Heading

System and Unit Test Report
EZ 3D
Nov. 30, 2021

Unit Tests

Module: Undo

Function: If CTRL + z is pressed, determine whether or not there is anything to undo, and if there is, undo it by reverting to the last state

Equ. Class	Description	Possible Values
$EC_{z,notCTRLZ}$	These keys do not trigger the running of the execution	A,b,c,d,e,f,g,h, CTRL,z,CTRL+y,del
$EC_{z,CTRLZ}$	This key combination triggers the execution	‘CTRL+z’
$EC_{z,notStored}$	These states result in the function being unable to fully execute	The scene is completely blank, there are no stored states
$EC_{z,stored}$	This state allows the function to fully execute	There is a stored last state

Test Cases:

Equ. Class Combos	Input	Expected Output
$EC_{z,notCTRLZ} + EC_{z,notStored}$	‘c’ + no saves	No undo
$EC_{z,notCTRLZ} + EC_{z,stored}$	‘f’ + saved state	No undo
$EC_{z,CTRLZ} + EC_{z,notStored}$	‘CTRL + z’ + no saves	No undo
$EC_{z,CTRLZ} + EC_{z,stored}$	‘CTRL + z’ + saved state	Undo executes, reverts to last saved state

Module: Color Selector

Function: If Color is changed in the object bar, determine whether or not there is an object selected. If there is, change the color of that object to the selected value.

Equ. Class	Description	Possible Values
$EC_{col,valid}$	Valid red, green, and blue inputs	0 <= red <= 1 & 0 <= green <= 1 & 0 <= blue <= 1
$EC_{col,error}$	Invalid rgb values	(Red < 0 || Red > 1) || (Blue < 0 || Blue > 1) || (Green < 0 || Green > 1)
$EC_{obj,\ selected}$	If a valid object is selected	Mesh object, light object selected
$EC_{obj,\ notSelected}$	If no valid object is selected	No selection, no objects in scene

Test Cases:

Equ. Class Combos	Input	Expected Output
$EC_{col,valid}$+ $EC_{obj,\ selected}$	red=0.5, green=0.5, blue=0.5, obj=mesh1	Mesh1 color changes to 0.5,0.5,0.5
$EC_{col,\ error}$ + $EC_{obj,selected}$	red=0.5, green=0.5, blue=-0.5, obj=mesh1	Error
$EC_{col,valid}$+ $EC_{obj,\ notSelected}$	red=0.5, green=0.5, blue=0.5, obj=not selected	No change
$EC_{col,error}$+ $EC_{obj,\ notSelected}$	red=0.5, green=0.5, blue=-0.5, obj=not selected	Error

Module: Shade Selection

Function: If a shading option is selected, determine whether or not there is a mesh selected, and if there is, change that meshes material properties

Equ. Class	Description	Possible Values
$EC_{wireframe,Change}$	Changes meshes material property to wireframe	Clicks Wireframe Button
$EC_{flatShading,Change}$	Changes meshes material property to flatShading	Clicks Flat Button
$EC_{smoothShading,Change}$	Changes meshes material property to smoothShading	Clicks Smooth Button

Test Cases:

Equ. Class Combos	Input	Expected Output
$EC_{wireframe,Change}$ + $EC_{flatShading,Change}$	Wireframe button click + flat button click	Mesh's shade changes from wireframe to flat
$EC_{wireframe,Change}$ + $EC_{smoothShading,Change}$	Wireframe button click + smooth button click	Mesh's shade changes from wireframe to smooth
$EC_{flatShading,Change}$ + $EC_{smoothShading,Change}$	Flat button click + smooth button click	Mesh's shade changes from flat to smooth
$EC_{flatShading,Change}$ + $EC_{wireframe,Change}$	Flat button click + wireframe button click	Mesh's shade changes from flat to wireframe
$EC_{smoothShading,Change}$ + $EC_{flatShading,Change}$	Smooth button click + flat button click	Mesh's shade changes from smooth to flat
$EC_{smoothShading,Change}$ + $EC_{wireframe,Change}$	Smooth button click + wireframe button click	Mesh's shade changes from smooth to wireframe

Module: Intensity

Function: If the user clicks and drags, check to see if the action is done at the proper location. If it is, change the intensity of the currently selected light.

Equ. Class	Description	Possible Values
$EC_{intensity,null}$	There is no intensity slider because no light has been selected	Light doesn't exist Light exists but is not selected Selected model exists but it is not a light
$EC_{intensity,1}$	Intensity slider exists	Light is selected
$EC_{intensity,valid}$	Valid inputs that trigger a change in a light's intensity	Click and drag on intensity slider
$EC_{intensity,invalid}$	Invalid inputs that do not trigger a change in a light's intensity	Click and drag outside the intensity slider Click off the light to deselect it

Test Cases:

Equ. Class Combos	Input	Expected Output
$EC_{intensity,null}$ + $EC_{intensity,valid}$	Light doesn't exist + Click and drag on intensity slider	Impossible action - No change in light's intensity
$EC_{intensity,null}$ + $EC_{intensity,invalid}$	Light exists but is not selected + Click and drag outside the intensity slider	No change in light's intensity
$EC_{intensity,1}$ + $EC_{intensity,valid}$	Light is selected + Click and drag on intensity slider	Selected light's intensity changes
$EC_{intensity,1}$ + $EC_{intensity,invalid}$	Light is selected + Click off the light to deselect it	No change in light's intensity

Module: Object List

Function: If there is at least one mesh in the object list, when the user clicks the object tag, determine whether the object is selected or not. If selected, the transformation mechanism on the object will be visible.

Equ. Class	Description	Possible Values
$EC_{\text{object list,empty}}$	There is no object in the object list. The user has not added mesh yet.	Empty object list
$EC_{\text{object list,non-empty}}$	There is at least one object in the object list.	A list with object name(s) Click object tag
$EC_{\text{object list,click object tag}}$	There is at least one object tag and click on it.	The object is selected Transformation UI appears on the object
$EC_{\text{object list,click name tag}}$	Click on the name tag on the right side of object tag.	“Type mesh name” on name tag
$EC_{\text{object list,define name}}$	Type the name in the name tag	Defined name on name tag

Test Cases:

Equ. Class Combos	Input	Expected Output
$EC_{\text{object list,empty}}$ + $EC_{\text{object list,click object tag}}$	Empty object list + Click on the object tag	Impossible action - No object tag in the list
$EC_{\text{object list,non-empty}}$ + $EC_{\text{object list,click object tag}}$	Non empty object list + Click on the object tag	Object is selected, and transformation UI appears on the object.
$EC_{\text{object list,non-empty}}$ + $EC_{\text{object list,click name tag}}$	Non empty object list + Click on and off the name tag	The name tag does not change.
$EC_{\text{object list,non-empty}}$ + $EC_{\text{object list,define name}}$	Non empty object list + Type the name in the name tag	Input name in the name tag