Your First Windows Mobile Application

General

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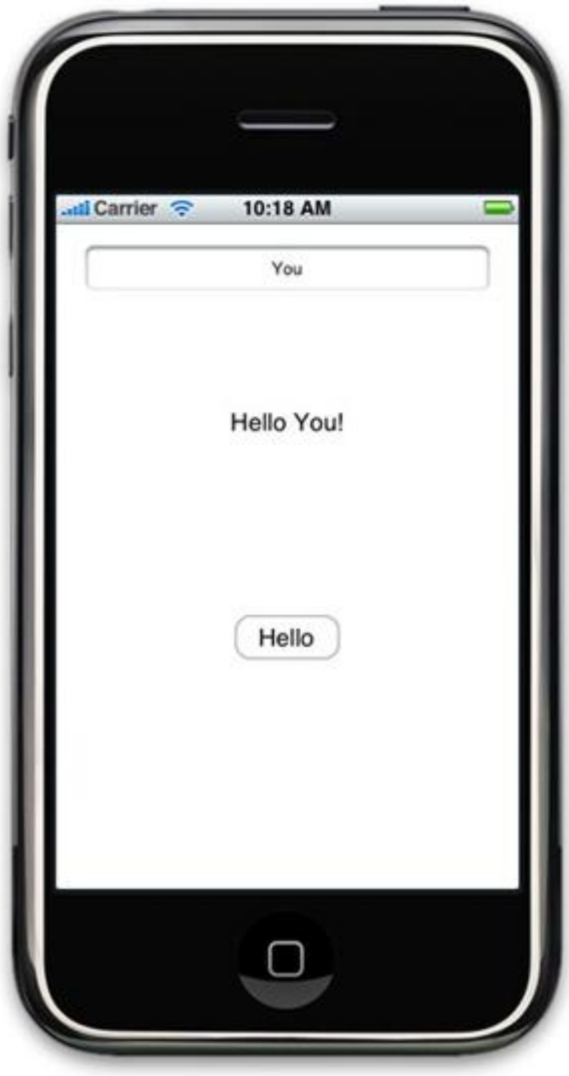
Chapter 1. Tutorial Overview and Design Patterns

Tutorial Overview

In this tutorial, we will create an application equivalent to the “Hello World” application as described in Apple’s “Your First iPhone Application” tutorial, using .Net Compact Framework 3.5 and Visual Studio 2008.



This is the application to be duplicated. It consists of a text entry field, a text display area and a single button. The user types in their name and presses the “Hello” button, causing the text to change to Hello followed by the name the user typed in.

Design Patterns

The MacOS X system, of which the iPhone OS is a subset, is based on the Model-View -Controller design pattern. The .Net system, however, is based on a container-object-event model where UI elements are objects that are held in a container and which expose events that are subscribed to and fired when needed.

As a result of this simpler architecture, there is no need for an entire layer abstracting the object from the consumer of the object, although one can add it if desired. As a result, a lot of steps in the Apple tutorial just don't apply to development in .Net, and really aren't replaced by anything.

