



Filtering And Business Rules

Data Aquarium Framework offers a unique approach to creating reusable business rules and logic for ASP.NET applications. Today we will explore filtering with business rules.

All code samples are built for a Data Aquarium application generated from *Northwind* database.

TASK 1

You want to enhance the customer lookup capability of *Northwind* application to display only USA customers when users are editing orders in a grid view and have a UK customer list when users are editing orders in form view. This should not affect any other views that are presenting customers.

SOLUTION

Create new class *Class1* and add property *Country* as shown in example below.

C#

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using MyCompany.Data;

public class Class1 : BusinessRules
{
    public Class1()
    {
    }
}
```

```

[RowFilter("Customers", "grid1", "Country")]
public string Country
{
    get
    {
        RowFilter.Canceled = String.IsNullOrEmpty(
            RowFilter.LookupContextController);
        if (RowFilter.LookupContextController == "Orders" &&
            RowFilter.LookupContextView == "editForm1")
            return "UK";
        else
            return "USA";
    }
}
}

```

VB

```

Imports Microsoft.VisualBasic
Imports MyCompany.Data

Public Class Class1
    Inherits BusinessRules

    <RowFilter("Customers", "grid1", "Country")> _
    Protected ReadOnly Property Country() As String
        Get
            RowFilter.Canceled = _
                String.IsNullOrEmpty(RowFilter.LookupContextController)
            If RowFilter.LookupContextController = "Orders" AndAlso _
                RowFilter.LookupContextView = "editForm1" Then
                Return "UK"
            End If
        End Get
    End Property
End Class

```

```

        Else
            Return "USA"
        End If

    End Get
End Property

End Class

```

This class is inherited from *MyCompany.Data.BusinessRules* base.

Property *Country* is adorned with *RowFilter* attribute. This attribute will force the framework to evaluate the property whenever *grid1* view of data controller *Customers* is expected to present data. The value of the property will be applied as a server-side filter.

The filtering property *Country* is notifying the framework that its value shall be ignored when property *LookupContextController* of *RowFilter* is null. This can be accomplished by assigning boolean value *False* to *RowFilter.Canceled*.

Row filter is constructed only once for each data page request received from the client. The framework will reset the cancellation flag of row filter prior to evaluating each business rules property matched to the requesting data controller view. If evaluation of the property has resulted in cancellation then property value is ignored. Otherwise the value is inserted as a parameterized SQL expression in the WHERE clause of SELECT statement constructed by the framework.

The third argument of *RowFilter* attribute applied to *Country* property specifies the name of the field that must be filtered. This is useful if the property of the business rule is named differently than the actual field defined in the data controller view. It is redundant in our example.

Class *BusinessRules* features *RowFilter* property that gives you access to *Controller*, *View*, *LookupContextController*, *LookupContextView*, and *LookupContextFieldName* that are useful to determine if and how the filter shall be applied. Lookup context properties are informing you if the data has been requested by the lookup field. You can

examine lookup context field name to apply a server-side filter to the data that might be helpful if the same database lookup data is used to provide lookup values to more than one table in your database. If the data is requested by a standalone data view then you will find that all of the lookup context properties are equal to null.

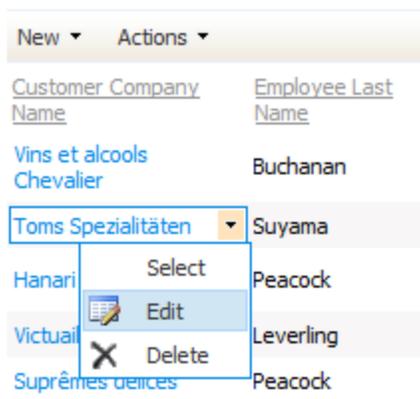
Multiple *RowFilter* attributes can be applied to the same property.

Now you have to link the new business rules to *Customers* data controller defined in *~/Controllers/Customers.xml*. This is done by adding attribute handler as shown here.

