Lil Koi Pond

By Me (Nick C)

The Goal: Make a lil koi pond.

[6

Make a basic scene

setup

Pretty self explanatory

07

Make basic world texture

It's called pondbase.png, it's the base of the pond

MO

Make water

It's a box, and a plane, they're both blue

70

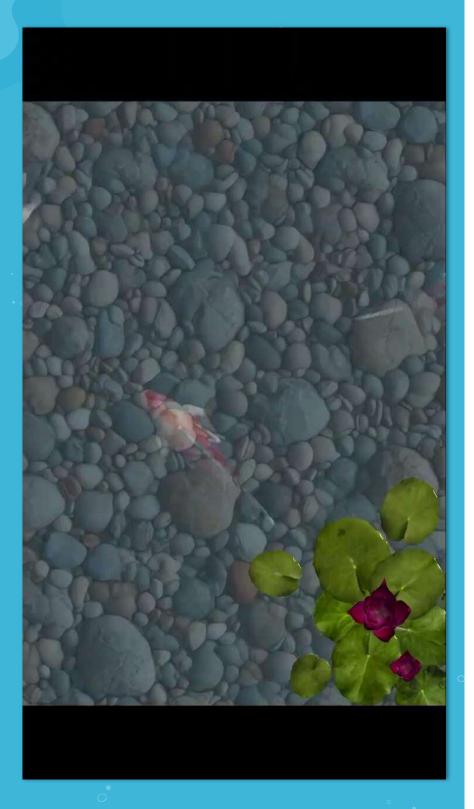
Make fish

Make some lil guys to swim around and be fish

70

Make ripples and fish food

Give us a way to play with our lil fishes



So you want to make realistic water?

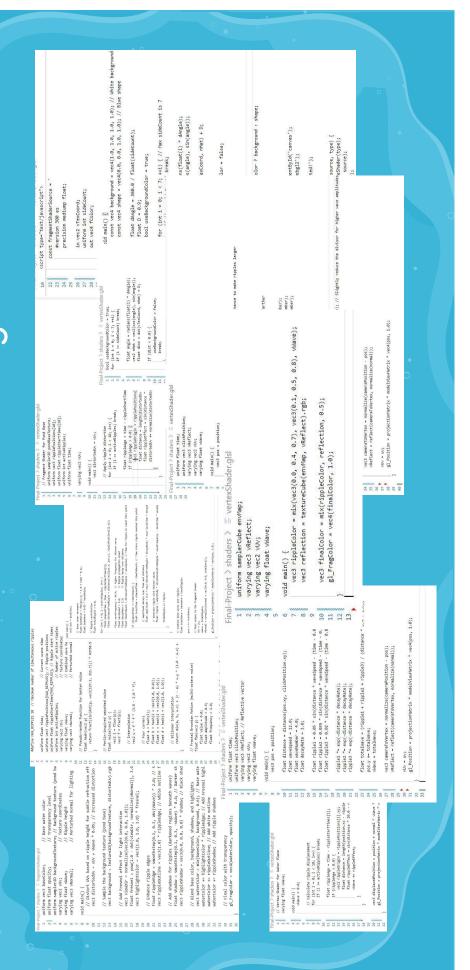
ts literally just shaders

My First Shaders

```
| Indian Project > shaders > E vertex/bader.g|s| | |
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```

```
vec3 waterColor = mix(baseColor, background, 0.6); // Base water with background texture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 vec3 rippleOutline = vec3(1.0) * rippleEdge; // White outline for ripple peaks
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               waterColor += highlightColor * rippleEdge; // Add Fresnel highlights to edges
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         float rippleEdge = smoothstep(0.1, 0.3, abs(vWave)) * 2.0; // Stronger edges
                                                                                                                                                                                                                                                                       vec2 distortedUv = vUv + vWave * 0.05; // Increased distortion for ripples
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 float shadow = smoothstep(0.1, 0.3, -vWave) * 0.4; // Darker shadows
                                                                                      uniform sampler2D backgroundTexture; // Background texture (pond base)
                                                                                                                                                                                                                                            // Distort UVs based on ripple height for subtle refraction effect
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         vec3 rippleShadow = vec3(0.0, 0.0, 0.0) * shadow; // Black shadows
                                                                                                                                                                                                                                                                                                                                                                                                                                                        float fresnel = pow(1.0 - dot(viewDir, normalize(vNormal)), 3.0);
                                                                                                                                                                                                                                                                                                                                                vec3 background = texture2D(backgroundTexture, distortedUv).rgb;
                                                                                                                                                                 // Perturbed normal for lighting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       // Add shadows for ripples (darkened regions beneath waves)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          // Blend base color, background, shadows, and highlights
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  vec3 highlightColor = vec3(1.0, 1.0, 1.0) * fresnel;
                                                                                                                   // Texture coordinates
                                                             // Transparency level
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        waterColor += rippleOutline; // Add white outline
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                waterColor += rippleShadow; // Add ripple shadows
                                 // Base water color
                                                                                                                                                                                                                                                                                                                                                                                                                               vec3 viewDir = normalize(vec3(0.0, 0.0, 1.0));
                                                                                                                                         // Ripple height
                                                                                                                                                                                                                                                                                                                          // Sample the background texture (pond base)
                                                                                                                                                                                                                                                                                                                                                                                                     // Add Fresnel effect for light interaction
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gl_FragColor = vec4(waterColor, opacity);
Final-Project > shaders > = fragmentShader.glsl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     // Final color with transparency
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   // Enhance ripple edges
                                   uniform vec3 baseColor;
                                                                uniform float opacity;
                                                                                                                                                                     varying vec3 vNormal;
                                                                                                                                           varying float whave;
                                                                                                                   varying vec2 vUv;
                                                                                                                                                                                                                      void main() {
```

Learning Perspective: Shaders are hard, its ok to give up. Better to code without regrets.



SYLEGI