Chapter_2 Bitmap类

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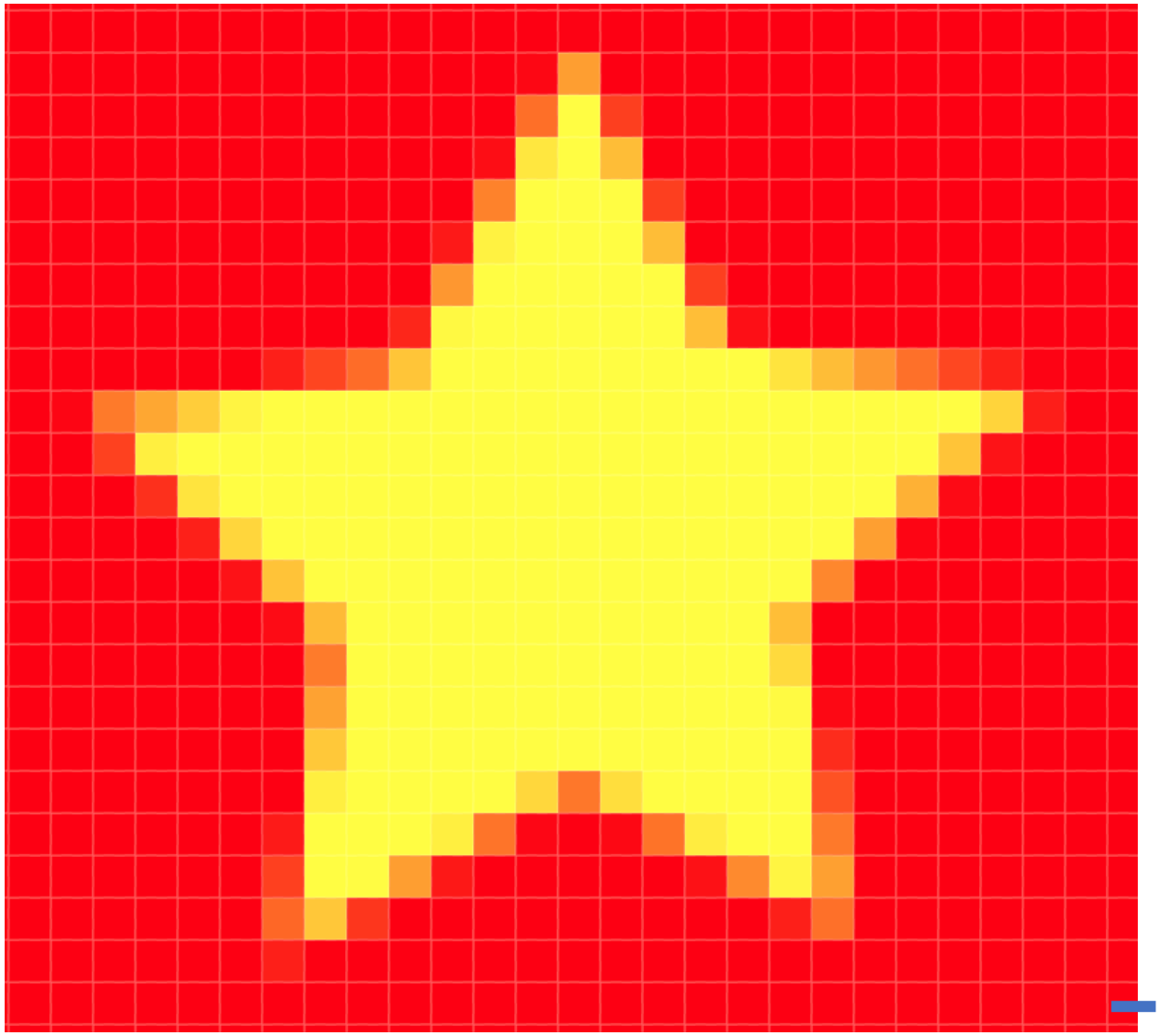
