

# Custom Functions

Developing complex expressions for reports



# Overview

- Embedded Code
- Custom Assembly

# Embedded Code

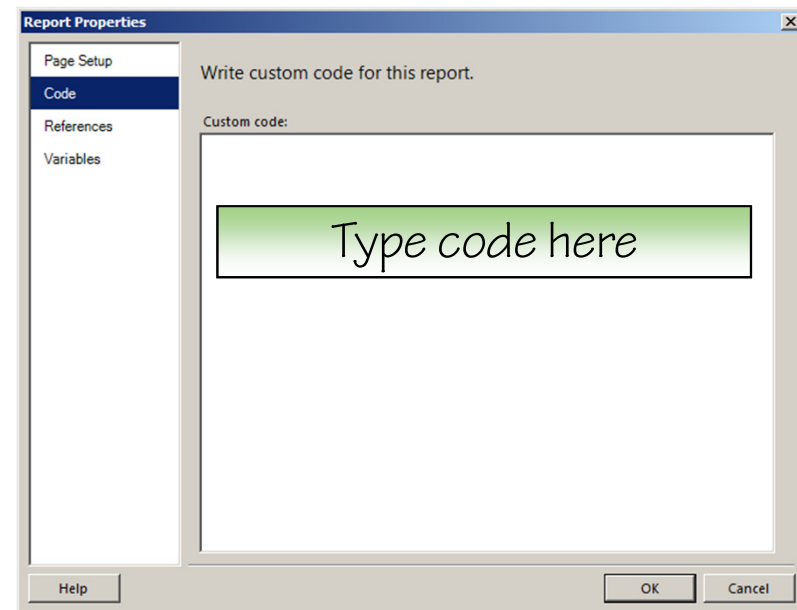
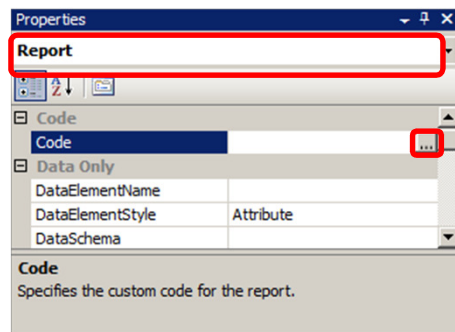
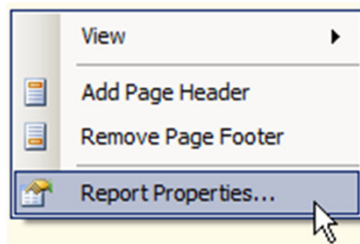
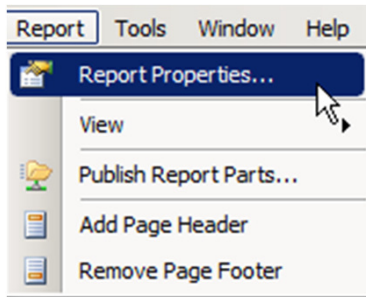
## ■ Pros

- Easy implementation
- One place to change expression
- Support for loops (FOR, WHILE) or conditions (IF...THEN, CASE)
- Built-in support for the following namespaces without qualifiers
  - Microsoft.VisualBasic
  - System.Convert
  - System.Math

## ■ Cons

- Visual Basic .NET only
- Scope limited to current report
- No IntelliSense, syntax checking, or debugging tools
- Inability to access dataset objects or use network or file I/O

# Code Property



# Example Function

```
Function GetStatus(ByVal StatusType As String, ByVal StatusCondition As Decimal,  
    ByVal StatusThreshold As Decimal) As String
```

```
    Dim ReturnValue As String
```

```
    Select Case StatusType
```

```
        Case "Color"
```

```
            Select Case StatusCondition
```

```
                Case Is < .02
```

```
                    ReturnValue = "Red"
```

```
                Case Is > StatusThreshold
```

```
                    ReturnValue = "Green"
```

```
                Case Else
```

```
                    ReturnValue = "Black"
```

