IPI International

Working with PowerShell

Name : IPI Modules and CRUD Operations
Type : PowerShell Scripts and Modules
Developer : Paul I Ighofose and Web Search Results
Date Created : 16/01/2022
Date Updated : 05/02/2022
Requirements : Microsoft Windows 7 upwards. PowerShell version 5 up
Function : PowerShell Query and CRUD Tool for csv files and SQL Server using either ACE OLEDB and System.Data.OleDb or System.Data.SqlClient connections. Also using JavaScript and JQuery to interact with PowerShell running WPF Forms and Web Browsers.

Introduction

In my previous role as Senior Finance Analyst of NHS North West Surrey CCG, I used ADODB connections and VBA code written to pull data, build webpage displays to populate user forms from Outlook, Excel and Ms Access. That way I could get useful tabular data of an item selected in an Excel cell, MS Access field or Selected text of an Outlook item.

Occasionally, I just wanted a desktop link to give me quick access to structured result-sets. Having used PowerShell intensively for a lot of other quick access functions and knowing that it has many capabilities I 1st checked to see how to create VBA Types in PowerShell. Then I checked to see how to create ADODB Record-sets. I found the PowerShell 3 videos with Jason Helmick and Jeffrey Snover encouraging and instructive about using PowerShell Modules.

I started with a simple Contacts record building and retrieval process to determine what was required to achieve CRUD operations, then display of the data from csv or SQL database sources, to finally populating Outlook items, PowerPoint Slides and word documents with filtered and non-filtered result-sets. With displaying the data, I was also able to achieve using both standard and Bootstrap CSS, JavaScript and JQuery, and get 2 way interaction with PowerShell.

Package Structure

- A sample script file starts the process off, by offering test functions to create a Contacts Record and utilise all the Contacts Module functions. Both the sample script and the Contacts Module (TypeContact) utilise all other modules included
- There are 7 Modules
    - TypeContact
    - TypeWebForm
    - FormWPFWebView
    - CrudOledb
    - CrudSql
    - ScriptBlocks
    - SendTos

Save the modules to the default PowerShell Modules folder and open the sample file in PowerShell ISE in Administrator mode

Save Folders

- Place the sample file **Test Contact Type Module.ps1** in \Documents\Source Files\ps1\
  This has functions to test each function of the TypeContact module
- Place the following files under \Documents\WindowsPowerShell\Modules\TypeContact\
  - TypeContact.psm1
  - CheckExists.sql
  - CreateTable.sql
  - spEntityCache_Fix.sql
    - Place the files **psContacts.css** and **bootstrap.min.css** in \Documents\Source Files\css\
    - Place the files **psContacts.js** and **jquery-3.5.1.bom.js** in \Documents\Source Files\js\
- Place **TypeWebForm.psm1** in \ Documents\WindowsPowerShell\Modules\TypeWebForm\
  This module acts as the pre-cursor and build to the FormWPFWebView module. It bundles all the parameters passed to it in to a single object (much like a VBA Custom Type)
- Place **FormWPFWebView.psm1** in \Documents\WindowsPowerShell\Modules\FormWPFWebView\
  This module parses the XML from the module TypeWebForm and displays a WPF grid representing that input. It also displays a WebBrowser control
- Place **CrudOledb.psm1** in \Documents\WindowsPowerShell\Modules\CrudOledb\
  This module handles the select and filtering queries for csv files
- Place **CrudSql.psm1** in \Documents\WindowsPowerShell\Modules\CrudSql\
- This modules handles the full CRUD operations for interacting with SQL Server
- Place **ScriptBlocks.psm1** in \Documents\WindowsPowerShell\Modules\ScriptBlocks\
  This module contains adhoc functions for
  - Formating
  - Convertions
  - Parameter Retrieval
- Place **SendTos.psm1** in \Documents\WindowsPowerShell\Modules\SendTos
  This module handles all the Send to requests for send displayed results to
  - Outlook
  - PowerPoint
  - Word

Sample File Structure

Test Contact Type Module.ps1*

```
1   param ($First_Name, $Last_Name, $Phones, $Emails, $Contact_Title, $ShowSql, $ShowCsv)
2
3   $csv = '..\csv\psContacts.csv'
4   $html = '..\html\psContacts.htm'
5   $style = '<link media="screen" rel="stylesheet" href="../css/psContacts.css" /><link rel="stylesheet" href="../css/bootstrap.min.css" />'
6   $script = '<script src="../js/psContacts.js"></script>'
7   $jQuery = '<script src="../js/jquery-3.5.1.bom.js"></script>'
8   $title = 'Contacts'
9   $Server = '(LocalDB)\MSSQLLocalDB'
10  $Database = 'PowerShellModulesDb'
11  $Table = 'psContacts'
12
13  function Test-WebForm
14 ⊞{...}
18
19  function Test-GetContactsCSV
20 ⊞{...}
24
25  function Test-InsertCSV
26 ⊞{...}
34
35  function Test-InsertOLEDbCSV
36 ⊞{...}
44
45  function Test-UpdateCSV
46 ⊞{...}
55
56  function Test-DeleteCSV
57 ⊞{...}
62
63  function Test-ShowCSV
64 ⊞{...}
67
68  function Test-GetContactsSQL
69 ⊞{...}
76
77  function Test-InsertSQL
78 ⊞{...}
86
87  function Test-UpdateSQL
88 ⊞{...}
97
98  function Test-DeleteSQL
99 ⊞{...}
104
105 function Test-ShowSQL
106 ⊞{...}
109
110 if($ShowSql)
111 ⊞{...}
114
115 if($ShowCsv)
116 ⊞{...}
119
120 cd "C:$env:HOMEPATH\Documents\Source Files\ps1"
121 ⊟if (!$First_Name) {
122     . .\'Test Contact Type Module.ps1' Paul Ighofose 01932,777 paul@home, paul@work 'Mr.'
123 }
```

- Running the sample file in Administrator Mode will load all its test functions for you to try out in the PowerShell console. It will also fill its parameters with the sample variables given for a new contact.
- The changing of the directory is **VERY** important as all the other modules are meant to use \Documents\Source Files\ directory as the base for file locations. As you can see beneath the last function (Test-SHOWSQL) the directory is changed to the \Documents\Source Files\ps1\
- So any csv file created by the modules will be stored in \Documents\Source Files\csv\ and html files in \Documents\Source Files\html\

Test Contact Type Module.ps1*

```
1   param ($First_Name, $Last_Name, $Phones, $Emails, $Contact_Title, $ShowSql, $ShowCsv)
2
3   $csv = '..\csv\psContacts.csv'
4   $html = '..\html\psContacts.htm'
5   $style = '<link media="screen" rel="stylesheet" href="../css/psContacts.css" /><link rel="stylesheet" href="../css/bootstrap.min.css" />'
6   $script = '<script src="../js/psContacts.js"></script>'
7   $jQuery = '<script src="../js/jquery-3.5.1.bom.js"></script>'
8   $title = 'Contacts'
9   $Server = '(LocalDB)\MSSQLLocalDB'
10  $Database = 'PowerShellModulesDb'
11  $Table = 'psContacts'
12
13  function Test-WebForm
14  {...}
18
19  function Test-GetContactsCSV
20  {
21      $tbl = (Convert-ContactCSVtoHTML -CsvPath $csv -HtmlPath $html -Head "$style`r$jQuery`r$script" -Title $title)
22      Invoke-item $html
23  }
24
25  function Test-InsertCSV
26  {
27      $test = Set-Contact -First_Name $First_Name -Last_Name $Last_Name -Phones $Phones -Emails $Emails -Contact_Title $Contact_Title
28      if ($test)
29      {
30          Insert-ContactCSV -CsvPath $csv -Object $test
31          Test-GetContactsCSV
32      }
33  }
```