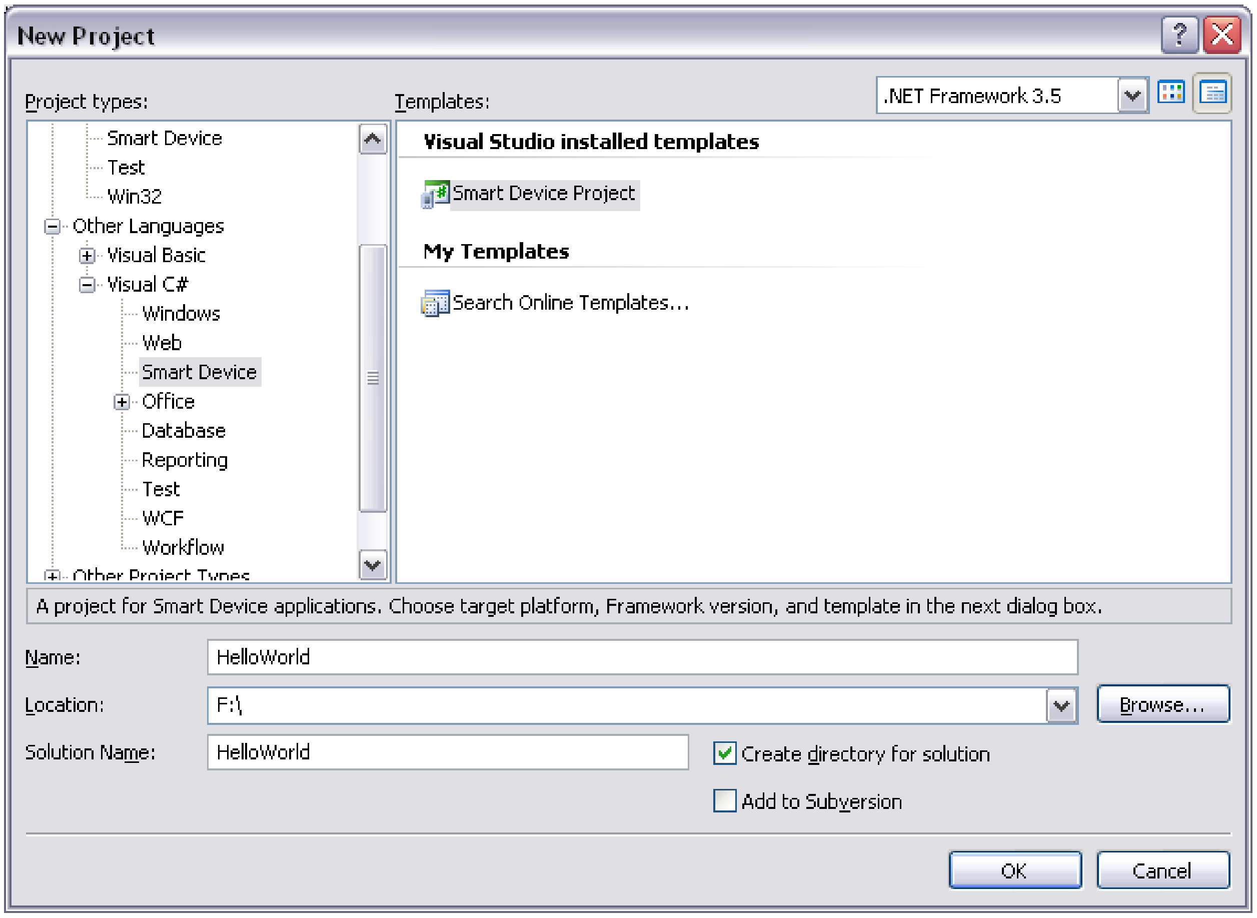
The other important difference is that Visual Studio does a lot of the work for you by generating most of the code, so you can focus on the application logic, rather than on hooking everything up.

Chapter 2. Creating Your Project

Visual Studio 2008 + Windows Mobile 6 SDK

Visual Studio 2008 allows you to build Windows Mobile applications and general Windows applications both for .Net and native. It also supports a wide range of languages including C++, C#, J# (Java) and Visual Basic.

Launch VS2008 and select “New Project...” from the File menu.

