

# orxSHADER structure

## Summary

```
[ShaderTemplate]
Code = "// Shader code
void main()
{
    // Do stuff
}"
KeepInCache = <bool>
ParamList = ParamFloat # ParamTexture # ParamVector
ParamFloat = <float>
ParamVector = <vector>
ParamTexture = path/to/TextureFile|screen
UseCustomParam = <bool>
```

## Details

Here's a list of the available properties for an orxSHADER structure:

- Code: This block <sup>1)</sup> contains the code that will be executed. It needs to be provided and be valid GLSL fragment shader code.
- KeepInCache: Defines if the shader code should be kept in memory even if no shader of this type is currently in use. This saves time (reading from disk + compiling) but costs memory. Its default value is `false`.
- ParamList: This defines the list of parameters needed and used by the shader's code. Every defined parameter must have a default value that will help orx guess their type. If none is provided, then its type will be assumed to be a texture. Available types are `<float>`, `<vector>` and texture (if a path to a texture file or the keyword `screen` is provided). If an invalid path is provided for a parameter, or the parameter isn't defined at all, the owner's texture will be used <sup>2)</sup>.
- UseCustomParam: Defines if parameters can have their value overridden at runtime (ie. interactive). Its default value is `false` which means only the default values will be used.

Here's a simple example of a non-interactive shader as seen in the [spawner/shader tutorial](#).

```
[Decompose]
Code = "void main()
{
    float fRed, fGreen, fBlue;

    // Computes positions with offsets
    vec2 vRedPos = vec2(gl_TexCoord[0].x + offset.x, gl_TexCoord[0].y +
offset.y);
    vec2 vGreenPos = vec2(gl_TexCoord[0].x, gl_TexCoord[0].y);
    vec2 vBluePos = vec2(gl_TexCoord[0].x - offset.x, gl_TexCoord[0].y -
offset.y);
```

```
// Red pixel inside texture?  
if((vRedPos.x >= 0.0) && (vRedPos.x <= 1.0) && (vRedPos.y >= 0.0) &&  
(vRedPos.y <= 1.0))  
{  
    // Gets its value  
    fRed = texture2D(texture, vRedPos).r;  
}  
  
// Green pixel inside texture?  
if((vGreenPos.x >= 0.0) && (vGreenPos.x <= 1.0) && (vGreenPos.y >= 0.0) &&  
(vGreenPos.y <= 1.0))  
{  
    // Gets its value  
    fGreen = texture2D(texture, vGreenPos).g;  
}  
  
// Blue pixel inside texture?  
if((vBluePos.x >= 0.0) && (vBluePos.x <= 1.0) && (vBluePos.y >= 0.0) &&  
(vBluePos.y <= 1.0))  
{  
    // Gets its value  
    fBlue = texture2D(texture, vBluePos).b;  
}  
  
// Outputs the final decomposed pixel  
gl_FragColor = vec4(fRed, fGreen, fBlue, 1.0);  
}"  
ParamList = texture#offset  
offset     = (-0.05, -0.05, 0.0) ~ (0.05, 0.05, 0.0); <= Let's take some  
random offset
```

Please see the [spawner/shader tutorial](#) for more information.

1)

delimited by double quotes (") as seen in the [syntax page](#)

2)

if the owner is a viewport, it will be its associated texture; if it's an object, it's current graphic/animation key's texture will be used

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