

Course 2DCis: 2D-Computer Graphics with C#

Chapter C1: The Complete Code of the Intro Project

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Copy all this code into an empty `Form1.cs` of a new Windows Application C#-project `intro1` and clear `Form1.Designer.cs` and `Program.cs`.

```
using System;
using System.Drawing;
using System.Windows.Forms;

public class Form1 : Form
{ [STAThread] static void Main() { Application.Run( new Form1() ); }
  Font arial18 = new Font( "Arial", 18 );
  Font arial16 = new Font( "Arial", 16 );
  Font courier14 = new Font( "Courier New", 14 );
  Brush blackbrush = SystemBrushes.ControlText;
  Brush redbrush = new SolidBrush( Color.Red );
  Brush whitebrush = new SolidBrush( Color.White );
  Pen blackpen = new Pen( Color.Black, 4 );
  Pen randompen = new Pen( Color.Black, 20 );

  public Form1()
  { Text = "intro1";
    BackColor = Color.White;
    SetStyle( ControlStyles.ResizeRedraw, true );
    StartPosition = FormStartPosition.Manual;
    Top = 50;
    Left = 50;
    Width = 800;
    Height = 600;
  }

  protected override void OnPaint( PaintEventArgs e )
  { //Version 2 *****
    Graphics g = e.Graphics;
    Rectangle cr = ClientRectangle;
    String s0 = "Hello world, here is intro1 !";
    String s1 = "Change the size of your window by dragging a corner !";
    String s2w = "Form : Width = " + Width.ToString();
    String s3w = "Client: Width = " + cr.Width.ToString();
    String s2h = " Height= " + Height.ToString();
    String s3h = " Height= " + cr.Height.ToString();
    g.DrawString( s0, arial18, blackbrush, 0, 0 );
    g.DrawString( s1, arial16, redbrush, 0, 20 );
    g.DrawString( s2w + s2h, courier14, blackbrush, 0, 40 );
    g.DrawString( s3w + s3h, courier14, blackbrush, 0, 60 );
    //Version 3 *****
    Point mid = new Point( cr.Width/2, cr.Height/2 );
    g.DrawString( "left", arial16, blackbrush, 0, mid.Y );
    g.DrawString( "right", arial16, blackbrush, cr.Width-50, mid.Y );
    g.DrawString( "top", arial16, blackbrush, mid.X, 0 );
    g.DrawString( "bottom", arial16, blackbrush, mid.X, cr.Height-30 );
    //Version 4 *****
    g.DrawLine( blackpen, 0, 0, cr.Width, cr.Height );
    g.DrawLine( blackpen, cr.Width, 0, 0, cr.Height );
    Int32 w5 = cr.Width / 5;
    Int32 h5 = cr.Height / 5;
    g.FillRectangle( whitebrush, w5, h5, 3 * w5, 3 * h5 );
    g.DrawRectangle( blackpen, w5, h5, 3 * w5, 3 * h5 );
    g.DrawEllipse ( blackpen, w5, h5, 3 * w5, 3 * h5 );
  }
}
```

```

//Version 5 *****
Int16 i, nn = 120;
Int32 red, green, blue;
randompen.EndCap = System.Drawing.Drawing2D.LineCap.DiamondAnchor;
Point[] splash = new Point[nn];
Double arcus_1 = 2.0 * Math.PI / nn;
Double arcus_i, factor, sinus, cosinus;
Double radius_x = 1.35 * w5;
Double radius_y = 1.35 * h5;
Random random = new Random();
for ( i=0; i < nn; i++ )
{
    red    = random.Next( Byte.MaxValue );
    green  = random.Next( Byte.MaxValue );
    blue   = random.Next( Byte.MaxValue );
    randompen.Color = Color.FromArgb( red, green, blue );
    factor = Math.Max( 0.25, random.NextDouble() );
    arcus_i = arcus_1 * i;
    cosinus = radius_x * factor * Math.Cos( arcus_i );
    sinus   = radius_y * factor * Math.Sin( arcus_i );
    g.DrawLine( randompen, mid.X, mid.Y, mid.X + (Int32)cosinus, mid.Y + (Int32)sinus );
    splash[i].X = mid.X + (Int32)(cosinus * 0.8);
    splash[i].Y = mid.Y + (Int32)( sinus * 0.8);
}
//Version 6 *****
g.FillClosedCurve( redbrush, splash );
g.DrawString( "splash !", arial18, whitebrush, mid.X - 40, mid.Y - 9 );
//Version 7 *****
System.Threading.Thread.Sleep( 100 ); //Wait 100 milliseconds.
Invalidate(); //Ask the operating system to raise the Paint event again.
}
}

```