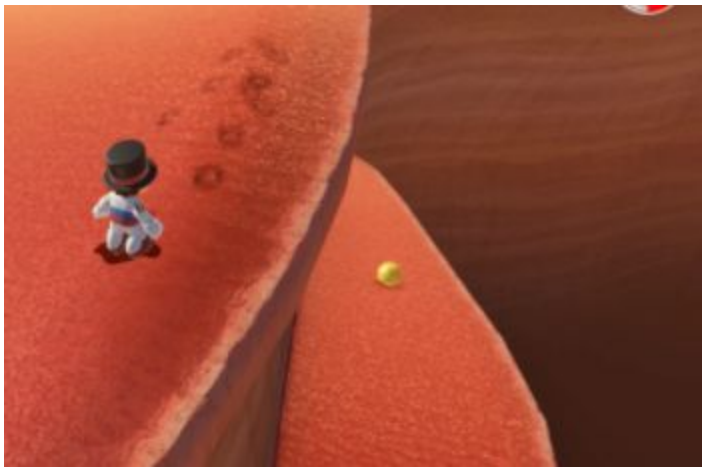
Rock Shader

For our senior capstone game we would like our world geometry to have different rock layers. This would be a pain to do with textures as we'd need to make sure the uv coordinates are *just right* for every piece of world geometry (and it would require a lot of texture work). Instead it would be very convenient to have a fragment shader do all the hard work for us. This is the effect we are going for:

I've seen this kind of effect used in several games. Here is a screenshot from a desert area in Super Mario Odyssey (looking at the wall on the right):



To achieve this effect I imagine we would base the color of each fragment on its world coordinates. This way the rock layers would be seamless across multiple meshes (and we could then make our world geometry out of several building blocks). In the screenshot above it appears as if the color of each fragment is some base color plus the sine of the fragment's y coordinate, which makes the layers blend into each other nicely. Additionally, some noise function (such as Perlin noise) seems to be in play to add some irregular waviness to the rock layers. And last but not least, I would imagine another noise function is being used to add a bit of texture to the rock, adjusting the brightness of certain fragments (or maybe even adding some vertex displacement).

My teammates for the final project are Sebastian Shelley and Autumn Washington-English.