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«Київський політехнічний інститут імені Ігоря Сікорського»
Факультет інформатики та обчислювальної техніки
Кафедра обчислювальної техніки
Архітектура комп'ютерів-2.
Процесори Лабораторна робота №4

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Київ 2021 р.

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# insmod lab6.ko amount=7
64.500550] lab6: loading out-of-tree module taints kernel.
64.505655] Entered parameter is between 5 and 10
64.505682] Hello World!
64.505767] Hello World!
64.505798] Hello World!
64.505842] Hello World!
64.505877] Hello World!
64.505957] Unhandled fault: page domain fault (0x81b) at 0x00000008
64.506126] pgd = (ptrval)
64.506187] [00000008] *pgd=48bc6835, *pte=00000000, *ppte=00000000
64.506568] Internal error: : 81b [#1] SMP ARM
64.506749] Modules linked in: lab6(0+)
64.507040] CPU: 0 PID: 63 Comm: insmod Tainted: G          0      4.19.220 #1
64.507174] Hardware name: Generic DT based system
64.507605] PC is at hello_init+0xc8/0x1000 [lab6]
64.507707] LR is at 0x17
64.507764] pc : [<bf0050c8>]      lr : [<00000017>]      psr: 20060013
64.507872] sp : c8b55db8 ip : 00000000 fp : 00000000
64.507966] r10: 000000c0 r9 : bf0010b8 r8 : c135a34c
64.508058] r7 : 00000000 r6 : 00000000 r5 : bf002000 r4 : 00000006
64.508175] r3 : 0000000e r2 : 18000000 r1 : 0000000f r0 : 041f8360
64.508312] Flags: nzCv IRQs on FIQs on Mode SVC_32 ISA ARM Segment none
64.508445] Control: 10c5387d Table: 48b5806a DAC: 00000051
64.508562] Process insmod (pid: 63, stack limit = 0x(ptrval))
64.508693] Stack: (0xc8b55db8 to 0xc8b56000)
64.508836] 5da0:                                c1788300 c1604c48
64.509039] 5dc0: fffffe00 bf005000 00000000 c1604c48 bf002040 c0302d4c c8b80280 c04f0a48
64.509229] 5de0: 00210d00 00000002 c1604c48 c8b46640 c8b80264 c04f143c 00000000 e097afff
64.509416] 5e00: ffe00000 fffff000 8040003f c8b463c0 dbcf0480 706ff1e0 dbcf0480 c8b46640
64.509558] 5e20: bf002040 706ff1e0 bf002040 00000002 c8b80340 00000002 c8b80280 c03d1ba8
64.509742] 5e40: 00000001 c03d3f04 c8b55f30 c8b55f30 00000002 c8b80240 00000002 c03d3f20
64.509932] 5e60: bf00204c 00007fff bf002040 c03d0de0 c8b82818 bf002088 c8b82a9c bf002234
64.510120] 5e80: bf002170 c1358818 00000000 c121f204 c121f274 c1604c48 c1608f04 c8af1800
64.510304] 5ea0: fffff000 e0800000 c8af1800 c8b46640 00000000 00000000 00000000 00000000
64.510490] 5ec0: 00000000 00000000 6e72656b 00006c65 00000000 00000000 00000000 00000000
64.510674] 5ee0: 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
64.510863] 5f00: 00000000 706ff1e0 00000000 0000141c 00000000 e097941c 0013166c c1604c48
64.511046] 5f20: 001201f8 fffffe00 00000051 c03d4380 e09682ca e09683c0 e0968000 0001141c
64.511234] 5f40: e0978c9c e0978ac4 e09752b8 00003000 00003040 00000000 00000000 00000000
64.511425] 5f60: 0000171c 0000002d 0000002e 00000017 00000000 00000010 00000000 706ff1e0
64.511616] 5f80: 000f86c4 001201f8 b6f17950 0001141c 00000000 c0301204 c8b54000 00000000
64.511803] 5fa0: 000f86c4 c0301000 001201f8 b6f17950 00120250 0001141c 001201f8 00000000
64.511989] 5fc0: 001201f8 b6f17950 0001141c 00000000 00000001 beedcea0 0010d3a8 000f86c4

