Simple Paint With Bitmaps Tutorial Morosko Final

Overview

This tutorial is to help understand Bitmaps, and graphics in Visual Basic. We will be creating a simple paint program with the functions to reset your painting and save it.

Bitmaps

Bitmaps are for storing images. They can be resied and manipulated. Bitmaps store an image as a position and color value for a bit(pixel).

Graphics

Graphics is the class used to draw various shapes and objects such as a line, rectangle, or circle.

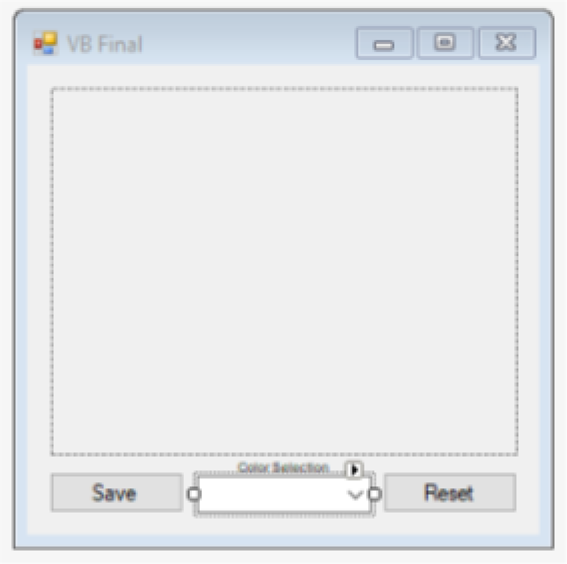
Project Consept

To create the paint program we will use the bitmap and graphics classes to set a painting area inside an Image box. Then we will detect when the user is inside the image box and clicking the left mouse button. If that is the case then we will use the graphics class to draw a square right at the position of the mouse. We will then allow the user to save the image using the bitmap save method and the save dialog.

Let's Start

Layout

- Add an PictureBox, two Buttons, a label, a SaveFileDialog and a ComboBox.
- Set the label text to "Color Selection", the buttons to "save" and "reset", and the ComboBox items property to black, blue and red.

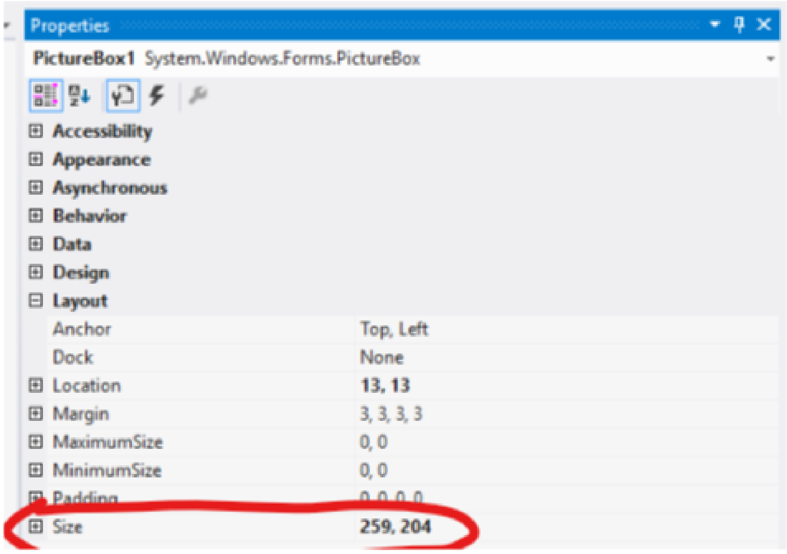


alt text

- Next let's double click the form to add a form on load function. Add 3 global variables and the tasks inside the form1_Load sub.

```
Dim bmp As New Drawing.Bitmap(259, 204)
Dim gfx As Graphics = Graphics.FromImage(bmp)
Dim color As Brush = Brushes.Black

Private Sub Form1_Load(sender As Object, e As EventArgs) Handles MyBase.Load
    gfx.FillRectangle(Brushes.White, 0, 0, PictureBox1.Width, PictureBox1.Height)
    PictureBox1.Image = bmp
End Sub
```

Above we created a Bitmap, Graphic, abd a Brush. In the form1_Load we set the graphic to a solid rectagle of white, it started at point 0, 0 in the picture box and is the same width and height. On line 1 you would need to change the height and width to the correct size for your image box. The size can be found in the properties under layout in the size row.