- The Test-InsertCSV function will
  - Create a Record object using the TypeContact module and assign it to an object variable
  - Then pass in the parameters (updated when the file was first run) and the new object to Insert-ContactCSV of the TypeContact module
    - Which in turn converts the record and outputs its contents to a csv file in \Documents\Source Files\csv using PowerSell's Out-File cmdlet
  - Finally it calls the Test-GetContactCSV function above
    - Which in turn calls the Convert-ContactCSVtoHTML of the TypeContact module, passing in the csv location, html file output path and headers for the web page output
      - And the Convert-ContactCSVtoHTML retrieves the contents of the csv file and using the head and title parameters calls PowerShell's Convertto-HTML cmdlet to convert all to a html file to be saved in \Documents\Source Files\html\
    - And finally invokes the web page file created and displays it in your default web browser

```
function Test-InsertCSV
{...}

function Test-InsertOLEDbCSV
{
    $test = Set-Contact -First_Name $First_Name -Last_Name $Last_Name -Phones $Phones -Emails $Emails -Contact_Title $Contact_Title
    if ($test)
    {
        Insert-ContactOLEDBtoCSV -CsvPath $csv -Object $test
        Test-GetContactsCSV
    }
}
```

- The Test-InsertOLEDbCSV function does the same as Test-InsertCSV, except
    - The Insert-ContactOLEDBtoCSV of the TypeContact module then uses the Insert-OLEDbCSV function of the CrudOledb module to insert the record using PowerShell's OleDb library

```

function Test-UpdateCSV
{
    Param($Id = 1)
    $test = Set-Contact -First_Name $First_Name -Last_Name $Last_Name -Phones $Phones -Emails $Emails -Contact_Title $Contact_Title
    if ($test)
    {
        Update-ContactCSV -Id $Id -CsvPath $csv -Object $test
        Test-GetContactsCSV
    }
}

function Test-DeleteCSV
{
    Param($Id = 2)
    Delete-ContactCSV -Id $Id -CsvPath $csv
    Test-GetContactsCSV
}
```

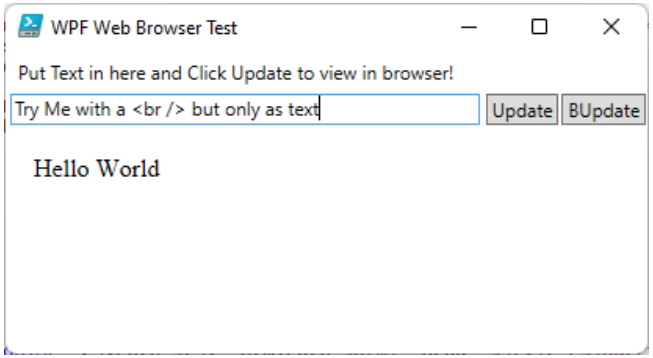
- Instead of using variables like $First_Name and so on you can just use string entries
- The –Phones and –Emails parameters take arrays so a comma between each entry will pass them in as a string in an array
- Or you can run the whole file with the string entries (the first . (dot and a space) tells PowerShell to use the current session) notice (. .\)
  . .\'Test Contact Type Module.ps1' Paul Ighofose 01932,777 paul@home, paul@work 'Mr.'
- As –First_Name, -Last_Name and –Contact_Title all expect single string entries, you will have to surround any string with quotes that you want to just appear in one of these fields.
- Also notice that the entries are positional and without need for parameter names as long as they follow the right order.
- The Test-UpdateSQL function has a default parameter set to 1. Therefore to update a different record you would, in the console
    - Change any one of $First_Name, $Last_Name, $Phones, $Emails, $Contact_Title variables
    - Enter Test-UpdateSQL 2 (the Id number of the current record you are amending)
- The Id parameter is only used in Delete and Update functions to specify which record to update as the insert functions only use a generated Id

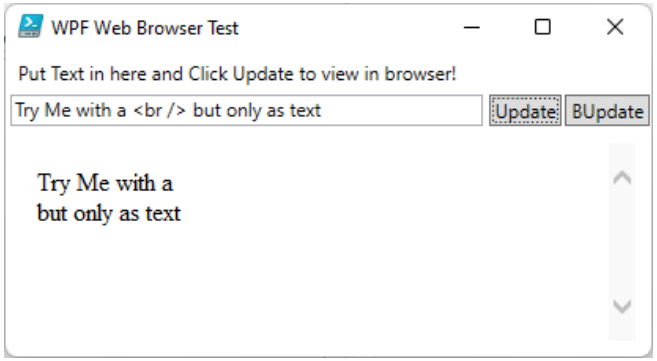
```
function Test-GetContactsSQL
{
    $tbl = (Convert-ContactSQLtoHTML -Server $Server -Database $Database -Table $Table -HtmlPath $html -Head "$style`r$jQuery`r$script" -Title $title)
    if ($tbl)
    {
        Invoke-item $html
    }
}

function Test-InsertSQL
{
    $test = Set-Contact -First_Name $First_Name -Last_Name $Last_Name -Phones $Phones -Emails $Emails -Contact_Title $Contact_Title
    if ($test)
    {
        Insert-ContactSQL -Server $Server -Database $Database -Table $Table -Object $test
        Test-ShowSQL
    }
}

function Test-UpdateSQL
{
    Param($Id = 1)
    $test = Set-Contact -First_Name $First_Name -Last_Name $Last_Name -Phones $Phones -Emails $Emails -Contact_Title $Contact_Title
    if ($test)
    {
        Update-ContactSQL -Id $Id -Server $Server -Database $Database -Table $Table -Object $test
        Test-ShowSQL
    }
}

function Test-DeleteSQL
{
    Param($Id = 2)
    Delete-ContactSQL -Id $Id -Server $Server -Database $Database -Table $Table
    Test-ShowSQL
}

function Test-ShowSQL
{
    Show-ContactSQL -Server $Server -Database $Database -Table $Table -Head "$style`r$jQuery`r$script" -Title $title
}
```

- The Test-InsertSQL, Test-UpdateSQL, Test-DeleteSQL all work similarly to the CSV functions with the exception that
  - When Test-InsertSQL is run
    - The TypeContact module
      - Checks if a Database for the name given exists and if it has a table of the name given. If not, it requests confirmation from the user to create a database and table with the names given.
      - This is where the additional .sql files in the TypeContact folder play their part. The names in those scripts for the database and table are replaced by the names you specify in your parameters. The stored procedure fixes the database scoped configuration of IDENTITY_CACHE to ensure that when records are added, there are no jumps in Id number like the last record having Id = 5 and the next record having Id = 1001.
      - The default database name is PowerShellModulesDb
      - The default table name is psContacts
  - All CRUD operations are done using the CrudSql module
  - Instead of using Test-GetContactsSQL to retrieve the records from SQL Server and display them in your default web browser, they use Test-ShowSQLto make a call to the Show-ContactSQL function of the TypeContact module

```
12
13  function Test-WebForm
14  {
15      $object = Set-WebForm
16      Show-WPFWebViewForm -object $object
17  }
```

- The Test-WebForm just loads the initial Proof of Concept test I ran when starting.
- It calls the Set-WebForm function of the TypeWebForm module
    - Which builds an object with parameters containing a couple of textboxes and buttons to test function and interaction between them and the WebBrowser control.
        - Then calls the Show-WPFWebViewForm function of the FormWPFWebView to parse the XML and display an interactive form.






```
62
63  function Test-ShowCSV
64  {
65      Show-ContactCSV -CsvPath $csv -HtmlPath $html -Head "$style`r$jQuery`r$script" -Title $title
66  }
67
68  function Test-GetContactsSQL
69  {...}
76
77  function Test-InsertSQL
78  {...}
86
87  function Test-UpdateSQL
88  {...}
97
98  function Test-DeleteSQL
99  {...}
104
105 function Test-ShowSQL
106 {
107     Show-ContactSQL -Server $Server -Database $Database -Table $Table -Head "$style`r$jQuery`r$script" -Title $title
108 }
```

