# Visual C# Introduction

## Sample manual - first two chapters


Manual 1109 - 90 pages –

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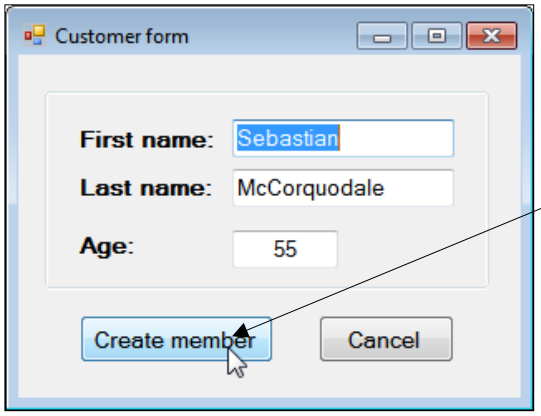
# CHAPTER 1 - VISUAL STUDIO PRIMER

## 1.1 Windows Forms

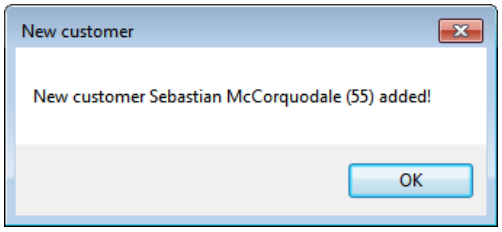
There are three main types of application you can develop using *Visual Studio* ((Microsoft's development tool for .NET programmers):

| Type of application | Use for |
|---|---|
| *WinForms (Windows Forms)* | Creating basic business standalone applications to run within Windows. |
| *WPF (Windows Presentation Foundation)* | Creating Windows applications with fancy graphics (WPF takes longer to learn but is more powerful than Windows forms). |
| *ASP.NET webforms* | Creating websites using forms-based ASP.NET. |
| *ASP.NET MVC / MVC Core* | Creating websites using the model-view-controller method. |

This courseware uses WinForms exclusively, because it's the simplest of the 3 types of application (the aim of the course is to teach C#, not drawing!).




This is an application form for the *Wise Owl Dating Agency* (*WODA*, not to be confused with YODA). Clicking on the button could show a message like this:




To create a Windows Forms application like this, you'll first need to learn to use Visual Studio, as shown in the rest of this chapter.

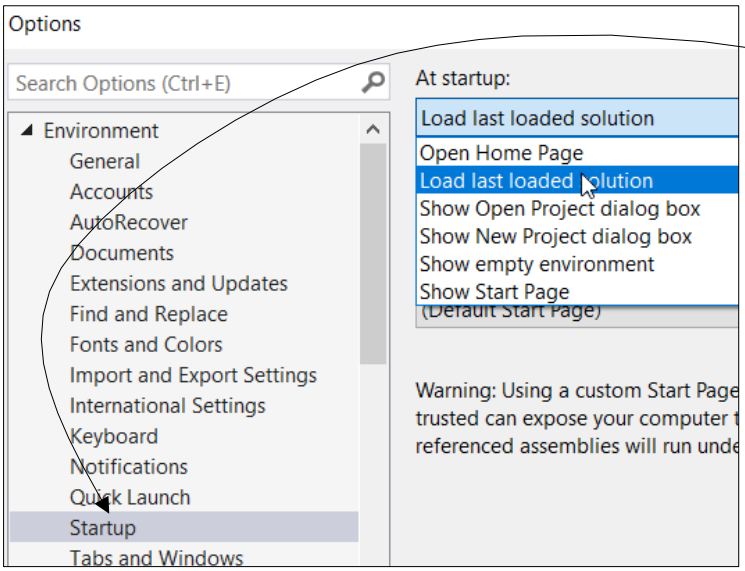

*This courseware uses Visual Studio 2017, but you should find that all functionality is pretty much identical, regardless of which version of Visual Studio you use.*

## 1.2 Customising Visual Studio

Before getting started using Visual Studio, it's a good idea to make a couple of changes.

### Setting the Default Start-up Page

To change what you see each time that you go into Visual Studio, from the menu select: **Tools Options...** and then:

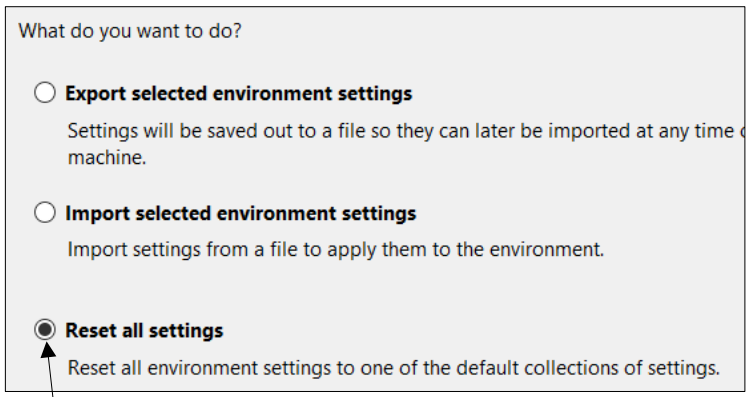



a) Select the **Startup** option under the **Environment** section.

b) Choose the option you want (the Wise Owl preference is to show the last thing you were working with, as here).

