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Direct Lighting

**Ambient Implementation**

The way to calculate ambient light is simple. We have to multiply the objects surface color by the color of the light.

To do this, we must first, in our program, create a handle for the lights color and send it to the fragment shader. First, in your fragment shader, declare a new uniform variable of type vec4. Now, in the rendering program, create a handle for the light’s color using glGetUniformLocation and pass in your shader’s program and the name of the uniform variable that was created earlier. Next in the program, create a variable of type vec4. This variable will be for the color of the light. We will use this variable to send information to the shader. Initialize this variable with a color for the light. Once the variable for the lights color is created and initialized, use glUniform4fv and pass in the handle created for the light’s color as the first argument, and then pass in the address of the first index of the light’s color variable. This function will send the information to the shader.

Now, going back to the fragment shader, we will use the uniform variable created in order to calculate the ambient light. In the main function of the fragment shader, create a vec4 variable and call it “ambient”. Assign ambient to lightColor. Finally, assign the fragColor to vColor \* ambient.