The WPF ListBox Can Do That?! - Part 1

The WPF ListBox is a very versatile control. In this multi-part series of blog posts, you will be shown a myriad of ways to coerce the ListBox to work the way you want. You will learn how to create multi-row and column items with images, how to change the information displayed in each row dynamically, and how to present the list box horizontally. You will also learn to use data triggers, sorting, grouping, and filtering. In this post, you learn to add multiple rows and columns to each row of your list box.

Before reading this blog post, I recommend you read my blog post on **Using WPF List Controls - Part 1** at https://bit.ly/2LaACHb. This will introduce you to the data layer used in this blog post and review how WPF list controls work.

Two-Column ListBox

When most developers think of a ListBox, they think of a simple list of a single piece of data. However, like most things in WPF, each row of a ListBox control can contain as much XAML as you want. This means you are free to display many pieces of data within each row of a ListBox. When using WPF, if you want to display data in two columns, create a <Grid> element and define two columns as shown in the code snippet below.

```
<Grid>
  <Grid.ColumnDefinitions>
    <ColumnDefinition Width="*" />
    <ColumnDefinition Width="*" />
  </Grid.ColumnDefinitions>
  <TextBlock Grid.Column="0"
             Text="This is Column 1" />
  <TextBlock Grid.Column="1"
             Text="This is Column 2" />
</Grid>
```

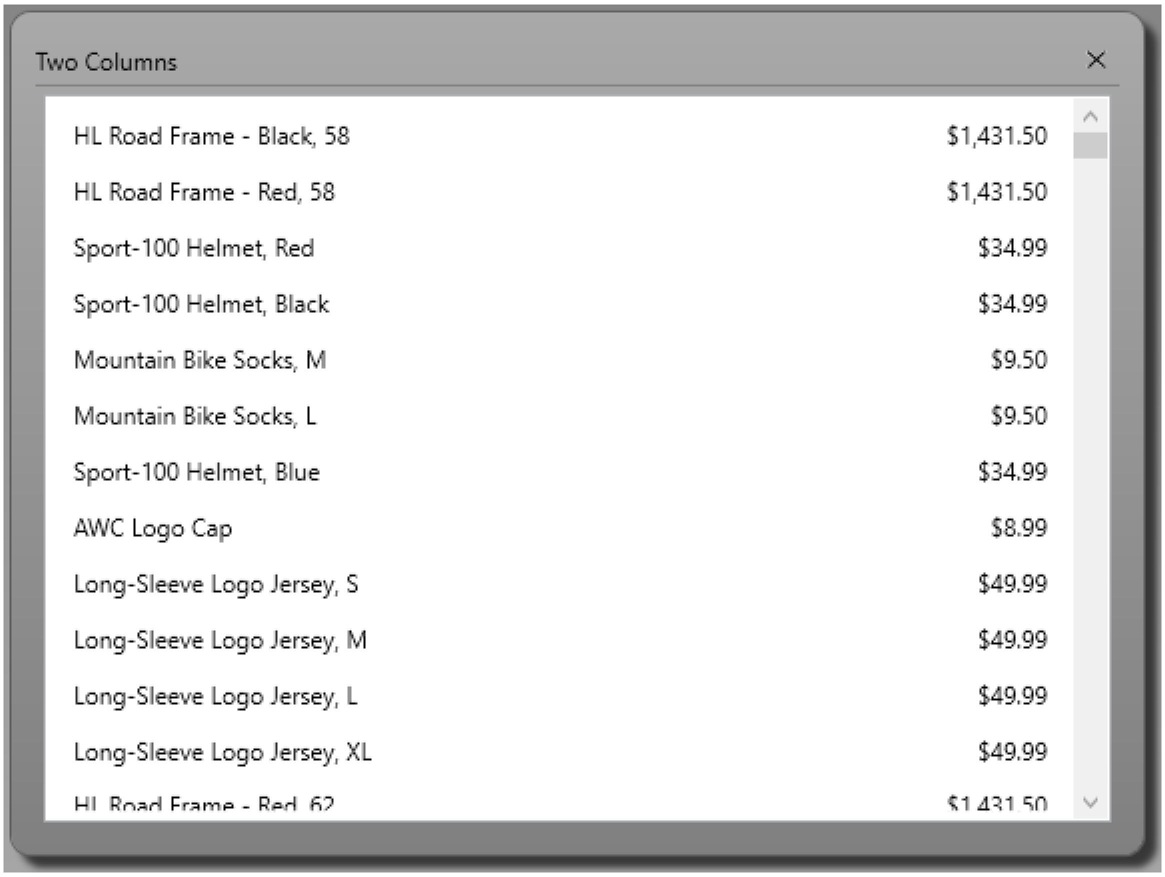
You can see the two ColumnDefinition elements break the Grid into two equal parts. Two TextBlock controls set into each of the Grid columns using the Grid.Column attached properties display the data within the columns.