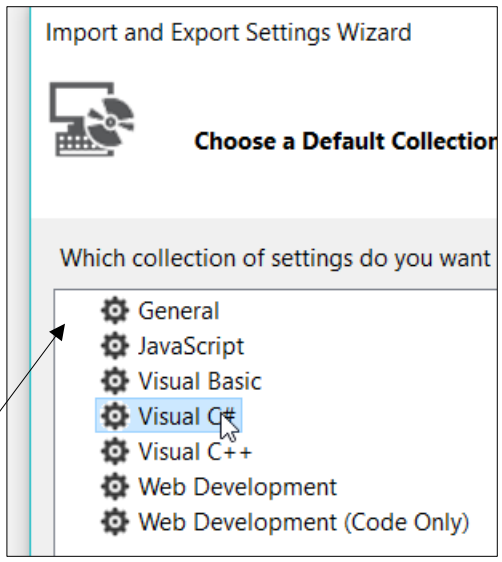
### Creating Appropriate Settings

In Visual Studio you can save *settings*, letting you switch between different ways of working. From the menu choose **Tools → Import and Export Settings…** and then:




a) Choose to reset your settings (the next dialog box asks if you want to save your existing ones, but there never seems much point).

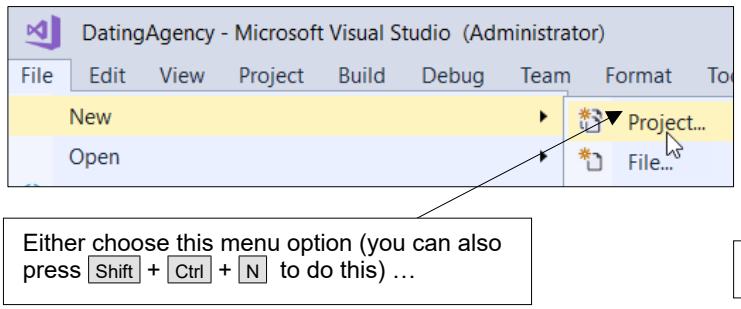
b) Choose to become a C# developer by default!



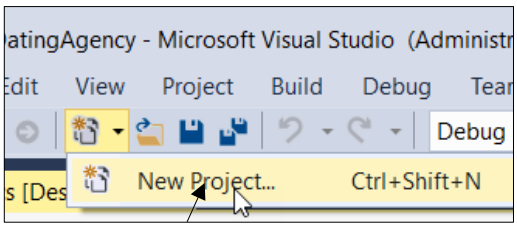
## 1.3 Creating Projects

A *project* is the term for the container for all of the files which make up your application. Projects can contain any number of folders and files. To create a project:

1) Choose one of the ways shown below to create a new project:




Either choose this menu option (you can also press Shift + Ctrl + N to do this) …



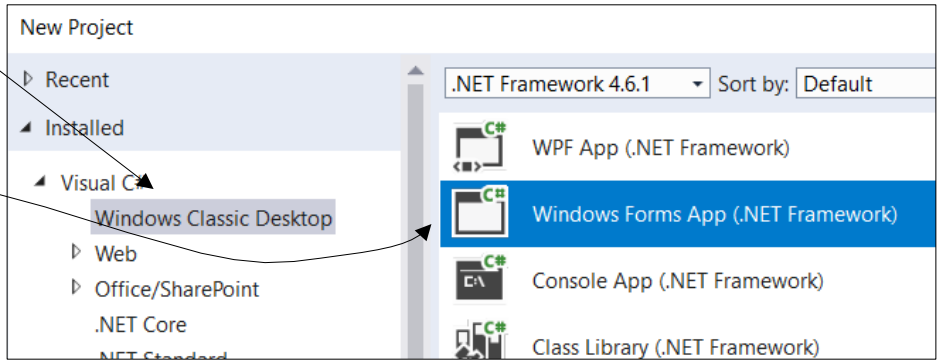

… or click on this tool to create a new project.

2) Complete the dialog box which appears as shown below, then select OK.

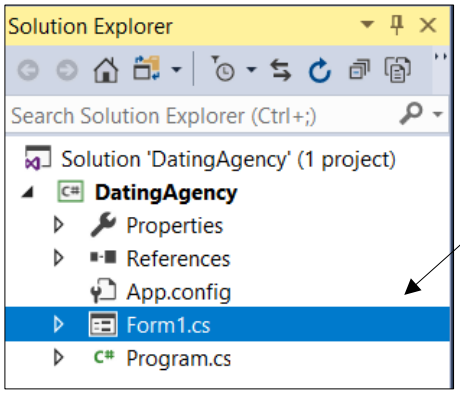
a) Choose to create a Windows application using C#.

b) Choose to create a WinForms application, not a WPF one.

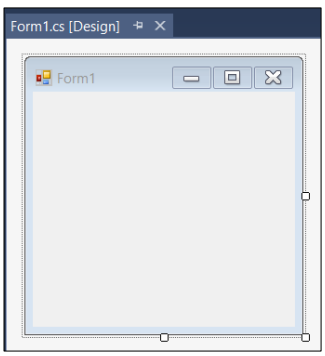
c) Give your project a name, and choose where to store it.







