A Complete Guide for windows phone 8.1 Developers

Rahat Yasir
Shariful Islam Nibir

Windows Phone 8.1
Complete Solution

Windows Phone 8.1 Complete Solution

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This book is written for the beginners who are thinking to start developing Windows Phone Application and it would be a gentle introduction of learning Windows Phone App developing to others. Also to help the Bangladeshi MSPs (Microsoft Student Partners) to give them proper guideline about Windows Phone Application. All the MSPs are taking help from our blog site and published articles.

This book is dedicated to all the members of .Net Community in Bangladesh.

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About the Authors

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He has 3+ years of experience in developing windows phone apps.

Ex Microsoft Student Partner and Current Youth Spark Advocate.

Team Leader of BD Devs and they develop local Windows Phone apps for free.

Runner up of Microsoft Imagine Cup 2012, Bangladesh.

One of the top 10 image processing app developer of Nokia Future Capture Hackathon, Lund, Sweden.

Microsoft Student Partner Summit participant, Washington, USA, 2014.

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He is 3+ years experienced Windows Phone app developer.

Microsoft Student Partner Lead of North South University.

Senior Member of BD Devs (BD Devs - A pioneer windows phone app development team in Bangladesh)

3 times Windows Phone National App-a-thon winner.

Reviewers Comment

I have had the privilege and pleasure to read this book and I think this is a perfect place to start for those coders who are starting their app development career. The authors are well reputed and easily among some of the top Windows Phone app developers in Bangladesh. They covered a wide variety of topics on the subject matter deep enough to get anyone started in the world of Windows Phone. What I like about the book is that they started out with IDE and necessary tools setup all the way to the Hybrid app development and publishing to the Store – a complete solution approach; the name justifies it very nicely. That is to say this is not a reference book; rather it's a neat journey that you may take to learn Windows Phone app development by reading cover to cover filled with step-by-step nice and easy examples.

We have a lot of give back to the community.

This book is certainly a great work, and contributes value to the community. I believe it is going to serve as a handbook for aspirant Windows Phone app developers.

Congratulations to the authors for getting their first book out. I wish all the best.

Tanzim Saqib

Technical Evangelist, Microsoft Bangladesh

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Introduction

Windows Phone 8.1 Complete Solution is the first complete book on windows phone 8.1. Authors of this book is Rahat Yasir and Shariful Islam Nibir. Both of this authors are experienced windows phone app developers and have 3 + years of experience in this field.

Windows Phone 8.1 Complete Solution book is for those developers who are willing to develop windows phone 8.1 apps. Pre-requisite of this book is object oriented programming in C#.

New windows phone developers can also start their app developing career with this book.

This book covers both basic and intermediate level windows phone 8.1 app development topics.

This book has mentioned all possible ways of windows phone app development, like, developing simple but beautiful windows phone apps using app studio and this chapter is for newbies, beautiful, efficient and advanced windows phone app using visual studio and this is for beginners and intermediate level developers, and then, windows phone app development using cross platform technology like PhoneGap (Cordova) this is for cross platform app developers and web developers who are willing to develop non-native windows phone apps.

You can read articles of this book from this site,

http://www.c-sharpcorner.com/Authors/020f8f/Articles/

You can also follow the blog site of authors,

http://learnwithbddevs.wordpress.com/

Visual Studio 2013.3 IDE Installation Process

Introduction

In this chapter I'll explain how to install Visual Studio 2013 with Update 3 step by step. It's pretty much straight forward, and I'll show you all the steps one by one, so that you can have the idea what's going on when you'll install it in your own personal computer.

So let's get crack in Visual Studio 2013.3 IDE Installation process.

Downloading the Visual Studio 2013.3 from DreamSpark

First of all download Visual Studio 2013 with Update 3. If you have DreamSpark, BizSpark or MSDN account, you can download it from it. Here, I've downloaded it from my DreamSpark account. After login in your account, you can find all software in Catalog section and choose your flavor from there.

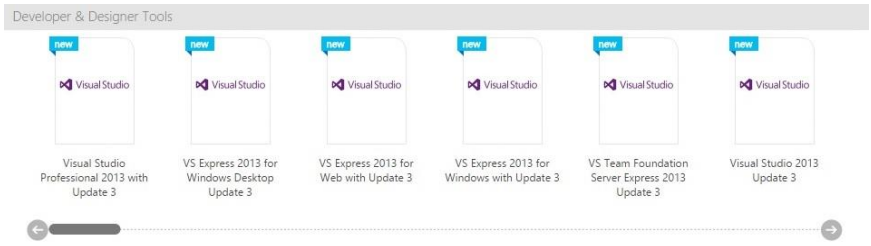


Figure 1

After downloading the .iso file, go to the destination folder and open the folder. Inside the folder you can see these files.

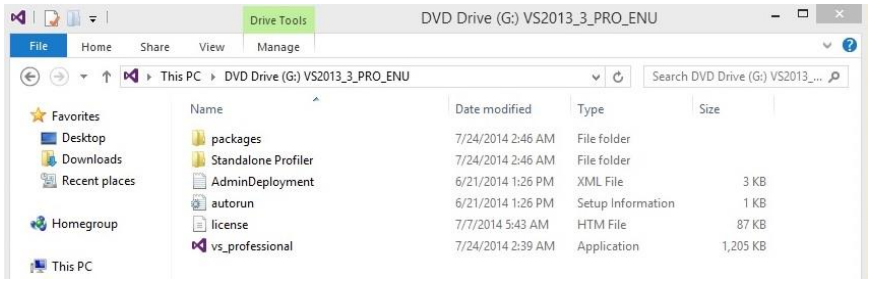


Figure 2

If you don't have any DreamSpark, BizSpark of MSDN account, you can download it from online Microsoft community for free.

http://www.visualstudio.com/en-us/downloads/visual-studio-2015-downloads-vs

Start Installation Process

Open the "vs_professional" application file and you will see the windows below one by one.

Figure 3

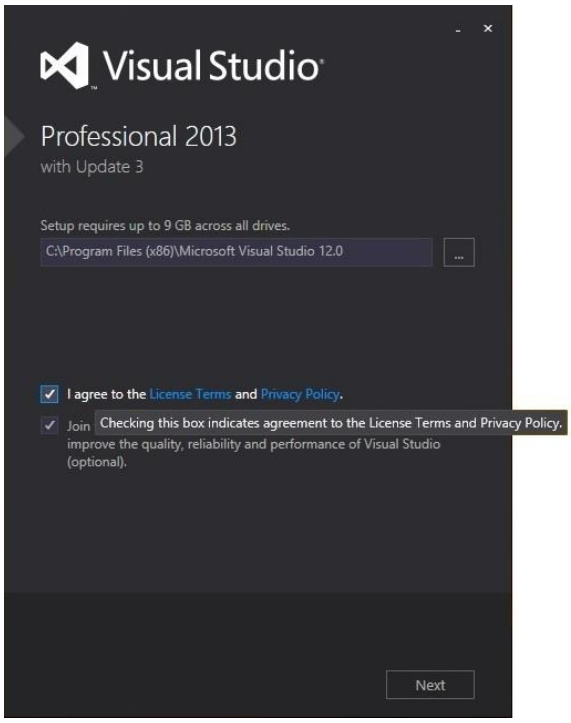


Figure 4

Select the “I agree …” check box and hit “Next”. Then you can see installation features of VS.

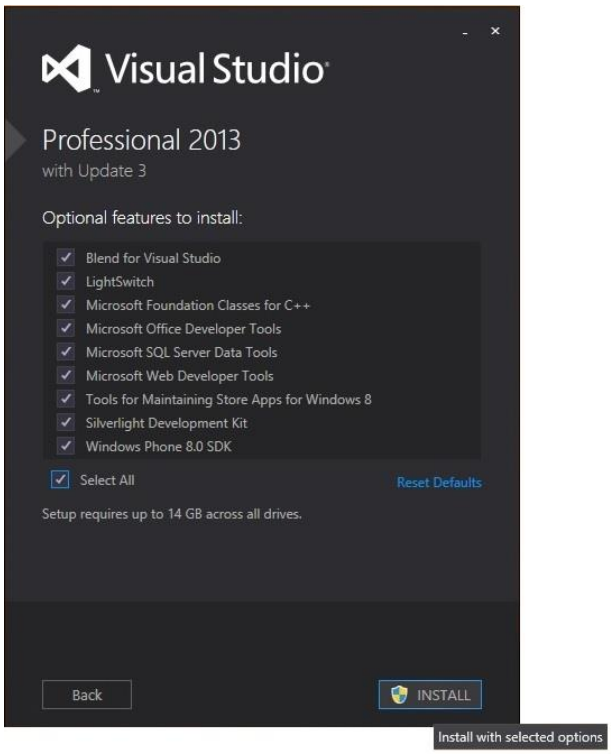


Figure 5

Select all the options and hit “Install”. Then the installation process will start. It’ll take some time based on your computer configuration. High configuration PCs take average twenty to half an hour.

Figure 6

Be patience, and some moment later you see the windows below.

Restarting Your Computer

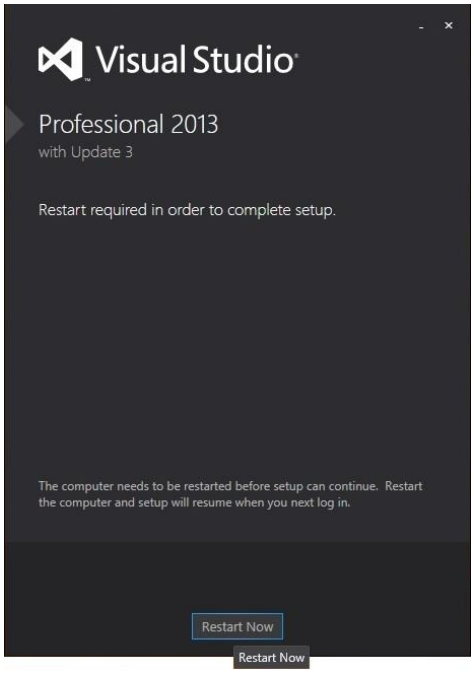


Figure 7

Hit the “Restart Now” button. It’ll restart your computer and after restarting your VS setup will be resumed.

Figure 8

After some moment your installation process will be done and you’ll get this message window.

Launching Visual Studio 2013.3

Figure 9

Then you'll be asked to "Sign in" with your Microsoft account, you can do so or just click "Not now, may be later".

Figure 10

Then you can see the windows below, here you can choose your Development settings and VS Theme. I've set my development settings to C#.

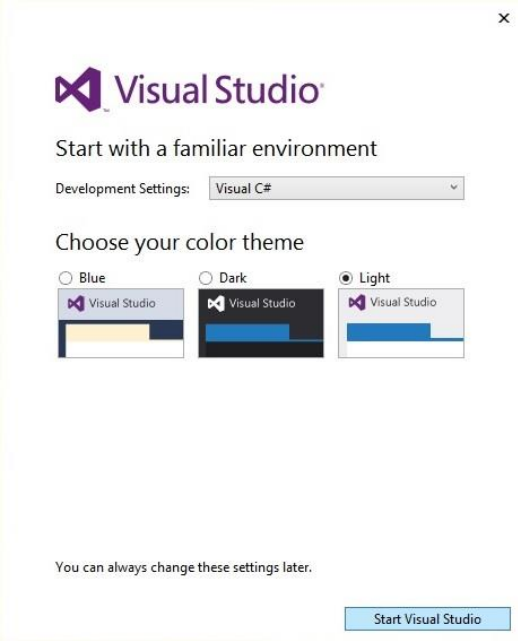


Figure 11

Hit the "Start Visual Studio" button and you all set now. Your Visual Studio 2013.3 is ready to use.

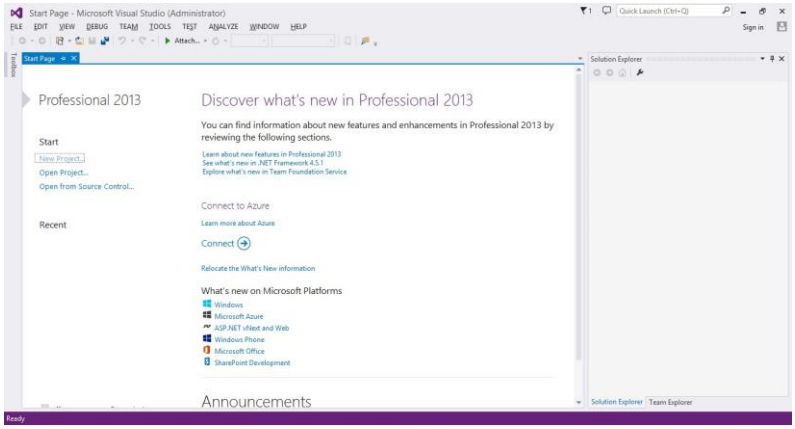


Figure 12

Activating Visual Studio

Now one more thing to do, is activate your Visual Studio with the product id which you've got from your DreamSpark account. Go to Help >> Register Product Key.

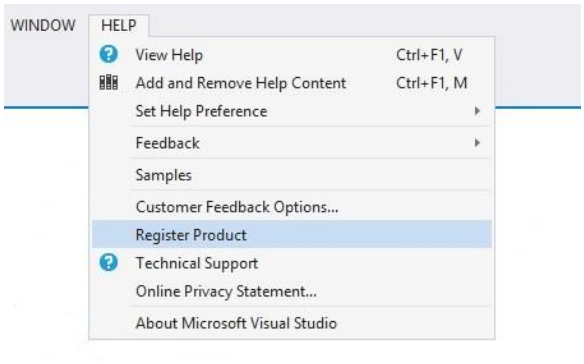


Figure 13

Hit the Register Product Key and you'll see this window like below. Click the "Licence with a Product Key" and enter your product key like below.

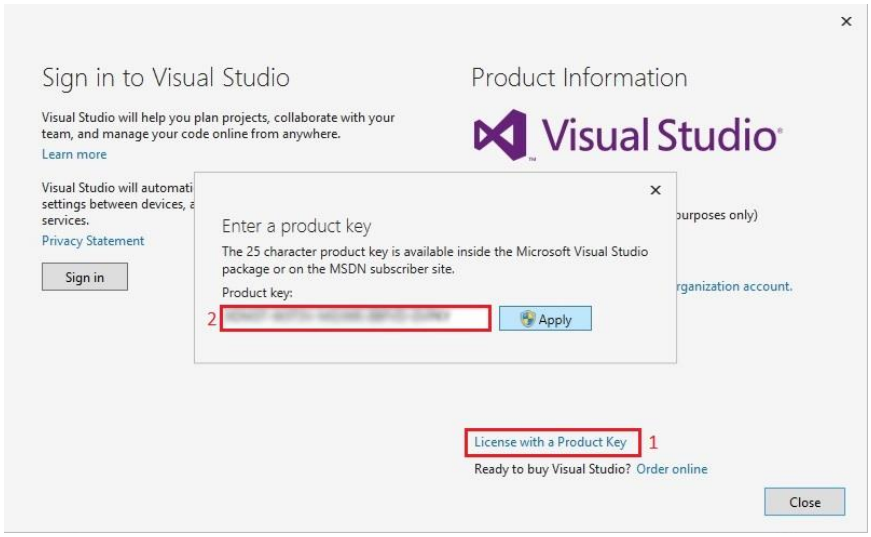


Figure 14

Hit "Apply" and you're ready to go.

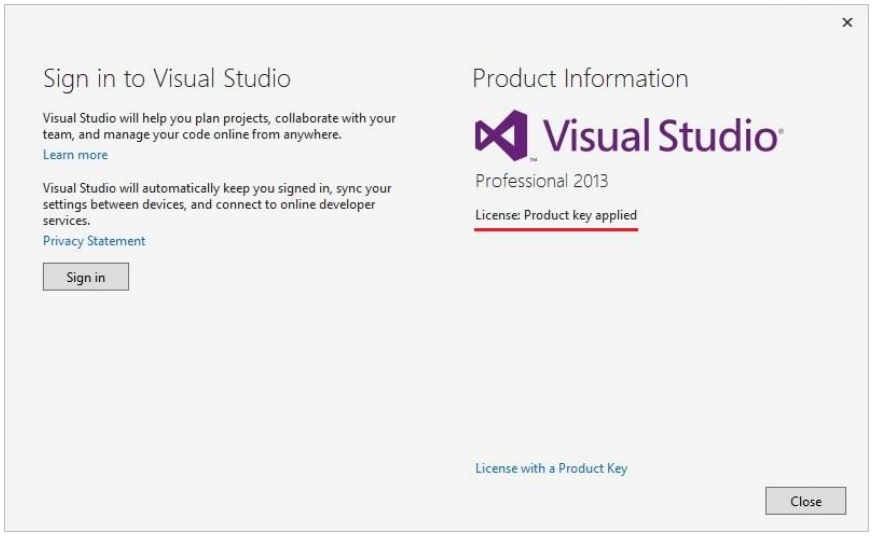


Figure 15

Get Ready to Use Visual Studio

Now you can make your favorite Windows Phone 8.1 application. Just Click the "New Project", select your template and rock on.

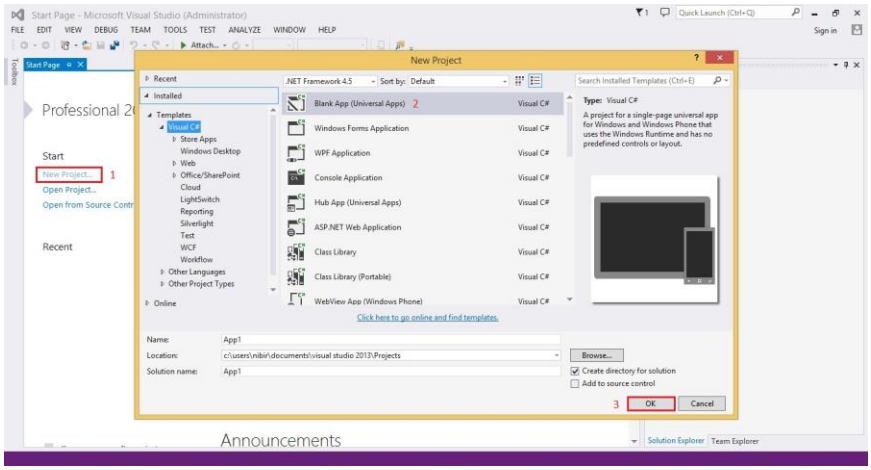


Figure 16

Summary

So, that's it. Start developing awesome application with the greatest tool of Microsoft. In next chapter we'll create our first application "Hello world". If you've done till this, you're ready to go.

Hello world!

Windows Phone - Hello world!

Introduction

Welcome to Windows Phone App Development. Those who are thinking to start Windows Phone App developing, but can't understand where to start, by thinking about them I've written this book. I hope, at least, you can come in handy.

Programming language or software development whatever you say, everything starts with a "Hello world" application. Which means, you are declaring your existence to the world.

Creating your first project

At first, you have to open Visual Studio, then you can see the picture below in Figure 1.

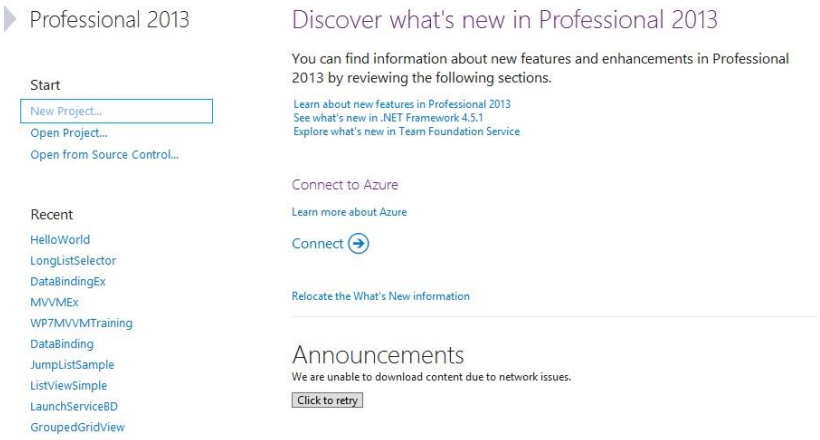


Figure 1

Select "New Project", choose "Blank App" and give it a name "HelloWorld" and hit "OK".

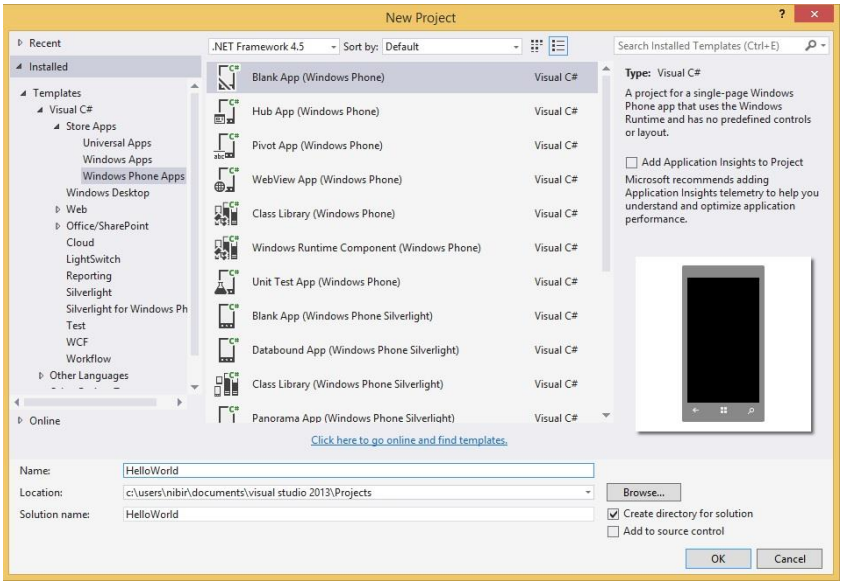


Figure 2

Changing MainPage.xaml

Now delete the "MainPage.xaml" like in Figure 3.

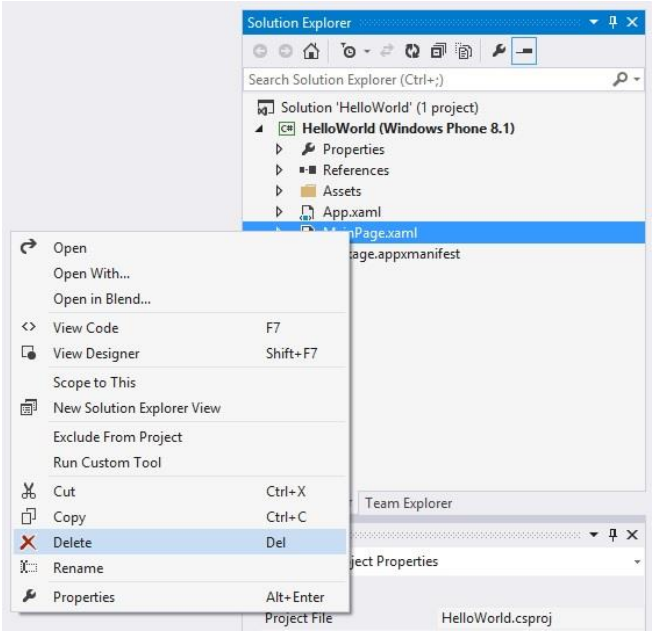


Figure 3

Add a "New Item",

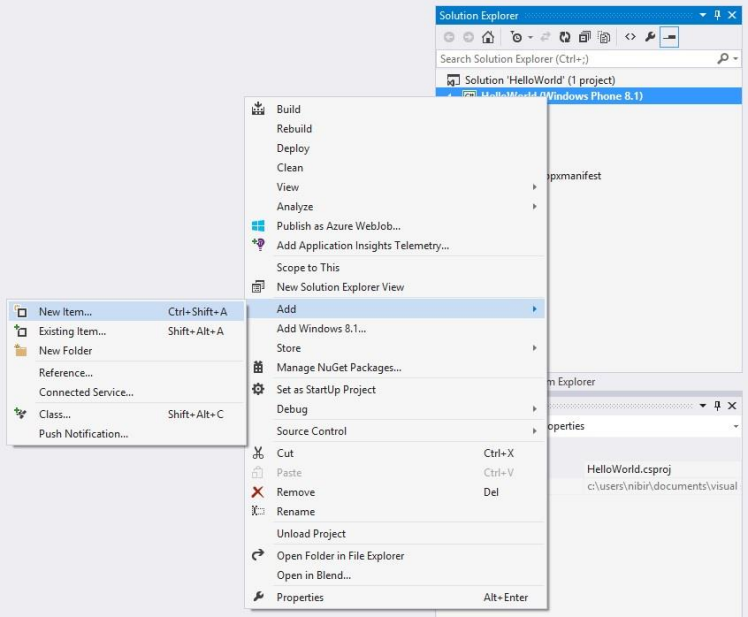


Figure 4

And now you can see the picture below. Select a "Basic Page" template and give it name "MainPage.xaml".

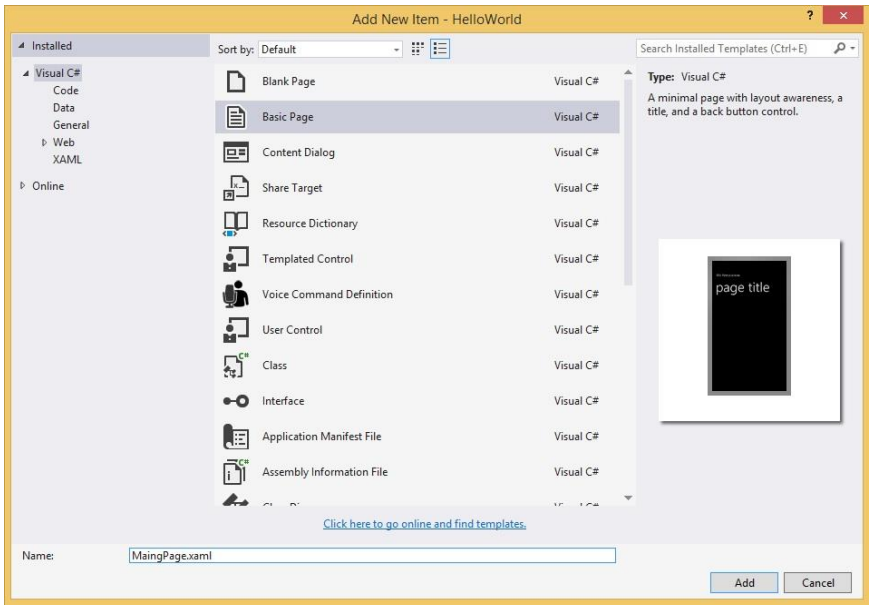


Figure 5

If you see a popup window, hit "Yes".

Figure 6

Modifying title section

Now we will modify the "TitlePanel contains the name of the application and page title" section in "MainPage.xaml", like the code below in Listing 1.

```
<!-- Title Panel -->

<StackPanel Grid.Row="0" Margin="19,0,0,0">

    <TextBlock Text="MY FIRST APPLICATION" Style="{ThemeResource
TitleTextBlockStyle}" Margin="0,12,0,0"/>

    <TextBlock Text="Hello world!" Margin="0,-6.5,0,26.5"
Style="{ThemeResource HeaderTextBlockStyle}"
CharacterSpacing="{ThemeResource
PivotHeaderItemCharacterSpacing}"/>

</StackPanel>
```

Listing 1

In Listing 1 line number three & five, we gave our application name "MY FIRST APPLICATION" and gave the title "Hello world!".

Modifying the main grid

Now, we will modify our main grid. Grid is a framework of spaced bars that hold the control elements of the WP apps. We'll talk about grid more lately on Windows Phone Controls chapters. We will change the "ContentPanel – place additional content here" section like below in Listing 2.

```
<!--TODO: Content should be placed within the following grid-->
```

```
<Grid Grid.Row="1" x:Name="ContentRoot" Margin="19,9.5,19,0">
    <Button Content="Click Me"
            HorizontalAlignment="Left"
            VerticalAlignment="Top"
            Click="Button_Click_Me"
            Margin="10,0,0,0">
    </Button>

    <TextBox x:Name="TextBox_HelloWorld"
            HorizontalAlignment="Left"
            Height="40"
            Margin="10,75,0,0"
            TextWrapping="Wrap"
            VerticalAlignment="Top"
            Width="342">
    </TextBox>
</Grid>
```

Listing 2

Here in Listing 2, we take a button control, whose content is "Click Me", which will show in the surface of the button, and gave an event controller, which will handle the background work if someone click the button. Also we have taken a TextBox control, which will show the text for us, and its name is "TextBox_HelloWorld". Our design will look like this in Figure 7,

Figure 7

Creating the button event handler

We have come to an end of our application. Till now, we have design our app. Now we will code behind with C#. We will double click the "MaingPage.xaml.cs" in the Solution Explorer, and modify the code inside like this in Listing 3,

```
private void Button_Click_Me(object sender, RoutedEventArgs e)
{
    TextBox_HelloWorld.Text = "Rock the world!";
}
```

Listing 3

Here in Listing 3, line number three, "TextBox_HelloWorld" is our TextBox's name. We will call it by name, and it will show us the text "Rock the world!". So our TextBox's showing text will be "Rock the world!".

Run your application

Now we will run the application, for that reason you have to click the play button or press F5 like below,

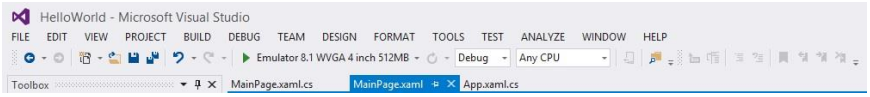


Figure 8

And the application will look like this in Figure 9.

Figure 9

Now, if we click the "Click Me" button, it will show the text "Rock the world!" in the TextBox below.

Summary

We've successfully created our very own Windows Phone 8.1 application. You've introduced some terms like, Solution Explorer, you'll learn more about Visual Studio's features and functionality more in the upcoming chapters. You'll be familiar with Properties Window, Toolbox and lots more. We'll discuss about them later, but here we've shown only their uses. I hope that, everyone can do this. So that's it, in next chapter we'll learn about windows phone controls and their uses.

WP Control Part 1

Windows Phone Controls – Part 1

Introduction

In this chapter, I will talk about some basic controls of Windows Phone, and XAML is the main design language of Windows Phone. I think it will help you to understand the basic principle of XAML and how it works. Its attribute and uses. So let's get crack it, the essential XAML controls for Windows Phone.

XAML makes your life much easier. Back then, you have to design a lot of pages with same alignment and it hectic & frustrating, also not that easy task. But XAML brings you the flexibility to make your design portable and easy to arrange. You can copy paste your design and reuse wherever you want. It's not all, you can shape your design whatever you like to do, and the power is now in your hand. Now let's see what kind of simple controls you can use in your Windows Phone Application.

Creating a new project

First of all, we will create a project. Open Visual Studio, and open a "New Project". Select "Blank App" and name it "WindowsPhoneControls".

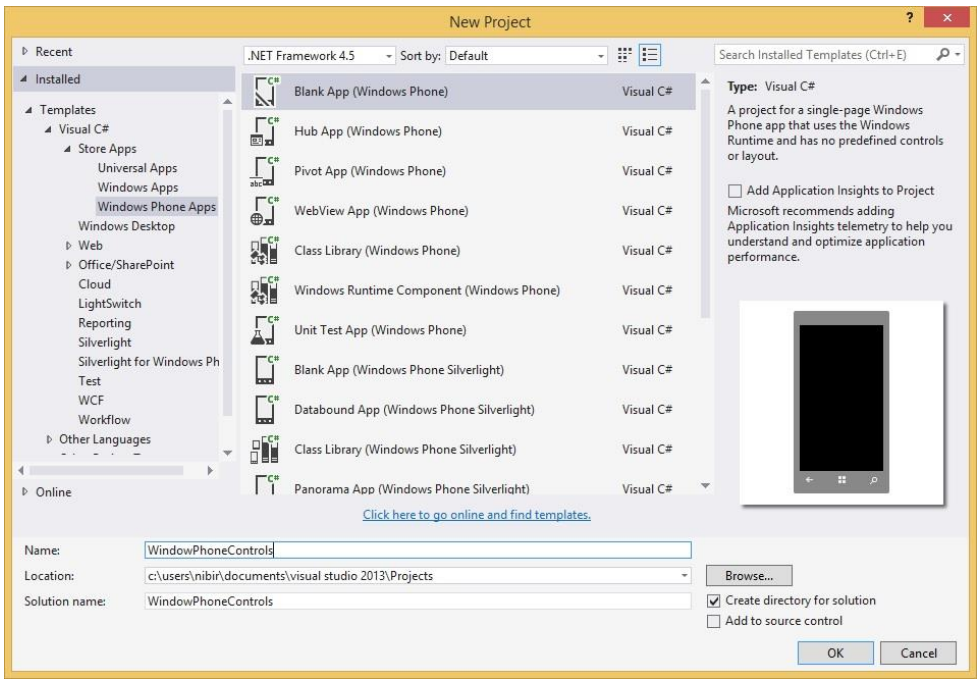


Figure 1

Click OK and you can see Visual Studio like below.

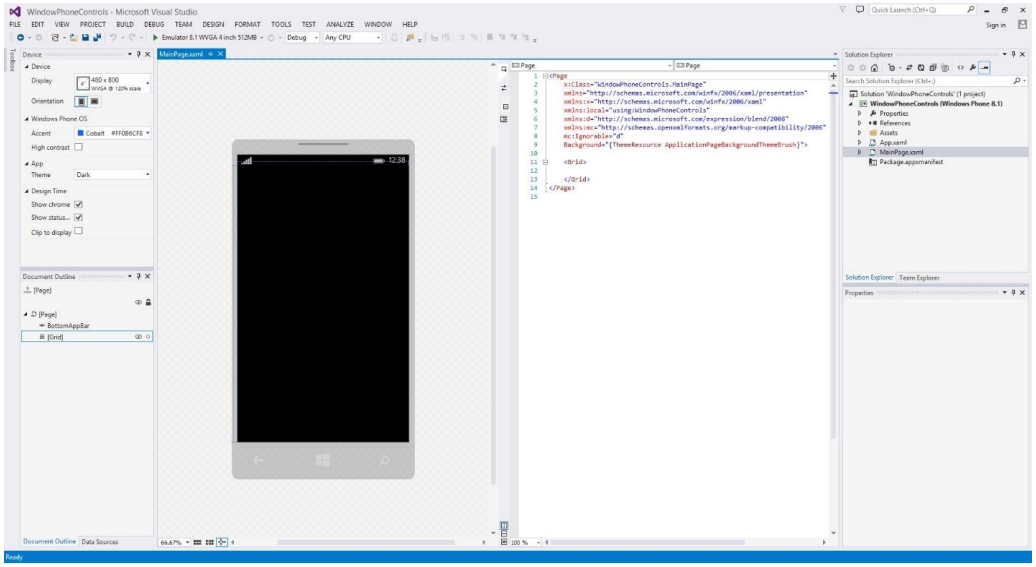


Figure 2

Working with HyperlinkButton

Previously, we've worked with simple Button controls in our "Hello world" application. Now, we'll work with another Button like control called "HeyperLinkButton". It's used to link a URL or some other things you like.

To do that, you can see Toolbox in the left side of the Visual Studio and you can find it in "All XAML Controls" section. Click on this control and drag it to you design. Like this,

Figure 3

Now, to make sure it works, we need another TextBlock control. To do so, drag it from the Toolbox and put it below the Hyperlink button. The designing code is given below.

```
<!--Hyperlink Button-->
```

```
<HyperlinkButton x:Name="HyperlinkButton_1"
                 Content="HyperlinkButton"
                 HorizontalAlignment="Left"
                 VerticalAlignment="Top"
                 Margin="10,10,0,0"
                 Click="HyperlinkButton_1_Click"/>

<TextBlock x:Name="HB_TextBlock"
           HorizontalAlignment="Left"
           VerticalAlignment="Top"
           Margin="10,10,0,0"
           TextWrapping="Wrap"
           Height="40"
           Width="140"
           FontSize="24" Grid.Column="1"/>
```

Listing 1

Here, in HyperlinkButton we have an event controller named HyperlinkButton_1_Click, it creates a code block which will handle the background task, when you will click in the hyper link Button and we will show a confirmation message in the TextBlock named "HB_TextBlock".

Making Grid

We've made some Grids in our main Grid, to arrange the controls in these Grids like Grid 1, 2 and so on.

You can make Grids wherever you want, you can customize the Grid as your needs.

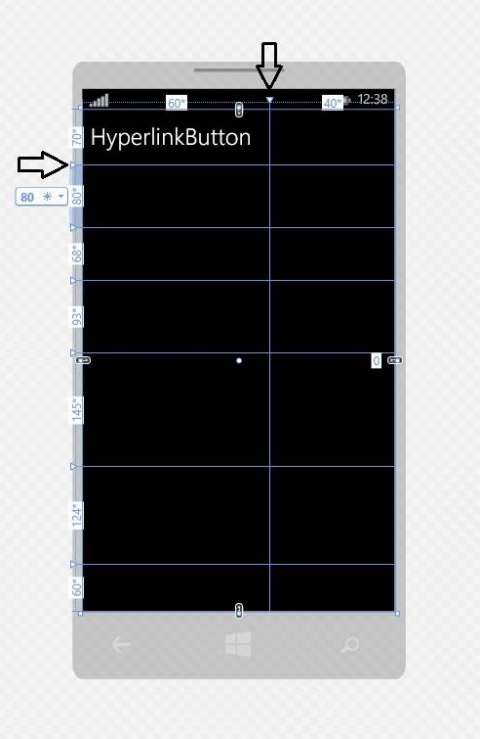


Figure 4

Like above the picture, just take your mouse courser on these points and just click above the Main Grid, and it will create Grids automagically, also generate codes of making Grids in XAML.

Now, open "MainPage.xaml.cs" and put the code below the constructor.

```
private void HyperlinkButton_1_Click(object sender,
RoutedEventArgs e)

{

    HB_TextBlock.Text = "OK";

}
```

Listing 2

Now run the application, and it will look like the picture below, after you will click in the HyperlinkButton.

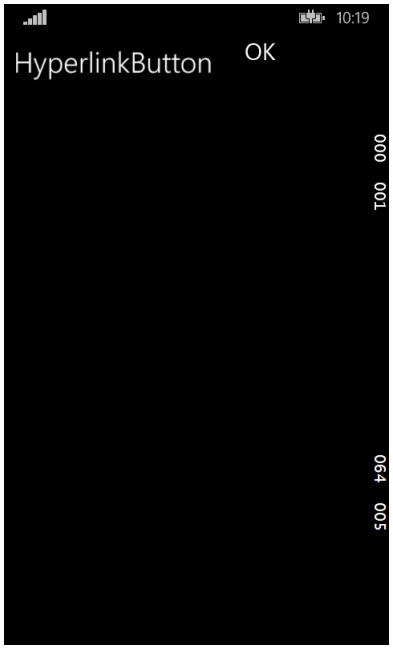


Figure 5

Working with RadioButton

Well if you can do that, then you are on move. Now, we take another control name RadioButton, and drag it from TextBlock and put it in another Grid and also a TextBlock in Row 1. The customized code will look like this, or you can simply drag a control and test separately, it's up to you. I suggest you to do as like I do.

So, our design will look like this,

Figure 6

And the designing code is given below.

```
<!--Radio Button-->
```

```
<RadioButton x:Name="RadioButton_1"
             Content="RadioButton"
             HorizontalAlignment="Left"
             Margin="10,10,0,0"
             Grid.Row="1"
             VerticalAlignment="Top"
             Checked="RadioButton_1_Checked"/>
<TextBlock x:Name="RB_TextBlock"
           HorizontalAlignment="Left"
           VerticalAlignment="Top"
           Margin="10,10,0,0"
           TextWrapping="Wrap"
           Height="40"
           Width="140"
           FontSize="24"
           Grid.Column="1"
           Grid.Row="1"/>
```

Listing 3

Here, like HyperlinkButton, in our RadioButton we have also an event handler named "RadioButton_1_Checked", and in our event handler we will show the confirmation message whether it's checked or unchecked.

```
private void RadioButton_1_Checked(object sender, RoutedEventArgs
e)
{
    if (RadioButton_1.IsChecked == true)
```

```
    {
        RB_TextBlock.Text = "Checked";
    }
    else
    {
        RB_TextBlock.Text = "Not checked";
    }
}
```

Listing 4

Here, we're checking whether our RadioButton is checked or not, if it's checked (true), the TextBlock will show "Checked"

Or if it's unchecked (false), the TextBox will show "Not checked".

After you run your application, it'll look exactly like this.

Figure 7

Working with TextBlock

Another control, we rapidly use in our every application is TextBlock. We've used it in our previous controls also. We will show static data in our TextBlock e.x., "Hello world".

The design will look like this.

Figure 8

Designing code is given below.

```
<!--Text Block-->
<TextBlock Text="Hello world"
           HorizontalAlignment="Left"
           Margin="10,10,0,0"
           Grid.Row="2"
           TextWrapping="Wrap"
           VerticalAlignment="Top"
           Height="40"
           Width="380"
           FontSize="24" Grid.ColumnSpan="2"/>
```

Listing 5

We don't need any Button or event handler in this case, cause the text is given statically in the design (Text="Hello world").

After you run your application, it'll look exactly like this.

Figure 9

Working with ToggleSwitch

Another control, we'll talk about is ToggleSwitch. It's really a beautiful control that will make your application cooler than before. I think you know, how to use a control now, we have done it before. So, just take this control and take another TextBlock, and the design will look like this.