- The Show-ContactCSV and Show-ContactSQL functions in the TypeContact Module both pass parameter variables to and call the Set-WebForm function of the TypeWebForm module

```
1109
1110  function Show-ContactCSV
1111  {
1112      [CmdletBinding()]
1113      Param (
1114          [Parameter(Mandatory=$true,
1115                     ValueFromPipeline=$true,
1116                     ValueFromPipelineByPropertyName=$true,
1117                     Position=0)]
1118          [ValidateNotNullOrEmpty()]
1119          [string]
1120          $CsvPath,
1121          [Parameter(Mandatory=$true,
1122                     ValueFromPipeline=$true,
1123                     ValueFromPipelineByPropertyName=$true,
1124                     Position=1)]
1125          [ValidateNotNullOrEmpty()]
1126          [string]
1127          $HtmlPath,
1128          [Parameter(Mandatory=$false,
1129                     ValueFromPipeline=$true,
1130                     ValueFromPipelineByPropertyName=$true,
1131                     Position=2)]
1132          [string]
1133          $Head,
1134          [Parameter(Mandatory=$false,
1135                     ValueFromPipeline=$true,
1136                     ValueFromPipelineByPropertyName=$true,
1137                     Position=3)]
1138          [string]
1139          $Title,
1140          [Parameter(Mandatory=$false,
1141                     ValueFromPipeline=$true,
1142                     ValueFromPipelineByPropertyName=$true,
1143                     Position=4)]
1144          [bool]
1145          $HtmlOnly = $false,
1146          [Parameter(Mandatory=$false,
1147                     ValueFromPipeline=$true,
1148                     ValueFromPipelineByPropertyName=$true,
1149                     Position=5)]
1150          [psobject]
1151          $Filter
1152      )
1153      Begin
1154      {...}
1164      Process
1165      {...}
1268      End
1269      {...}
1284  }
```

```
1286  function Show-ContactSQL
1287  {
1288      [CmdletBinding()]
1289      Param (
1290          [Parameter(Mandatory=$true,
1291                     ValueFromPipeline=$true,
1292                     ValueFromPipelineByPropertyName=$true,
1293                     Position=0)]
1294          [ValidateNotNullOrEmpty()]
1295          [string]
1296          $Server,
1297          [Parameter(Mandatory=$true,
1298                     ValueFromPipeline=$true,
1299                     ValueFromPipelineByPropertyName=$true,
1300                     Position=1)]
1301          [ValidateNotNullOrEmpty()]
1302          [string]
1303          $Database,
1304          [Parameter(Mandatory=$true,
1305                     ValueFromPipeline=$true,
1306                     ValueFromPipelineByPropertyName=$true,
1307                     Position=2)]
1308          [ValidateNotNullOrEmpty()]
1309          [string]
1310          $Table,
1311          [Parameter(Mandatory=$false,
1312                     ValueFromPipeline=$true,
1313                     ValueFromPipelineByPropertyName=$true,
1314                     Position=3)]
1315          [string]
1316          $Head,
1317          [Parameter(Mandatory=$false,
1318                     ValueFromPipeline=$true,
1319                     ValueFromPipelineByPropertyName=$true,
1320                     Position=4)]
1321          [string]
1322          $Title,
1323          [Parameter(Mandatory=$false,
1324                     ValueFromPipeline=$true,
1325                     ValueFromPipelineByPropertyName=$true,
1326                     Position=5)]
1327          [bool]
1328          $HtmlOnly = $false,
1329          [Parameter(Mandatory=$false,
1330                     ValueFromPipeline=$true,
1331                     ValueFromPipelineByPropertyName=$true,
1332                     Position=6)]
1333          [psobject]
1334          $Filter
1335      )
1336      Begin
1337      {...}
1340      Process
1341      {...}
1444      End
1445      {...}
1460  }
```

- The Show-ContactCSV and Show-ContactSQL functions in the TypeContact Module are almost identical with the following exceptions
  - That they call functions that are either csv or SQL related
  - The CSV element can load from an html file as well as object containing html, whereas the SQL element always has to load from an object containing html

```
1152        )
1153        Begin
1154        {
1155            if (!$Filter)
1156            {
1157                $obj = Get-ContactCSV -CsvPath $CsvPath
1158            }
1159            else
1160            {
1161                $obj = Get-ContactOLECSV $CsvPath -Filter $Filter
1162            }
1163        }
1164        Process
1165        {...}
1268        End
1269        {...}
1284    }
```

- The CSV element
  - loads the csv file using PowerShell's Import-Csv cmdlet when there is no filter
  - or when there is a filter, calls the Get-ContactOLECSV function
    - which builds the required SQL syntax for that filter
    - then calls the Get-OLEDbCSV of the CrudOledb module to run the command
      - which returns a Table from System.Data.DataSet

```
1335        )
1336        Begin
1337        {
1338            $obj = Get-ContactSQL -Server $Server -Database $Database -Table $Table -Filter $Filter
1339        }
1340        Process
1341        {...}
1444        End
1445        {...}
1460    }
```

- The SQL element
  - Calls the Get-ContactSQL function
    - Which builds the required SQL syntax with or without the filter
    - Then calls the CRUD-SQL function of the CrudSql module to run the command
      - Which returns a System.Data.DataTable

```
Process
{
    $body = (Format-Html $obj)
    $arr = @('../css/', '../js/')
    foreach ($itm in $arr)
    {
        $Head = ($Head -replace $itm, (Resolve-Path $itm))
    }
    $rDefs = '
        <RowDefinition Height="Auto" />
        <RowDefinition Height="Auto" />
        <RowDefinition Height="Auto" />
    '
    $cDefs = '
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
    ';
    $fields = @(
        @('Id', 60),
        @('Contact_Title', 80),
        @('First_Name', 120),
        @('Last_Name', 200),
        @('Phones', 200),
        @('Emails', 300)
    )
    foreach ($lbl in $($fields|select @{L='Fields'; E={($_; $fields.IndexOf($_); 0; $_ -replace '_', ' '})}))
    {...}
    foreach ($tbx in $($fields|select @{L='Fields'; E={($_; $fields.IndexOf($_); 1; 1})}))
    {...}
    $xBody += ...
    $bColSpan = 'Grid.ColumnSpan="7"';
    $bCol = '';
    $bRowSpan = '';
    $bRow = 'Grid.Row="1"';
    $fWidth = 280;
    $fHeight = 280;
    $fTopMost = $false;
    $bHeight = ($fHeight * 2.5);
    $bWidth = ($fWidth * 3.9);
    $objects = @(@('Empty', ''));
    $dSource = @{}
    'CsvPath', 'HtmlPath' | select @{E={($dSource.Add(($_), (Invoke-Expression "`$$_")))}} > $null
    $jQuery = @('Clear Higlighting', 'Clear JQuery Filter', 'Filter Using JQuery')
    $sources = @(...)
}
```

```
Process
{
    $body = (Format-Html $obj)
    $arr = @('../css/', '../js/')
    foreach ($itm in $arr)
    {
        $Head = ($Head -replace $itm, (Resolve-Path $itm))
    }
    $rDefs = '
        <RowDefinition Height="Auto" />
        <RowDefinition Height="Auto" />
        <RowDefinition Height="Auto" />
    '
    $cDefs = '
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
        <ColumnDefinition Width="Auto" />
    ';
    $fields = @(
        @('Id', 60),
        @('Contact_Title', 80),
        @('First_Name', 120),
        @('Last_Name', 200),
        @('Phones', 200),
        @('Emails', 300)
    )
    foreach ($lbl in $($fields|select @{L='Fields'; E={($_; $fields.IndexOf($_); 0; $_ -replace '_', ' '})}))
    {...}
    foreach ($tbx in $($fields|select @{L='Fields'; E={($_; $fields.IndexOf($_); 1; 1})}))
    {...}
    $xBody += ...
    $bColSpan = 'Grid.ColumnSpan="7"';
    $bCol = '';
    $bRowSpan = '';
    $bRow = 'Grid.Row="1"';
    $fWidth = 280;
    $fHeight = 280;
    $fTopMost = $false;
    $bHeight = ($fHeight * 2.5);
    $bWidth = ($fWidth * 3.9);
    $objects = @(@('Empty', ''));
    $dSource = @{}
    'Server', 'Database', 'Table' | select @{E={($dSource.Add(($_), (Invoke-Expression "`$$_")))}} > $null
    $jQuery = @('Clear Higlighting', 'Clear JQuery Filter', 'Filter Using JQuery')
    $sources = @(...)
}
```