```
<dataController name="Customers"
  conflictDetection="overwriteChanges"
  label="Customers" xmlns="urn:schemas-codeontime-com:data-aquarium"
  handler="Class1">
  .....
```

Run your application or navigate to the online demo at <http://dev.codeontime.com/demo/filteringrules/?controller=Orders>.

Start editing any order in the grid view of orders.



Click on the link with the customer name.

Record ▾

Customer Company Name Employee La:
Name

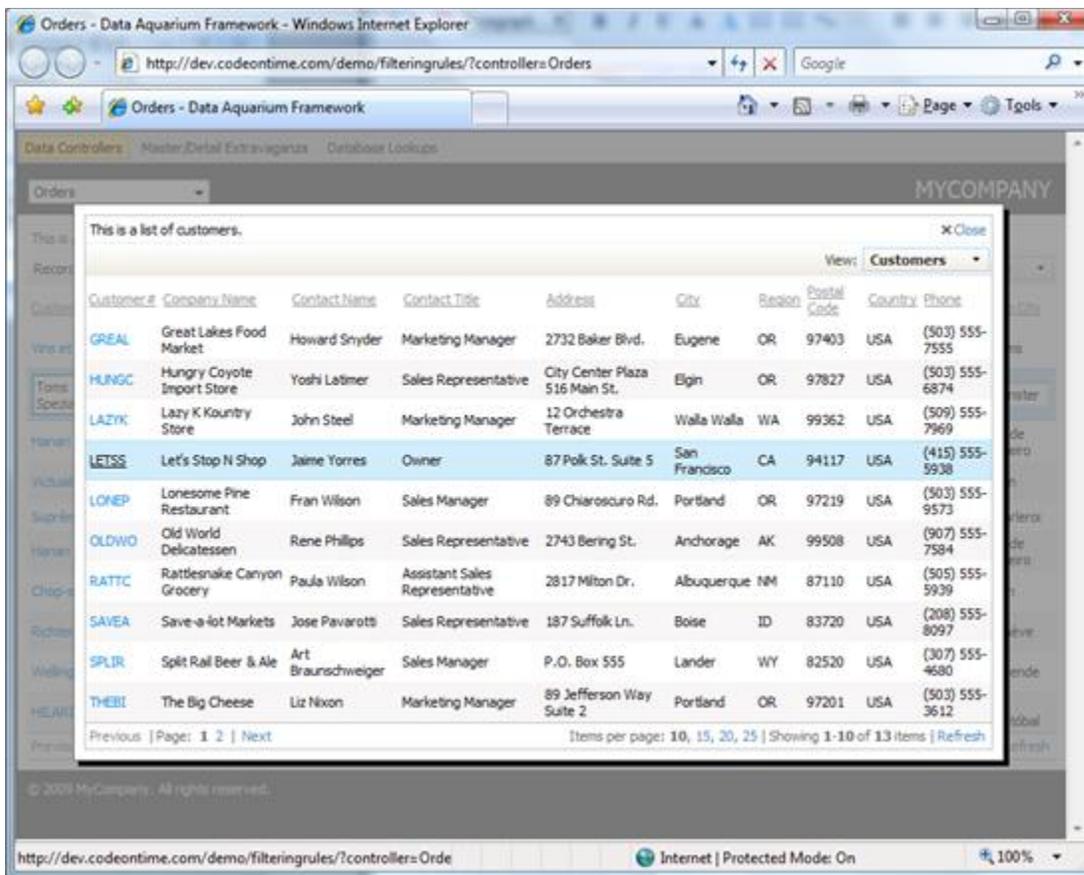
Vins et alcools Chevalier Buchanan