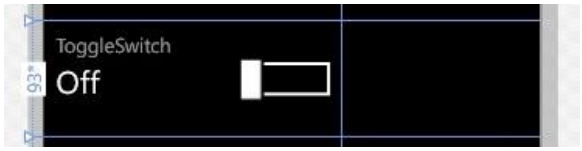


Figure 10

The designing code is given below,

```
<!--Toggle Switch-->
<ToggleSwitch x:Name="ToggleSwitch_1"
              Header="ToggleSwitch"
              Margin="10,9.5,6,0"
              Grid.Row="3"
              VerticalAlignment="Top"
              Toggled="ToggleSwitch_1_Toggled"/>
<TextBlock x:Name="TS_TextBlock"
           HorizontalAlignment="Left"
           VerticalAlignment="Top"
           Margin="10,9.5,0,0"
           TextWrapping="Wrap"
           Height="40"
           Width="140"
           FontSize="24"
           Grid.Column="1"
           Grid.Row="3"/>
```

Listing 6

We have an event handler here, so the C# code will be like this.

```
private void ToggleSwitch_1_Toggled(object sender, RoutedEventArgs
e)
{
```

```
    if (ToggleSwitch_1.IsOn == true)
    {
        TS_TextBlock.Text = "This is On";
    }
    else
    {
        TS_TextBlock.Text = "This is Off";
    }
}
```

Listing 7

We did the same logic here like the RadioButton.

After you run your application, it'll look exactly like this.

Figure 11

Working with ListBox

Our fifth control will be ListBox, its data binding control. It's an important control which has some complicated structure. So let's see how, we can use it in our application.

Like other controls drag it from Toolbox and put in the Grid. Here, we need a Button and TextBlock controls.

The design will look like this,

Figure 12

The designing code is given below,

```
<!--List Box-->
<ListBox x:Name="ListBox_1"
         HorizontalAlignment="Left"
         Height="120"
         Margin="10,10.167,0,0"
         Grid.Row="4"
         VerticalAlignment="Top"
         Width="220"
         ScrollViewer.VerticalScrollBarVisibility="Visible">
    <ListBoxItem Content="January"/>
    <ListBoxItem Content="February"/>
    <ListBoxItem Content="March"/>
    <ListBoxItem Content="April"/>
    <ListBoxItem Content="May"/>
```

```
    <ListBoxItem Content="June"/>
    <ListBoxItem Content="July"/>
    <ListBoxItem Content="August"/>
    <ListBoxItem Content="September"/>
    <ListBoxItem Content="October"/>
    <ListBoxItem Content="November"/>
    <ListBoxItem Content="December"/>
</ListBox>

<Button Content="Ok"
        x:Name="Ok"
        Grid.Column="1"
        HorizontalAlignment="Left"
        Margin="10,0.167,0,0"
        Grid.Row="4"
        VerticalAlignment="Top"
        Width="125"
        Click="Ok_Click"/>

<TextBlock x:Name="LB_TextBlock"
           HorizontalAlignment="Left"
           VerticalAlignment="Top"
           Margin="10,53.167,0,0"
           TextWrapping="Wrap"
```

```
            Height="77"
            Width="140"
            FontSize="24"
            Grid.Column="1"
            Grid.Row="4"/>
```

Listing 8

Here, we have an event handler named “Ok_Click”, and we have bound some months name inside the ListBox starting and closing tags. TextBlock’s name is “LB_TextBlock”. So, the C# code will look like this.

```
private void Ok_Click(object sender, RoutedEventArgs e)
{
    string[] month = { "January", "February", "March", "April",
"May", "June", "July", "August", "September", "October",
"November", "December" };
    if (ListBox_1.SelectedValue != null)
    {
        LB_TextBlock.Text = month[ListBox_1.SelectedIndex];
    }
    else
    {
        LB_TextBlock.Text = "Select a item from list.";
    }
}
```

Listing 9

Here, we have created a string Array named “month”, and the array index’s values are the month’s name. In If decision statement, first we’re checking if the ListBlock is selected or

Not, if an item is selected we’re matching the SelectedIndex’s value with our array Index’s value, and if no item’s selected then a alert message will be shown in the TextBlock.

If we run the application, it will look exactly like this,

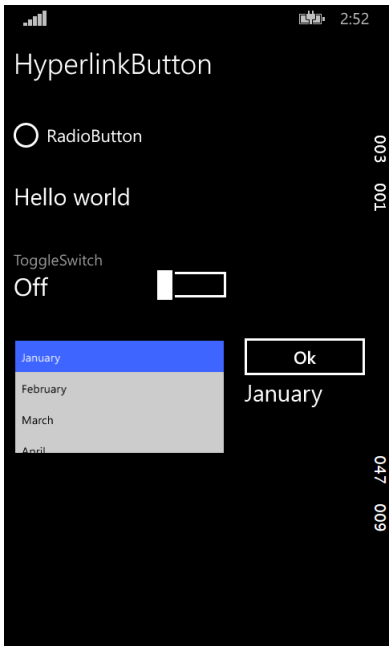


Figure 13

Working with ComboBox

Now, we’ll talk about a similar control and it’s really awesome than ListBox, just works likely same as ListBox, but it depend on your application which will be more appropriate in case of your needs. It’s called ComboBox. Take it from ToolBox or you can just write XAML on your

Own, like or something like that. So, the design will look like this,

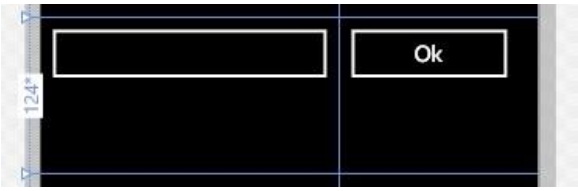


Figure 14

The designing code is given below,

```
<ComboBox x:Name="ComboBox_1"
          HorizontalAlignment="Left"
          Margin="10,0.167,0,0"
          Grid.Row="5"
          VerticalAlignment="Top"
          Width="220">
    <ComboBoxItem Content="January"/>
    <ComboBoxItem Content="February"/>
    <ComboBoxItem Content="March"/>
    <ComboBoxItem Content="April"/>
    <ComboBoxItem Content="May"/>
    <ComboBoxItem Content="June"/>
    <ComboBoxItem Content="July"/>
    <ComboBoxItem Content="August"/>
    <ComboBoxItem Content="September"/>
    <ComboBoxItem Content="October"/>
    <ComboBoxItem Content="November"/>
```

```
    <ComboBoxItem Content="December"/>
</ComboBox>

<TextBlock x:Name="CB_TextBlock"
           HorizontalAlignment="Left"
           VerticalAlignment="Top"
           Margin="10,65.167,0,0"
           TextWrapping="Wrap"
           Height="40"
           Width="380"
           FontSize="24"
           Grid.Row="5" Grid.ColumnSpan="2"/>

<Button Content="Ok"
        x:Name="Ok_1"
        Grid.Column="1"
        HorizontalAlignment="Left"
        Margin="10,0.167,0,0"
        Grid.Row="5"
        VerticalAlignment="Top"
        Width="125"
        Click="Ok_1_Click"/>
```

Listing 10

And the C# code is here.

```
private void Ok_1_Click(object sender, RoutedEventArgs e)
{
    string[] month = { "January", "February", "March", "April",
"May", "June", "July", "August", "September", "October",
"November", "December" };
    if (ComboBox_1.SelectedValue != null)
    {
        CB_TextBlock.Text = month[ComboBox_1.SelectedIndex];
    }
    else
    {
        CB_TextBlock.Text = "Select a item from list.";
    }
}
```

Listing 11

If we run the application, it'll look exactly like this.

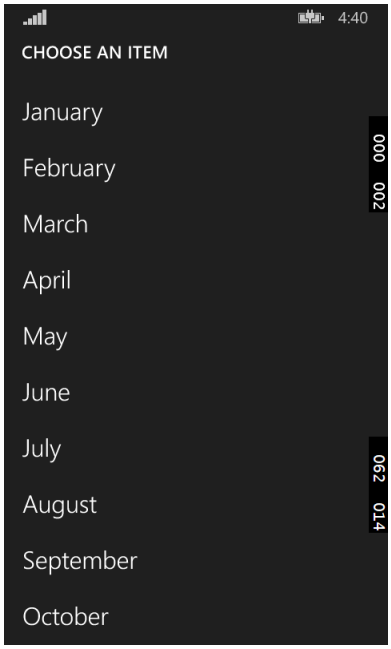


Figure 15.1

Figure 15.2

Adding a User Control

And lastly, we'll talk about Popup Box with a Button control, and it will show some messages. For this, we need a User Control. Go to the Solution Explorer, and Add >> New Item.

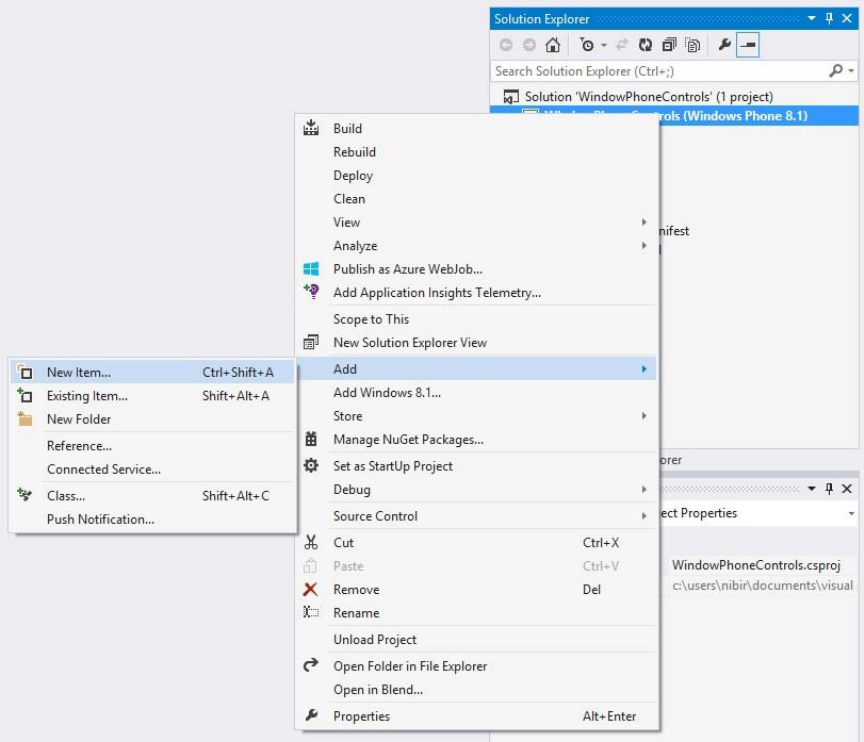


Figure 16

Now you've to select User Control and give it a name called "PopupPanel".

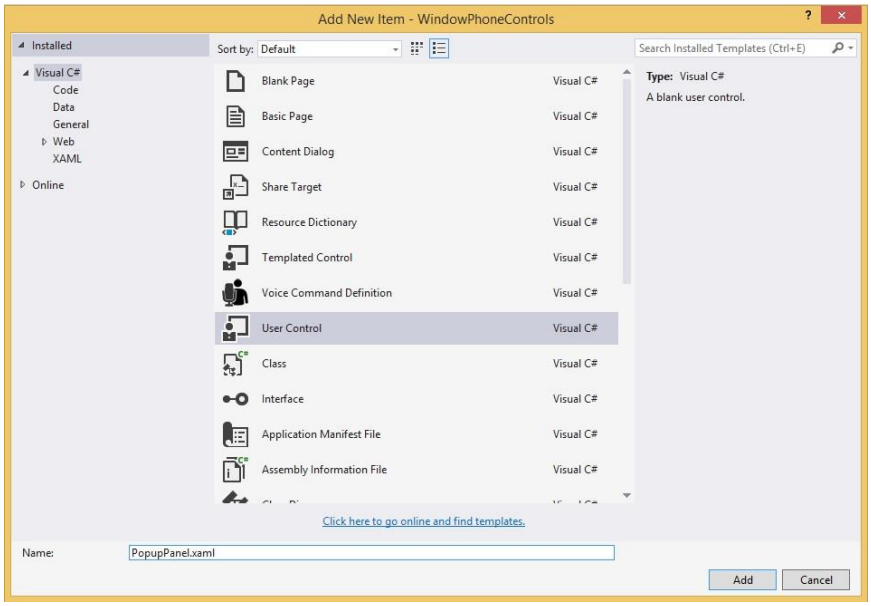


Figure 17

Customize the XAML code, mainly the Grid section.

```
<Grid>

    <Border BorderBrush="{StaticResource
ApplicationForegroundThemeBrush}" BorderThickness="1"
Background="{StaticResource ApplicationPageBackgroundThemeBrush}">

        <Border BorderBrush="{StaticResource
ApplicationForegroundThemeBrush}" BorderThickness="1">

            <Border BorderBrush="{StaticResource
ApplicationForegroundThemeBrush}" BorderThickness="1">

                <Border BorderBrush="{StaticResource
ApplicationForegroundThemeBrush}" BorderThickness="1">

                    <StackPanel Orientation="Vertical"
Height="200" Width="200" VerticalAlignment="Center">

                        <TextBlock Text="This is a Popup!"
VerticalAlignment="Center" HorizontalAlignment="Center"
Margin="0,60,0,0"/>

                        <TextBlock Text="Hit the button again to
hide me" VerticalAlignment="Center" HorizontalAlignment="Center"
Margin="0,10,0,0" TextWrapping="Wrap" TextAlignment="Center"/>

                        <Button HorizontalAlignment="Center"
Content="Close Popup" Click="ClosePopup" />

                    </StackPanel>

                </Border>

            </Border>

        </Border>

    </Border>

</Grid>
```

Listing 12

Here, we've Border brushes, StacPanel which will bounded the TextBlocks and a Button. The design will look like this,

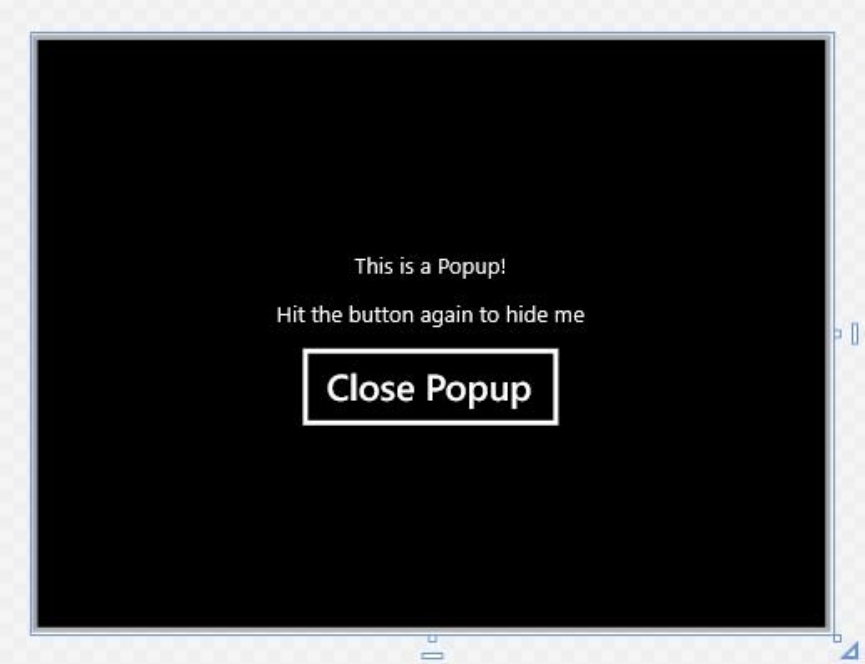


Figure 18

The C# code of PopupPanel.xaml.cs is given below. It's mainly the Button's event handler.

```
private void ClosePopup(object sender, RoutedEventArgs e)
{
    Popup hostPopup = this.Parent as Popup;
    hostPopup.IsOpen = false;
}
```

Listing 13

We just make our first User Control. It's really helpful when you need a custom control in your application.

Working with Popup Window

Now, in our "MainPage.xaml", we have to take a TextBlock which will have a header message called "Popup Window" and a Button which content is "Show Popup". The design will look like this,

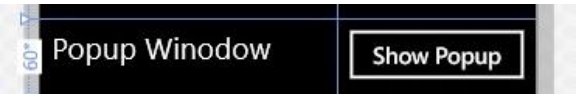


Figure 19

The designing code is given below,

```
<!--Popup Window-->
<TextBlock HorizontalAlignment="Left"
           Text="Popup Winodow"
           VerticalAlignment="Top"
           Margin="10,10,0,0"
           TextWrapping="Wrap"
           Height="40"
           Width="220"
           FontSize="24"
           Grid.Row="6"/>

<Button Content="Show Popup"
        x:Name="PopupButton"
        Grid.Column="1"
        HorizontalAlignment="Left"
```

```
        Margin="10,0,0,0"
        Grid.Row="6"
        VerticalAlignment="Top"
        Width="140"
        Click="PopupButton_Click"/>
```

Listing 14

Our event handler C# code behind is also given here,

```
private void PopupButton_Click(object sender, RoutedEventArgs e)
{
    if (!popup.IsOpen)
    {
        popup.Child = new PopupPanel();
        popup.VerticalOffset = 250.0;
        popup.HorizontalOffset = 100.0;
        popup.IsOpen = true;
    }
}
Popup popup = new Popup();
```

Listing 15

Here, we have created a new object of Popup window, and checked it in our event handler code block by If decision statement. We've created a Popup Child object and set its position and make IsOpen equal to true, so that it shows up when it's called.

If we run the application, it'll look exactly like this

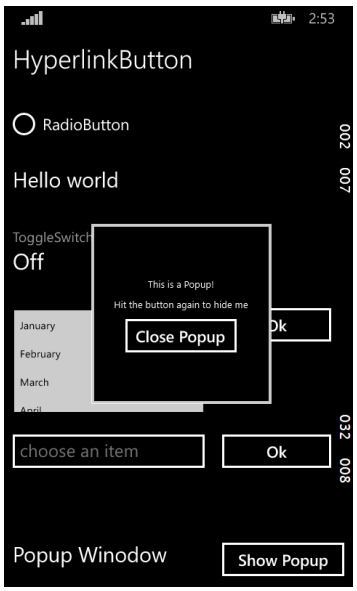


Figure 20

Finalizing and running our Control Application

In the end, our full design will look like the picture below,

Figure 21

And if we run the complete application, it'll look exactly like this.

Figure 22

Summary

Well, in this chapter we've talked about seven different controls and their uses. Hopefully, it'll give you a little idea how to use controls and modify with XAML in Windows Phone 8.1 Application. I think, I can help you just a little to move on with XAML.

WP Control Part 2

Windows Phone Controls – Part 2

Introduction

In last chapter, we've seen seven essential controls of Windows Phone. Here we'll learn about more common controls like Input controls. We'll mostly talk about TextBox, Date and Time Picker controls. So let's get started.

Working with TextBox Control

First of all, here I'm not going to explain, how to open up project from start. We've done this before. So, I'm moving up to the content right here. Take two TextBlocks, and change the Text content to "First Name" & "Last Name". Then take two TextBoxes, named it "firstNameTextBox" & "lastNameTextBox", and take another two TextBlocks and named it "welcomeTextBlock" & "nameTextBlock". Arrange them like the picture below.

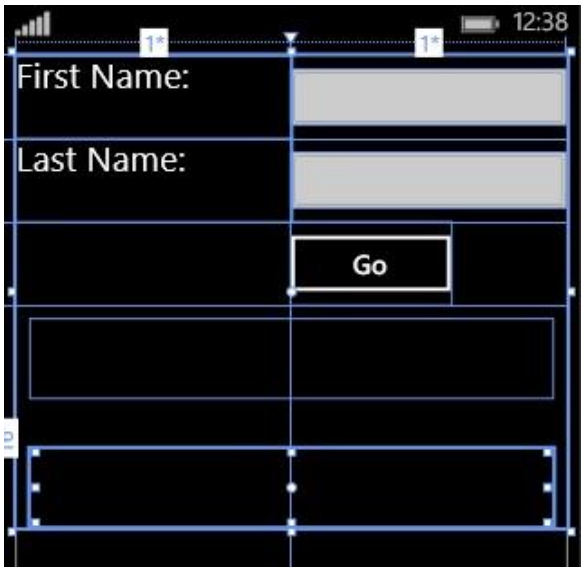


Figure 1

Designing code is also given here.

```
<TextBlock Text="First Name: " FontSize="24"/>
<TextBox x:Name="firstNameTextBox" Grid.Column="1" />

<TextBlock Text="Last Name: " Grid.Row="1" FontSize="24"/>
<TextBox x:Name="lastNameTextBox" Grid.Row="1" Grid.Column="1" />

<Button x:Name="GoButton" Grid.Column="1" Grid.Row="2"
Content="Go"
        VerticalAlignment="Bottom" Width="110"
Click="GoButton_Click" />
<TextBlock x:Name="welcomeTextBlock" HorizontalAlignment="Left"
           Margin="10,9.5,0,0" Grid.Row="3" TextWrapping="Wrap"
           VerticalAlignment="Top" Height="55" Width="360"
FontSize="24"
           Grid.ColumnSpan="2"/>
<TextBlock x:Name="nameTextBlock" HorizontalAlignment="Left"
           Margin="10,98.5,0,0" Grid.Row="3" TextWrapping="Wrap"
           Width="360" FontSize="24" Grid.ColumnSpan="2"
           Height="55" VerticalAlignment="Top"/>
```

Listing 1

As we have to handle the Input operation, we used a Button control in the code above and have a click event “GoButton_Click”. So our C# code will be look like this.

```
private void GoButton_Click(object sender, RoutedEventArgs e)
```

```
{
    if (lastNameTextBox.Text != string.Empty)
    {
        if (firstNameTextBox.Text != string.Empty)
        {
            welcomeTextBlock.Text = "Hello,";
            nameTextBlock.Text = firstNameTextBox.Text + " " +
lastNameTextBox.Text;
        }
        else
        {
            welcomeTextBlock.Text = "Hello,";
            nameTextBlock.Text = lastNameTextBox.Text;
        }
    }
    else
    {
        welcomeTextBlock.Text = "Sorry,";
        nameTextBlock.Text = "Last name can't be empty!";
    }
}
```

Listing 2

Now, what I actually did, is checking the text of “lastNameTextBox” whether it’s empty or not. If it’s not empty, it’ll good to go. Then we’re checking the text of “firstNameTextBox”, and if it’s not empty we’ll do the operation below the second if decision statement. So, in this case we make a welcome text “Hello” and put the first and last name in the “nameTextBlock” or we’ll just put the last name in this field.

Otherwise, we’ll give an error message if the last name field is empty, because last name can’t be empty.

Working with Date & Time Picker Control

Now, we’ll talk about Date and Time Picker controls. Drag and drop or just write your own customized XAML. I like to write my preferable customized XAML. I’ve taken, one Textblock as header to show some text, one DatePicker and one TimePicker and a Button. On the right side, I’ve also taken a TextBlock as a header field and two other TextBlcok to show the date and time you’ll pick. The design given here.

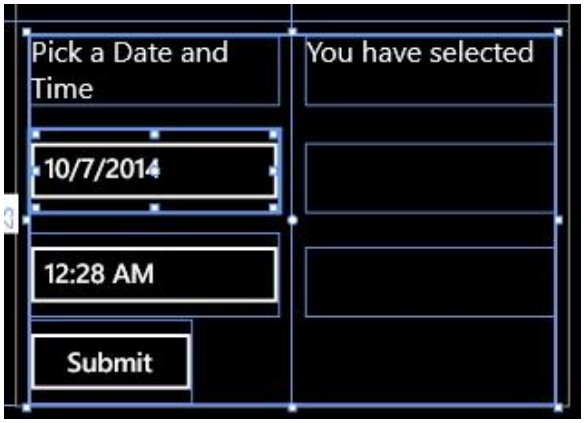


Figure 2

Designing code is given below.

```
<TextBlock HorizontalAlignment="Left" Margin="10,10.167,0,0"
           Grid.Row="4" TextWrapping="Wrap" Text="Pick a Date and
Time"
```

```
            FontSize="20" VerticalAlignment="Top" Height="47"
Width="170"/>
<DatePicker x:Name="datePicker" HorizontalAlignment="Left"
            Margin="10,74.167,0,0" Grid.Row="4"
            VerticalAlignment="Top" Width="170"/>
<TimePicker x:Name="timePicker" HorizontalAlignment="Left"
            Margin="10,146.167,0,0" Grid.Row="4"
VerticalAlignment="Top"
            Width="170"/>
<TextBlock HorizontalAlignment="Left" Margin="10,10.167,0,0"
           Grid.Row="4" TextWrapping="Wrap" Text="You have
selected"
           FontSize="20" VerticalAlignment="Top" Height="47"
           Width="170" Grid.Column="1"/>
<TextBlock x:Name="dateTextBlock" HorizontalAlignment="Left"
           Margin="10,84.167,0,0" Grid.Row="4" TextWrapping="Wrap"
           FontSize="20" VerticalAlignment="Top" Height="47"
           Width="170" Grid.Column="1"/>
<TextBlock x:Name="timeTextBlock" HorizontalAlignment="Left"
           Margin="10,156.167,0,0" Grid.Row="4"
TextWrapping="Wrap"
           FontSize="20" VerticalAlignment="Top" Height="47"
Width="170"
           Grid.Column="1"/>
<Button x:Name="submitButton" Grid.Row="4" Content="Submit"
        VerticalAlignment="Bottom" Width="110"
```

```
Click="submitButton_Click" Margin="10,0,0,1" />
```

Listing 3

And in the code behind, the C# code will be like this. Some codes are commented out here.

```
private void submitButton_Click(object sender, RoutedEventArgs e)
{
    //dateTextBlock.Text = datePicker.Date.Day + " /" +
datePicker.Date.Month + " /" + datePicker.Date.Year;
    dateTextBlock.Text = datePicker.Date.ToString("D");
    //timeTextBlock.Text = timePicker.Time.Hours + ":" +
timePicker.Time.Minutes;
    //timePicker.ClockIdentifier =
Windows.Globalization.ClockIdentifiers.TwelveHour;
    timeTextBlock.Text = timePicker.Time.ToString("T");
}
```

Listing 4

Here, in the Button event handler, we've used some methods to show date and time. Best and easy option is given here for both date and time. Others are commented out, you can try these if you want.

After, you've set all these, your design will look like this,

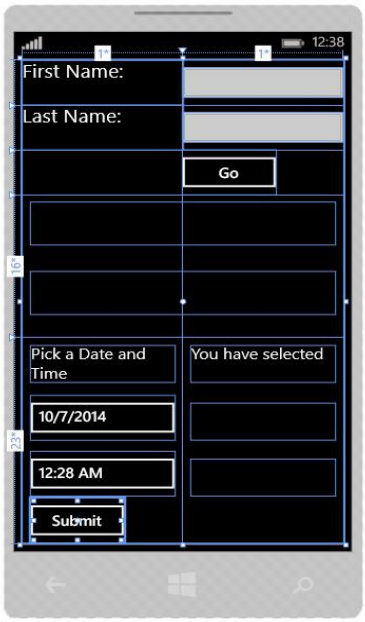


Figure 3

And if you run the application, it'll work just like this.

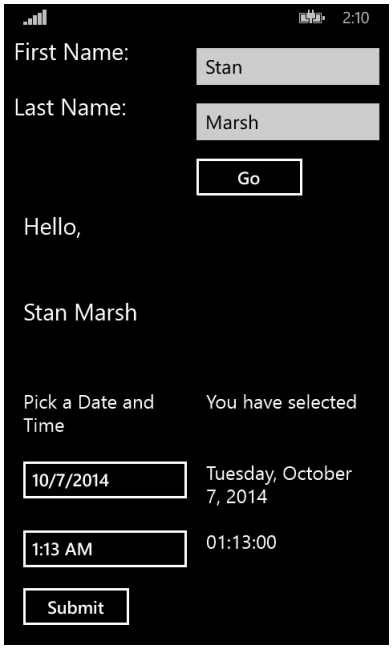


Figure 4

Summary

Hope, you've understand each of the controls. In next chapter we'll learn about Image control and its uses.

WP Control Part 3

Windows Phone Controls – Part 3

Introduction

It's our last part of Windows Phone Controls. In this chapter we'll talk about Image control in Windows Phone. It's really awesome and you'll definitely like it. So let's get crack in, Windows Phone Image Control.

Working with Image Control

You can take an Image control from Toolbox or just write a simple code like that, and you have to take four RadioButtons.

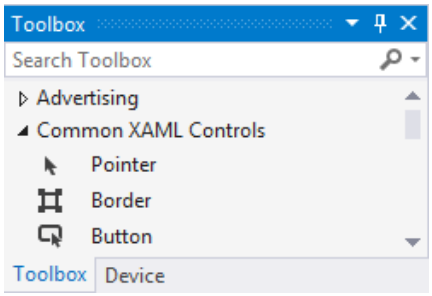


Figure 1

We've talked about RadioButton in our first part of this controls section Windows Phone Controls – Part 1. If you don't familiar with RadioButton take a look of it. So, our design looks like this picture below.

Figure 2

Adding an Image to Our Project

Now we've to do a little bit of work before to go. We need to add an image to our project. Just right click in the Solution Explorer and go to Add >> New Folder.

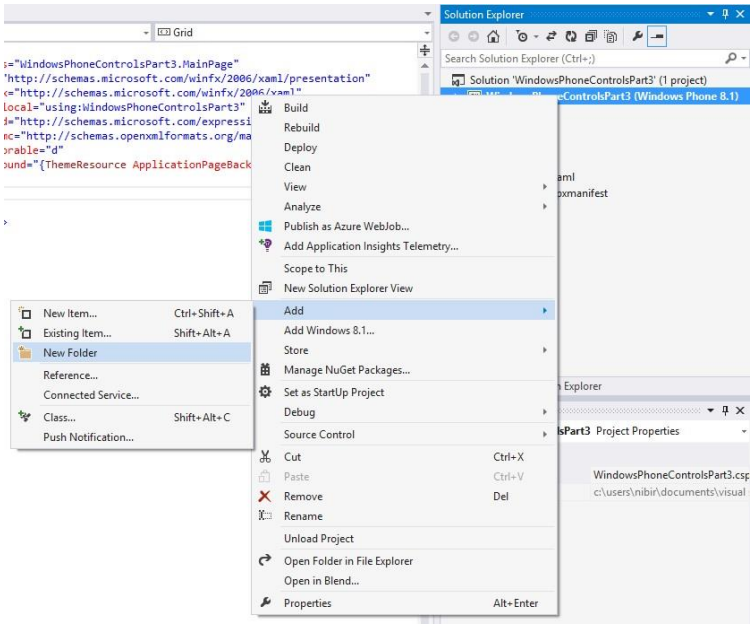


Figure 3

Give it a name “Images”.

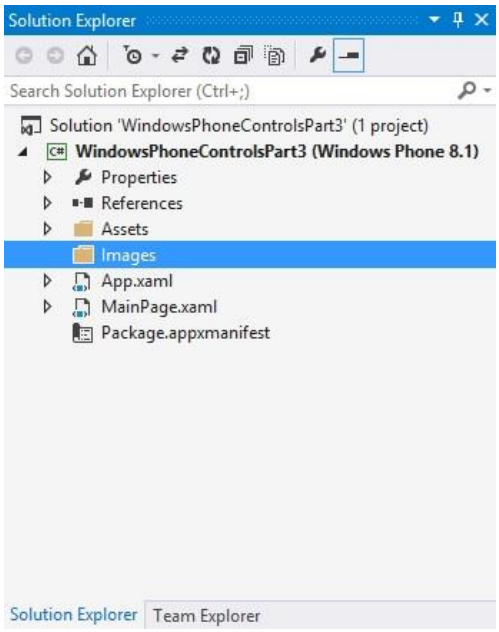


Figure 4

Now, right click on the “Images” folder and go to Add >> Existing Item.

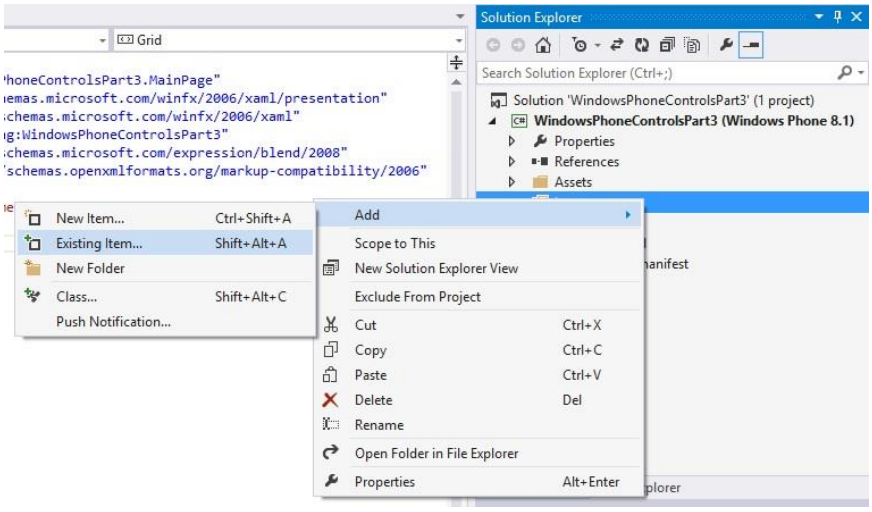


Figure 5

Now, go to your destination directory to select your desire image. Select and add it.

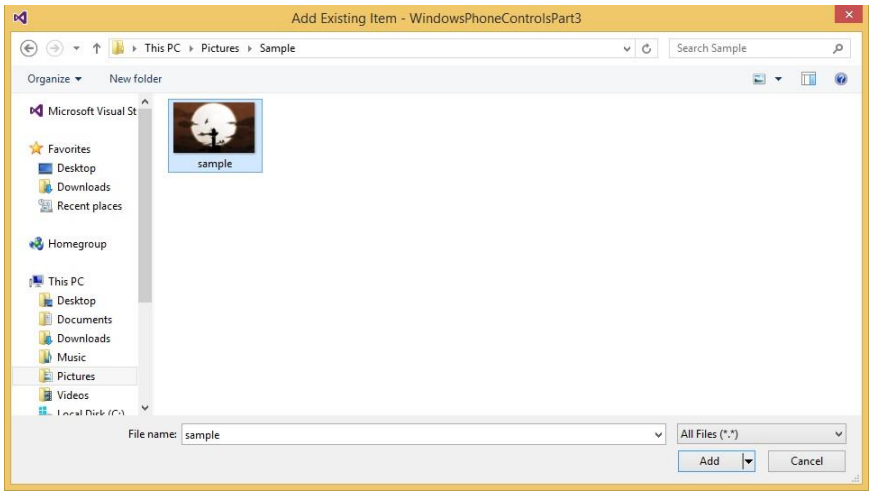


Figure 6

Designing UI and Code Behind

Now, in the XAML code show the path of the image you've added in the Source property of Image control. XAML code is given below.

```
<Grid>
    <Image x:Name="Image1"
    HorizontalAlignment="Left"
    Height="473"
    VerticalAlignment="Top"
    Width="380"
    Source="Images/sample.jpg"
    Stretch="None"
    Margin="10,10,0,0"/>

    <RadioButton x:Name="NoneButton" Content="None"
```

```
            HorizontalAlignment="Left"
            VerticalAlignment="Top"
            Checked="StretchModeButton_Checked"
            Margin="10,488,0,0"/>
<RadioButton x:Name="FillButton" Content="Fill"
            HorizontalAlignment="Left"
            VerticalAlignment="Top"
            Checked="StretchModeButton_Checked"
            Margin="222,488,0,0"/>
<RadioButton x:Name="UniformButton" Content="Uniform"
            HorizontalAlignment="Left"
            VerticalAlignment="Top"
            Checked="StretchModeButton_Checked"
            Margin="10,555,0,0"/>
    <RadioButton x:Name="UniformToFillButton"
            Content="UniformToFill"
            HorizontalAlignment="Left"
            VerticalAlignment="Top"
            Checked="StretchModeButton_Checked"
            Margin="222,555,0,0"/></Grid>
```

Listing 1

Here, we've shown the path full path of our image in line number seven. We will mainly show the four image Zooming property e.g., Fill, Uniform, Uniform to Fill and Normal (None). Our four RadioButton will handle this operation. C# code is given here.

```
private void StretchModeButton_Checked(object sender,
RoutedEventArgs e)

{    RadioButton button = sender as RadioButton;

    if (Image1 != null)

    {

        switch (button.Name)

        {

            case "FillButton":

                Image1.Stretch
=Windows.UI.Xaml.Media.Stretch.Fill;

                break;

            case "NoneButton":

                Image1.Stretch
=Windows.UI.Xaml.Media.Stretch.None;

                break;

            case "UniformButton":

                Image1.Stretch =
Windows.UI.Xaml.Media.Stretch.Uniform;

                break;

            case "UniformToFillButton":

                Image1.Stretch =
Windows.UI.Xaml.Media.Stretch.UniformToFill;

                break;
```

```
            default:
                break;
        }
    }
}
```

Listing 2

Here, we've applied a very simple logic, like Switch Case operation. We just called every RadioButton by their names like in line number eight, eleven, fourteen and seventeen, and call Windows Media Class. "Image1" is our Image controls name. It's really small lines of codes but really helpful.

Running the Application

If you run the application it'll look exactly like this.

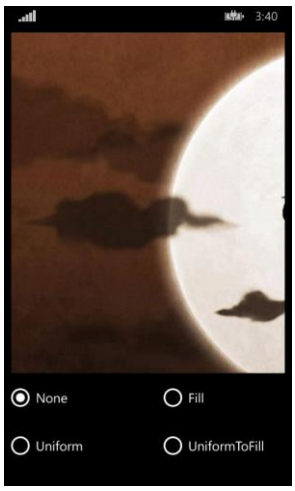


Figure 7.1 Figure 7.2

Figure 7.3 Figure 7.8

Summary

Hope you can do this with me. This is the end of Windows Phone 8.1 controls, we'll move to our next chapter with XAML Styling.

Windows Phone - XAML Styling

Introduction

In this chapter, I'll talk about XAML styling. How you can make your XAML controls more beautiful and customized. If you Bing search "windows phone XAML style" you'll get some helpful references. Styling XAML is not only for customizing your controls but also making code much clean and easily readable. So let's get crack in Windows Phone XAML Styling.

I'll just try to explain how you can use XAML styling in you existent projects. I'm just going to modify my existing user control to show you the procedure. If you've read Windows Phone Controls – Part 1, then you can understand the difference between previous and current XAML code. I'll not modify all the controls, but the "Popup Window". I've used a "User Control", I'll just modify that page.

Creating a New Project and Add a User Control

First of take a new Project and add a new "User Control". We've used these XAML code in our previous Project.

```
<Grid>

    <Border BorderBrush="{StaticResource
ApplicationForegroundThemeBrush}" BorderThickness="1"
Background="{StaticResource ApplicationPageBackgroundThemeBrush}">

        <Border BorderBrush="{StaticResource
ApplicationForegroundThemeBrush}" BorderThickness="1">

            <Border BorderBrush="{StaticResource
ApplicationForegroundThemeBrush}" BorderThickness="1">

                <Border BorderBrush="{StaticResource
ApplicationForegroundThemeBrush}" BorderThickness="1">
```

```
                    <StackPanel Orientation="Vertical"
Height="200" Width="200" VerticalAlignment="Center">

                        <TextBlock Text="This is a Popup!"
VerticalAlignment="Center" HorizontalAlignment="Center"
Margin="0,60,0,0"/>

                        <TextBlock Text="Hit the button again to
hide me" VerticalAlignment="Center" HorizontalAlignment="Center"
Margin="0,10,0,0" TextWrapping="Wrap" TextAlignment="Center"/>

                        <Button HorizontalAlignment="Center"
Content="Close Popup" Click="ClosePopup" />

                    </StackPanel>

                </Border>

            </Border>

        </Border>

    </Border>

</Grid>
```

Listing 1

And the design is look like this.

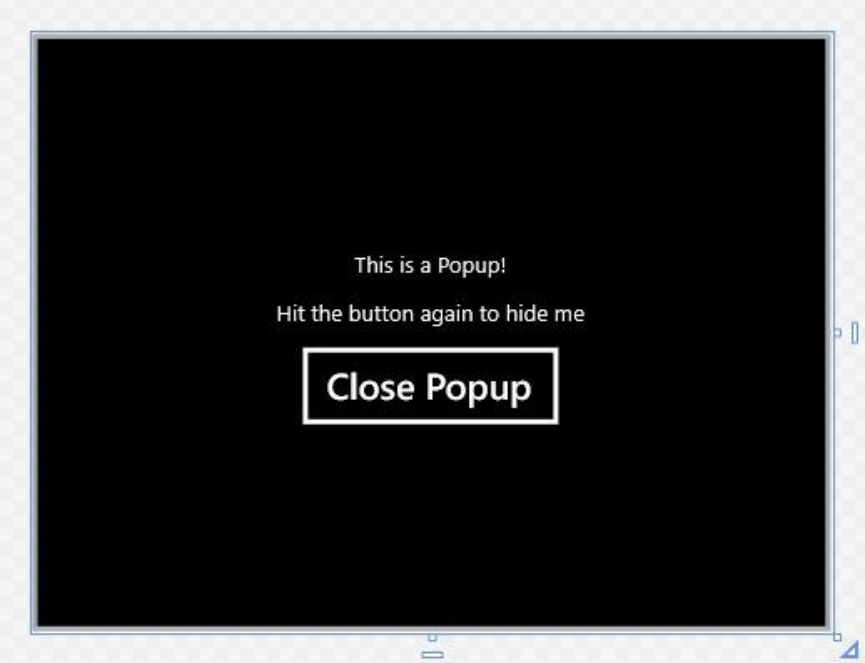


Figure 1

Now, we'll use XAML styling in the same XAML code and make it much clean and customized as well. To do so, you've to put resources as shown below.

```
<UserControl
...     d:DesignWidth="400">
    <UserControl.Resources>
        ...
    </UserControl.Resources>
    <Grid>
        ...
    </Grid>
</UserControl>
```

Listing 2

Creating Styles

All you've to do, is put all your style properties inside the Resources tag. First of all we'll create a "Border Style" for our "Border" control.

```
<UserControl.Resources>
    <Style x:Key="BorderStyle" TargetType="Border">
        <Setter Property="BorderThickness" Value="2"/>
        <Setter Property="CornerRadius" Value="0,10,0,10"/>
    </Style>
</UserControl.Resources>
```

Listing 3

Note: If you're using this in Blank of Basic pages, the code will be like this.

```
<Page.Resources>
    <Style x:Key="BorderStyle" TargetType="Border">
        <Setter Property="BorderThickness" Value="2"/>
        <Setter Property="CornerRadius" Value="0,10,0,10"/>
    </Style>
</Page.Resources>
```

Listing 4

As we're using a "User Control", so we used "UserControl.Resources".