- As you can see, the CSV Element on the left builds its parameter list much the same way the SQL element on the right does
- Note at the top that the relative folders for css and js are resolved to full directory paths using the PowerShell Resolve-Path cmdlet. This is why it is important that the **Test Contact Type Module** sets the current working directory to being it's own location \Documents\Source Files\ps1\ so that relative paths like '../css/' and '../js/' will be resolved to \Documents\Source Files\css\ and \Documents\Source Files\js\
- The Format-Html function is from the ScriptBlocks module
    - Which uses PowerShell's ConvertTo-Html cmdlet to convert the data-table object
    - Then takes the table element from that object and reformats it by repaginating the elements within
- The rDefs and cDefs get parsed by PresentationFramework when they finally arrive in the FormWPFWebView module
- The $fields array is used to build the labels and textboxes

```
foreach ($lbl in $($fields|select @{L='Fields'; E={($_; $fields.IndexOf($_); 0; $_ -replace '_', ' '})}))
{
    $xBody += "
        <Label
            Name = `"lbl$($lbl.Fields[0])`"
            Width = `"$($lbl.Fields[1])`"
            Grid.Column = `"$($lbl.Fields[2])`"
            Grid.Row = `"$($lbl.Fields[3])`"
            Content = `"$($lbl.Fields[4])`"
        />
    "
}
```

```
foreach ($tbx in $($fields|select @{L='Fields'; E={($_; $fields.IndexOf($_); 1; 1})}))
{
    $xBody += "
        <TextBox
            Name = `"$($tbx.Fields[0])`"
            Width = `"$($tbx.Fields[1])`"
            Grid.Column = `"$($tbx.Fields[2])`"
            Grid.Row = `"$($tbx.Fields[3])`"
            Margin = `"$($tbx.Fields[4])`"
        />
    "
}
```

```
1362        $fields = @(...)
1370        foreach ($lbl in $($fields|select @{L='Fields'; E={$_; $fields.IndexOf($_); 0; $_ -replace '_', ' '}})))
1371        {
1372            $xBody += "
1373                <Label
1374                    Name = `"lbl$($lbl.Fields[0])`"
1375                    Width = `"$($lbl.Fields[1])`"
1376                    Grid.Column = `"$($lbl.Fields[2])`"
1377                    Grid.Row = `"$($lbl.Fields[3])`"
1378                    Content = `"$($lbl.Fields[4])`"
1379                />
1380            "
1381        }
1382        foreach ($tbx in $($fields|select @{L='Fields'; E={$_; $fields.IndexOf($_); 1; 1}})))
1383        {
1384            $xBody += "
1385                <TextBox
1386                    Name = `"$($tbx.Fields[0])`"
1387                    Width = `"$($tbx.Fields[1])`"
1388                    Grid.Column = `"$($tbx.Fields[2])`"
1389                    Grid.Row = `"$($tbx.Fields[3])`"
1390                    Margin = `"$($tbx.Fields[4])`"
1391                />
1392            "
1393        }
1394        $xBody += '
1395            <ComboBox
1396                Name = "cboUpdate"
1397                Grid.Column = "6"
1398                Grid.Row = "1"
1399                Margin = "1"
1400            />
1401        '
```

- After the labels and textboxes are built, a combo box is added. This combo box will be used to list functions to call from the WPF Form

```
$objects = @(@('Empty', ''));
$dSource = @{}
'CsvPath', 'HtmlPath' | select @{E={$dSource.Add($_), (Invoke-Expression "`$$_")}}} > $null
$jQuery = @('Clear Higlighting', 'Clear JQuery Filter', 'Filter Using JQuery')
```

```
$dSource = @{}
'Server', 'Database', 'Table' | select @{E={$dSource.Add($_), (Invoke-Expression "`$$_")}}} > $null
```

  - As I am using a combo box to call functions I do not need buttons. To use buttons, I would fill the $objects arrays with button names and the functions they called or text boxes they should get data from like I do in the proof of concept sample

```
if ($objects.Count -eq 0) {
    $objects = @(@('btnUpdate', 'txt1'), @('btnUpdate1', 'txt1'), @())
}
```

  - $dSource is an important parameter set as it passes the file locations or SQL Database and table names back and forth with function calls
  - $jQuery is also important, as it tells the WPF form to skip running other functions.

```
$sources = @(
    @('cboUpdate',
        @('Select a Function', 'Add Contact', 'Clear Fields', 'Clear Higlighting', 'Clear JQuery Filter', 'Delete Contact', 'Get All Contacts',
            'Filter Using JQuery', 'Filter Using OLEDB', 'Send to Email New', 'Send to Email Open', 'Send to PowerPoint New', 'Send to PowerPoint Open',
            'Send to Word New', 'Send to Word Open', 'Update Contact'),
        @('Id', 'Contact_Title', 'First_Name', 'Last_Name', 'Phones', 'Emails'),
        @(
            @(''),
            @('Set-Contact', 'Insert-ContactCSV', 'Show-ContactCSV'),
            @(''),
            @('clearHighlight'),
            @('clearFilter'),
            @('Delete-ContactCSV', 'Show-ContactCSV'),
            @('Show-ContactCSV'),
            @('filterRows'),
            @('Show-ContactCSV'),
            @('Send-ContactsEmailNew'),
            @('Send-ContactsEmail'),
            @('Send-ContactsPowerPointNew'),
            @('Send-ContactsPowerPointOpen'),
            @('Send-ContactsWordNew'),
            @('Send-ContactsWordOpen'),
            @('Set-Contact', 'Update-ContactCSV', 'Show-ContactCSV' )
        )
        @()
    ),
    @()
)
$sources = @(
    @('cboUpdate',
        @('Select a Function', 'Add Contact', 'Clear Fields', 'Clear Higlighting', 'Clear JQuery Filter', 'Delete Contact', 'Get All Contacts',
            'Filter Using JQuery', 'Filter Using SQL', 'Send to Email New', 'Send to Email Open', 'Send to PowerPoint New', 'Send to PowerPoint Open',
            'Send to Word New', 'Send to Word Open', 'Update Contact'),
        @('Id', 'Contact_Title', 'First_Name', 'Last_Name', 'Phones', 'Emails'),
        @(
            @(''),
            @('Set-Contact', 'Insert-ContactSQL', 'Show-ContactSQL'),
            @(''),
            @('clearHighlight'),
            @('clearFilter'),
            @('Delete-ContactSQL', 'Show-ContactSQL'),
            @('Show-ContactSQL'),
            @('filterRows'),
            @('Show-ContactSQL'),
            @('Send-ContactsEmailNew'),
            @('Send-ContactsEmail'),
            @('Send-ContactsPowerPointNew'),
            @('Send-ContactsPowerPointOpen'),
            @('Send-ContactsWordNew'),
            @('Send-ContactsWordOpen'),
            @('Set-Contact', 'Update-ContactSQL', 'Show-ContactSQL' )
        )
        @()
    ),
    @()
)
```

