

Hardware

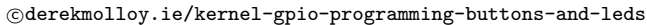
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Um was geht es ?

Hardware

- ▶ *user-space* → *kernel-space* → *HW*
 - ▶ via *sysfs*
- ▶ *HW* → *kernel-space* → *user-space*
 - ▶ Interrupts



Vom *user-space* aus

In Verzeichnis `/sys/class/gpio`

- ▶ Output `gpio49`
 - ▶ `cd gpio49`
 - ▶ `echo out > direction`
 - ▶ `echo 1 > value echo 0 > value`
- ▶ Input `gpio115`
 - ▶ entsprechend

Aufgabe

Skript

- ▶ blink
- ▶ Polling
 - ▶ read switch set led

Loadable Kernel Module (LKM)

gpio-0.c

- ▶ eigenes Verzeichnis in `sys: my-hw`
- ▶ einen File `led` mit `rw`:
 - ▶ write: `echo x > /sys/my-hw/led`
 - `x=1` set led
 - `x=0` clear led
 - `x=t|T` toggle ledandere Werte von `x` ändern nichts
 - ▶ read: `cat /sys/my-hw/led`
 - `1` led on
 - `0` led off

Was Sie brauchen

Pin 49

- ▶ `gpio_request`
- ▶ `gpio_free`
- ▶ `gpio_direction_output`
- ▶ `gpio_set_value`