Guide shows how to Enhance the following Pages:

1. Customer Inquiry (Initial Page)
2. Customer Maintenance (Option “2”)

In addition, the Site has been branded to show the fictitious company “SunFarm” with its logo on all pages.

## What this Guide *is not*

1. This Guide is not an introduction to ASNA Core Foundation
2. This is not a Tutorial.
3. Cloning the repository is not enough. There are ASNA references (or source Projects) that need to be installed.

## Specifically, the goal is to transform: Customer Inquiry Page:

Enter  
F3  
PgUp  
PgDn

contreras

M5 Customer Inquiry

11/05/20 17:08:15


Position to name:

2=Update 3=Display sales 5=Delivery Addresses 7=Create sales record 9=Print sales (Online) 10=Print sales (Batch) 11=Orders

Sel	Custno	Customer Name	City / State / Zip
▼	46000	38 Inc. Co Operations	Shreveport, LA 71101
▼	85500	3x Hinge League	San Francisco, CA 94105
▼	35300	3X Wholesale Phosphate	Miami, FL 33147
▼	100100	ACME Conduit Sales	San Antonio, TX 78230
▼	64000	Advantage Ranch Manufacturing Inc	Somersworth, TX 03878
▼	29400	Advertising Agricultural 2nd Day	Bryan, OH 43506
▼	48100	Advertising Electric	Gillette, A 82716
▼	68100	Advertising Murray Ltd	Palo Alto, CA 94303-0000
▼	86400	Agency Way Loans	Merryville, TN 37801-3748
▼	64700	Aims Analysis Group Singapore	Wilkes-barre, PA 18701
▼	99500	Aims College Corp Company	Fairmont, MN 56031
▼	82600	Aims Group Berry Compositing	New York, NY 10004
▼	25300	Aims Management Data	Orlando, FL 32832
▼	17100	Akashic City Insurance	Cleveland, OH 45202

F3=Exit

To this modern look:



**sunfarm**  
always fresh

### Customer Inquiry

Position to name:


Selection	Custno	Customer Name	City / State / Zip
<input type="checkbox"/>	46000	38 Inc. Co Operations	Shreveport, LA 71101
<input type="checkbox"/>	85500	3x Hinge League	San Francisco, CA 94105
<input type="checkbox"/>	35300	3X Wholesale Phosphate	Miami, FL 33147
<input type="checkbox"/>	100100	ACME Conduit Sales	San Antonio, TX 78230
<input type="checkbox"/>	64000	Advantage Ranch Manufacturing Inc	Somersworth, TX 03878
<input checked="" type="checkbox"/> Update	29400	Advertising Agricultural 2nd Day	Bryan, OH 43506
<input type="checkbox"/>	48100	Advertising Electric	Gillette, A 82716
<input type="checkbox"/>	68100	Advertising Murray Ltd	Palo Alto, CA 94303-0000
<input type="checkbox"/>	86400	Agency Way Loans	Merryville, TN 37801-3748
<input type="checkbox"/>	64700	Aims Analysis Group Singapore	Wilkes-barre, PA 18701
<input type="checkbox"/>	99500	Aims College Corp Company	Fairmont, MN 56031
<input type="checkbox"/>	82600	Aims Group Berry Compositing	New York, NY 10004
<input type="checkbox"/>	25300	Aims Management Data	Orlando, FL 32832
<input type="checkbox"/>	17100	Akashic City Insurance	Cleveland, OH 45202
<input type="checkbox"/>	19300	Akzo Allyn Inc Co	Tucson, AZ 85713
<input type="checkbox"/>	80600	Akzo Of Maine	Sanford, ME 04073
<input type="checkbox"/>	59700	Akzo Sign Systems Co	Dalton, GA 30720
<input type="checkbox"/>	50500	Alamo Elias Board Overland	Greensboro, NC 27407
<input type="checkbox"/>	92000	Alexvale Danek Noble Incorporated Mfg	Pompano Beach, FL 33064
<input type="checkbox"/>	10100	Alexvale Investments Publishing	Rumford, RI 02916