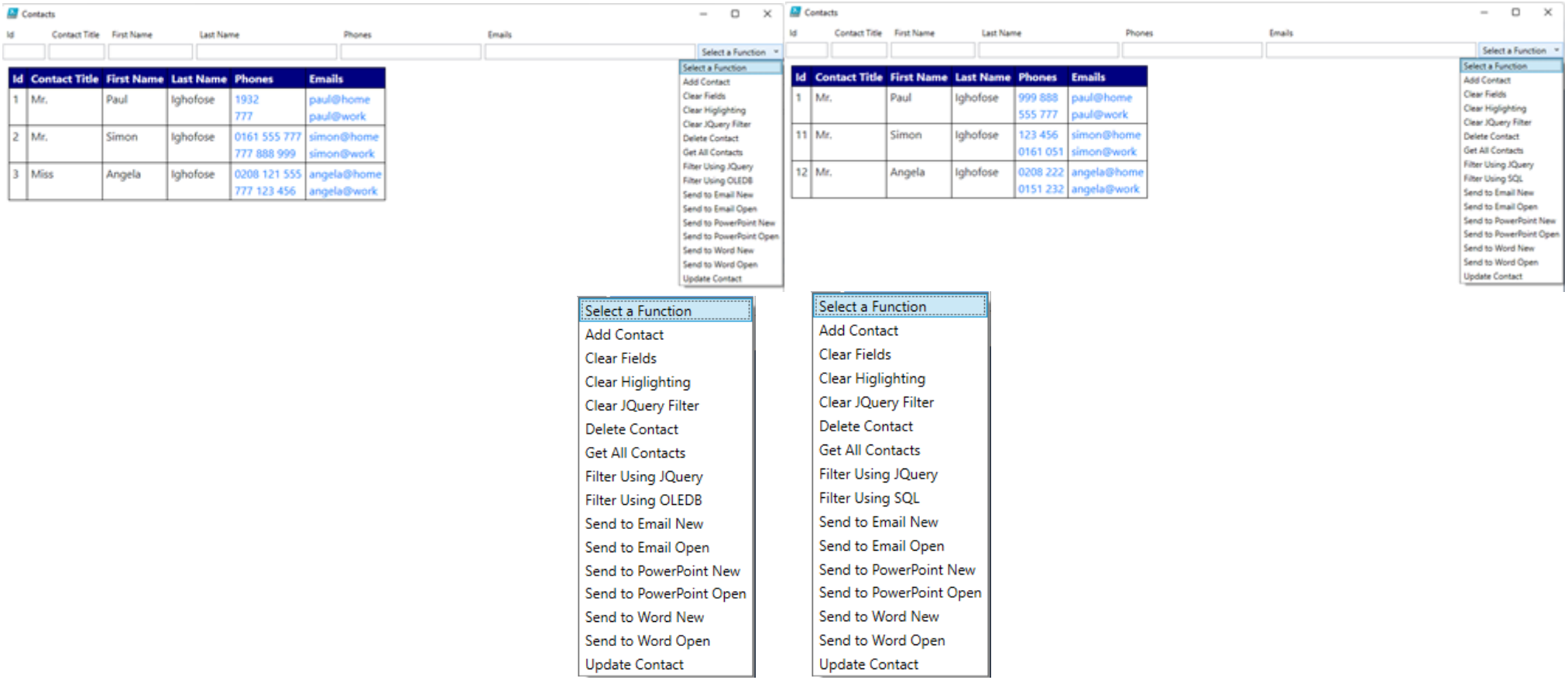
- As you can see, both $sources parameters are almost identical
  - The cboUpdate array is used
    - In its 1st array to populate the combo box used in making function calls
    - In its 2nd array to identify the fields it and the WebBrowser control will be interacting with
    - And, in it's 3rd array, gives the names of the functions to call when an item in the combo box is selected

```
End
{
    if (!$HtmlOnly)
    {
        $prm = @{}
        'head', 'title', 'body', 'cDefs', 'xBody', 'bColSpan', 'objects', 'fWidth', 'fHeight', 'fTopMost', 'sources', 'dSource', 'jQuery' | select @{E=({$prm.Add(($_), (Invoke-Expression "`$$_"))})} > $null
        Show-WPFWebViewForm -object (Set-WebForm @prm)
    }
    else
    {
        return ((
            ConvertTo-Html -Body $body -Head $Head -Title $Title) -replace '<html xmlns="http://www.w3.org/1999/xhtml">',
                '<html xmlns="http://www.w3.org/1999/xhtml"><meta http-equiv="x-ua-compatible" content="IE=11">'
        )
    }
}
```

- Finally, and this is identical for both CSV and SQL
    - if calling the function from the WPF Form the parameter $HtmlOnly is set to true and just the WebBrowser control is updated
    - otherwise, the all parameters are put in to a hash table and passed to the Set-WebForm function of the TypeWebForm module
        - Which then wraps them all up in a Class Object
    - Then the returned Class Object is sent to the Show-WPFWebViewForm function of the FormWPFWebView module
        - Which then displays the results

```
 1   Add-Type -AssemblyName PresentationFramework
 2
 3  function Show-WPFWebViewForm {
 4      [CmdletBinding()]
 5      Param (
 6          [...]
10          [ValidateNotNullOrEmpty()]
11          [psobject]
12          $object
13      )
14      $innerHTML = ... + $object.Title + '
21          </title>
22          <script>
23              ' + $object.Script + ... + $object.Style + '
27          </style>
28          ' + $object.Head + ... + $object.Body + '
32      </body>
33  </html>
34  '
35      [xml]$XAML = ... + $object.Title + '"
40      WindowStartupLocation="' + $object.WindowLocation + ... + $object.WindowSize + '"
42      Top="' + $object.WindowTop + ... + $object.RowDefinitions + '
46          </Grid.RowDefinitions>
47          <Grid.ColumnDefinitions>
48              ' + $object.ColumnDefinitions + ... + $object.XAMLBody + '
51          <WebBrowser
52              HorizontalAlignment="Left"
53              Margin="10,10,10,10"
54              VerticalAlignment="Top"
55              Name="WebBrowser"
56              ' + $object.BrowserColSpan + ... + $object.BrowserColumn + '
58              ' + $object.BrowserRowSpan + ... + $object.BrowserRow + '
60              />
61      </Grid>
62  </Window>
63      ';
64      $reader = New-Object System.Xml.XmlNodeReader($XAML)
65      $_ = ConvertFrom-Json "{'LoadIt': 0}"
66      $Form = [Windows.Markup.XamlReader]::Load($reader)
67      $Form.Width = $object.FormWidth
68      $Form.Topmost = $object.FormTopMost
69      $WebBrowser = $Form.FindName('WebBrowser')
70      $WebBrowser.Width = $object.BrowserWidth
71      $WebBrowser.Height = $object.BrowserHeight
72      $WebBrowser.NavigateToString($innerHTML)
73      $WebBrowser.Add_Navigated(...)
90
91      if ($object.Sources[0] -ne 'Empty') {...}
184
185     if ($object.Objects[0] -ne 'Empty') {...}
200     $Form.ShowDialog()
201 }
```

WPF Web Form View Results



- If you do use Boostrap css like I have, ensure that you do not set the media=screen in the <link></link> tags, as this will cause the JQuery function I have provided to fail.
- The css file I have provided should have its media=screen in the <link></link> tags, as the JQuery function I have provided uses it to create a style tag in the response it sends back to the WPF form for use in formatting html sent to Outlook items
- *Clear Fields*, will clear all entries in the Form Text boxes
- *Clear Highlighting* will use both JavaScript and JQuery to clear all cells highlighted by the JQuery on-click function
- *Clear JQuery* filter will unhide all rows hidden by the *Filter Using JQuery* function. Hidden rows are not sent to Outlook, PowerPoint or Word.
- *Filter Using OLEDB* or *SQL* will limit the table result after querying their relative data sources
- *Send To* functions will create hyperlinks in Outlook, PowerPoint and Word where they exist. Also note that the hyperlinks displayed are created dynamically using JQuery in the JavaScript file provided, and arrays are split on to separate lines

Contacts

Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul			paul@home, paul@work

Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul	Ighofose	1932 777	paul@home paul@work
2	Mr.	Simon	Ighofose	0161 555 777 777 888 999	simon@home simon@work
3	Miss	Angela	Ighofose	0208 121 555 777 123 456	angela@home angela@work

Contacts

Id	Contact Title	First Name	Last Name	Phones	Emails
	Mr.	Paul			paul@home, paul@work

Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul	Ighofose	1932 777	paul@home paul@work
2	Mr.	Simon	Ighofose	0161 555 777 777 888 999	simon@home simon@work
3	Miss	Angela	Ighofose	0208 121 555 777 123 456	angela@home angela@work

- Clicking the cells will
  - either highlight or remove highlighting
  - populate the textboxes or remove entries from those textboxes
  - convert separated line entries back in to comma separated arrays
  - when working with just one row and having clicked all its cells, you can then update parts of that contact and run the *Update Contact* function

Contacts

Id	Contact Title	First Name	Last Name	Phones
1		Simon		

Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul	Ighofose	1932 777	paul@home paul@work
2	Mr.	Simon	Ighofose	0161 555 777 777 888 999	simon@home simon@work

