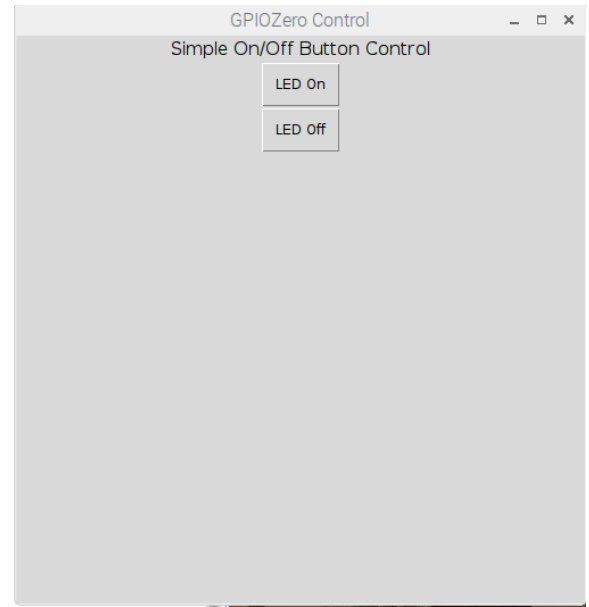
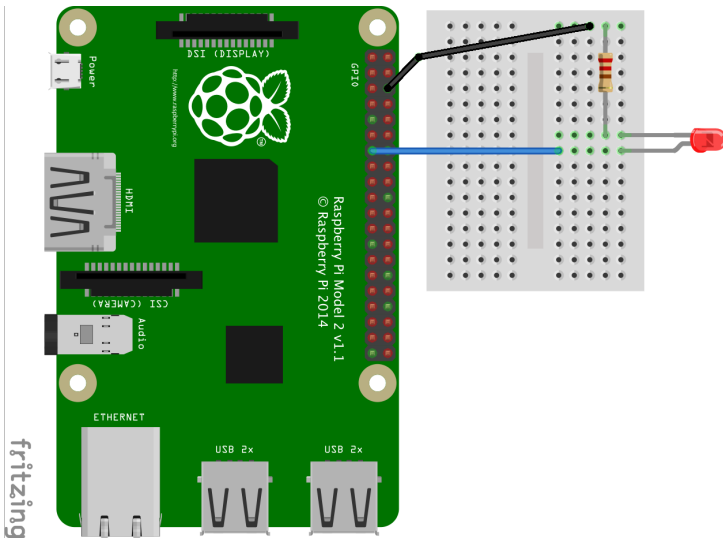


A SIMPLE GUI



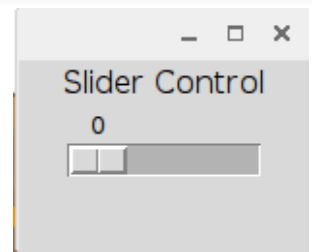
Let's use the guider library to make a simple GUI to control our LED circuit

```

1 from gpiozero import PWMLED
2 from guizero import *
3
4 led = PWMLED(27) # Our LED is on pin 27
5
6 app = App("GPIOZero Control") # Create a window
7
8 # text label
9 text1 = Text(app, "Simple On/Off Button Control")
10 # on-screen button to turn on LED
11 button_on = PushButton(app, led.on, text="LED On")
12 # on-screen button to turn off LED
13 button_off = PushButton(app, led.off, text="LED Off")
14
15 app.display()
16

```

Now try a slider for LED brightness. This time we'll make the window smaller too.



```
1 from gpiozero import PWMLED
2 from guizero import *
3
4 led = PWMLED(26) # Our LED is on pin 26
5
6 def brightness(value):
7     led.value = float(value)/10.0
8
9 # Create a window 100 x 150 pixels
10 app = App("GPIOZero Control", height=100, width=150)
11
12 # text label
13 text1 = Text(app, "Slider Control")
14
15 # Slider to control LED brightness
16 slider = Slider(app, start=0, end=10, command=brightness)
17 app.display()
18
```