SubmitExitPgUpPgDn

## Customer Maintenance Page:

Enter	contreras	M5 Customer Maintenance	11/05/20	17:52:40
F3				
Prompt		46000	Akzo Allyn Inc Co	
New				
Delete	Name:	<input type="text" value="Akzo Allyn Inc Co"/>		
Cancel	Address:	<input type="text" value="Bldg S. Belt 1x Bld 2226"/>		
		<input type="text" value=""/>		
	City:	<input type="text" value="Tucson"/>		
	State/Zip:	<input type="text" value="AZ"/>	<input type="text" value="(F4)"/>	<input type="text" value="85713"/>
	Fax:	<input type="text" value="602)251-3271"/>		
	Phone:	<input type="text" value="(602) 258-7898"/>		
	Status:	<input type="text" value=""/>	<input type="text" value="(F4)"/>	
	Contact Name:	<input type="text" value=""/>		
	Contact eMail:	<input type="text" value=""/>		
	Send Confirmation:	<input type="text" value=""/>	<input type="text" value="(Y/N)"/>	
F4=Prompt F6=New customer F11=Remove customer F12=Cancel				


To the page where more useful information is displayed



**sunfarm**  
always fresh

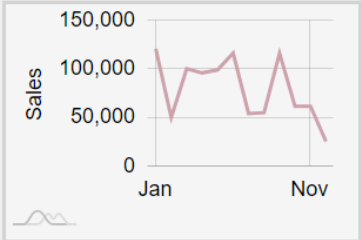
### Customer Maintenance

Account number29400



NameAdvertising Agricultural 2nd Day  
Address 11313 N Rd 122 Prkwy Suite  
Address 2  
CityBryanOH43506  
Salesperson  
eMail  
Phone(419) 251-3060Fax419)682-0611Send Confirmation(Y/N)

Active



Sales

JanNov

Last registered sales (Year 1997)

960,992.57↓ +21.3%

Jan	121,174.32	Feb	50,489.49	Mar	100,567.71	Apr	96,354.00
May	99,382.42	Jun	116,623.63	Jul	54,574.63	Aug	55,472.98
Sep	116,586.43	Oct	61,889.79	Nov	62,112.07	Dec	25,765.10

Last registered returns (Year 1997)

131,644.38

Jan	16,950.64	Feb	6,806.59	Mar	13,552.22	Apr	13,089.60
May	13,158.84	Jun	16,079.07	Jul	7,643.46	Aug	7,341.96
Sep	16,092.86	Oct	8,439.19	Nov	8,820.75	Dec	3,669.20

SubmitExitPromptNew CustomerRemove CustomerBack

## Data Files used

The IBMi data files were also migrated to a Microsoft SQL instance.

Microsoft SQL Server Management Studio has been used to show file definitions and query results.

The DataGate database in \$SunFarm\CustomerAppLogic\MyJob.cs named ***NancySQL*** points to a Microsoft SQL instance where the Data Files have been migrated.

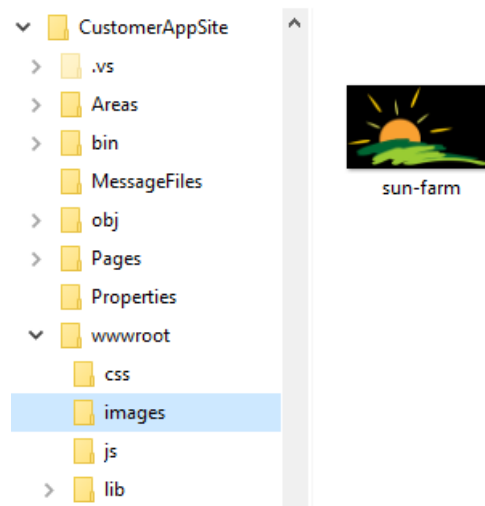
## Adding branding: SunFarm Logo as a heading on all pages.

The heading is produced by an image, text added with proper CSS and a solid background.



The file used is a PNG raster image as shown, with transparency. The name of the file is “sun-farm.png”

The place where static resources are placed is under the `wwwroot` folder:



Out of the box, the folder `wwwroot/css` already has a CSS file named `site.css`. It is empty.

Let's add some styles that will allow us to position and define the look of our logo elements





```

#logo-banner {
    height: auto;
    background-color: green;
}

#logo {
    padding-left: 1em;
}

#logo-text {
    display: inline-block;
    vertical-align: top;
    margin-left: -41px;
}

#logo-title {
    color: orange;
    font-size: xx-large;
    font-family: system-ui;
    font-weight: bolder;
}

#logo-subtitle {
    text-align: center;
    color: lightgreen;
    font-size: medium;
    opacity: 0.5;
}
1

```

The markup that we need is standard HTML which we will place in the file:

\$SunFarm\CustomerAppSite\Areas\CustomerAppViews\Pages\\_ViewStart.cshtml.cshtml

This file shared with all the Pages in the View file structure.

```

@{
    Layout = "_Layout";
}

<div id="logo-banner">
    
    <div id="logo-text">
        <div id="logo-title">sunfarm</div>
        <div id="logo-subtitle">always fresh</div>
    </div>
</div>