Contacts

Id	Contact Title	First Name	Last Name	Phones
1| 3				

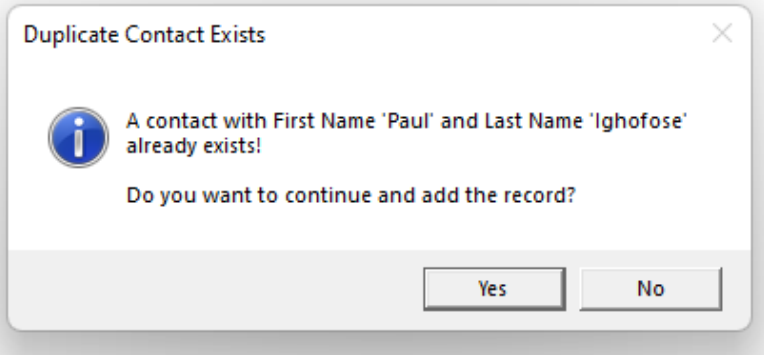
Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul	Ighofose	1932 777	paul@home paul@work
3	Miss	Angela	Ighofose	0208 121 555 777 123 456	angela@home angela@work

- Using the *Filter Using JQuery* function will
  - Hide all rows that do not have a cell highlighted.
  - All rows hidden will not be sent when sending the table to Outlook, PowerPoint or Word
  - Although this form of filtering may allow records to be displayed when using JQuery, they may cause no records to be returned when using *Filter Using OLEDB* or *SQL*
  - Multiple entries of filtered rows are separated with a | (bar/pipe symbol)
    - When the Id field is populated with more than one entry, then only the *Delete Contact* function will use those values in its filter
- Using the *Clear JQuery Filter* will redisplay all rows and leave highlighting as it is

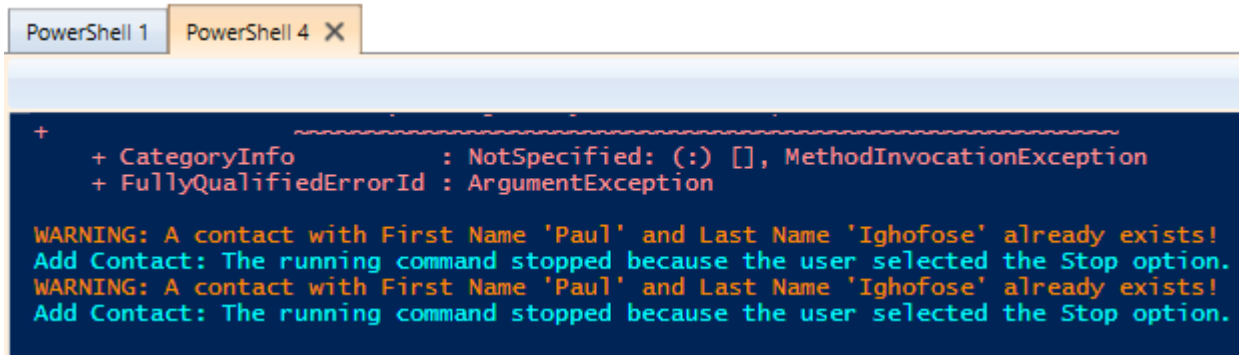
Contacts

Id	Contact Title	First Name	Last Name	Phones	Emails
	Mr.	Paul	Ighofose	999 888, 555 777	paul@home, paul@work

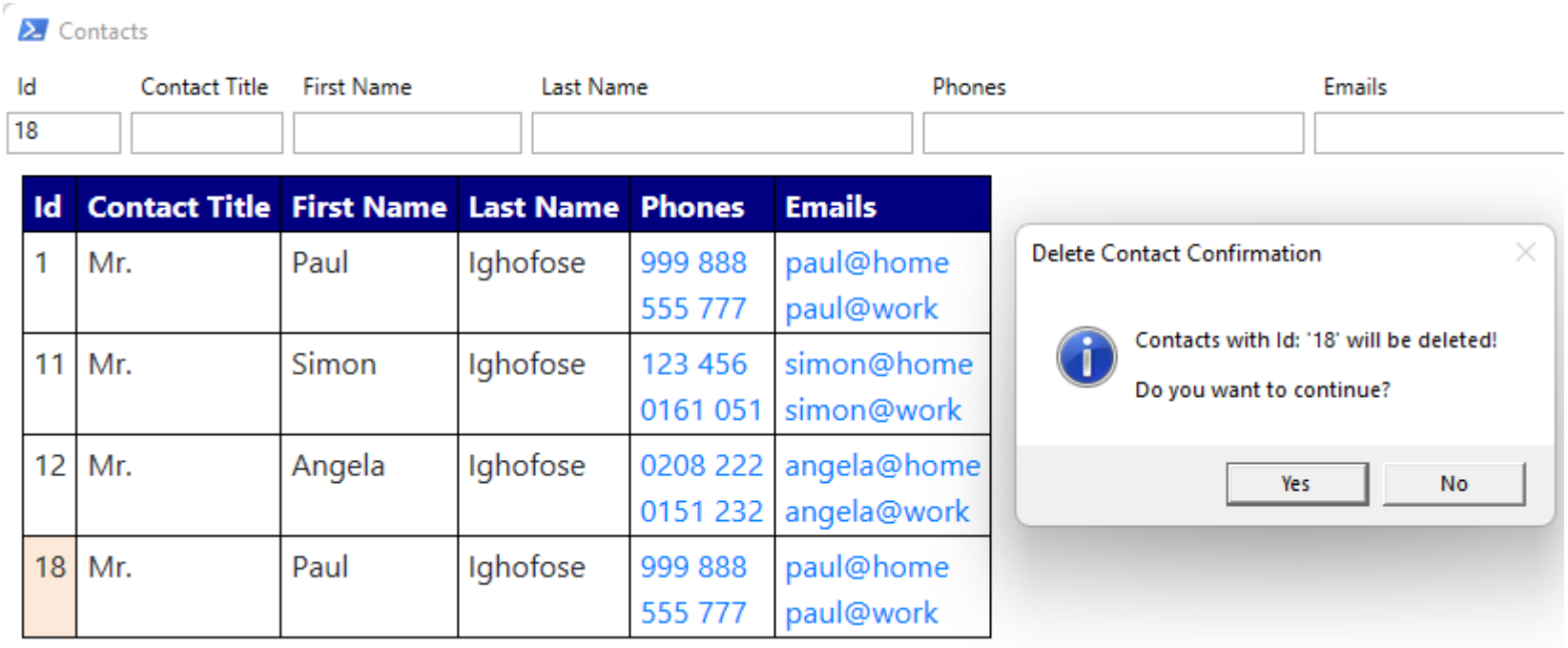
Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul	Ighofose	999 888 555 777	paul@home paul@work
11	Mr.	Simon	Ighofose	123 456 0161 051	simon@home simon@work
12	Mr.	Angela	Ighofose	0208 222 0151 232	angela@home angela@work



- Trying to add a Contact that already exists will throw a PowerShell error warning and give you the option to continue.



- Although the console can be hidden when running from a desktop link, this send the results to the PowerShell console