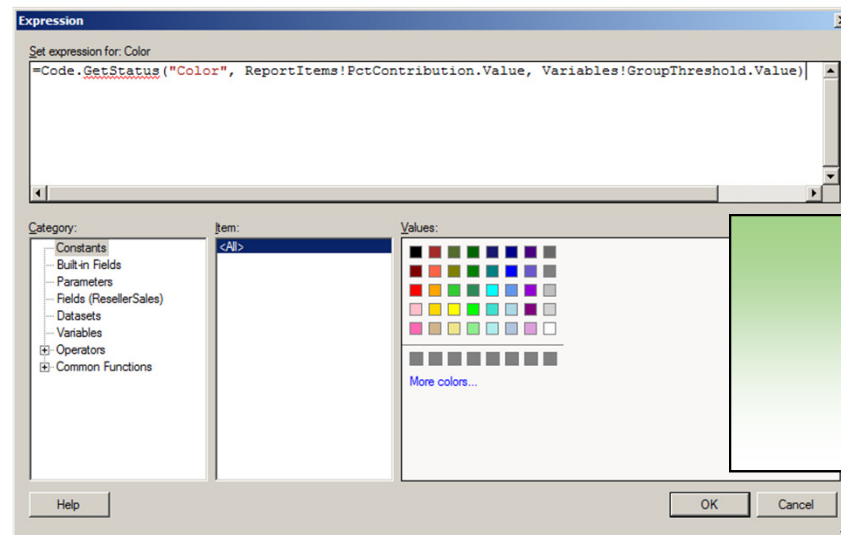
```
            End Select
```

```
    ...
```

```
    Return ReturnValue
```

```
End Function
```

# Function Usage



=Code.Method

Code member  
and method

=Code.GetStatus(  
    "Color",  
    ReportItems!PctContribution.Value,  
    Variables!GroupThreshold.Value)

Arguments

# Custom Assembly

## ■ Pros

- Usable in multiple reports
- Development in any .NET language

## ■ Cons

- .NET managed code only
- No support for developing or debugging within BIDS
- Additional steps to deploy and secure

# Custom Assembly Implementation

1. Develop and compile class library
2. Place custom assembly in Report Designer folder

*%ProgramFiles%\Microsoft Visual Studio 9.0\Common7\IDE\PrivateAssemblies*

3. Place custom assembly in report server bin folder

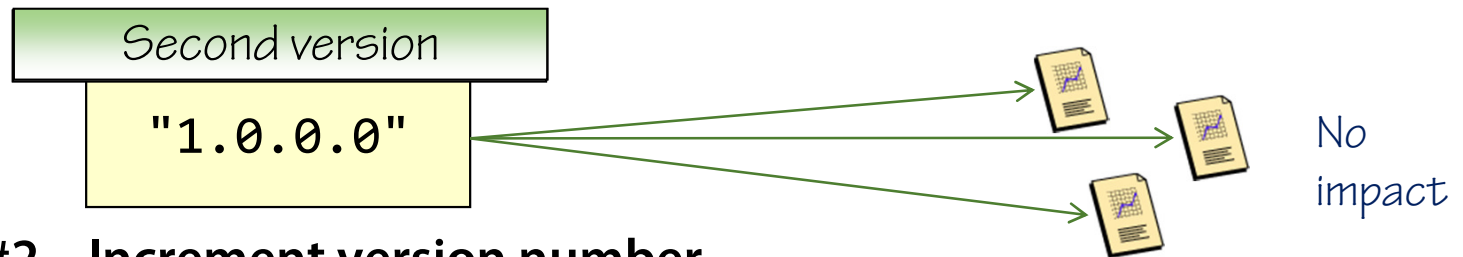
*%ProgramFiles%\Microsoft SQL Server\MSRS10\_50.MSSQLSERVER\Reporting Services\ReportServer\bin*