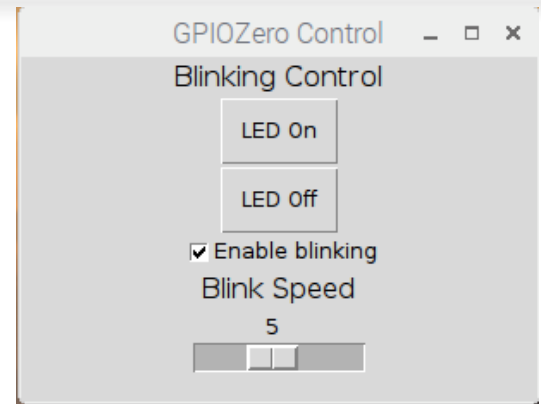
How about a checkbox and some coloured text?

```
1 from gpiozero import PWMLED
2 from guizero import *
3
4 led = PWMLED(27) # Our LED is on pin 27
5
6 blink_mode = False
7
8 def ledcontrol():
9     global blink_mode
10     if blink_mode:
11         led.blink(on_time=0.5, off_time=0.5, background=True)
12     else:
13         led.on()
14
15 def set_mode():
16     global blink_mode
17     if blink_mode:
18         blink_mode = False
19     else:
20         blink_mode = True
21
22 app = App("GPIOZero Control", height=150, width=300) # Create a window
23 # on-screen button to turn on LED
24 text1 = Text(app, "Blinking Control", color='red', size=14)
25 button_on = PushButton(app, ledcontrol, text="LED On")
26 # on-screen button to turn off LED
27 button_off = PushButton(app, led.off, text="LED Off")
28 # check-box to enable blinking of LED when switched on
29 checkbox = CheckBox(app, "Enable blinking", command=set_mode)
30
31 app.display()
32
```



Put it all together!

```
1 from gpiozero import PWMLED
2 from guizero import *
3 from time import sleep
4
5 led = PWMLED(27) # Our LED is on pin 27
6
7 # variables to keep track of what's going on:
8 blink_mode = False # is blink mode enabled?
9 led_active = False # is the led turned on (in any mode)?
10 blink_freq = 0.5 # frequency of blinking
11 # these will be set as global variables by functions that use them
12
13 def ledcontrol(): # turns the led on or starts it blinking
14     global blink_mode
15     global blink_freq
16     global led_active
17     led_active = True
18     if blink_mode:
19         led.blink(on_time=blink_freq, off_time=blink_freq, background=True)
20     else:
21         led.on()
22
23 def led_turn_off(): # turns led off and stops blinking
24     global led_active
25     led_active = False
26     led.off()
27
28 def set_mode(): # sets whether blink mode is on
29     # this function is run whenever the box is checked or un-checked
30     global blink_mode
31     if blink_mode:
32         blink_mode = False
33     else:
34         blink_mode = True
35
36 def speed(speed): # set frequency of blinking
37     # this function is run whenever the slider is moved
38     global blink_freq
39     global led_active
40     blink_freq = 1/float(speed) #freq between 0.1 and 1 second
41     print(blink_freq)
42     if (blink_mode and led_active):
43         led_turn_off()
44         led_active = True
45         led.blink(on_time=blink_freq, off_time=blink_freq, background=True)
46
47
48 app = App("GPIOZero Control", height=200, width=300) # Create a window
49 # on-screen button to turn on LED
50 text1 = Text(app, "Blinking Control") # text label
51 button_on = PushButton(app, ledcontrol, text="LED On")
52 # on-screen button to turn off LED
53 button_off = PushButton(app, led_turn_off, text="LED Off")
54 # check-box to enable blinking of LED when switched on
55 checkbox = CheckBox(app, "Enable blinking", command=set_mode)
56 text2 = Text(app, "Blink Speed") # text label
57 # Slider to control LED brightness
58 slider = Slider(app, start=1, end=10, command=speed)
59 app.display()
```



Challenge: Create a GUI to control the colour of an RGB LED!