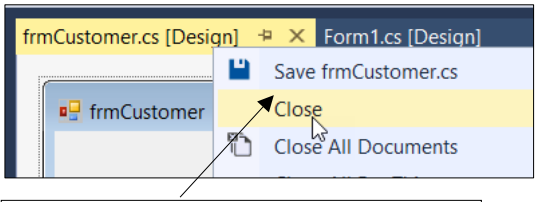

d) Visual Studio automatically creates a new form called **Form1** in your new project, and shows this on screen:



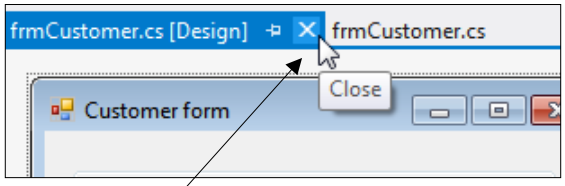
## 1.4 Saving and Closing Files

### Closing One Window

To close a single window, either right-click on its tab or use the cross:



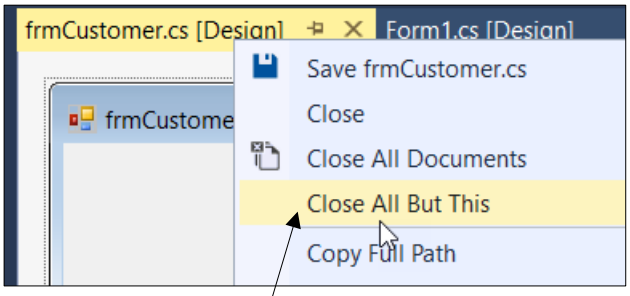

Either right-click on the window tab and choose the option shown to close it …



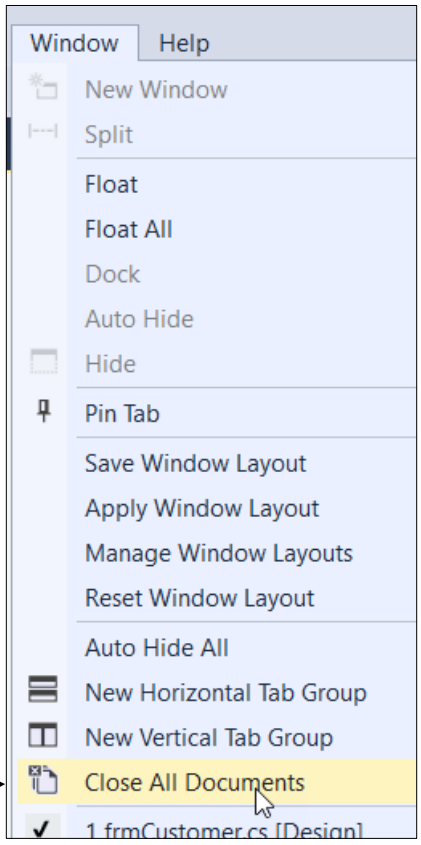

… or click on this cross to close the window in question.

### Closing All or Nearly All Windows

Windows accumulate quickly in Visual Studio – before you know where you are you have 8 or 10 open! Two quick ways to close all or nearly all of your windows are shown below:




Right-click on a window and choose this menu option to close all the windows except this one.

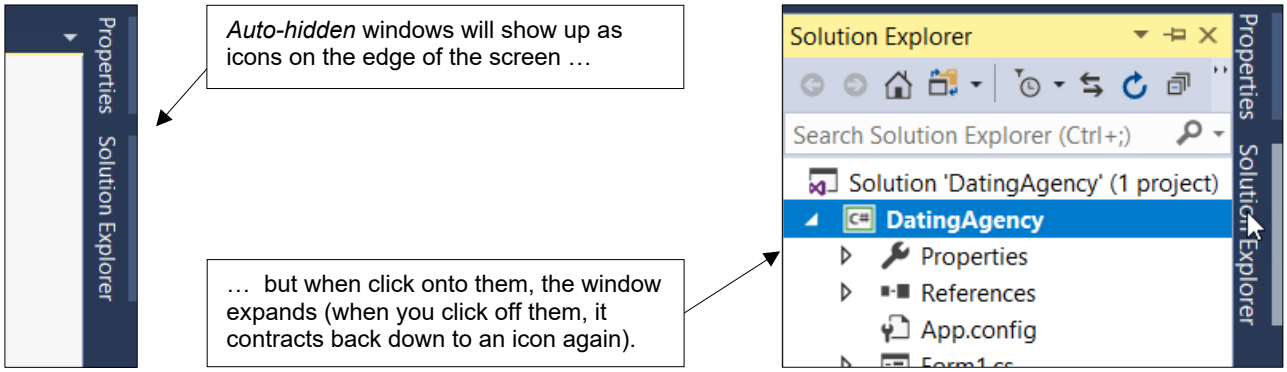



Select this menu option to close every window that you have open.