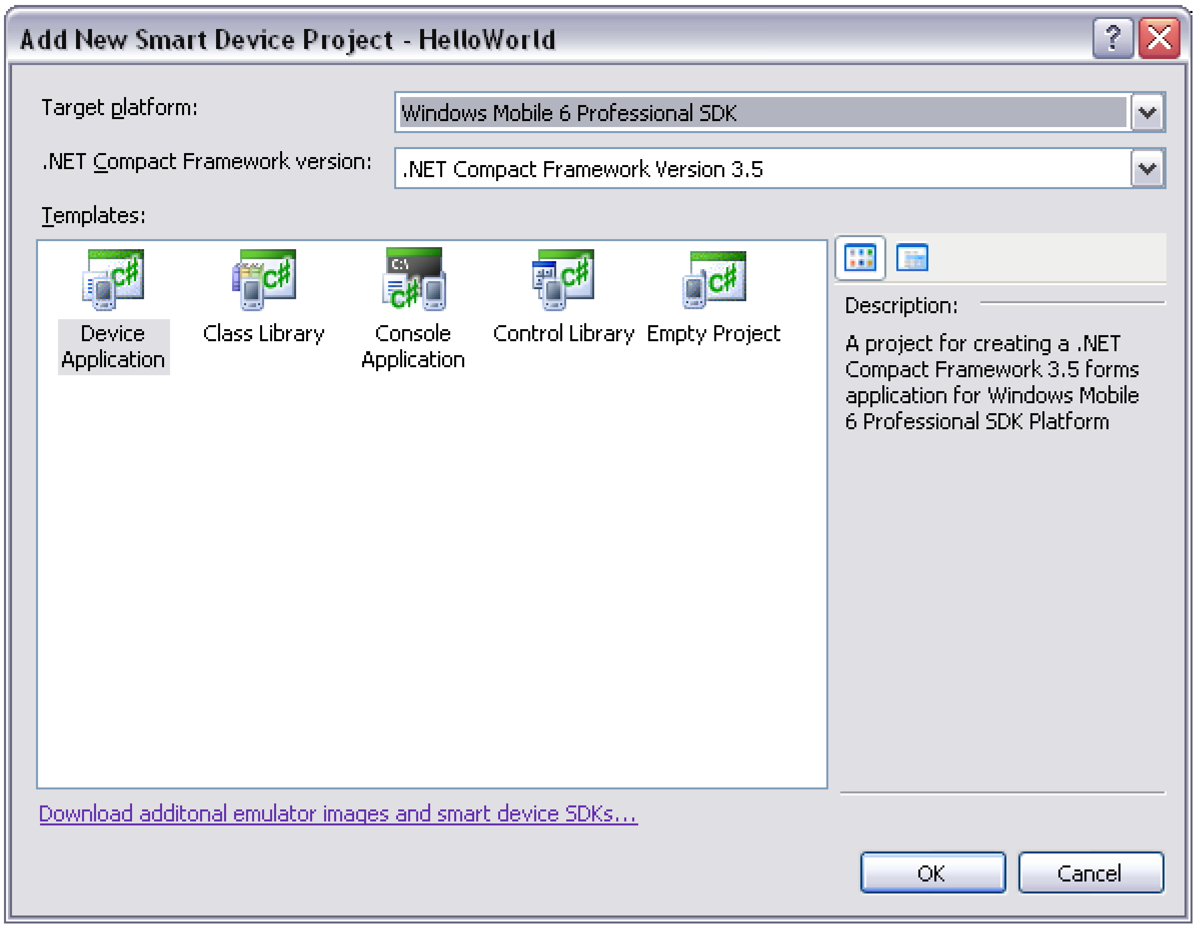


A project for Smart Device applications. Choose target platform, Framework version, and template in the next dialog box.

Name: HelloWorld
Location: F:\
Solution Name: HelloWorld
[✓] Create directory for solution
[ ] Add to Subversion

Select where you want the project to be and the name for it, in our case “HelloWorld”.
Choose Visual C# (or which ever language you prefer)
Choose Smart Device (the generic name for WindowsCE or Windows Mobile devices)
Choose Smart Device Project.
Click OK

One more step.


Add New Smart Device Project - HelloWorld

Target platform: Windows Mobile 6 Professional SDK

.NET Compact Framework version: .NET Compact Framework Version 3.5

Templates:

Description:

A project for creating a .NET Compact Framework 3.5 forms application for Windows Mobile 6 Professional SDK Platform

Download additonal emulator images and smart device SDKs...

Choose "Windows Mobile 6 Professional SDK" for Target platform.
Choose ".Net Compact Framework Version 3.5" for .Net Compact Framework version.
Choose "Device Application" for Template.
Click OK.

Visual Studio should now generate a complete SmartDevice framework and open up a window with a blank application with a title bar and a menu.

Application Bootstrapping

Does not apply.

Chapter 3. Adding a View Controller.

Does not apply.

Adding a View Controller Class

Does not apply.

Adding a View Controller Property

Does not apply.

Creating the View Controller Instance

Does not apply.

Setting up the View

Does not apply.

Housekeeping

Does not apply.

Implementation Source Listing

None.

Chapter 4. Adding a Nib File

Does not apply.

Interface Builder

Does not apply.

Create the Nib File

Does not apply.

Configuring File's Owner

Does not apply.

Connecting the View Outlet

Does not apply.

