Editor Keybinds:

The following table shows several keybinds that are specialized for the Editor. Most of these are features are used for visualizing the unseen aspects of a level or for preforming simple algorithms. Some are toggleable while others are one and done or active while Holding.

|  |  |  |
| --- | --- | --- |
| Key | Type | Method |
| Left Click | Function | Selects Objects if None are Selected. If an object is selected, left click outside of object to deselect it. Selected Objects can be moved if left click is held down on it, and sides/vertices can be moved if selected. Is able to select boxes and features in editor window. |
| Right Click | Function | Brings up Editor Window. Right click when an object is selected to view and modify values with precision. If an object is not selected, a right click will bring up a new objects window that allows the user to create a new object. |
| P | Toggle | Toggles between playing and editing mode. |
| Escape | Function | Easy way to deselect an object if one is currently being edited. If in editor window, escape will close the window. If everything is unselected, open editor options GUI. |
| Backspace | Function | Deletes the currently selected object. |
| Space | Function | Deselects All Objects and Opens New Object Window |
| W | Hold | Holding W will move the camera north. Holding for long periods of time causes movement to be faster. |
| A | Hold | Holding A will move the camera west. Holding for long periods of time causes movement to be faster. |
| S | Hold | Holding S will move the camera south. Holding for long periods of time causes movement to be faster. |
| D | Hold | Holding D will move the camera east. Holding for long periods of time causes movement to be faster. |
| E | Function | Toggles Lock of Object |
| Q | Function | Prints the coordinates in world space of the cursor. |
| Z | Toggle | Toggles level border visualizer. |
| X | Toggle | Toggles normal vector visualizes. |
| C | Function | Clones an Object |
| Enter | Function | Saves the changes in currently loaded levels. |
| Right Shift | Function | Sorts visual objects from back to front and color to texture for efficiency and to correctly draw objects. |
| Arrow Keys | Hold | Shift a Selected Object in Currently Held Direction |
| R | Hold | Supported Objects Are Able to be Rotated. While R is held, use mouse to rotate left or right, no click needed |
| F | Hold | While Held, Resizing Will be Disabled |

Attenuation Values:

The following table shows the values used for attenuation. Attenuation is the process of diming the effects of lights as the distance gets greater. The equation “1 / (constant + linear \* x + quadratic \* x^2)” represents this process where linear affects how long it lasts, and quadratic affects how fast it decays

|  |  |  |  |
| --- | --- | --- | --- |
| Distance | Constant | Linear | Quadratic |
| 7 | 1.0 | 0.7 | 1.8 |
| 13 | 1.0 | 0.35 | 0.44 |
| 20 | 1.0 | 0.22 | 0.2 |
| 32 | 1.0 | 0.14 | 0.07 |
| 50 | 1.0 | 0.09 | 0.032 |
| 65 | 1.0 | 0.07 | 0.017 |
| 100 | 1.0 | 0.045 | 0.0075 |
| 160 | 1.0 | 0.027 | 0.0028 |
| 200 | 1.0 | 0.022 | 0.0019 |
| 325 | 1.0 | 0.014 | 0.0007 |
| 600 | 1.0 | 0.007 | 0.0002 |
| 3250 | 1.0 | 0.0014 | 0.000007 |

Intensity Values:

The following table shows the values used for the Intensity of a Spotlight. The equation is modeled by “(theta – outer) / (outer – inner)” where theta is the angle between the spotlight and fragment, outer is the size of the outer cone of the spotlight, and inner is the size of the inner cone of the spotlight. Theta is calculated by normal and positions, so it is not important right now.

|  |  |  |
| --- | --- | --- |
| Angle | Inner | Outer |
| 180 |  |  |
| 150 |  |  |
| 120 |  |  |
| 90 |  |  |
| 60 |  |  |
| 45 |  |  |
| 30 |  |  |
| 15 |  |  |

Material Values:

The following table shows the values used to determine the material of an object. The values of a material include the ambient, diffuse, specular, and shininess of an object. Diffuse is the color sent from vertex shader or texture. Ambient and Specular are percent values that are multiplied with Diffuse. Shininess is a number greater than 0 and affects how much Specular Lighting is applied. Diffuse here will be shown as a raw color

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Element | R | G | B | Ambient | Specular | Shinny |
| Default | NULL | NULL | NULL | 1 | 1 | 32 |
| No Shine | NULL | NULL | NULL | 1 | 0 | 0 |
| Emerald | 20 | 157 | 20 | 0.284 | 1.185 | 77 |
| Jade | 138 | 227 | 161 | 0.25 | 0.502 | 13 |
| Obsidian | 47 | 43 | 57 | 0.294 | 1.821 | 38 |
| Pearl | 255 | 211 | 211 | 0.25 | 0.359 | 11 |
| Ruby | 157 | 11 | 11 | 0.284 | 1.185 | 77 |
| Turquoise | 101 | 189 | 176 | 0.253 | 0.418 | 13 |
| Brass | 199 | 145 | 29 | 0.393 | 1.206 | 28 |
| Bronze | 182 | 109 | 46 | 0.298 | 0.551 | 26 |
| Chrome | 102 | 102 | 102 | 0.625 | 1.936 | 77 |
| Copper | 179 | 69 | 21 | 0.272 | 0.509 | 13 |
| Gold | 192 | 155 | 58 | 0.329 | 0.836 | 51 |
| Silver | 129 | 129 | 129 | 0.379 | 1 | 51 |
| Black Plastic | 3 | 3 | 3 | 0 | 50 | 32 |
| Cyan Plastic | 0 | 130 | 130 | 0.157 | 1 | 32 |
| Green Plastic | 26 | 89 | 26 | 0 | 1.571 | 32 |
| Red Plastic | 128 | 0 | 0 | 0 | 1.4 | 32 |
| White Plastic | 140 | 140 | 140 | 0 | 1.273 | 32 |
| Yellow Plastic | 128 | 128 | 0 | 0 | 1.2 | 32 |
| Black Rubber | 3 | 3 | 3 | 2 | 40 | 10 |
| Cyan Rubber | 102 | 128 | 128 | 0.1 | 1.4 | 10 |
| Green Rubber | 0 | 102 | 128 | 0.1 | 1.4 | 10 |
| Red Rubber | 128 | 102 | 102 | 0.1 | 1.4 | 10 |
| White Rubber | 128 | 128 | 128 | 0.1 | 1.4 | 10 |
| Yellow Rubber | 128 | 128 | 102 | 0.1 | 1.4 | 10 |