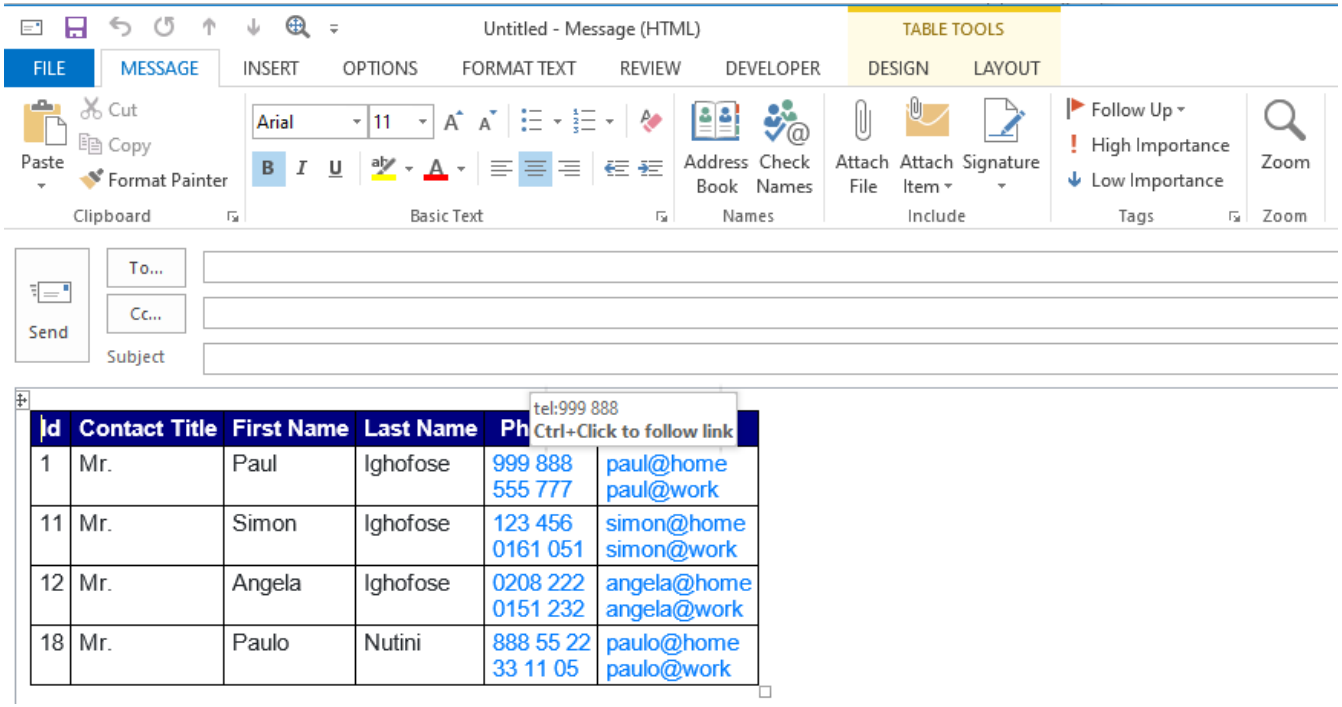
- The same will happen when deleting contacts, an error warning will request confirmation before deleting those contacts

Contacts

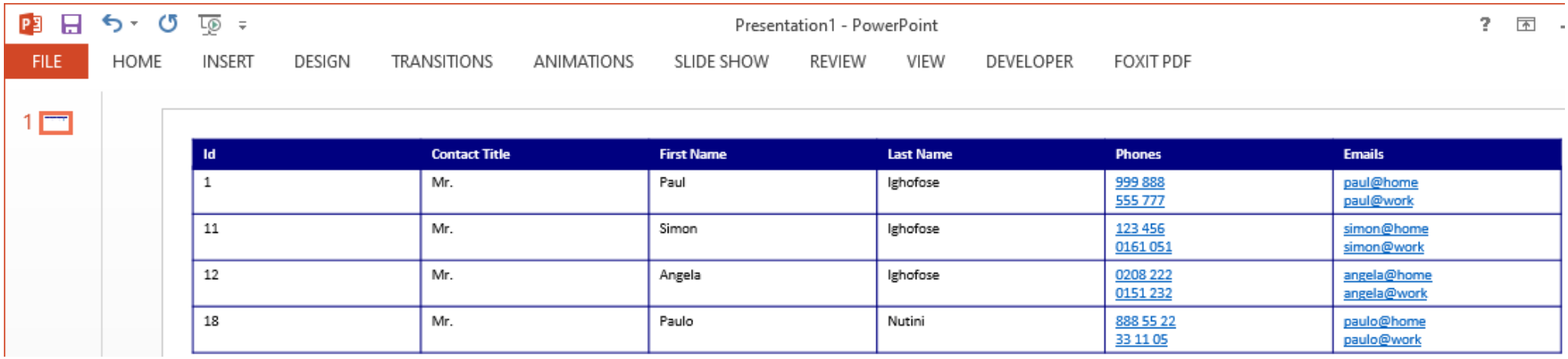
Id	Contact Title	First Name	Last Name	Phones	Emails
18	Mr.	Paulo	Nutini	888 55 22, 33 11 05	paulo@home, paulo@work

Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul	Ighofose	999 888 555 777	paul@home paul@work
11	Mr.	Simon	Ighofose	123 456 0161 051	simon@home simon@work
12	Mr.	Angela	Ighofose	0208 222 0151 232	angela@home angela@work
18	Mr.	Paulo	Nutini	888 55 22 33 11 05	paulo@home paulo@work

- Instead of deleting the Contact you can just use the *Update Contact* function after changing the entries to update the contact with the given Id



- Using either the *Send to Email New* or *Open* functions will send the table displayed, its formatting and any hyperlinks to an Outlook item

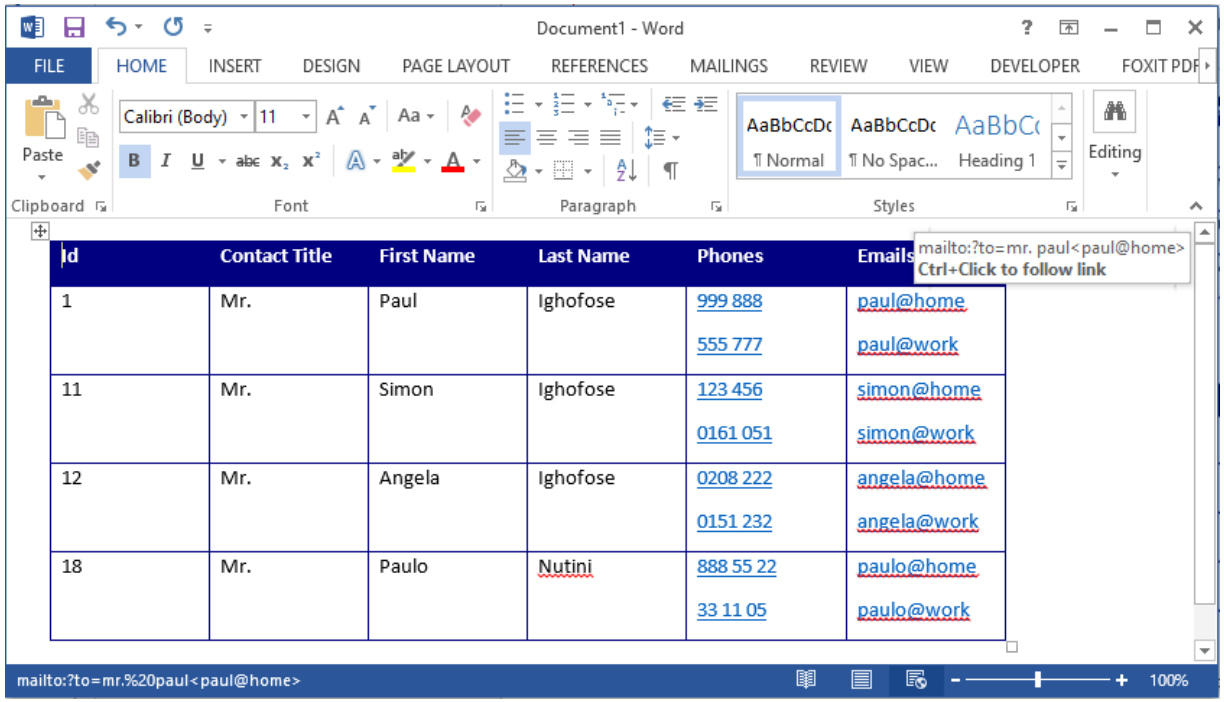


Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul	Ighofose	999 888 555 777	paul@home paul@work
11	Mr.	Simon	Ighofose	123 456 0161 051	simon@home simon@work
12	Mr.	Angela	Ighofose	0208 222 0151 232	angela@home angela@work
18	Mr.	Paulo	Nutini	888 55 22 33 11 05	paulo@home paulo@work

Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul	Ighofose	999 888 555 777	paul@home paul@work
11	Mr.	Simon	Ighofose	123 456 0161 051	simon@home simon@work
12	Mr.	Angela	Ighofose	0208 222 0151 232	angela@home angela@work
18	Mr.	Paulo	Nutini	888 55 22 33 11 05	paulo@home paulo@work

