

```
def read_internal_temperature():  
    raw = temp_adc.read_u16()  
    voltage = raw * 3.3 / 65535  
    temperature = 27 - (voltage - 0.706) / 0.001721  
    return round(temperature, 2)
```

```
def calculate_brightness(raw):  
  
    # Observed calibration values from testing  
  
    LDR_BRIGHT = 26000    # brightest environment  
  
    LDR_DARK = 39000      # darkest environment  
  
  
    # Clamp raw value  
  
    raw = max(min(raw, LDR_DARK), LDR_BRIGHT)  
  
  
    # Invert so bright = high value  
  
    inverted = LDR_DARK - raw  
  
  
    # Normalize to 0-100  
  
    brightness = (inverted * 100) / (LDR_DARK - LDR_BRIGHT)  
  
  
    return int(brightness)
```

```
# --- 1. RAIN GAUGE MONITOR ---  
  
current_rain_state = rain_pin.value()  
  
if last_rain_state == 1 and current_rain_state == 0:  
    rain_tips += 1  
  
    print(f"🌧 Rain Tip! Total: {rain_tips}")  
  
    time.sleep(0.1) # debounce  
  
last_rain_state = current_rain_state
```

```
def toggle_wifi(enable):  
    wlan = network.WLAN(network.STA_IF)  
    wlan.active(enable)  
  
    if enable:  
        print("\n⚡ Waking up WiFi...", end="")  
        wlan.connect(SSID, PASSWORD)  
        max_wait = 20  
        while max_wait > 0:  
            if wlan.isconnected():  
                print(f" Connected! IP: {wlan.ifconfig()[0]}")  
                return True  
            time.sleep(1)  
            print(".", end="")  
            max_wait -= 1  
        print(" Failed.")  
        return False  
    else:  
        print("✂ Cutting WiFi Power...")  
        return False
```