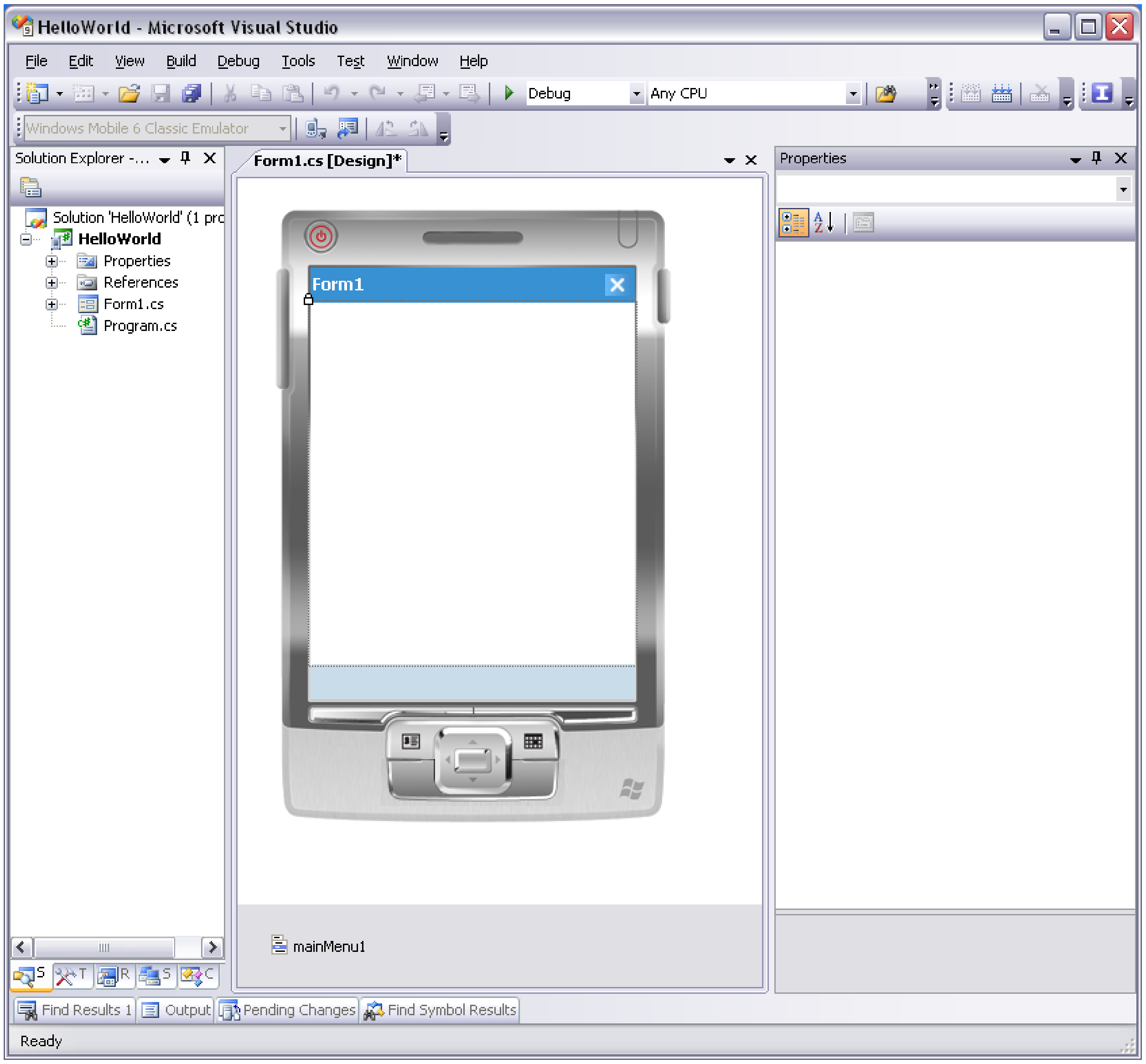
Loading the Nib File

Does not apply.

