CS 457 Project #2
Noisy Elliptical Dots

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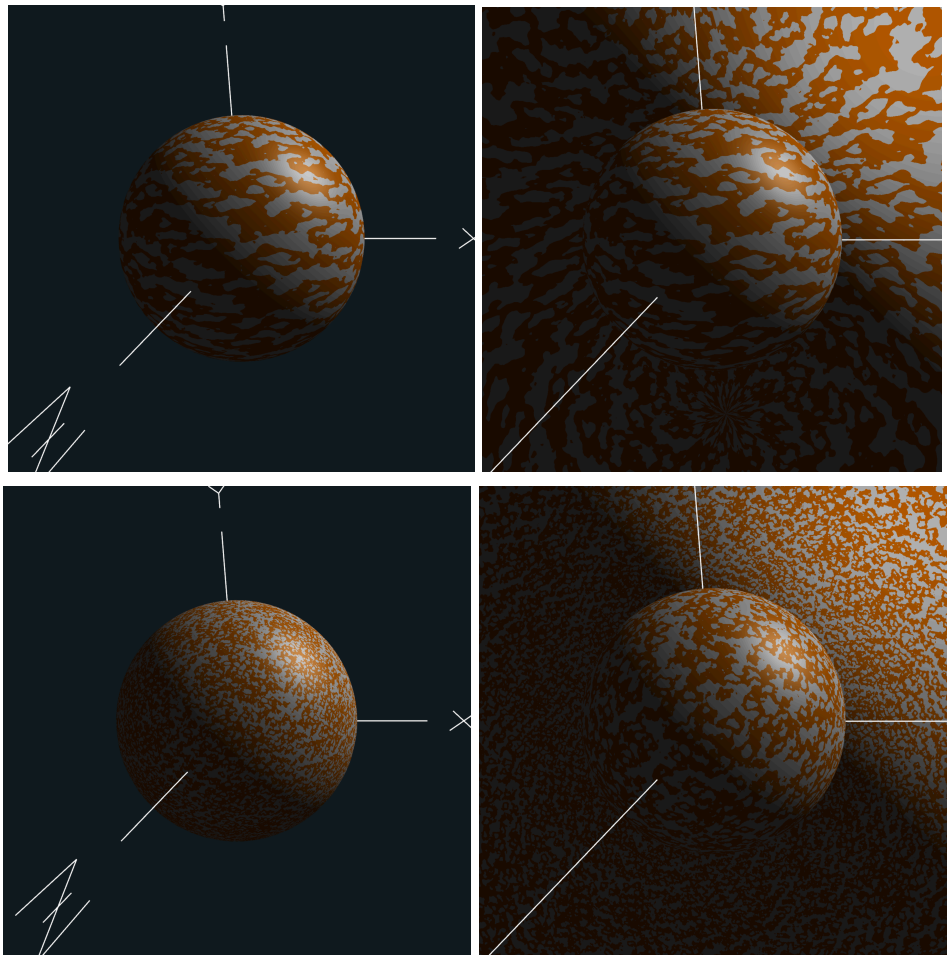

Video link

To create this display, I worked in this order:

proj2.glib

1) Defined additional variables:
    a) uNoiseAmp
        i) Frequency of the noise function
        ii) Multiples what goes into the noise function
    b) uNoiseFreq
        i) Amplitude of the noise function
        ii) Multiplies the noise value
    c) uUseXYZforNoise

        i) Used to determine whether to index noise from 3D model coordinates or 2D texture coordinates
2) Added a smaller sphere

pattern.frag

3) Instantiated uniform sampler3D Noise3, uniform float uNoiseAmp, uNoiseFreq, and uniform bool uUseXYZforNoise
4) Instantiated vec4 nv in main()
5) Created an if else statement based on uUseXYZforNoise to either:
    a) Index noise from 3D model coordinates
        i) The two spheres will have two different patterns
    b) Index noise from 2D texture coordinates
        i) The two spheres will have the same pattern
6) Gave the noise a range of [-1., +1]
7) Determined:
    a) ds
        i) Difference between the texture coordinate a and the respective ellipse center coordinate uSc
    b) dt
        i) Difference between the texture coordinate b and the respective ellipse center coordinate uTc
8) Added noise to the actual input values to produce new “fake” input values
9) Scaled ds and dt
10) Divided the modified ds and dt by Ar and Br, respectively
11) Computed d by squaring the modified quantities and adding them together
12) Used d in the smoothstep() function
13) Used what is returned from smoothstep() to mix() the 2 colors, giving the noise-modified pattern