# Accès aux entrées/sorties

Donnée:

Code:

Observation:

L’identifiant demandé par la donnée est en fait l’identifiant de la zone mémoire réservée. Il peut être obtenu grâce à la méthode ioread. Mais pour pouvoir lire cette zone, il faut la mapper dans la mémoire virtuelle du noyau avec la méthode ioremap, car le noyau n’a pas directement accès aux entrées/sorties.

Output:

# # modprobe mymodule

# [ 29.064426] [c6] Linux module skeleton loaded

# [ 29.067327] [c6] Memory allocated

# [ 29.070654] [c6] uP register: Bit 31..12 : product id=0x10000

# [ 29.076370] [c6] uP register: Bit 11..8 : package id=0x0

# [ 29.081743] [c6] uP register: Bit 7..4 : major revision=0x0

# [ 29.087481] [c6] uP register: Bit 3..0 : minor revision=0x0

# # cat /proc/iomem

# 03000000-03048fff : /lpass@03810000

# 03810000-038100ff : /lpass@03810000

# 03830000-038300ff : samsung-i2s

# 03860000-03860fff : /pinctrl@03860000

# 03880000-03880fff : /amba/adma@03880000

# 03880000-03880fff : /amba/adma@03880000

# 10000000-100000ff : uP register

# …

# # dmesg | tail -n 10

# [ 9.902144] [c7] VFS: Mounted root (nfs filesystem) on device 0:13.

# [ 9.908748] [c7] devtmpfs: mounted

# [ 9.910854] [c7] Freeing unused kernel memory: 436K (c089c000 - c0909000)

# [ 12.272021] [c6] pwm-samsung: tin parent at 66600000

# [ 29.064426] [c6] Linux module skeleton loaded

# [ 29.067327] [c6] Memory allocated

# [ 29.070654] [c6] uP register: Bit 31..12 : product id=0x65422

# [ 29.076370] [c6] uP register: Bit 11..8 : package id=0x0

# [ 29.081743] [c6] uP register: Bit 7..4 : major revision=0x0

# [ 29.087481] [c6] uP register: Bit 3..0 : minor revision=0x1

# # modprobe -r mymodule

# [ 65.988246] [c0] Linux module skeleton unloaded

# [ 65.991313] [c0] Memory released

# Threads du noyau

Donnée :

Code :

Output :

# pwd

/usr/workspace/csel1/environment/module\_noyau/exercice7

# modprobe mymodule

[ 2209.174677] [c1] Thread created

# [ 2214.178018] [c0] Thread awake

[ 2219.183004] [c0] Thread awake

[ 2224.187999] [c0] Thread awake

[ 2229.193003] [c0] Thread awake

[ 2234.198002] [c0] Thread awake

[ 2239.202999] [c0] Thread awake

[ 2244.208002] [c0] Thread awake

[ 2249.213016] [c0] Thread awake

# [ 2254.217981] [c0] Thread awake

# modprobe -r mymodule

[ 2259.223010] [c3] Thread awake

[ 2259.224553] [c0] Thread stopped

# Mise en sommeil

Donnée :

Code :

Output :

# modprobe mymodule

[ 38.965238] [c7] Init wait queue

[ 38.967042] [c7] Threads created

# [ 43.970754] [c2] Thread2 (notif each 5s) awake

[ 43.973766] [c3] Thread1 (wait notif) awake

[ 48.975722] [c2] Thread2 (notif each 5s) awake

[ 48.978723] [c3] Thread1 (wait notif) awake

[ 53.980719] [c2] Thread2 (notif each 5s) awake

[ 53.983716] [c3] Thread1 (wait notif) awake

[ 58.985719] [c2] Thread2 (notif each 5s) awake

[ 58.988719] [c3] Thread1 (wait notif) awake

# modprobe -r mymodule

[ 63.990723] [c2] Thread2 (notif each 5s) awake

[ 63.993722] [c3] Thread1 (wait notif) awake

[ 68.995715] [c2] Thread2 (notif each 5s) awake

[ 68.998725] [c1] Threads stopped