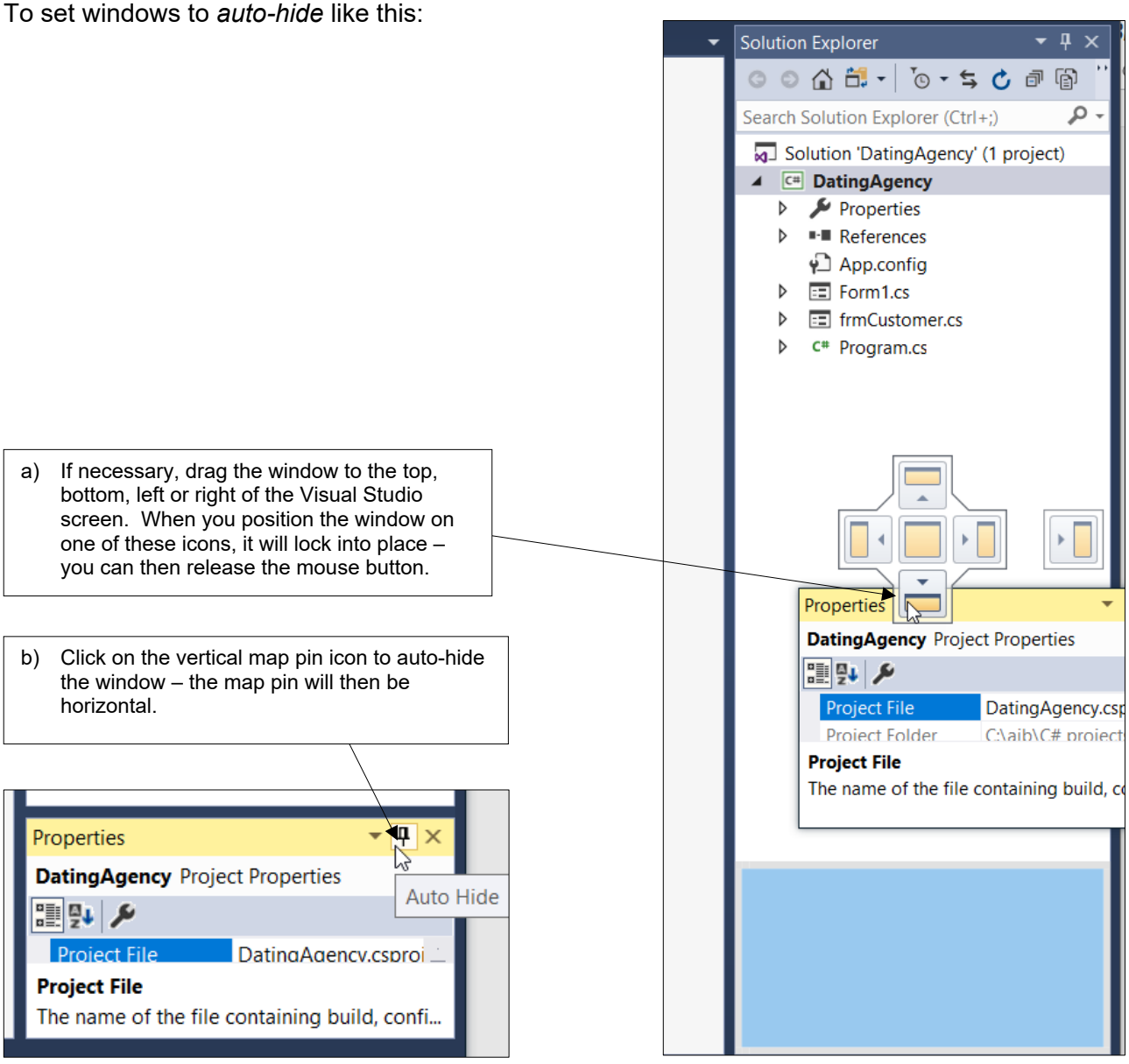

*A useful short-cut is to press* Shift + Ctrl + S *to save every window that you have open – this means that you can then close all of your open windows without having to confirm that you want to save the changes for each.*

## 1.5 Auto-hiding windows

There are a lot of windows in Visual Studio, and they can quickly clutter up the screen. The best thing to do is to *auto-hide* them, so that they show up as icons on the edge of the screen:




To set windows to *auto-hide* like this:



## 1.6 The Three Most Useful Windows

### Displaying Windows

Visual Studio contains 3 toolbars that you'll need to have open most of the time – here's how to display them:

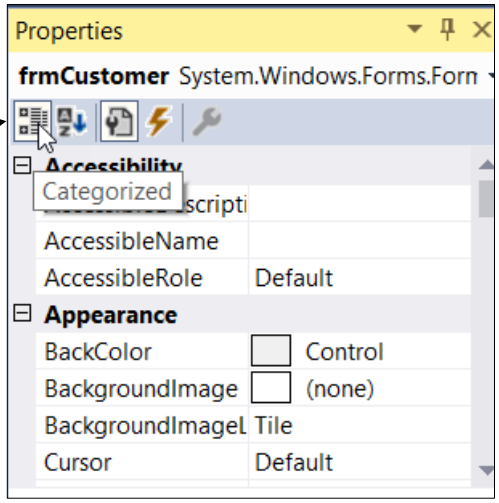
| Windows | Menu option | Short-cut key |
|---|---|---|
| *Solution Explorer* | **View Solution Explorer** | Alt + Ctrl + L |
| *Properties* | **View Properties Window** | F4 |
| *Toolbox* | **View Toolbox** | Alt + Ctrl + X |

### Properties Window

You can choose to display properties by category or alphabetically:

If you choose to display properties by category (the best option, this owl thinks) …

… you'll see the properties grouped into categories (**Accessibility**, **Appearance**, etc.).