```

The Application will show the branded heading on top of all pages, as shown below:

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<sup>1</sup> Commit: "Logo resources".

sunfarm  
always fresh

Enter contreras M5 Customer Inquiry 11/05/20 18:55:53

F3 Position to name:

PgUp 2=Update 3=Display sales 5=Delivery Addresses 7=Create sales record 9=Print

PgDn sales (Online) 10=Print sales (Batch) 11=Orders

Sel	Custno	Customer Name	City / State / Zip
▼	46000	38 Inc. Co Operations	Shreveport, LA 71101
▼	85500	3x Hinge League	San Francisco, CA 94105
▼	35300	3X Wholesale Phosphate	Miami, FL 33147
▼	100100	ACME Conduit Sales	San Antonio, TX 78230

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## Navigation menu (formerly DDS File Active Function Keys)

The two pages we are enhancing, are formed by records described by CUSTDSP Displayfile.

All Display files are described using Razor Page syntax, where ExpoTags runtime support augments with DDS-like tag-helpers.

The Expo tag-helper that represents the “*DDS File Active Function Keys*” is named **DdsFunctionKeys** (tag-helper).

The default markup for Monarch Migrated Displayfiles shows the **DdsFunctionKey** tag-helper without any attributes (at the top of each Displayfile, inside the **DdsFile** tag-helper):

```
<form id="MonarchForm" method="post">
  <DdsFile DisplayPageModel="Model">

    <DdsFunctionKeys />

    <main role="main" class="display-element-uninitialized">
      .
      .
      .
    
```

---

<sup>2</sup> Commit: Branding all pages.

Let's change the **Location** attribute to the value "HorizontalBottom":

```
<DdsFunctionKeys Location="HorizontalBottom" />
```

The Navigation Menu looks much better at the bottom of the Page:

The screenshot shows the Sunfarm application interface. At the top is a green header with the Sunfarm logo and tagline "always fresh". Below the header, the user name "contreras" and the title "M5 Customer Inquiry" are displayed, along with the date and time "11/05/20 19:20:32". A search field labeled "Position to name:" is present. Below this, a list of function keys is shown: "2=Update 3=Display sales 5=Delivery Addresses 7=Create sales record 9=Print sales (Online) 10=Print sales (Batch) 11=Orders". A table with three columns: "Sel", "Custno", and "Customer Name" is displayed. The table contains 15 rows of data. Below the table, the text "F3=Exit" is shown. At the bottom, a navigation bar contains the labels "Enter", "F3", "PgUp", and "PgDn".

Sel	Custno	Customer Name	City / State / Zip
▼	46000	38 Inc. Co Operations	Shreveport, LA 71101
▼	85500	3x Hinge League	San Francisco, CA 94105
▼	35300	3X Wholesale Phosphate	Miami, FL 33147
▼	100100	ACME Conduit Sales	San Antonio, TX 78230
▼	64000	Advantage Ranch Manufacturing Inc	Somersworth, TX 03878
▼	29400	Advertising Agricultural 2nd Day	Bryan, OH 43506
▼	48100	Advertising Electric	Gillette, A 82716
▼	68100	Advertising Murray Ltd	Palo Alto, CA 94303-0000
▼	86400	Agency Way Loans	Merryville, TN 37801-3748
▼	64700	Aims Analysis Group Singapore	Wilkes-barre, PA 18701
▼	99500	Aims College Corp Company	Fairmont, MN 56031
▼	82600	Aims Group Berry Compositing	New York, NY 10004
▼	25300	Aims Management Data	Orlando, FL 32832
▼	17100	Akashic City Insurance	Cleveland, OH 46202

Instead of using aid key, you may want to use the mover vernacular form function key, something like: "Exit" equivalent to the **F3** aid key being pressed at the keyboard.

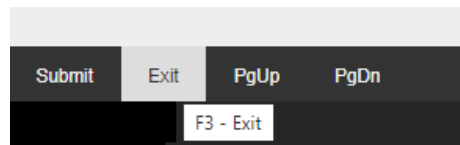
Note: experienced users may still use the **Fxx** key, if there is a physical keyboard that produces such key-code.