Toms Spezialitäten Suyama

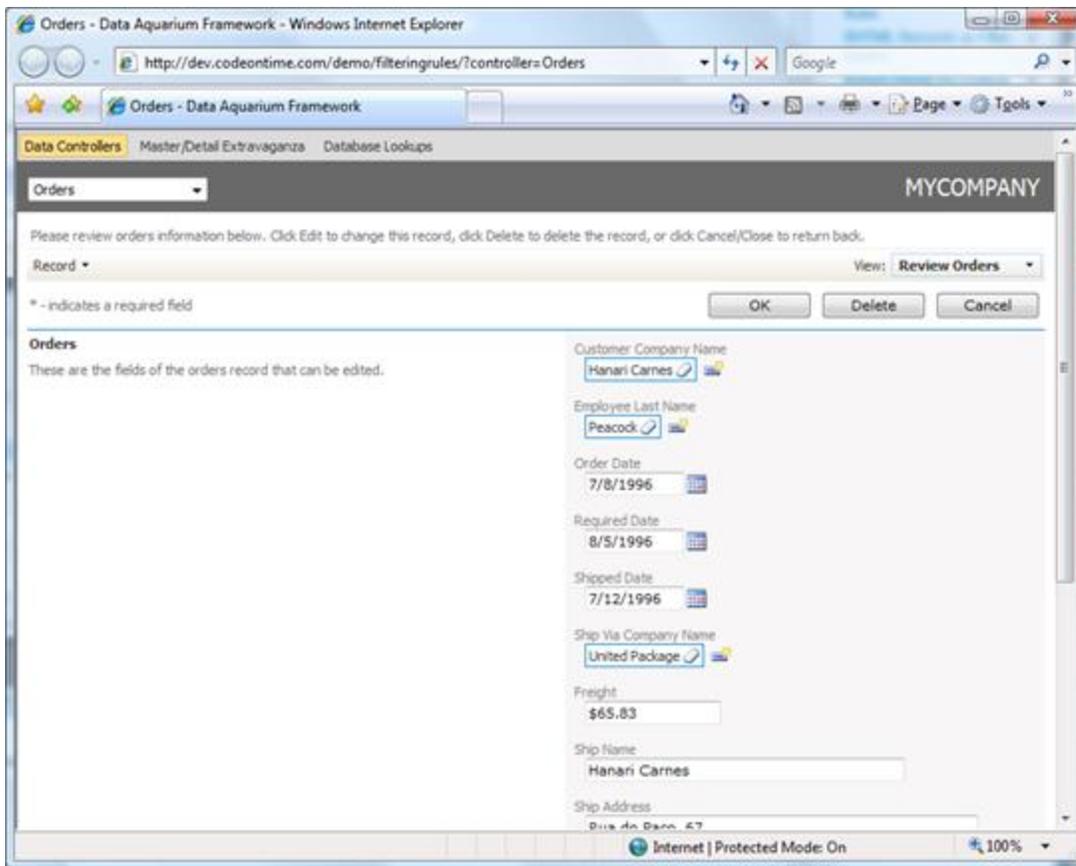
Hanari Select Customer# Peacock

Victuailles en stock Leverling

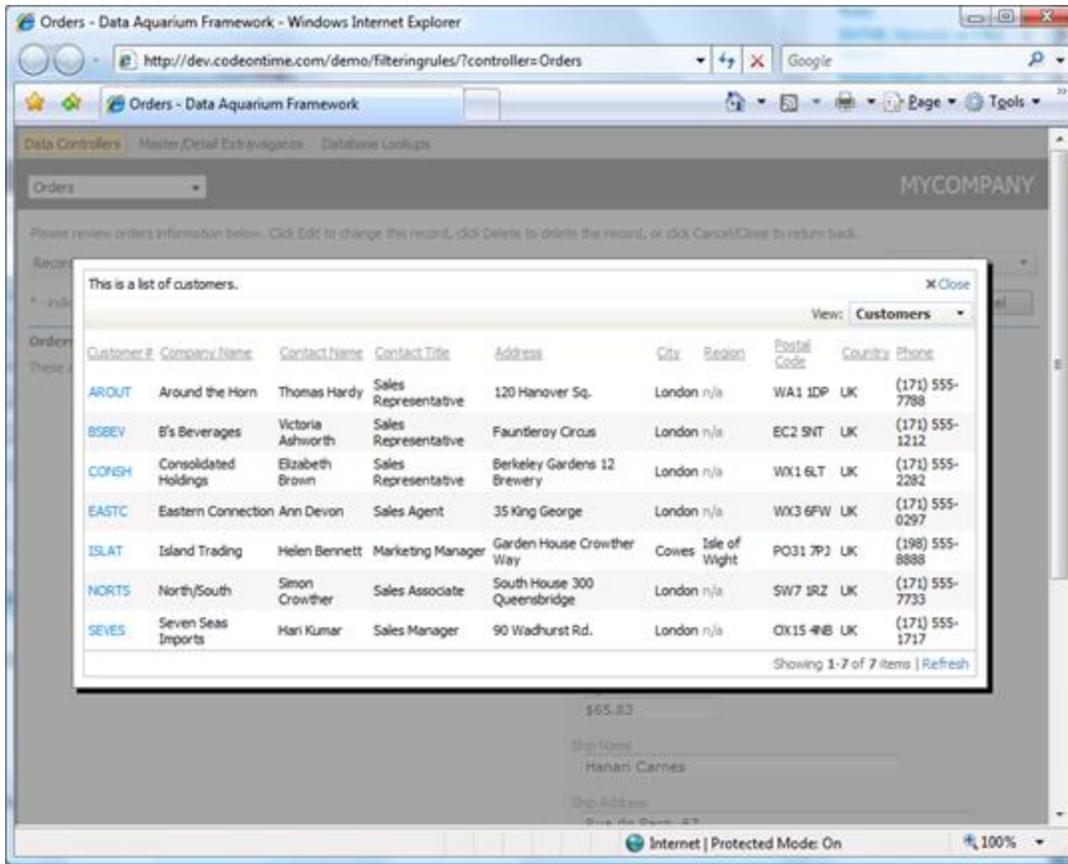
Customer lookup window will display 13 records of customers from USA.



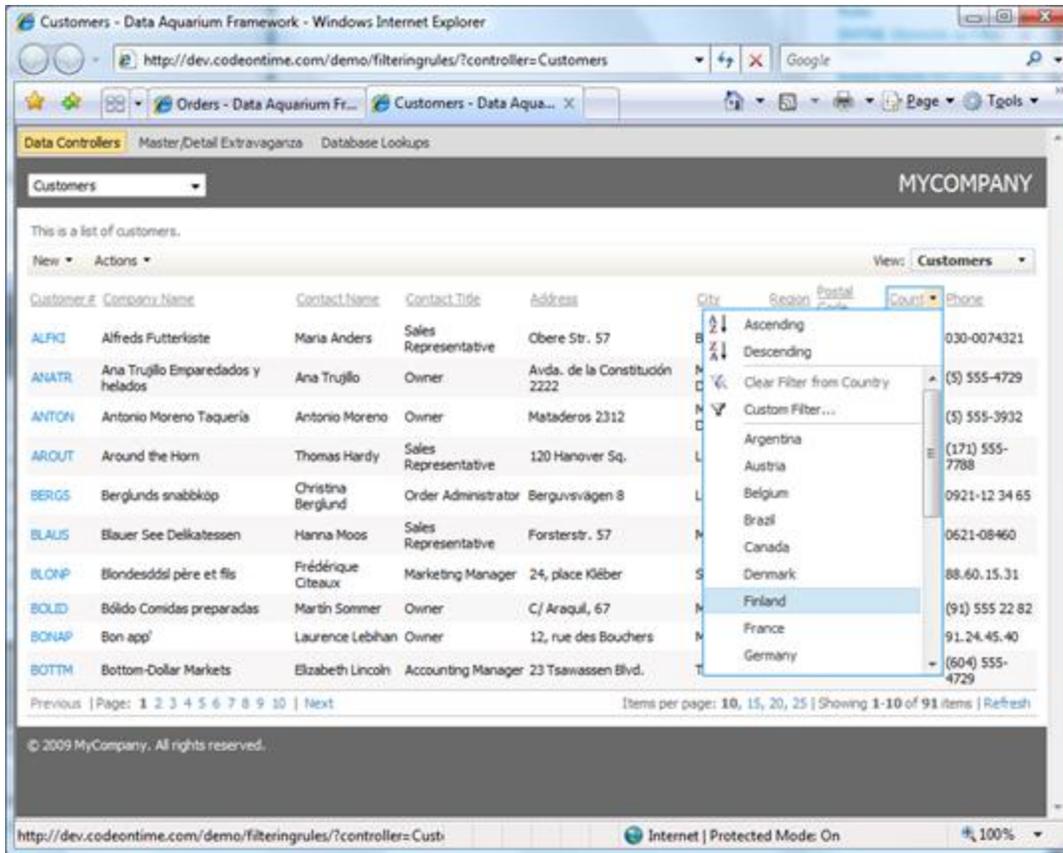
Press *Escape* key and click on any other link in *Customer Company Name* column. Click *Edit* button to start editing record in the form view *editForm1*.



Click on the lookup link in *Customer Company Name* field. Notice that only UK customers are presented.



Let's see if our business rules have affected the global list of customers. Navigate to <http://dev.codeontime.com/demo/filteringrules?controller=Customers>. About ninety customer records shall be displayed. We have used *RowFilter.Canceled* property to prevent filtering when the data is no requested in the context of the lookup field.



TASK 2

You want to limit the list of employees to those born between 1/1/1950 and 11/1/1960.

SOLUTION

Continue modifying our class and add *BirthDate* and *BirthDate2* properties.

C#