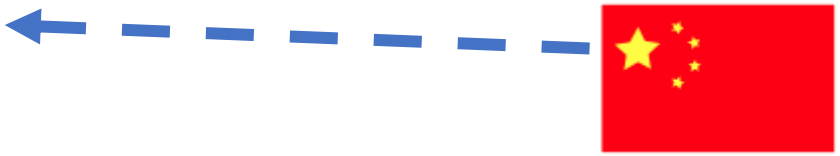
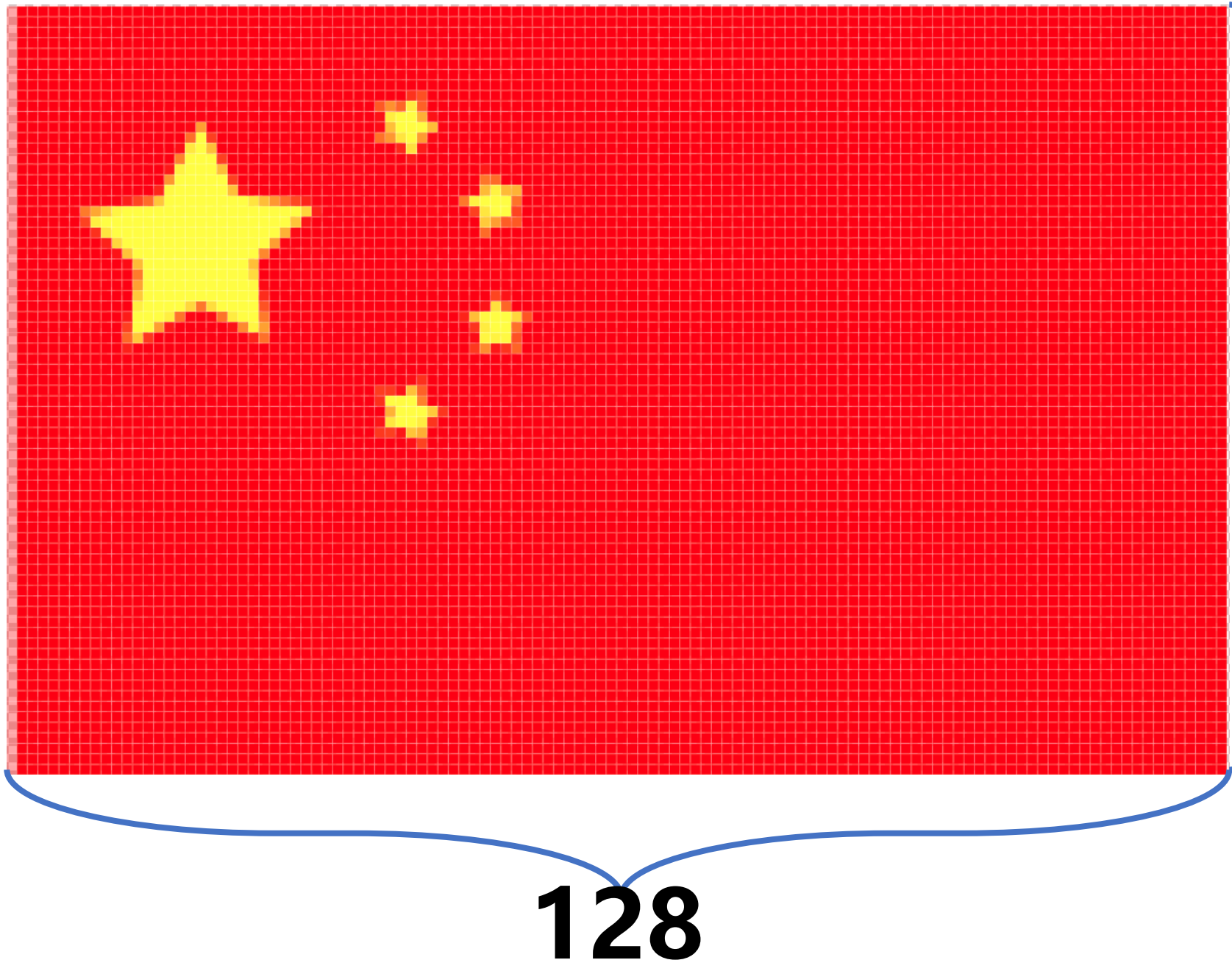
图片：由像素责成(Pixel)

