

# Windows Applications in DataFlex 19.0

What is new? What has changed?

# Two Most Noticeable Changes

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- DPI scaling support for icon resources
- MDI Tab Interface support

# DPI Scaling for Icon Resources

# What is Windows DPI Scaling?

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- As screen resolutions get higher Windows applications look smaller
- Since Windows VISTA the operating system performs “default scaling” on applications unless instructed not to.

# Default DPI Scale Factors

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- 96 DPI = 100% scaling
- 120 DPI = 125% scaling
- 144 DPI = 150% scaling
- 192 DPI = 200% scaling

# DPI Scaling - Fonts

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- Scale Factor is applied to the system font
- If your application uses system fonts in controls then the fonts scale
- If your application uses font height metrics for size & location then scale factor changes will correctly scale your application
- In DataFlex 17.0 we changed DataFlex to use the correct system font and fixed some bugs relating to applying font height metrics.

# DPI Scaling - Icons

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- Windows DPI Scaling is also applied to icons used within your application.
- This should affect:
  - Menus
  - Toolbars & Ribbon Bars
  - Status bars

# DPI Scaling – Icon Mapping

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- Icons are bit-mapped graphic objects
  - Not implicitly scalable (pixilation or blurring)
- The Windows API supports two basic icon sizes:
  - Small Icons
  - Large Icons
- Toolbars and Menus typically only use small icons
- Ribbon bars typically contain a mixture of small and large icons
- DPI Scaling determines the actual pixel size of small and large icons





# DPI Scaling – Icon Mapping

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<u>DPI Scale</u>	<u>Small Icon</u>	<u>Large Icon</u>
100%	16x16	32x32
125%	20x20	40x40
150%	24x24	48x48
175%	28x28	56x56
200%	32x32	64x64

Windows API function returns correct Icon Size:

`Move (GetSystemMetrics(SM_CXSMICON)) to iSmall`

# Icon Scaling

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- Until DataFlex 19.0 Icon Scaling was not supported correctly.
  - CodeJock Controls handled icon scaling badly
  - With compiled Icon resources, DataFlex did not choose the correct icon size
- Order Entry 18.2 does not scale toolbars, menus or statusbar
- Many Windows Applications scale badly
- Order Entry 19.0

# Icon Scaling - CodeJock

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- Menus & Toolbars

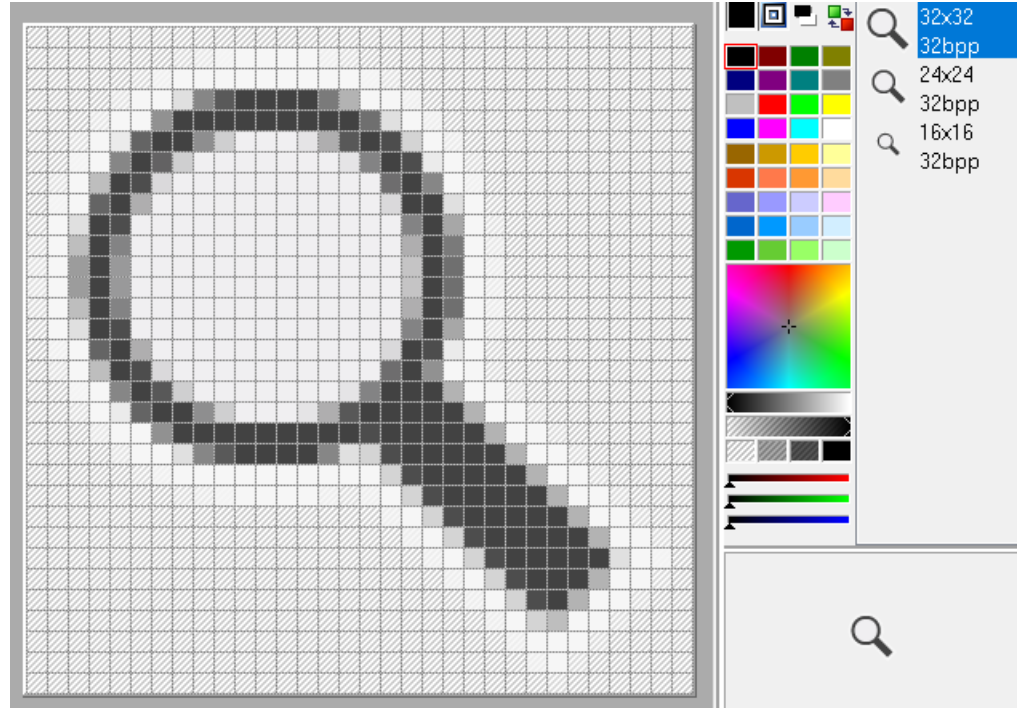
<u>DPI Scale</u>	<u>Small Icon</u>	<u>Large Icon</u>
100%	16x16	32x32
125%	24x24	48x48
150%	24x24	48x48
175%	32x32	64x64
200%	32x32	64x64

- This is probably a good thing!