## Re-labeling the Menu Options

Expo Tag-helpers that represent options at the DDS File (*DdsFile*) level and DDS Records (*DdsRecord* & *DdsSubfileControl*) have, have an attribute called **KeyNames**, where we can override the default active key labels.

```
KeyNames="ENTER 'Submit'; F3 'Exit'; PageUp '◀ Page'; PageDown 'Next ▶';"
```

Where the value in single-quotes re-labels the text for the key name that precedes it. Instead of “ENTER” we show ‘Submit’; instead of “F3” we show ‘Exit’, etc.



Note: The labels for PgUp and PgDn should have been replaced. This bug has been reported to R&D.

## Color effects that worked on *green-screen* are displeasing on a modern *blue-screen* Browser Pages

DDS on the IBMi usually renders on a terminal with dark background. Text screen attributes such as REVERSE-IMAGE produced a subtle lighter green background which some considered pleasant on the eye to highlight text, such as record on a subfile.

REVERSE-IMAGE on a typically white/pale background Browser Page would produce a very heavy block on text when rendered.

As you can see on the off-the-shelf migration for “M5 Customer Inquiry” Page, the subfile records are rendered with a color that is displeasing to the eye.

The reverse-image display attribute DDS keyword **DSPATR(RI)** gets translated to **InvertFontColors=“\*True”** tag-helper attribute.

Removing such attribute produces a much pleasant output.

\$\SunFarm\CustomerAppSite\Areas\CustomerAppViews\Pages\CUSTDSPF.cshtml  
Lines 51, 52 and 53:<sup>4</sup>

```
<div Row="8" RowSpan="@SFLC_SubfilePage * @SFLC_SubfileRowsPerRecord">
    @for (int rrn=0, row = 8; rrn < Model.SFLC.SFL1.Count; rrn++, row +=
    @SFLC_SubfileRowsPerRecord)
    {
        <DdsSubfileRecord RecordNumber="rrn" For="SFLC.SFL1">
            <div IsGridRow>
                <DdsCharField Col="2" For="SFLC.SFL1[rrn].SFCOLOR" VisibleCondition="*False"
                VirtualRowCol="@row,2" tabIndex=1 />
                <DdsDecField Col="4" For="SFLC.SFL1[rrn].SFSEL" VirtualRowCol="@row,4"
                EditCode="Z" ValuesText="'0','2','3','5','7','9','10','11'" tabIndex=2 />
                <DdsDecField Col="7+1" For="SFLC.SFL1[rrn].SFCUSTNO" VirtualRowCol="@row,7"
                Color="Green : !61 , DarkBlue : 61" InvertFontColors="*True" EditCode="Z" Comment="CUSTOMER
                NUMBER" />
                <DdsCharField Col="14+1" For="SFLC.SFL1[rrn].SFNAME1" VirtualRowCol="@row,14"
                Color="Green : !61 , DarkBlue : 61" InvertFontColors="*True" />
                <DdsCharField Col="55+1" For="SFLC.SFL1[rrn].SFCSZ" VirtualRowCol="@row,55"
                Color="Green : !61 , DarkBlue : 61" InvertFontColors="*True" Comment="CITY-STATE-ZIP" />
            </div>
        </DdsSubfileRecord>
    }
</div>
```

contreras M5 Customer Inquiry 11/06/20 10:04:00

Position to name:

2=Update 3=Display sales 5=Delivery Addresses 7=Create sales record 9=Print sales (Online) 10=Print sales (Batch) 11=Orders

Sel	Custno	Customer Name	City / State / Zip
▼	46000	38 Inc. Co Operations	Shreveport, LA 71101
▼	85500	3x Hinge League	San Francisco, CA 94105
▼	35300	3X Wholesale Phosphate	Miami, FL 33147
▼	100100	ACME Conduit Sales	San Antonio, TX 78230
▼	64000	Advantage Ranch Manufacturing Inc	Somersworth, TX 03878
▼	29400	Advertising Agricultural 2nd Day	Bryan, OH 43506
▼	48100	Advertising Electric	Gillette, A 82716
▼	68100	Advertising Murray Ltd	Palo Alto, CA 94303-0000
▼	86400	Agency Way Loans	Merryville, TN 37801-3748
▼	64700	Aims Analysis Group Singapore	Wilkes-barre, PA 18701
▼	99500	Aims College Corp Company	Fairmont, MN 56031
▼	82600	Aims Group Berry Compositing	New York, NY 10004
▼	25300	Aims Management Data	Orlando, FL 32832
▼	17100	Akashic City Insurance	Cleveland, OH 45202

F3=Exit

Submit Exit PgUp PgDn

<sup>4</sup> Commit: Remove Reverse-image on Subfile records