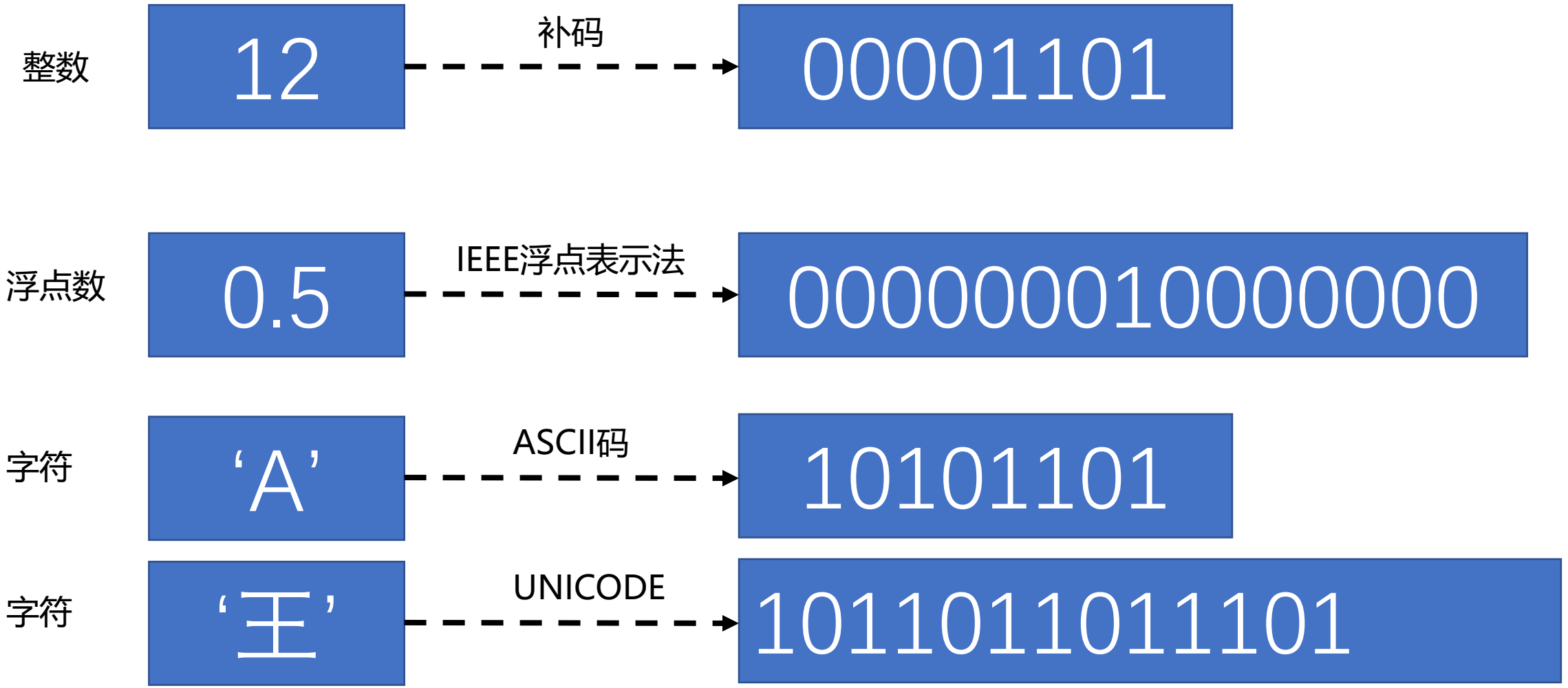




分辨率



信息如何存到计算机里


整数
12
补码
00001101
浮点数
0.5
IEEE浮点表示法
00000001000000000
字符
‘A’
ASCII码
10101101
字符
‘王’
UNICODE
1011011011101

图片

?

