



Reporting Services

Sample manual - first two chapters



Wise Owl
Training

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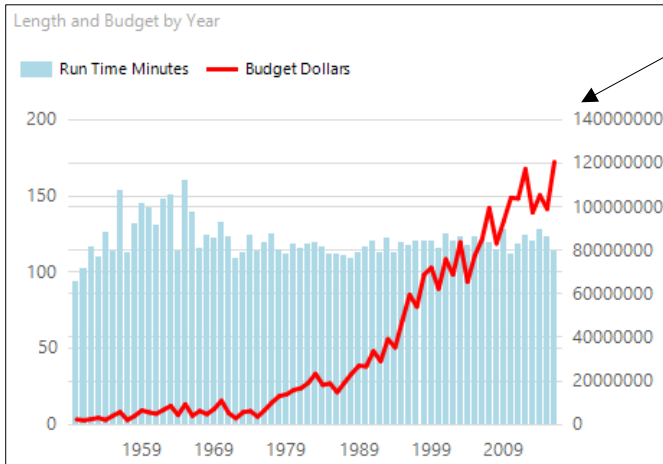
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CHAPTER 1 - GETTING STARTED

1.1 What is Reporting Services?

SQL Server Reporting Services (SSRS) allows you to create, manage and share reports. You can see examples of the types of reports you can create in the diagram below:

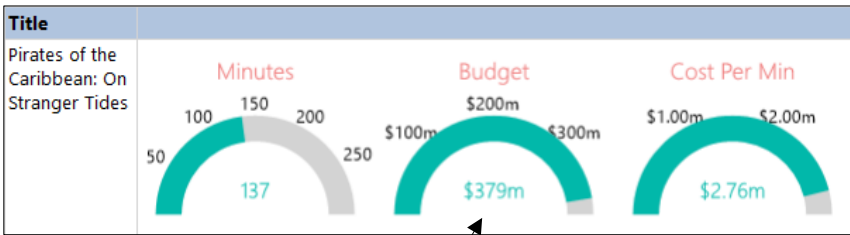


Charts allow you to display data graphically.

Year	Quarter	Month	Action	Adventure	Ani
2016	1	January			
		February	108		
		March	151		
	2	April		105	
		May	291		

A matrix groups data into rows and columns.

Akira Kurosawa		
Title	Run Time	
Seven Samurai	207	↑
Kagemusha	180	↑
Ran	162	→
Ikiru	143	→
The Hidden Fortress	139	→
Throne of Blood	110	↓
Yojimbo	110	↓
Sanjuro	95	↓
Rashomon	88	↓



Indicators and gauges allow you to replace a boring list of numbers with a set of interesting icons and simple charts.

You can add *parameters* to a report to allow users to control what data they see.

Even a boring table can become exciting by adding interactive elements to it.

Australia		
Brazil		
Title	Release Date	Run Time
City of God	30/08/2002	130
Total		130

Choose director: Steven Spielberg

Choose film: Raiders of the Lost Ark

Cast list for Raiders of the Lost Ark

Role	Actor
Indiana Jones	Harrison Ford
Sallah	John Rhys-Davies
Satipo	Alfred Molina
Marion Ravenwood	Karen Allen
Special vocal effects	Frank Welker
Dr. Marcus Brody	Denholm Elliott

1.2 Visual Studio and SQL Server Data Tools

SQL Server Data Tools (SSDT) is a set of templates for *Visual Studio*, Microsoft's flagship development tool. You create reports in Visual Studio using the SSDT templates.

A Brief History of Version Numbers

The versions of Visual Studio and SQL Server that go together by default aren't quite as intuitive as you'd expect!

SQL Server version	Default Visual Studio version	Name of Business Intelligence Templates
2008 R2	2008	Business Intelligence Development Studio (BIDS)
2012	2010	SQL Server Data Tools (SSDT)
2014	2012 (and later, 2013)	
2016	2015	
2017	2015	

The screenshots in this manual are taken from SQL Server 2016 Developer Edition and Visual Studio 2015 Community Edition.



You can use a later version of Visual Studio to connect to data stored in an earlier version of SQL Server. You can also deploy report projects to earlier versions of SQL Server, providing that you change the appropriate settings.

Installing SQL Server Data Tools

You can install SSDT either as a standalone product or within an existing installation of Visual Studio. The standalone version of SSDT installs a lightweight Shell edition of Visual Studio.

