

Windows Phone Programming

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Outline

- ▶ Windows Phone Operating System
- ▶ Development Tools
- ▶ Windows Phone Apps
- ▶ Demonstration

Windows Phone Operating System

- Windows Phone (WP) is the Microsoft operating system for smartphones.
- It was first launched in October 2010 with Windows Phone 7.
- It is the successor to Windows Mobile.
- With Windows Phone a new user interface with a design language named "Modern" (formerly known as "Metro") was introduced.

Windows Phone 7

- ▶ Windows Phone 7 was released publicly in November 2010 and updated (Windows Phone 7.5) in May 2011.
- ▶ The update included a mobile version of Internet Explorer 9 that supports the same web standards and graphical capability as the desktop version, multi-tasking of third-party applications, Twitter integration for the People Hub and Windows Live SkyDrive access.

Windows Phone 7

- ▶ The minor update "Tango" was released in 2012. Along with other bug fixes it lowered the hardware requirements to allow for devices with 800 MHz CPUs and 256 MB of RAM to run Windows Phone.
- ▶ Windows Phone 7.8 was released in January 2013. It added some new features such as an updated start screen, additional color schemes, and additional wallpaper options.

Windows Phone 8

- ▶ Windows Phone 8 was released in October 2012. It introduced a new generation of the operating system. Windows Phone 8 replaces its previously Windows CE-based architecture with one based on the Windows NT kernel with many components shared with Windows 8, allowing applications to be easily ported between the two platforms.

Windows Phone 8

- ▶ Windows Phone 8, while adding a number of software improvements, also brought support for updated hardware. This included support for multi-core processors and high resolution screens. This gave Windows Phone the ability to better compete with other smartphones.

Windows Phone 8.1

- ▶ Windows Phone 8.1 was announced in April 2014. New features added include:
- ▶ a notification center
- ▶ Internet Explorer 11 with tab syncing among Windows 8.1 devices and WP devices
- ▶ separate volume controls
- ▶ the option to skin and add a third column of live tiles to the Start Screen

Windows Phone 8.1

- ▶ Starting with this release, Microsoft has also dropped the requirement that all Windows Phone OEMs include a camera button and physical buttons for back, Start, and Search.
- ▶ Windows Phone 8.1 also adds "Cortana", a voice assistant much like Siri and Google Now. Cortana replaces the previous Bing search feature.

Windows Phone 8.1 Update

- ▶ Windows Phone 8.1 Update 1 is a very minor update to Windows Phone 8.1. The new version includes:
- ▶ A Chinese version of Cortana (with a different theme) with built in-car navigation
- ▶ Start screen folders, where you can drag apps to organize the home screen & Windows Store live tile
- ▶ Smart case support, higher resolutions and bigger sized phones

Windows Phone 8.1 Update

- ▶ Voice over LTE (VoLTE) support, which will allow Lumia smartphone owners to make phone calls over a 4G connection
- ▶ Automatic updates & phones need a required proximity system
- ▶ Network Time Protocol (NTP) for syncing the same time between devices (computers, phones, etc.)
- ▶ OS compression (to make OS smaller) & performance improvements

Windows Phone 8.1

- ▶ Start screen folders, where you can drag apps to organise the home screen & Windows Store live tile
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Windows Phone 8.1

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Windows Phone Development Tools

- ▶ Developing Windows Phone 8 applications requires installation of the Windows Phone 8 SDK (Software Development Kit) on a computer running Windows 8 64-bit edition.
- ▶ The reason for this requirement is the Windows Phone Emulator.
- ▶ It is running as a virtual machine in Hyper-V, Microsoft's virtualization platform.

Windows Phone Development Tools

- ▶ So, we'll be running the Windows Phone 8 operating system in a window that looks like a real phone for testing purposes.
- ▶ Windows Phone SDK and other useful development software can be downloaded from here:
- ▶ <http://developer.windowsphone.com/en-us/downloadsdk>

Enabling Hyper-V

- ▶ During installation we may need to enable Hyper-V for the Windows Phone Emulator
- ▶ [http://msdn.microsoft.com/en-us/library/windowsphone/develop/jj863509\(v=vs.105\).aspx](http://msdn.microsoft.com/en-us/library/windowsphone/develop/jj863509(v=vs.105).aspx)
- ▶ Visual Studio is used as the IDE for developing WP apps:
- ▶ Visual Studio 2013 with update 2
- ▶ Visual Studio Trial Versions
- ▶ Visual Studio Express edition

XAML

- ▶ XAML (eXtensible Application Markup Language) is an XML language used in Windows Phone applications to represent the application user interface. Just like any XML language XAML consists of elements, attributes and namespaces.
- ▶ XAML allows defining controls and their properties. Instances of classes and their properties are created based on XAML.

XAML

- ▶ For example, we can define a Button control and set some of its properties in XAML in the following way:
- ▶ `<Grid x:Name="mainGrid">`
- ▶ `<Button x:Name="showButton" Content="Show" Foreground="Blue" Background="Bisque" HorizontalAlignment="Left" VerticalAlignment="Top" Margin="127,367,0,0"/>`
- ▶ `</Grid>`

.xaml and .xaml.cs

- ▶ The .xaml.cs file defines a MainPage class, and furthermore, it defines it as a partial class:

```
namespace Example_11
{
    public sealed partial class MainPage : Page
    {
```

The other half of the equation is defined in the MainPage.xaml:

```
<Page
    x:Class="Example_11.MainPage"
    ...
```

Demo

- ▶ In the example we develop a Windows Phone app, which allows us using Map technique.
- ▶ We can simply drag a Map control from the ToolBox and drop it over the page.
- ▶ We add also two buttons and a label to the app.
- ▶ We can then implement the business logic of the app.
- ▶ The application requires adding Location capabilities in the application manifest file.

Thank you!