To apply this scenario to a ListBox, override WPF's default ItemTemplate with a custom ItemTemplate. Into that ItemTemplate, create a <Grid> like the one shown above. In the TextBlock controls, use data binding to bind to the properties of the Product class. Also notice the TextBlock in the second column has its TextAlignment property set to "Right" so the ListPrice value is right justified.

```
<ListBox Grid.Row="1"
    ItemsSource="{Binding Source={StaticResource viewModel},
                          Path=Products}">
  <ListBox.ItemTemplate>
    <DataTemplate>
      <Grid>
        <Grid.ColumnDefinitions>
          <ColumnDefinition Width="*" />
          <ColumnDefinition Width="*" />
        </Grid.ColumnDefinitions>
        <TextBlock Grid.Column="0"
           Text="{Binding Path=Name}" />
        <TextBlock Grid.Column="1"
           TextAlignment="Right"
           Text="{Binding Path=ListPrice, StringFormat=c}" />
      </Grid>
    </DataTemplate>
  </ListBox.ItemTemplate>
</ListBox>
```

If you run the above code, you would see the ListPrice was NOT right aligned. This is because the normal style for each ListBoxItem control is to left-justify all content. In order to allow for right alignment, override the HorizontalContentAlignment property to "Stretch". Now the ListPrice will be right justified as shown in Figure 1.

```
<Style TargetType="ListBoxItem">
  <Setter Property="HorizontalContentAlignment"
          Value="Stretch" />
</Style>
```



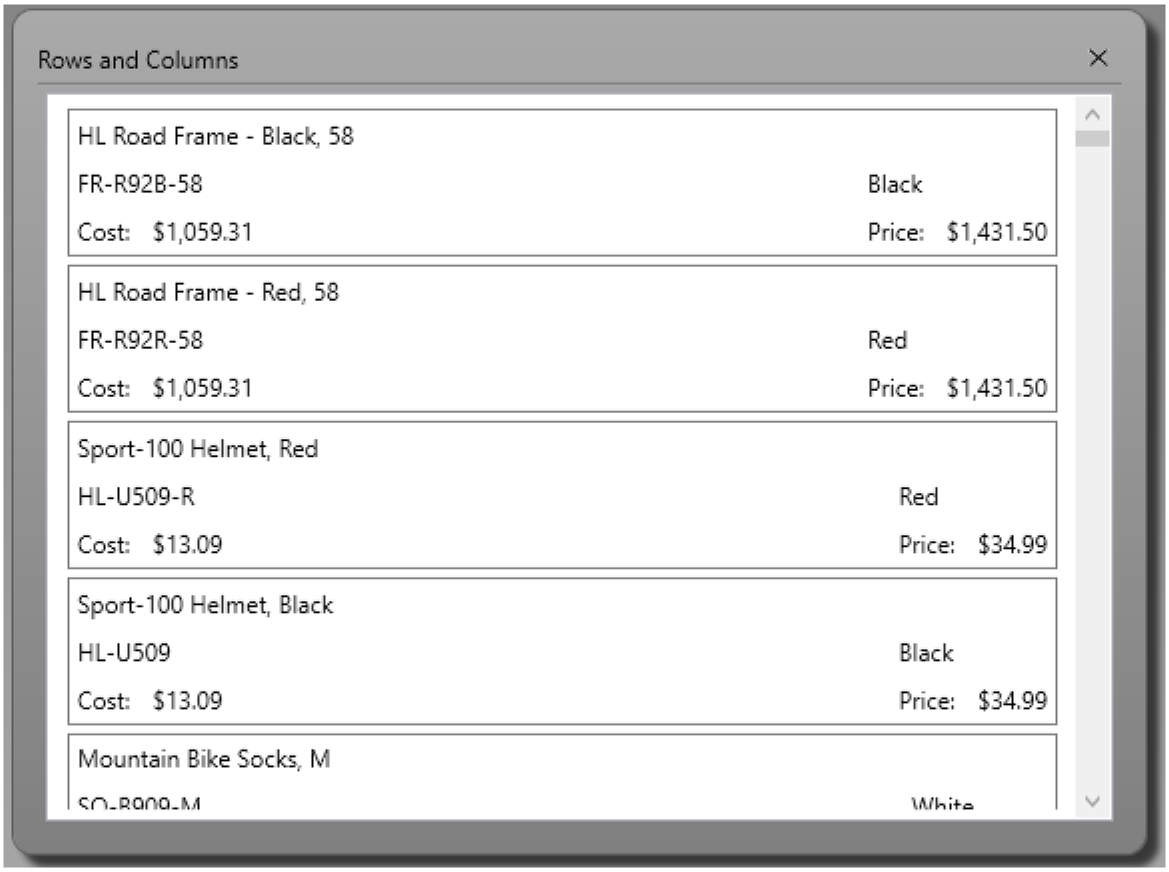
HL Road Frame - Black, 58	$1,431.50
HL Road Frame - Red, 58	$1,431.50
Sport-100 Helmet, Red	$34.99
Sport-100 Helmet, Black	$34.99
Mountain Bike Socks, M	$9.50
Mountain Bike Socks, L	$9.50
Sport-100 Helmet, Blue	$34.99
AWC Logo Cap	$8.99
Long-Sleeve Logo Jersey, S	$49.99
Long-Sleeve Logo Jersey, M	$49.99
Long-Sleeve Logo Jersey, L	$49.99
Long-Sleeve Logo Jersey, XL	$49.99
HL Road Frame - Red, 62	$1,431.50