Properties

PictureBox1 System.Windows.Forms.PictureBox

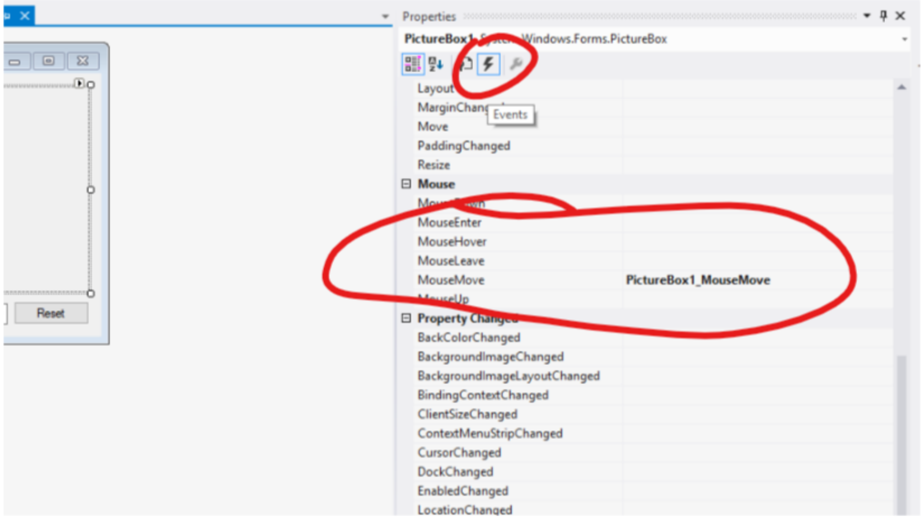
⊞ Accessibility
⊞ Appearance
⊞ Asynchronous
⊞ Behavior
⊞ Data
⊞ Design
⊟ Layout

Anchor	Top, Left
Dock	None
⊞ Location	13, 13
⊞ Margin	3, 3, 3, 3
⊞ MaximumSize	0, 0
⊞ MinimumSize	0, 0
⊞ Padding	0, 0, 0, 0
⊞ Size	259, 204

Functionality

On Load Event

- Add a mouse move event to the Picture Box. Click events tab in the properties box, then double select mouse move. Add the code below to the sub.



Properties

PictureBox1 System.Windows.Forms.PictureBox

Layout	
MarginChanged	
Move	
PaddingChanged	
Resize	
⊟ Mouse	
MouseDown	
MouseEnter	
MouseHover	
MouseLeave	
MouseMove	PictureBox1_MouseMove
MouseUp	
⊟ Property Changed	
BackColorChanged	
BackgroundImageChanged	
BackgroundImageLayoutChanged	
BindingContextChanged	
ClientSizeChanged	
ContextMenuStripChanged	
CursorChanged	
DockChanged	
EnabledChanged	
LocationChanged	

alt text

```
    Private Sub PictureBox1_MouseMove(sender As Object, e As MouseEventArgs) Handles Picture
```

```
        If MouseButtons.HasFlag(MouseButtons.Left) Then
            Try
                gfx.FillRectangle(color, MousePosition.X - Me.Location.X - PictureBox1.Locat

                'OR . . .  use this for the smallest size line
                'bmp.SetPixel(MousePosition.X - Me.Location.X - PictureBox1.Location.X - 8,

                PictureBox1.Image = bmp
            Catch ex As Exception
            End Try
        End If
    End Sub
```

At this point you are able to test the program without errors. * The code above draws a 4px x 4px rectangle at the mouse position. The mouse position is calculated from the top left of the screen, therefore to get the position inside the picturebox we must subrtact the location of the window, the pictureBox, and the top bar. * Line 6 above shows how to draw pixel by pixel using the set pixel function in the Bitmap class. * The last step to drawing anything wither a pixel or a rectangle is to reset the Picturebox to the new image. * All is put in a try catch to avoid the error thrown when the user is outside of the picture box.

Reset Button

- Double click the reset buttion to add a click event. Then add the code below. This is identical to the on load event.