# Icon Scaling in DataFlex – How to...

- Use Icon Files not bitmaps!
- Each icon now requires icon images of at least 3-sizes
- We now provide our standard toolbar icons in multiple sizes
  - New Flat Icons
  - Old shaded color icons

Set `pbAutoSizeIcons` to `True`



# What about Treeviews etc.?

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- With any control that uses an image list you can explicitly choose the icon size that will be loaded.
  - If you are using an icon with multiple sizes then you “must” explicitly choose the icon size that will be loaded (otherwise the first icon in the file is loaded and scaled)
  - All images in an image list must be the same size.
  - You can probably continue to use 16x16 pixel bitmaps or icons

# cImageList32 with Icon Scaling

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```
Function AddIconDPI String sIcon Returns Integer
    Integer iImage iVoid
    Handle hImage
    Integer iSize

    Move -1 to iImage // assume inability to add
    Move (GetSystemMetrics(SM_CXSMICON)) to iSize

    Move (LoadImage(GetModuleHandle(0), sIcon, IMAGE_ICON, iSize, iSize, LR_DEFAULTSIZE)) to hImage

    If (hImage <> 0) Begin
        Move (ImageList_ReplaceIcon(phImageList(Self), -1, hImage)) to iImage
        Move (DestroyIcon(hImage)) to iVoid
    End

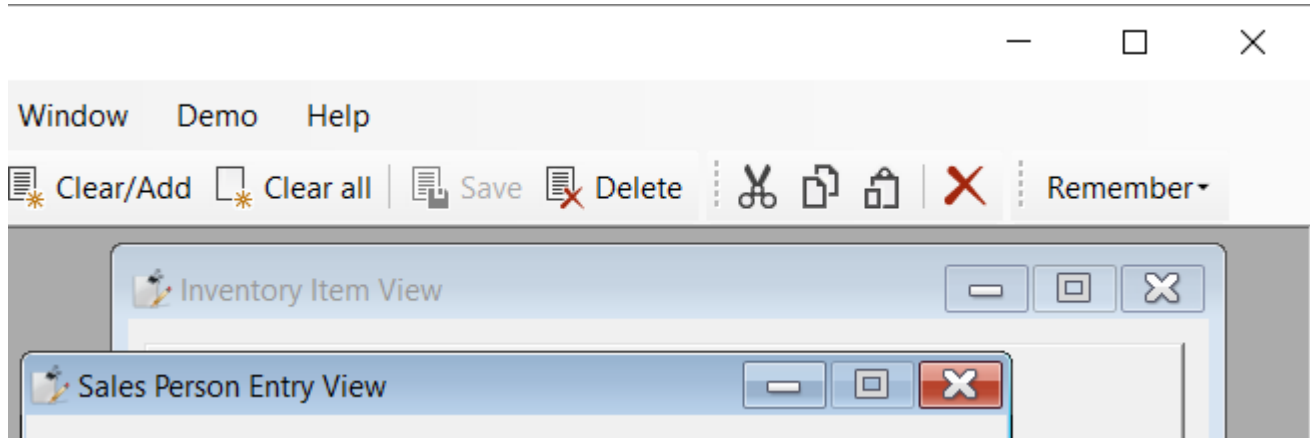
    Function_Return iImage
End_Function
```

# MDI Tab Interface support

# Traditional MDI Interface

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- Microsoft doesn't like MDI Interface so much...
- In Windows 10 – Caption and System buttons are not painted correctly!





# Traditional MDI Interface

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- In Office 2010 – Excel is not much better!
- Modern applications – like Photoshop CC use a combination of TAB interface and floating MDI child windows

# DataFlex MDI Tab Interface

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- DataFlex 19.0 now supports a “Tab Windows” MDI style.
- Uses the CodeJock Tab Workspace API
- This is different to the SIG group’s implementation of Tabbed MDI
- Work In Progress...