

DataFlex Entwickler Tag 2017

Harm Wibier



DataFlex 19



Why we use DataFlex...

- In one of our single day training classes you might:
 - Create a workspace
 - Connect to a complex SQL database
 - Create a set of business rules (DDs)
 - Create a Mobile Web Application
 - Implement a modern, good-looking, responsive web application with a complete set of navigationally contextual views for adding, editing and deleting data according to the business rules
 - Tie everything together with a user-friendly dashboard
 - Employ nice navigational interfaces for breadcrumbs, menus (multiple styles) and user access that are essentially automatic

Why we use DataFlex...

- And then after lunch...
 - Use the power of SQL to create and utilize an SQL view that combines elements of the complex data structure into a tight set of targeted data
- And you would do it all in a matter of hours and in under a couple of hundred lines of code (actually typed)
- And that's just for the Web
- If you had a couple of more hours you could do this in Windows as well

DataFlex 18.x

It's the cumulative effect that counts...

DataFlex 2014 - 18.0

- Rebranding
- Web
 - Version 2 of the Web Framework
 - Grid/List, Upload class, SuggestionForm
- Windows
 - Buttons with images, LinkButton, dbSuggestionForm
 - Optional modal views
- Studio
 - Table Viewer
 - Native SQL Type Modeling
- Data Dictionaries
 - SQL Filtering
- Client Web Services - nullable data type support
- Character encoding translation class

DataFlex 2015 - 18.1

- Web
 - Mobile framework!
 - Complex web properties (structs and arrays)
 - Previewer evolved into interactive designer
- Data Dictionaries
 - Big performance and memory improvements
 - Improved missing (deleted) record handling
- Connectivity
 - Identity column
 - GUID
 - Azure
- Studio - Improved debugger performance
- UChar Array improvements - tables, sequential files, String to UChar functions
- Many new struct/array functions

DataFlex 2016 - 18.2

- Primarily created to fix bugs and implement suggestions
- Web
 - Version 2 of the Mobile Web Framework
 - ParentCombo
 - Flat desktop theme
 - DD Debugger
- Windows
 - Windows 10 Support
 - Parentcombo, month calendar
- Studio
 - Pre/post compile processing
- Data Dictionaries
 - Smart Relates
- Extensive new set of DateTime functions

And now...
Introducing DataFlex 19.0

DataFlex 2017 - 19.0

- Connectivity
 - Managed Connections
 - Improve indexing support
- Windows Framework
 - Enhanced high DPI Support
 - Updated look
 - An MDI alternative style
- Studio, Database Explorer and Database Builder
 - More natural developing using SQL
 - Updated capabilities and look
- Web Framework
 - Server Web Properties
 - New Controls
- Web Application Server
 - Simplified deployment
 - 64-bit support
- Runtime – JSON Parser

DataFlex 2017 - 19.0



Connectivity

Connectivity Goals

- Fully integrate Connection IDs into Tools and Applications
- Improve indexing support
- Improve the flow of SQL-based application development
 - Primary Keys
 - Foreign Keys
 - Clustered Indexes
- Improve the database login process
 - Encrypted credentials
- Make the Convert, Connect, Reconnect process easier to use and more robust

- Maintain backwards compatibility!

SQL Connection Manager

Connection ini file: C:\Projects\Playground\WebOrderSQL_19\Data\DFConnId.ini Reload

Id	Driver	Connection String	Enabl...
LocalWebOrder	MSSQLDRV	SERVER=(local);DATABASE=WebOrder19;trusted_c...	yes

Add... Edit...

Edit a Connection

Database Type: MSSQLDRV

Connection Id: LocalWebOrder Enabled

SQL Server Connect

Select or enter a Server Name:

(local) ...

