

# Tutorial – Drawing (Windows Store App)

Chih-Yu Kang

Ver. 1.0, 7<sup>th</sup> November, 2012

Bo Jun Chen

Ver. 3.0 24th 4 November, 2016

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## About This Document

在本次的練習中，將會練習到如何在 Windows Store App 中使用 Canvas 繪出矩形和圓形。

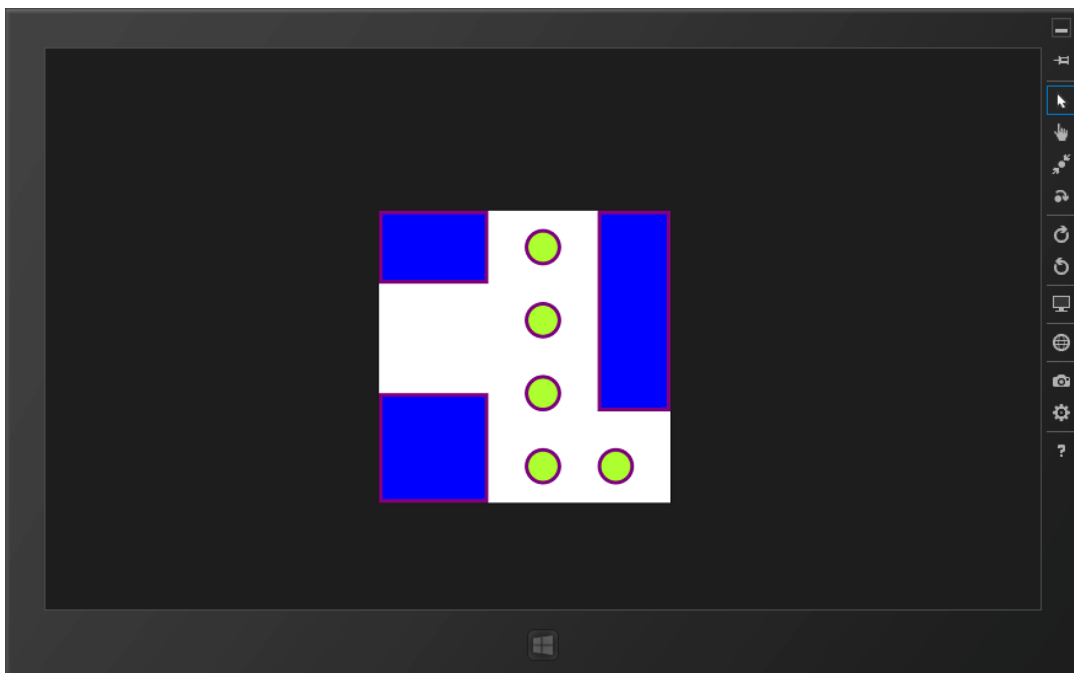


Figure 1 程式執行結果

## Tutorial – Elfin

### Step 1 Setup Environment

打開 Visual Studio 2015 後，點選 File > Visual C# > Windows > Universal > Blank App(Universal Windows)，若發現沒有此項可選擇，請使用下方說明來取得。

因為 Windows10 以上版本的 Visual Studio 2015 預設是沒有內建 Windows Store App 的專案工具，所以必須先至以下網站下載需要工具，請先關閉 Visual