Figure 1: Display two columns within a WPF ListBox control

Rows and Columns For Each ListBox Item

Just like you add columns by adding ColumnDefinition elements, add rows by adding RowDefinition elements to a Grid as shown in Figure 2. The code below defines two columns and three rows within the <Grid> element. You still need to set the same Style element to set the HorizontalContentAlignment to "Stretch" as you did in the last example.

```
<ListBox Grid.Row="1"
    ItemsSource="{Binding Source={StaticResource viewModel},
                          Path=Products}">
  <ListBox.ItemTemplate>
    <DataTemplate>
      <Border BorderBrush="Gray"
              BorderThickness="1">
        <Grid>
          <Grid.ColumnDefinitions>
            <ColumnDefinition Width="*" />
            <ColumnDefinition Width="Auto" />
          </Grid.ColumnDefinitions>
          <Grid.RowDefinitions>
            <RowDefinition Height="Auto" />
            <RowDefinition Height="Auto" />
            <RowDefinition Height="Auto" />
          </Grid.RowDefinitions>
          <TextBlock Grid.Row="0"
                      Grid.Column="0"
                      Text="{Binding Path=Name}" />
          <TextBlock Grid.Row="1"
                      Grid.Column="0"
                      Text="{Binding Path=ProductNumber}" />
          <TextBlock Grid.Row="1"
                      Grid.Column="1"
                      Text="{Binding Path=Color}" />
          <StackPanel Grid.Row="2"
                      Grid.Column="0"
                      Margin="0"
                      Orientation="Horizontal">
            <TextBlock Text="Cost: " />
            <TextBlock TextAlignment="Left"
              Text="{Binding Path=StandardCost, StringFormat=c}" />
          </StackPanel>
          <StackPanel Grid.Row="2"
                      Grid.Column="1"
                      Margin="0"
                      Orientation="Horizontal">
            <TextBlock Text="Price: " />
            <TextBlock TextAlignment="Right"
              Text="{Binding Path=ListPrice, StringFormat=c}" />
          </StackPanel>
        </Grid>
      </Border>
    </DataTemplate>
  </ListBox.ItemTemplate>
</ListBox>
```