Use Windows Authentication

Enter user name and password to log on to the server:

User Name:

Password: Store Password

Test Connection

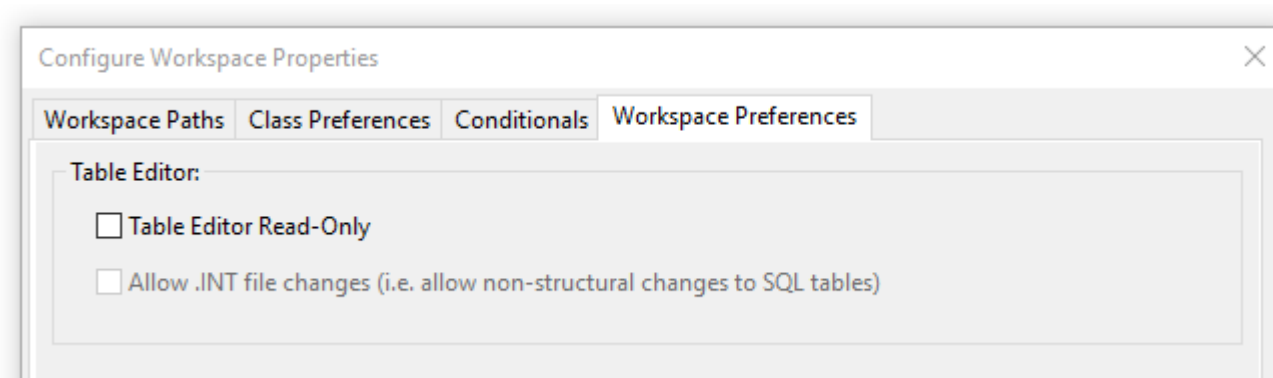
Select or enter a Database Name:

WebOrder19 ... Create Database...

OK Cancel

Connectivity Features

- Environment management
 - Mimimum_Client_Version
 - Match_Client_Server_Version
- Updated default data type mapping
- Restructure control
 - All table changes allowed
 - Only .int file changes allowed
 - No changes allowed
- Fast database switching at runtime
 - RedirectIdConnectString
 - DF_DATABASE_DEFAULT_DATABASE
- Support for SQL Server 2016



Windows Framework

Windows Framework

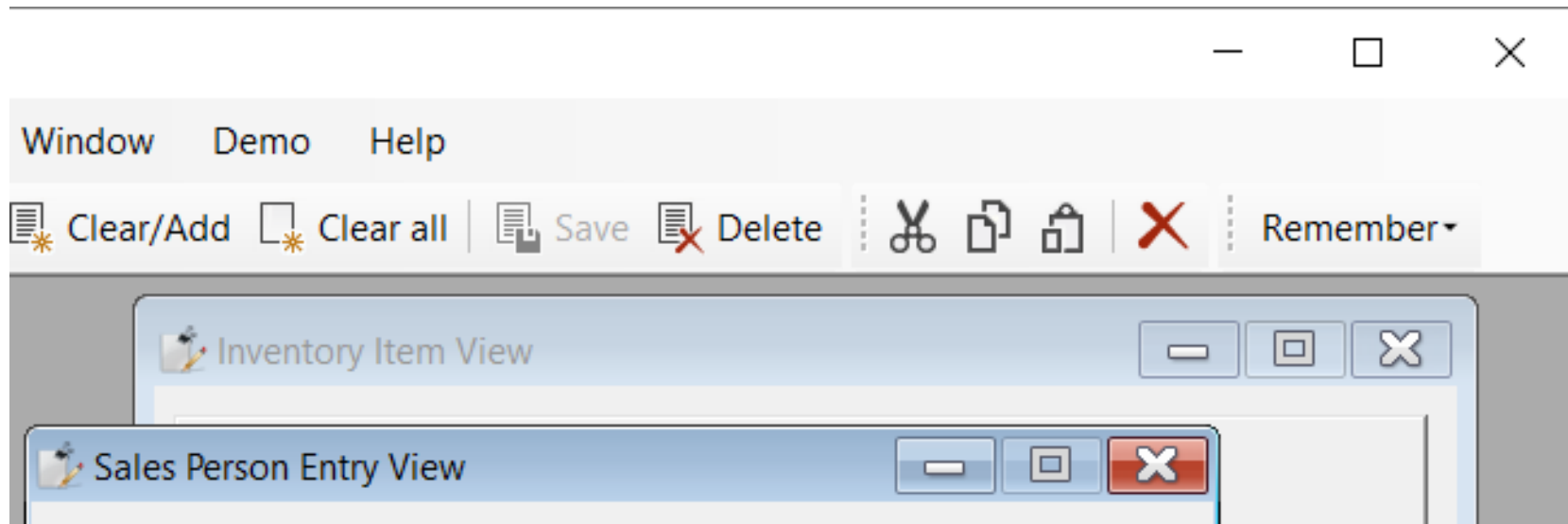
- Improved DPI Awareness
 - The key to making the UI look consistently good across a variety of high-DPI display settings
- Flat Style Icons
 - All of the menu and toolbar icons in our tools and all of the standard icons used in the Framework menu and toolbar are updated to the new style (and high DPI format)
- An alternative approach to MDI in Window

