**Blender Activity 1**

Github Repository Link: https://github.com/stekunda/blender-activity-1

Checkpoint 0:

A screenshot of a computer

Description automatically generated

Checkpoint 1:

A screenshot of a computer

Description automatically generated

Checkpoint 2:

A screenshot of a computer

Description automatically generated

Checkpoint 3:

A screenshot of a computer

Description automatically generated

Checkpoint 4:

The sphere with resolution 160 by 90 is very blurry compared to the original sphere resolution with 1920 by 1080 resolution, this is because it has less pixels per inch so the image doesn’t look as crisp. The lower the resolution, the blurrier the image appears. The higher the resolution, the more crisp and less blurry the image.

Checkpoint 5:

A screenshot of a computer

Description automatically generated

Checkpoint 6:

In checkpoint 5, I used a gamma value of 3.0. This made the grey background appear much brighter, it also made the blue sphere appear brighter. It brought the colors closer towards a shade of white. In checkpoint 2, with the default gamma value of 1.0, the brightness of the sphere along with the background appears to depict the colors a lot better. It’s not too dim but it’s not overly bright either, so it’s a good central point.

1. How does light interact differently with different objects in real life? Give 3 examples.

Light interacts differently with objects depending on the composition of the object. When light interacts with an object, it is either transmitted, reflected, refracted, absorbed, diffracted, polarized, or scattered.

Ex 1: When light interacts with a window, which is transparent, the light is transmitted through the window.

Ex 2: When light interacts with smoke that is in the air, the light is scattered. This is due to the irregularities of smoke.

Ex 3: When light interacts with a wall, which is an opaque object, majority of the light is absorbed.

1. Why do objects appear to have different colors to our eyes?

Objects appear to have different colors to our eyes because we see color through light bouncing off of an object and reflecting into our eyes. The different colors that we see is based on how much of the light is reflected into our eyes.

1. What’s the advantage of using YUV color space?

* It is a more efficient mapping for representing visual perception.
* It has an important component called luminance, which is the Y component.
* It reduces bandwidth more than typical RGB can

1. How are colors added differently for lights compared to paint? What does R+G+B equal to in each case?

With light, when you add more colors, it is reflecting more light into our eyes. With paint, when you add more colors, it is preventing light from reflecting into our eyes. R + B + G in light equals to white light. R + B + G in paint equals to black or a very dark brown.

1. Why are green screens green? Hint: think about the arrangement of color filters in front of the camera sensor.

Green screens don’t necessarily have to be green, but green is one of the colors furthest away from humans’ skin tone. This makes it easier for the camera to see your skin and prevents it from not being visible when playing video.

1. Why is tone mapping needed for HDR images?

Tone mapping is needed to reveal all the details of HDR images, and it allows for HDR images to look more realistic through the ability to adjust color and luminance.

1. What’s the relationship between the wavelength of the light and color of the light? E.g. Why is the wavelength of 700nm associated with red, and 400nm associated with purple?

The relationship between the wavelength of the light and color of the light is that the wavelength of light is the result of the color of the light as it’s perceived by our eyes. So, when our eyes see a certain wavelength of light, we see the color associated with that length.

On the color spectrum, light that is closer to the red side of the spectrum has longer wavelengths while light that is closer to the violet end of the spectrum has shorter wavelengths.