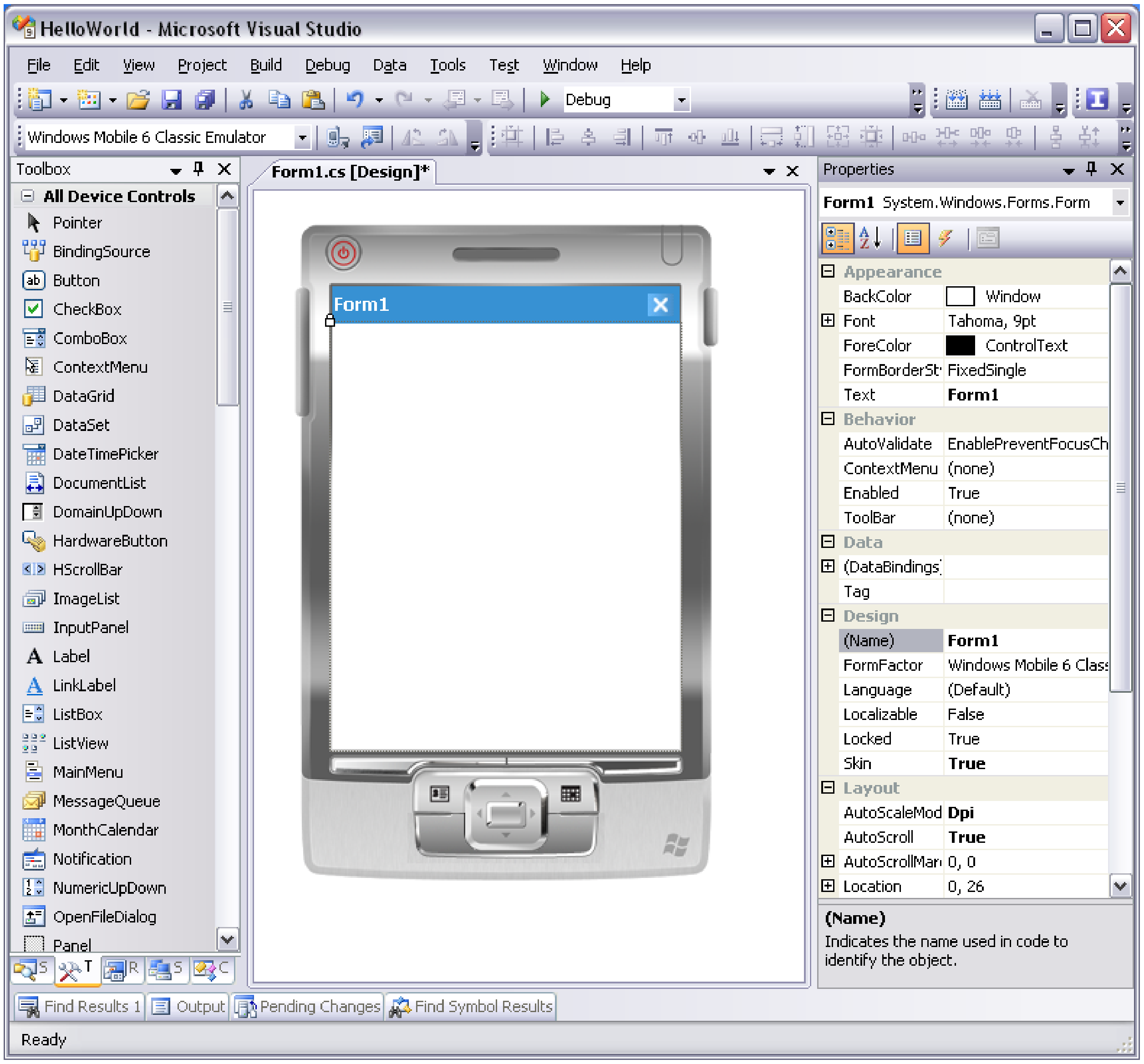
Chapter 5. Configuring the View

The .Net architecture isn't Model-Controller-View in design, but can be done that way. In general, the approach is Containers instead of views, and objects that respond to events. Since in general we have to have some kind of UI, we get a base form generated for us as a starting point.

Adding the User Interface Elements



Remove Menu (since we're not using it) and switch to Toolbox



Form1 System.Windows.Forms.Form

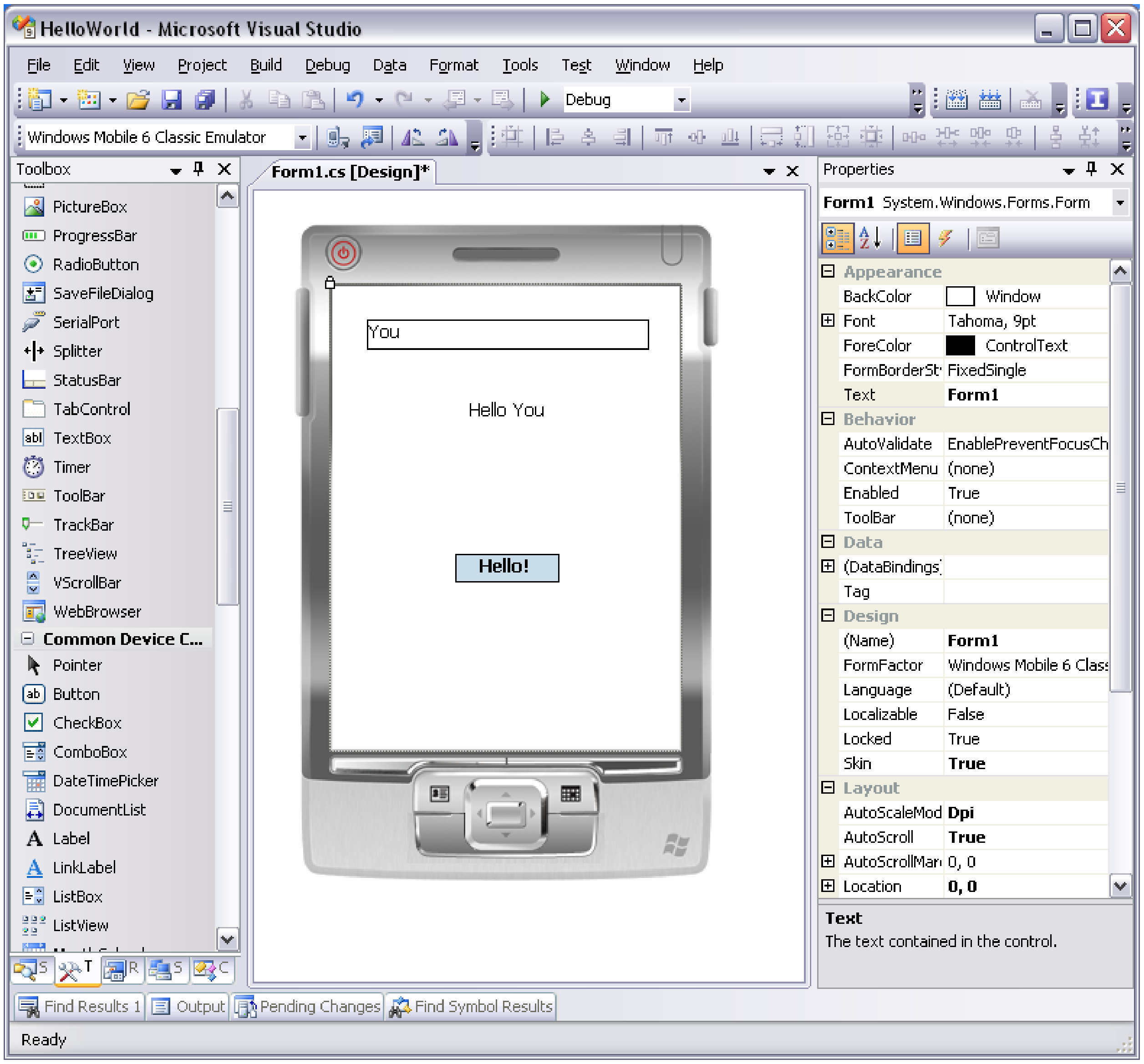
Appearance	
BackColor	Window
Font	Tahoma, 9pt
ForeColor	ControlText
FormBorderSt	FixedSingle
Text	**Form1**
Behavior	
AutoValidate	EnablePreventFocusCh
ContextMenu	(none)
Enabled	True
ToolBar	(none)
Data	
(DataBindings	
Tag	
Design	
(Name)	**Form1**
FormFactor	Windows Mobile 6 Class
Language	(Default)
Localizable	False
Locked	True
Skin	**True**
Layout	
AutoScaleMod	**Dpi**
AutoScroll	**True**
AutoScrollMar	0, 0
Location	0, 26

