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Comp Graphic and Visualization

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Triangle and Cube Studios Final Reflection

The shapes I chose to portray in this scene are shapes that can easily be broken down into simple shapes. These shapes can easily be drawn with triangles. The hammer is comprised of two cylinders, one for the head and one for the handle. The ruler is a series of planes, made up of ten triangles, two for each plane. The screwdriver handle is a six-sided cylinder, the shaft is a four-sided cylinder, and the head is a collection of triangles that is representative of a mishappen pyramid. The tape roll could be classified as a torus, but it is really two cylinders connected on top.

The total triangle count is 802, 384 of which make up the tape roll. Since it is a bigger object in size, I needed to give it more slices in order to properly represent the round shape. In reference, the hammer head has 48 slices and the hammer handle has 40 slices. Since these objects make up the majority of my triangles, I feel as though it is a good balance between the size of the objects and the number of triangles used.

The scene can be navigated using the mouse and keyboard. The WASD keys can be used as directional keys for the camera, with W moving the camera forward, A to the left, S backwards, and D to the right. The Q key moves the camera straight up, and the E key moves it down. Movement of the mouse controls the camera’s direction, and the scroll wheel of the mouse controls the speed at which the camera moves. The P key immediately puts the view into an orthographic perspective, and the X key toggles rendering in wire mode.

The functions that I incorporated in this project help make the overall project modularized and organized. For instance, I made a function that creates a cylinder mesh which can be called by the main function. This is beneficial because instead of drawing the cylinder within this function, I put all of the vertices and indices into their own arrays, bind them to vbos, and then manipulate and draw them separately in the URender function. This also allows me to pass in information unique to each individual shape, like a mesh object, the number of slices, and its height. This also keeps all of my code for vertices separate and organized. This function was called four times to draw four different cylinders within this scene, each with their own mesh, number of slices, and height.

I also used this code as a base for my tape roll function. It is essentially two cylinders but needed a bit more customization than just calling the cylinder function twice. I feel as though this justifies needing its own function with slightly reused code. Additionally, since the ruler is just five planes, I felt as though it was better to create the vertices for the ruler on their own, as opposed to calling the plane function five times and trying to perfectly position them.

The function to create textures is reusable as well. It is called five times, and only takes up four lines in the main function for each. Another thing that really helped was declaring the global variables for manipulation at the top of the code, so I could easily see the values for everything in one place and change them with great ease.

Original photo of scene for reference