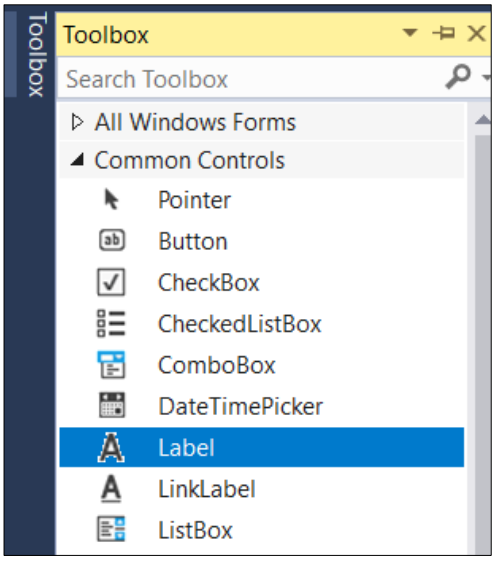



### The Toolbox

The *toolbox* allows you to add things to a form quickly:

Click on any tool and drag it onto the form to add it. The main tools we'll use are:

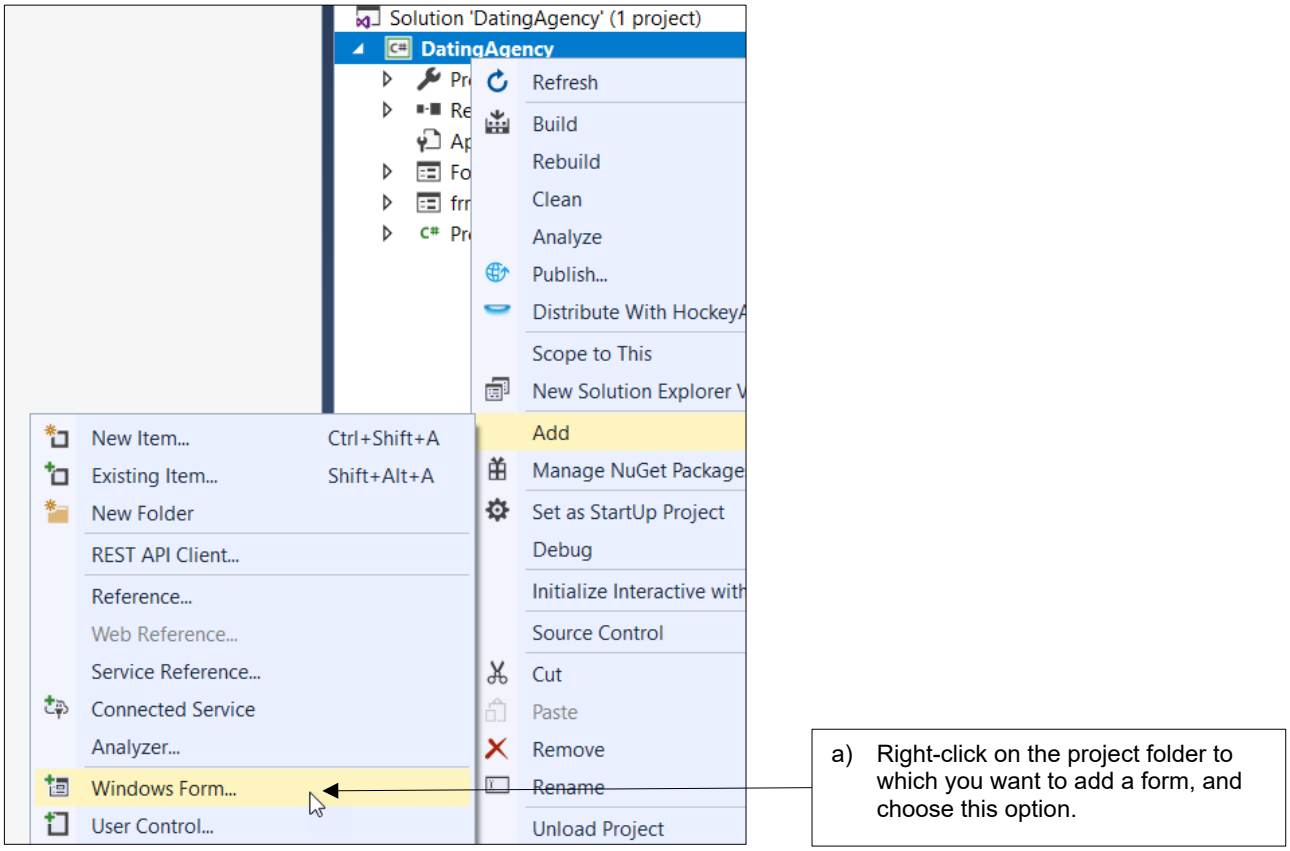
| Tool | What it does |
|---|---|
| *Label* | Displays text on a form. |
| *TextBox* | Allows a user to type text into a box. |
| *Button* | A clickable button, with events attached. |
| *ComboBox* | A dropdown list. |
| *GroupBox* | Used to draw rectangles on forms. |



