

```

1  from machine import Pin, PWM
2  from time import sleep_ms
3  import math
4
5  # Pin 25 for inbuilt LED
6  pwm = PWM(Pin(25))
7
8  # Set frequency in Hz
9  pwm.freq(100)
10
11 # Initialise brightness value
12 brightness = 0
13
14 # Evenly spaced brightnesses in linear or log space
15 isLog = True
16
17 # specify the cycle length
18 cycleLength = 4 # seconds
19
20 # 200 steps in one cycle, converted to ms. Needs to be an int for sleep_ms() function
21 delay = round((cycleLength / 200) * 1000)
22
23 def GetBrighter(t, b, log=False):
24     # Loop 100 points for each cycle
25
26     i = 0
27     while i < 101:
28         print(f"{b:0.2f}")
29
30         pwm.duty_u16(round(b * 65025))
31
32         sleep_ms(t)
33
34         if log:
35             b = math.pow(10, i/100) / 10
36         else:
37             b += 0.01
38         i += 1
39
40     return b
41
42 def GetDimmer(t, b, log=False):
43     # Loop 100 points for each cycle
44     i = 0
45     while i < 101:
46         print(f"{b:0.2f}")
47
48         pwm.duty_u16(round(b * 65025))
49
50         sleep_ms(t)
51
52         if log:
53             b = math.pow(10, - i/100 + 1) / 10
54         else:
55             b -= 0.01
56         i += 1
57
58     return b
59
60 while True:
61
62     if brightness <= 0.5:
63         print("getting brighter")
64         brightness = GetBrighter(delay, brightness, log=isLog)
65
66     elif brightness >= 0.5:
67         print("getting dimmer")
68         brightness = GetDimmer(delay, brightness, log=isLog)
69
70     else:
71         break

```