

Functional Lighting

Bruce Steinberg

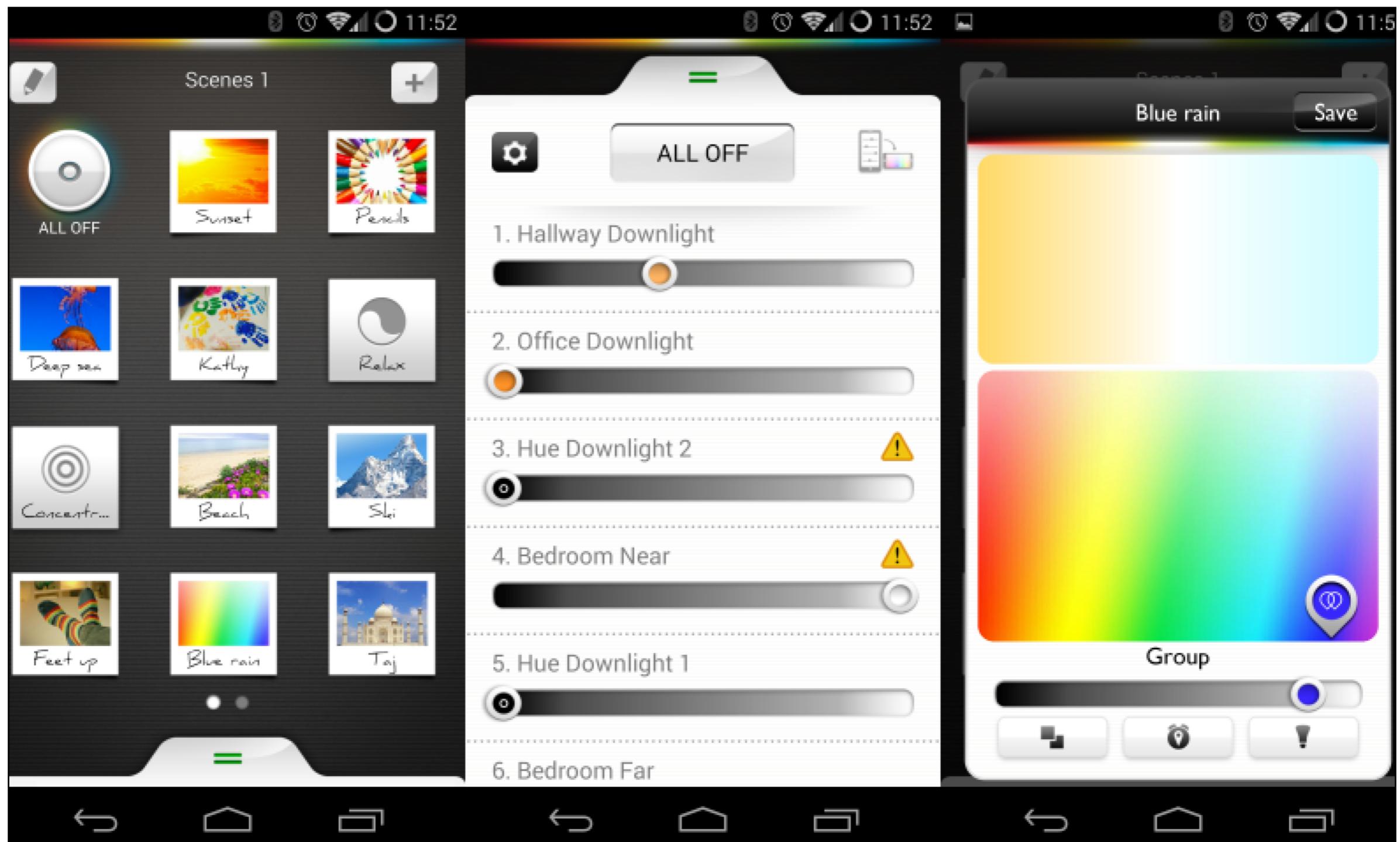
Philips Hue



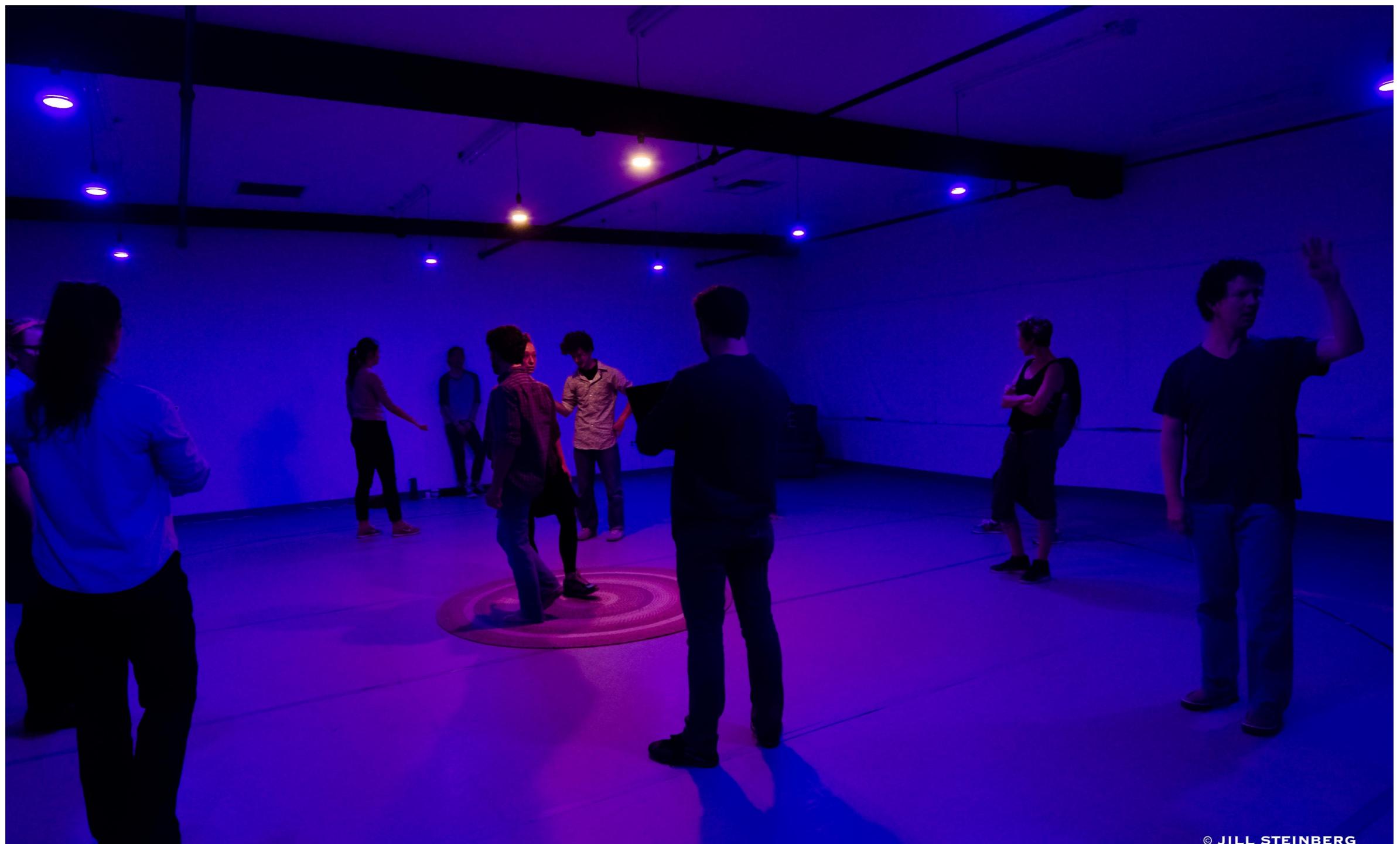
How Most People Use Hues



The Official App



How I Use Them



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My Program (Control)

Simple Hue Control

Select Lights to Cue

LX 1 LX 2 LX 3 LX 4 LX 5 LX 6 LX 7 LX 8
 LX 9 LX 10 LX 11 LX 12 LX 13 LX 14 LX 15 LX 16

[Clear](#) [Select All](#)

On or Off? On Off

Intensity?

Hue?

Saturation?