Here, we're considering only one "Border" control. If you look above the code, we gave the style name "BorderStyle" and set target to "Border". In which control you work, you've to give a unique name and set target of that control. Also, we've set a property name "BorderThickness" and set value to "2", which will make the thickness of the border's outer edges. And we've also set "CornerRadious" to "0,10,0,10", which will make the upper right and lower left corner edges little bit round.

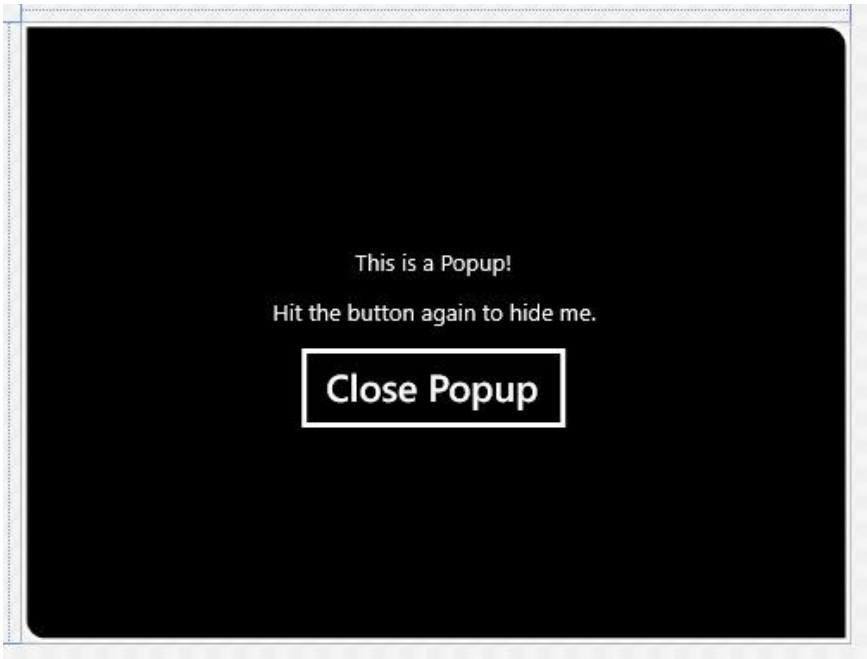


Figure 2

Now, similarly we've added "TextBox" and "Button" styles.

```
<UserControl.Resources>
    <Style x:Key="BorderStyle" TargetType="Border">
        <Setter Property="BorderThickness" Value="2"/>
        <Setter Property="CornerRadius" Value="0,10,0,10"/>
    </Style>
    <Style x:Key="StackPanelStyle" TargetType="StackPanel">
        <Setter Property="Orientation" Value="Vertical"/>
        <Setter Property="VerticalAlignment" Value="Center"/>
        <Setter Property="Height" Value="200"/>
        <Setter Property="Width" Value="200"/>
    </Style>
```

```
    <Style x:Key="ButtonStyle" TargetType="Button">
        <Setter Property="HorizontalAlignment" Value="Center"/>
        <Setter Property="Content" Value="Close Popup"/>
        <Setter Property="Background" Value="Green"/>
    </Style>
    <Style x:Key="TextBlockStyle" TargetType="TextBlock">
        <Setter Property="VerticalAlignment" Value="Center"/>
        <Setter Property="HorizontalAlignment" Value="Center"/>
        <Setter Property="Text" Value="This is a Popup!"/>
        <Setter Property="Margin" Value="0,60,0,0"/>
        <Setter Property="Foreground" Value="Red"/>
    </Style>
    <Style x:Key="TextBlockStyle1" TargetType="TextBlock">
        <Setter Property="VerticalAlignment" Value="Center"/>
        <Setter Property="HorizontalAlignment" Value="Center"/>
        <Setter Property="TextAlignment" Value="Center"/>
        <Setter Property="TextWrapping" Value="Wrap"/>
        <Setter Property="Text" Value="Hit the button again to
hide me."/>
        <Setter Property="Margin" Value="0,10,0,0"/>
        <Setter Property="Foreground" Value="Gray"/>
    </Style>
</UserControl.Resources>
```

Listing 5

If you take a look the old XAML code, you can see all the properties are here exactly same, exception in “Button” click event. You’ve to put this event in the main Grid’s “Button” control’s code.

```
<Grid>

    <Border BorderBrush="{StaticResource
ApplicationForegroundThemeBrush}"

            Background="{StaticResource
ApplicationPageBackgroundThemeBrush}"

            Style="{StaticResource BorderStyle}">

        <StackPanel Style="{StaticResource StackPanelStyle}">

            <TextBlock Style="{StaticResource TextBlockStyle}"/>

            <TextBlock Style="{StaticResource TextBlockStyle1}"/>

            <Button Style="{StaticResource ButtonStyle}"
Click="ClosePopup" />

        </StackPanel>

    </Border>

</Grid>
```

Listing 6

All you need to do is just reference the styles in corresponding controls. Like in “Border” control we’ve used “Style=”{StaticResource BorderStyle}”.. “. After the “StaticResource” name the Style name.

Put Your Styles Separate

Another important thing you can do is to separate the XAML styling into different location. To make much clean XAML. To do so, just open “App.xaml” and put the same code there, like this.

```
<Application
...
    >
    <!--Application Resources-->
    <Application.Resources>
        <Style x:Key="BorderStyle" TargetType="Border">
            <Setter Property="BorderThickness" Value="2"/>
            <Setter Property="CornerRadius" Value="5"/>
        </Style>
        <Style x:Key="StackPanelStyle" TargetType="StackPanel">
            <Setter Property="Orientation" Value="Vertical"/>
            <Setter Property="VerticalAlignment" Value="Center"/>
            <Setter Property="Height" Value="200"/>
            <Setter Property="Width" Value="200"/>
        </Style>
    </Application.Resources>
    </Application>
```

Listing 7

Only difference is the tag, here it should be “Application.Resources”, because it’s in “App.xaml” file. So, the tag structure should like “Type.Resources”. Here type can “Page”, “Application”, “UserControl” etc.

Now, in “Main Page.xaml” take Button control to show the “Popup Window”.

```
<Page.Resources>
    <Style x:Key="ButtonStyle" TargetType="Button">
        <Setter Property="Name" Value="PopupButton"/>
        <Setter Property="HorizontalAlignment" Value="Left"/>
        <Setter Property="VerticalAlignment" Value="Top"/>
        <Setter Property="Width" Value="140"/>
        <Setter Property="Margin" Value="10,0,0,0"/>
        <Setter Property="Content" Value="Show Popup"/>
    </Style>
</Page.Resources>

<Grid>
    <Button Style="{StaticResource ButtonStyle}"
Click="PopupButton_Click"/>
</Grid>
```

Listing 8

Code Behind

And C# code of this "Button" event handler is given below.

```
private void PopupButton_Click(object sender, RoutedEventArgs e)
{
    if (!popup.IsOpen)
    {
        popup.Child = new PopupPanel();
        popup.VerticalOffset = 250.0;
```

```
            popup.HorizontalOffset = 100.0;
            popup.IsOpen = true;
        }
}
```

```
Popup popup = new Popup();
```

Listing 9

Running the Application

So, if you run the application it'll look like this.

Figure 3.1 Figure 3.2

Here, we've another sample, which "Popup Window" is round. You can simply do that just changing this code in "PopupPanel.xaml"

```
<Page.Resources>
    <Style x:Key="BorderStyle" TargetType="Border">
        <Setter Property="BorderThickness" Value="2"/>
        <Setter Property="CornerRadius" Value="100"/>
    </Style>
</Page.Resources>
```

Listing 10

Summary

Hope, you've understand the basic of XAML styling and how to remake your code to more clean and efficient. Coding is also an art, make your code more beautiful and significant to others.

Appxmanifest

Windows Phone – Package.appxmanifest

Introduction

In this chapter, I'll talk about Windows Phone "Package.appxmanifest". It's really very important to make your app fully complete. Because just designing and lots of code don't make a good app, the look of the app must be very attractive. Look and feel is very important to attract a customers. Moreover, not only look but also the capabilities and dependencies of app are need to set in "Package.appxmanifest".

Exploring Package.appxmanifest

So, let's explore the Windows Phone "Package.appxmanifest". Just open up the "Package.appxmanifest" from your "Solution Explorer", and you can see the similar picture below.

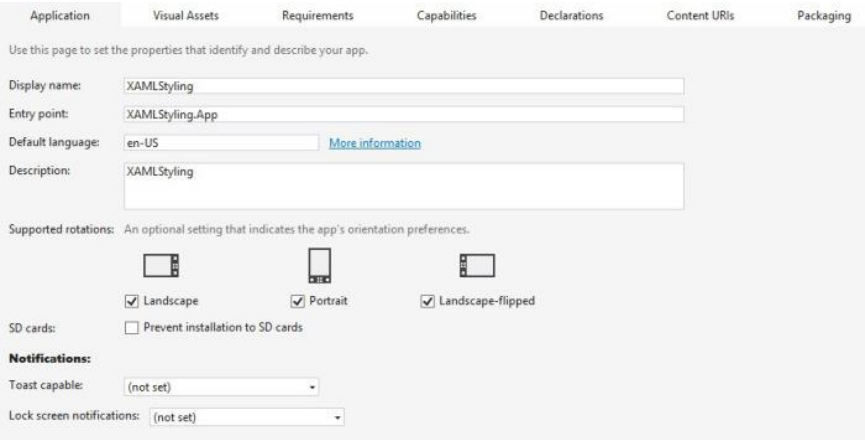


Figure 1

I've used my previous example of Windows Phone XAML Styling here. You can use any of existing application or just create a new one.

Changing Application Title

If you take a look at the picture, "Display name" and "Description" have that same content "XAMLStyling". Yes, it's our app name, we've given it before. But does it look good, when we run the application?

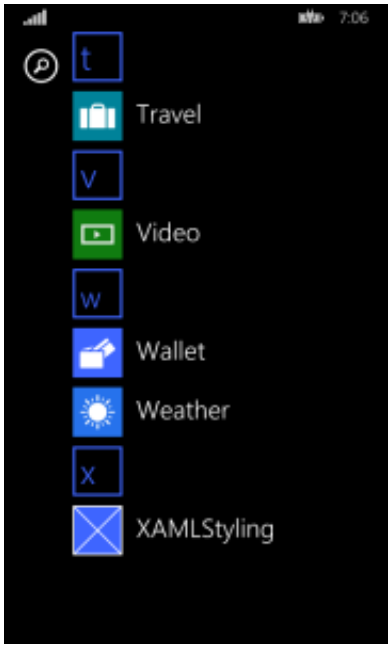


Figure 2.1

Figure 2.2

The answer will obviously “No”. So we just need to little bit of work. Just give a space between “XAML” and “Style”, so it’ll be “XAML Style”.

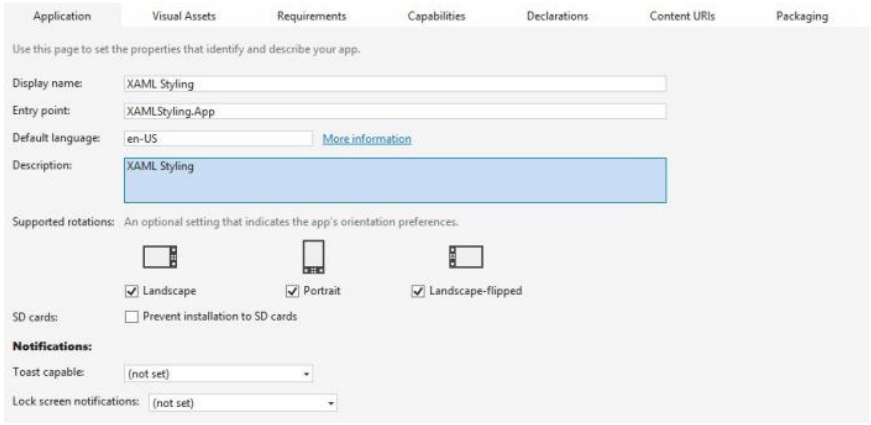


Figure 3

One more thing we’ve to do is, switch to the “Visual Assets” tab and check the “Check Box” below “Title”.

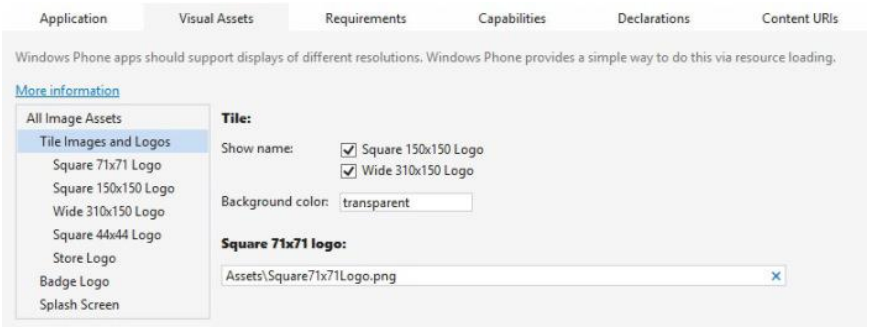


Figure 4

After that you'll get some good visualization of you app's tiles.

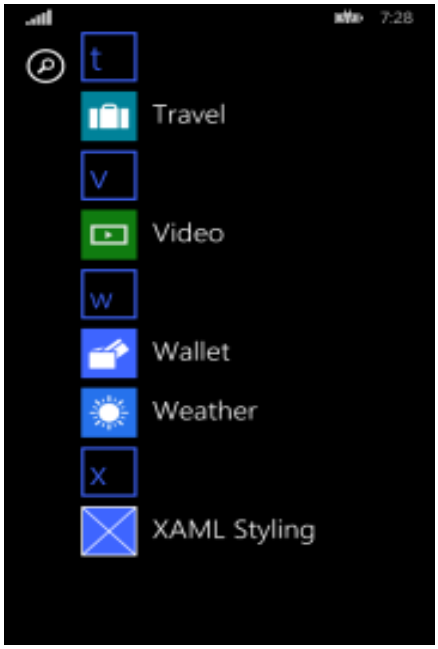


Figure 5.1 Figure 5.2

Changing Application Logo

Very important thing is to change the application logo. It's your app's unique identity. So, select the list item one by one and change your logo. But before that you've to upload your logo to your project solution. To do that, right click one the project and add a new folder. Give it a name "Images". Right click on the folder and click Add >> Existing Item

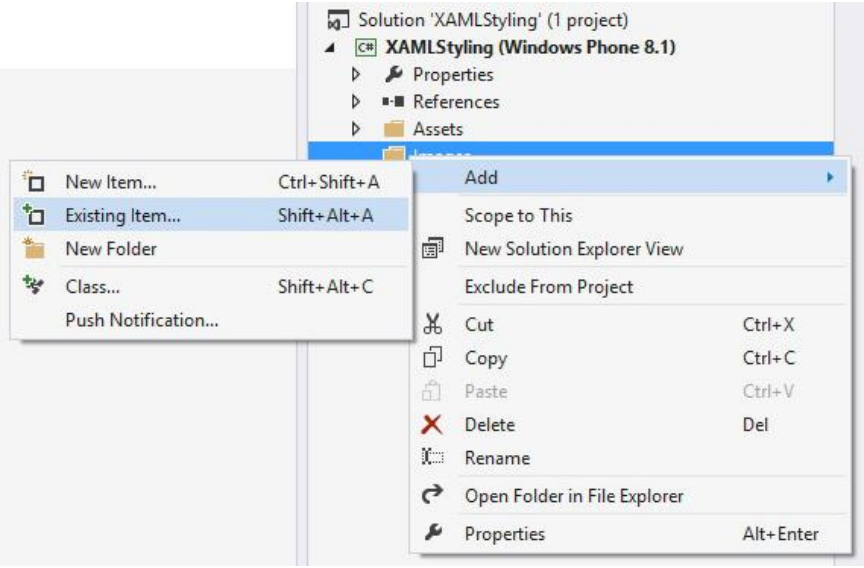


Figure 6

Upload all required logos of corresponding resolution.

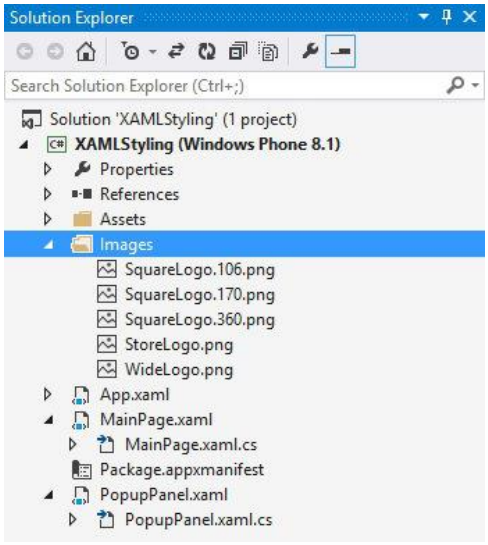


Figure 7

Now, locate all the logos in “Visual Assets” section

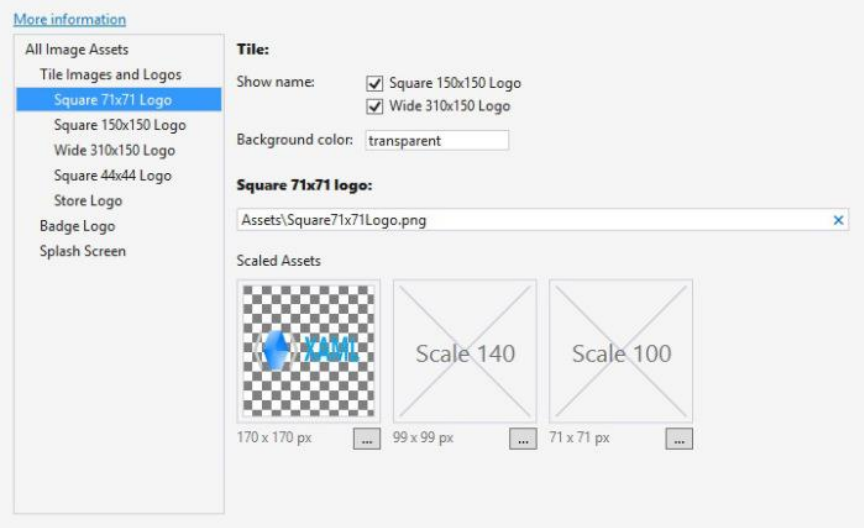


Figure 8

Format of Logo

Logo must be in "png" format and if it's transparent then it'll be better for visualizing some information. Locate all these logos one by one. After you've changed the logos, save it. If you run the application, it'll look like this.

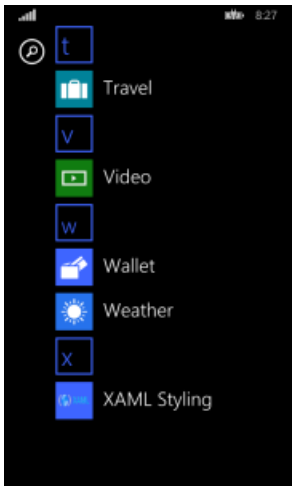


Figure 9.1

Figure 9.2

Figure 9.3

Other Options

Well, we've done some major modification of our application. There're some other parts like "Requirements".

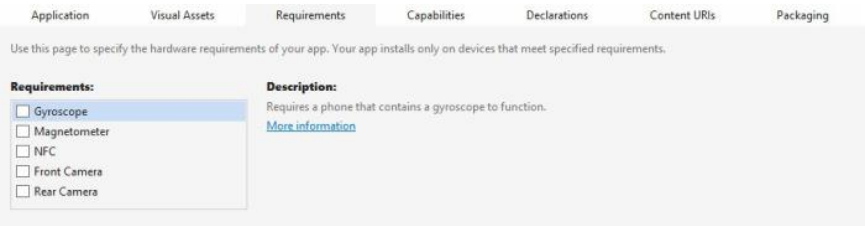


Figure 10

If you use sensors and camera API then you need to check the option, you've used in your application. One more thing is "Capabilities".

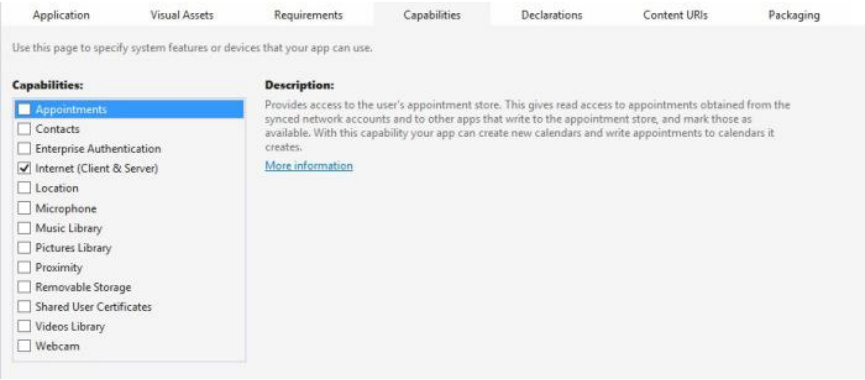


Figure 11

If you use microphone, location service, internet, proximity or any other things, you need to check these options as well. Otherwise your application will not work.

There're some other options like "Declaration", "Content URIs" and "Packaging". You can also change these things as well. I've shown the common things here.

Summary

So, that's it. Hope you've now understanding about Windows Phone "package.appxmanifest". Keep digging with Visual Studio and try to learn new things every day.

Splash Screen

Windows Phone – Extended Splash Screen with Progress Bar

Introduction

In the previous chapter, I've talked about Windows Phone Package.appxmanifest. I've shown there, how to add custom application logos with different resolution. It makes your app much beautiful and attractive.

Adding a Splash Screen

One more important thing to add in your application is "Splash Screen". This gives you a nice representation of your app and yourself or your company. So, how you can do that? It's really simple to add a "Splash Screen" in Windows Phone 8.1 with Visual Studio 2013 update 2/3. Just go to "Package.appxmanifest" and open "Visual Assets" tab. Then you can find "Splash Screen" at the bottom.

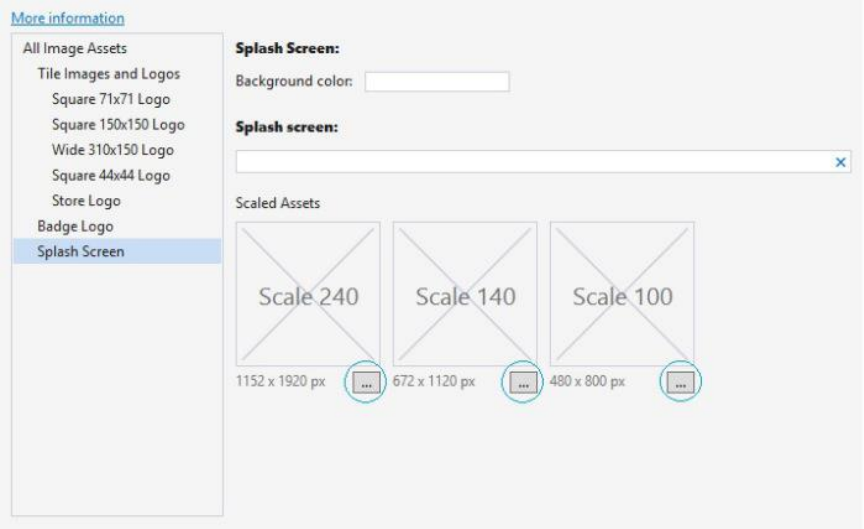


Figure 1

All you've to do, is just upload your "Splash Screen" in your project and locate this file. This will bring the "Splash Screen" when someone opens the application, but it'll vanish in blink of an eye. To make effective, we need to add "Splash Screen" in a different way. We call it "Extended Splash Screen".

Extend Splash Screen

So let's get crack in Windows Phone "Extended Splash Screen with Progress Bar". First of all, take "Blank App" template, give it a name "ExtendedSplash.xaml" and customize your main grid like this.

```
<Grid>

    <Image x:Name="extendedSplashImage"
Source="Images/SplashScreen.png" Stretch="Fill"/>

    <Canvas>

        <ProgressBar IsIndeterminate="True" Maximum="100"
Value="30" Height="10" Width="400"/>

    </Canvas>

</Grid>
```

Listing 1

Here, we've also taken a "ProgressBar" control to indicate that the application is running while displaying the "Splash Screen". It makes the application really cool. Now in "ExtendedSplash.xaml.cs" put this method below and call it from the constructor, like this.

```
public ExtendedSplash()

{
    this.InitializeComponent();
    //Call MainPage from ExtendedSplashScreen after some delay
ExtendeSplashScreen();

}


async void ExtendeSplashScreen()
{
    await Task.Delay(TimeSpan.FromSeconds(3));
 // set your desired delay
```

```
    Frame.Navigate(typeof(MainPage)); // call MainPage
}
```

Listing 2

Async Operation

Here we've used an async method named "ExtendeSplashScreen" and make it delayed till three seconds. Then it'll bring the "MainPage.xaml".

Async and await keywords in C# are intended to help with offloading long IO operations off the UI thread. The await keyword ensures that nothing happens before the called asynchronous method is finished. Both keywords - async and await - always work together. Await without async is not allowed. When using async and await the compiler generates a state machine in the background. If the "ExtendedSplashScreen()" hasn't finished and still running, "ExtendedSplashScreen()" will return to its calling method, thus the main thread doesn't get blocked. When the delay is done then a thread from the ThreadPool (can be any thread) will return to "MainPage()" (constructor) at its previous state and continue execution.

Changing Starting Page to the Splash Screen Page

One more thing to do, is make the startup page to "ExtendedSplash.xaml" otherwise the splash screen will not work. To do so, go to "App.xaml.cs" and find "OnLaunched" method, and at the bottom you'll find "rootFrame.Navigate(typeof(MainPage), e.Arguments)", change "MainPage" to "ExtendedSplash" which we've named to our "Splash Screen".

```
if (!rootFrame.Navigate(typeof(ExtendedSplash), e.Arguments))
{
    throw new Exception("Failed to create initial page");
}
```

Listing 3

Handling Back Button Press

Now, we've set all things to make work our "Splash Screen". But it's really important to understand the Windows Phone page navigation service. We've set the starting page to

our “Splash Screen” and after three seconds it’ll bring the “Main Page”. But when we want to go back, it’ll bring the “Splash Screen” again and after three seconds it’ll bring the “Main Page” again. So it’s just irritating. To avoid this problem we need to add a method called “HardwareButtons_BackPressed” in “MainPage.xaml.cs”

```
void HardwareButtons_BackPressed(object sender,
Windows.Phone.UI.Input.BackPressedEventArgs e)
{
    Frame frame = Window.Current.Content as Frame;
    if (frame == null)
    {
        return;
    }

    if (frame.CanGoBack)
    {
        frame.GoBack();
        //Indicate the back button press is handled so the app
does not exit
        e.Handled = true;
    }
}
```

Listing 4

Here, we make Frame object name “frame” and if it’s not null and if we’ve a go back state, then we make “e.Handled” equal to true, so that app doesn’t exit. If you make it false, the app will exit when you press the back button. Another problem is, if you have multiple of pages then it will bring the “Splash Screen” instead of bringing the previous

page because of calling the method “GoBack”. We need this for another purpose which I’m talking later.

Now, we’re handling the “Can go back” task, but our problem still exists. To solve this problem we need to check the “Back State” situation. If the “Back State” equals to one, then we’ve only one page remaining and it’s obviously our “Splash Screen”. So, we just need to remove the “Back State” so that our app can exit. To do so, just put this code inside the “OnNavigatedTo” method.

```
// Check if ExtendedSplashscreen.xaml is on the backstack  and
remove

if (Frame.BackStack.Count() == 1)

{
    Frame.BackStack.RemoveAt(Frame.BackStackDepth - 1);
}
```

Listing 5

Now, back to unfinished topic is why we need to use “frame.Goback” method, because if we don’t use it we’ll get an exception when we’ll navigate through multiple pages and press back key. To avoid that, we need this method.

Running the Application

Now, run the application and it’ll work just fine.

Figure 2

If you look closely, you can see “Progress Bar” top of the “Splash Screen” and it’ll be displaying for three seconds, then the “MainPage” will load.

Summary

To make a commercial app, you must add Splash Screen that represent the app and give a different look and feel. So, that’s it. Hope you’ve understand all these things. In the next chapter you’ll learn more about how to navigate through one page to another.

Windows Phone – Page navigation and pass a complex object to a page

Introduction

In this chapter we'll talk about Windows Phone page navigation. Previously in Windows Phone 7 or 8, page navigation technique was quite different. In Windows Phone 8 app, it could have several pages and when we want to navigate through different pages, it opens a new window. But in Windows Phone 8.1, there is only one window. When we want to open a different page, it opens a new frame. So things got changed a little like Windows 8.

So, let's see how it works in Windows Phone 8.1 page navigation. Let's get started.

Creating a New Project

Fist open up a new "Blank App (Windows Phone)" project. Then you've to delete the "MainPage.xaml", because when we navigate between pages, we'd use the Basic Page template.

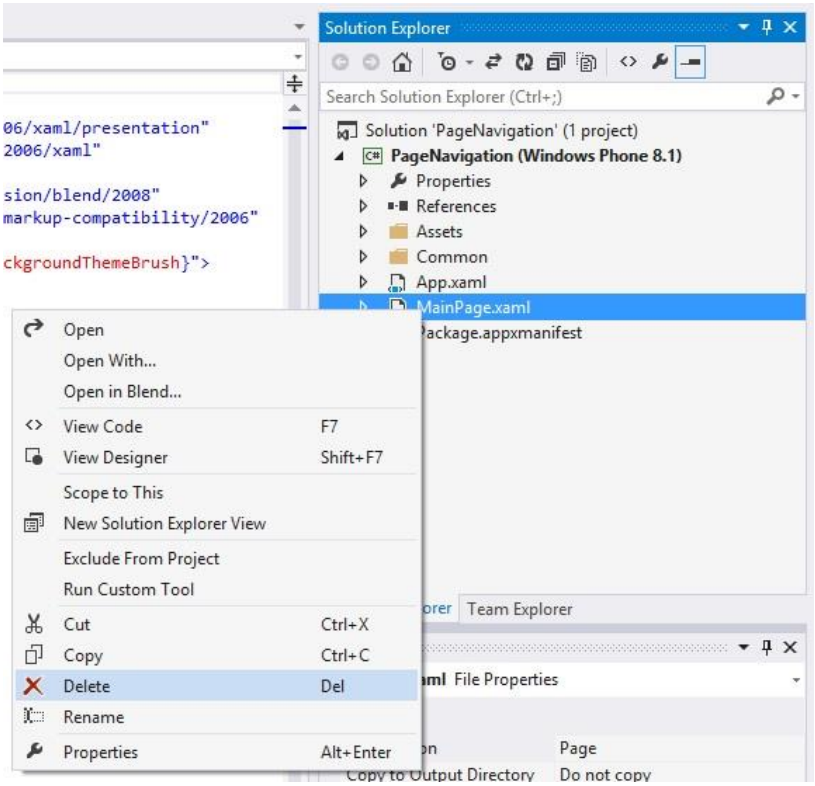


Figure 1

So, it's good to work with "Basic Page" template. To add a new "Main Page", just right click on the project in Solution Explorer and select Add >> New Item.

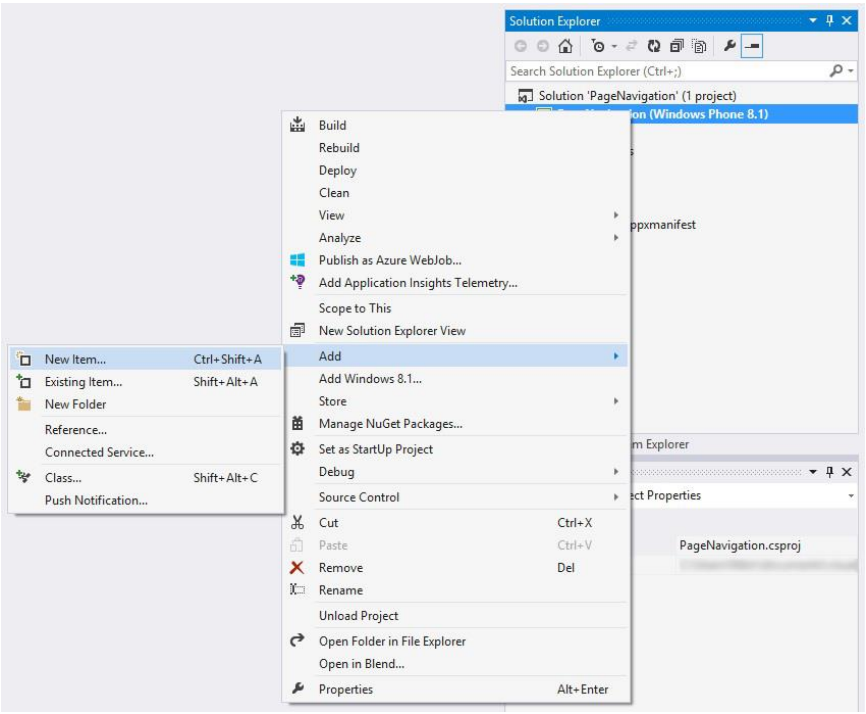


Figure 2

Then, select "Basic Page" template and give it an exact same name "MainPage.xaml".

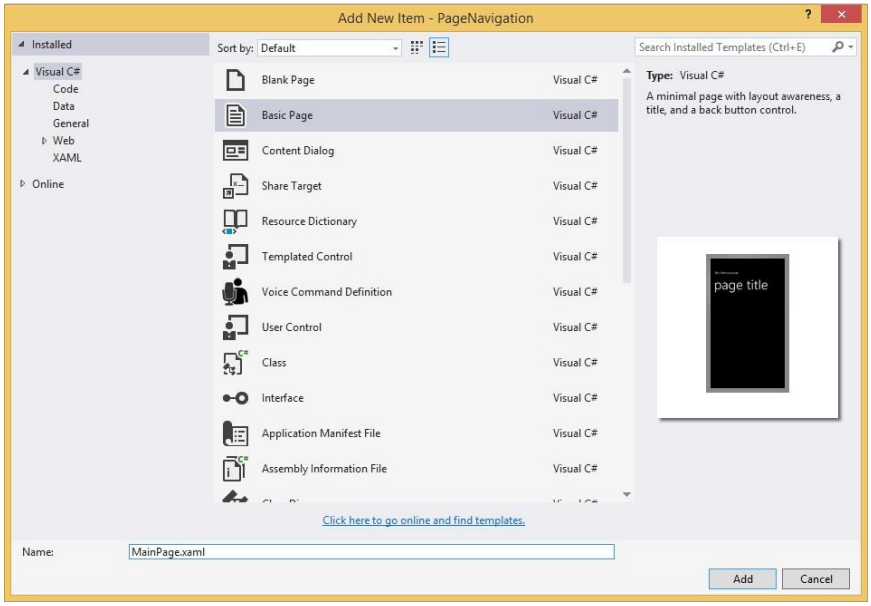


Figure 3

We need another page to navigate from "MainPage" to the second page. So, we need to add similarly a "Basic Page" template and give it a name "SecondPage.xaml".

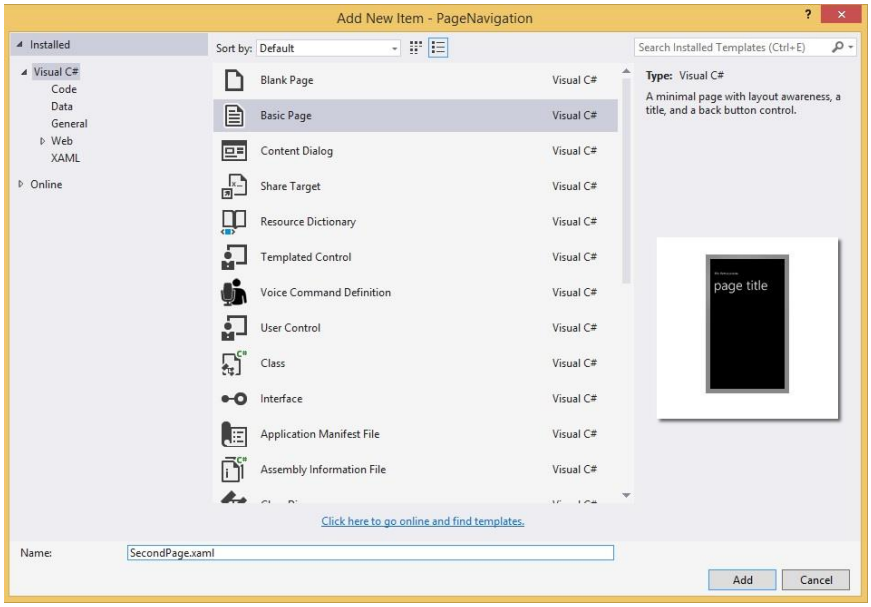


Figure 4

Adding a New Class

Now, we've to add another class name "Person.cs". We'll create two person's attributes "Name" and "Blog" which we'll pass when we navigate through pages,

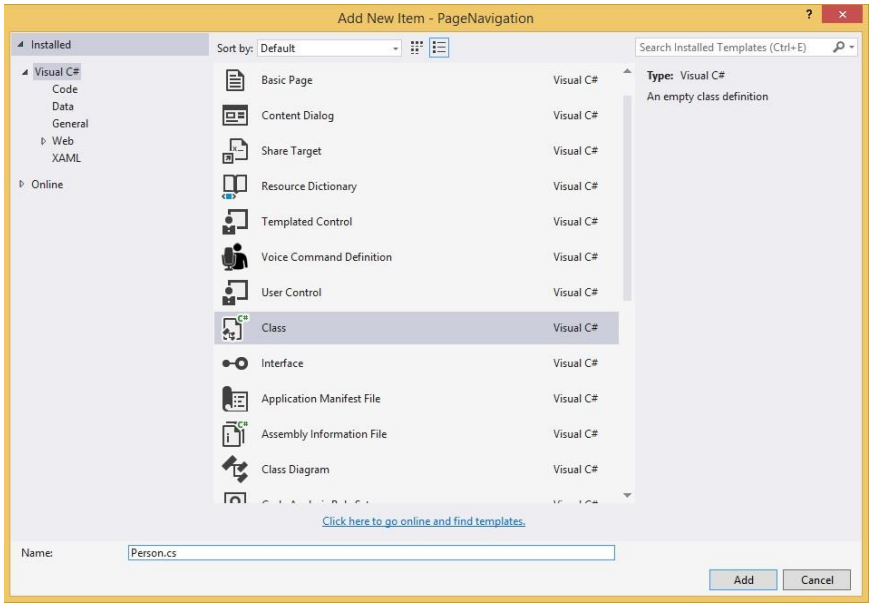


Figure 5

and the code is given below.

```
class Person
{
   public string Name { get; set; }
   public string Blog { get; set; }
}
```

Listing 1

Here, we've created two string variables "Name" and "Blog". Just type "prop" and double tab in the key board, it'll automatically create full code snippet for you, and tab again and change "int" to "string", hit tab second time and change "MyProperty" to "Name". Change the second code snippet like wise.

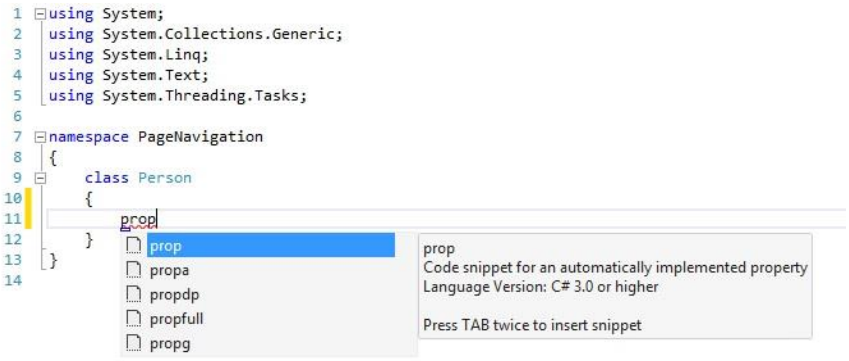


Figure 6

Adding a Button Control

Now, we'll work in "MainPage.xaml". Take a Button control and change content to "Next Page" and the other property like below.

```
<Button Content="Next Page"
                HorizontalAlignment="Left"
                Margin="10,0,0,0"
                VerticalAlignment="Top"
                Click="NextPage_Click"/>
```

Listing 1

The C# code of "MainPage.xaml.cs", mainly the event handler of the Button control is given here.

```
private void NextPage_Click(object sender, RoutedEventArgs e)

{
   var person = new Person { Name = "Stan Marsh", Blog =
"learnwithbddevs.wordpress.com" }
}
```

Listing 2

Here, we've created a person object of our Person class, we've set our "Name" and "Blog" and pass it through the "Second Page". As we mentioned before, Navigation Service does not work in Windows Phone 8.1, it opens up a new frame every time. So, here we call Frame class which has another Navigate Method, which has some types. Like here we've "Basic Page" template and we've passed our person object as parameter.

