

Assignment #1:
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We've designed a super multi-function tri-color lamp. Currently the module is controlled through sending bytes over bluetooth in hex form. As an app developer, you will want to use this guide to connect your GUI with the functions of the lamp.

The form of all messages is magicNumber-Key-value1-value2-value3

For example, to turn on just the green led, you could type 0x110200FF00

This tells you to start (from the magicNumber), go to function 2 and then set Red=00, Green=255 (full on) and Blue=00.

NOTE: Not all messages have a value1, value2 or value 3, check the documentation below.

To begin with any function you need to enter the magic number. This allows the program to identify that a program will be sent.

Hex Value	State	Functions	Type	Characteristic
0x11	Magic Number: Tells tells the Simblee that it should now be ready to parse data for a function	Listens and then sets the nextState to a state that finds the key to determine which function to execute.	Byte	Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)

Our device has 9 distinct functions. Each one called by a different 'key' and called through a finite state machine. Here is how it works:

Key	State	Functions	Type	Characteristic
0x00	setBulbState: This turns all 3 LEDs either on or off	Turns off if value1 ==0x00, on if value1 ==0x01. value1 is the hex code sent after specifying the state	Byte	Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)

0x01	getBulbState: sends the state of the lights (on or off)	Sends 0x01 if any of the three lights are on, else 0x00	Byte	<p>Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)</p> <p>Read (UUID = 0x2D30C082-F39F-4CE6-923F-3484EA480596)</p>
0x02	setColorState: sets each individual color based on values	value1 affects the brightness of the red bulb(0-255) value2 affects green, and value3 affects blue	Byte	<p>Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)</p>
0x03	getColorState: Send values of LEDs to Simblee by color	First hex value is red, second green, third blue.	Byte	<p>Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)</p> <p>Read (UUID = 0x2D30C082-F39F-4CE6-923F-3484EA480596)</p>
0x04	setTimeState: Sets the time interval to wait before turning on or off the 3 LEDs.	<p>Each of the three values has a distinct function:</p> <p>value1: Decides whether we are turning the light on or off (0x00=on, 0x01=off)</p> <p>value2: decides how long to set the timer before the action-the hex value sent *10 will be the number of seconds to wait.</p> <p>*hex value must be >=0x02 (20 seconds)*</p> <p>value3: Starts the timer (0x01).</p> <p>Example: See below</p>	Byte	<p>Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)</p>

0x05	getTimerState: Counts down until action happens in Simblee	If value1 (the third hex value sent) is 0x00, it will send the time until the light turns on. If value1 is 0x01, it will count down until turning off.	Byte	Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596) Read (UUID = 0x2D30C082-F39F-4CE6-923F-3484EA480596)
0x06	setFadeState: This fades the three colors from the initial intensity to the desired one	Colors will fade each time you switch them. Fade is initially set to 0. To change that, set value1 when sending this function to a number between 0x00 and 0x0a (0-10 seconds).	Byte	Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)
0x07	getFadeState: This sends the time until fading is done.	Calling this function will send back the current time that fade is set to. If it was never changed, the function will return 0x00	Byte	Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596) Read (UUID = 0x2D30C082-F39F-4CE6-923F-3484EA480596)
0x08	Disco: varies colors on lights in cool ways (music recommended.)	4 options for lights: set value1 to 0x00 for the first disco, 0x01, 0x02, 0x03 for the other 3 songs. 0x00 and 0x03 have a special surprise, but make sure to play 0x00 before 0x03.	Byte	Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)

After sending the key, you may need to send a value or values. This depends on the documentation above.

Value	State	Functions	Type	Characteristic
value1	First value set after magic number and key	Used to decide what function to perform once in a state or to set a value	Byte	Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)
value2	Second value set after magic number and key	Used to decide what function to perform once in a state or to set a value	Byte	Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)
value3	Third value set after magic number and key	Used to decide what function to perform once in a state or to set a value	Byte	Write (UUID = 0x2D30C083-F39F-4CE6-923F-3484EA480596)

setColorState example: If you would like to set green high, but the rest low:

1. 0x11: Magic key
2. 0x02 setColorState
3. 0x00 red=0
4. 0xFF green=255
5. 0x00 blue=0

setTimerState example: If you would like to wait 30 seconds before turning the light on:

1. 0x11: Magic key
2. 0x04: TimeState
3. 0x00 set on
4. 0x03 3*10 = 30 seconds
5. 0x01 start timer

If, however, you would like to wait 50 seconds until turning the light off:

1. 0x11: Magic key
2. 0x04: TimeState
3. 0x01 set off
4. 0x05 5*10 = 50 seconds
5. 0x01 start timer

Now, you'd like to see on your phone how much time remains:

1. 0x11: Magic Key
2. 0x05 getTimerState
3. 0x00/0x01 (time until on/off, respectively)

Fade the lights:

This method is always running, although you can turn it off by simply setting the fade time to 0x00 (0 seconds). Let's do an example:

1. 0x11 Magic Key
2. 0x06 setFadeState
3. 0x05 (5 seconds. You can pick between 0x00-0x0a)

Now, let's see it happen.

1. 0x11 Magic Key
2. 0x00 Turn on all colors
3. 0x01 Turn on (0x00 for off)

Let's disco:

1. 0x11 Magic Key
2. 0x08 DiscoState
3. 0x00/01/02/03 Your choice.