```
[RowFilter("Employees", "grid1", "BirthDate",
    RowFilterOperation.GreaterThanOrEqual)]
public DateTime BirthDate
{
    get
    {
        return new DateTime(1950, 1, 1);
    }
}
```

```

    }
}

[RowFilter("Employees", "grid1", "BirthDate",
    RowFilterOperation.LessThanOrEqual)]
public DateTime BirthDate2
{
    get
    {
        return new DateTime(1960, 1, 1);
    }
}

```

VB

```

<RowFilter("Employees", "grid1", "BirthDate", _
    RowFilterOperation.GreaterThanOrEqual)> _
    Protected ReadOnly Property BirthDate() As DateTime
    Get
        Return New DateTime(1950, 1, 1)
    End Get
End Property

```

```

<RowFilter("Employees", "grid1", "BirthDate", _
    RowFilterOperation.LessThanOrEqual)> _
    Protected ReadOnly Property BirthDate2() As DateTime
    Get
        Return New DateTime(1960, 1, 1)
    End Get
End Property

```

Link *Class1* to *~/Controllers/Employees.xml* data controller in the same fashion as we did for *Customers* data controller. Properties *BirthDate* and *BirthDate2* are creating a range filter for employee field *BirthDate*.

You can see filtering by BirthDate in action at <http://dev.codeontime.com/demo/filteringrules/?controller=Employees>.

This filter is consistently applied whenever employee information is presented in data views.

TASK 3

You want to filter data based on ASP.NET session variable.

SOLUTION

Business rules have property *Context* that provide access to standard *Request*, *Response*, *Session*, *Cache*, and *Application* objects available in ASP.NET web forms. If you have a value stored in the session variable then you can easily apply its value as a filter.

```
<RowFilter("Customers", "grid1", "Country")> _  
Protected ReadOnly Property CountryFilter() As String  
    Get  
        Return Context.Session("Country")  
    End Get  
End Property
```

TASK 4

You want to filter data for a certain user roles.

SOLUTION

The following code will inspect user role if a current user is not a member of *Admin* role then only customers from *Finland* are presented. Administrator's view is not limited by a filter, which is accomplishing by cancelling filtering caused by *CountryFilter* property.

```
<RowFilter("Customers", "grid1", "Country")> _  
Protected ReadOnly Property CountryFilter() As String
```

```
Get
    If Context.User.IsInRole("Admin") Then
        RowFilter.Canceled = True
        Return String.Empty
    Else
        Return "Finland"
    End If
End Get
End Property
```

Remember that if multiple filter properties are applicable to a give data page request then each filtering property must cancel row filter on its own.

CONCLUSION

Business rules in [Data Aquarium Framework](#) web applications allow efficient data filtering logic that is reused throughout your application. Subscribe to [premium projects](#) and start being productive today.

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