[Save](#) [Set](#)

Display & Cues

Channel Table							
LX 1	LX 2	LX 3	LX 4	LX 5	LX 6	LX 7	LX 8
On?:	On?:	On?:	On?:	On?:	On?:	On?:	On?:
Bri:	Bri:	Bri:	Bri:	Bri:	Bri:	Bri:	Bri:
Hue:	Hue:	Hue:	Hue:	Hue:	Hue:	Hue:	Hue:
Sat:	Sat:	Sat:	Sat:	Sat:	Sat:	Sat:	Sat:
LX 9	LX 10	LX 11	LX 12	LX 13	LX 14	LX 15	LX 16
On?:	On?:	On?:	On?:	On?:	On?:	On?:	On?:
Bri:	Bri:	Bri:	Bri:	Bri:	Bri:	Bri:	Bri:
Hue:	Hue:	Hue:	Hue:	Hue:	Hue:	Hue:	Hue:
Sat:	Sat:	Sat:	Sat:	Sat:	Sat:	Sat:	Sat:

Main Cue List

Cues: 1. Preshow - 5s

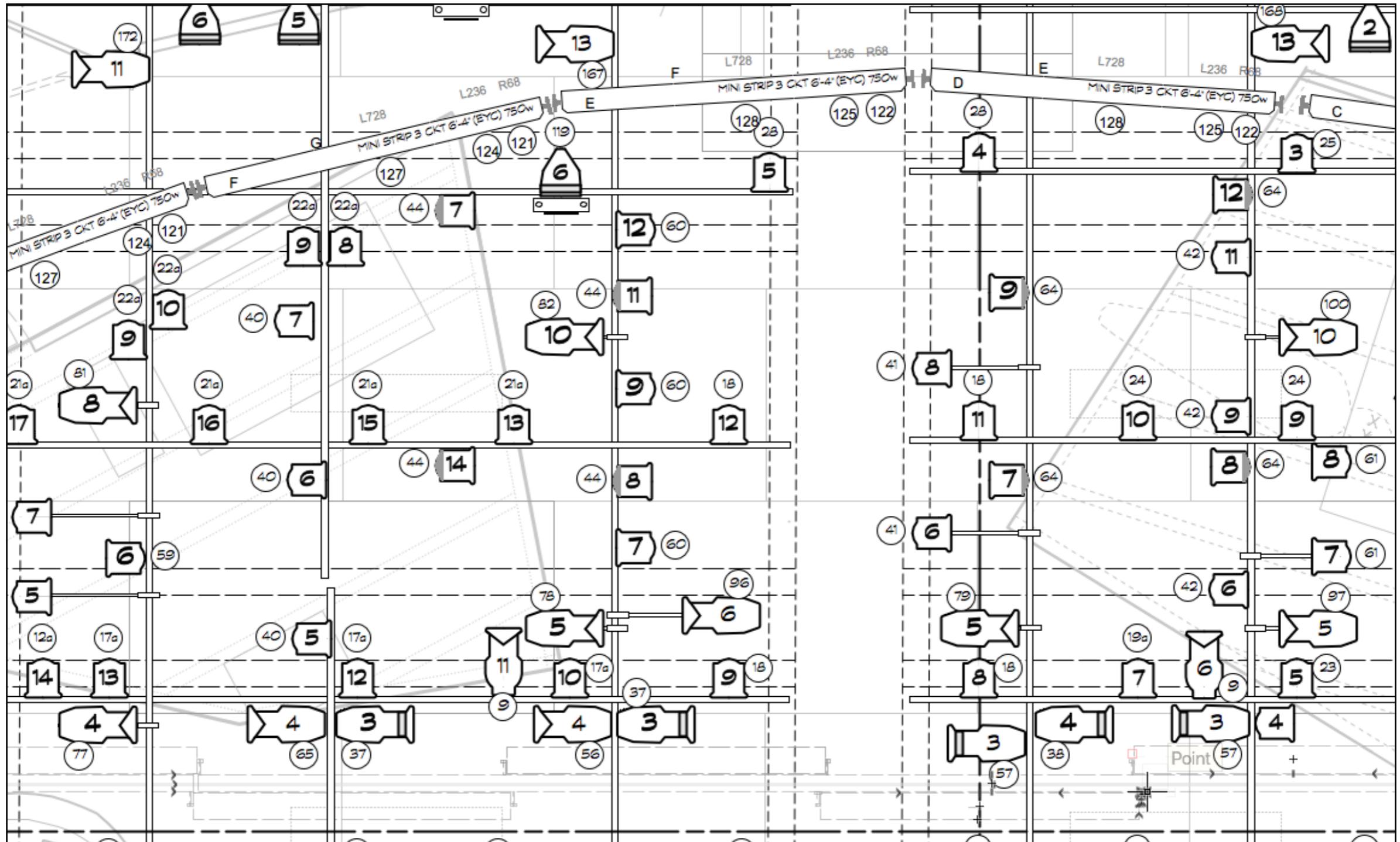
Delete Restore

Right, Left, Right, Left

Initial Impulse



Technical Documents



Programming

ColorSrc PAR		Color			Beam
Ch		Red	Green	Blue	Shutter Strobe
51	40	:G L200	:G L200	:G L200	
52	40	:G L200	:G L200	:G L200	
53	40	:G L200	:G L200	:G L200	
54	40	:G L200	:G L200	:G L200	
55	40	:G L200	:G L200	:G L200	
56	40	:G L200	:G L200	:G L200	
57	40	:G L200	:G L200	:G L200	
58	40	:G L200	:G L200	:G L200	
59					
60					