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64.509558] 5e20: bf002040 706ff1e0 bf002040 00000002 c8b80340 00000002 c8b80280 c03d1ba8
64.509742] 5e40: 00000001 c03d3f04 c8b55f30 c8b55f30 00000002 c8b80240 00000002 c03d3f20
64.509932] 5e60: bf00204c 00007fff bf002040 c03d0de0 c8b82818 bf002088 c8b82a9c bf002234
64.510120] 5e80: bf002170 c1358818 00000000 c121f204 c121f274 c1604c48 c1608f04 c8af1800
64.510304] 5ea0: fffff000 e0800000 c8af1800 c8b46640 00000000 00000000 00000000 00000000
64.510490] 5ec0: 00000000 00000000 6e72656b 00006c65 00000000 00000000 00000000 00000000
64.510674] 5ee0: 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
64.510863] 5f00: 00000000 706ff1e0 00000000 0000141c 00000000 e097941c 0013166c c1604c48
64.511046] 5f20: 001201f8 fffffe00 00000051 c03d4380 e09682ca e09683c0 e0968000 0001141c
64.511234] 5f40: e0978c9c e0978ac4 e09752b8 00003000 00003040 00000000 00000000 00000000
64.511425] 5f60: 0000171c 0000002d 0000002e 00000017 00000000 00000010 00000000 706ff1e0
64.511616] 5f80: 000f86c4 001201f8 b6f17950 0001141c 00000000 c0301204 c8b54000 00000000
64.511803] 5fa0: 000f86c4 c0301000 001201f8 b6f17950 00120250 0001141c 001201f8 00000000
64.511989] 5fc0: 001201f8 b6f17950 0001141c 00000000 00000001 beedcea0 0010d3a8 000f86c4
64.512178] 5fe0: beedcb58 beedcb48 0003ba98 b6dd11b0 60060010 00120250 00000000 00000000
64.512847] [<bf0050c8>] (hello_init [lab6]) from [<c0302d4c>] (do_one_initcall+0x54/0x208)
64.513090] [<c0302d4c>] (do_one_initcall) from [<c03d1ba8>] (do_init_module+0x64/0x224)
64.513243] [<c03d1ba8>] (do_init_module) from [<c03d3f20>] (load_module+0x2150/0x2458)
64.513405] [<c03d3f20>] (load_module) from [<c03d4380>] (sys_init_module+0x158/0x18c)
64.513560] [<c03d4380>] (sys_init_module) from [<c0301000>] (ret_fast_syscall+0x0/0x54)
64.513701] Exception stack(0xc8b55fa8 to 0xc8b55ff0)
64.513824] 5fa0:                                001201f8 b6f17950 00120250 0001141c 001201f8 00000000
64.513993] 5fc0: 0001201f8 b6f17950 0001141c 00000000 00000001 beedcea0 0010d3a8 000f86c4
64.514138] 5fe0: beedcb58 beedcb48 0003ba98 b6dd11b0
64.514370] Code: e5800000 03a06000 eb4ece52 e1a07006 (b1c600f8)
64.514663] ---[ end trace 5d3c2b62a09b354f ]---
Segmentation fault
/ #

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a4: e1a0100a    mov     r1, s1
a8: e5980018    ldr     r0, [r8, #24]
ac: ebfffffe    bl      0 <kmem_cache_alloc_trace>
    if(i==5) var_1 = NULL;
b0: e3540005    cmp     r4, #5
for (i = 0; i < amount; i++) {
b4: e2844001    add     r4, r4, #1
    var_1->next = kmalloc(sizeof(struct head_list), GFP_KERNEL);
b8: e5860000    str     r0, [r6]
    if(i==5) var_1 = NULL;
bc: 03a06000    moveq   r6, #0
    var_1->time = ktime_get();
c0: ebfffffe    bl      0 <ktime_get>
    var_2 = var_1;
c4: e1a07006    mov     r7, r6
    var_1->time = ktime_get();
c8: e1c600f8    strd    r0, [r6, #8]
    pr_info("Hello World!");
cc: e1a00009    mov     r0, r9
d0: ebfffffe    bl      0 <printk>
    var_1 = var_1->next;
d4: e5966000    ldr     r6, [r6]
d8: eaffffed    b       94 <init_module+0x94>
}

if (amount != 0) {
dc: e3530000    cmp     r3, #0
e0: 0a000003    beq     f4 <init_module+0xf4>
    kfree(var_2->next);
e4: e5970000    ldr     r0, [r7]
e8: ebfffffe    bl      0 <kfree>
    var_2->next = NULL;
ec: e3a03000    mov     r3, #0
f0: e5873000    str     r3, [r7]
}

pr_info("Amount: %d\n", amount);
f4: e5951000    ldr     r1, [r5]
f8: e3000000    movw    r0, #0
fc: e3400000    movt    r0, #0
100: ebfffffe    bl      0 <printk>

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