(Name)
Indicates the name used in code to identify the object.

1. Select the form and change the following:
   a. WindowState to Maximized (gets rid of the title bar)
2. Add a TextBox and change the following settings:
   a. Name to txtName
   b. Text to “You”
3. Add a Label and change the following settings:
   a. Name to lblName
   b. Text to “Hello You”
   c. TextAlign to TopCenter
4. Add a Button and change the following settings:
   a. Name to btnHello
   b. Text to “Hello!”

Select all three controls and use Align Centers to center the controls.

You should now see something like this:



Form1 System.Windows.Forms.Form

Appearance	
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(DataBindings)	
Tag	
Design	
(Name)	**Form1**
FormFactor	Windows Mobile 6 Class
Language	(Default)
Localizable	False
Locked	True
Skin	**True**
Layout	
AutoScaleMod	**Dpi**
AutoScroll	**True**
AutoScrollMar	0, 0
Location	**0, 0**

Text
The text contained in the control.

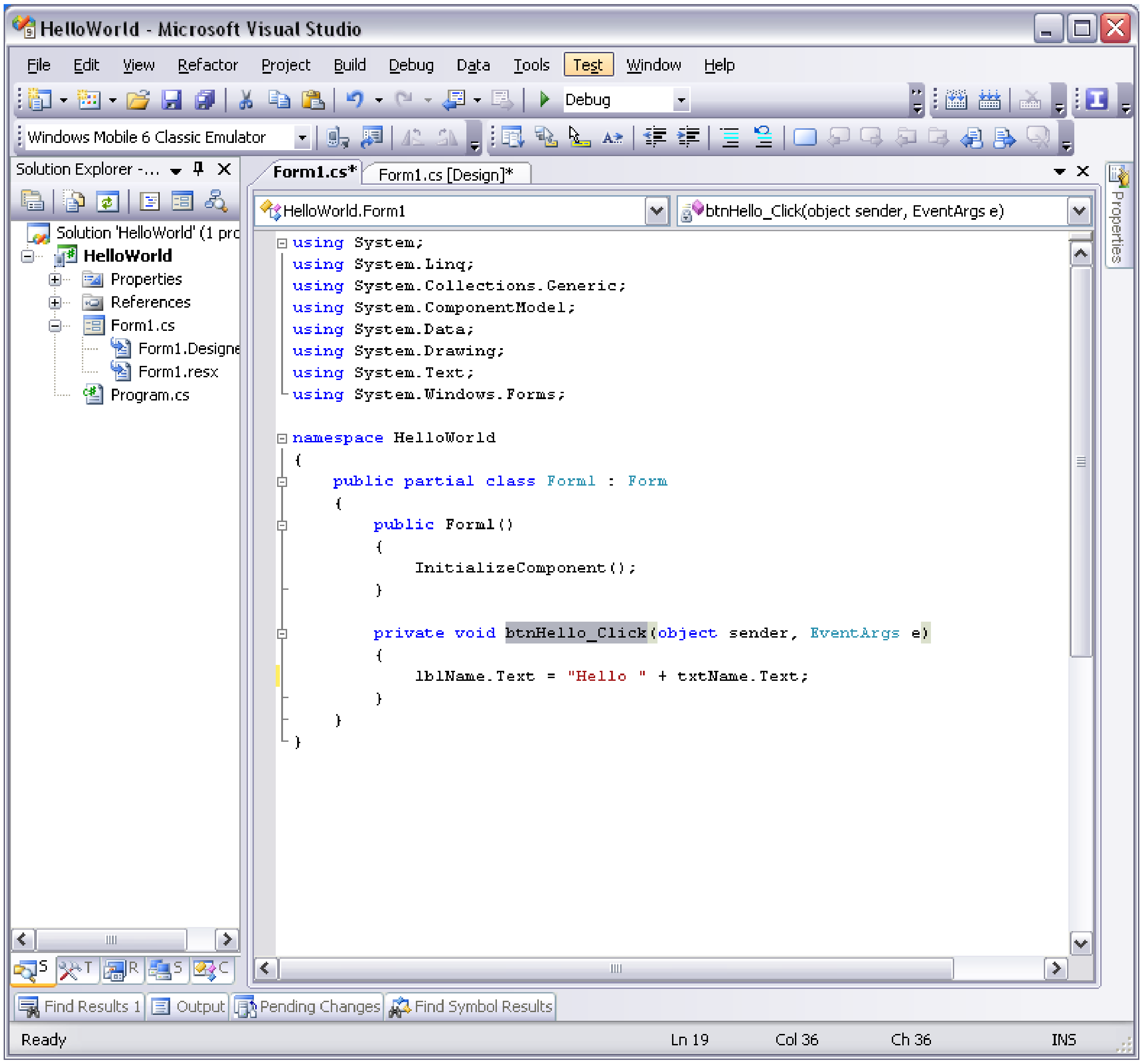
The View Controller Interface Declaration