Displaying Data in Second Page

Now, in our "SecondPage.xaml" we've taken two TextBlock "tb1″ and "tb2″. The XAML code is given below,

```
<TextBlock x:Name="tb1"
                    HorizontalAlignment="Left"
                    Margin="10,10,0,0"
                    TextWrapping="Wrap"
                    VerticalAlignment="Top"
                    Height="50"
                    Width="342"
                    FontSize="20"/>
<TextBlock x:Name="tb2"
                    HorizontalAlignment="Left"
                    Margin="10,65,0,0"
                    TextWrapping="Wrap"
                    VerticalAlignment="Top"
                    Height="50"
                    Width="342"
                    FontSize="20"/>
```

Listing 3

and C# code is given here.

```
private void NavigationHelper_LoadState(object sender, LoadStateEventArgs e)
{
   var person = (Person)e.NavigationParameter;

   if (!string.IsNullOrWhiteSpace(person.Name))
   {
      tb1.Text = "Hello, " + person.Name;
      tb2.Text = "Welcome to: " + person.Blog;
   }
   else
   {
      tb1.Text = "Name is required. Go back and enter a name.";
   }
}
```

Listing 4

We've to put all the code in "NavigationHelper_LoadState" method, cause when a new page loads this code block will work to retrieve data while navigate. This method is built in, you just need to modify yourself as you like to do.

In our case, we've created a person variable object, which we've parsed into "Person" class. We've checked whether Person's name is empty or not, if not empty data will be displayed otherwise not. It'll show an error message "Name is required. Go back and enter a name."

All of our work is done. If you run the application, it'll look like this.

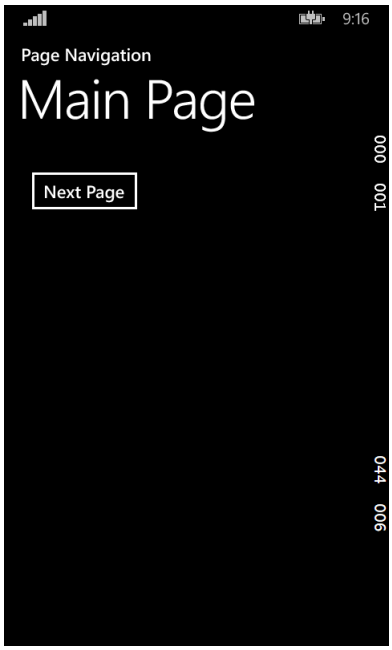


Figure 7.1 Figure 7.2

Hit the "Next Page" Button and it'll navigate to the "Second Page", and display the "Name" and "Blog" info on the TextBlocks respectively.

Summary

So, that's it. Hope it'll help to understand the basic navigation between pages and passing complex object like we've done.

Emulator

Working with Windows Phone Emulator

In this chapter I'll talk about the Windows Phone 8.1 Emulator. To test and run your application, Windows Phone Emulator gives you lots of flexibility and cool features. I've seen others development environments but Visual Studio is the best IDE (Integrated Development Environment) in the Universe. Windows Phone Emulator is a virtual mobile image inside your PC. It's really cool to work with it. So let's get crack in Windows Phone Emulator.

Running the Emulator

If you open a new project or an existing project, you can run the application from here.

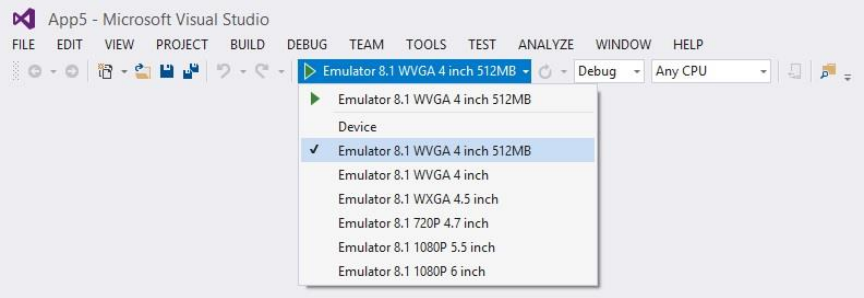


Figure 1

You can see that, there are different types of Emulator Images with different resolutions. You can choose any of them and test your application to verify whether it works fine or not.

If you look at the Emulator, it just full featured Windows Phone 8.1 but it doesn't have some sensors or you can't make any call from it. But it gives the real demo of running your application in your Windows Phone device.

Figure 2

Emulator Tools Options

You can see that, there is a menu bar at the right side of the emulator and if you press back, search and other button it works just as same as your personal Windows Phone.

If you click on the double arrow at the bottom of the menu bar, another window will pop up.

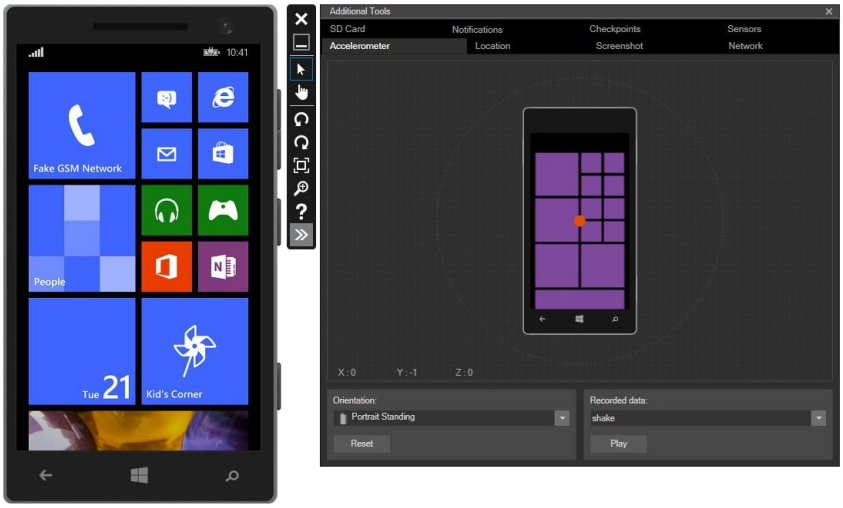


Figure 3

Accelerometer

There're some tabs in this window, first one is "Accelerometer" tab. If you're working on a project which have some functionality of "Accelerator" then, you can test your application via this tool.

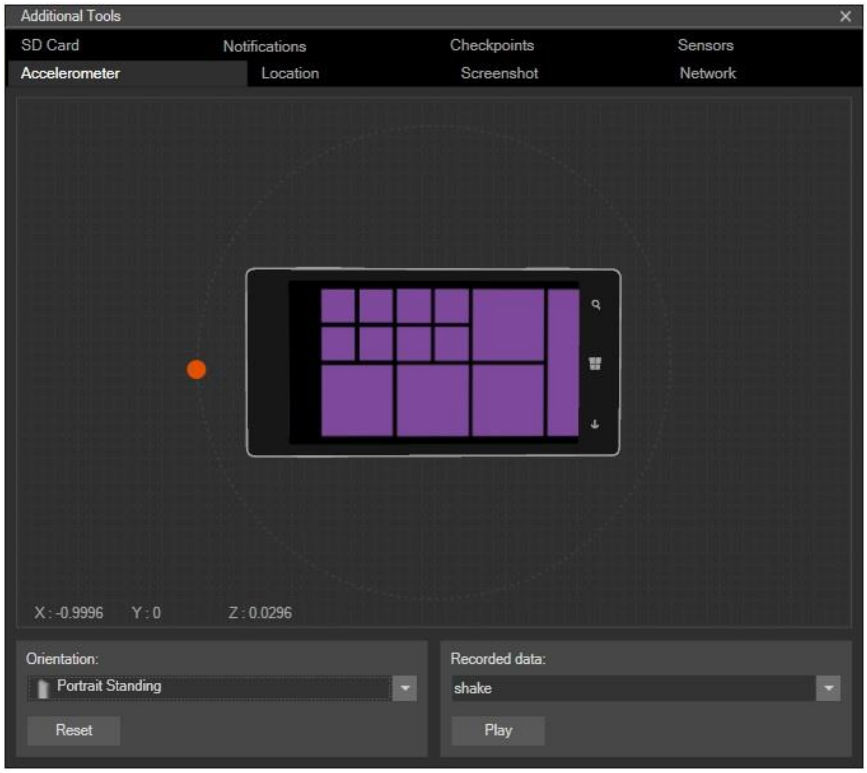


Figure 4

You can change the orientation of the device and see the changes according to the coordinates.

Let's do some experiment on this. I'm just showing a simple example of this. Just take a look the picture below.

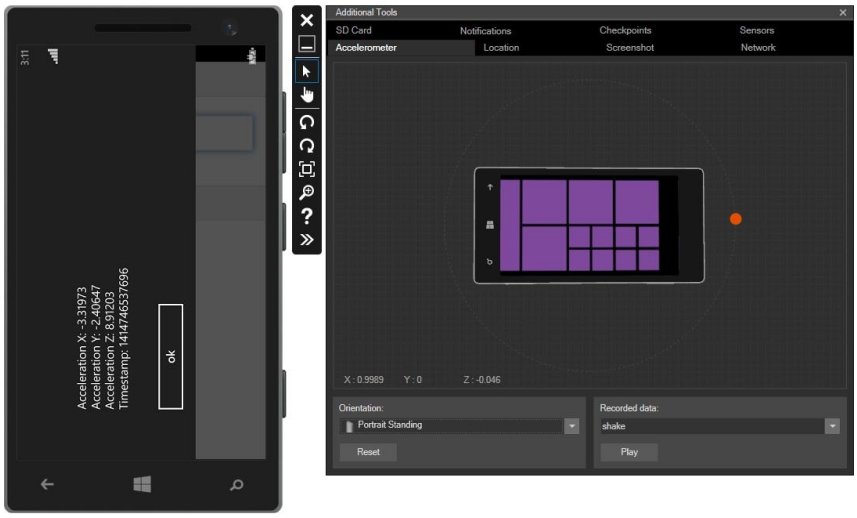


Figure 6

Just changing the orientation of the "Accelerometer", the application itself changes its orientation as well and here the example gives the acceleration data in the Alert Box. I've used a PhoneGap Application. You can find it in PhoneGap (Cordova) Part 2 chapter.

You can also change the Orientation types from the Tools also.

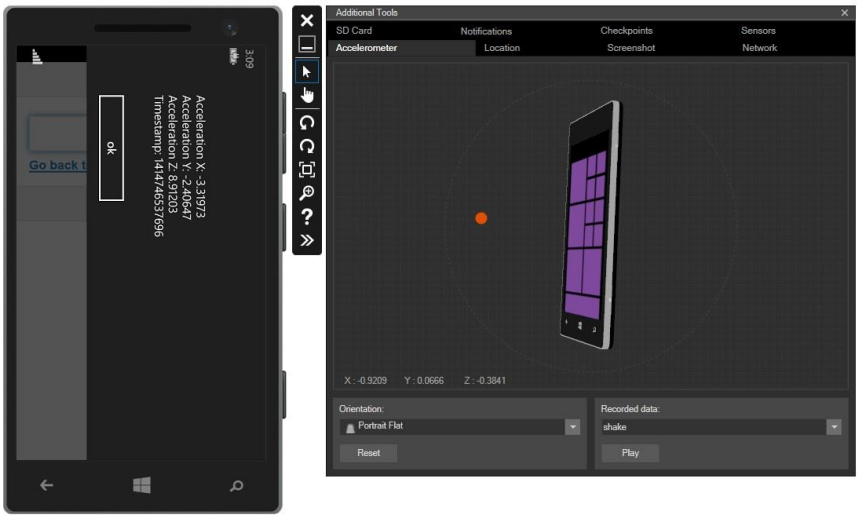


Figure 7

You can see that, now the visual state changed in “Portrait Flat” mood.

Location

Second tab is “Location” section. It’s very important and helpful indeed. If you don’t have any real device or Windows Phone, and you’re working on Geo-locator, Map or any location based service then you can test your application via this control window. It’s some features that will blow you mind and I myself find it very helpful while working on Location Based Project.

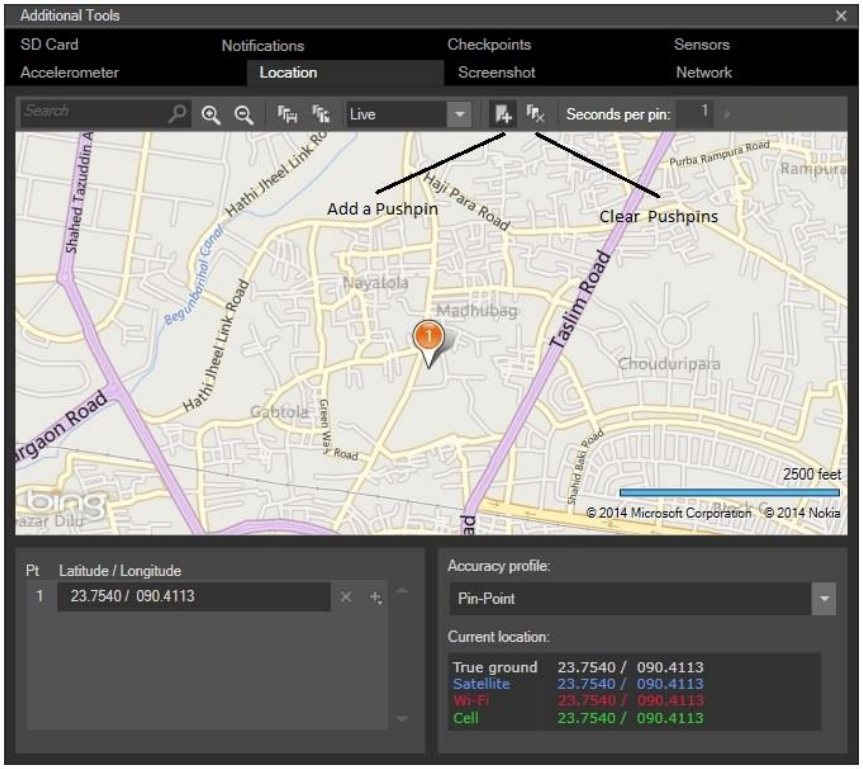


Figure 8

You can add a Pushpin from here, and if you run the Map application, it assumes, this is your current location and if you change it then it’ll update eventually.

You can also save your location from here.

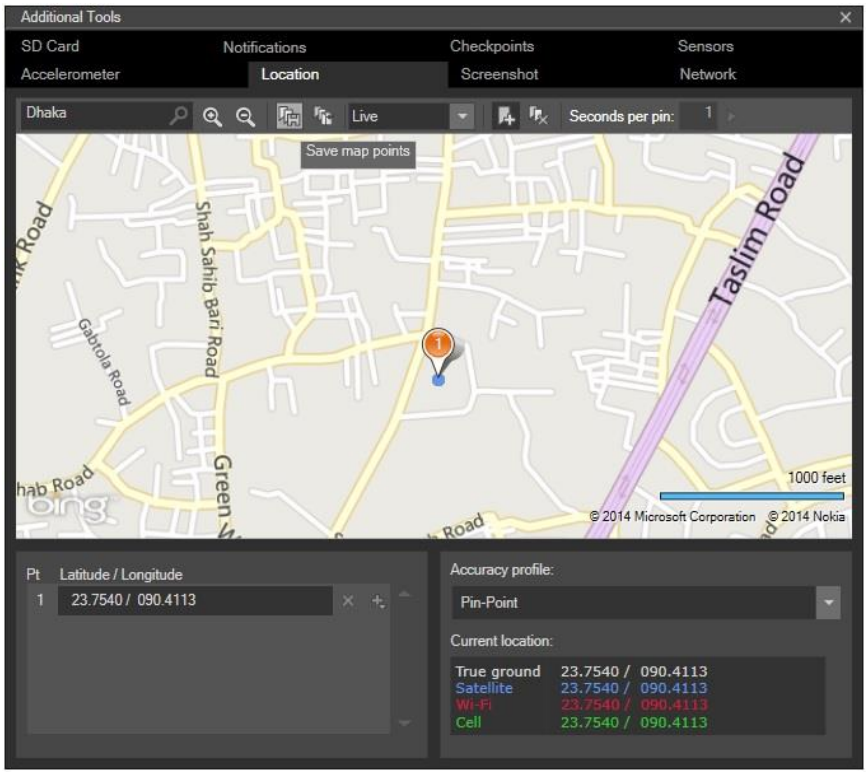


Figure 9

And when you need, you can also load your saved location data from the right button of the "Save Map Points" buttons. It generates a "XML" file that contains the "Latitude" and "Longitude" of your location.

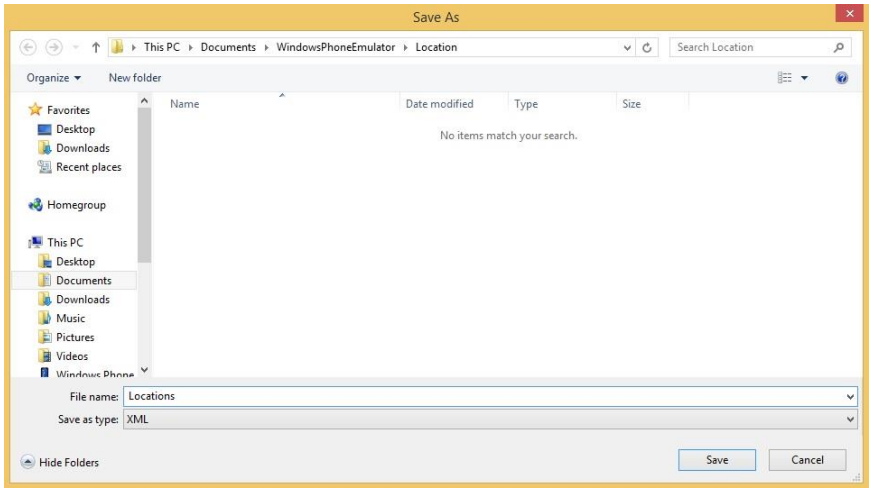


Figure 10

You can save it anywhere of your hard drive, but by default you can find it in Documents >> **Windows Phone Emulator >> Location folder.**

You can also test the direction between two points and test it while navigation if you use navigation service in your application.

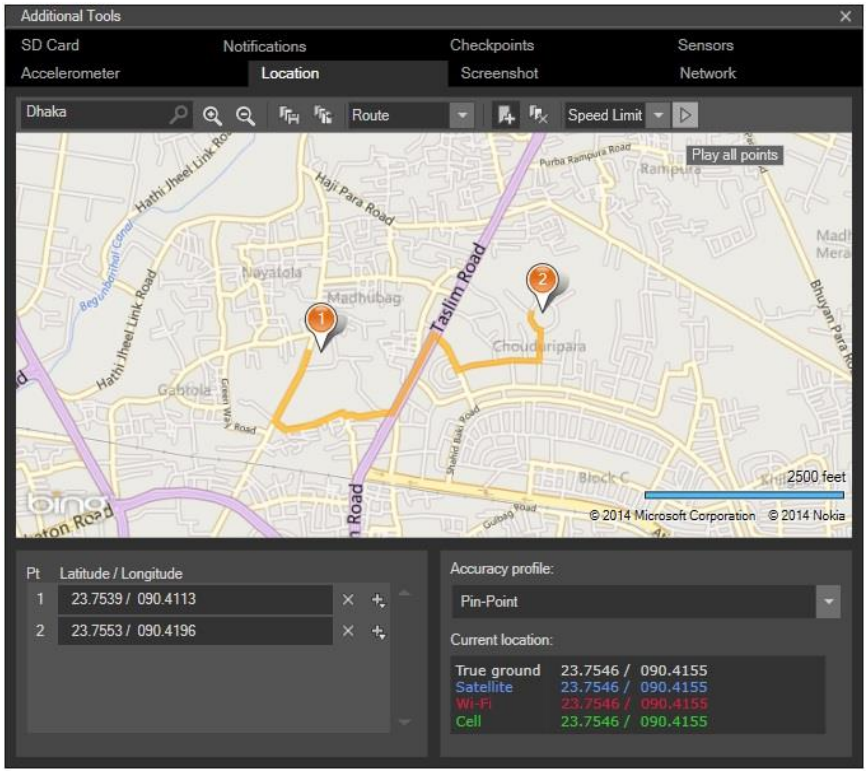


Figure 22

Put two Pushpin where you want and then hit the “Play” button and you can see like this.

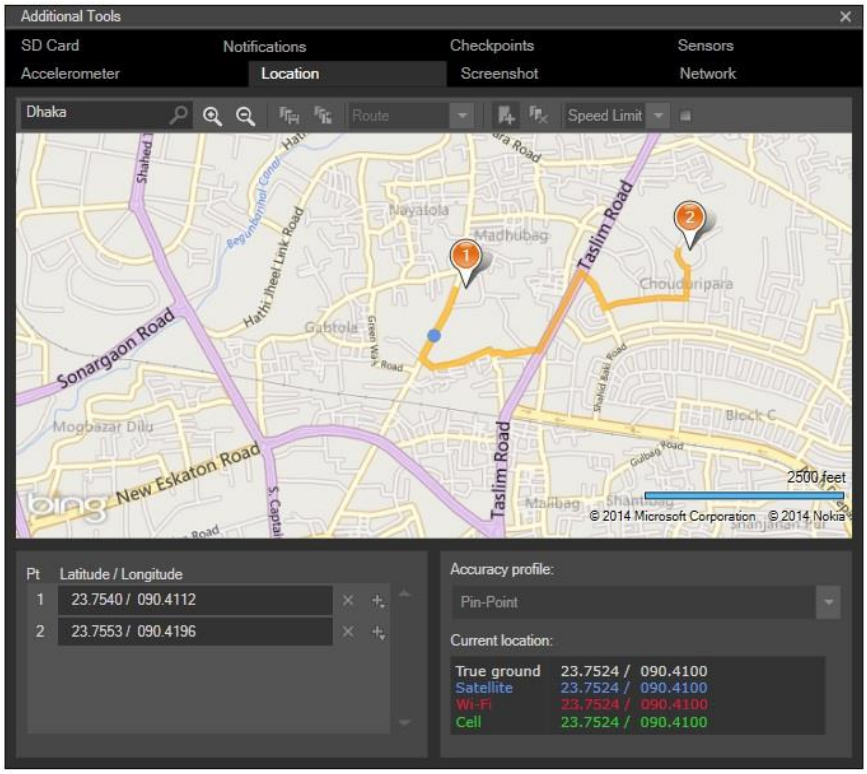


Figure 12

You can notice that a point is moving through the route, you can also set speed limit from here.

Screen Capture

Another feature is take a “Screen Shot”. It’s really awesome and you must have to use it while submitting your application in the store. You’ve to take several screen shots to give proper view of your application to the users.

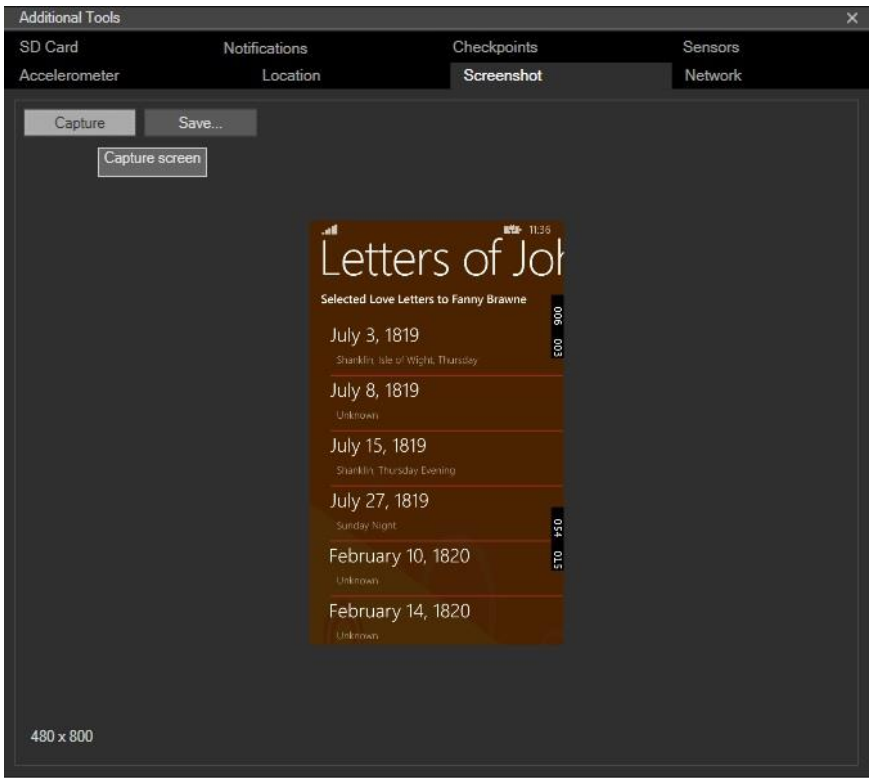


Figure 13

Save the image anywhere you want. By default it's "png" format image and Windows Phone Store doesn't support "jpeg" format. So it's really helpful.

Network

Last important tab is "Network" section. You can see your network information, emulator's physical address and some other information that will help you to configure if you're using a wireless network as well cable network.

Other Options

There are some other sections like "SD Cards", "Notifications", "Checkpoints" and "Sensors". You can surf these section if you want, but above four sections are mostly important. I recommend you to test your application in your real device if you're using any sensors. Because then you can understand the performance of you application.

Emulator Tools Names and Functions

These are basic option of the emulator.

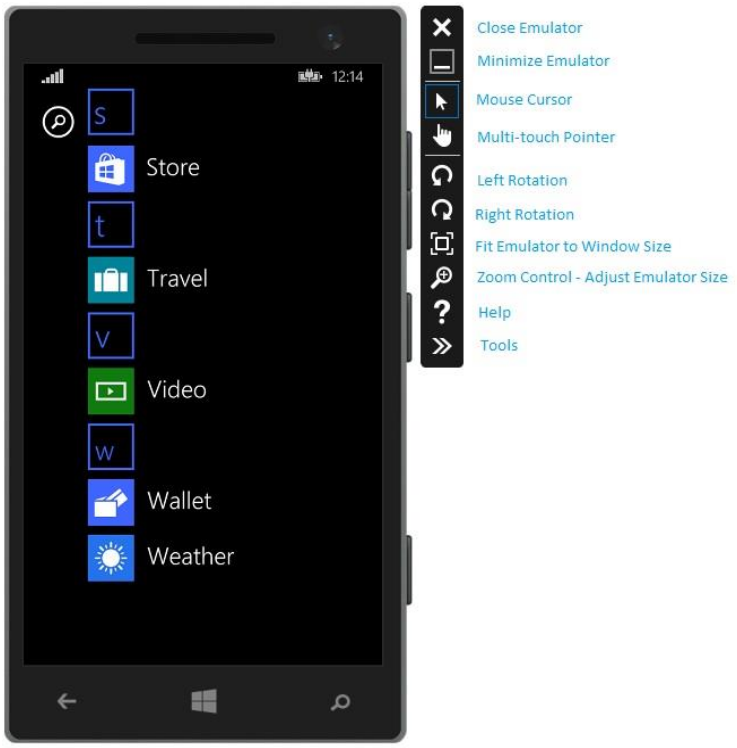


Figure 14

You can also fit your Emulator window as your needs.

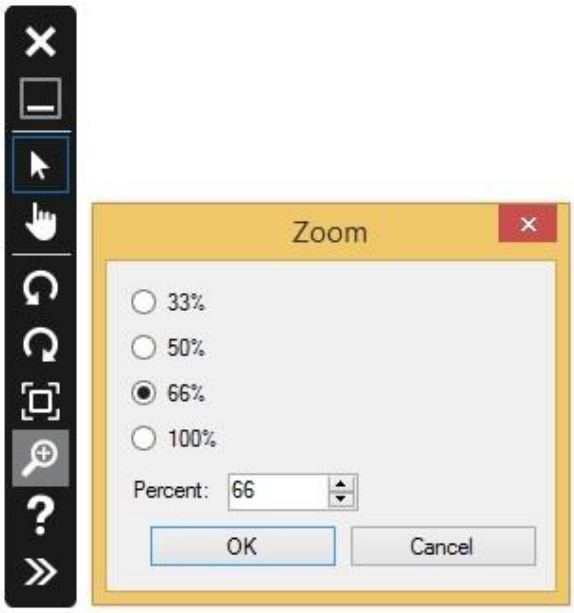


Figure 15

It'll help you if you're working on big screen as well small screen.

Device Configuration from Visual Studio

Moreover if you can test the theme of your application like "Dark" or "light" and also change the Accent Color.

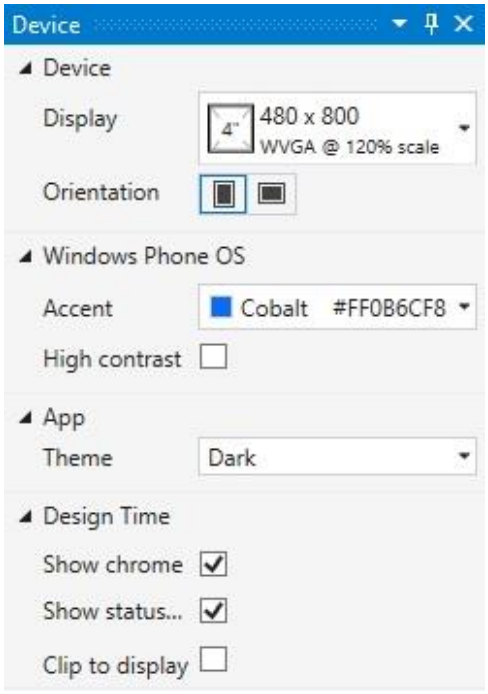


Figure 16

You can find this option in left side of the Visual Studio on “Device” tab. You can also change device resolution and orientation from here.

Summary

So, that’s pretty much about Windows Phone Emulator. Working with emulator and know its functionality is important as well developing your application. Windows phone emulator gives a lots of features for testing your application. Hope you can find it helpful.

Command Bar

Windows Phone – Command Bar

Introduction

In this chapter I'll talk about a simple but useful topic "Windows Phone Command Bar". If you've previous experience about Windows Phone 7 or 8, you could have noticed that, in Windows Phone 8.1 they made a little bit of change. Previously we're familiar with "App Bar" control, now it's known as "Command Bar". "CommandBar" is another user interface element, we can use in the application to provide more options in the form of icons and menu options to the user than what they see displayed by default. Obviously the code segment also changed than before. So, let's get crack in Windows Phone Command Bar.

Creating a New Project and Add a CommandBar

First of all, open up a new project or you can simply load your previous project. Now, in your left-side of Visual Studio, you can see a side window named "Document Outline". Just right click on the "BottomAppBar" and add a "Command Bar".

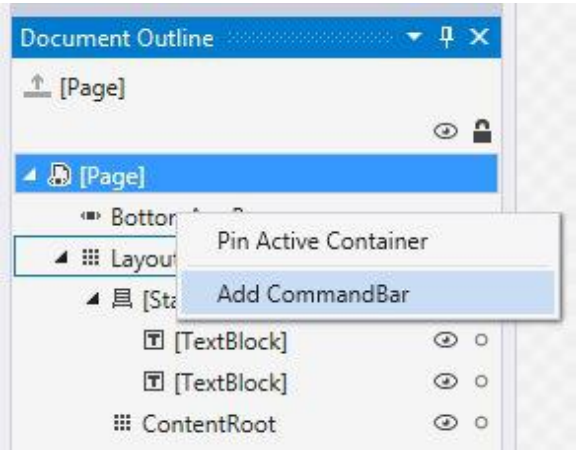


Figure 1

Now, you'll notice that, it automatically generates a XAML code snippet for you.

```
<Page.BottomAppBar>
    <CommandBar>
        <AppBarButton Icon="Accept" Label="appbarbutton"/>
        <AppBarButton Icon="Cancel" Label="appbarbutton"/>
    </CommandBar>
</Page.BottomAppBar>
```

Listing 1

Now, again right click on the “SecondaryCommands” and add a new “AppBarButton”.

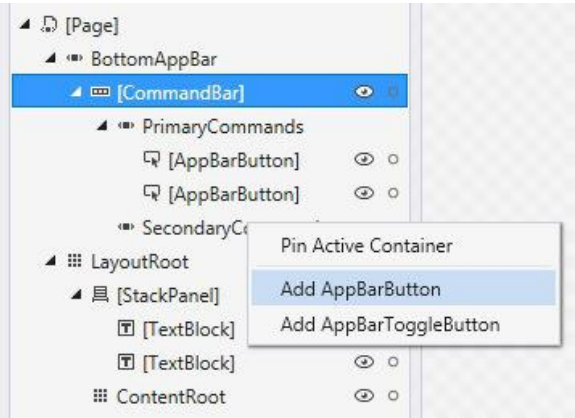


Figure 2

And you can see it creates another menu button for your “Command Bar”, and your XAML code will look like this.

```
<Page.BottomAppBar>
    <CommandBar>
        <CommandBar.SecondaryCommands>
            <AppBarButton Label="about"/>
        </CommandBar.SecondaryCommands>
        <AppBarButton Label="accept">
            <AppBarButton.Icon>
                <FontIcon Glyph="A"/>
            </AppBarButton.Icon>
        </AppBarButton>
        <AppBarButton Label="cancel">
            <AppBarButton.Icon>
                <FontIcon Glyph="C"/>
```

```
            </AppBarButton.Icon>
        </AppBarButton>
    </CommandBar>
</Page.BottomAppBar>
```

Listing 2

We've modified the labels of "Accept" and "Cancel" button, it shows the hint about the "Command Bar" buttons, and changed the label of "AppBarButton" to "about".

Changing the CommandBar Icons

Now, you can change the icons of your "Command Bar", as you see in the picture below, it already set to "Accept" icon. Because we've selected the "accept" button in the XAML code.

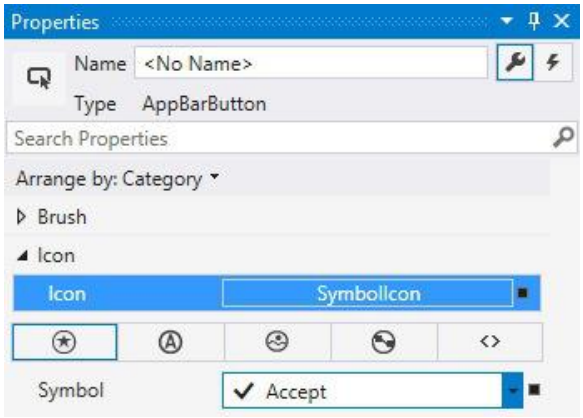


Figure 3

Or you can choose a "font icon" as your Icon, like "A", "B" or anything you want.

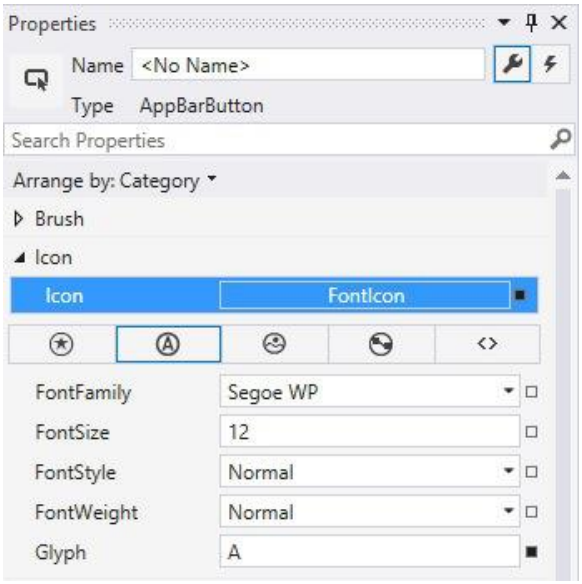


Figure 4

If you change “Accept” to “A” and “Cancel” to “C”, the code will look like this.

```
<Page.BottomAppBar>
    <CommandBar>
        <CommandBar.SecondaryCommands>
            <AppBarButton Label="about"/>
        </CommandBar.SecondaryCommands>
        <AppBarButton Label="accept">
            <AppBarButton.Icon>
                <FontIcon Glyph="A"/>
            </AppBarButton.Icon>
        </AppBarButton>
        <AppBarButton Label="cancel">
            <AppBarButton.Icon>
                <FontIcon Glyph="C"/>
            </AppBarButton.Icon>
        </AppBarButton>
    </CommandBar>
</Page.BottomAppBar>
```

Listing 3

Changing the CommadBar Mode

You can also change the mode of "Command Bar". For this, all you've to do, is just make some change in your "<CommandBar>" tag like the picture below.

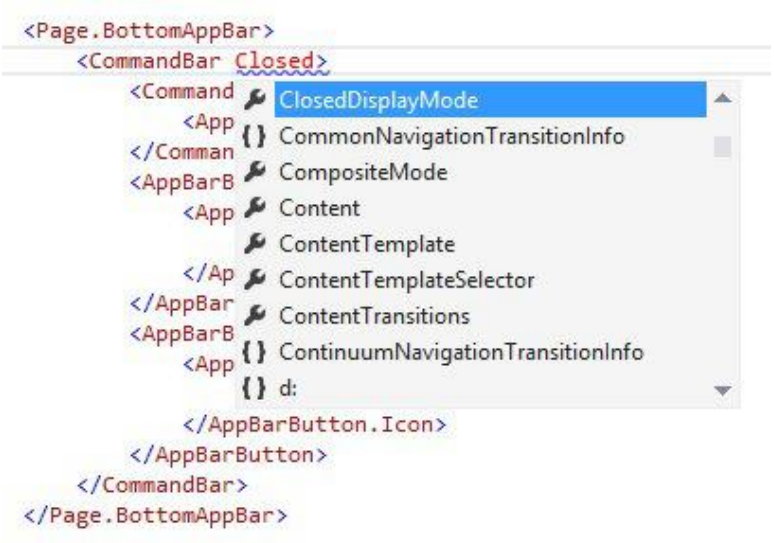


Figure 5

You've to select the "Minimal" view of "ClosedDisplayMode".

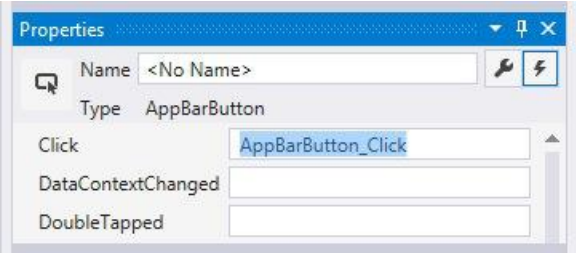
```
<Page.BottomAppBar>
   <CommandBar ClosedDisplayMode="Minimal">
        <CommandBar.SecondaryCommands>
            <AppBarButton Label="about"/>
        </CommandBar.SecondaryCommands>
        <AppBarButton Label="accept">
            <AppBarButton.Icon>
                <FontIcon Glyph="A"/>
            </AppBarButton.Icon>
        </AppBarButton>
        <AppBarButton Label="cancel">
            <AppBarButton.Icon>
                <FontIcon Glyph="C"/>
</AppBarButton.Icon> </AppBarButton>
    </CommandBar>
</Page.BottomAppBar>
```

Listing 4

Add an Event Handler

Now let's go back to previous changes and give an event handler in "about" button. To do so, in XAML code select the "About AppBarButton" line and under the "Solution Explorer", you can see a "Properties" window and select the thunder sign like the picture below,

and double click on the "Click" section and it automatically generates the code block for you.



If you take a look at the XAML code, you can see exactly like this.

```
<Page.BottomAppBar>
    <CommandBar ClosedDisplayMode="Minimal">
        <CommandBar.SecondaryCommands>
            <AppBarButton Label="about"
Click="AppBarButton_Click"/>
        </CommandBar.SecondaryCommands>
        <AppBarButton Label="accept" Icon="Accept"/>
        <AppBarButton Label="cancel" Icon="Cancel"/>
    </CommandBar>
</Page.BottomAppBar>
```

Listing 5

As, we've made an event handler for our "about" button, so we have to take another page named "About.xaml" and we'll navigate to that page if someone tap on the "about" button.

So, when you've done adding a new page, go to the "MainPage.xaml.cs" or wherever you've done this. In our case, we created our "Command Bar" in "MainPage.xaml", and you can see this code block in that page.

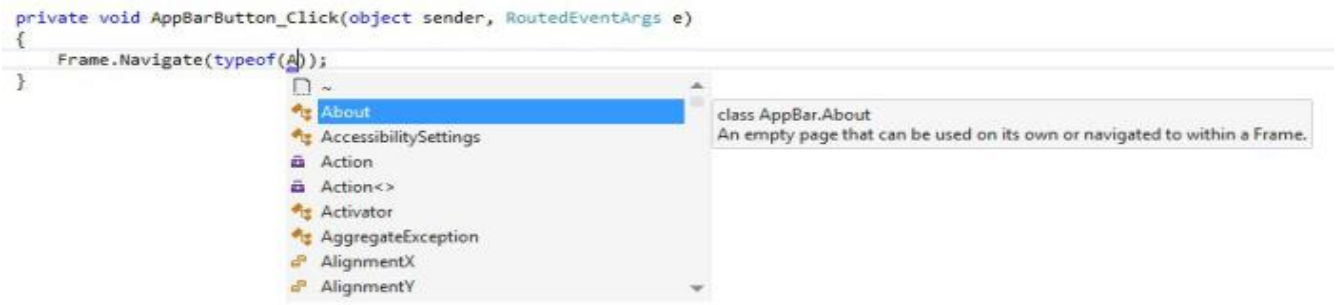


Figure 8

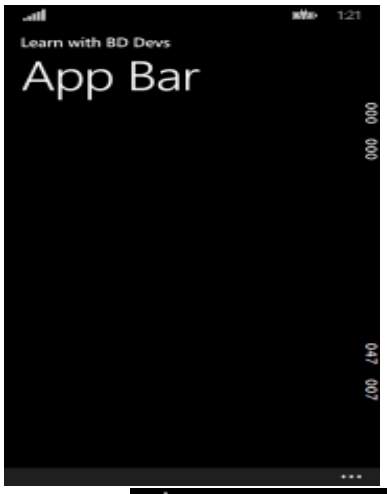
When've done, the code will look like this.

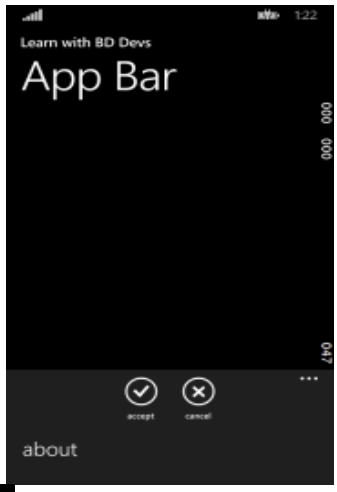
```
private void AppBarButton_Click(object sender, RoutedEventArgs e)
{
    Frame.Navigate(typeof(About));
}
```

Listing 6

Running the Application

After all you set, run the application and it will look like this.