Studio 2015，下載完成後點選安裝 Figure. 2 所選取的項目，並等候安裝更新。

<http://go.microsoft.com/fwlink/?LinkID=619615>

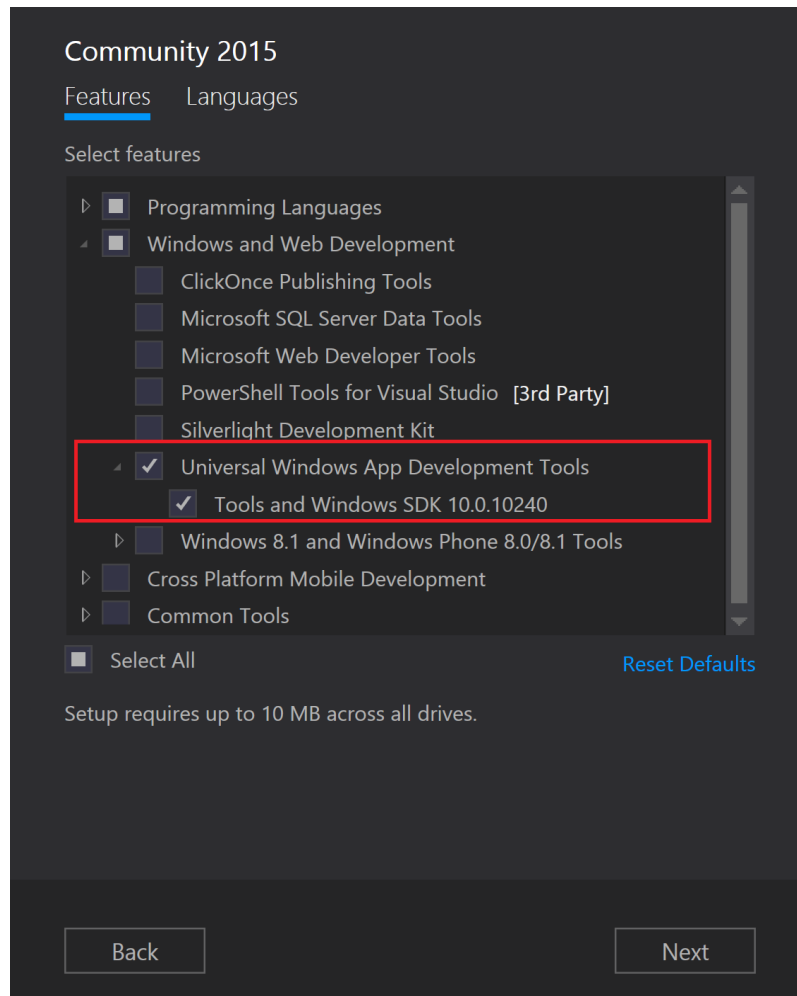


Figure 2 Run setup and choose items which you need  
(whether Community Vision or Enterprise Vision)

打開 Visual Studio 2015 後，點選 File > Visual C# > Windows > Universal > Blank App(Universal Windows)，然後輸入專案名稱，即可成功建立一個空白的 Windows Store App 專案。

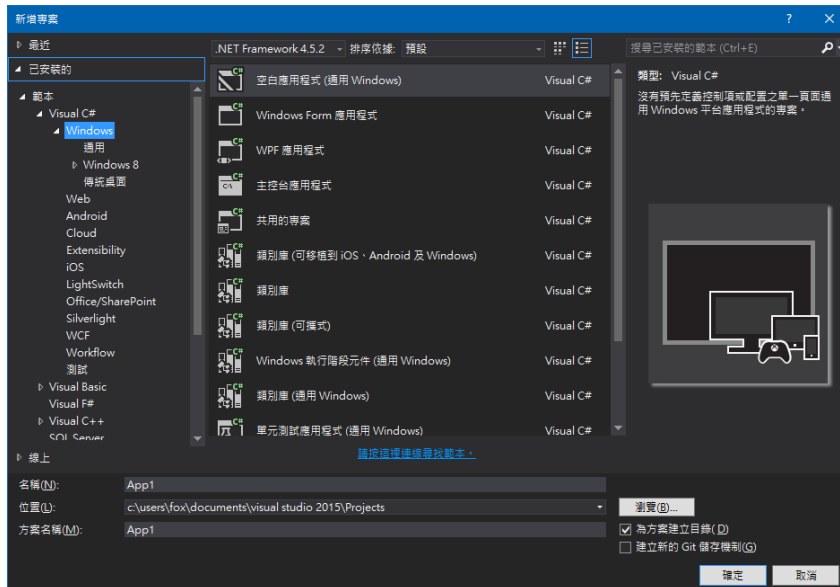


Figure 2 開啟新專案

## Step 2 Create a Canvas

點選 MainPage.xaml，從 Toolbox(Figure 3)中點選 Canvas 並拖拉至 MainPage 中。然後開啟 MainPage.xaml.cs 檔案，並且加入以下程式碼，之後按下執行鍵 (Figure 4)，可以看到執行結果如 Figure 5 所示。

```
public sealed partial class MainPage : Page
{
    private const int CANVAS_SIZE = 400;
    private const int BALL_SIZE = 50;
    private const double STROKE_THICKNESS = 5;
    private SolidColorBrush _whiteColor =
        new SolidColorBrush (Colors.White);
    private SolidColorBrush _blueColor =
        new SolidColorBrush (Colors.Blue);
    private SolidColorBrush _blackColor =
        new SolidColorBrush (Colors.Black);
    private SolidColorBrush _yellowColor =
        new SolidColorBrush (Colors.Yellow);
    private SolidColorBrush _greenYellowColor =
        new SolidColorBrush (Colors.GreenYellow);
    private SolidColorBrush _purpleColor =
        new SolidColorBrush (Colors.Purple);

    public MainPage ()
```

```

{
    this.InitializeComponent();
    _canvas.Width = CANVAS_SIZE;
    _canvas.Height = CANVAS_SIZE;
    _canvas.Background = _whiteColor;
}

protected override void OnNavigatedTo(NavigationEventArgs e)
{
}
}