Does not apply.

Making Connections

Double click on the button. This will open up the code for the form object and insert the routine “btnHello_Click,” which will be called in response to a user clicking on the button.

Enter the line ”lblName.Text = "Hello " + txtName.Text;” in the body of this routine.



```
using System;
using System.Linq;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;

namespace HelloWorld
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }

        private void btnHello_Click(object sender, EventArgs e)
        {
            lblName.Text = "Hello " + txtName.Text;
        }
    }
}
```

You’re done. Really. One line of code.

Chapter 6. Implementing the View Controller

Does not apply.

The Properties

Does not apply.

The changeGreeting: Method

Does not apply.

The Text Field’s Delegate

Does not apply.

Chapter 7. Troubleshooting

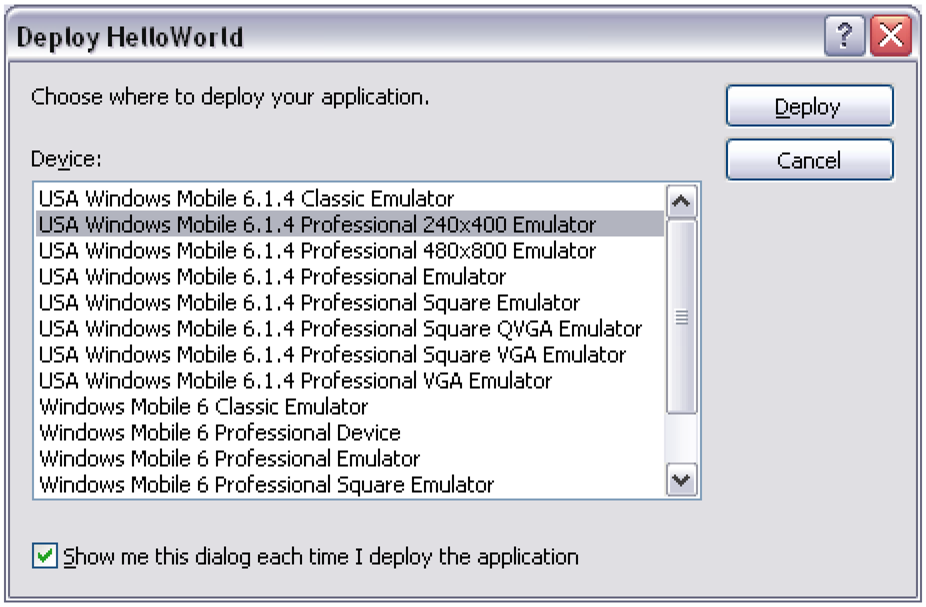
Oddly, the Apple tutorial never actually suggests compiling and running your new application.

Compiling and Running

Hit F5 to run. This will also compile the application. If you made any errors typing in the one line of code, you'll see it in the Errors pane.

Installing on a Device

Select the configuration you want to test on and click OK.



Deploy HelloWorld

Choose where to deploy your application.

Device:

USA Windows Mobile 6.1.4 Classic Emulator
USA Windows Mobile 6.1.4 Professional 240x400 Emulator
USA Windows Mobile 6.1.4 Professional 480x800 Emulator
USA Windows Mobile 6.1.4 Professional Emulator
USA Windows Mobile 6.1.4 Professional Square Emulator
USA Windows Mobile 6.1.4 Professional Square QVGA Emulator
USA Windows Mobile 6.1.4 Professional Square VGA Emulator
USA Windows Mobile 6.1.4 Professional VGA Emulator
Windows Mobile 6 Classic Emulator
Windows Mobile 6 Professional Device
Windows Mobile 6 Professional Emulator
Windows Mobile 6 Professional Square Emulator