<https://docs.microsoft.com/en-us/sql/ssdt/download-sql-server-data-tools-ssdt>

Installing SSDT without Visual Studio pre-installed

If you don't have Visual Studio installed on your machine, installing SSDT for Visual Studio 2015 will also install a minimal "Integrated Shell" version of Visual Studio 2015. This version of Visual Studio is free to install and use on as many machines as you wish. It gives you all the SQL Server project types, plus SQL Server Object Explorer and other SQL tools experiences.

If you do have [Visual Studio 2015 Community Edition \(or above\)](#) installed on your machine, installing SSDT will add the full set of SQL Server tools into your existing Visual Studio installation. Visual Studio includes many features you might want to use, such as Source Code Control integration and non-SQL language support. We recommend using Visual Studio 2015 Community or above to get the best experience when developing T-SQL.

You can read more about how SSDT works at this Microsoft web page.

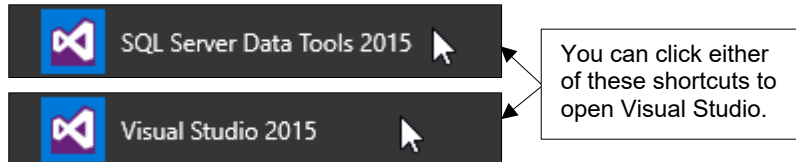
The page also includes links to download the various pieces of software that you'll need.

1.3 Report Server Projects

Before creating a report you'll need to create a *report server project*. The project contains all of the reports and any associated items such as database connections and queries.

Opening Visual Studio

Depending on which version of SSDT you installed you may find multiple **Start Menu** shortcuts to open Visual Studio.



Creating a New Project

To create a new report server project:

- 1) Choose an option from the table on the right:

Menu	Keyboard
F ile N ew P roject...	Ctrl + Shift + N

- 2) Complete the dialog box as shown in the diagram below:

The screenshot shows the 'New Project' dialog box with the following configurations and callouts:

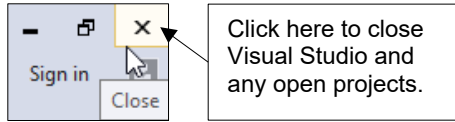
- a) Choose the Business Intelligence category.** Points to the 'Business Intelligence' category in the left-hand tree view.
- b) Choose the Report Server Project template.** Points to the 'Report Server Project' template in the middle pane.
- c) Give your project a sensible name and set where to save it.** Points to the 'Name' field (containing 'Report Project1') and the 'Location' dropdown (containing 'C:\Wise Owl\Manuals\SSRS 2016\').
- d) Optionally, you can create a Solution folder and give it a name. This is only worth doing if you're planning to create multiple projects in a single directory.** Points to the 'Solution name' field (containing 'Report Project1').
- e) Click OK to create the project.** Points to the 'OK' button at the bottom right.

Closing a Project

The simplest way to close a project is to quit from Visual Studio. To do this:

Menu	Keyboard
File Exit	Alt + F4

You could also just click the cross at the top right of the Visual Studio window to close the application.



If you prefer, you can close the current solution and keep Visual Studio open. To do this:

Menu
File Close Solution

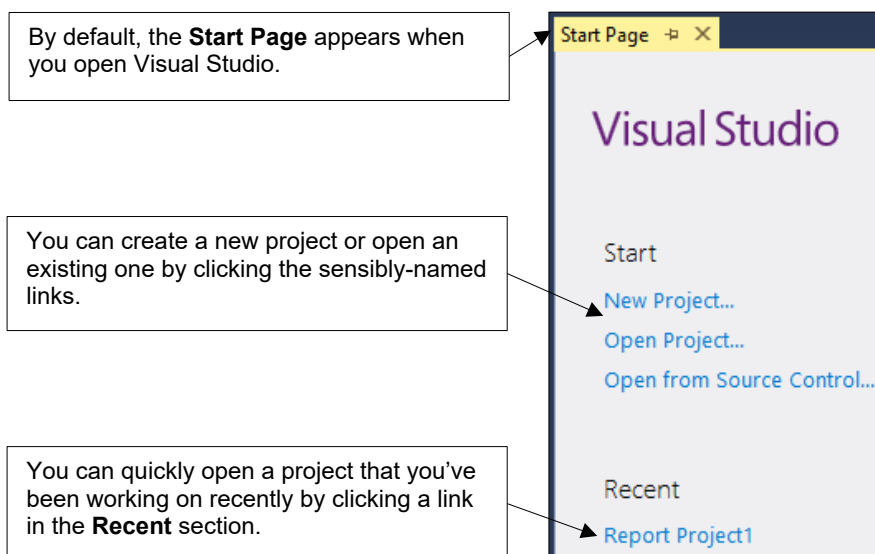
Opening an Existing Project

You can open an existing project in several ways, as shown in the table below:

Menu	Alternative menu	Keyboard
File Open Project/Solution	File Recent Projects and Solutions [Project name]	Ctrl + Shift + O

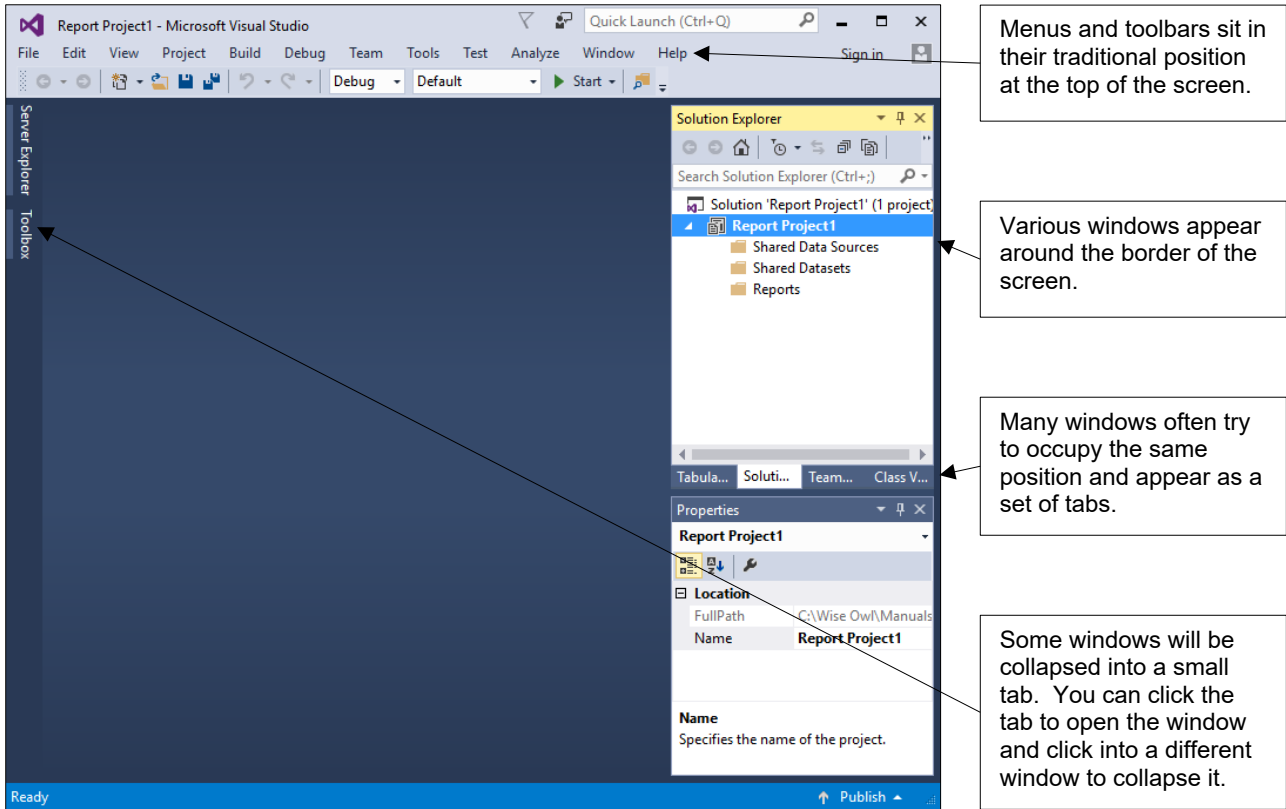
Using the Start Page

You can create and open projects quickly by using the links that appear on the *Start Page* when you first open Visual Studio.