Rows and Columns

HL Road Frame - Black, 58
FR-R92B-58 Black
Cost: $1,059.31 Price: $1,431.50

HL Road Frame - Red, 58
FR-R92R-58 Red
Cost: $1,059.31 Price: $1,431.50

Sport-100 Helmet, Red
HL-U509-R Red
Cost: $13.09 Price: $34.99

Sport-100 Helmet, Black
HL-U509 Black
Cost: $13.09 Price: $34.99

Mountain Bike Socks, M
SO-B909-M White

Figure 2: Add rows to each ListBox item by adding row definitions to a Grid

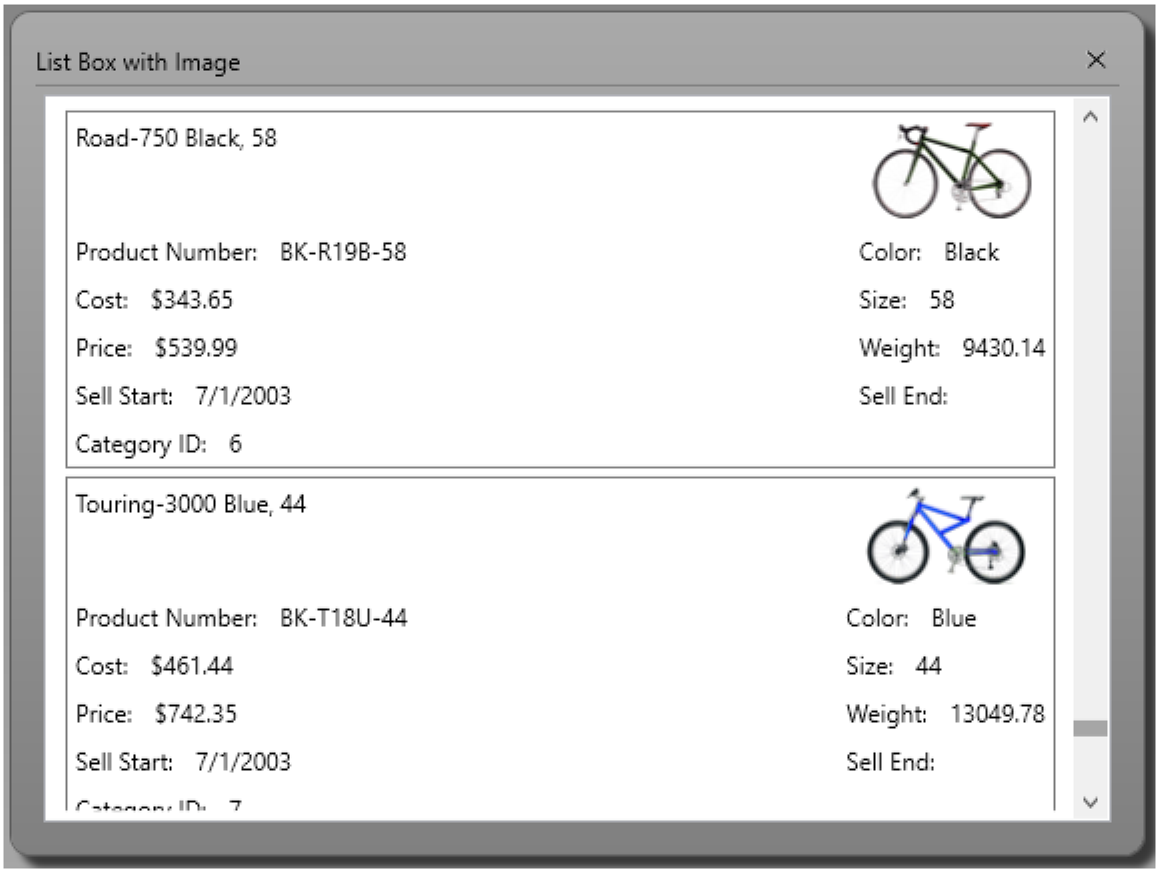
Add an Image and Create a Reusable Data Template