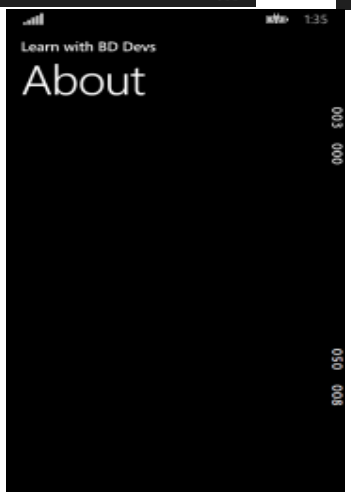


Figure 9.1 Figure 9.2 Figure 9.3

When you tap on the “about” button, it navigates to the “About.xaml” page.

Summary

So, that’s it. I think you got the basic idea how to use “Command Bar” in Windows Phone 8.1. It’s really helpful to give other option and settings of you application.

Data Binding

Data Binding with INotifyPropertyChanged Interface

Introduction

In this chapter we'll talk about a little bit advanced topic like Data Binding. It's really useful when you've massively structured code, and you've to handle a lots of data, not like our typical controls,

e.g., textBox1.Text = "Hello, world!";

Data Binding is nothing but creating a "ViewModel" class or you can name as you wish, which actually contains the data. One more important thing, you must follow in Data Binding control is INotifyPropertyChanged.It actually gives you an alert, when a property value is changed. Just like - hey there, "I'm changed." We'll come back it later.

Different Binding Modes

There are a number of different binding modes, as defined in the BindingMode enumeration:

TwoWay – changes to the UI or model automatically update the other. This is used for editable forms or other interactive scenarios.OneWay – updates the UI when the model changes. This is appropriate for read-only controls populated from data.
OneTime – updates the UI when the application starts or when the data context changes. This is used when the source data is static/does not change.
OneWayToSource – changes to the UI update the model.

Default – uses the default mode for the particular binding target (UI control). This differs based on the control.

Objects that take part in OneWay or TwoWay binding must implement the "INotifyPropertyChanged" interface. Thus interface requires only that the object publishes the "PropertyChanged" event

```
public class ItemViewModel : INotifyPropertyChanged
{
    public event PropertyChangedEventHandler PropertyChanged;
```

```
...
}
```

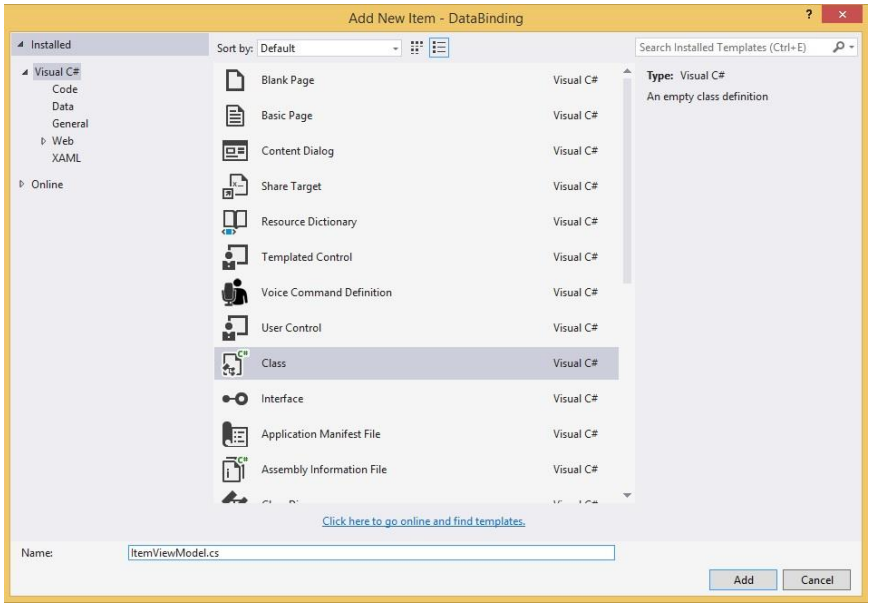
Listing 1

Object must fire the "PropertyChanged" event whenever the value of one of its public properties changes.

So, first of all we'd like to implement our "ViewModel" class, which will contain our data properties.

Adding a "ItemViewModel" class

Add a new class and give it a name "ItemViewModel".



Now, we've to declare our private properties what we want to do, and make public get and set methods. It's really a bad idea to declare you variable public. So, we've declared private but work with internally public.

There are two types of "INotifyPropertyChanged" implementation. One is Non-Optimal and other is Optimal. Let's see how the Non-Optimal implementation works first.

```
public class ItemViewModel : INotifyPropertyChanged
{
    // Properties
```

```
private string _manufacturer;
private string _model;
private string _color;
private int _year;

public string manufacturer
{
    get { return _manufacturer; }

    set
    {
        _manufacturer = value;
        NotifyPropertyChanged("manufacturer");
    }
}

public string model
{
    get { return _model; }
    set
    {
        _model = value;
        NotifyPropertyChanged("model");
    }
}

public string color
{
    get { return _color; }
    set
    {
        _color = value;
        NotifyPropertyChanged("color");
    }
}

public int year
{
    get { return _year; }
```

```
        set
        {
            _year = value;
            NotifyPropertyChanged("color");
        }
    }

    // Property Change Logic
    public event PropertyChangedEventHandler PropertyChanged;

    private void NotifyPropertyChanged(string propertyName)
    {
        if (PropertyChanged != null)
        {
            PropertyChanged(this, new
ropertyChangedEventArgs(propertyName));
        }
    }
}
```

Listing 2

Here, we've declared our four private properties, actually a car's attributes, and most importantly in the setter whenever the value changes we call a method called "NotifyPropertyChanged" ("manufacturer"), which fires that property changed event. And gives the name of that property. It's kind of error-prone because this is what we using is "Magic Strings". It's not actually good to hard coded given new name of your property.

Optimal ViewModel Implementation

Now, let's see our Optimal ViewModel implementation,

```
public class ItemViewModel : INotifyPropertyChanged
{
    // Properties
    private string _manufacturer;
    private string _model;
    private string _color;
    private int _year;

    public string manufacturer
```

```
    {
        get { return _manufacturer; }

        set { this.SetProperty(ref this._manufacturer, value); }
    }

    public string model
    {
        get { return _model; }

        set { this.SetProperty(ref this._model, value); }
    }

    public string color
    {
        get { return _color; }

        set { this.SetProperty(ref this._color, value); }
    }

    public int year
    {
        get { return _year; }

        set { this.SetProperty(ref this._year, value); }
    }


    // Property Change Logic
    public event PropertyChangedEventHandler PropertyChanged;

    protected bool SetProperty<T>(ref T storage, T value,
CallerMemberName] string propertyName = null)
    {
        if (object.Equals(storage, value)) return false;
        storage = value;
        this.OnPropertyChaned(propertyName);
        return true;
```

```
    private void OnPropertyChaned(string propertyName)
    {
        var eventHandler = this.PropertyChanged;
        if (eventHandler != null)
            eventHandler(this, new
PropertyChangedEventArgs(propertyName));
    }

}
```

Listing 3

and you've noticed that it's kind of nice refection tool to change the name of your property, which will nicely do through all of your app. It works similarly Non-Optimal "ViewModel" but changes the value of your property automatically and fires the "PropertyChanged" event whenever the value of one of its public properties changes.

Designing UI

So, our "ViewModel" implementation is okay now. Now, we'll move to design our app, which will show four properties of our "ItemViewModel" class. Let's take four TextBlocks and a Button. You can design as you wish to do so. Sample XAML UI code is given below,

```
<!--TODO: Content should be placed within the following grid-->

<Grid Grid.Row="1" x:Name="ContentRoot" Margin="19,9.5,19,0">
<TextBlock Height="50"
               HorizontalAlignment="Left"
               Margin="10,10,0,0"
               Name="manufacturerBlock"
               Text="{Binding manufacturer,Mode=TwoWay}"
               VerticalAlignment="Top"
               Width="342" FontSize="24"/>
    <TextBlock Height="50"
               HorizontalAlignment="Left"
               Margin="10,65,0,0"
               Name="modelBlock"
               Text="{Binding model,Mode=TwoWay}"
               VerticalAlignment="Top"
```

```
                Width="342" FontSize="24"/>
    <TextBlock Height="50"
                HorizontalAlignment="Left"
                Margin="10,120,0,0"
                Name="colorBlock"
                Text="{Binding color,Mode=TwoWay}"
                VerticalAlignment="Top"
                Width="342" FontSize="24"/>
    <TextBlock Height="50"
                 HorizontalAlignment="Left"
                 Margin="10,175,0,0"
                 x:Name="yearBlock"
                 Text="{Binding year, Mode=TwoWay}"
                 VerticalAlignment="Top"
                 Width="342" FontSize="24"/>
    <Button Content="Update"
            Height="50"
            HorizontalAlignment="Left"
            Margin="202,443,0,0"
            Name="updateButton"
            VerticalAlignment="Top"
            Width="150"
            Click="updateBtn_Click" />
</Grid>
```

Listing 4

Here, we've used TwoWay mode, because we will update our databound UI elements in XAML runtime.

Backend C# Code

Now, let's look inside of our "MainPage.xaml.cs" class.

```
public sealed partial class MainPage : Page
{
    ItemViewModel _itemViewModel;
...
}
```

Listing 5

Put this line of code at the top of our constructor. It creates an object of our "ItemViewModel" class.

```
// Constructor
public MainPage()
{
    this.InitializeComponent();
     Loaded += MainPage_Loaded;
...
}
```

Listing 6

Update the constructor with "MainPage_Loaded" method, because when you run the application it'll call the method to display the data.

Now, implement the "MainPage_Loaded" method.

```
void MainPage_Loaded(object sender, RoutedEventArgs e)
{
    _itemViewModel = new ItemViewModel
    {
        manufacturer = "Oldsmobile",
        model = "Cutlas Supreme",
        color = "Silver",
        year = 1988

    };

    setDataContext();
}
```

Listing 7

So, we created new "ItemViewModel" object and bound our data in "ItemViewModel" class, and set data context by calling "setDataContext" method.

```
private void setDataContext()
{
```

```
    ContentRoot.DataContext = _itemViewModel;
}
```

Listing 8

What it does, is setting up our data in the main Grid of our XAML UI. Here, "ContentRoot" is the name of our main Grid.

```
// utility method which changes the PhoneModel properties

private void setItemProperties(String manufacturer, String model,
String color, int year)
{
    _itemViewModel.manufacturer = manufacturer;
    _itemViewModel.model = model;
    _itemViewModel.color = color;
    _itemViewModel.year = year;

}
```

Listing 9

It's kind of nice, that you don't have to worry about showing your data. Which is string and which is integer, you don't have to bother about it. Just make a reference of your data, that's it. When we press our Update Button, it'll do the work for us.

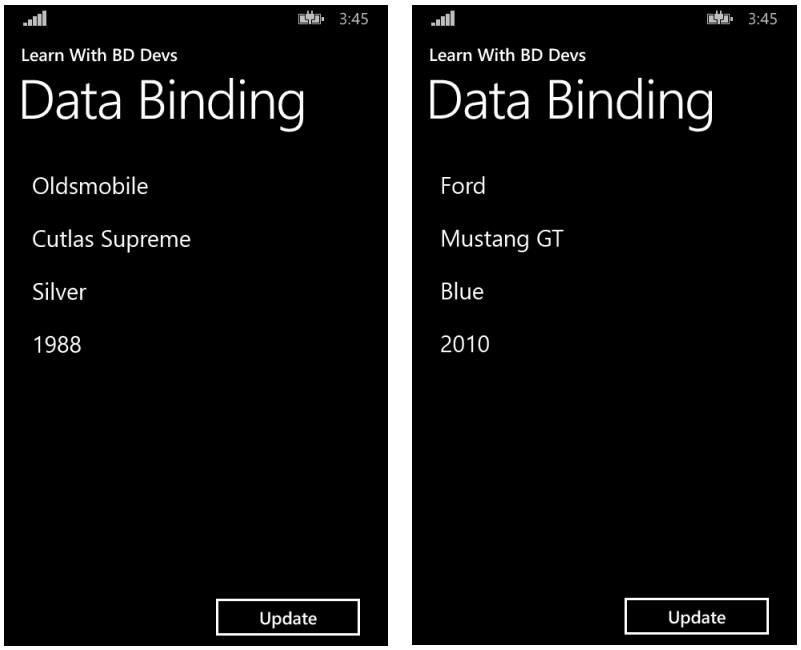
```
// called when update button is clicked
private void updateBtn_Click(object sender, RoutedEventArgs e)
{
    setItemProperties("Ford", "Mustang GT", "Blue", 2010);
}
```

Listing 10

It calls the "setItemProperties" method, and pass the following data to it. Really simple, isn't it?

Running the Application

Now, if you run the application, it'll look exactly like this.



Summary

That's it. Hope you've understand the basic of "DataBinding" and "INotifyPropertyChanged Interface". So, make your app more awesome with this features.

MVVM

MVVM – Simple Way You Can Think

Introduction

In previous chapter we've talked about DataBinding. Now, I'll talk about one the most important and little bit advanced topic. It's all about "MVVM". "MVVM" stands for "Model-View-ViewModel". Model basically initialize properties, attributes whatever you say, and "ViewModel" contains all data of your application. Finally View represents actual representation of data in your screen. Basically Data Binding works between "ViewModel" and "View "layer, "View" requests command and "ViewModel" accepts it and responses to the "View". I'm not going the whole theoretical knowledge. I tried to give you the basic idea what "MVVM" is.

Now, let's get crack in the best practice in this super awesome architectural model.

Creating a New Project

First of all, open up a new project and name it "MVVMEx" or whatever you want. Now, simply delete your "Mainpage.xaml". Don't freak out, it's kind of modification. Now, add three folder "Models", "ViewModels" and "Views" one by one, like this.

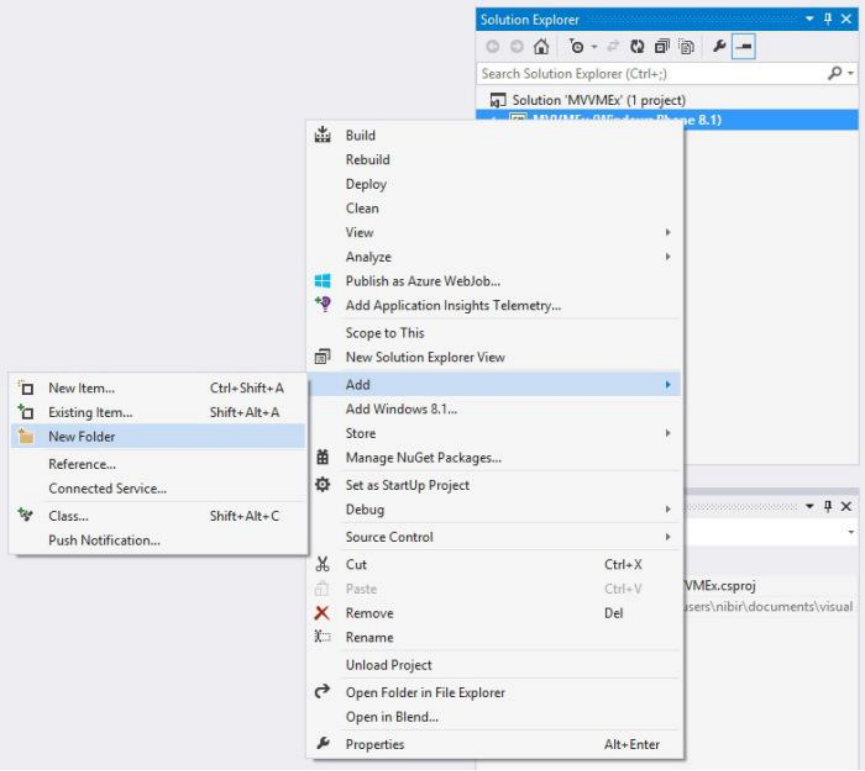


Figure 1

It should look exactly like below in Figure 2.

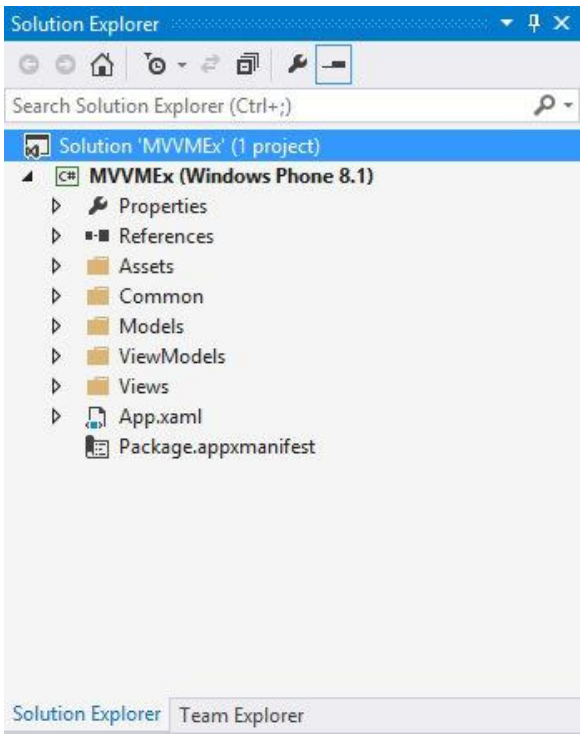
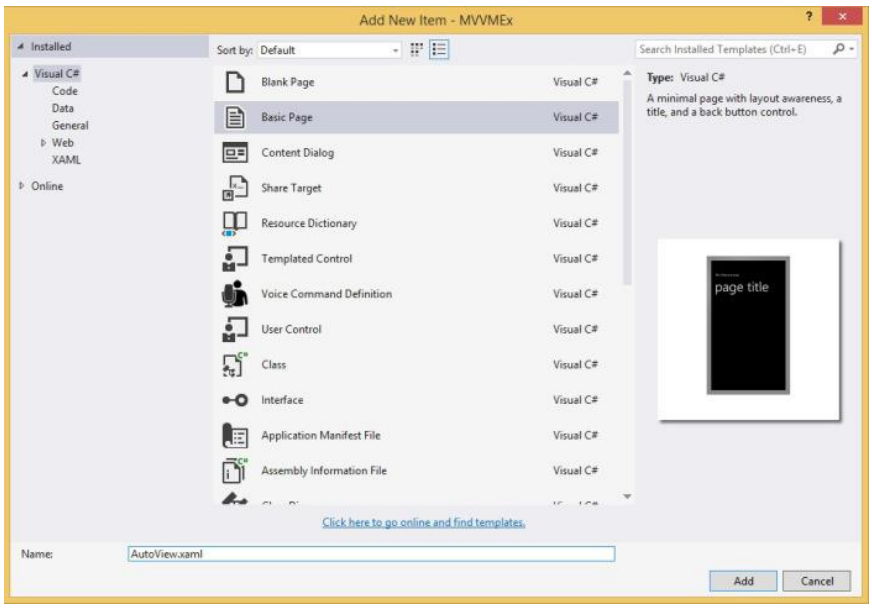


Figure 2

Adding a New Page

Now, it kind of remake of our Data Binding example from my last article. Now, In "Views" folder right click and add a new "Basic Page", give it a name "AutoView".



Changing the Starting Page

Now one more thing we've to do, is changing our starting page. For that, you've to go "app.xaml.cs" and change this line of code,

```
if (!rootFrame.Navigate(typeof(AutoView), e.Arguments))
{
    throw new Exception("Failed to create initial page");
}
```

Listing 1

because, we've deleted our "MainPage.xaml" and add a new page "AutoView.xaml".

Adding Classes

Now, similarly right click on the "Model" folder and add a new class named "Auto.cs". Again right click on the "ViewModels" folder and add another class named "AutoViewModel.cs". After all you setup, your Solution Explorer will look like in Figure 4.

Figure 4

Now, as we'll do similarly as our previous Data Binding example, now we'll modify our "AutoView.xaml" as follows.

Modifying "AutoView.xaml" Page

Setting up app title and information.

```
<!-- Title Panel -->
<StackPanel Grid.Row="0" Margin="19,0,0,0">
    <TextBlock Text="Learn With BD Devs" Style="{ThemeResource
TitleTextBlockStyle}" Margin="0,12,0,0"/>
    <TextBlock Text="MVVM" Margin="0,-6.5,0,26.5"
Style="{ThemeResource HeaderTextBlockStyle}"
CharacterSpacing="{ThemeResource
PivotHeaderItemCharacterSpacing}"/>
</StackPanel>
```

Listing 2

Modifying main grid.

```
<!--TODO: Content should be placed within the following grid-->

<Grid Grid.Row="1" x:Name="ContentRoot" Margin="19,9.5,19,0">
<TextBlock Height="50"
                HorizontalAlignment="Left"
                Margin="10,10,0,0"
                Name="manufacturerBlock"
                Text="{Binding manufacturer,Mode=OneWay}"
                VerticalAlignment="Top"
                Width="342" FontSize="24"/>
    <TextBlock Height="50"
                HorizontalAlignment="Left"
                Margin="10,65,0,0"
                Name="modelBlock"
                Text="{Binding model,Mode=OneWay}"
                VerticalAlignment="Top"
                Width="342" FontSize="24"/>
    <TextBlock Height="50"
                HorizontalAlignment="Left"
                Margin="10,120,0,0"
                Name="colorBlock"
                Text="{Binding color,Mode=OneWay}"
                VerticalAlignment="Top"
                Width="342" FontSize="24"/>
    <TextBlock Height="50"
                HorizontalAlignment="Left"
                 Margin="10,175,0,0"
                x:Name="yearBlock"
                Text="{Binding year, Mode=OneWay}"
                VerticalAlignment="Top"
                Width="342" FontSize="24"/>
</Grid>
```

Listing 3

Implementation of "BaseModel.cs" Class

Now, we'll move to our "Models" folder and initialize auto's properties, but before that, we've to add another class name "BaseModel.cs" in our "Common" folder.

```
public class BaseModel : INotifyPropertyChanged
{
    public event PropertyChangedEventHandler PropertyChanged;

    protected bool SetProperty<T>(ref T storage, T value,
CallerMemberName] string propertyName = null)
    {
        if (object.Equals(storage, value)) return false;
        storage = value;
        this.OnPropertyChaned(propertyName);
        return true;
    }

    private void OnPropertyChaned(string propertyName)
    {
        var eventHandler = this.PropertyChanged;
        if (eventHandler != null)
            eventHandler(this, new
PropertyChangedEventArgs(propertyName));
    }
}
```

Listing 4

It's our "INotifyPropertyChanged" interface. As, we've said in best practice, you've make your code as much clean you can.

Implementation of "Auto.cs" Class

Now, move back to our "Auto.cs" class. The initialized properties are given below.

```
public class Auto : BaseModel
{
    private string _manufacturer;
    private string _model;
    private string _color;
```

```
    private int _year;
    public string manufacturer
    {
        get { return _manufacturer; }
        set { this.SetProperty(ref this._manufacturer, value); }

    }

    public string model
    {
        get { return _model; }
        set { this.SetProperty(ref this._model, value); }
    }

    public string color
    {
        get { return _color; }
        set { this.SetProperty(ref this._color, value); }
    }

    public int year
    {
        get { return _year; }
        set { this.SetProperty(ref this._year, value); }
    }
}
```

Listing 5

Here, we've inherited all the public properties of "BaseModel.cs" class, and fire the value of data in setter. Just simple logic of OOP (Object Oriented Programming).

Setting Up Data in "AutoViewModel.cs" Class

Now, we'll set the data of our "Auto" properties in "AutoViewModel.cs" class.

```
public class AutoViewModel : Auto
{
    Auto _auto = new Auto
    {
        manufacturer = "Oldsmobile",
        model = "Cutlas Supreme",
```

```
        color = "Silver",
        year = 1988
    };

    public AutoViewModel()
    {
        this.manufacturer = _auto.manufacturer;
        this.model = _auto.model;
        this.color = _auto.color;
        this.year = _auto.year;
    }
}
```

Listing 6

Here, we've used Inheritance and inherited "Auto.cs" class like before, so that we can access all the public properties of "Auto.cs" class.

We created a "_auto" object of "Auto.cs" class and initialize all the values here, and in constructor "AutoViewModel" we make references of these properties.

Setting Up DataContext in "AutoView.xaml.cs" Class

It's almost done our work. Now, to visualize the data of our "AutoViewModel.cs" class, we have to instantiate in our "AutoView.xaml.cs" class. To do so, change these line of code as follows.

```
private AutoViewModel defaultViewModel = new AutoViewModel();

public AutoView()
{
    this.InitializeComponent();
...
    this.DataContext = defaultViewModel;
}


public AutoViewModel DefaultViewModel
{
    get { return this.defaultViewModel; }
}
```

Listing 7

Here, we've created a "defaultViewModel" object of "AutoViewModel.cs" class and make it the "DataContext" of our "AutoView.xaml.cs" class in constructor. It actually retrieve all data from "AutoViewModel" constructor and shows in "ContentRoot" grid of "AutoView.xaml".

Running the Application

Now, it's time to build our project. After you run the application, it should look exactly like this.

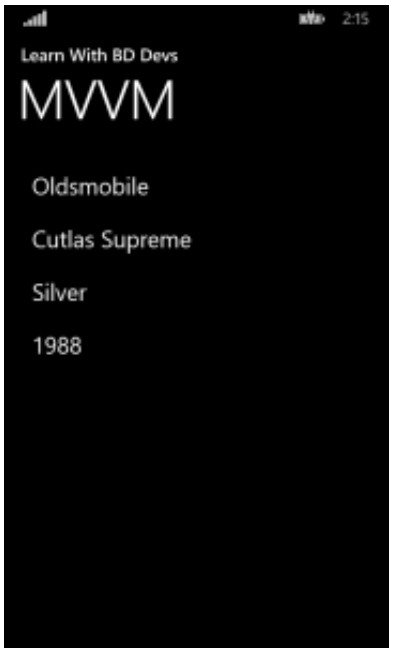


Figure 5

Summary

So, that's it. Hope you've understand the concept of "MVVM" and how to implement in your project. It's really helpful when you'll work in big project and you've to handle a lots of data.

Hub App with Json

Windows Phone Hub App – Working with Json Data

Introduction

In this chapter, I'm going to talk about "Handing Data with Json" and we'll be working in Windows Phone "Hub App" template. It's going to be fun to working with this awesome template and I hope after exploring the "Hub App" and "Json Data", you'll be able to do your own stuff and write a great Windows Phone App. If you've followed my previous articles, as a great Windows Phone developer your journey starts here. We'll create an awesome app name "Letters of John Keats". JK is one of my favorite poets and we're going to make this app which will have the letters to his girlfriend "Fanny Brawne". So let's get crack in "Hub App" working with "Json".

Creating a New Project

First of all take a new project and select the "Hub App" template. Give it a name simply "HubApp".

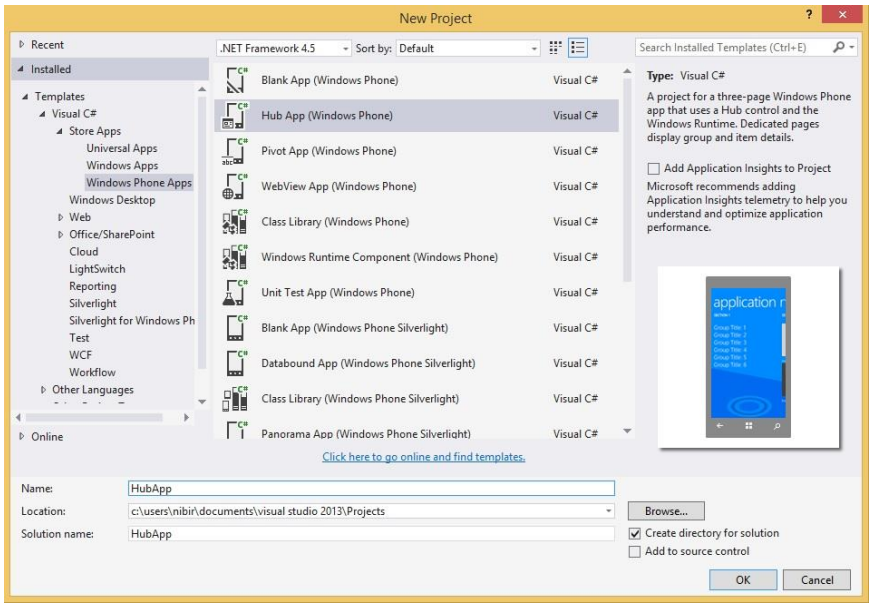


Figure 1

Now, you've all these files in your Solution Explorer.

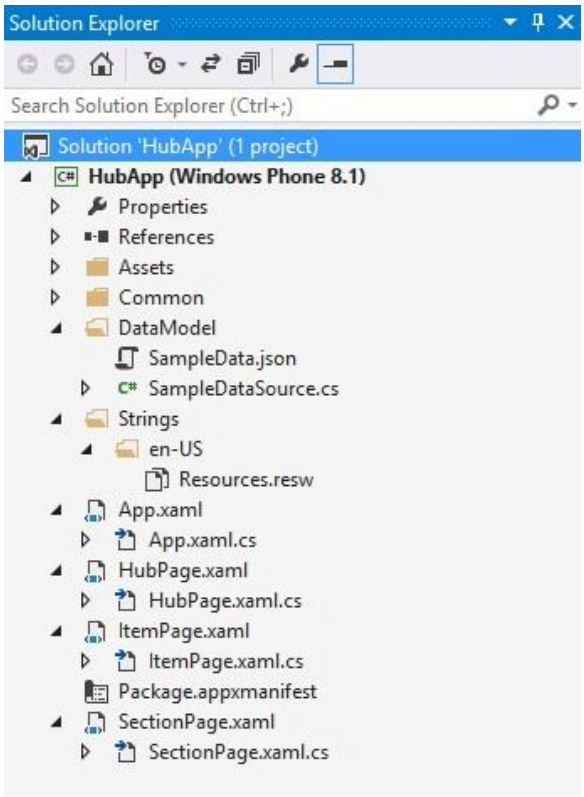


Figure 2

Working with Json Data

So, first is first, we'll replace the "SampleData.json" with our own file. Simple is to erase all the data in existing file and paste your desire data here. We've replaced with our own data here.

```
{"Groups":[
    {
        "Title": "Letters of John Keats",
        "Subtitle": "Selected Love Letters to Fanny Brawne",
        "Items": [
            {
                "Title": "July 3, 1819",
                "Subtitle": "Shanklin, Isle of Wight, Thursday",
                "Content": "My dearest Lady - I am glad I had ...
please so."
```

```
            }
        ]
    }
]
}
```

Listing 1

Here, is a sample data of our application. We've used "Json". "Json" stands for JavaScript Object Notation. Json is lightweight data interchange format. If you notice, you can realize that "Json" is nothing but an "Array" object. Here, the "Items" has two items and the items are surrounded by third brackets ("[]"), the last item doesn't have comma at the end in line number fifteen. Mainly every last element doesn't need comma at the end. You can declare as many items as you need, also you can have many group items. This is the basic format of "Json". You can learn basics about "Json" at **http://json.org**.

Retrieving the Json Data

So, out app local data is set, now we need to modify the class "SampleDataSouce.cs" like this.

```
// Sample Data Item Class

public class SampleDataItem
{
    public SampleDataItem(String title, String subtitle, String
content)
    {
        this.Title = title;
        this.Subtitle = subtitle;
        this.Content = content;
    }
    public string Title { get; private set; }
    public string Subtitle { get; private set; }
    public string Content { get; private set; }
    public override string ToString()
    {
        return this.Title;
    }
}
```

```
// Sample Data Group Class

public class SampleDataGroup
{
    public SampleDataGroup(String title, String subtitle)
    {
        this.Title = title;
        this.Subtitle = subtitle;
        this.Items = new ObservableCollection<SampleDataItem>();
    }
    public string Title { get; private set; }
    public string Subtitle { get; private set; }
    public ObservableCollection<SampleDataItem> Items { get;
private set; }

    public override string ToString()
    {
        return this.Title;
    }
}

public sealed class SampleDataSource
{
    private static SampleDataSource _sampleDataSource = new
SampleDataSource();

    private ObservableCollection<SampleDataGroup> _groups = new
ObservableCollection<SampleDataGroup>();

    public ObservableCollection<SampleDataGroup> Groups
    {
        get { return this._groups; }
    }

    public static async Task<IEnumerable<SampleDataGroup>>
GetGroupsAsync()
    {
        await _sampleDataSource.GetSampleDataAsync();
        return _sampleDataSource.Groups;
    }
```

```
    public static async Task<SampleDataGroup> GetGroupAsync(string
uniqueId)
    {
        await _sampleDataSource.GetSampleDataAsync();
        // Simple linear search is acceptable for small data sets
        var matches = _sampleDataSource.Groups.Where((group) =>
group.Title.Equals(uniqueId));
        if (matches.Count() == 1) return matches.First();
        return null;
    }

    public static async Task<SampleDataItem> GetItemAsync(string
uniqueId)
    {
        await _sampleDataSource.GetSampleDataAsync();
        // Simple linear search is acceptable for small data sets
        var matches = _sampleDataSource.Groups.SelectMany(group =>
group.Items).Where((item) => item.Title.Equals(uniqueId));
if (matches.Count() == 1) return matches.First();
        return null;
    }

    private async Task GetSampleDataAsync()|
    {
        if (this._groups.Count != 0)
            return;

        Uri dataUri = new Uri("ms-
appx:///DataModel/SampleData.json");


        StorageFile file = await
StorageFile.GetFileFromApplicationUriAsync(dataUri);
        string jsonText = await FileIO.ReadTextAsync(file);
        JsonObject jsonObject = JsonObject.Parse(jsonText);
        JsonArray jsonArray = jsonObject["Groups"].GetArray();
foreach (JsonValue groupValue in jsonArray)
        {
            JsonObject groupObject = groupValue.GetObject();
            SampleDataGroup group = new
```

```
SampleDataGroup(groupObject["Title"].GetString(),
groupObject["Subtitle"].GetString());
            foreach (JsonValue itemValue in
groupObject["Items"].GetArray())
            {
                JsonObject itemObject = itemValue.GetObject();
group.Items.Add(new
SampleDataItem(itemObject["Title"].GetString(),
itemObject["Subtitle"].GetString(),
itemObject["Content"].GetString()));
            }
            this.Groups.Add(group);
        }
    }
}
```

Listing 2

Different Json Approach

Another approach of "Json" you can have is given below.

```
{"Groups":[
    {
        "Title": "Letters of John Keats",
        "Subtitle": "Selected Love Letters to Fanny Brawne",
"Items": [
            {
                "Title": "July 3, 1819",
                "Subtitle": "Shanklin, Isle of Wight, Thursday",
                "Content":
                [
                    "My dearest Lady - I am glad I had ... little
mad.",
                    ...
                    "Present my Compliments to your mother, ...
so."
                ]
```

```
            }
        ]
    }
]
}
```

Listing 3

Then, you have to change this line of code in “SampleDataSouce.cs”

```
foreach (JsonValue itemValue in groupObject["Items"].GetArray())
{
    JsonObject itemObject = itemValue.GetObject();
    group.Items.Add(new
SampleDataItem(itemObject["Title"].GetString(),
itemObject["Subtitle"].GetString(),
itemObject["Content"].Stringify().Replace("[", "").Replace("]",
"").Replace("\",", "\n").Replace("\"", "")));
}
```

Listing 4

I personally don’t like to do that, because you can’t use double quote and “\n” or “\r” in this case. Or you may find it helpful in some cases.

Working with “HubPage.xaml”

Now, we’ll modify the “HubPage.xaml” first. We don’t need the other sections of “HubPage.xaml” for our appliction.

```
<Page.Resources>
    <DataTemplate x:Key="HubSectionHeaderTemplate">
        <TextBlock Margin="0,0,0,-9.5" Text="{Binding}"/>
    </DataTemplate>
</Page.Resources>

<Grid x:Name="LayoutRoot">
    <Hub x:Name="Hub" x:Uid="Hub" Header="application name"
ackground="{ThemeResource HubBackgroundImageBrush}">
```

```
        <HubSection x:Uid="HubSection1" Header="{Binding
ubtitle}" DataContext="{Binding Groups[0]}"
eaderTemplate="{ThemeResource HubSectionHeaderTemplate}"
idth="400">
            <DataTemplate>
                <ListView
                    ItemsSource="{Binding Items}"
                    IsItemClickEnabled="True"
                    ItemClick="ItemView_ItemClick"

ontinuumNavigationTransitionInfo.ExitElementContainer="True">
                    <ListView.ItemTemplate>
                        <DataTemplate>
                            <StackPanel Grid.Column="1"
Margin="14.5,0,0,0">
                                <TextBlock Text="{Binding Title}"
Style="{ThemeResource ListViewItemTextBlockStyle}"/>
<TextBlock Padding="10" Text="{Binding Subtitle}"
Style="{ThemeResource ListViewItemSubheaderTextBlockStyle}"/>
<Line  x:Name="line" X1="0" Y1="5" X2="365" Y2="5"  Stroke="Brown"
StrokeThickness="2"></Line>
                            </StackPanel>
                        </DataTemplate>
                    </ListView.ItemTemplate>
                </ListView>
            </DataTemplate>
        </HubSection>
    </Hub>
</Grid>
```

Listing 5

Let me explain, what I've done here. In line number nine, you can see that we've bound header element with "Subtitle". It's actually "Groups'" subtitle because our "Datacontext" is "Groups[0]" index, the first group content. In line number we've bound "ItemSource" to "Items", so it'll fetch all "Items" data. And in line number fourteen we've a click event name "ItemView_ItemClick". When you click an item, it'll bring the "ItemPage.xaml" to

view the details of Items. In line number nineteen & twenty we've bound the value "Title" & "Subtitle". In line number twenty one we've used a line to separate the items title and subtitle with different items.

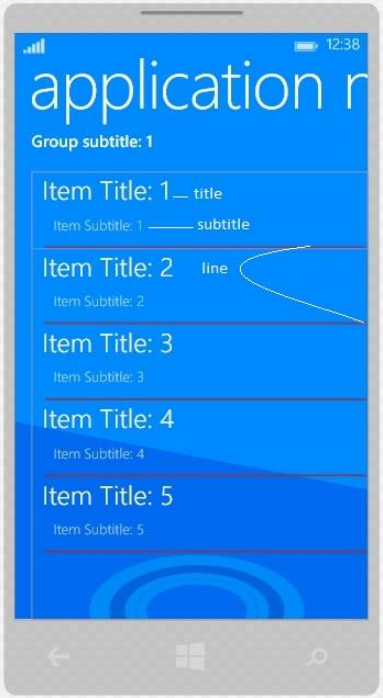


Figure 3

Now if we look at the "HubPage.xaml.cs", we just modify the "ItemView_ItemClick" event like this.

```
private void ItemView_ItemClick(object sender, ItemClickEventArgs
e)
{
    // Navigate to the appropriate destination page, configuring
the new page
    // by passing required information as a navigation parameter
    var itemTitle = ((SampleDataItem)e.ClickedItem).Title;
    if (!Frame.Navigate(typeof(ItemPage), itemTitle))
    {
        throw new
Exception(this.resourceLoader.GetString("NavigationFailedException
```

```
Message"));
    }
}
```

Listing 6

Here in line number five, we declare a variable “itemTitle” and set it to the title of “Items”, and pass it through the “Frame.Navigation()” as a parameter in line number six. We don’t need the “GroupSection_ItemClick” event because we aren’t using “SectionPage.xaml” in our application. So we’re working only two different pages, first is “HubPage.xaml” and second is “ItemPage.xaml”. So, you can understand that you got some real power to to present a lots of data simply in two pages. So DataBinding and Json give us lots of flexibility to make our apps much faster and efficient.

Working with “ItemPage.xaml”

Now, were going to modify our “ItemPage.xaml”, just put these three lines of code.

```
<ScrollViewer>
    <StackPanel Grid.Column="1" Margin="14.5,0,0,0">
        <TextBlock Text="{Binding Title}" Style="{ThemeResource
istViewItemTextBlockStyle}"/>
        <TextBlock Padding="10,0,0,20" Text="{Binding Subtitle}"
Style="{ThemeResource ListViewItemSubheaderTextBlockStyle}"/>

        <TextBlock Padding="0,0,0,10" TextWrapping="Wrap"
Text="{Binding Content}" FontSize="20" Style="{ThemeResource
ListViewItemSubheaderTextBlockStyle}"/>
    </StackPanel>
</ScrollViewer>
```

Listing 7

Here, the we’ve three TextBlocks, and first one is showing the items “Title”, second one is “Subtitle” and third one is “Content” which contains the letter body. We surround the TextBlocks with a StackPanel and ScrollViewer so that, you can see long text with scrolling option. One important thing is in line number five we’ve used TextWrapping to “Wrap” so that, the texts fit in the window size.