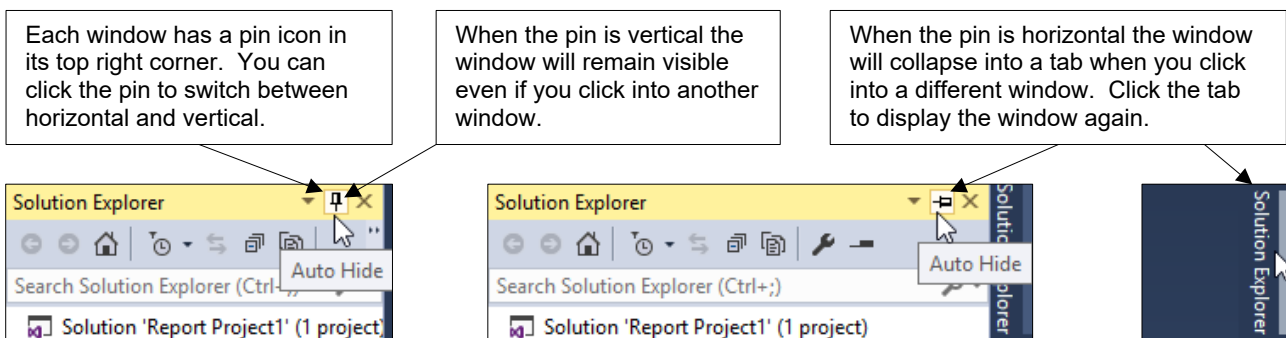
1.4 The Visual Studio Screen

Visual Studio is a complex application! You can see an overview of the main areas of the screen in the diagram below:



Auto-Hiding Windows

You'll use lots of different windows in Visual Studio. To make sure that you have enough space to design your reports you can set windows to *Auto Hide*.



Opening and Closing Windows

Visual Studio displays lots of windows by default, many of which you won't need when working on a report server project. You can close the windows that you don't need.

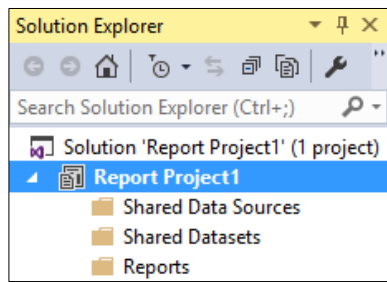
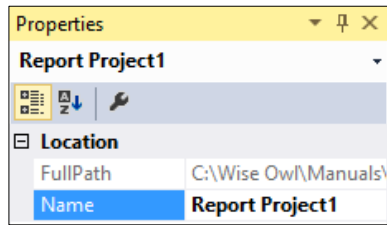
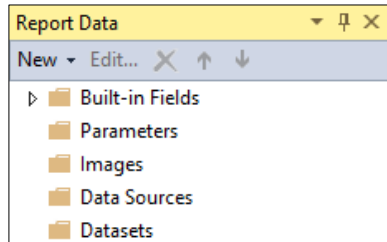
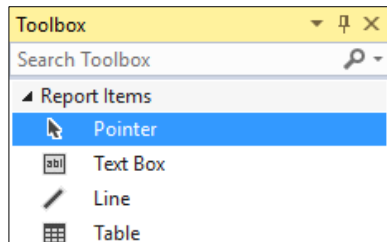


It's highly unlikely that you'll need to use the **Class View** window when working in a report server project. You can click the cross at the top right corner to close it.

To reopen any windows that you've closed, choose **View** from the menu and select the window that you want to display.

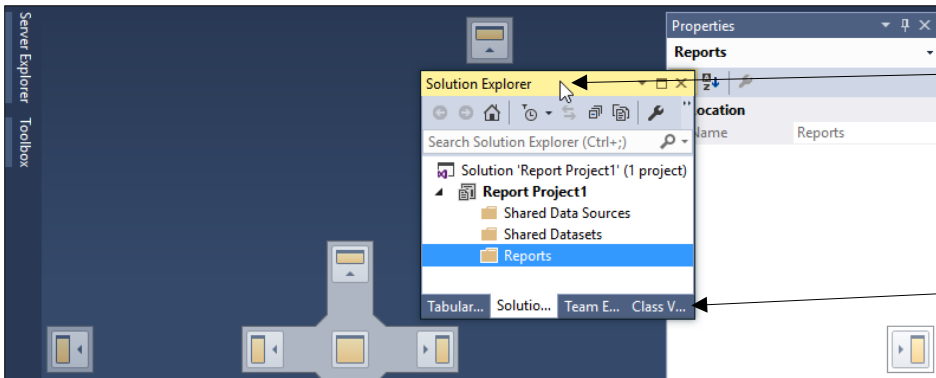
The Main Windows

There are several windows that you'll use frequently in a report server project. You can see a description of the main windows in the table below:

Name	What it's for	What it looks like
<i>Solution Explorer</i>	Lists all of the items that belong to the project that you're working on.	
<i>Properties</i>	Displays the attributes of any object that you have selected. You can change these properties to alter the object in various ways.	
<i>Report Data</i>	Allows you to create connections to data sources and queries to retrieve data that will be displayed in the report. This window appears when you open a report.	
<i>Toolbox</i>	Contains objects that you can add to the design of your report.	

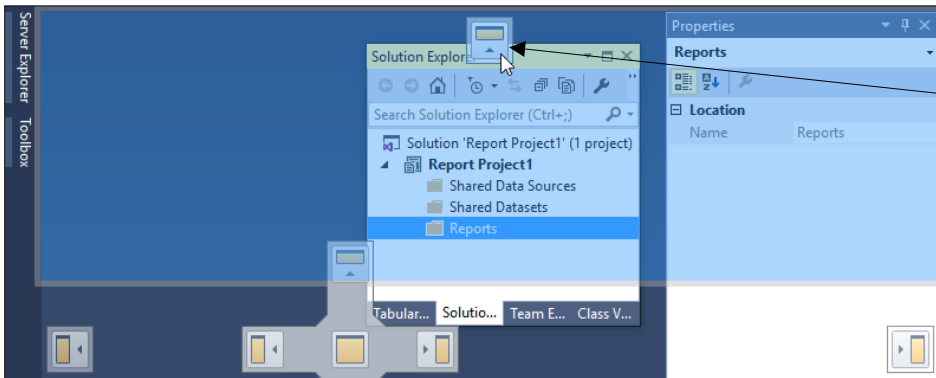
Repositioning Windows

If you'd prefer a window to appear somewhere other than its default location, you can dock it to one of many other positions by clicking and dragging on the window's title bar.



Click and drag the title bar of a window to undock it from its current location.

If you have multiple windows grouped in a set of tabs, you can click and drag on the tab to move just one window rather than the whole group.

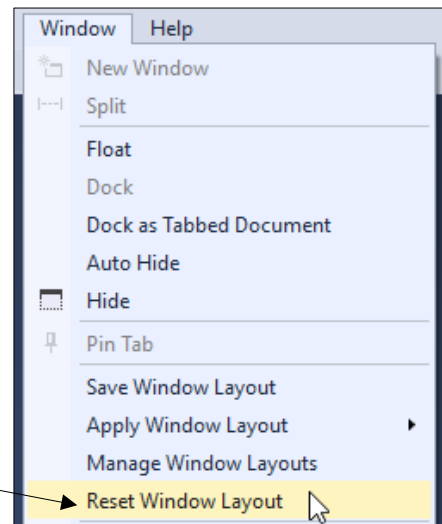


Drag the window to one of the icons that appear around the screen.

Release the mouse button to dock the window to the location indicated by the blue shaded area.

Resetting the Window Layout

If you manage to make a mess of your window layout (a surprisingly easy thing to do!) you can quickly reset everything by choosing **Window | Reset Window Layout** from the menu.



It's difficult to overstate the usefulness of this option!

CHAPTER 2 - WORKING WITH REPORTS

2.1 Creating Reports

You can create new reports using the **Solution Explorer** window.

The image illustrates the steps to create a new report in SQL Server Enterprise Developer. It is divided into two main sections: the Solution Explorer and the 'Add New Item' dialog box.

Section 1: Solution Explorer

- a)** In the **Solution Explorer** window, right-click the **Reports** folder and choose **Add | New Item...** or use the shortcut key shown here.
- b)** The **Add New Report** option launches a wizard which provides a guided way to create a new report.
- c)** On the dialog box which appears, click the **Report** option in the list.

Section 2: Add New Item - Report Project1

- d)** Give the report a sensible name, or an uninspired, boring one as I've done here.
- e)** Click **Add** to create the report and open it ready for editing.

