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COSC 77: Computer Graphics
Assignment 4: Technical Implementation

Part 1: Perlin Noise

For the hash2 function, I found a good one online from the shadertoy example I looked at for this week's reading assignment. In perlin_noise, I followed the class slides and then referenced the *Book of Shaders* on how to properly implement 3 calls of mix and 4 dot products. For noiseOctave, I looped through and computed the sum, decreasing the amplitude and increasing the frequency at each step.

Part 2: Terrain Generation

To complete the height function, I played around with different built-in mathematical functions, such as simple multiplication with noiseOctave (like the example from the assignment), square root of noiseOctave, e^(noiseOctave), and sin(noiseOctave). For my advanced feature, I ended up using the sine function. I also multiplied all values less than 0 by 0.2 to flatten the ground a little. For compute_normal, I normalized the cross product of v2-v1 and v4-v3. For the advanced feature, in get_color, I made the emissiveColor a blue water color when the height was < 0, otherwise it was a mix between brown and white, where white was at the top to emulate snow.