……00001101……

音频

?

……10101101……

视频

?

……11101111……

3D模型

?

……01101001……

图片

按照某种
算法与标准

.bmp / .jpg / .jpeg / .png / .gif / .ppm

音频

按照某种
算法与标准

.mp3 / .wma

视频

按照某种
算法与标准

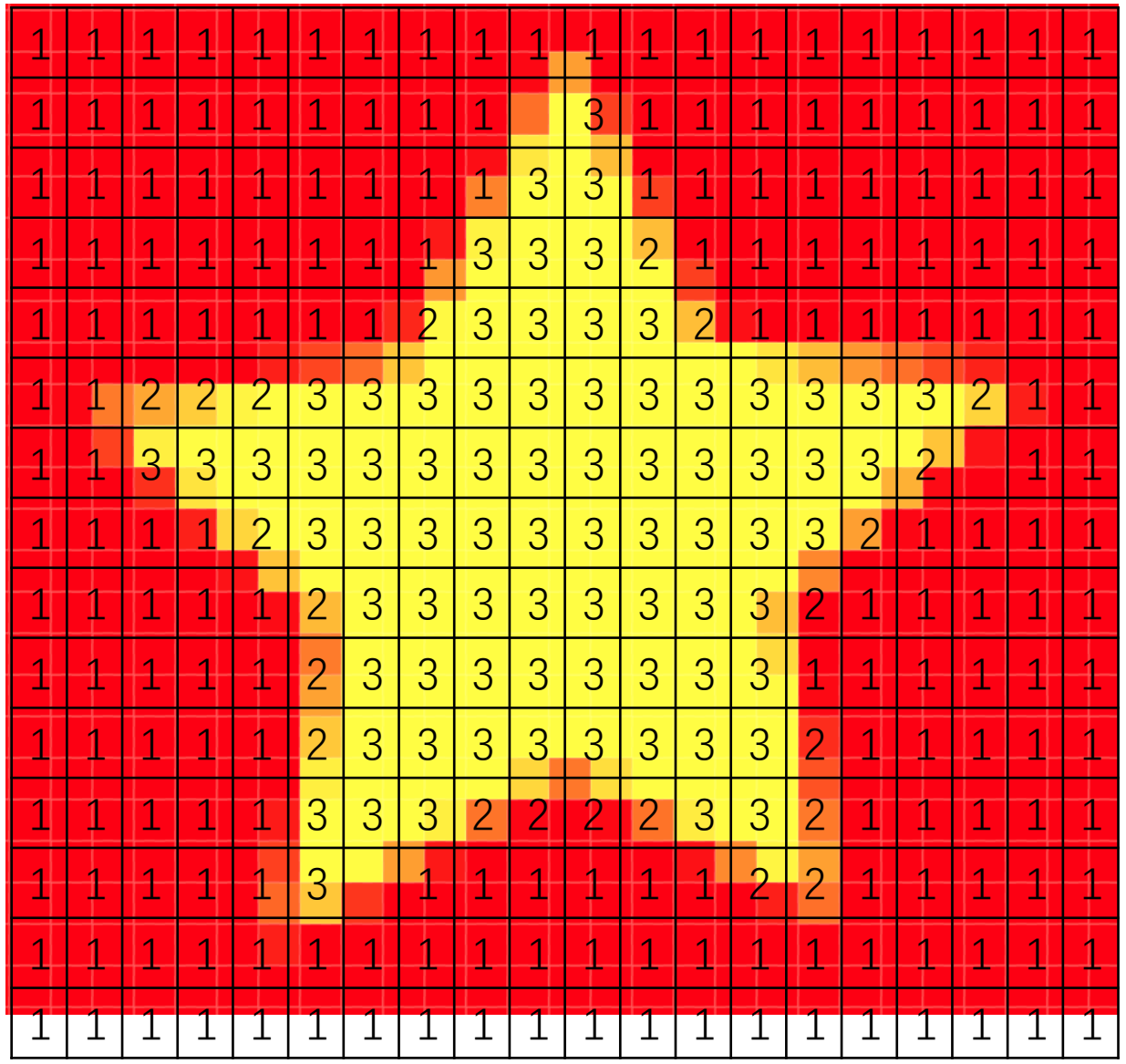
.avi / .mp4

3D模型

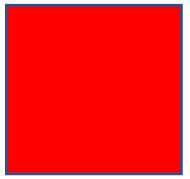
按照某种
算法与标准

.3ds / .obj / .fbx

数据的存储:

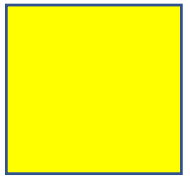


存索引:



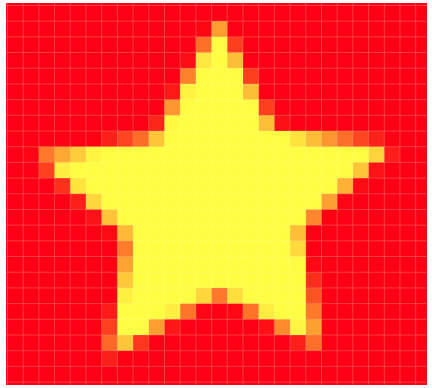
1

2



3

数据的存储:



255,0,0	255,0,0	255,0,0	255,0,0	255,0,0	255,0,0
255,0,0	255,0,0	255,0,0	255,0,0	255,0,0	255,0,0