In the previous samples, you created a <DataTemplate> within each <ListBox> control. However, many times you might need to reuse the data template on many different ListBoxes. If this is the case, create a data template in the App.xaml file of your WPF application, or in any resource dictionary and assign a unique *Key* value to that template. This allows you to use the resource key name on any ListBox in your application. Open the App.xaml file in your WPF application and add the following code.

```
<DataTemplate x:Key="ProductLargeTemplate">
  <Border BorderBrush="Gray"
          BorderThickness="1"
          MinWidth="300">
    <Grid>
      <Grid.ColumnDefinitions>
        <ColumnDefinition Width="*" />
        <ColumnDefinition Width="Auto" />
      </Grid.ColumnDefinitions>
      <Grid.RowDefinitions>
        <RowDefinition Height="Auto" />
        <RowDefinition Height="Auto" />
        <RowDefinition Height="Auto" />
        <RowDefinition Height="Auto" />
        <RowDefinition Height="Auto" />
        <RowDefinition Height="Auto" />
      </Grid.RowDefinitions>
      <TextBlock Grid.Row="0"
                 Grid.Column="0"
                 Text="{Binding Path=Name}" />
      <Image Grid.Row="0"
             Grid.Column="1"
             Source="{Binding Path=ThumbNailPhoto}" />
      <StackPanel Grid.Row="1"
                 Grid.Column="0"
                 Margin="0"
                 Orientation="Horizontal">
        <TextBlock Text="Product Number: " />
        <TextBlock Text="{Binding Path=ProductNumber}" />
      </StackPanel>
      <StackPanel Grid.Row="1"
                 Grid.Column="1"
                 Margin="0"
                 Orientation="Horizontal">
        <TextBlock Text="Color: " />
        <TextBlock Text="{Binding Path=Color}" />
      </StackPanel>
      <StackPanel Grid.Row="2"
                 Grid.Column="0"
                 Margin="0"
                 Orientation="Horizontal">
        <TextBlock Text="Cost: " />
        <TextBlock Text="{Binding Path=StandardCost,
StringFormat=c}" />
      </StackPanel>
      <StackPanel Grid.Row="2"
                 Grid.Column="1"
                 Margin="0"
                 Orientation="Horizontal">
        <TextBlock Text="Size: " />
        <TextBlock Text="{Binding Path=Size}" />
      </StackPanel>
      <StackPanel Grid.Row="3"
                 Grid.Column="0"
                 Margin="0"
                 Orientation="Horizontal">
        <TextBlock Text="Price: " />
        <TextBlock Text="{Binding Path=ListPrice, StringFormat=c}"
/>
      </StackPanel>
      <StackPanel Grid.Row="3"
                  Grid.Column="1"
                  Margin="0"
                  Orientation="Horizontal">
        <TextBlock Text="Weight: " />
        <TextBlock Text="{Binding Path=Weight}" />
      </StackPanel>
      <StackPanel Grid.Row="4"
                  Grid.Column="0"
                  Margin="0"
                  Orientation="Horizontal">
        <TextBlock Text="Sell Start: " />
        <TextBlock Text="{Binding Path=SellStartDate,
StringFormat=d}" />
      </StackPanel>
      <StackPanel Grid.Row="4"
                  Grid.Column="1"
                  Margin="0"
                  Orientation="Horizontal">
        <TextBlock Text="Sell End: " />
        <TextBlock Text="{Binding Path=SellEndDate, StringFormat=d}"
/>
      </StackPanel>
      <StackPanel Grid.Row="5"
                  Grid.Column="0"
                  Margin="0"
                  Orientation="Horizontal">
        <TextBlock Text="Category ID: " />
        <TextBlock Text="{Binding Path=ProductCategoryID}" />
      </StackPanel>
    </Grid>
  </Border>
</DataTemplate>
```

Two items of interest in the above code are the setting of x:Key="ProductLargeTemplate". The *Key* property uniquely identifies this data template so you can reference it from any ListBox in your application. The other item is the addition of an Image control to display an image on each ListBox item. Set this DataTemplate on a ListBox by setting the ItemTemplate property as shown in the following code snippet.

```
<ListBox Grid.Row="1"
    ItemTemplate="{StaticResource ProductLargeTemplate}"
    ItemsSource="{Binding Source={StaticResource viewModel},
                          Path=Products}" />
```


List Box with Image

Road-750 Black, 58

Product Number: BK-R19B-58
Cost: $343.65
Price: $539.99
Sell Start: 7/1/2003
Category ID: 6

Color: Black
Size: 58
Weight: 9430.14
Sell End:

Touring-3000 Blue, 44

Product Number: BK-T18U-44
Cost: $461.44
Price: $742.35
Sell Start: 7/1/2003
Category ID: 7

Color: Blue
Size: 44
Weight: 13049.78
Sell End:

Figure 3: You can add images to each list box item

Summary

In this blog post, you learned to add multiple rows and columns to each ListBox item. Setting the HorizontalContentAlignment to "Stretch" is vital to ensure you can use different kinds of alignment in each row. You also added an image to each ListBox item for a little bit of visual interest. Finally, you created a reusable template in App.xaml and utilized that template on a ListBox elsewhere in your application. In the next blog post, you learn how to change the data displayed in each row dynamically at runtime and how to use data triggers.

NOTE: You can download the sample code for this article by visiting my website at http://www.pdsa.com/downloads. Select “Fairway/PDSA Blog”, then select “The WPF List Box Can Do That?! - Part 1” from the dropdown list.