

## Gas Leakage Monitoring And Alerting System

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**Write python code for blinking LED and Traffic lights for Raspberry pi.**

```
#importing the required module
#!/usr/bin/python -p
import time
import subprocess
import threading
"""
```

This is a class for blinking the onboard ACT LED on the Raspberry PI 3 based on shell commands. There should be a way to do this via GPIO, but for me it did not work so far. Here are some relevant links for blinking via GPIO:

- <https://kofler.info/on-board-leds-des-raspberry-pi-steuern/>
- <https://www.raspberrypi.org/forums/viewtopic.php?f=44>

**HYPERLINK**

"<http://www.raspberrypi.org/forums/viewtopic.php?f=44&t=144787>"&

**HYPERLINK**

"<http://www.raspberrypi.org/forums/viewtopic.php?f=44&t=144787>"t=144787 Example:

```
import time
= LED()
# turn on LED
l.led(True)
# turn off LED
l.led(False)
# turn on LED and then turn it off after 1 second
l.led(True, 1)
# some blinking patterns
l.start()
time.sleep(5)
l.stop()
l.start_simple(3,0.1,1)
time.sleep(5)
l.stop()
l.start_offset(3,0.1,0.2,1)
time.sleep(5)
```

```
l.stop()
l.start_simple([0.1,0.1,0.1,0.25,1])
time.sleep(5)
l.stop()
```

Credits:

- <https://stackoverflow.com/questions/18018033/how-to-stop-a-looping-thread-in-python>
- <https://kofler.info/on-board-leds-des-raspberry-pi-steuern>

```
class LED:
```

```
def __init__(self):
```

```
subprocess.call("echo \"none\" > /sys/class/leds/led0/trigger", shell=True)def
```

```
start_loop(self, loop_body):
```

```
def run():
```

```
while not self.stop_event.is_set():
```

```
loop_body()
```

```
self.stop_event = threading.Event()
```

```
thread = threading.Thread(target=run)
```

```
thread.start()
```

```
return self
```

```
def start(self):
```

```
self.start_loop(lambda: self.blink_offset(1, 1, 1, 1))def
```

```
start_simple(self, blinks, quick, slow):
```

```
self.start_loop(lambda: self.blink_offset(blinks, quick, quick, slow))def
```

```
start_offset(self, blinks, on, off, out):
```

```
self.start_loop(lambda: self.blink_offset(blinks, on, off, out))
```

```
def start_generic(self, onoff):
```

```
self.start_loop(lambda: self.blink_generic(onoff))
```

```
def led(self, on, reset = -1):
```

```
if on:
```

```
subprocess.call("echo 1 > /sys/class/leds/led0/brightness", shell=True)
```

```
else:
```

```
subprocess.call("echo 0 > /sys/class/leds/led0/brightness", shell=True)
```

```
if reset > 0:
```

```
time.sleep(reset)
```

```
self.led(not on)
```

```
def blink_offset(self, blinks, on, off, out):
```

```
time.sleep(out)
```

```
for i in range(blinks):
```

```
self.led(True, on)
```

```
time.sleep(off)
```

```
def blink_generic(self, onoff):
```

```
for i in range(len(onoff) / 2):
```

```
on = onoff[i * 2]
```

```
off = onoff[i * 2 + 1]
self.led(True, on)
time.sleep(off)
def stop(self):
self.stop_event.set()
```