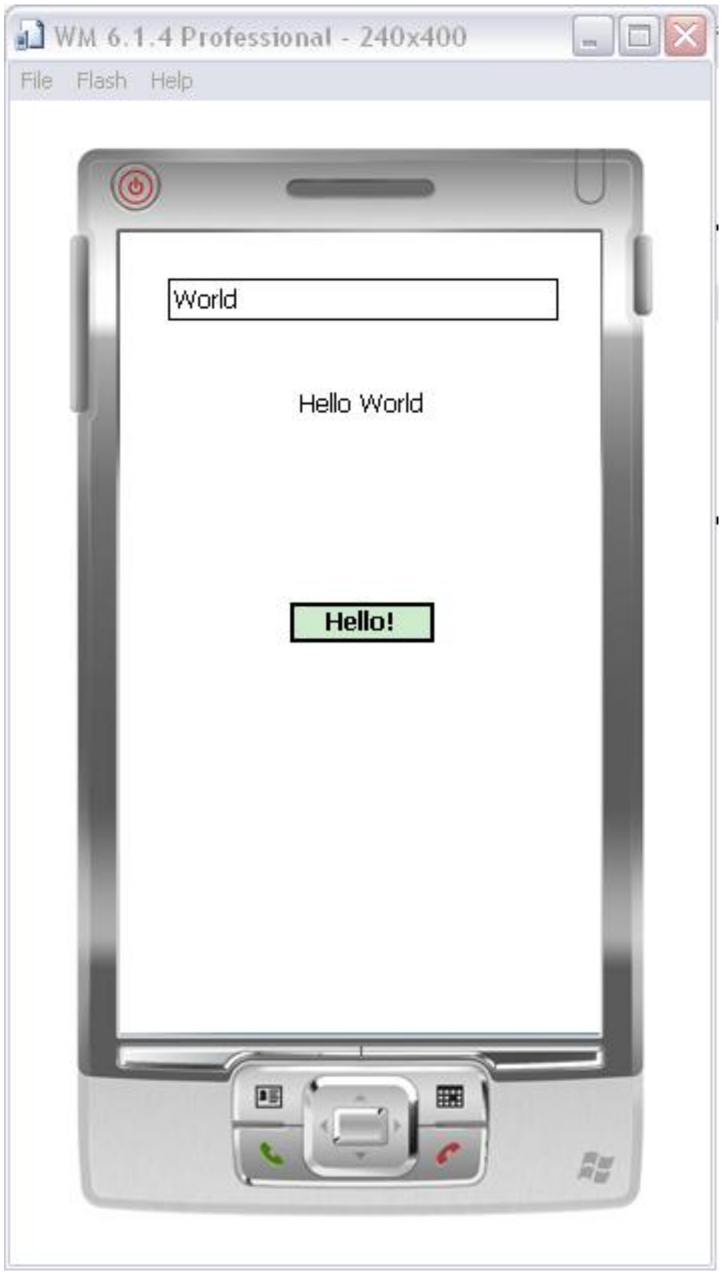
[✓] Show me this dialog each time I deploy the application

If you select one of the choices which refer to an emulator, the emulator will be started with that configuration and your application will be deployed along with all necessary support files (such as .Net 3.5 Compact Framework) and it will be launched.

If you select one of the choicse which refer to an actual device (such as "Windows Mobile 6 Professional Device"), the device must be connected. The application and support files will be deployed to your Windows Mobile device.

End Product

And voila. Your application running in emulation. Type “World” into the text box and click on “Hello” and it should look like this:



Chapter 8. What Next?

The User Interface

You can both use the stock controls or easily create new controls via the UserControl item. You can use existing controls and bind them together into a user control, add specialized logic and once compile, they become part of your library of controls.

Each control has an array of properties that you can preset in the designer, or programmatically at run time. As well, each control has events which are fired to let your object do specific tasks.

In many cases, functionality is immediate upon connecting UI elements together.

Creating User Interface Elements Programmatically

In this tutorial, the user elements were dragged and dropped onto a form, but you may wish to add new elements at design time. This is very easy. Every UI element is also a .Net object and so can be instanced on demand.

Let's add a new TextBox to the form. First, double-click on the form to create a Form_Load event handler, or use the Event panel and double click on Load which will bring you to the form Load event handler generated for you. Enter the following code:

```
private void Form1_Load(object sender, EventArgs e)
{
    TextBox txtField = new TextBox();
    txtField.Bounds = new Rectangle(20, 68, 280, 31);
    txtField.TextAlign = HorizontalAlignment.Center;
    txtField.Name = "txtAnotherField";
    this.Controls.Add(txtField); // adds the control to the form
}
```

That's basically it.

Conclusion

In each version of XCode, the development of a MacOS X or iPhone app gets simpler, but in my opinion, and I hope I've shown here, in fact – the development of .Net applications with Visual Studio is still significantly simpler, especially for UI oriented applications.

If Apple improved XCode to handle more of the code generation and management, I believe it could easily become almost as simple, although there are other obstacles which, to me, limit the ease of use of the XCode development system.