```

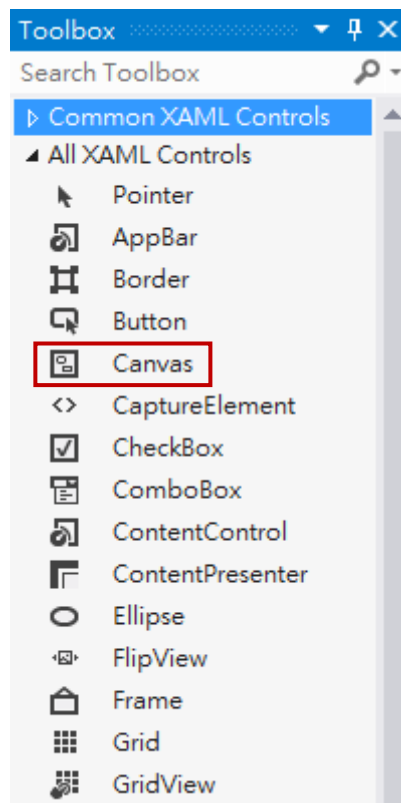


Figure 3 Toolbox

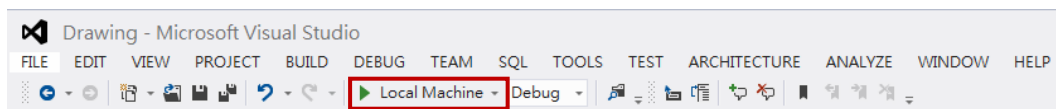


Figure 4 按下執行

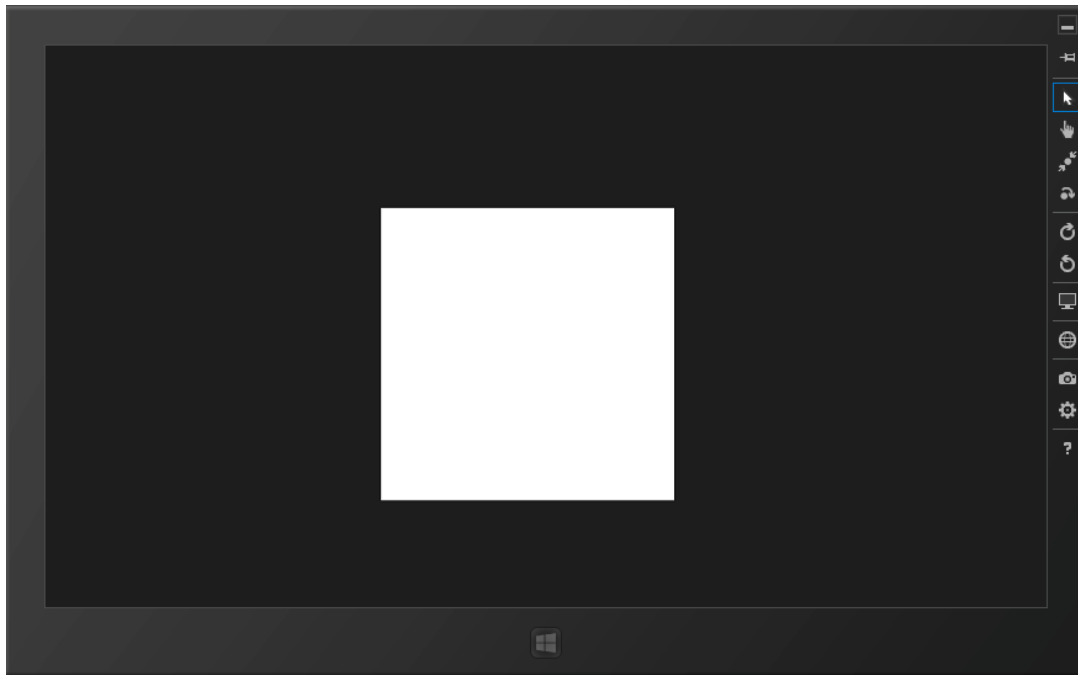


Figure 5 執行結果

### Step 3 Draw some Rectangle and Ellipse

接著要在 Canvas 中加入一些圖形，先在 MainPage.xaml.cs 中加入 InitializeShape 的函式

```
private Shape InitializeShape(Shape shape, int left, int top, int right,
int bottom, SolidColorBrush fillColorBrush)
{
    shape.Margin = new Thickness(left, top, right, bottom);
    shape.Width = right;
    shape.Height = bottom;
    shape.Fill = fillColorBrush;
    return shape;
}
```