A New Look for the Tools

- These changes also led to improvements in the Studio, Database Explorer and Database Builder
 - They all have a new look
 - Applied all of the DPI changes
 - Replaced images with multi-sized, flat icons
 - We have a lot of images!
 - Updated our theme
 - Refreshed Dashboard and Start Center looks

Traditional MDI Interface

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



An Alternative MDI Style for Windows

- Microsoft has not done a good job of keeping the appearance of MDI dialogs up to date
 - Although this is a great and practical application style, Microsoft is moving away from this
 - It doesn't look like this will change
 - This makes an application appear old fashioned
- Rather than fight this, we are supporting an alternative look for MDI style applications
- Tabbed Workspaces
 - Instead of using overlapping windows your views are placed in tabbed workspaces
 - Views can be split vertically or horizontally, allowing you to see multiple views at one time
 - Views are selected by selecting their tab
 - To work properly special sizing, centering and scrolling of views must be supported – it's all automatic

Database Explorer

- Log changes made to data
 - tablename, tablename, rowid, timestamp, network user, operation (create/edit/delete)
- Supports Managed Connections
- Provides more information about the backend structure
- Updated grids and lists throughout
- Improved filtering
- Modern layout, capabilities and feel

- Vincent's has been very, very busy...

Web Framework

Server Web Properties

- Web properties were designed to configure everything that the client needs to know about (mainly the state of the user interface)
- Applications use web properties for all kinds of state data. This is data that is not needed on the client but needed for the page or session
- In 19.0, Server Web Properties provide a secure method to store application state data
- Lowers data consumption to improve performance on slow networks

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●●●●● O2-UK 4G
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Server Web Properties

- Same syntax as existing web properties
- Handled by the framework
- Client-side properties now use { WebProperty=Client }

```
{ WebProperty=Server }  
Property String psFilter ""
```

```
Procedure OnConstrain  
    String sFilter
```

```
WebGet psFilter of oView to sFilter
```

Implementation

- Stored in a single database table
 - WebAppServerProps
- Serialized to JSON by the runtime
- Page lifetime or session lifetime
- Backwards compatible

```
{ WebProperty=Server }  
Property String[] paCustomers ""
```

```
{ WebProperty=ServerSession }  
Property String[] paCustomers ""
```


Web Framework Controls

- DataFlex 19.0 includes exciting additions to the control set for the Mobile / Touch style
 - Color Picker
 - List Menu
 - Floating Panel
 - Highlight Column
 - Accordion Control
 - Collapsible Group
 - Styled Checkbox and Radio
 - Swipe Buttons (in Lists) and Cards

DataFlex Styler

- <https://styler.dataaccess.eu/>
 - Login with Data Access ID

WebApp Server

WebApp Server

- 64-bit Support
 - Simplifies installation and configuration
 - Allows both 32-bit and 64-bit on the same server
 - Only part of the WebApp Server became 64-bit (not the WebApp.exe)
- Administrator allows applications to be configured to run on other than the default web site
- New Command Line Interface for Managing Web Applications
 - Allows more control over which website is used

Configure New Web Application



Please select a web server share (virtual directory) for this

Web

Test99
Default Web Site
roottest.daehosting.net
Test99

WebOrder

Directory:
e.g. C:\MyWorkspace\AppHtml

C:\Projects\DF\DataFlex 19.0\Examples\WebOrder\AppHtml

Browse...