255,0,0	255,192,0	255,192,0	255,192,0	255,192,0	255,192,0
255,0,0	255,255,0	255,255,0	255,255,0	255,255,0	255,255,0
255,0,0	255,255,0	255,255,0	255,255,0	255,255,0	255,255,0
255,0,0	255,255,0	255,255,0	255,255,0	255,255,0	255,255,0
255,0,0	255,255,0	255,255,0	255,255,0	255,255,0	255,255,0
255,0,0	255,255,0	255,255,0	255,255,0	255,255,0	255,255,0

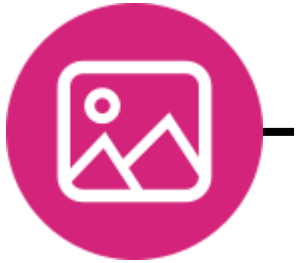
存颜色RGB

R : 255
G : 0
B : 0

R : 255
G : 192
B : 0

R : 255
G : 255
B : 0

图片



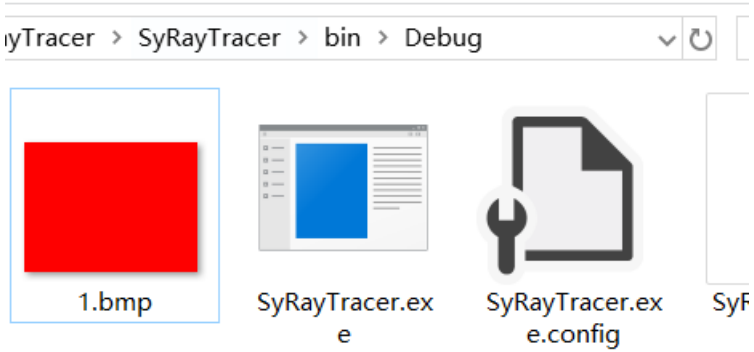
?