Working with “Sectionpage.xaml”

One more extra thing you can do, is to modify your “SectionPage.xaml”. Though I’m not using this page, just showing if you want to use. Modify the “SectionPage.xaml” like this, here is only “ListView”.

```
<ListView    x:Name="itemListView"
AutomationProperties.AutomationId="ItemListView"
AutomationProperties.Name="Items In Group"
    TabIndex="1"
    Grid.Row="1"
    ItemsSource="{Binding Items}"
    IsItemClickEnabled="True"
    ItemClick="ItemView_ItemClick"
    SelectionMode="None"
    IsSwipeEnabled="false"
    Margin="19,0,0,0">
    <ListView.ItemTemplate>
        <DataTemplate>
            <Grid>
                <Grid.ColumnDefinitions>
                    <ColumnDefinition Width="Auto"/>
                    <ColumnDefinition Width="*"/>
                </Grid.ColumnDefinitions>
                <StackPanel Grid.Column="1"
erticalAlignment="Top" Margin="10,0,0,0">
<TextBlock Text="{Binding Title}" Style="{ThemeResource
ListViewItemTextBlockStyle}"/>
                    <TextBlock Text="{Binding Subtitle}"
Style="{ThemeResource ListViewItemSubheaderTextBlockStyle}"/>
</StackPanel>
            </Grid>
        </DataTemplate>

    </ListView.ItemTemplate>
</ListView>
```

Listing 8

We just used the “Title” & “Subtitle” section. Also the “ItemView_ItemClick” event in “SectionPage.xaml.cs” like this.

```
private void ItemView_ItemClick(object sender, ItemClickEventArgs
e)
{
    var itemTitle = ((SampleDataItem)e.ClickedItem).Title;
    if (!Frame.Navigate(typeof(ItemPage), itemTitle))
    {
        var resourceLoader =
ResourceLoader.GetForCurrentView("Resources");
        throw new
Exception(resourceLoader.GetString("NavigationFailedExceptionMessa
ge"));
    }
}
```

Listing 9

We've declared a variable "itemTitle" and pass it through navigation. That's it.

Working with Phone Resources

Now change the "Header.Text" & "Hub.Header" in "Strings>>en-US>>Resources.resw" like this.

	Name	Value
▶	Header.Text	Letters of John Keats
	Hub.Header	Letters of John Keats
	HubSection1	SECTION 1
	HubSection2	SECTION 2
	HubSection3	SECTION 3
	HubSection4	SECTION 4
	HubSection5	SECTION 5
	NavigationFailedExceptionMessage	Navigation failed.
*		

Figure 4

Working with "App.xaml"

Also, we want to change the background of our app, so that it looks more beautiful and readable. Go to "App.xaml" and change the background like below.

```
<Application.Resources>
    <ResourceDictionary>
```

```
        <ResourceDictionary.ThemeDictionaries>
            <ResourceDictionary x:Key="Default">
                <ImageBrush x:Key="HubBackgroundImageBrush"
ImageSource="Assets/HubBackground.theme-light.png" Opacity="0.3"/>
            </ResourceDictionary>
            <ResourceDictionary x:Key="HighContrast">
                <ImageBrush x:Key="HubBackgroundImageBrush"
ImageSource="{x:Null}"/>
            </ResourceDictionary>
        </ResourceDictionary.ThemeDictionaries>
</ResourceDictionary>
</Application.Resources>
```

Listing 10

Here, we changed the background of the app, just by changing the picture. You'll find it in the "Assets" folder or you can upload your own choose picture. Also we changed the opacity to "0.3" so the background becomes darker than as it is.

Now your design should look like this.

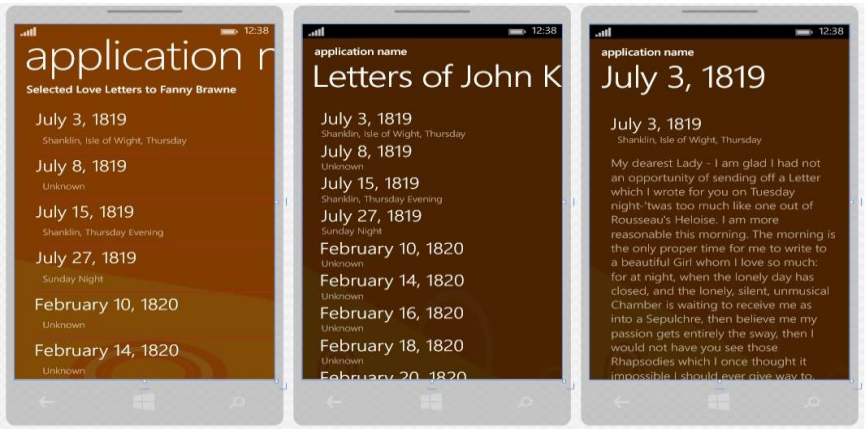


Figure 5

Running the Application

Now we're all set. If we, run the application, it looks just awesome like this.

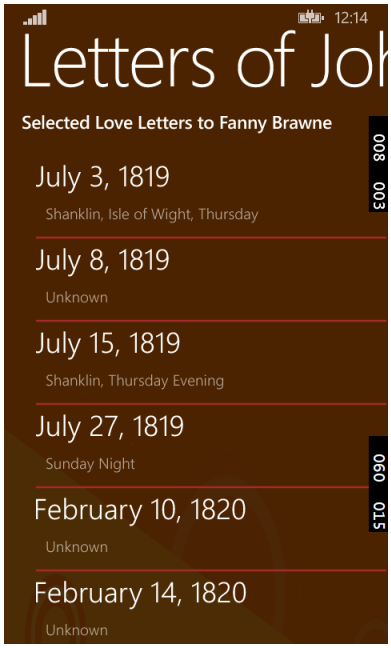


Figure 6.1

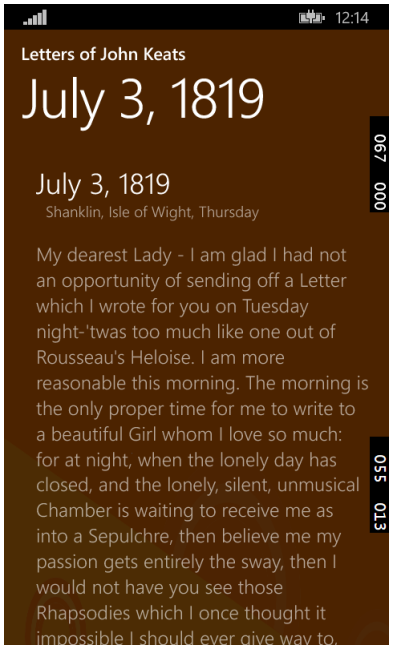


Figure 6.2

Summary

So, we just made a rich “Json Data Hub App” doing few modification of “Hub App” template. I personally make an app about my favorite poet John Keats’ letters to his girlfriend Fanny Brawne and you can make your own data bound app like this.

Map

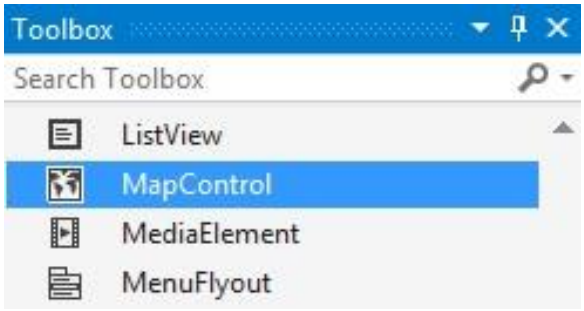
Windows Phone 8.1 – Map Control

Introduction

Hopefully you're doing great with Windows Phone 8.1. I really love to share new features of Windows Phone 8.1. In this chapter I'll talk about Windows Phone Map Control and obviously it's Bing Map. In new update of Windows Phone, there're significant APIs changed from previous Windows Phone 8.0. A lots of great features added like Geofencing. So let's get crack in a whole new Windows Phone 8.1 Map Control.

Creating a New Project and Add a Map Control

Take a new project and give it a name simply "Map" or whatever you want. Now, we'll add our map control from the "Toolbox". Drag the "MapContol" tool from the "Toolbox" and place it in the main Grid.



Making Grids

Now, we'll modify our main Grid to re-size the "MapControl" and to show some other stuffs. First of all, we'll make some rows to put other controls.

```
<Grid HorizontalAlignment="Stretch"
                Margin="8,8,8,8" VerticalAlignment="Stretch">
    <Grid.RowDefinitions>
        <RowDefinition Height="10"/>
        <RowDefinition Height="50"/>
        <RowDefinition Height="*"/>
```

```
        <RowDefinition Height="40"/>
    </Grid.RowDefinitions>
    ...
</Grid>
```

Listing 1

Here, in line number four, five, six and seven we've declared four "RowDefinitions". First one is 10px in height, second 50px, third one is "*" which will cover the rest of the grid space and last one is 40px.

Adding Controls

Here are the controls we've used in our "MainPage.xaml".

```
<Canvas>
    <ProgressBar x:Name="progressBar" Grid.Row="0"
                 IsIndeterminate="True"
                 Maximum="100" Value="30"
                 Height="10"
                 Width="400"/>
</Canvas>

<TextBlock TextWrapping="NoWrap" Grid.Row="1"
           Text="Map control"
           FontSize="36"
           Margin="8,0,0,16" />
<Maps:MapControl x:Name="MyMap" Grid.Row="2"
                   HorizontalAlignment="Left"
```

```
                    VerticalAlignment="Top"
                    Height="500"
                    Width="385"
                MapTapped="MyMap_MapTapped" />
<Slider x:Name="mySlider" Grid.Row="3"
        Maximum="20"
        Minimum="10"
        ValueChanged="Slider_ValueChanged" />
```

Listing 2

We've used a "ProgressBar" control, to indicate while Map is loading, a "TextBlock" to show the title, a "MapControl" to show the Bing Map and a "Slider" to zoom in and zoom out.

Adding AppBar

We've also used a "BottomAppBar" to locate your current position.

```
<Page.BottomAppBar>
    <CommandBar ClosedDisplayMode="Minimal" Opacity="0.5">
        <AppBarButton Label="locate me" Icon="Target"
Click="LocateMe_Click" />
    </CommandBar>
</Page.BottomAppBar>
```

Listing 3

I'm not going through the details of adding controls and how they work, if you don't know please feel free to take a look my previous articles.

So, finally our design will look like this.

Figure 2

Code Behind

Now, time to code behind in C#. Let's open "MainPage.xaml.cs" and find "OnNavigatedTo" method. Modify it like below.

```
public sealed partial class MainPage : Page
{
    Geolocator geolocator;
    protected async override void
OnNavigatedTo(NavigationEventArgs e)
    {
        // Map Token for testing purpose,
        // otherwise you'll get an alart message in Map Control
        MyMap.MapServiceToken = "abcdef-abcdefghijklmno";
```

```
        geolocator = new Geolocator();
        geolocator.DesiredAccuracyInMeters = 50;

        try
        {
            // Getting Current Location
            Geoposition geoposition = await
geolocator.GetGeopositionAsync(
                maximumAge: TimeSpan.FromMinutes(5),
                timeout: TimeSpan.FromSeconds(10));

            MapIcon mapIcon = new MapIcon();
            // Locate your MapIcon
            mapIcon.Image =
RandomAccessStreamReference.CreateFromUri(new Uri("ms-
appx:///Assets/my-position.png"));
            // Show above the MapIcon
            mapIcon.Title = "Current Location";
            // Setting up MapIcon location
            mapIcon.Location = new Geopoint(new BasicGeoposition()
            {
                //Latitude = geoposition.Coordinate.Latitude,
[Don't use]
                //Longitude = geoposition.Coordinate.Longitude
[Don't use]
```

```
                Latitude =
geoposition.Coordinate.Point.Position.Latitude,
                Longitude =
geoposition.Coordinate.Point.Position.Longitude
            });
            // Positon of the MapIcon
            mapIcon.NormalizedAnchorPoint = new Point(0.5, 0.5);
            MyMap.MapElements.Add(mapIcon);
            // Showing in the Map
            await MyMap.TrySetViewAsync(mapIcon.Location, 18D, 0,
0, MapAnimationKind.Bow);


            // Disable the ProgreesBar
            progressBar.Visibility =
Windows.UI.Xaml.Visibility.Collapsed;
            // Set the Zoom Level of the Slider Control
            mySlider.Value = MyMap.ZoomLevel;
        }
        catch (UnauthorizedAccessException)
        {
            MessageBox("Location service is turned off!");
        }
        base.OnNavigatedTo(e);
    }
...
```

```
}
```

Listing 4

Our main work is done, now we've to write the other methods to work it perfectly.

```
// Slider Control
private void Slider_ValueChanged(object sender,
RangeBaseValueChangedEventArgs e)
{
    if (MyMap != null)
        MyMap.ZoomLevel = e.NewValue;
}

// Locate Me Bottom App Bar
private async void LocateMe_Click(object sender, RoutedEventArgs
e)
{
    progressBar.Visibility = Windows.UI.Xaml.Visibility.Visible;
    geolocator = new Geolocator();
    geolocator.DesiredAccuracyInMeters = 50;

    try
    {
        Geoposition geoposition = await
geolocator.GetGeopositionAsync(
```

```
            maximumAge: TimeSpan.FromMinutes(5),
            timeout: TimeSpan.FromSeconds(10));
        await MyMap.TrySetViewAsync(geoposition.Coordinate.Point,
18D);
        mySlider.Value = MyMap.ZoomLevel;
        progressBar.Visibility =
Windows.UI.Xaml.Visibility.Collapsed;
    }
    catch (UnauthorizedAccessException)
    {
        MessageBox("Location service is turned off!");
    }
}

// Custom Message Dialog Box
private async void MessageBox(string message)
{
    var dialog = new MessageDialog(message.ToString());
    await Dispatcher.RunAsync(CoreDispatcherPriority.Normal, async
() => await dialog.ShowAsync());
}
```

Listing 5

Adding Tap Event

One more thing, I'd like to add is Map Tapped functionality, we'll add another method which will give us a cool feature when we tap somewhere and in the Map Icon. It'll show the location details in the Message Dialog Box.

To add this method, go to "MainPage.xaml", select "MapControl" in the main grid. If you don't see "Properties" tab, then hit F4 and you'll find it on the left side of the Visual Studio.

Now double click on the "MapTapped" section and it'll automatically generate the method stub for you.

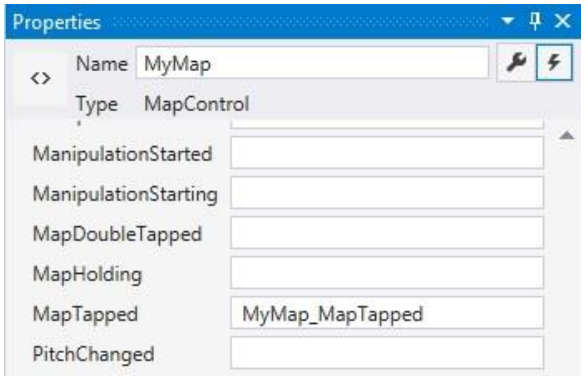


Figure 3

Now, complete the "MyMap_MapTapped" method in the "MainPage.xaml.cs"

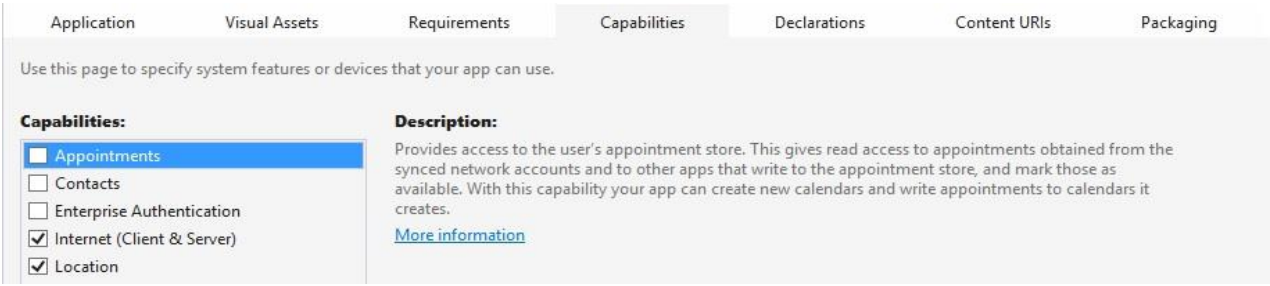
```
private async void MyMap_MapTapped(MapControl sender,
MapInputEventArgs args)

{

    Geopoint pointToReverseGeocode = new
Geopoint(args.Location.Position);


    // Reverse geocode the specified geographic location.

    MapLocationFinderResult result =
```

```
        await
MapLocationFinder.FindLocationsAtAsync(pointToReverseGeocode);

    var resultText = new StringBuilder();

    if (result.Status == MapLocationFinderStatus.Success)
    {
        resultText.AppendLine(result.Locations[0].Address.District
+ ", " + result.Locations[0].Address.Town + ", " +
result.Locations[0].Address.Country);
    }

    MessageBox(resultText.ToString());
}
```

Listing 6

Adding Location Capability

Now, our work is done, but if you run the application in your device or emulator, you'll get an error definitely. Because we've given permission to track our current position to our application. To do this, go to "Package.appxmanifest" and find "Capabilities" section and tick the "Location" service and save it.



Running the Application

Now if you run the application it'll look exactly like this.

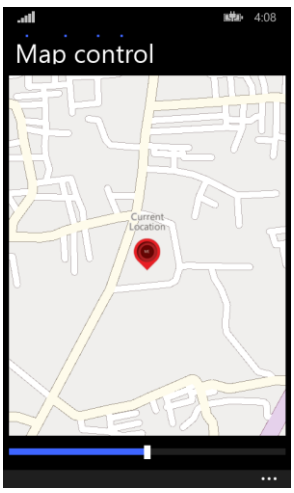


Figure 5.1

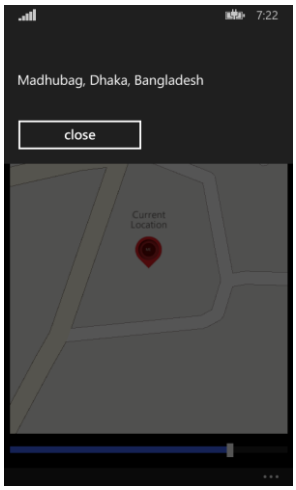


Figure 5.2

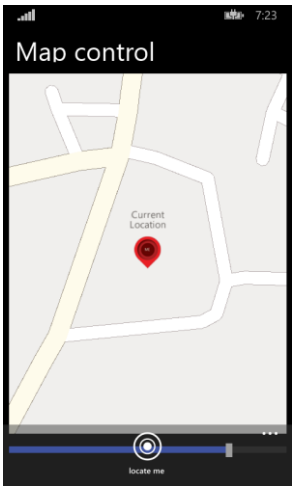


Figure 5.3

If you tap on the "MapIcon" it'll show the location details on the Message Dialog Box.

Using Polygon as Pushpin

Another thing, if don't want to use external image as a "MapIcon", you can use custom "Pushpin" like "Polygon" control. Then you've to modify the "OnNavigatedTo" method like this,

```
protected async override void OnNavigatedTo(NavigationEventArgs e)
{
    // Map Token for testing purpose,
    // otherwise you'll get an alart message in Map Control
MyMap.MapServiceToken = "abcdef-abcdefghijklmno";
```

```
    geolocator = new Geolocator();
geolocator.DesiredAccuracyInMeters = 50;
    try
    {
        // Getting Current Location
        Geoposition geoposition = await
geolocator.GetGeopositionAsync(
            maximumAge: TimeSpan.FromMinutes(5),
            timeout: TimeSpan.FromSeconds(10));

        // Create a New Pushpin
        var pushpin = CreatePushPin();
MyMap.Children.Add(pushpin);
        // Setting up Pushpin location
        var location = new Geopoint(new BasicGeoposition()
       {
            Latitude = geoposition.Coordinate.Latitude,
Longitude = geoposition.Coordinate.Longitude
        });
        MapControl.SetLocation(pushpin, location);
        // Position of the Pushpin
MapControl.SetNormalizedAnchorPoint(pushpin, new Point(0.0, 1.0));
// Showing in the Map
        await MyMap.TrySetViewAsync(location, 18D, 0, 0,
apAnimationKind.Bow);

        // Disable the ProgressBar
        progressBar.Visibility =
Windows.UI.Xaml.Visibility.Collapsed;
        // Set the Zoom Level of the Slider Control
mySlider.Value = MyMap.ZoomLevel;
    }
    catch (UnauthorizedAccessException)
    {
        MessageBox("Location service is turned off!");
    }
    base.OnNavigatedTo(e);
}
```

Listing 7

and “CreatePushPin” method is given below.

```
private DependencyObject CreatePushPin()
{
    // Creating a Polygon Marker
    Polygon polygon = new Polygon();
    polygon.Points.Add(new Point(0, 0));
    polygon.Points.Add(new Point(0, 50));
    polygon.Points.Add(new Point(25, 0));
    polygon.Fill = new SolidColorBrush(Colors.Red);

    // Return the Polygon Marker
    return polygon;
}
```

Listing 8

Running the Application

Now, if you run the application, the marker will look like this.

Figure 6

Map Overlaying

It's really cool and awesome using custom Pushpin in Windows Phone 8.1. One more thing I'd like to add is overlaying tiled images on a map. If you want to overlay third-party or custom tiled images on the map, and make it customized then, you've to put simply these line of codes in the "OnNavigatedTo" method at the top.

```
protected async override void OnNavigatedTo(NavigationEventArgs e)
{
    var httpsource = new
HttpMapTileDataSource("http://a.tile.openstreetmap.org/{zoomlevel}
/{x}/{y}.png");
    var ts = new MapTileSource(httpsource);
MyMap.TileSources.Add(ts);...
    base.OnNavigatedTo(e);
}
```

Listing 9

And if your run the application, it will give you much graphical view than before with some details.

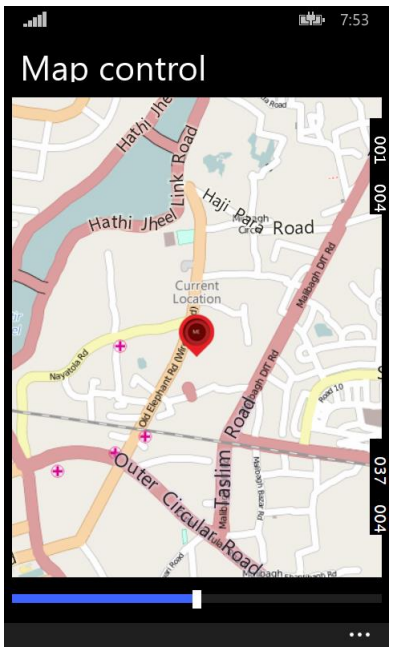


Figure 7

Summary

And that's it! Hope you've understand, how to use "MapControl" in Windows Phone 8.1. Have fun with Map Control and make some cool applications with it. Read more about Maps and directions (XAML) at – **http://bit.ly/X7S7ei.**

PhoneGap Part 1

Windows Phone 8 app development using PhoneGap (Cordova) Part: 1

Introduction

PhoneGap is an open source framework for quickly building cross-platform mobile apps using HTML5, Javascript and CSS

PhoneGap is an application container technology that allows you to create natively-installed applications for mobile devices using HTML, CSS, and JavaScript. The core engine for PhoneGap is also 100% open source, under the Apache Cordova project.

The UI layer of a PhoneGap application is a web browser view that takes up 100% of the device width and 100% of the device height.

PhoneGap provides an application programming interface (API) that enables you to access native operating system functionality using JavaScript. You build your application logic using JavaScript, and the PhoneGap API handles communication with the native operating system.

PhoneGap currently supports

1. iOS
2. Android
3. Wndows Phone 7
4. Windows Phone 8
5. BlackBerry
6. WebOS
7. Symbian
8. Bada

Did you see that PhoneGap supports 7 different platforms and interestingly Windows Phone 8 is the 7th (newest) one to be included?

As per the PhoneGap website, the following features are supported in PhoneGap for Windows Phone 8.

- Accelerometer
- Camera
- Compass
- Contacts
- File
- Geolocation
- Media
- Network
- Notification (Alert)
- Notification (Sound)
- Notification (Vibration)
- Storage

Setting up PhoneGap

If you are Windows Phone Developer and wish to develop Apps using HTML5, CSS and JavaScript, then can make use of the PhoneGap and develop Windows Phone Apps

Data Source: http://phonegap.com/2012/05/02/phonegap-explained-visually/

At first you need to download PhoneGap project from this link. I have used PhoneGap 2.8.0 in this tutorial,

http://phonegap.com/install/

Now Unzip the downloaded PhoneGap package, then open lib folder and then open windows-phone-8 folder. Now, you will see a zip file named CordovaWP8_2_8_0.

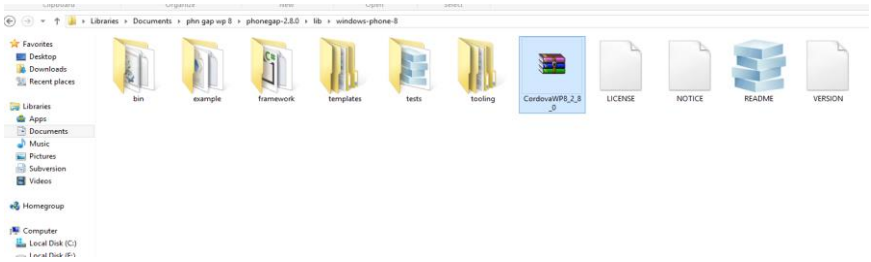


Figure 1

Copy this file and then go to, My Documents \ Visual Studio 2013 \ Templates \ ProjectTemplates folder

And paste CordovaWP8_2_8_0 here in this folder.

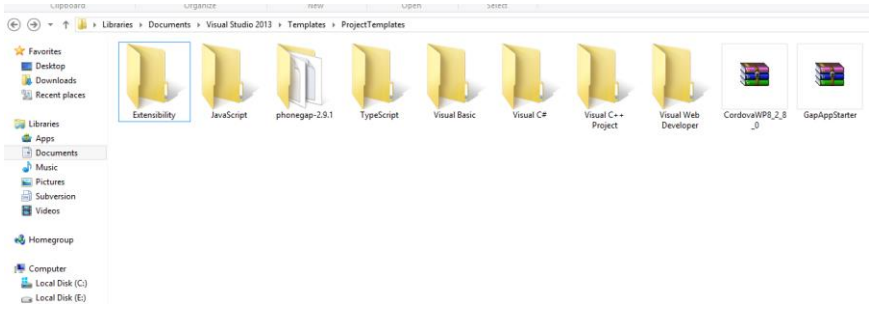


Figure 2

Creating a Project

Now, open your visual studio ide and click on New Project.

In the New Project panel, you will see, CordoWP8_2_8_0 template and then create a project with your desired name.

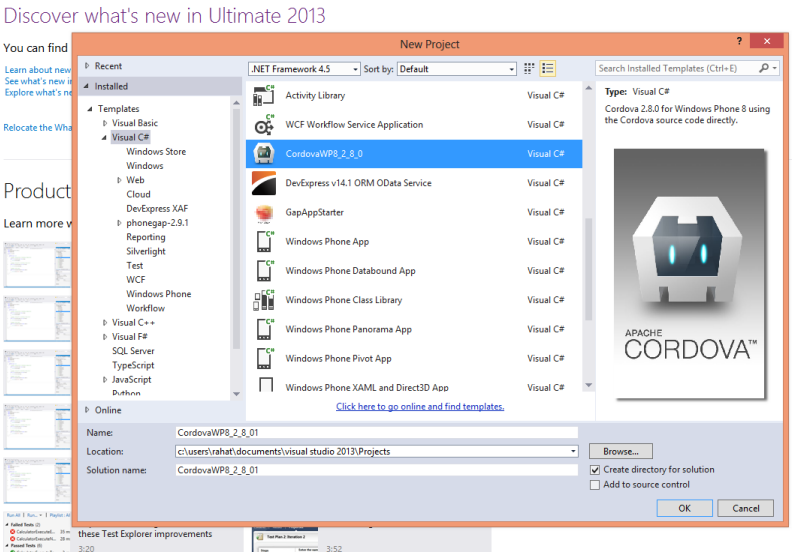
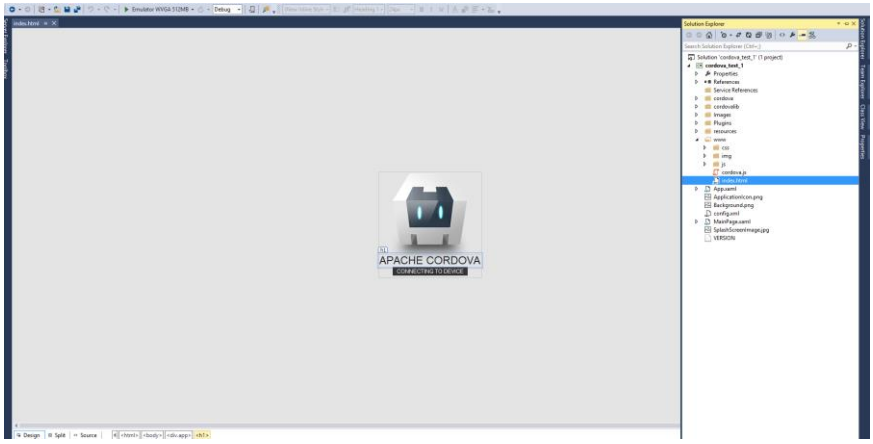


Figure 3

Now In the Solution Explorer, you will see a WWW folder. Click on this folder and then you will see, CSS folder, img folder, JS folder and index.html page. You will keep your CSS, JS pages and images in these CSS, JS, img folders.

Now click on the index.html page and then you will see a design like this.



Now if you can directly run this cross platform app on your windows phone 8 devices. If you deploy it on real device then you will see a screen like this, it means, your project is now ready.

Cheers!!!

Figure 5

Now select index.html and right click on the file then select view code.

This is the code of the index.html file and this is what we see when we run this project on emulator or real device.

Then I did some minor modification on the code. I have deleted the image and texts and added a h1 tag and wrote, Hello Windows Phone Developers. Now see what happen,

```
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html;
charset=UTF-8" />
        <meta name="format-detection" content="telephone=no" />
<meta name="viewport" content="user-scalable=no, initial-scale=1,
maximum-scale=1, minimum-scale=1, width=device-width,
height=device-height, target-densitydpi=device-dpi" />
<title>Hello World</title>
   </head>
    <body>
        <h1>Hello Windows Phone Developers</h1>
        <script type="text/javascript" src="cordova.js"></script>
<script type="text/javascript" src="js/index.js"></script>
<script type="text/javascript">
            app.initialize();
        </script>
    </body>
</html>
```

Listing 1

Figure 6

Now, we can see the Hello Windows Phone Developers text in our project main screen.

JQuery Mobile Theme

JQuery Mobile Theme for Windows Phone 8

Now we will add JQuery Mobile Theme in our windows phone 8 project.

We can add JQuery mobile theme in two ways,

One, we can install JQMThemeForWindowsPhone8 Package using Package Manager Console (PMC)

Two, we can directly add necessary references in our html file.

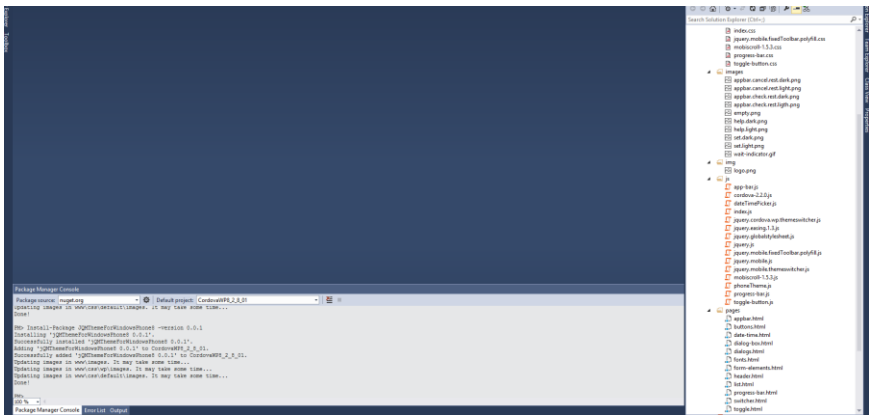
To use Package Manager Console, at first we need to click Tools then Library Package Manager and then Package Manager Console.

Package Manager Console will appear at the bottom of visual studio.

Then we will write,

Install-Package JQMThemeForWindowsPhone8 -version 0.0.1

In the Package Manager Console and press Enter button.



Then PCM will install JQM Theme for Windows Phone 8 Successfully and we will see lots of javascript files, css files and pages has been added in our project (look at solution explorer at right).

Now if we rename our index.html file to any other name and rename themeStartPage.html file into index.html file and run this project then we will see stunning look of JQuery Mobile Theme in our windows phone 8 project. Here, you will see different Jquery mobile controls, background and transitions. I have selected Dark theme and below you can see some screen shots of Dark Theme.

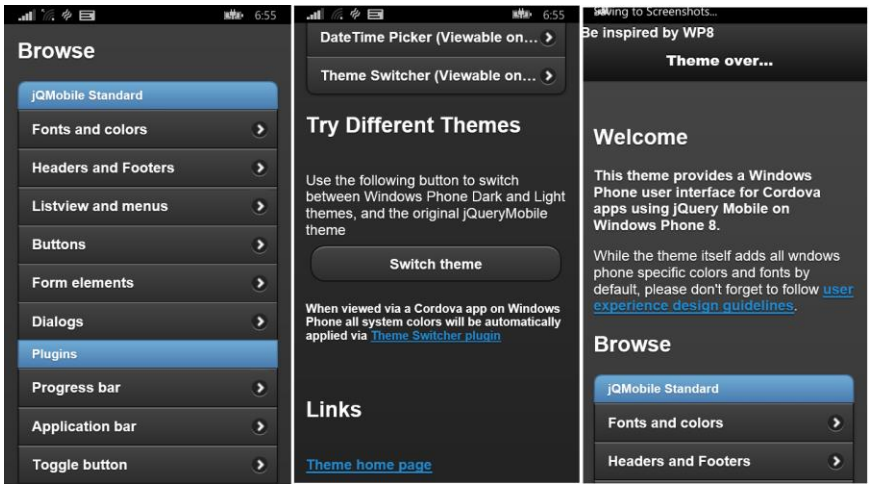


Figure 8

Way, two, directly add references of JQuery Mobile theme in your index.html file.

```
<link rel="stylesheet"
href="http://code.jquery.com/mobile/1.4.4/jquery.mobile-
```

```
1.4.4.min.css">
<script src="http://code.jquery.com/jquery-
1.11.1.min.js"></script>
<script src="http://code.jquery.com/mobile/1.4.4/jquery.mobile-
1.4.4.min.js"></script>
```

Listing 2

Using a ListView Control

Now, I have added a list view control code in my index.html file and you can see how it looks like now in below images. Here, I have used JQuery Mobile light theme.

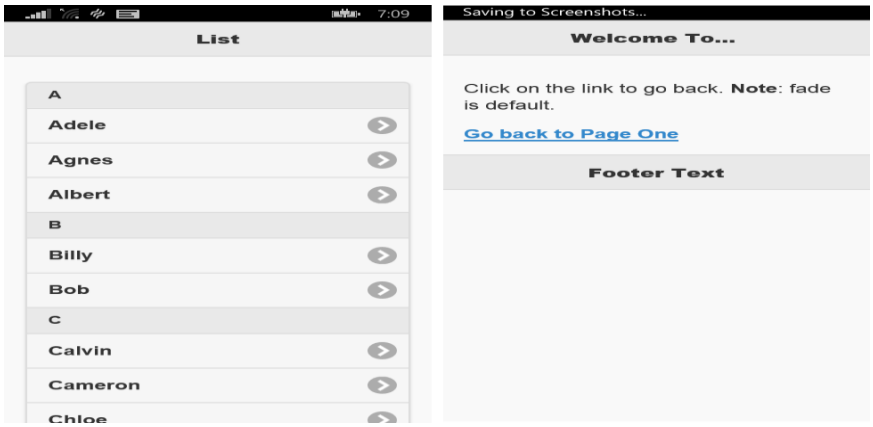


Figure 9

Full Code of Index.html file is given below,

```
<!DOCTYPE html>
<html>
    <head>
        <meta http-equiv="Content-Type" content="text/html;
charset=UTF-8" />
        <meta name="format-detection" content="telephone=no" />
        <meta name="viewport" content="user-scalable=no, initial-
scale=1, maximum-scale=1, minimum-scale=1, width=device-width,
height=device-height, target-densitydpi=device-dpi" />
<title>Functions</title>

        <link rel="stylesheet"
href="http://code.jquery.com/mobile/1.4.4/jquery.mobile-
1.4.4.min.css">
```

```
        <script src="http://code.jquery.com/jquery-
1.11.1.min.js"></script>        <script
src="http://code.jquery.com/mobile/1.4.4/jquery.mobile-
1.4.4.min.js"></script>
        <script type="text/javascript" charset="utf-8">
function checkLanguage() {
                navigator.globalization.getPreferredLanguage(
                  function (language) { alert('language: ' +
language.value + '\n'); },
                  function () { alert('Error getting
anguage\n'); }
                );          }

        </script>
    </head>
    <body>
        <div data-role="page" id="pageone">
            <div data-role="header">
                <h1>List</h1>
            </div>
            <div data-role="main" class="ui-content">
<ul data-role="listview" data-autodividers="true" data-
inset="true">
                   <li><a href="#pagetwo" data-
transition="flip">Adele</a></li>
                    <li><a href="#">Agnes</a></li>
                    <li><a href="#">Albert</a></li>
<li><a href="#">Billy</a></li>
                    <li><a href="#">Bob</a></li>
                    <li><a href="#">Calvin</a></li>
                    <li><a href="#">Cameron</a></li>
                    <li><a href="#">Chloe</a></li>
                    <li><a href="#">Christina</a></li>
                    <li><a href="#">Diana</a></li>
                    <li><a href="#">Gabriel</a></li>
                    <li><a href="#">Glen</a></li>

                    <li><a href="#">Ralph</a></li>
<li><a href="#">Valarie</a></li>
              </ul>
```

```
                <p>The data-autodividers="true" attribute creates
dividers where it is appropriate with uppercased first letters of
the item's text.</p>
            </div>
            <div data-role="footer">
                <h1>Footer Text</h1>
            </div>
        </div>
        <div data-role="page" id="pagetwo">
            <div data-role="header">
                <h1>Welcome To My Homepage</h1>
            </div>
            <div data-role="main" class="ui-content">
<p>Click on the link to go back. <b>Note</b>: fade is default.</p>
<a href="#pageone">Go back to Page One</a>
            </div>
            <div data-role="footer">
                <h1>Footer Text</h1>
            </div>
        </div>
        <script type="text/javascript" src="cordova.js"></script>
<script type="text/javascript" src="js/index.js"></script>
<script type="text/javascript">
            app.initialize();
        </script>
    </body>
</html>
```

Listing 3

Summary

Hope you've understand how to getting started with PhoneGap and creating hybrid apps. Hope to see you soon. Happy coding.

Source of this JQuery Mobile List View code:
http://www.w3schools.com/jquerymobile/jquerymobile_list_views.asp

PhoneGap Part 2

Windows Phone 8 app development using PhoneGap (Cordova) Part: 2

Introduction

This is the second chapter of windows phone 8 app development using PhoneGap (Cordova).

In last chapter we talked about the PhoneGap (Cordova) installation process in visual studio 2013 and how we can create our first "Hello world" windows phone project using visual studio and PhoneGap (Cordova).

At the end we saw two different ways of integrating JQuery mobile with our visual studio project to make our project more beautiful and professional.

Topics will be covered

Here in this article, we will see, different APIs of PhoneGap and codes to use different sensor or capabilities of windows phone device.

In this article, we will cover topics like,

1. Popup Window
2. Vibrate
3. Connection Type
4. Device Info
5. Camera Capture
6. Back Button
7. Accelerometer
8. Compass
9. Geo-location
10. Battery Status
11. Collapsible Control
12. Panel Control

Interface of the Application

Below images are the screen shots of long list selector through which we will select different functionalities and action.

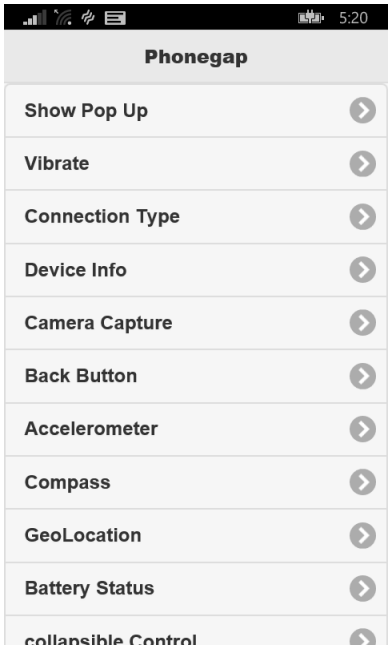


Figure 1.1

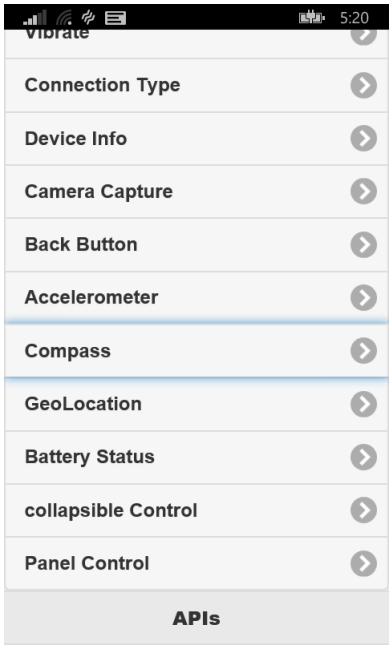


Figure 1.2

Here, in the above image we can see a long list selector. Through this long list selector, we will see different actions of different available functionalities of PhoneGap in windows phone.

Code Behind

The code of this long list selector is given below. Each section is described separately and briefly.