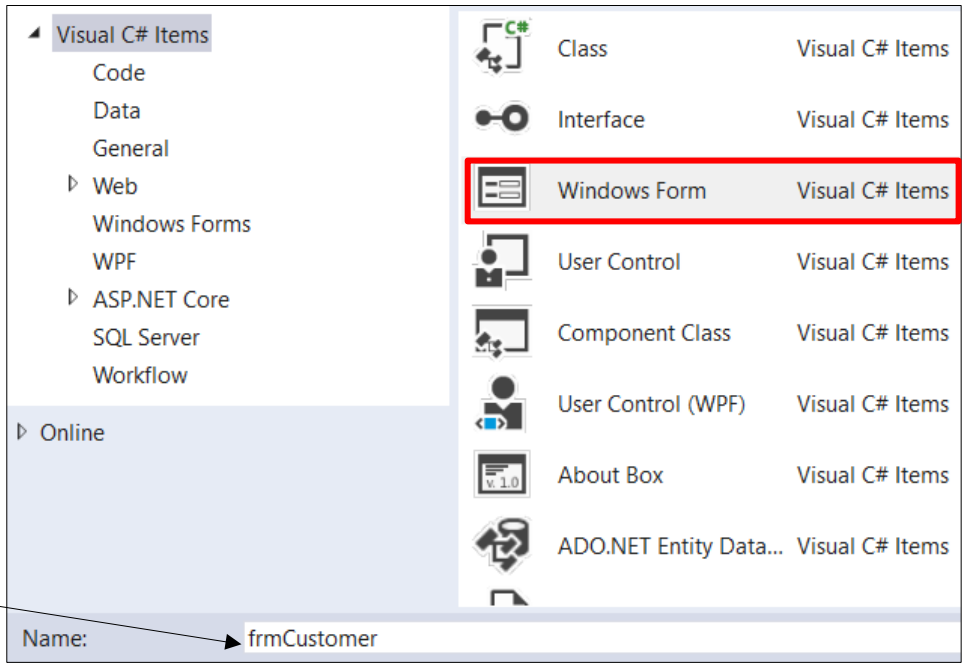
# CHAPTER 2 - DRAWING FORMS

## 2.1 Creating a New Form

To create a new form, press Alt + Ctrl + L to bring up the Solution Explorer window, then:




a) Right-click on the project folder to which you want to add a form, and choose this option.

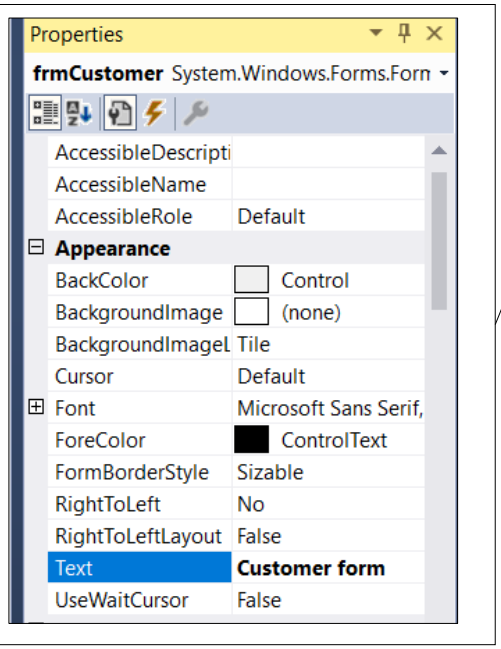


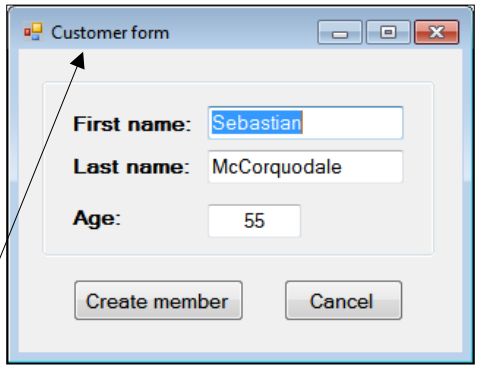

b) Choose to add a Windows form, then give it a sensible name.

## 2.2 Changing form properties

Click on the background of the form to make sure it's selected, then change any properties:

For example, the caption of the form comes from its **Text** property, which is in the **Appearance** category.