4. Grant code permissions if necessary

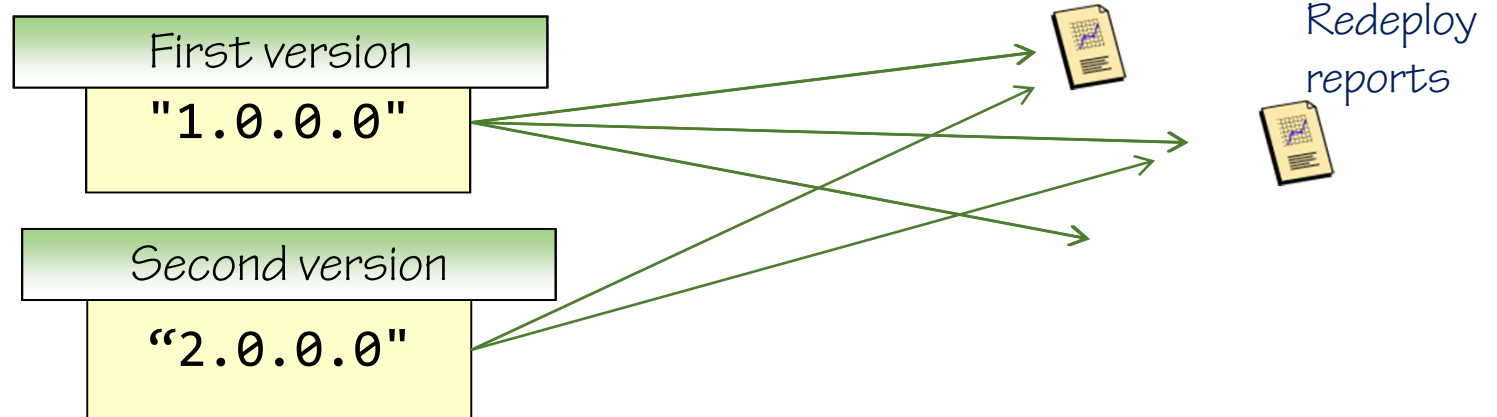


# Version Numbering

- Option #1 – Maintain one version number



- Option #2 – Increment version number

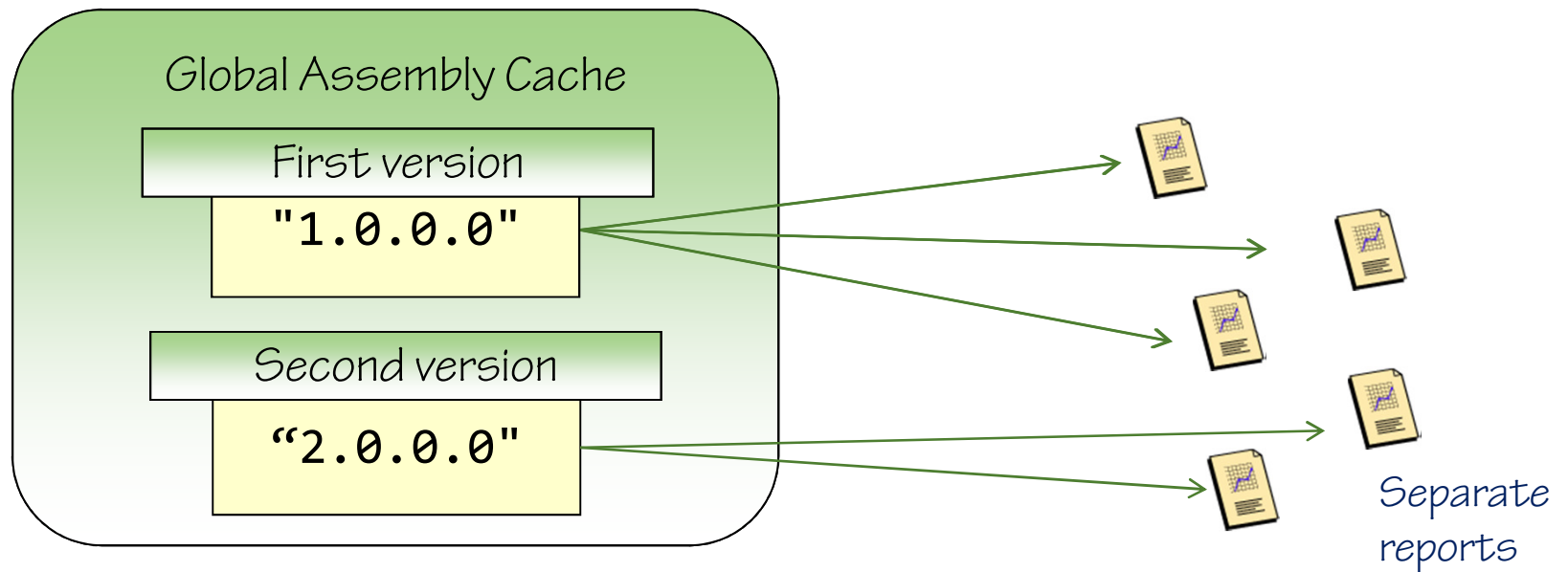


# Version Numbering

- Option #1 – Maintain one version number



- Option #2 – Increment version number

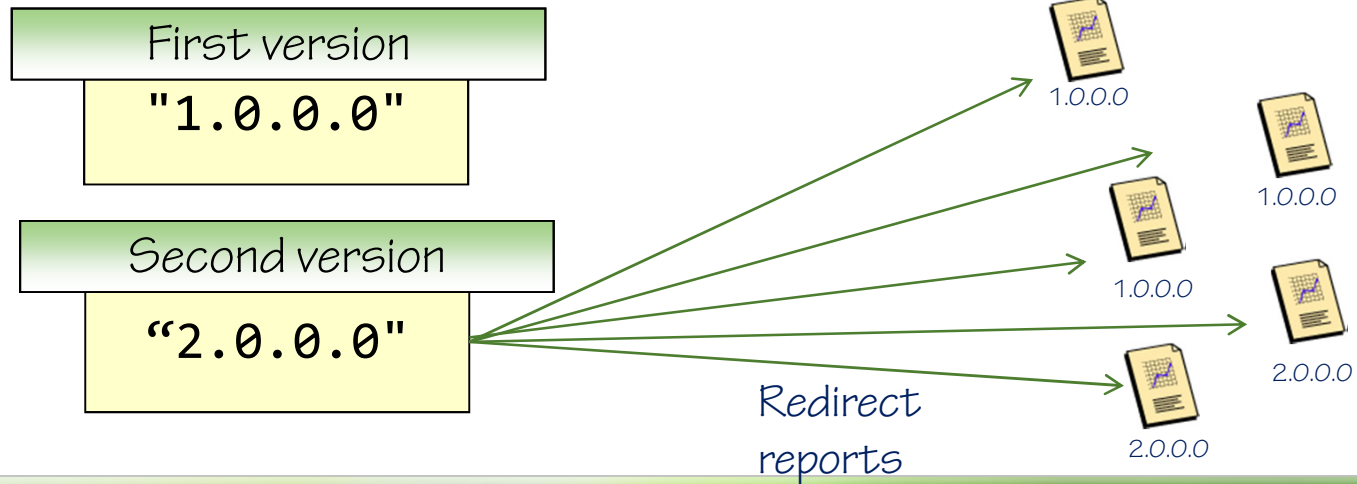


# Version Numbering

```
<configuration>
  <runtime>
    <assemblyBinding xmlns="urn:schemas-microsoft-com:asm.v1">
      <dependentAssembly>
        <assemblyIdentity name="myAssembly"
          publicKeyToken="32ab4ba45e0a69a1" culture="neutral" />
        <bindingRedirect oldVersion="1.0.0.0" newVersion="2.0.0.0"/>
      </dependentAssembly>
    </assemblyBinding>
  </runtime>
</configuration>
```

Update files:

- Report server web.config
- ReportService.exe.config

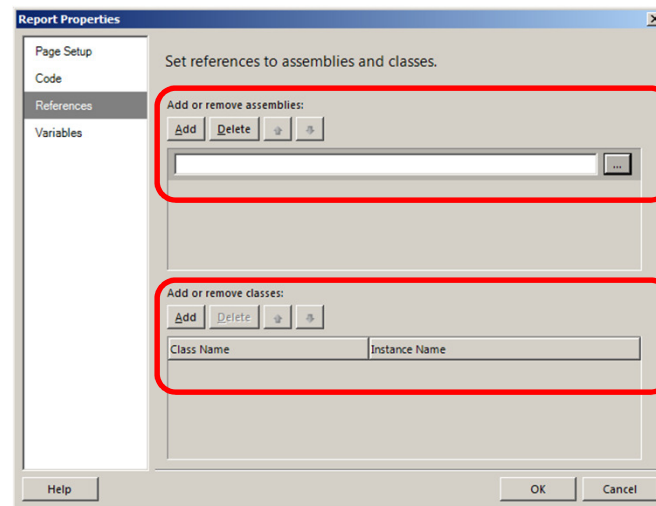


# Custom Assembly Reference

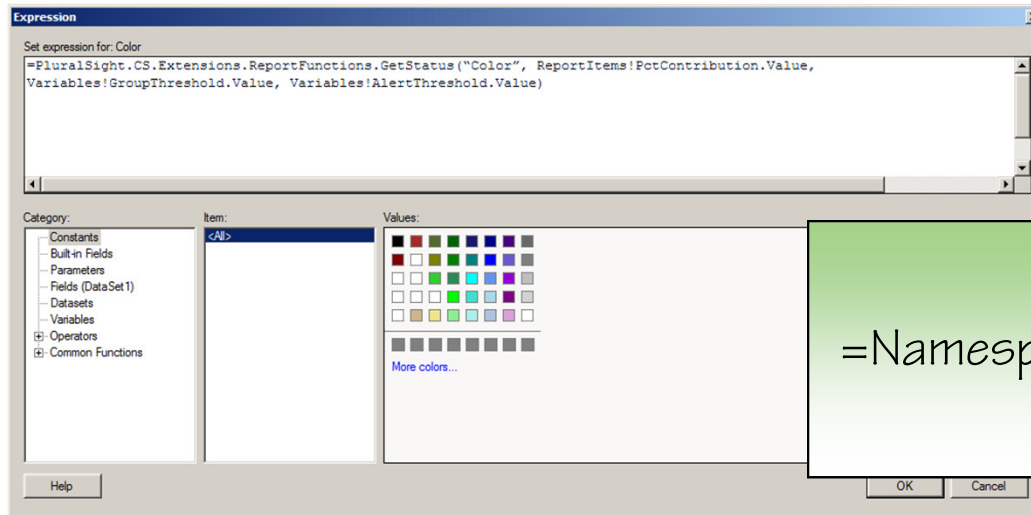
- Update CodeModule element

```
<CodeModules>  
  <CodeModule>CurrencyConversion, Version=1.0.1363.31103,  
    Culture=neutral, PublicKeyToken=null  
  </CodeModule>  
</CodeModules>
```

- Add reference to Report Properties



# Custom Assembly Usage



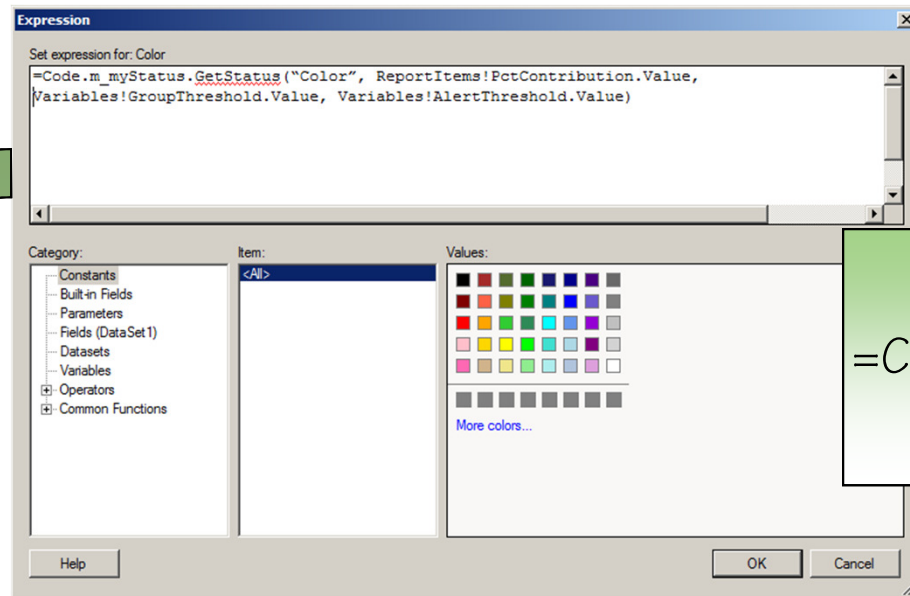
=Namespace.Class.Method

Fully qualified member  
and method

PluralSight.CS.Extensions.ReportFunctions.GetStatus(  
"Color",  
ReportItems!PctContribution.Value,  
Variables!GroupThreshold.Value,  
Variables!AlertThreshold.Value)

Arguments

# Custom Assembly Usage



=Code.InstanceName.Method

Fully qualified member  
and method

Code.m\_myStatus.GetStatus(  
    "Color",  
    ReportItems!PctContribution.Value,  
    Variables!GroupThreshold.Value,  
    Variables!AlertThreshold.Value)

Arguments



# Summary

- **Embedded Code**
  - Code property, Visual Basic .NET function, Code.Method expression
- **Custom Assembly**
  - Designer and server deployment, version number, CodeModule element, Namespace.Class.Method or Code.InstanceName.Method

# References

- **Custom Code and Assembly References in Expressions in Report Designer**
  - <http://msdn.microsoft.com/en-us/library/ms159238.aspx>
- **Using Custom Code References in Expressions**
  - <http://msdn.microsoft.com/en-us/library/ms155798.aspx>
- **Deploying a Custom Assembly**
  - <http://msdn.microsoft.com/en-us/library/ms155034.aspx>
- **Secure Development**
  - <http://msdn.microsoft.com/en-us/library/bb522723.aspx>
- **Asserting Permissions in Custom Assemblies**
  - <http://msdn.microsoft.com/en-us/library/ms153587.aspx>