< Back Next > Cancel Help

Runtime JSON Parser

A funny thing happened on the way to Server Properties...

JavaScript Object Notation

JSON (JavaScript Object Notation) is a lightweight data-interchange format. It is easy for humans to read and write. It is easy for machines to parse and generate. It is based on a subset of the [JavaScript Programming Language, Standard ECMA-262 3rd Edition - December 1999](#). JSON is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, Python, and many others. These properties make JSON an ideal data-interchange language.

The JSON Format

- Objects
- Arrays

- Strings
- Booleans
- Numbers

```
{  
  "name" : "John",  
  "details" : {  
    "age" : 31,  
    "male" : true  
  },  
  "ratings" : [ 8, 7.5, 8, 5.5 ]  
}
```


JSON

```
{  
  "name" : "John",  
  "details" : {  
    "age" : 31,  
    "male" : true,  
  },  
  "ratings" : [  
    8,  
    7.5,  
    8,  
    5.5  
  ]  
}
```

XML

```
<?xml version="1.0" encoding="UTF-8" ?>  
<student>  
  <name>John</name>  
  <details>  
    <age>31</age>  
    <male>true</male>  
  </details>  
  <ratings>  
    <rate>8</rate>  
    <rate>7.5</rate>  
    <rate>8</rate>  
    <rate>5.5</rate>  
  </ratings>  
</student>
```

Why a JSON Parser?

- Designing the server side web properties we needed the ability to...
 - Take DataFlex data of any type (and complexity) and convert it to JSON
 - Take JSON data of any type (and complexity) and convert it to a DataFlex type
- We added this capability to the runtime
- As long as we did that, we made this public so you can do the same thing
- As long as we were doing that we added an interface for a full JSON parser
 - It never ends...

JSON in DataFlex

- More than just a new parser...
- Web Services
 - Built in JSON support
 - Every DataFlex Web-Service can be called using JSON
 - JSON parsing & generation happens in ISAPI handler
- cJSONObject
 - Manually parse & generate JSON
 - Serialize / deserialize structs and arrays
- cJSONHttpTransfer
 - Communicate with JSON Services

Parsing Example

Get Create (RefClass(cJsonObject)) to hoJson

Get ParseString of hoJson '{"name" : "John", "details" : {"age" : 31, "male" : true}}' to bSuccess

If (bSuccess) Begin

 Get Member of hoJson "details" to hoDetails

 Get MemberValue of hoDetails "age" to iAge

 Send Destroy of hoDetails

End

Else Begin

 Send ReportParseError of hoJson

End

Send Destroy of hoJson

JSON <> Struct

```
{  
  "name": "Troy Umstead",  
  "details": {  
    "age": 20,  
    "male": true  
  },  
  "ratings": [  
    2.3,  
    5.2,  
    4.0,  
    9.4  
  ]  
}
```

```
Struct tStudentDetail  
  Integer age  
  Boolean male  
End_Struct
```

```
Struct tStudent  
  String name  
  tStudentDetail details  
  Number[] ratings  
End_Struct
```

JSON > Struct

tStudent student

Get Create (RefClass(cJsonObject)) to hoJson

Get ParseString of hoJson '{"name": "John", "details": {"age": 31, "male": true}, "ratings": [8, 7.5, 8, 5.5]}' to bSuccess

If (bSuccess) Begin

// Convert JSON structure into struct

Get JsonToDataType of hoJson to student

End

Else Begin

Send ReportParseError of hoJson

End

Send Destroy of hoJson

Struct tStudentDetail

Integer age

Boolean male

End_Struct

Struct tStudent

String name

tStudentDetail details

Number[] ratings

End_Struct

Overview

- Connectivity
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Vielen Dank für Ihre Aufmerksamkeit!
Haben Sie Fragen?