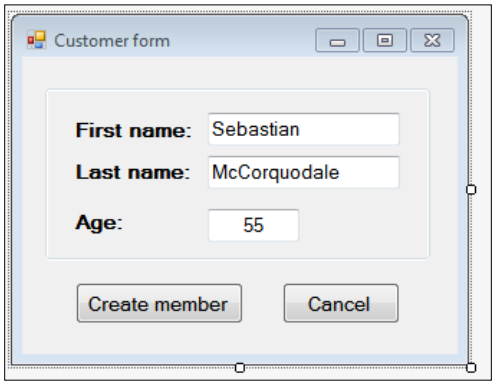

Here are some useful properties to set for a form:

| Category | Property | Notes |
|---|---|---|
| *Appearance* | **Text** | The caption for the form (as above). |
| *Layout* | **StartPosition** | Change to **CenterScreen** to make a form appear in the middle of the screen. |
| *Msc* | **AcceptButton** | Set to the button which you want to be selected by default if a user presses ↵ . |
| | **CancelButton** | Set to the button which you want to be selected by default if a user presses Esc . |

## 2.3 Form Controls

### Definition of Controls

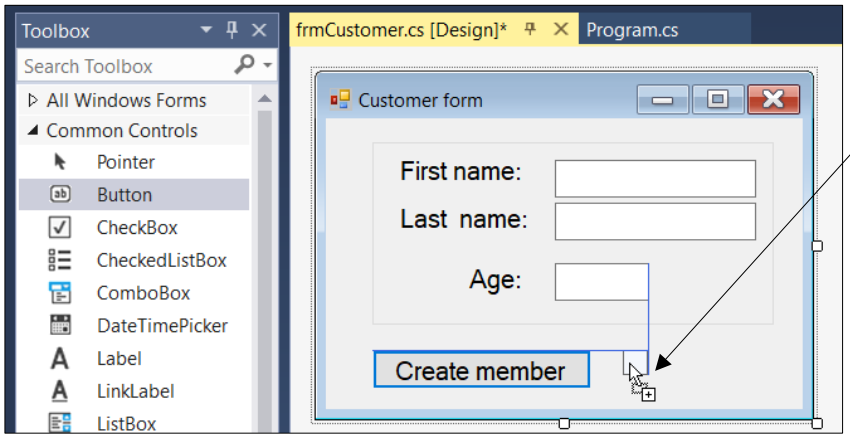
All the different widgets (labels, text boxes, command buttons, etc) that you add to a form are called *controls*:




This form contains 3 labels, 3 textboxes, 2 buttons and a groupbox (the thin rectangle).

### Adding controls

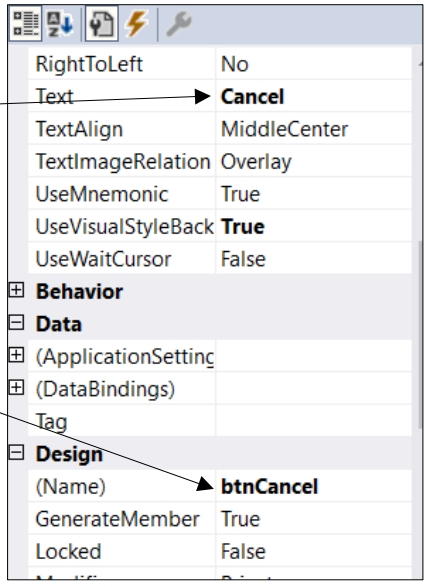
The easiest way to add a control to a form is to click and drag on it:




Here we're adding a clickable **Button** to a form. You can use the horizontal and vertical blue lines which appear to align controls.

You should then give your control a good name:

It's likely that you'll want to change the text displayed on a button.




The first **Design** category property of a control is always its name. Wise Owl use modified Hungarian notation (!) to name controls:

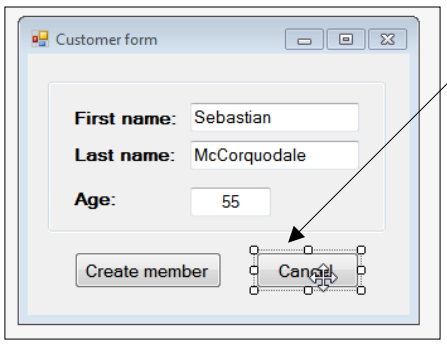
| Type of control | Prefix to use |
|---|---|
| *TextBox* | **txt** |
| *Label* | **lbl** |
| *Button* | **btn** |
| *ComboBox* | **cmb** |

## 2.4 Selecting Controls

Before you can move, copy, edit, delete, rename or format controls, you must first select them!

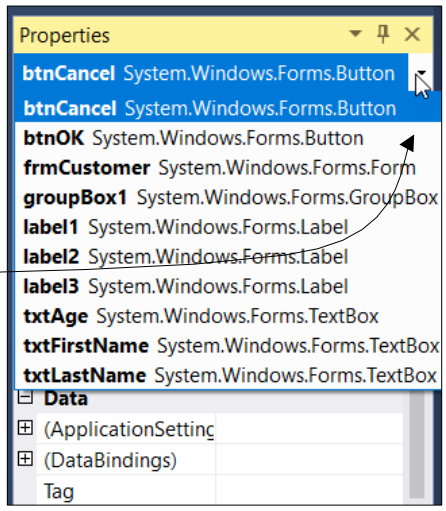
### Selecting a Single Control

Here are two ways to select a single control:



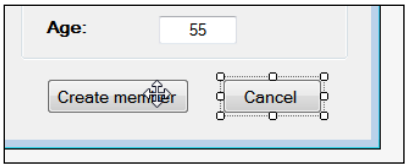
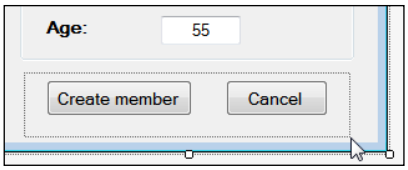

Click on a control to select it …

.. or click on the dropdown at the top of the **Properties** window to change what you have selected.