“‘vb

```
Private Sub Button1_Click(sender As Object, e As EventArgs) Handles Button1.Click
    gfx.FillRectangle(Brushes.White, 0, 0, PictureBox1.Width, PictureBox1.Height)
    PictureBox1.Image = bmp
End Sub
```

“‘

Save File Button

- Add a click event for the Save Button. Then add the code Below.

“‘vb

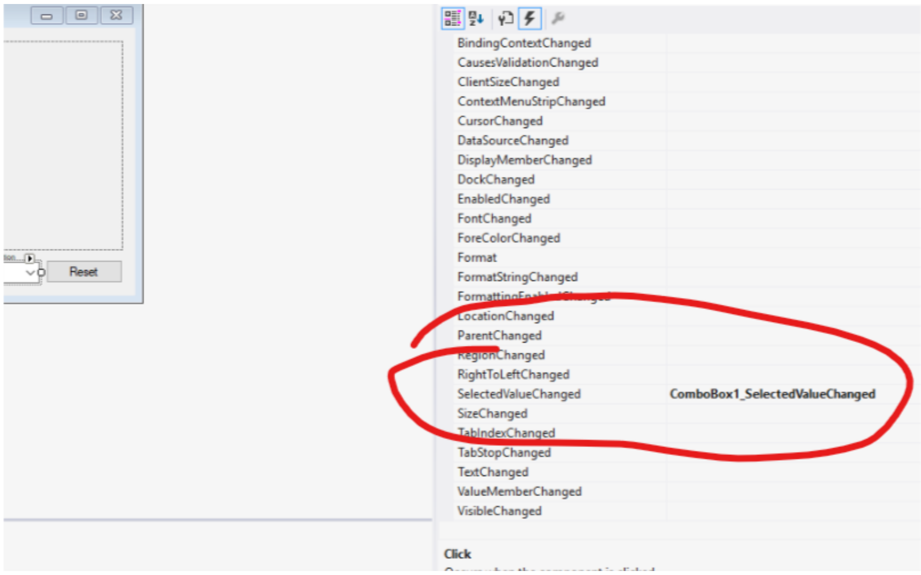
```
Private Sub Button2_Click(sender As Object, e As EventArgs) Handles Button2.Click
    Dim saveFileDialog1 As New SaveFileDialog()

    saveFileDialog1.Filter = "png files (*.png)|*.png"
    saveFileDialog1.FilterIndex = 1
    saveFileDialog1.RestoreDirectory = True

    If saveFileDialog1.ShowDialog() = DialogResult.OK Then
        MessageBox.Show("Image Saved to: " & saveFileDialog1.FileName.ToString)
        bmp.Save(saveFileDialog1.FileName.ToString, System.Drawing.Imaging.ImageFormat.Png)
    End If
End Sub
```

“‘

> As stated in our project consept this save button uses the Bitmap.Save() method. Save in this example takes two parameters (full file path including file name ex(C:/Documents/img.png), a image format type ex(.png, .jpg)

Change Graphic Brush Color

- Add a selected value changed event to the Picture Box. Click events tab in the properties box, then double select SelectedValueChanged. Add the code below to the sub. Test the program and draw, reset, change the color.



BindingContextChanged	
CausesValidationChanged	
ClientSizeChanged	
ContextMenuStripChanged	
CursorChanged	
DataSourceChanged	
DisplayMemberChanged	
DockChanged	
EnabledChanged	
FontChanged	
ForeColorChanged	
Format	
FormatStringChanged	
FormattingEnabledChanged	
LocationChanged	
ParentChanged	
RegionChanged	
RightToLeftChanged	
SelectedValueChanged	ComboBox1_SelectedValueChanged
SizeChanged	
TabIndexChanged	
TabStopChanged	
TextChanged	
ValueMemberChanged	
VisibleChanged	

Click

alt text

“‘vb

```
Private Sub ComboBox1_SelectedValueChanged(sender As Object, e As EventArgs) Handles ComboBo
    Select Case ComboBox1.SelectedIndex
        Case 2
            color = Brushes.Red
        Case 1
```

```
            color = Brushes.Blue
        Case 0
            color = Brushes.Black
    End Select
End Sub
```

“‘

> This sub is called every time a new value is selected. The select case changes the color gloabal variable to a different color using Brushes.