Traffic Lights Controller GUI

Flash the LEDs

1 Connect your LEDs to the following pins:

LED	GPIO
Red	22
Amber	27
Green	17
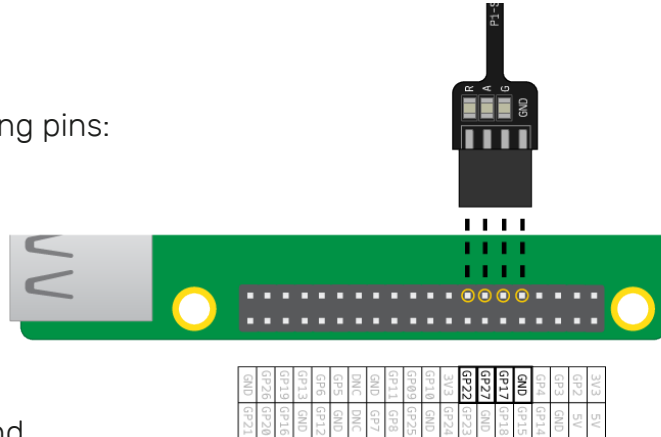
2 Open **Mu** from the main menu and click the **REPL** icon.

3 Enter the following commands, one by one, into the REPL, and observe the LEDs:

```
from gpiozero import TrafficLights
lights = TrafficLights(22, 27, 17)
lights.on()
lights.off()
lights.blink()
```

4 Now blink the LEDs at different speeds — the two numbers in the () are **on time** and **off time**, in seconds:

```
lights.blink(2, 2)
lights.blink(5, 5)
lights.blink(0.1, 0.1)
```

5 Try blinking each LED at a different rate:

```
lights.red.blink(1, 1)
lights.amber.blink(2, 2)
lights.green.blink(3, 3)
```

Close the REPL and use the main **Mu** window to type your program into a file.

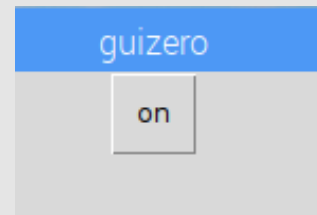**1** Create a GUI button to turn the red LED on:

```
from guizero import App, Text, PushButton
from gpiozero import TrafficLights

lights = TrafficLights(22, 27, 17)

app = App()

PushButton(app, command=lights.red.on, text="on")

app.display()
```
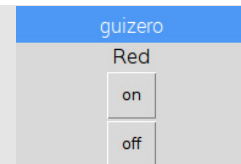
**2** Add a text label and a second button to turn the red LED off:

```
Text(app, "Red")
PushButton(app, command=lights.red.on, text="on")
PushButton(app, command=lights.red.off, text="off")
```

3 Now give your GUI app a name, and use the grid layout:

```
app = App("Traffic Lights controller", layout="grid")

Text(app, "Red", grid=[0, 0])
PushButton(app, command=lights.red.on, text="on", grid=[1, 0])
PushButton(app, command=lights.red.off, text="off", grid=[2, 0])
```
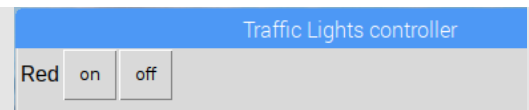
Challenges

1 Add on/off buttons for all three LEDs, and make sure the buttons are aligned in the grid.

2 Add buttons to make each LED blink.

3 Add buttons to turn all LEDs on/off at the same time.

4 Write your own function to make the LEDs do the traffic lights sequence.

Hint Include `from time import sleep` in your program, use `def sequence()`, and set the command to `sequence`.