Learn ShaderToy

1. 获取归一化uv坐标

```
vec2 uv = fragCoord.xy / iResolution.xy;
```

2. 返回像素颜色

```
fragColor = vec4(1.0, 1.0, 1.0, 1.0);
```

3. 最简单变色程序

```
void mainImage( out vec4 fragColor, in vec2 fragCoord )
{
    // Normalized pixel coordinates (from 0 to 1)
    vec2 uv = fragCoord.xy / iResolution.xy;

    // Time varying pixel color
    vec3 col = 0.5 + 0.5 * cos(iTime + uv.xyx + vec3(0, 2, 4));

    // Output to screen
    fragColor = vec4(col, 1.0);
}
```

4. vec2每个分量都加减一个float

```
vec2var -= 0.5;
```

5. 获取vec2长度

```
float len = length(vec2var);
```

6. 标量扩充到三分量向量

```
float c = 1.0;
fragColor = vec4(vec3(c), 1.0);
```

7. if-else语句

   这会造成uncontinueaty from plato to plato，不推荐使用。

```
if(d < 0.6) c = 1.0; else c = 0.0;
```

```
if(d < 0.6){
    c = 1.0;
}
else{
    c = 0.0;
}
```

8. Aspect Ratio修正

```
uv.x *= iResolution.x / iResolution.y;
```

9. Smooth Step函数进行平滑过渡

```
float d = length(uv);
float r = 0.3;
float c = smoothstep(r, r - 0.01, d);
```

10. 绝对值和三角函数

```
float r = 0.5 * abs(sin(iTime)) * 0.5;
```

11. 啊啊啊