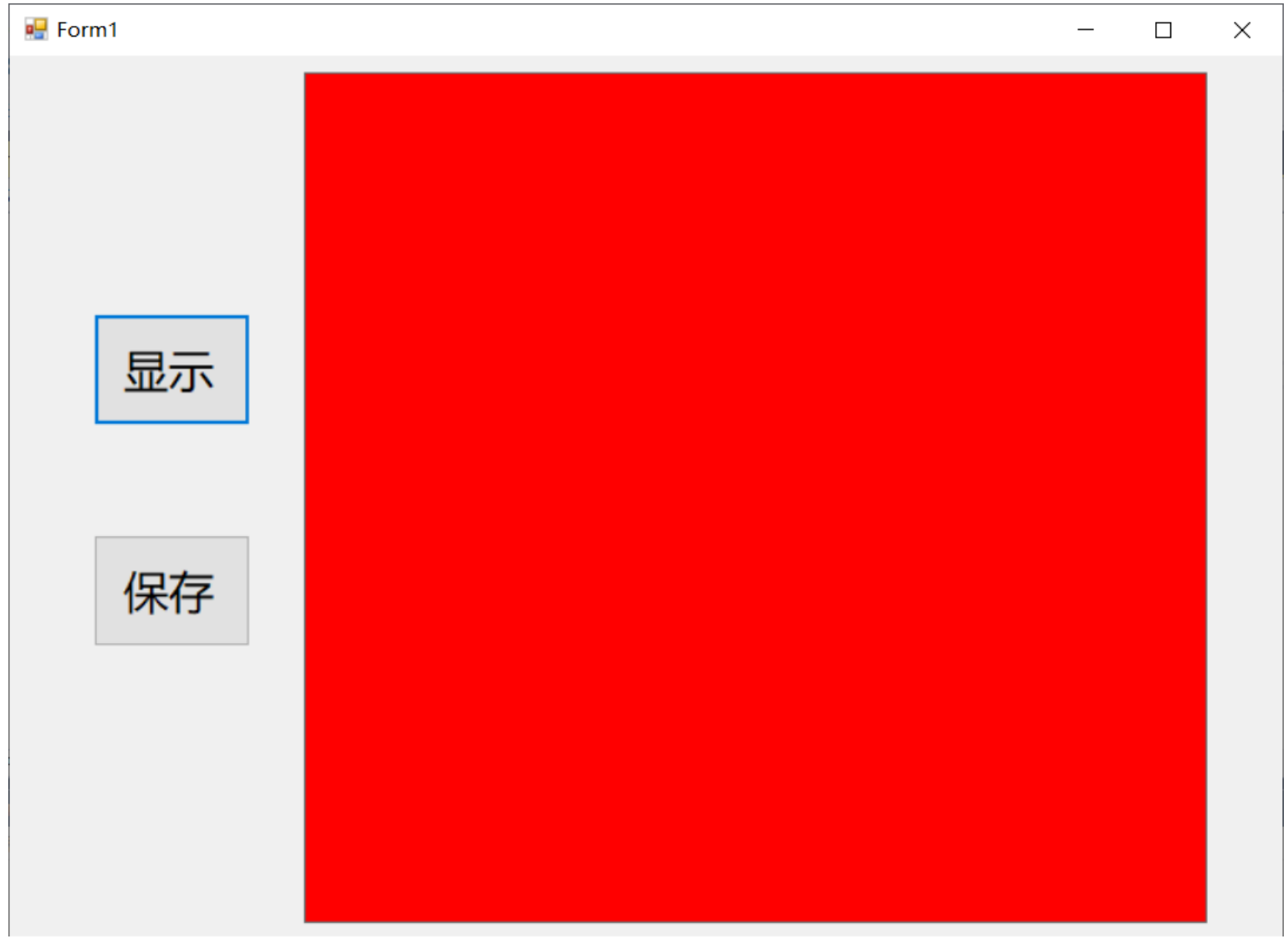
.bmp（微软）

C# Bitmap类

C# Bitmap 类

```
//bmp图像
Bitmap bmpRt;

//创建显示bmp图像
1 个引用
private void btnShow_Click(object sender, EventArgs e)
{
    //新建一张分辨率为400*300的图片
    //宽：400，高：300
    bmpRt = new Bitmap(400,300);

    //全部像素设置为红色
    for (int i = 0; i < 400; i++)
    {
        for (int j = 0; j < 300; j++)
        {
            bmpRt.SetPixel(i, j, Color.FromArgb(255, 0, 0));
        }
    }

    //将图片显示出来
    pictureBox1.BackgroundImage = bmpRt;

}

//保存bmp图像
1 个引用
private void btnSave_Click(object sender, EventArgs e)
{
    bmpRt.Save("1.bmp");
}
```

