

4235 Group 7: Library Components 2

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# E4235\_PullUpDown()

## Definitions

.equ GPIO\_PUP\_PDN\_CNTRL\_REG0, 0xe4 @ offset for GPIOs 0 - 15

.equ GPIO\_PUP\_PDN\_CNTRL\_REG1, 0xe8 @ offset for GPIOs 16 - 31

.equ GPIO\_BASE, 0xFE200000 @ base address for GPIO

.equ OFFSET\_FILE\_DESCRP, 0 @ file descriptor

.equ mem\_fd\_open, 3

.equ BLOCK\_SIZE, 4096 @ Raspbian memory page

.equ ADDRESS\_ARG, 3 @ device address

.equ SLEEP\_IN\_S, 1

.equ MAP\_SHARED,1 @ share changes with other processes

.equ PROT\_RDWR,0x3 @ PROT\_READ(0x1)|PROT\_WRITE(0x2)

device: .asciz "/dev/gpiomem"

msg: .asciz "ERROR: Please ensure your call is in form 'E4235\_gpio\_set\_pud(x,y)' where:\n 1 < x < 28\n 0 < y < 3\n"

GPIO\_BASE: .word 0xfe200000 @GPIO Base address Raspberry pi 4

Mem\_fd: .word device

O\_RDWR\_O\_SYNC: .word 2|256 @ O\_RDWR (2)|O\_SYNC (256).

## Final Inputs

r0 - The GPIO # for the desired pin to manipulate

r1 - Pullup/Pulldown (1(01) - Pull-Up, 2(10) - Pull-Down)

## Final Outputs

N/A

## Function Use

To toggle a specific GPIO into Pull Up or Pull Down configuration.

## Example ASM

main:

MOV r0, #5

MOV r1, #1

bl E4235\_gpio\_set\_pud

## Example C

E4235\_gpio\_set\_pud(24, 1)

## Test Results

We tested the code by using the ‘raspi-gpio get’ command to to pull the pull up/down status directly from the Pi for all GPIO #’s 0 - 55 (including internal). We noted the current status of the resistor for the GPIO # being tested, ran the program to change that state, and used the same command to see if the state of the test GPIO # was changed.