ColorSrc PAR		Color			Beam
Ch		Red	Green	Blue	Shutter Strobe
61	80	:G R5	:G R5	:G R5	
62	80	:G R5	:G R5	:G R5	
63	80	:G R5	:G R5	:G R5	
64	80	:G R5	:G R5	:G R5	
65	80	:G R5	:G R5	:G R5	
66	80	:G R5	:G R5	:G R5	
67	80	:G R5	:G R5	:G R5	

Expression



Hue Bridge



Hue API

Get Lighting Attributes & State:

<bridge ip address>/api/<username>/lights/<id>

Method: GET

Reply:

```
"state": {  
    "hue": 50000,  
    "on": true,  
    "effect": "none",  
    "alert": "none",  
    "bri": 200,  
    "sat": 200,  
    "ct": 500,  
    "xy": [0.5, 0.5],  
    "reachable": true,  
    "colormode": "hs"  
}
```

Hue API

Set Lighting State

/api/<username>/lights/<id>/state

Method: PUT

Body:

```
{  
    "hue": 50000,  
    "on": true,  
    "bri": 200,  
    "sat": 200,  
}
```

Reply:

```
{"success": {"/lights/1/state/bri": 200}},  
{"success": {"/lights/1/state/on": true}},  
{"success": {"/lights/1/state/hue": 50000}},  
{"success": {"/lights/1/state/sat": 200}}
```