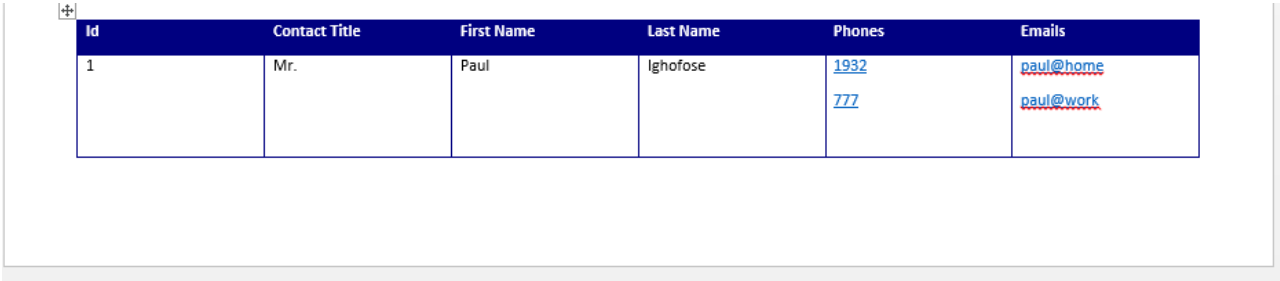
mailto:?to=Mr.%20Paulo<paulo@work>

- Using either the *Send to PowerPoint New* or *Open* functions will send the table displayed, its formatting and any hyperlinks to a PowerPoint presentation, but with PowerPoint, hyperlinks are only active in Slide Show mode.
- If the table has more rows than can fit on one slide, then new slides are created with row headers
- The Sending to Open function inserts a new slide below the current slide on display and before the next slide if there is one below it

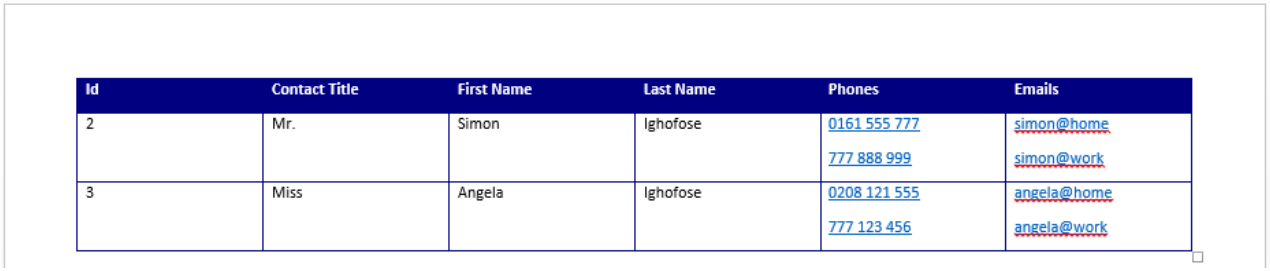


Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul	Ighofose	999 888 555 777	paul@home paul@work
11	Mr.	Simon	Ighofose	123 456 0161 051	simon@home simon@work
12	Mr.	Angela	Ighofose	0208 222 0151 232	angela@home angela@work
18	Mr.	Paulo	Nutini	888 55 22 33 11 05	paulo@home paulo@work

- Using either the *Send to Word New* or *Open* functions will send the table displayed, its formatting and any hyperlinks to a Word Document

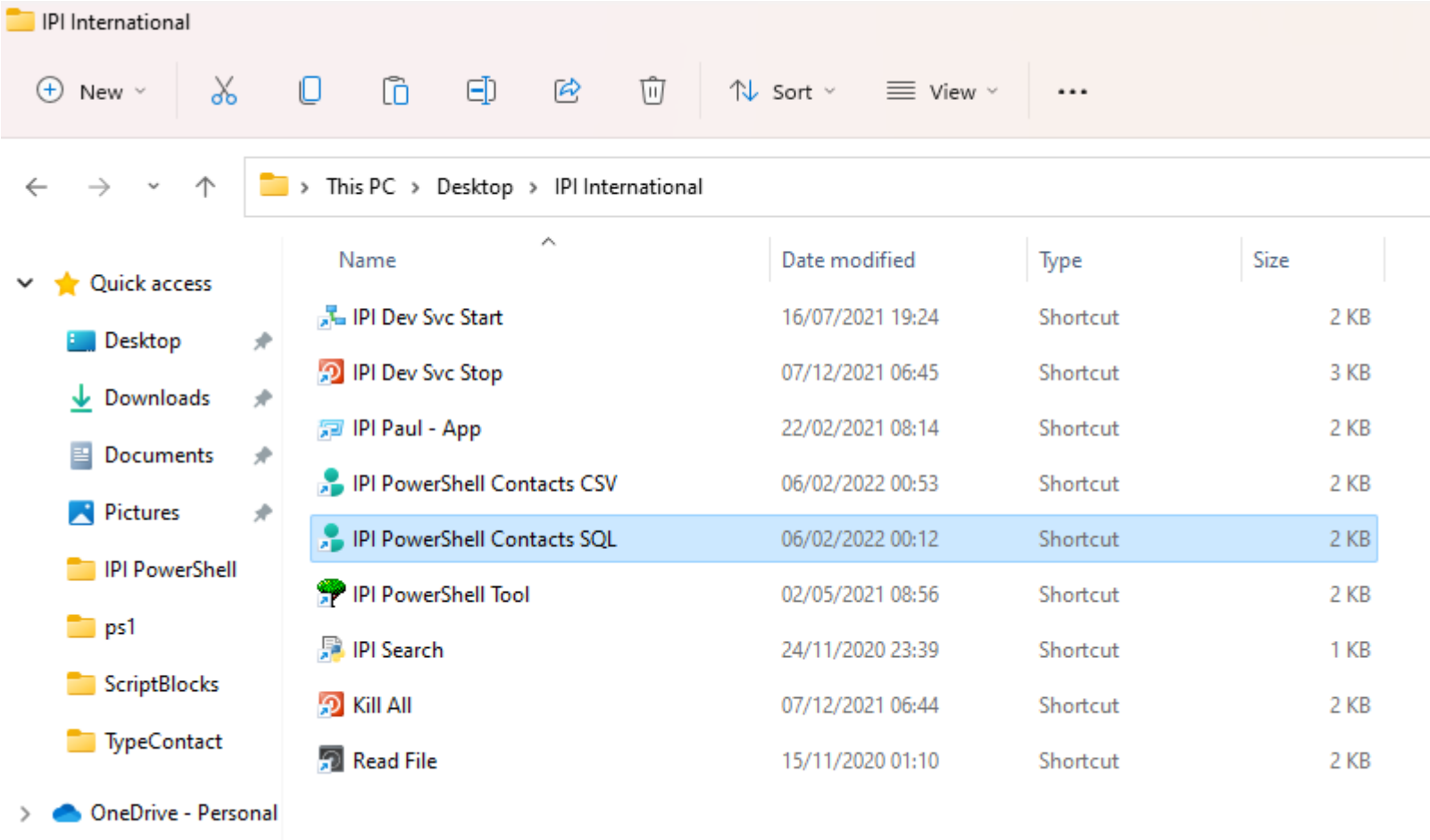


Id	Contact Title	First Name	Last Name	Phones	Emails
1	Mr.	Paul	Ighofose	1932 777	paul@home paul@work



Id	Contact Title	First Name	Last Name	Phones	Emails
2	Mr.	Simon	Ighofose	0161 555 777 777 888 999	simon@home simon@work
3	Miss	Angela	Ighofose	0208 121 555 777 123 456	angela@home angela@work

- Like PowerPoint, if the table cannot fit on one page, then it continues on to a new page and the header is repeated on that page



- You can create a desktop link for the Contacts CSV version and name it IPI PowerShell Contacts CSV
- Then use the path below to run the Contact script and load the WPF Web View Form (best done after you have created your 1st contact)

  C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe -ExecutionPolicy Bypass -WindowStyle Hidden -File "%userprofile%\Documents\Source Files\ps1\Test Contact Type Module.ps1" -ShowCSV 1

- And likewise for IPI PowerShell Contacts SQL

  C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe -ExecutionPolicy Bypass -WindowStyle Hidden -File "%userprofile%\Documents\Source Files\ps1\Test Contact Type Module.ps1" -ShowSql 1

Excuse me if any changes I made whilst creating this help file leads to a function not working
(Late breaking changes always do that ☹)