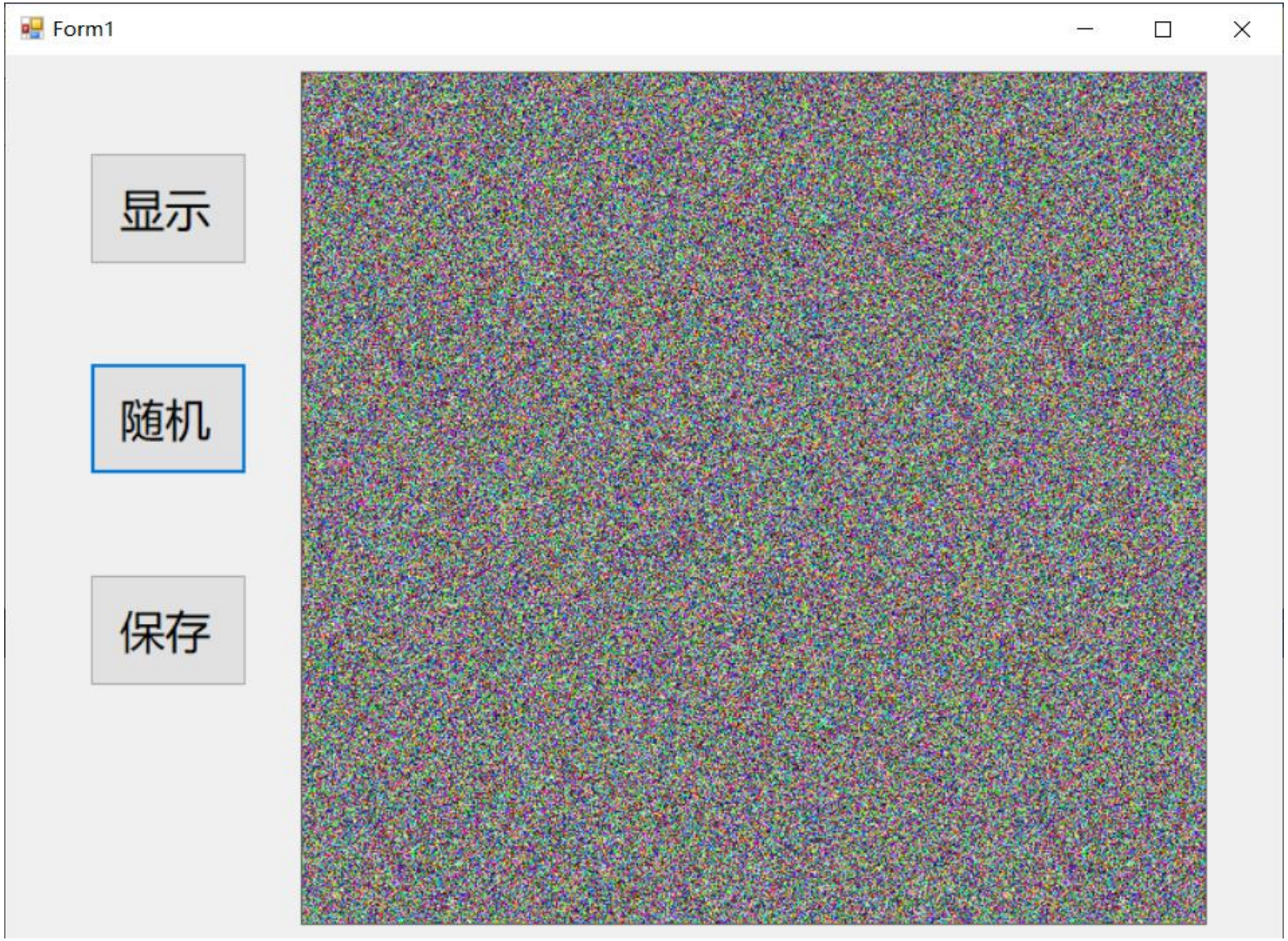

yTracer › SyRayTracer › bin › Debug
1.bmp
SyRayTracer.exe
SyRayTracer.exe.config
SyF


Form1
显示
保存

C# Random类

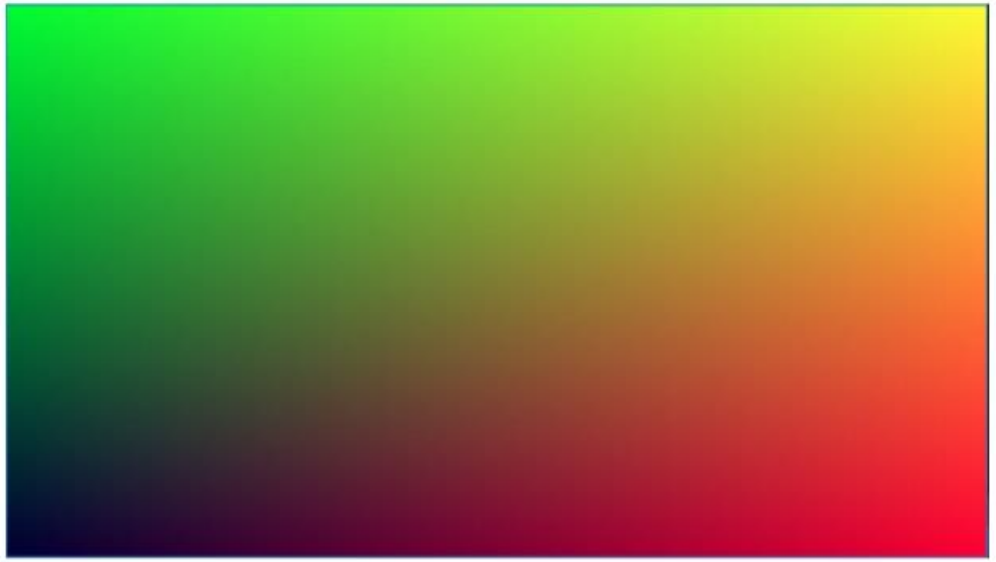
```
1 个引用
private void btnRandom_Click(object sender, EventArgs e)
{
    //新建一张分辨率为400*300的图片
    //宽：400，高：300
    bmpRt = new Bitmap(400, 300);

    //随机数
    Random random = new Random();

    //全部像素设置为红色
    for (int i = 0; i < 400; i++)
    {
        for (int j = 0; j < 300; j++)
        {
            int r = random.Next(256);
            int g = random.Next(256);
            int b = random.Next(256);
            bmpRt.SetPixel(i, j, Color.FromArgb(r, g, b));
        }
    }

    //将图片显示出来
    pictureBox1.BackgroundImage = bmpRt;
}
```

C# Random类



课后练习---bmp渐变

```
int nx = 200;   //宽度
int ny = 100;   //高度
Bitmap bitmap = new Bitmap(nx, ny);
for (int i = 0 ; i < nx; i++)
{
    for (int j = 0; j < ny; j++)
    {
        double r = (double)(i) / (double)(nx);
        double g = (double)(j) / (double)(ny);
        double b = 0.2;
        int ir = (int)(255.99 * r);
        int ig = (int)(255.99 * g);
```



```
        int ib = (int)(255.99 * b);
        bitmap.SetPixel(i, ny - j - 1, Color.FromArgb(ir, ig, ib));
 }
}
```