2.2 Report Views

You can switch between several different views of a report.

Design View and Report Preview

When you create a report it will automatically open in *design view*. This is where you'll spend most of your time as a report author. You can switch a report to a *preview* to run it and view its results.

The screenshot shows the SSRS report designer window for 'Report1.rdl'. At the top, there are two tabs: 'Design' (selected) and 'Preview'. Below the tabs is a 'Parameters Window' containing a grid. The main area is the 'Design Surface', which contains a message: 'To add an item to the report: drag an item from the Toolbox to the design surface, and then drag dataset fields to the item.' At the bottom, there is a 'Grouping Pane' with 'Row Groups' and 'Column Groups' sections.

You can switch between the two main views using the tabs at the top of the report window. Switching to the preview will automatically save the report.

The top region of the window is occupied by the **Parameters Window**.

The main area of the window contains the report *design surface*. This is where you add items to display the report's data.

The bottom of the window displays the **Grouping Pane**.

You can hide the **Parameters Window** and **Grouping Pane** to provide more space to design your report. To do this, right-click in the area surrounding the report's design surface and choose **View** followed by the item you'd like to hide.

The 'View' menu is shown with the following options: 'Add Page Header', 'Add Page Footer', 'Ruler', 'Grouping' (checked), and 'Parameters' (checked). A mouse cursor is pointing at the 'Parameters' option.

Code View

SSRS reports are written in a language called *Report Definition Language (RDL)*. You can see the RDL code that the report designer generates for you by opening the report in *code view*.

The screenshot shows the Solution Explorer with 'Report1.rdl' selected. The context menu is open, showing options: 'Open', 'Run Web Code Analysis', and 'View Code' (highlighted). The 'View Code' option has a keyboard shortcut 'F7' next to it.

Right-click on a report in the Solution Explorer and choose **View Code** to see what your report really looks like!

The RDL code view shows the following code:

```

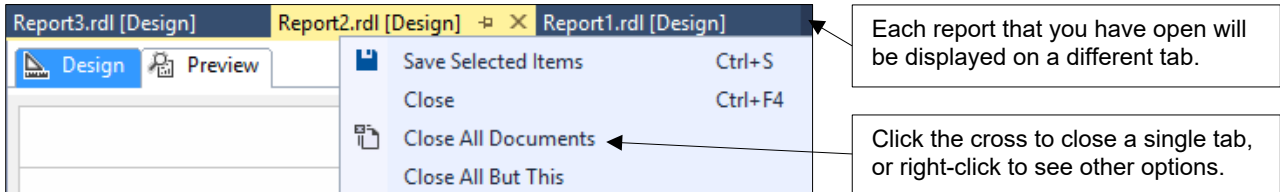
1 <?xml version="1.0" encoding="utf-8"?>
2 <Report MustUnderstand="df" xmlns="http://schemas.microsoft.com/reporting/reporting2005" >
3   <df:DefaultFontFamily>Segoe UI</df:DefaultFontFamily>
4   <AutoRefresh>0</AutoRefresh>
5   <ReportSections>
6     <ReportSection>

```

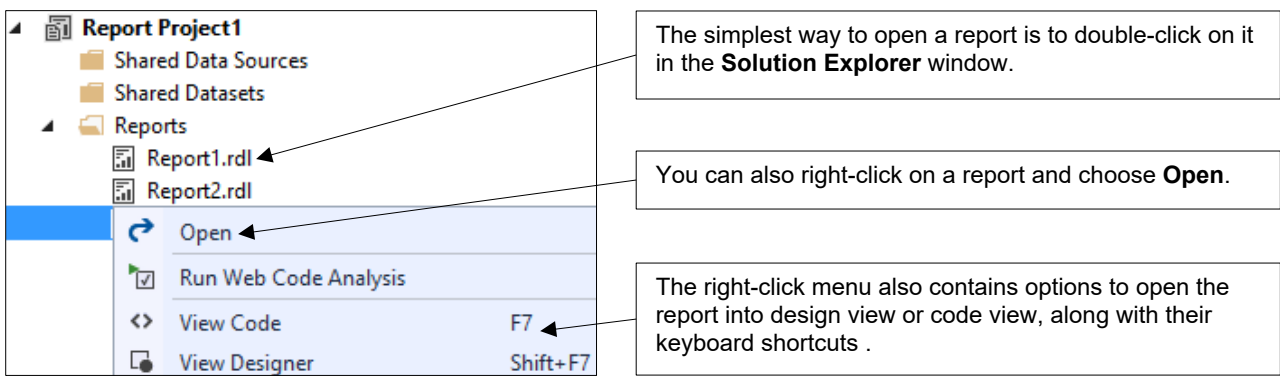
2.3 Managing Reports

Opening and Closing Reports

A report will be opened automatically when you first create it. You can close reports that you currently have open using the tabs at the top of the report window.