JQuery Mobile Reference

As we are using JQuery Mobile UI, we added these three lines of reference code first. This is the reference code of JQuery Mobile Theme.

```
<link rel="stylesheet"
href="http://code.jquery.com/mobile/1.4.4/jquery.mobile-
1.4.4.min.css">
<script src="http://code.jquery.com/jquery-
1.11.1.min.js"></script>
```

```
<script src="http://code.jquery.com/mobile/1.4.4/jquery.mobile-
1.4.4.min.js"></script>
```

Listing 1

Using Long List Selector

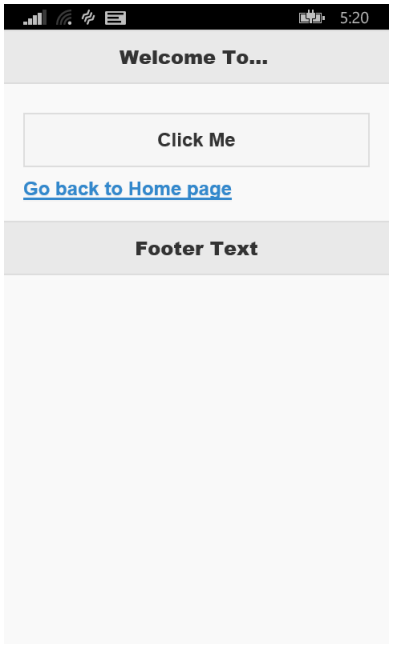
Html code of this long list selector is given below,

```
<div data-role="page" id="pageone">
 <div data-role="header">
        <h1>Phonegap</h1>
    </div>
    <ul data-role="listview" data-inset="true">
        <li><a href="#pagetwo">Show Pop Up</a></li>
        <li><a href="#pagethree">Vibrate</a></li>
        <li><a href="#pagefour">Connection Type</a></li>
<li><a href="#pagefive">Device Info</a></li>
        <li><a href="#pagesix">Camera Capture</a></li>
<li><a href="#pageseven">Back Button</a></li>
        <li><a href="#pageeight">Accelerometer</a></li>
<li><a href="#pagenine">Compass</a></li>
        <li><a href="#pageten">GeoLocation</a></li>
        <li><a href="#pagetwelve">Battery Status</a></li>
<li><a href="#pageeleven">collapsible Control</a></li>
<li><a href="#pagethirteen">Panel Control</a></li>

    </ul>
    <div data-role="footer">
        <h1>APIs</h1>
    </div>
    </div>...
</div>
```

Listing 2

Popup Control

Now if we select the first option in the long list selector which is Pop Up then we will see a screen like the below page. Then if we click on the Click Me button then a Pop Up menu will appear with the text of Button Clicked.



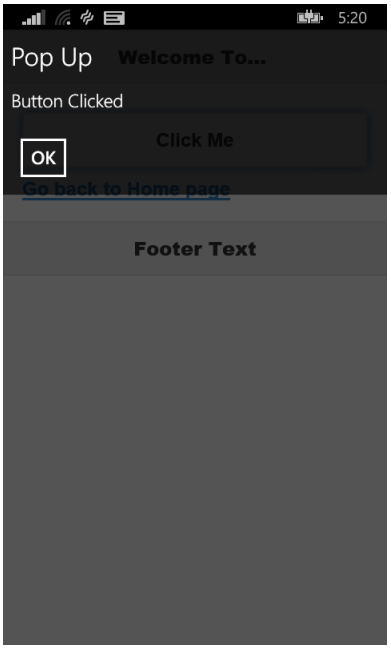


Figure 2.1 Figure 2.2

Html and JavaScript code of Pop Up menu.

```
<div data-role="page" id="pagetwo">
<div data-role="header">
<h1>Welcome To My Homepage</h1>
</div>
<div data-role="main" class="ui-content">
<a href="#" onclick="btn_click()" class="ui-btn">Click Me</a>
<a href="#pageone">Go back to Home page</a>
</div>
<div data-role="footer">
<h1>Footer Text</h1>
</div>
</div>
function btn_click()
{
    navigator.notification.alert("Button Clicked",null,"Pop
Up","");
}
```

Listing 3

Using Vibrate

Now we will look at the mobile device Vibrate API. Below is the screen shot of the "vibrate me" page.

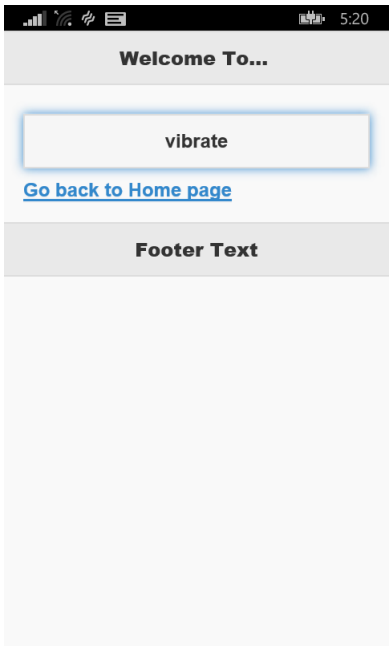


Figure 3

We can vibrate our mobile device by calling the below JavaScript vibrate function. Single line of JavaScript code is initializing the vibration in the device and here the duration of vibration is 1 second (1000 mili second)

```
function vibrate() {
 navigator.notification.vibrate(1000)
}
```

Listing 4

Connection Type

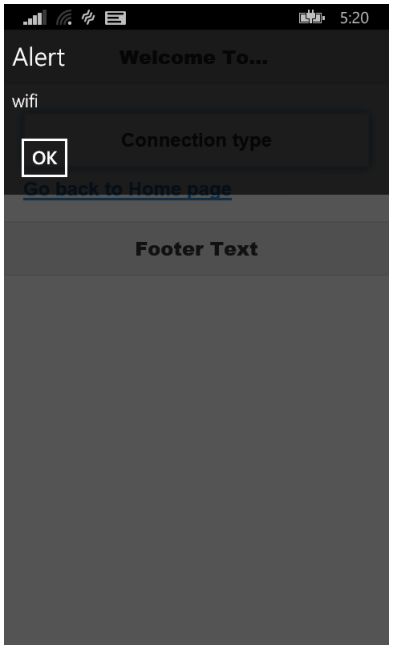


Figure 4

Now we will see connection type of our mobile device. We can the connection type of the device by calling the below JavaScript Connection_Type function. Here we are declaring a variable named networkState and then assigning the connection type value to this variable by calling the navigation.network.connection.type code. Then we can see the network status through an alert message.

```
f   var networkState = navigator.network.connection.type;
navigator.notification.alert(networkState);
}
```

Listing 5

```
unction Connection_Type() {
```

Device Information

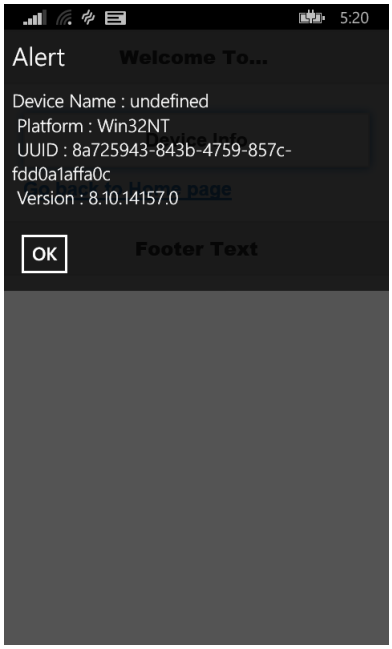


Figure 5

Here we can see Device info of our mobile device by calling the JavaScript Device_Info function. Here, JavaScript APIs like, device.name, device.platform, device.uuid, device.version is showing us the Device Name, platform, Unique ID and Version of the mobile device. Then, an alert message is showing us device info.

```
function Device_Info() {
var DeviceName = device.name;
 var Platform = device.platform;
var UniqueID = device.uuid;
var Version = device.version;
navigator.notification.alert('Device Name : ' + DeviceName + '\n
Platform : ' + Platform
    + '\n UUID : ' + UniqueID + '\n Version : ' + Version);
}
```

Listing 6

Camera Capture

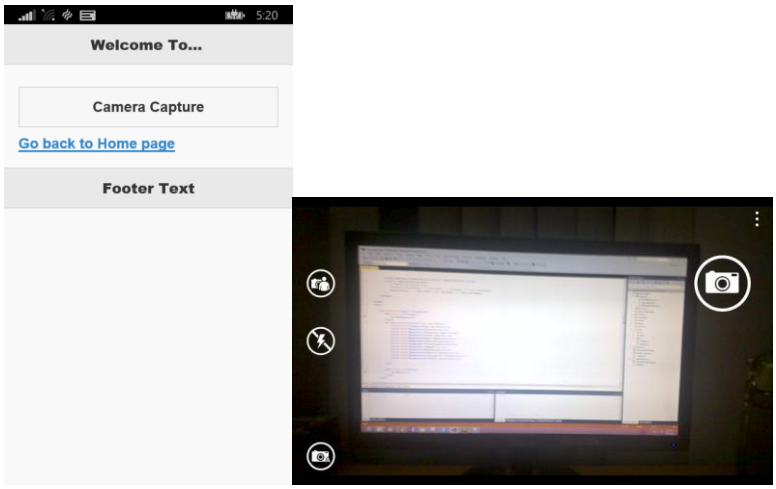


Figure 6

We can take picture, save it and preview it in windows phone using JavaScript API. Here, we are calling Camera Capture function and this function is invoking camera and then we can take picture. We are using camera.getPicture and if our application successfully invoke camera and take the picture then it will move to onSuccess function and then take an image control and show recently taken photo on that image control by setting its source.

```
function Camera_Capture() {
  navigator.camera.getPicture(onSuccess, onFail, { sourceType:
Camera.PictureSourceType.CAMERA });
}
function onSuccess(data) {
    var imageControl = document.getElementById('image');
imageControl.src = "" + data;
}
function onFail(message) {
alert('Error taking picture');
}
```

Listing 7

Back Button

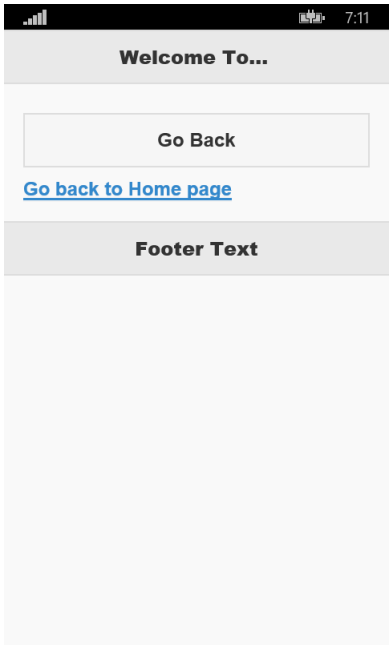


Figure 7

You can simply use “Back Button” control by adding a single line of code. Declare the data-rel="back", in the Button property. Here is the code given below.

```
<div data-role="page" id="pageseven">
 <div data-role="header">
  <h1>Welcome To My Homepage</h1>
    </div>
 <div data-role="main" class="ui-content">
 <a href="#" class="ui-btn" data-rel="back">Go Back</a>
 <a href="#pageone">Go back to Home page</a>

    </div>
<div data-role="footer">
<h1>Footer Text</h1>
 </div>
</div>
```

Listing 8

Accelerometer

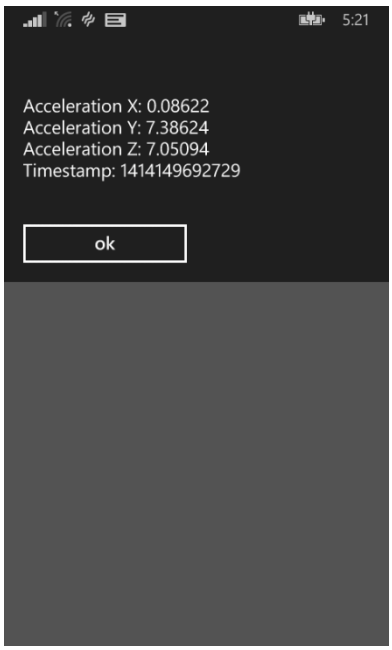


Figure 8

Here we can see Acceleration on X, Y, Z axis and timestamp using Accelerometer sensor of windows phone device. Here, JavaScript APIs like, acceleration.x, acceleration.y, acceleration.z and acceleration.timestamp is showing us the X, Y, Z acceleration and timestamp of the mobile device. Then, an alert message is showing us acceleration info.

```
function Dev_Ready() {
navigator.accelerometer.getCurrentAcceleration(onSuccess, Error);
}
function onSuccess(acceleration) {
    alert('Acceleration X: ' + acceleration.x + '\n' +
'Acceleration Y: ' + acceleration.y + '\n' +
'Acceleration Z: ' + acceleration.z + '\n' +
'Timestamp: '      + acceleration.timestamp + '\n');
}
function Error() {
    alert('onError!');
}
```

Listing 9

Compass

Figure 9

Here we are calling compass.getCurrentHeading to get the Compass heading of the mobile device then if our application successfully call the getCurrentHeading then then application will show current heading value using heading.magneticHeading through a message box.

```
function Compass() {
     navigator.compass.getCurrentHeading(Success, Errror);
}
function Success(heading) {
    alert('Heading: ' + heading.magneticHeading);
}
function Errror(compassError) {
    alert('Compass Error: ' + compassError.code);
}
```

Listing 10

Geolocation

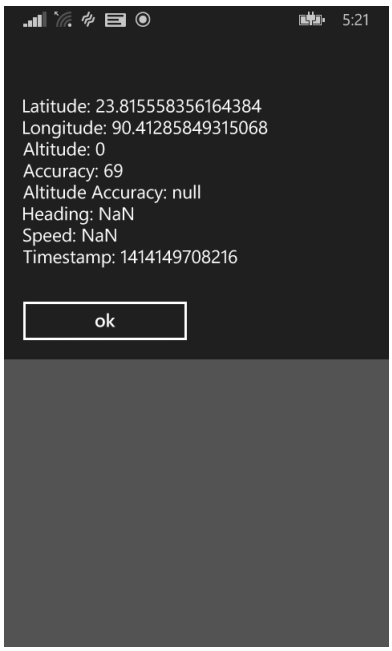


Figure 10

Below is the JavaScript code to get the current location of the mobile device. At first we are calling geolocation.getCurrentPosition and if it is successfully called then will call GeoSuccess function and pass the data of position that we get from getCurrentPosition. Then, by using position.coords.lattitude and position.coords.longitude we will get the longitude and latitude value of current location and show it on through a message box.

‘

```
function Geo_Location() {
     navigator.geolocation.getCurrentPosition(GeoSuccess,
GeoError);
}
function GeoSuccess(position) {
    var element = document.getElementById('geolocation');
alert('Latitude: ' + position.coords.latitude  + '\n' +

          'Longitude: ' + position.coords.longitude + '\n' +
          'Altitude: ' + position.coords.altitude + '\n' +
'Accuracy: ' + position.coords.accuracy + '\n' +
'Altitude Accuracy: ' + position.coords.altitudeAccuracy + '\n' +
'Heading: ' + position.coords.heading + '\n' +
           'Speed: ' + position.coords.speed + '\n' +
```

```
'Timestamp: ' + position.timestamp);
}
function GeoError(error) {
    alert('code: ' + error.code + '\n' +
            'message: ' + error.message + '\n');
}
```

Listing 11

Battery Status

Below is the code to get the battery status of the device. We can see the battery status if, the current battery level increase or decrease. If the current battery level is same then the message will not show. We can see battery status only if the status changes.

```
window.addEventListener("batterystatus", onBatteryStatus, false);
function onBatteryStatus(info) {
   // Handle the online event

    //console.log("Level: " + info.level + " isPlugged: " +
info.isPlugged);
    alert("Level: " + info.level + "%, isPlugged: " +
info.isPlugged);
}
```

Listing 12

Collapsible Control

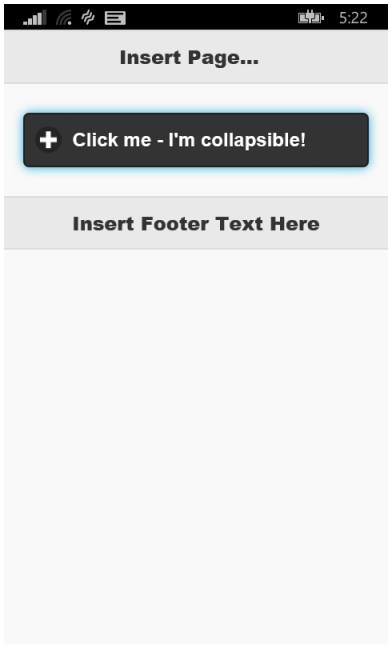


Figure 11.1

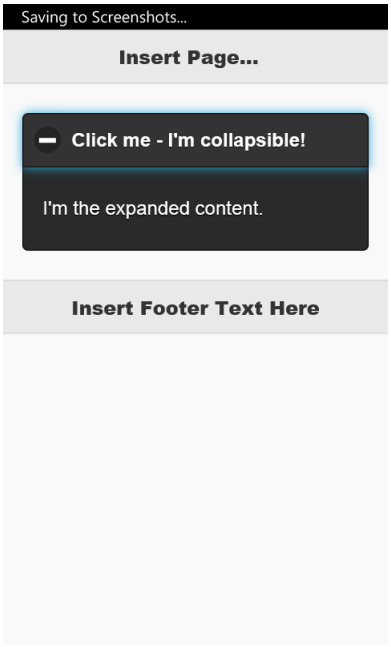


Figure 11.2

Below is the code of collapsible control in JQuery mobile.

```
<div data-role="page" id="pageeleven">
    <div data-role="header">
        <h1>Insert Page Title Here</h1>
    </div>
    <div data-role="main" class="ui-content">

        <div data-role="collapsible" data-theme="b" data-content-
theme="b">
            <h1>Click me - I'm collapsible!</h1>
            <p>I'm the expanded content.</p>
        </div>
    </div>
    <div data-role="footer">
        <h1>Insert Footer Text Here</h1>
    </div>
</div>
```

Listing 13

Panel Control

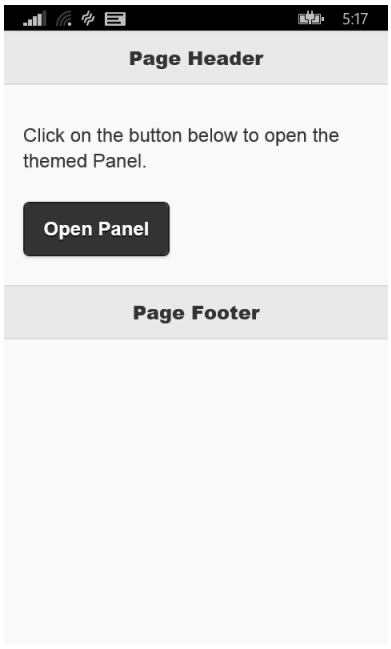


Figure 12.1

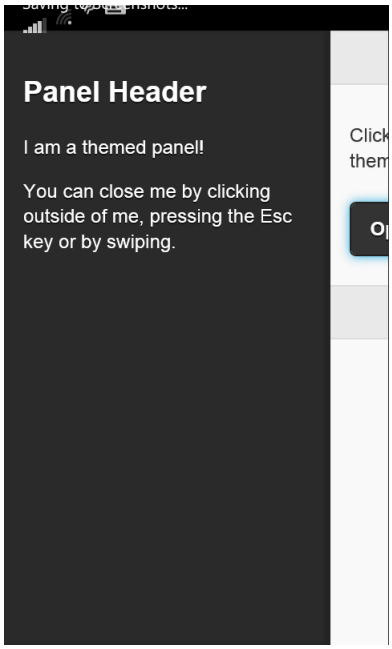


Figure 12.2

This is the code of opening a panel in a page. If we click on the button then a different panel will appear from the right side of the application

```
<div data-role="page" id="pagethirteen">
    <div data-role="panel" id="myPanel" data-theme="b">
<h2>Panel Header</h2>
        <p>I am a themed panel!</p>
        <p> You can close me by clicking outside of me, pressing
the Esc key or by swiping.</p>
    </div>
    <div data-role="header">
        <h1>Page Header</h1>
    </div>
<div data-role="main" class="ui-content">
<p>Click on the button below to open the themed Panel.</p>
<a href="#myPanel" class="ui-btn ui-btn-b ui-btn-inline ui-corner-
all ui-shadow">Open Panel</a>
    </div>
    <div data-role="footer">
```

```
        <h1>Page Footer</h1>
    </div>
</div>
```

Listing 14

Summary

Hope you've understand how to use these controls in PhoneGap. For further reading just visit the following links.

PhoneGap Documentation of Windows phone APIs:

http://docs.PhoneGap.com/en/2.3.0/guide_getting-started_windows-phone-8_index.md.html

JQuery Mobile Control Codes:

http://www.w3schools.com/jquerymobile/default.asp

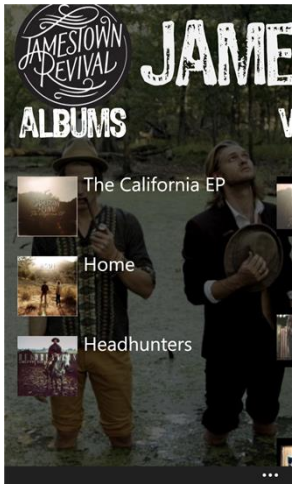
Getting Started with Windows App Studio

Introduction

App Studio is a Windows and Windows Phone developing platform of Microsoft. Point-and-click, web-based development. No coding required, very useful for information and Promotion type apps targets Windows and Windows Phone exclusively use/share your app immediately on any phone, laptop, or PC running Windows 8 or take your publish package to the Store. It enables you to extend or enhance your app with code. It's still Beta version. Visit appstudio.windows.com.

Sample apps from App Studio

These beautiful apps are created with App Studio.



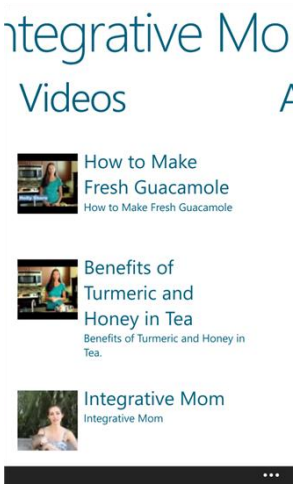


Figure 1.1, 1.2, 1.3, 1.4

Creating an app with App Studio

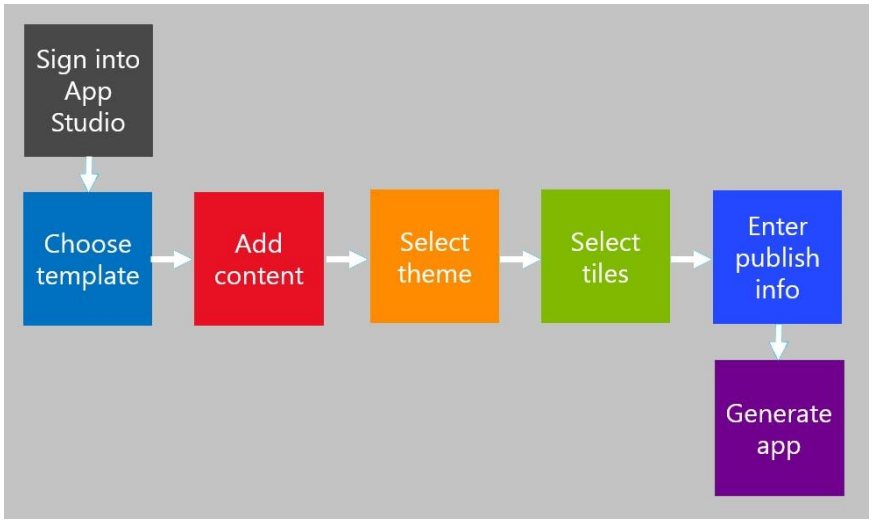


Figure 2

Demo: Creating an App

Sign in to App Studio with your Microsoft account.

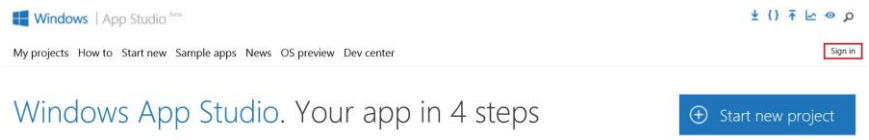


Figure 3

Choose Your Template

Once signed in you should create a new project by clicking the "Start new project" button. You will then have to choose a template for your app. When you select a template a popup window appears that describes and previews the template.

There are two choices for creating an app:

Start with a blank template. You'll need to create all the menus, sections, and data sources yourself. This gives the greatest flexibility, but involves more work.

Select an existing template. The app will already contain a set of menus, sections, and data sources you can use as they are or customize to your own requirements. You can also add new resources to the ones provided by the template.

When you've selected a template you're happy with you click the Create button to create your app.

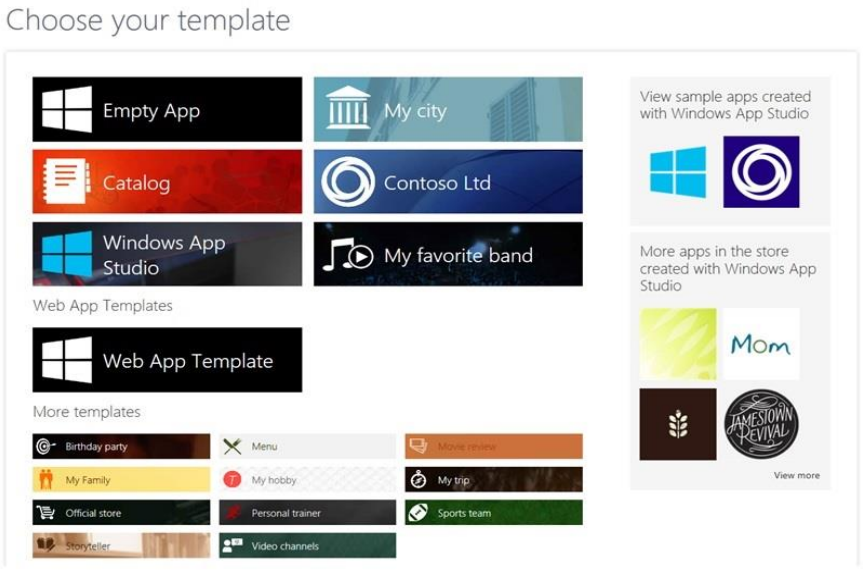


Figure 4

Here we're going to work with "Empty App" template. Select the "Empty App" template and you can see the window below.

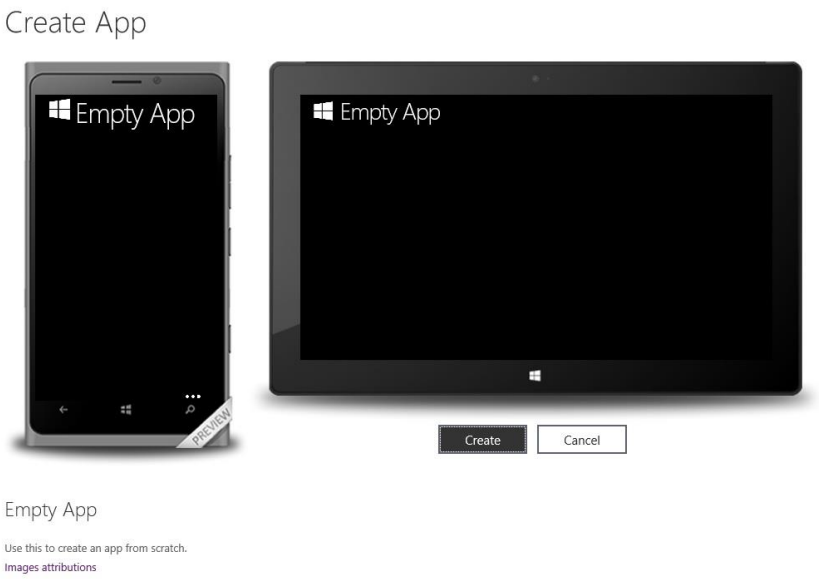


Figure 5

Click the "Confirm" button and you can see the working environment like below.

Getting Started

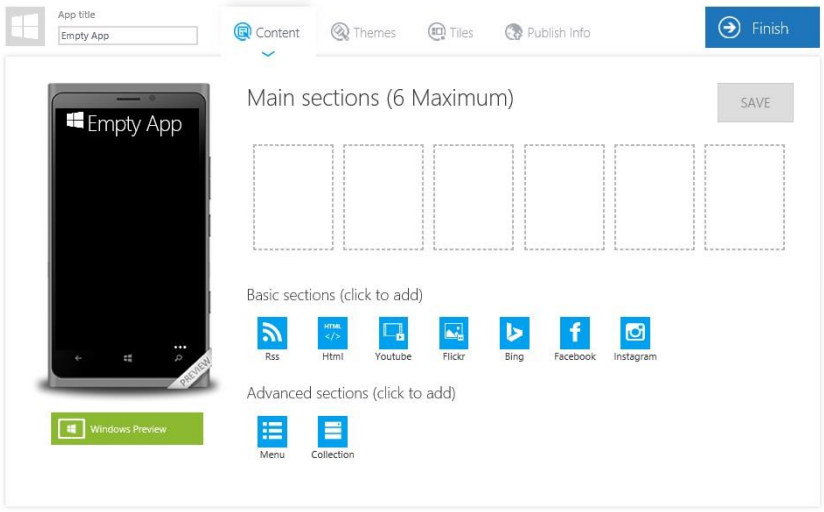
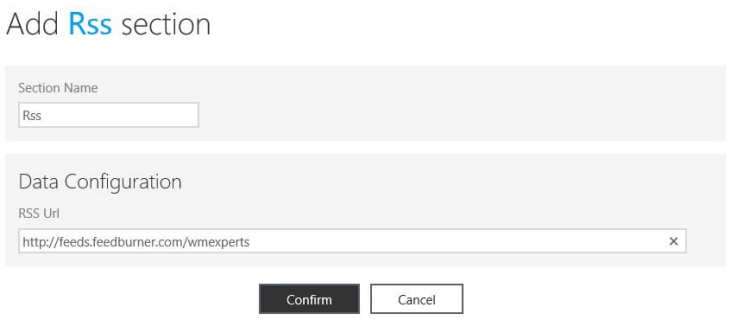


Figure 6

You can choose any item from the “Basic Section” menu. You can choose highest six items. We’ll go through all the items one by one, how to add and modify them as we want to. To make an app in App Studio, no code is need to write.

Rss Feed

First of all we’ll take “Rss” item. Rss enables you to include all feeds that a website provides. You can visualize your app with the important news of a website.



Paste your website’s Rss URL and hit the “Confirm” button. Here we’ve used Windows Phone Central’s Rss feed. You can also change the Section name to anything you want.

YouTube

After that, we’ll add Windows Phone YouTube Channel. The channel’s name is “windowsphone”.

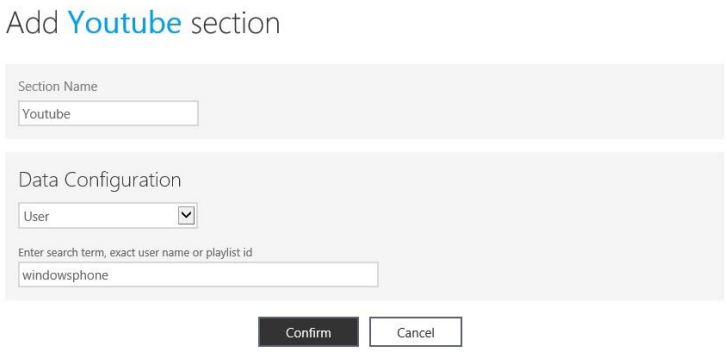


Figure 8

So, we put the channel's name and made the Data Configuration as User. Also if you want to just search item, you can do so. You can also change the Section Name from here.

Flicker

Now we'll add a Flicker item. Flickr offers web-based photo sharing and photo organizing. App Studio enables you to include galleries from Flickr in your app.

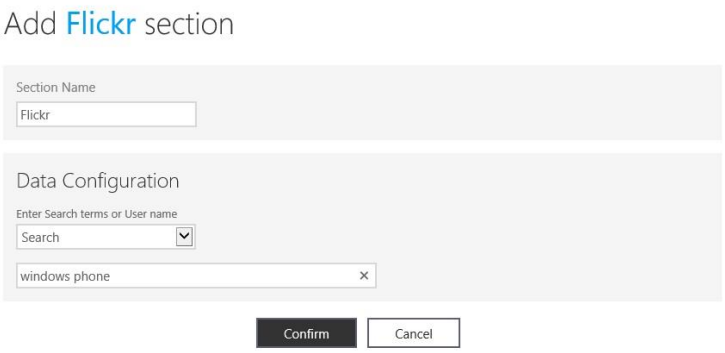


Figure 9

After adding this item, you can also change the view of the images that are retrieved from Flicker as follows. Click the edit option and you can edit from here.

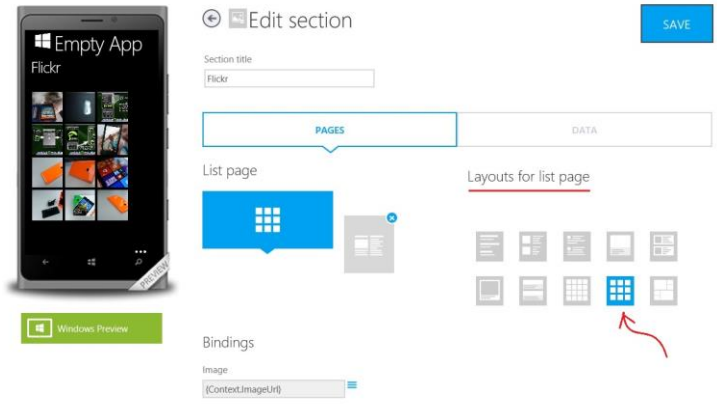


Figure 10

There're some types of layouts, choose your favorite one.

Bing Search

You can also implement Bing search in you app. We search “windows phone 8.1” in our search content. We want to see the news about Windows Phone 8.1, if we search in Bing Search Engine.

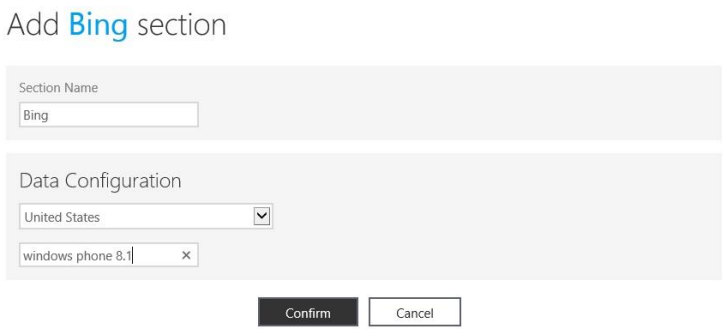


Figure 11

It will show the list of results in the window.

Facebook Page

You can also set your favorite Facebook page. Even you can make your own Facebook Page app. That cool, anyone can promote their page, just making a simple app in App Studio. Moreover, it’s universal. It runs both Windows and Windows Phone platform.

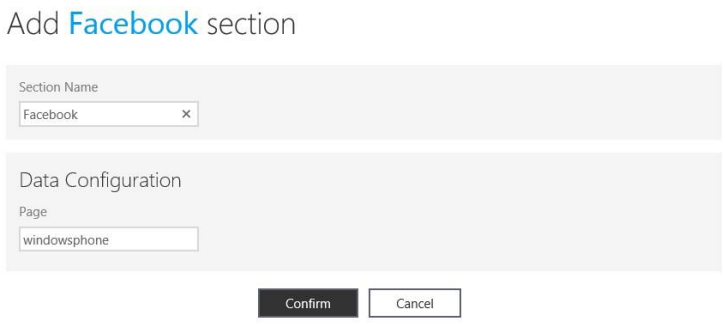


Figure 12

Here we’ve added Windows Phone Facebook page.

Instagram

Instagram allows photo sharing with friends. App Studio enables you to include photos from Instagram in your app.

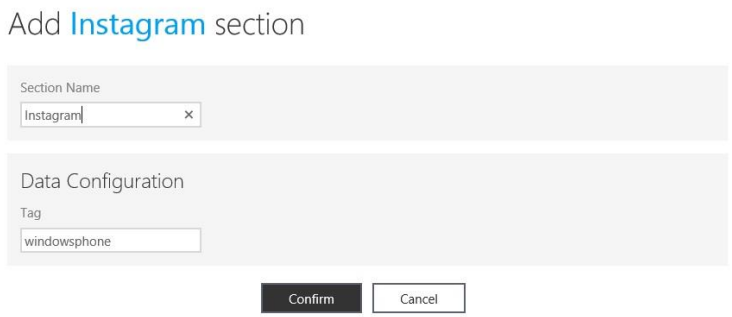


Figure 13

We put the tag “windowsphone”, no need to give hash sign here. One problem is nothing will show in design view, but when you run it will show several images which have “windowsphone” hash tag, like below.

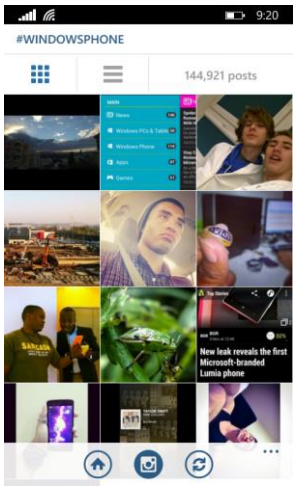


Figure 14

So, you can tag whatever you want to see. Lots of features are built in App Studio. Just drag and drop an item and that’s it. It’s one kind of magic. Microsoft gives you lots of flexibility to make an app if you’re a non-programmer.

HTML Content

Last item is HTML content. If you want to display some text or like an “About” page, or just like a normal HTML page, you can use HTML item. As, we can’t use more than six item, that’s the limitation, so we can’t use one more item in our app. But you can use it like this.

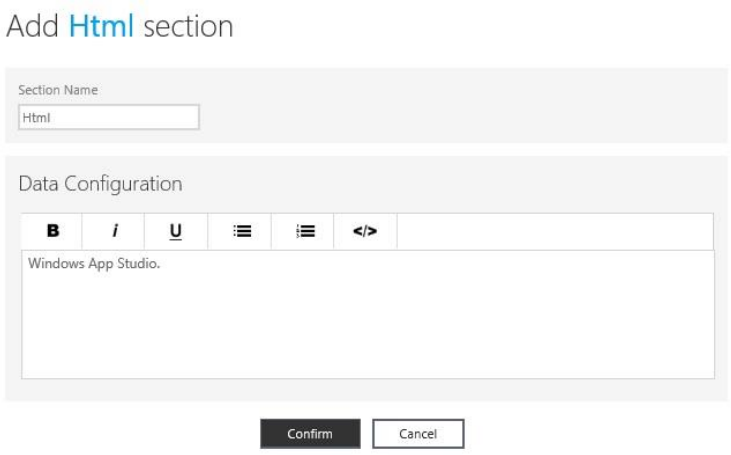


Figure 15

You can use, HTML tag also to beautify your content.

Changing Title

To change the title, just change the App title from here.

Figure 16

Changing the Theme

In the theme section, you can change the theme, background color and so one.

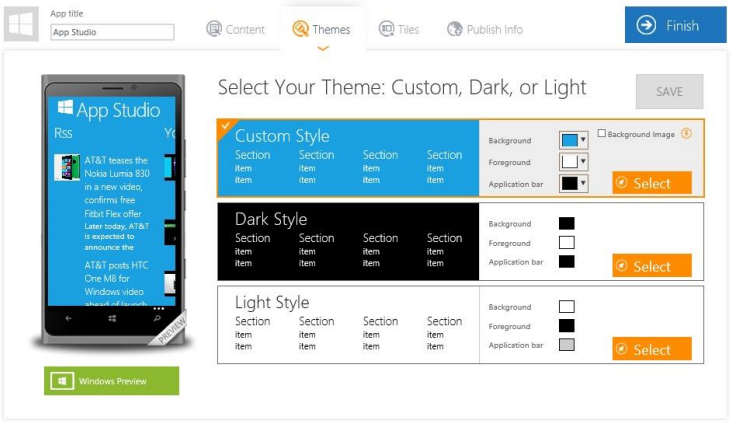


Figure 17

Also you can upload your external background from your local drive.

Tiles and Splash Screen

To change the title image and Splash screen, just go to the "Tile" section, and change it from here.

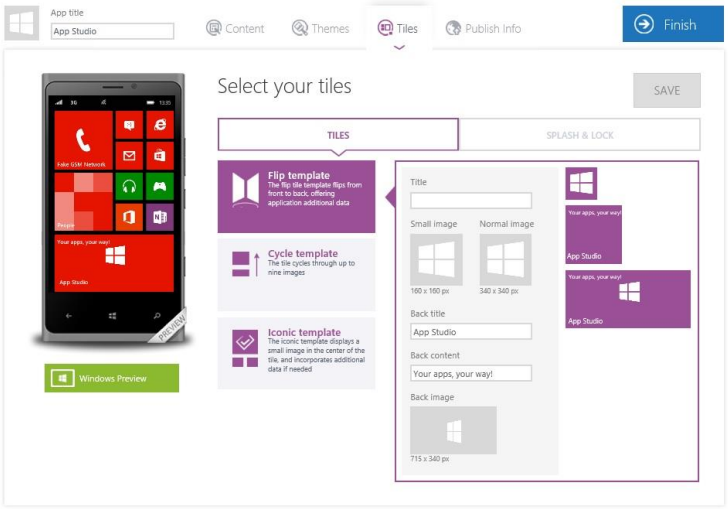


Figure 18

Remember, when you move one section to another, always save you changes, otherwise that will be lost and you've to do the same thing again.

Publish Info

Now go to the "Publish Info" section and you can also change App title, description from here. To associate you app with Store, there is an option here. Also you can give the privacy statement url here, but we're not doing these here. We'll do it later from Visual Studio in our next chapter.

Now hit the "Finish" button and you can see the window below.

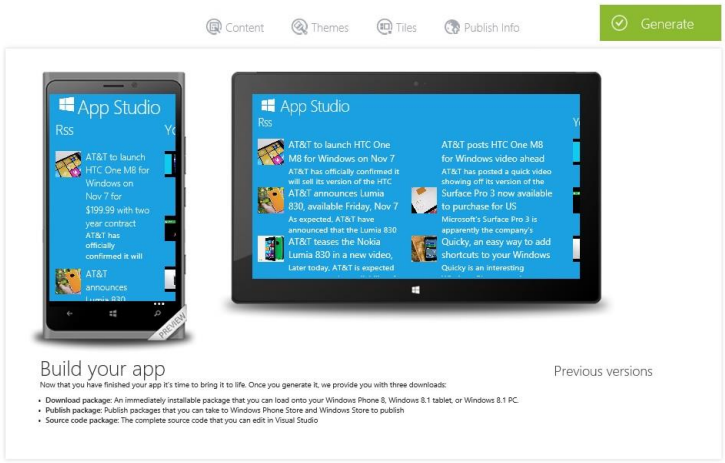


Figure 19

Hit the "Generate" button, then a popup window will open.