接著在 MainPage() 中加入：

```
// Three blue blocks
Rectangle rectangle = new Rectangle();
InitializeShape(rectangle, 0, 0, 150, 100, _blueColor);
_canvas.Children.Add(rectangle);

rectangle = new Rectangle();
InitializeShape(rectangle, 0, 250, 150, 150, _blueColor);
_canvas.Children.Add(rectangle);
```

```

rectangle = new Rectangle();
InitializeShape(rectangle, 300, 0, 100, 275, _blueColor);
_canvas.Children.Add(rectangle);

// Five balls
Ellipse ellipse = new Ellipse();
InitializeShape(ellipse, 200, 25, BALL_SIZE, BALL_SIZE,
_greenYellowColor);
_canvas.Children.Add(ellipse);

ellipse = new Ellipse();
InitializeShape(ellipse, 200, 125, BALL_SIZE, BALL_SIZE,
_greenYellowColor);
_canvas.Children.Add(ellipse);

ellipse = new Ellipse();
InitializeShape(ellipse, 200, 225, BALL_SIZE, BALL_SIZE,
_greenYellowColor);
_canvas.Children.Add(ellipse);

ellipse = new Ellipse();
InitializeShape(ellipse, 200, 325, BALL_SIZE, BALL_SIZE,
_greenYellowColor);
_canvas.Children.Add(ellipse);

ellipse = new Ellipse();
InitializeShape(ellipse, 300, 325, BALL_SIZE, BALL_SIZE,
_greenYellowColor); _canvas.Children.Add(ellipse);

```

按下執行鍵，可以看到結果如 Figure 6

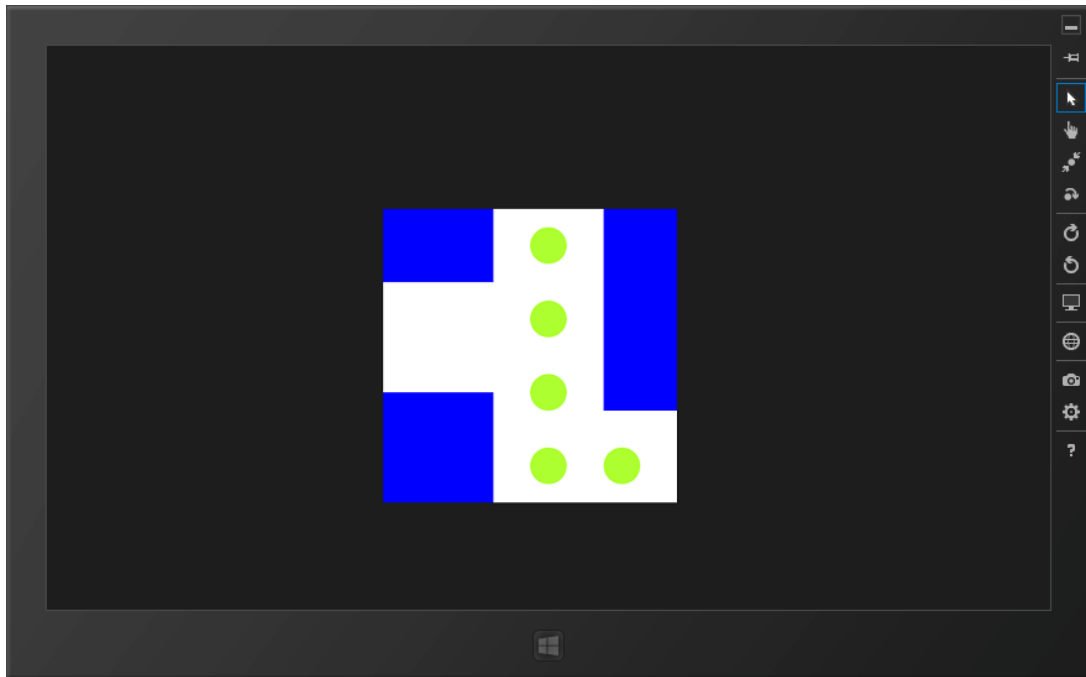


Figure 6 執行結果

#### Step 4 The shape StrokeThickness

做完剛剛的練習後，已經可以看到有三個矩形和五個圓形，接著我們要為他們加上外框，修改 InitializeShape 的副函式為以下：

```
private Shape InitializeShape(Shape shape, int left, int top, int right,
                             int bottom, SolidColorBrush fillColorBrush)
{
    shape.Margin = new Thickness(left, top, right, bottom);
    shape.Width = right;
    shape.Height = bottom;
    shape.Fill = fillColorBrush;
    shape.Stroke = _purpleColor;
    shape.StrokeThickness = STROKE_THICKNESS;
    return shape;
}
```

Figure 6 The modification of the function: InitializeShape

即可看到最後的執行結果如 Figure 1.

**- The End -**