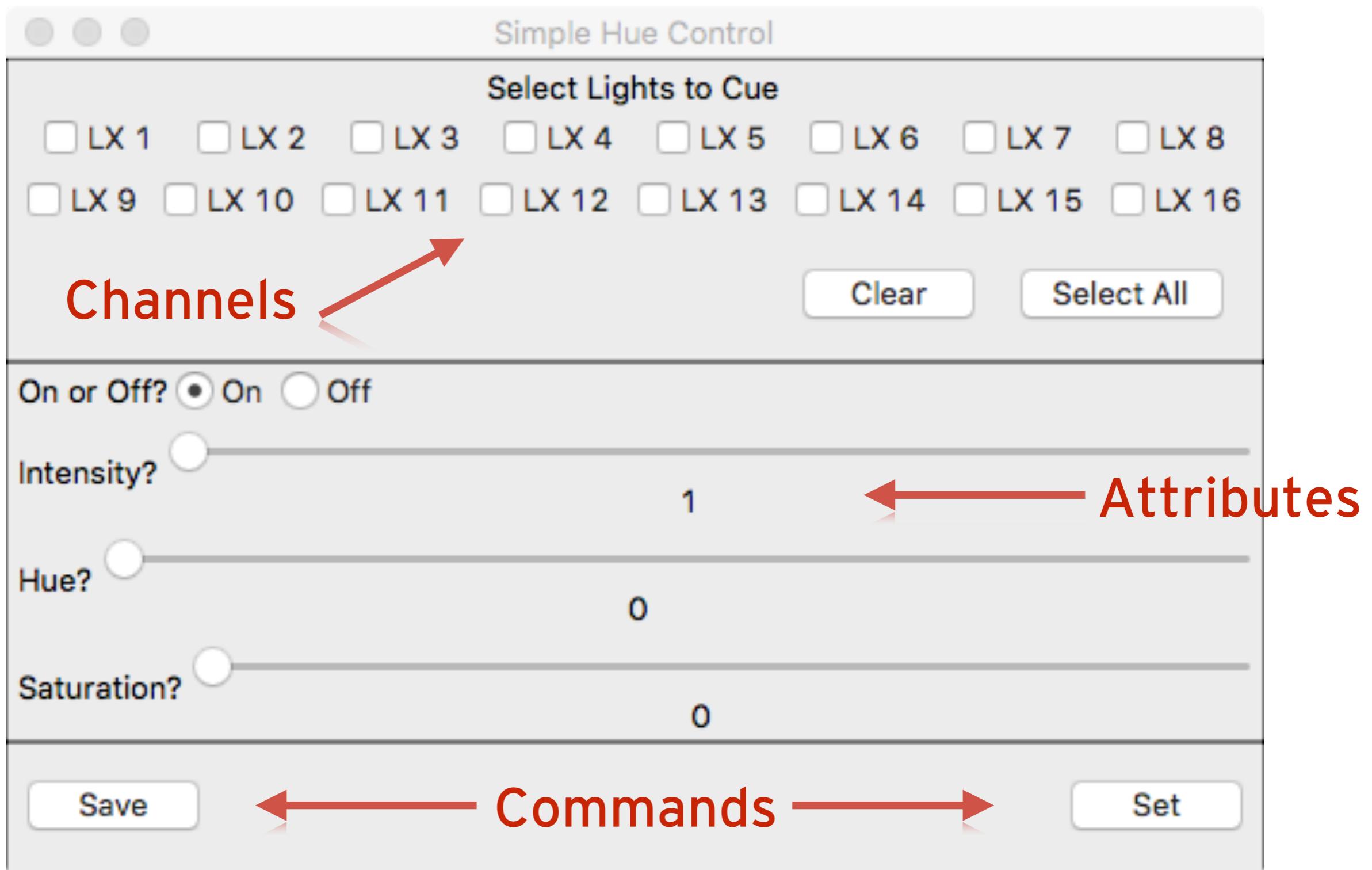
Simple Hue Control

- **Sets Lights, Saves Cues, Restores Cues**
- These are all discrete actions.
- The GUI buttons fire off procedures that set the lighting state, save cues, and restore cues.
- Objects are used to store information about lights and cues.

Light, Patch, Cue, Cue List

- Lights are Objects contained in a Patch Object.
 - “Patching” relates the physical address of the bulb to a conceptual “Channel”.
- Cues are Objects contained in a Cue List Object.
 - The json-value field of a Cue Object contains a hash of the lighting states returned from the bridge.

Setting Lights



Setting Lights

- **get-attributes** takes the settings from the GUI and passes them into the selected Light Objects.
- **set-lights!** takes the selected lights and:
 - Retrieves the bridge status
 - Compares state of the referenced bulb to the Light's state
 - Creates a hash containing the state & whether there are changes
 - Edits the hash to just the changed attributes
 - Converts that hash to json & sends it to the bridge

Saving Cues

- Pressing “Save”:
 - Grabs the Cue Number, Cue Name, and Time from the GUI
 - Passes the to a new Cue Object
 - Which uses **retrieve-bridge-status** to grab a hash containing current state of all lights

Restoring Cues

- **restore-cue**
 - Takes the index of the cue from the cue-list-display choice%
 - Iterates over all the light states within the stored bridge state and:
 - Creates a hash for each light containing the stored state and which attributes change
 - Uses the same process as **set-lights!**
 - But uses user defined timing.

Demo!

Things I'd Like to Improve

- Implement a Command Line
- Modifying Cues
- Implement Proper Tracking
- A Color Picker
- Optimize the Commands to the Bridge

Fin

Code:

github.com/brucehs/simple-hue-control-racket

Portfolio:

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