Generate the Source Code

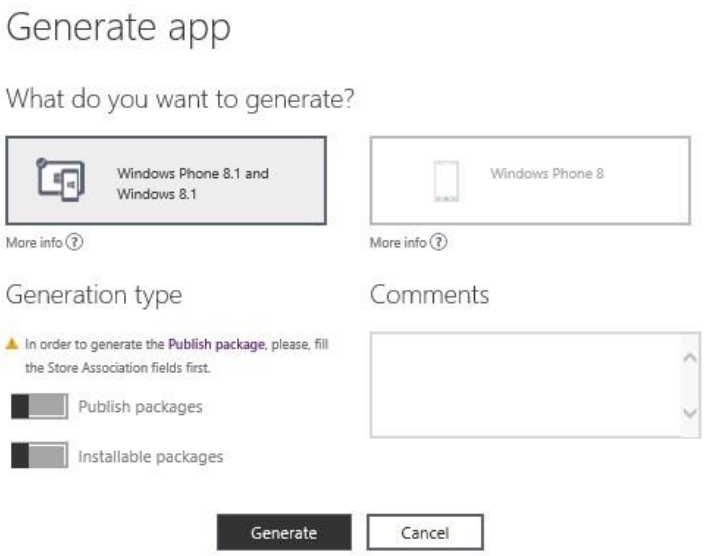


Figure 20

Click the "Generate" button, and it'll generate source code for both Windows and Windows Phone.

Download the Source Code

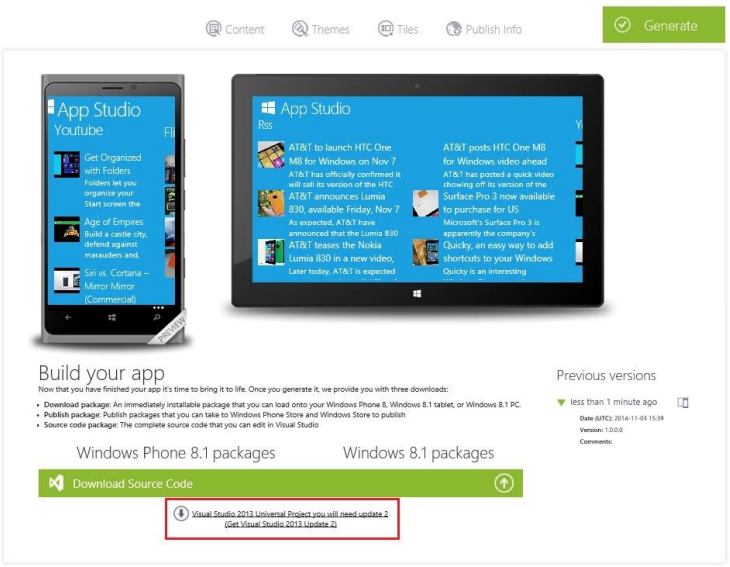


Figure 21

Download it from here.

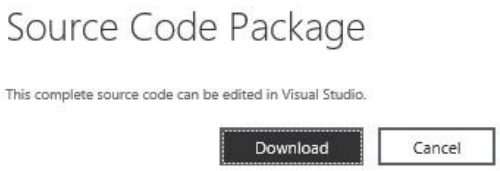


Figure 22

Hit “Download” and after downloading, open it with Visual Studio 2013.

Summary

It’s all done, you can make your favorite app only in an hour. In the next chapter we’ll discuss how to submit your app in Windows Phone Store from scratch.

Submitting App

Submitting App in Windows Phone Store from Scratch

To submit your Windows Phone App in your Store Account, you have to do some prerequisites. First of all, if you have downloaded the source code of your Universal App of Windows App Studio, just go to this download directory and open the Solution file in Visual Studio 2013 with Update 3. If you don't have Update 3, it's fine but you need at least Update 2 to run Universal Apps. In our last chapter we've downloaded our source code from App Studio. Open it in your Visual Studio.

After loading your project in Visual Studio 2013, follow some simple steps that must be done before submit your apps in Windows Phone Store.

Step 1: Right click on the Windows Phone Project in Solution Explorer, and make it StartUp Project.

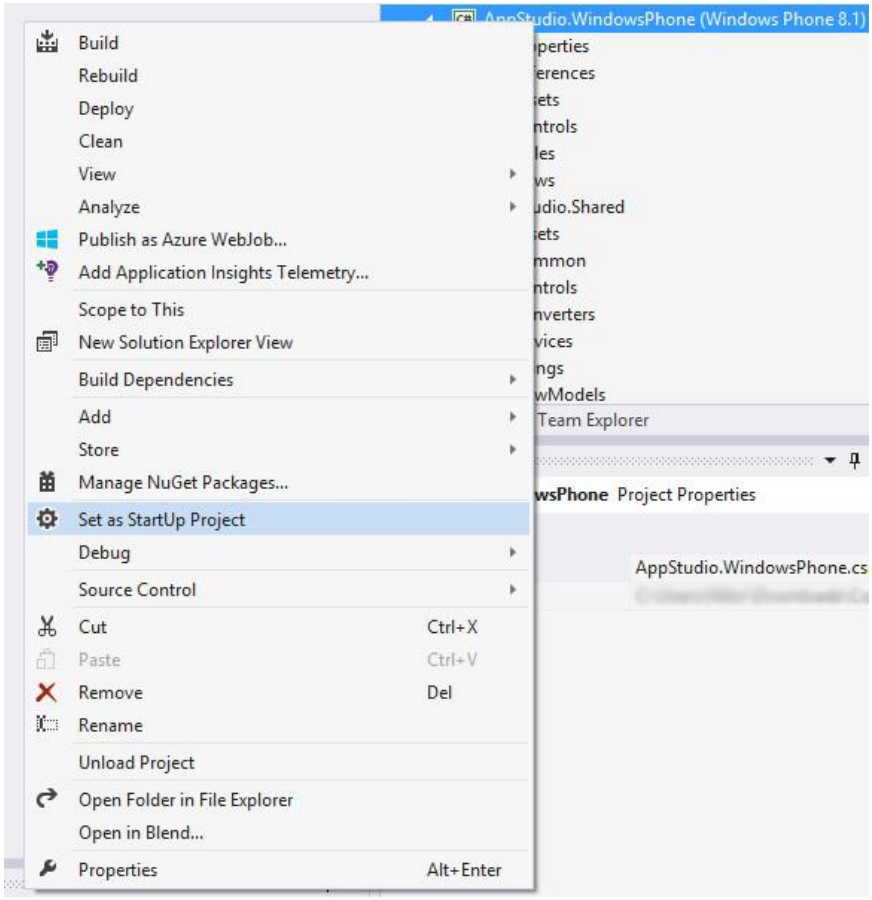


Figure 1

Step 2: Again right click on the Windows Phone Project in Solution Explorer, go to Store and click Associate App with the Store.

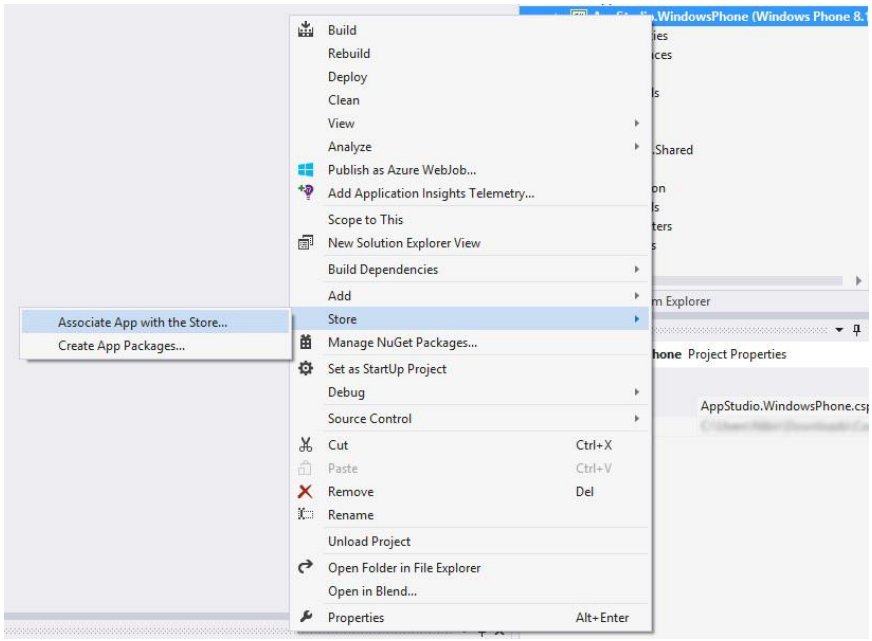


Figure 2

Then you can see the figure below, and click next.

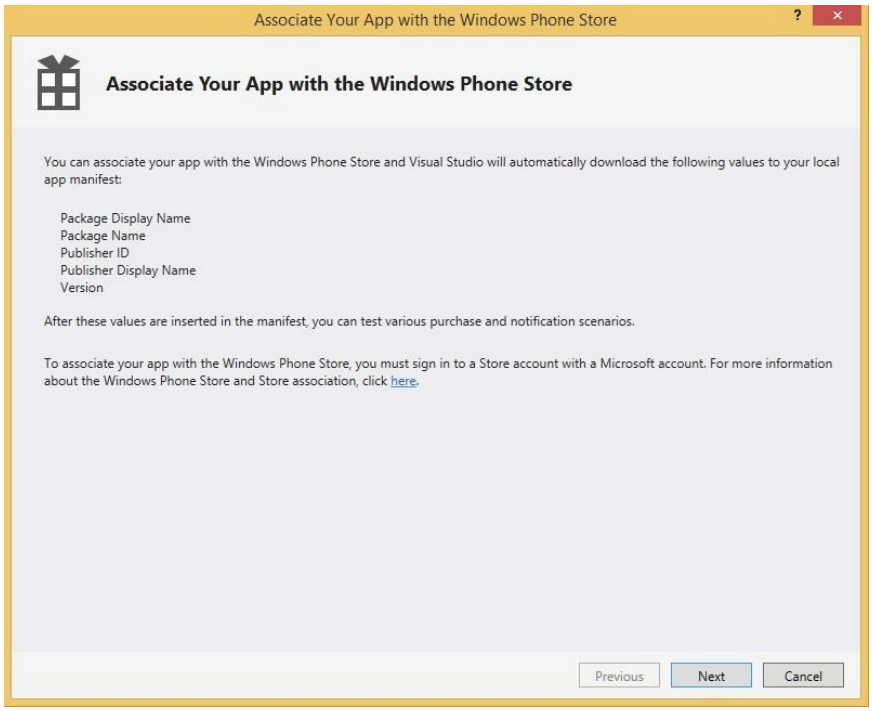
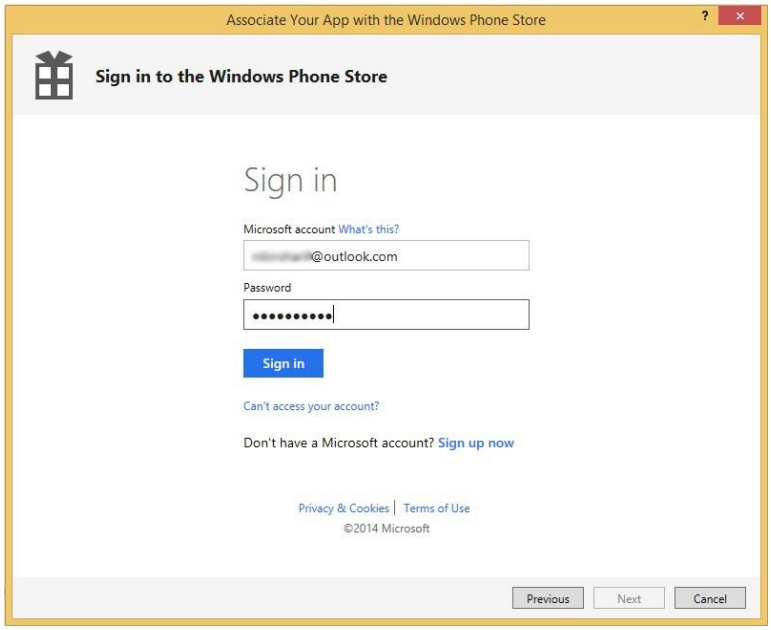


Figure 3

After that you will be asked to sing in with your Store Account, so sign in.



Verify with your phone number.

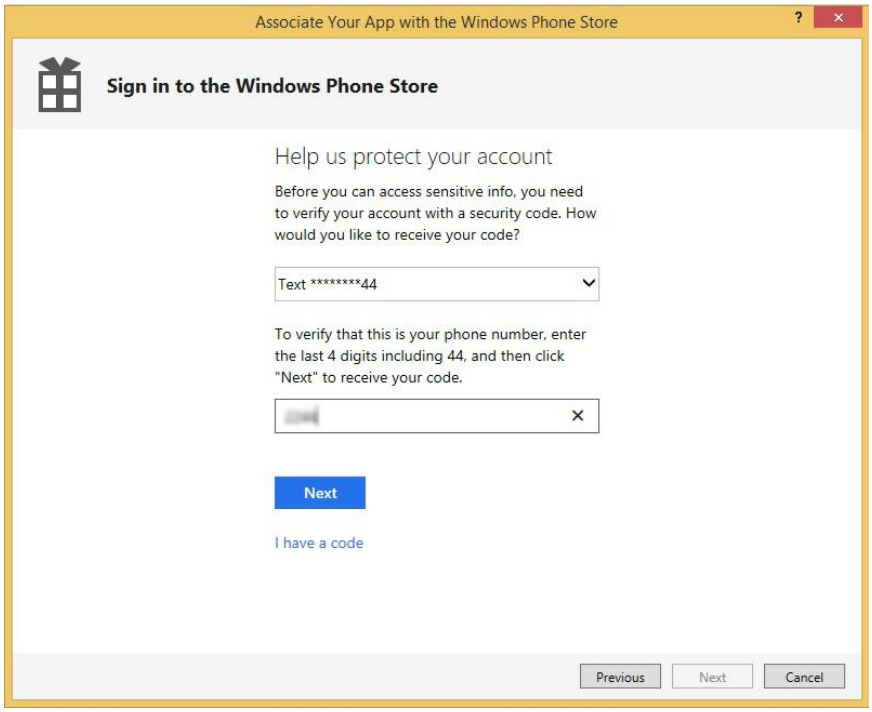


Figure 5

Insert the security code that you have received, and click submit.

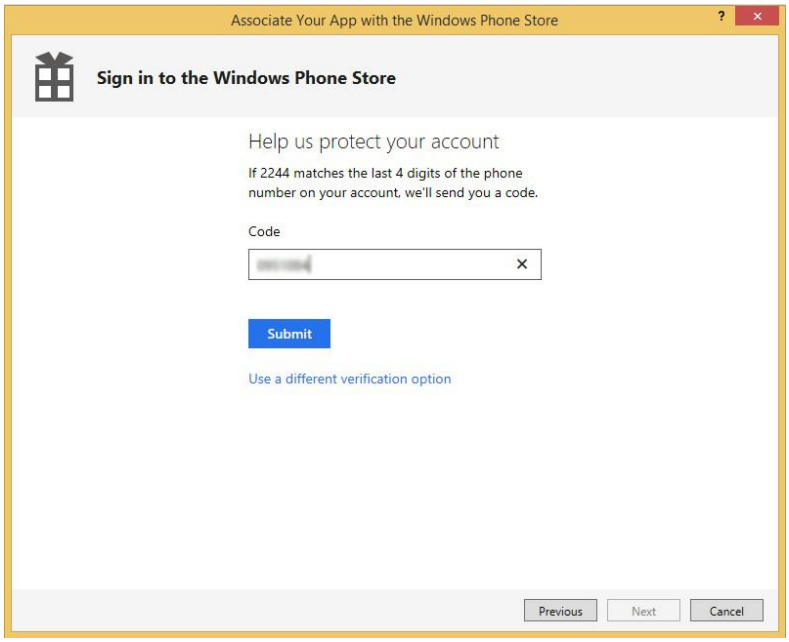


Figure 6

Now, we have reserved an app name in our last blog. Today we will just select the reserved app name and click next.

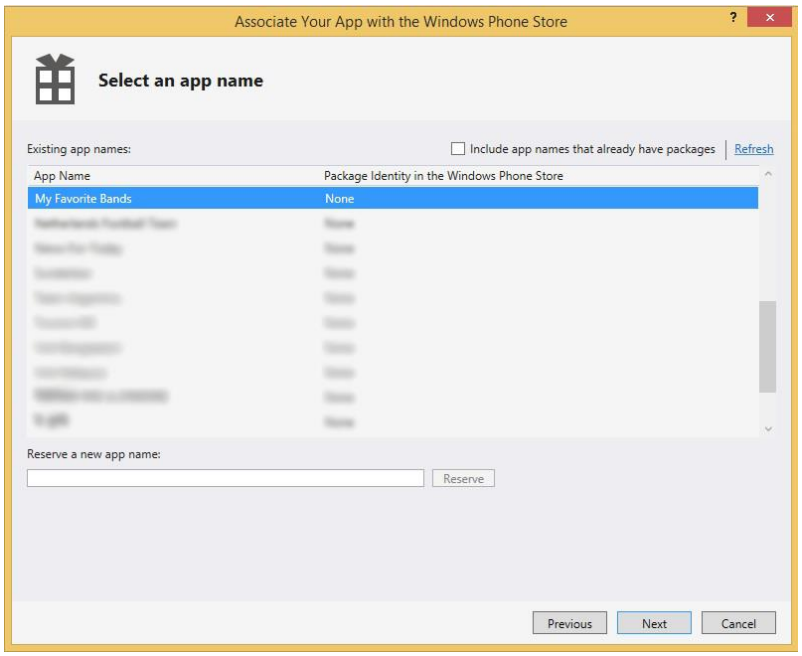


Figure 7

Here, I've used another app as an example to submit in my store. Click Associate.

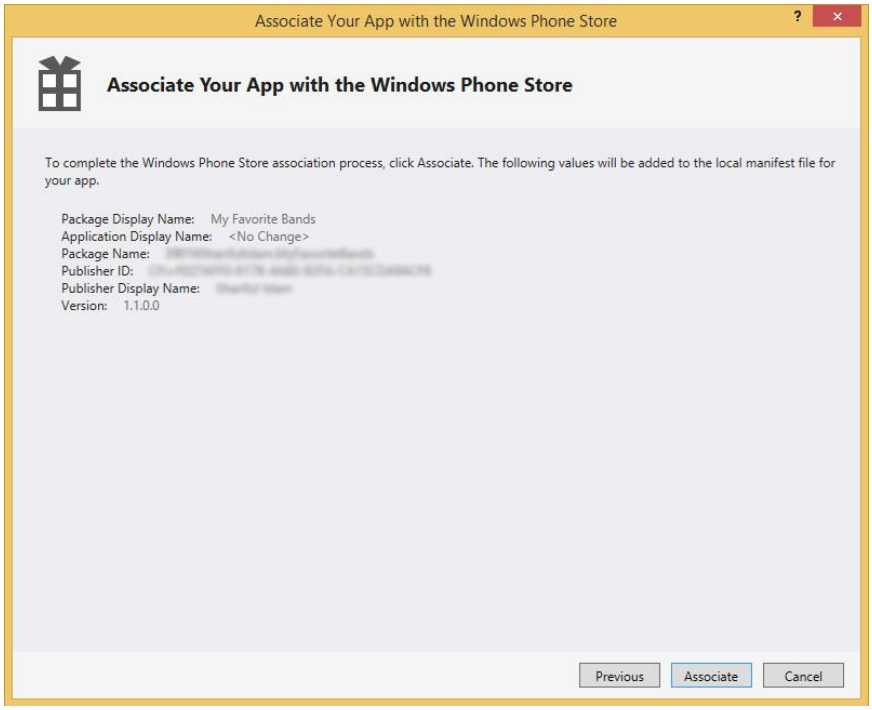


Figure 8

Step 3: Now we have to create an App Package for our app. So right click on Windows Phone Project in Solution Explorer, go to Store and select Create App Package.

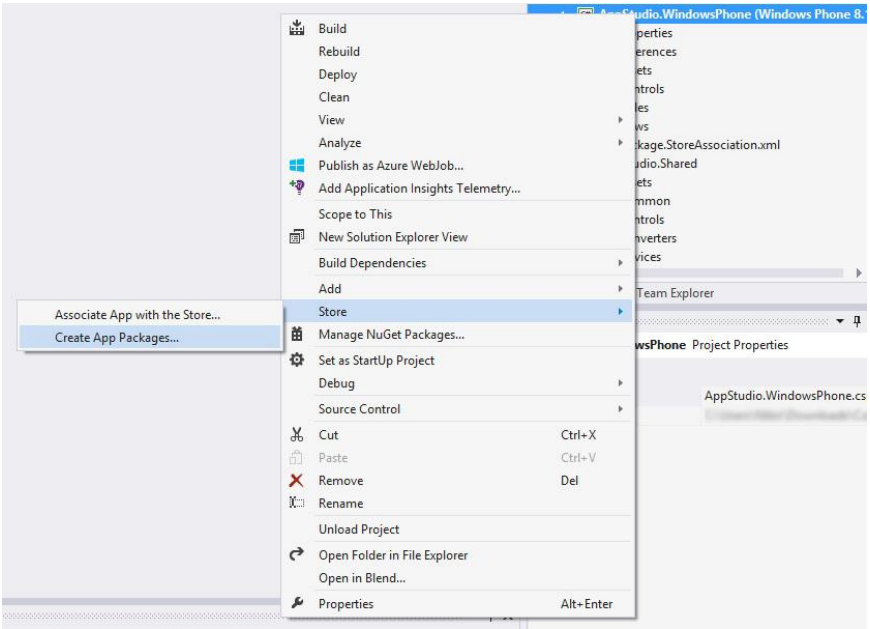


Figure 9

After that you will see the figure below and hit next.

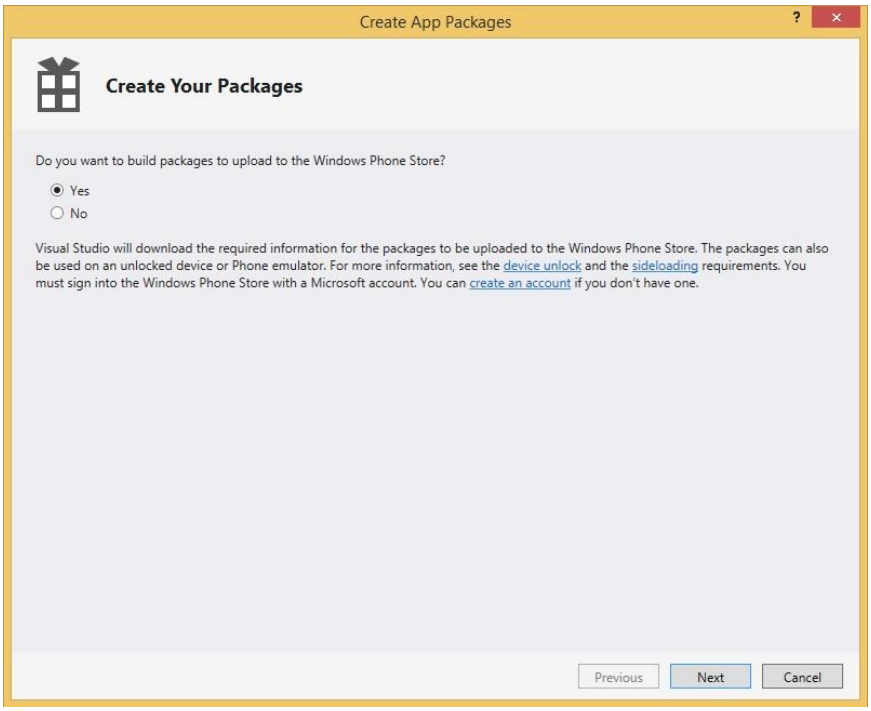


Figure 10

Hit next again.

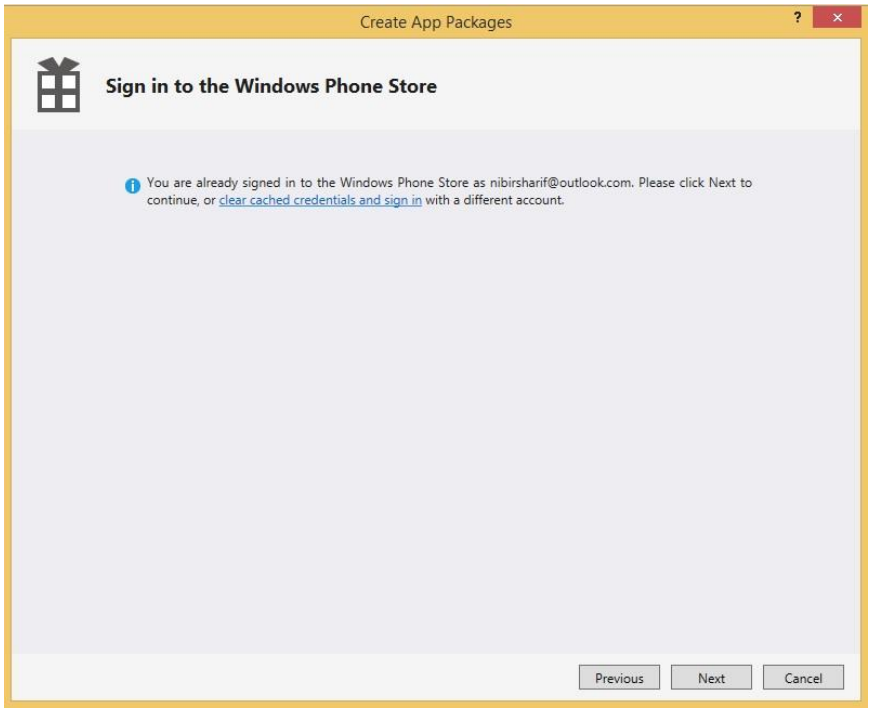


Figure 11

Then select the reserved app name and click next.

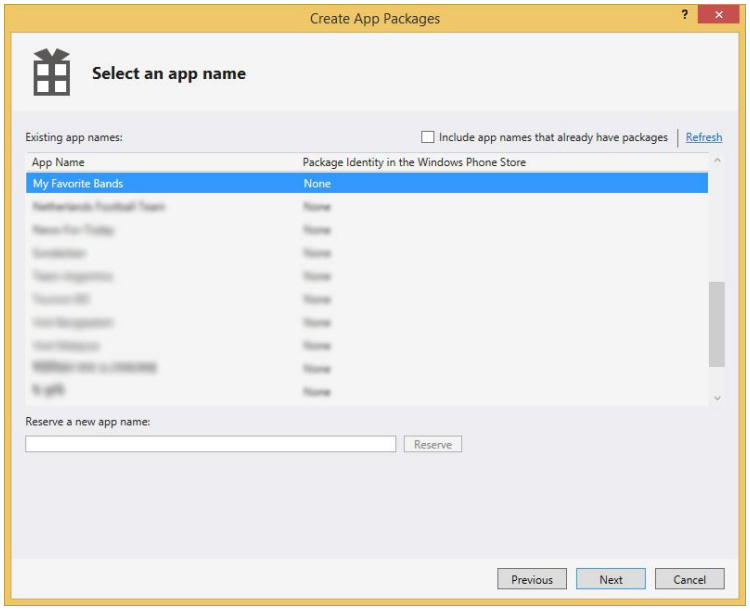


Figure 12

And lastly hit Create and Close.

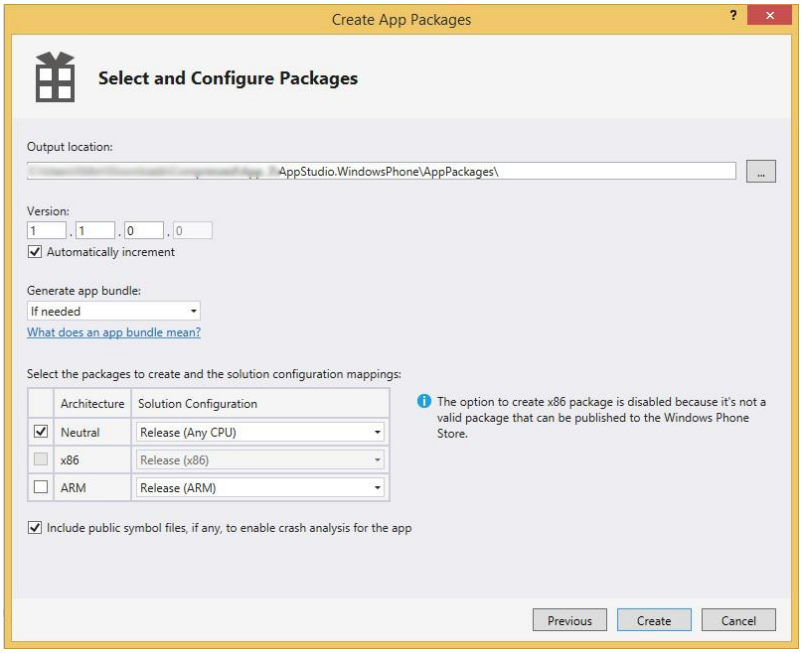
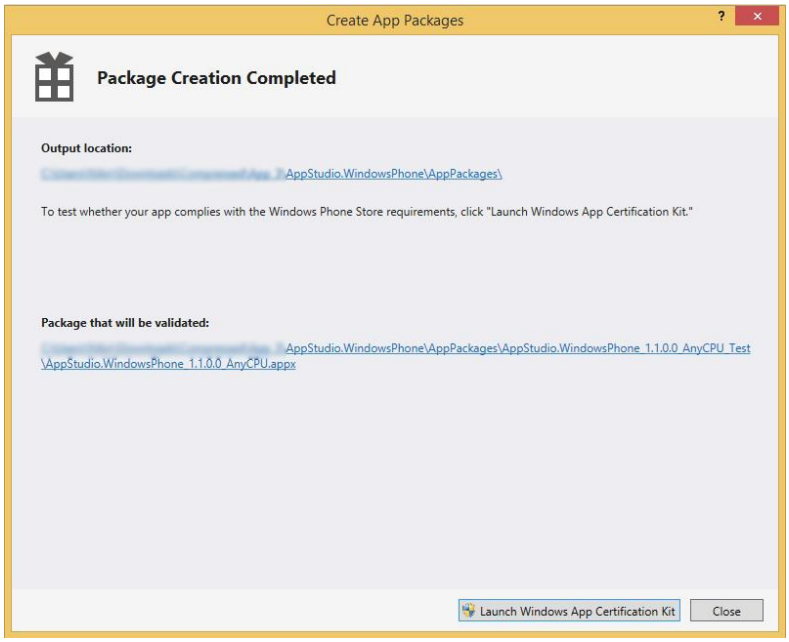
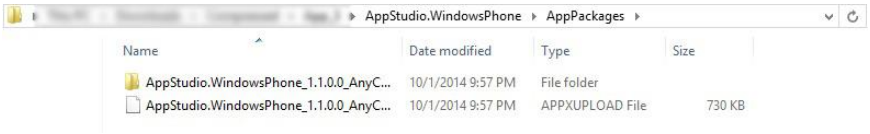


Figure 13



Step 4: You will find your created package in your destination folder.



Step 5: One last thing before go to our Store, we have to take some snap shots of our application. Just run the project in Visual Studio and after the Emulator start, click the double greater than sign and another window will pop up. Just see the figure, it's simply easy.

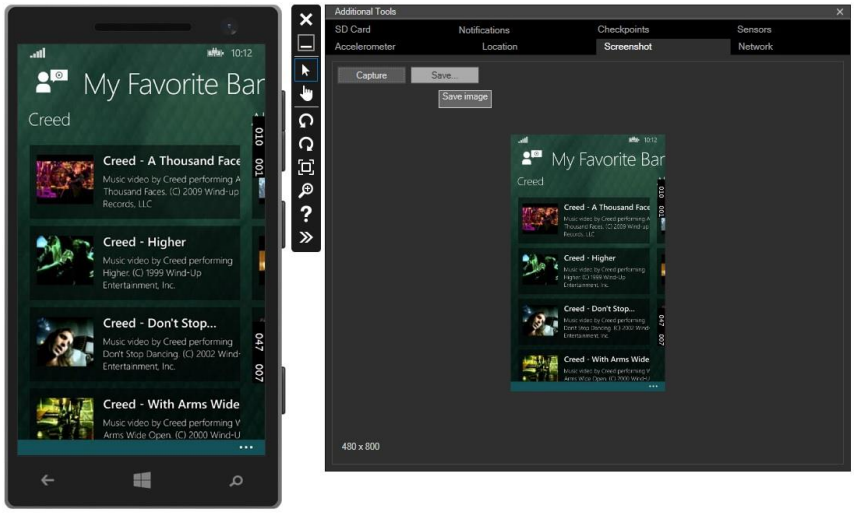


Figure 15

Step 6: Now it's time to sing in, in our Windows Phone Dev Center Account. After singing in, go to the Dashboard and click Submit App.

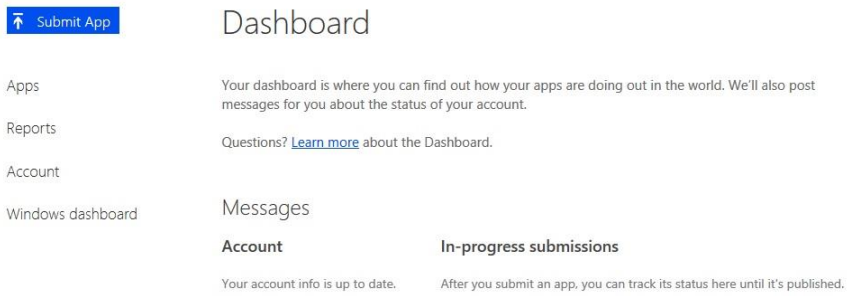


Figure 16

Then click App info.

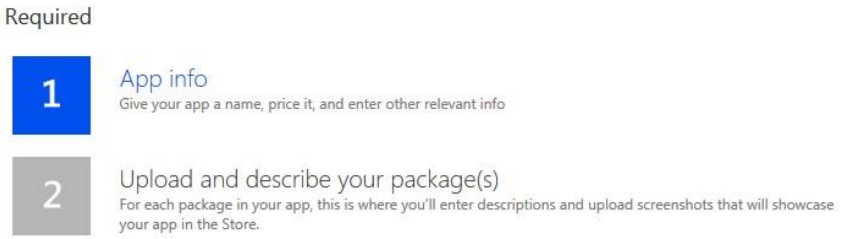


Figure 17

And fill these forms, just write down the reserved app name and click Associate and give the selected category of your app, in our case it's "music + video", and save it.

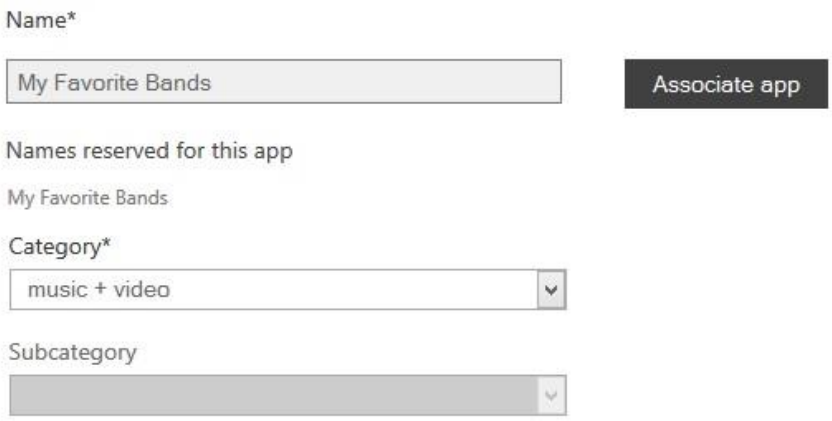


Figure 18

Step 7: Now click Upload and describe your package(s) and upload the APPXUPLOAD File you have created.

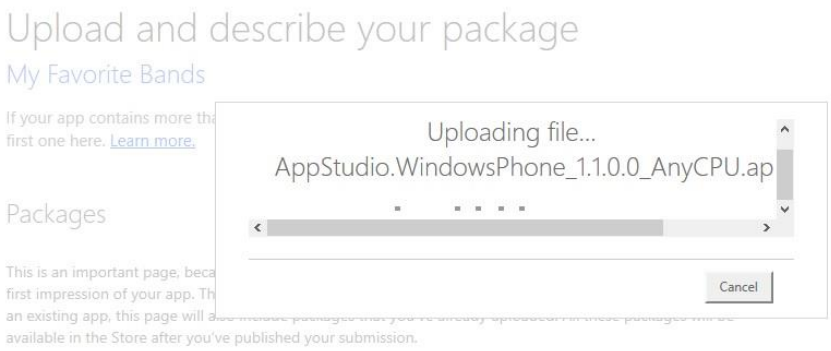


Figure 19

And give description of your app and upload the snap shots you have taken. It should be 768*1280 pixel.

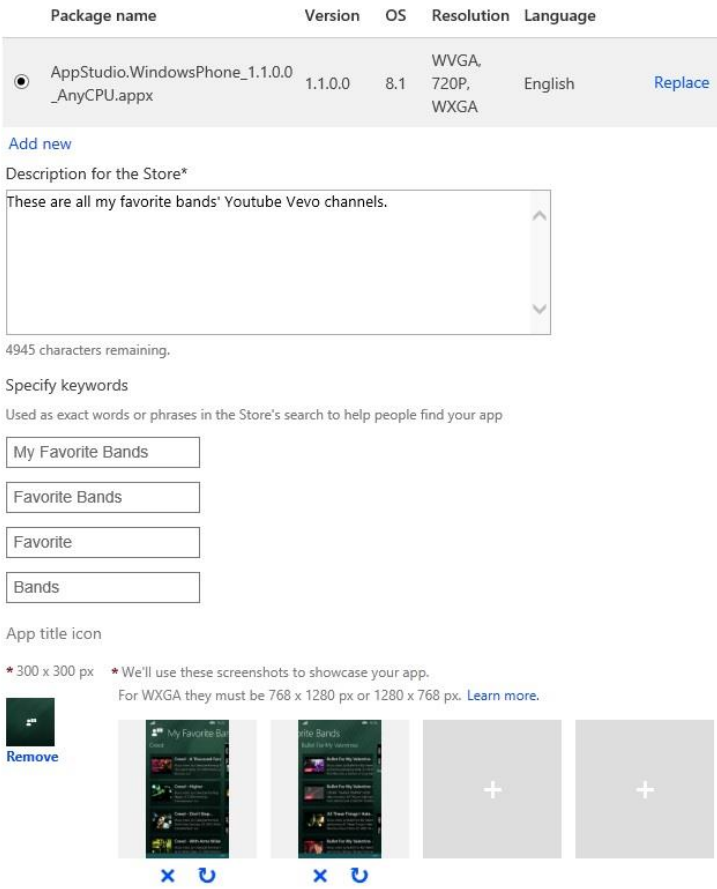


Figure 20

Save all. Now it's all done. What you have to do, just click Review and Submit button and wait for your Congratulation mail of your hard work.

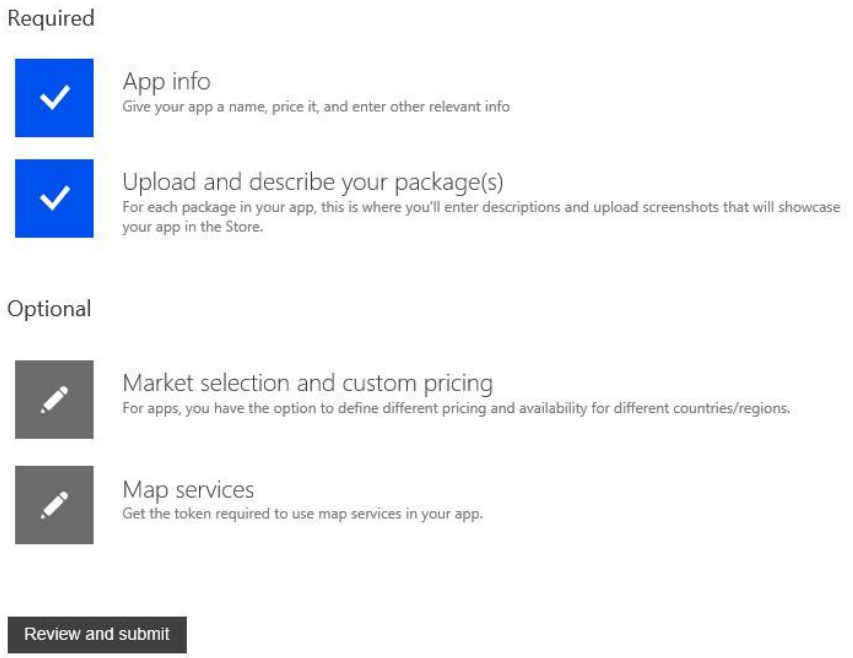


Figure 21

After couple of hours, you will get a confirmation mail. Back then, it took seven working hour to validate your app, now it takes just some hours. So why you will sit idle! Start building your very first own Windows Phone App.

Happy Coding!

Appendix

All the chapters are blogged in our blog site. If you find any difficulties and have any question, you can ask there.

http://learnwithbddevs.wordpress.com/

You can read articles of this book from this site,

http://www.c-sharpcorner.com/Authors/020f8f/Articles/

All the chapters' source code can be found here,

http://1drv.ms/1EeZYHG