You can open a closed report from the **Solution Explorer** window.

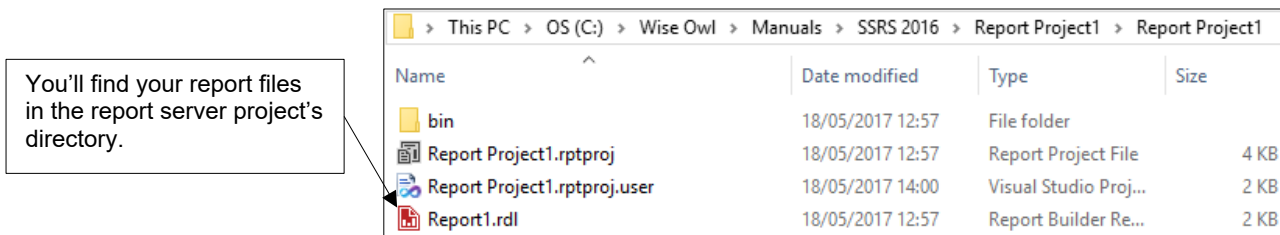


Saving Reports

You can choose to save either all of the reports you have open, or just those that you have selected. To select multiple reports you can click their tabs while holding the **Ctrl** key.

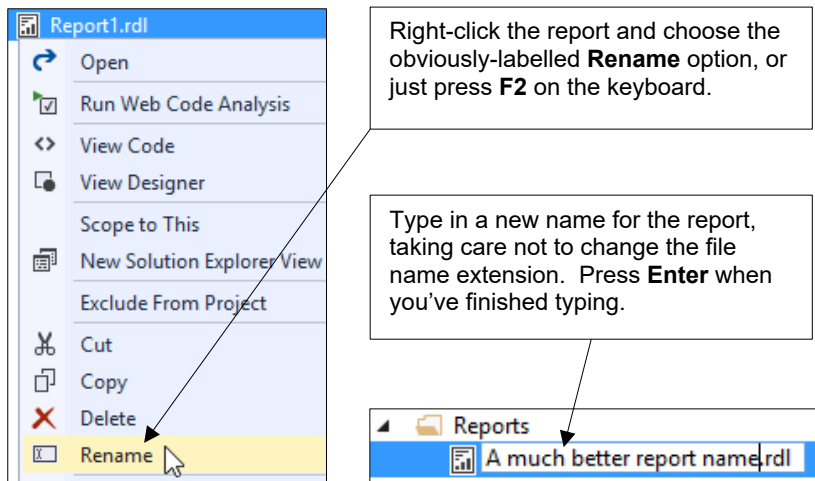
Option	Menu	Keyboard	Right Mouse
Save selected reports	File Save Selected Items	Ctrl + S	Save Selected Items
Save all open reports	File Save All	Ctrl + Shift + S	N/A

Reports are saved in the folder that you specified when you created the report project:



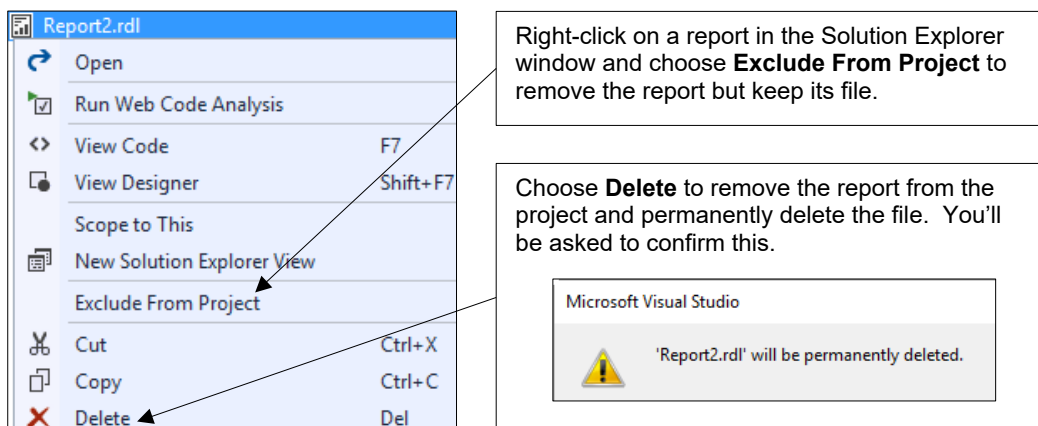
Renaming Reports

If you change your mind about the name you gave to the report when you created it, you can change it in the **Solution Explorer** window:



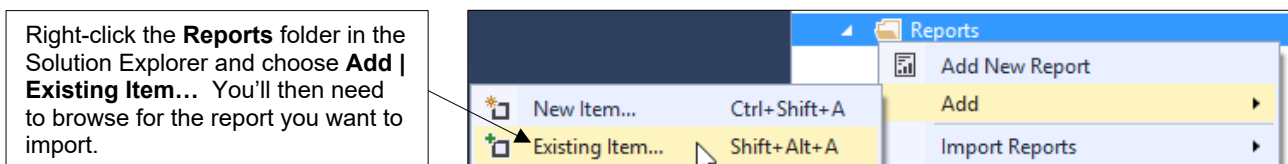
Deleting and Removing Reports

You can delete a report and its associated file entirely, or you can remove the report from the project but keep the file:



Importing Reports

If you want to bring back a report that you've removed from the project or add a report from another project, you can choose to import it:



2.4 Report Templates

The default report template contains nothing more than an empty page. Fortunately, you can create your own report templates populated with as many items as you like.

Creating a Report Template

To begin creating a report template, add a new report to your project in the usual way and add any items that you'd like to include in your template.



Your report template can be as elaborate as you like. This relatively basic one contains a custom header with a company logo and a table with some formatting applied to the header row.

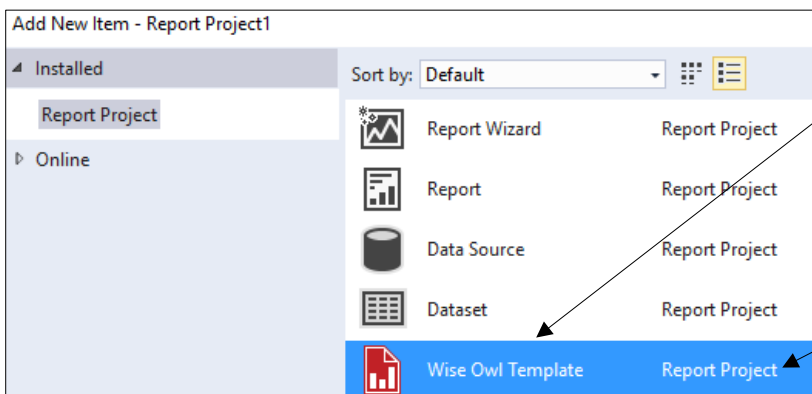
Once you've saved the report you can use it to create a template by copying the file to the correct location.

Copy the report you created to this folder. This is the default path for a standard installation of Visual Studio 2015.

Name	Date modified	Type	Size
Wise Owl Template.rdl	18/05/2017 16:34	Report Builder Re...	30 KB
DataSet.vsz	23/06/2016 02:30	Visual Studio Wiza...	1 KB

Using a Report Template

































If you've copied the file to the correct location, you'll see your template the next time you choose to add a new report to your project.



Choose to add a new item to your project in the usual way. You'll see your report template listed in the dialog box.

Select the template and create the report – it will contain all the items that you added when you created the template.

What we do!

		Basic training	Advanced training	Systems / consultancy
Office	Microsoft Excel			
	VBA macros			
	Office Scripts			
	Microsoft Access			
Power BI, etc	Power BI and DAX			
	Power Apps			
	Power Automate (both)			
SQL Server	SQL			
	Reporting Services			
	Report Builder			
	Integration Services			
	Analysis Services			
Coding	Visual C#			
	VB programming			
	MySQL			
	Python	