### Selecting Several Controls

Suppose that you want to select the two buttons in the form above. Here are two ways to do this:

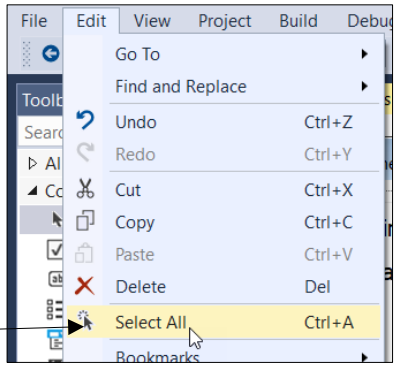
| Method | Example diagram |
|---|---|
| Select one control, then hold down the Ctrl key and click on the others you want to add to/remove from your selection. |  |
| Click and drag to draw a rectangle – anything it touches or encloses will be selected. |  |



### Selecting All Controls

To do this, press Ctrl + A or select the menu option shown:

Select this option from the menu to select all of the controls on a form.



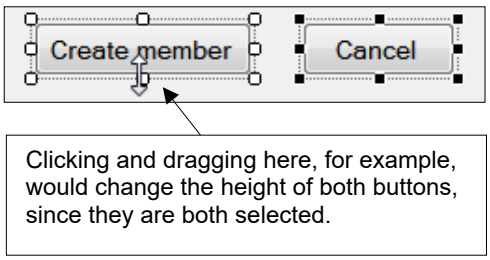
## 2.5 Basic Formatting

You can change how a form looks by *formatting* it. All of the examples below refer to the 

button, but the properties shown apply to most controls and to the form itself.

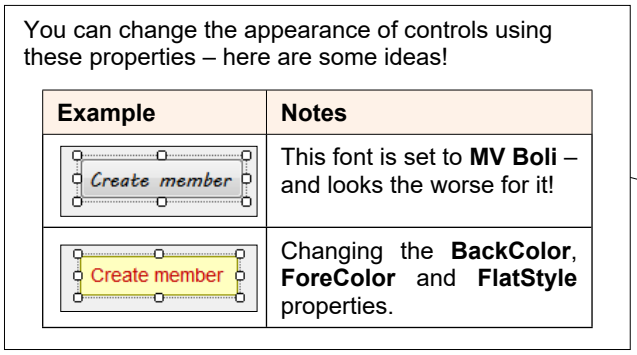
### `Resizing Controls

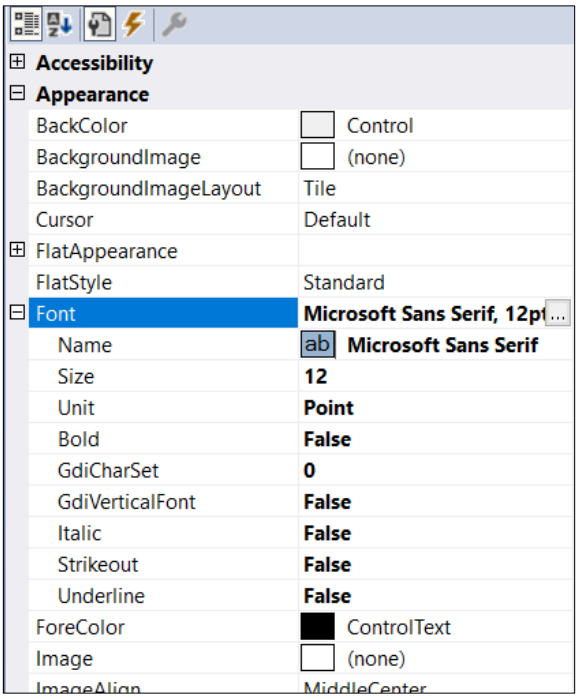
You can change the size of one or more controls using the handles surrounding them:




### Changing how Controls Look

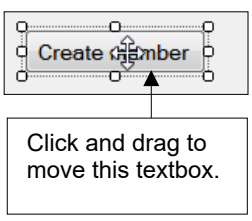
To do this, select the control(s) and change any of their properties – here are a couple of examples:

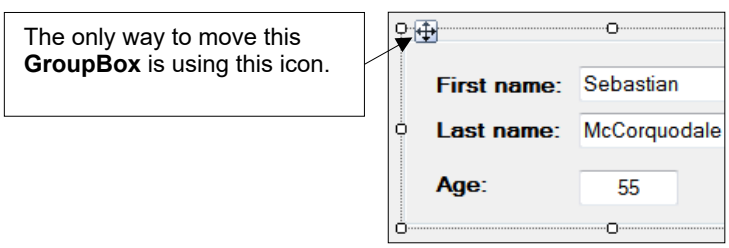



### Moving Controls

To move controls, select them and then click and drag on them with the  symbol:



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| | Power Apps |  | | |
| | Power Automate / PAD |  | | |
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