

ECEN 5013 Advanced Practical Embedded Software, Fall 17

HW#2- Write-up

Syscall dmesg log:

```
ashwath@ashwath-apes: /media/sf_kernels
[1343.979927] Received null from user.
[1451.478691] A call to sys_custom_call has been made
[1451.478831] Dynamically allocated a buffer of size:5744 bytes in kernel space
[1451.478841] Initiating a sort on the buffer
[1451.500667] Finished sorting successfully.
[1451.500682] sys_custom_call exits successfully.
[1473.037201] A call to sys_custom_call has been made
[1473.037215] Dynamically allocated a buffer of size:5744 bytes in kernel space
[1473.037224] Initiating a sort on the buffer
[1473.055833] Finished sorting successfully.
[1473.058225] sys_custom_call exits successfully.
[1473.059161] A call to sys_custom_call has been made
[1473.059169] Dynamically allocated a buffer of size:5008 bytes in kernel space
[1473.059174] Initiating a sort on the buffer
[1473.065770] Finished sorting successfully.
[1473.065774] sys_custom_call exits successfully.
[1473.065825] A call to sys_custom_call has been made
[1473.066105] Dynamically allocated a buffer of size:6976 bytes in kernel space
[1473.066109] Initiating a sort on the buffer
[1473.073823] Finished sorting successfully.
[1473.073858] sys_custom_call exits successfully.
[1473.074028] A call to sys_custom_call has been made
[1473.074030] Received null from user.
ashwath@ashwath-apes: /media/sf_kernels$
```

Module output:

```

ashwath@ashwath-apes: /media/sf_kernels/linux-4.12.10/custom_call/module$ modinfo custom_module.ko
filename:       /media/sf_kernels/linux-4.12.10/custom_call/module/custom_module.ko
author:        Ashwath Gundepally
description:    A custom module that increments a variable every 500ms and logs it's value to the kernal log
license:       GPL
srcversion:    057183B850369B2C27BFCA5
depends:
vermagic:      4.10.0-28-generic SMP mod_unload
ashwath@ashwath-apes: /media/sf_kernels/linux-4.12.10/custom_call/module$

```

Module logging every 500ms:

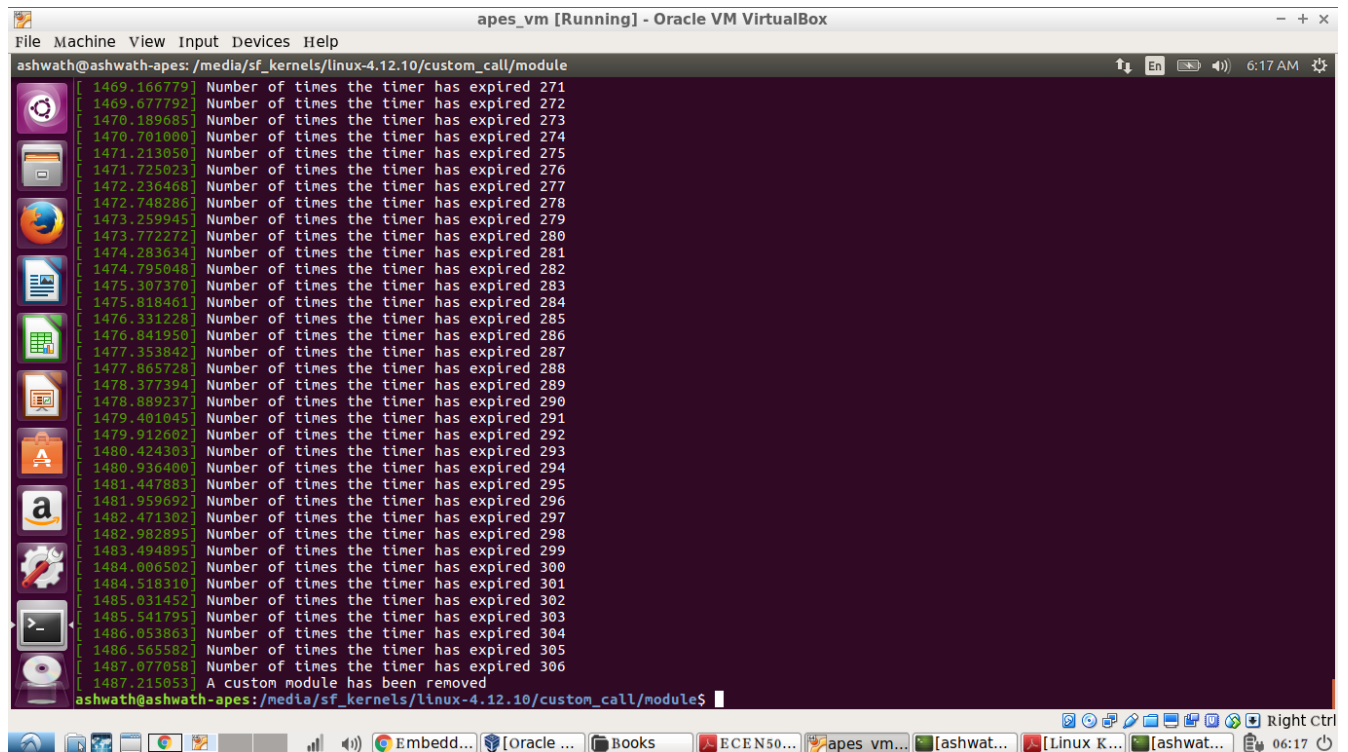
```

ashwath@ashwath-apes: /media/sf_kernels/linux-4.12.10/custom_call/module$
1349.929567 Number of times the timer has expired 38
1350.441640 Number of times the timer has expired 39
1350.953029 Number of times the timer has expired 40
1351.464994 Number of times the timer has expired 41
1351.976613 Number of times the timer has expired 42
1352.488289 Number of times the timer has expired 43
1353.000135 Number of times the timer has expired 44
1353.512772 Number of times the timer has expired 45
1354.023839 Number of times the timer has expired 46
1354.537416 Number of times the timer has expired 47
1355.047494 Number of times the timer has expired 48
1355.558784 Number of times the timer has expired 49
1356.071042 Number of times the timer has expired 50
1356.582335 Number of times the timer has expired 51
1357.095437 Number of times the timer has expired 52
1357.607811 Number of times the timer has expired 53
1358.117722 Number of times the timer has expired 54
1358.629285 Number of times the timer has expired 55
1359.140966 Number of times the timer has expired 56
1359.652985 Number of times the timer has expired 57
1360.164282 Number of times the timer has expired 58
1360.676030 Number of times the timer has expired 59
1361.187890 Number of times the timer has expired 60
1361.699874 Number of times the timer has expired 61
1362.212198 Number of times the timer has expired 62
1362.723002 Number of times the timer has expired 63
1363.235113 Number of times the timer has expired 64
1363.746757 Number of times the timer has expired 65
1364.258565 Number of times the timer has expired 66
1364.770022 Number of times the timer has expired 67
1365.281888 Number of times the timer has expired 68
1365.794586 Number of times the timer has expired 69
1366.305340 Number of times the timer has expired 70
1366.817252 Number of times the timer has expired 71
1367.329337 Number of times the timer has expired 72
1367.840996 Number of times the timer has expired 73
1368.353249 Number of times the timer has expired 74
ashwath@ashwath-apes: /media/sf_kernels/linux-4.12.10/custom_call/module$

```

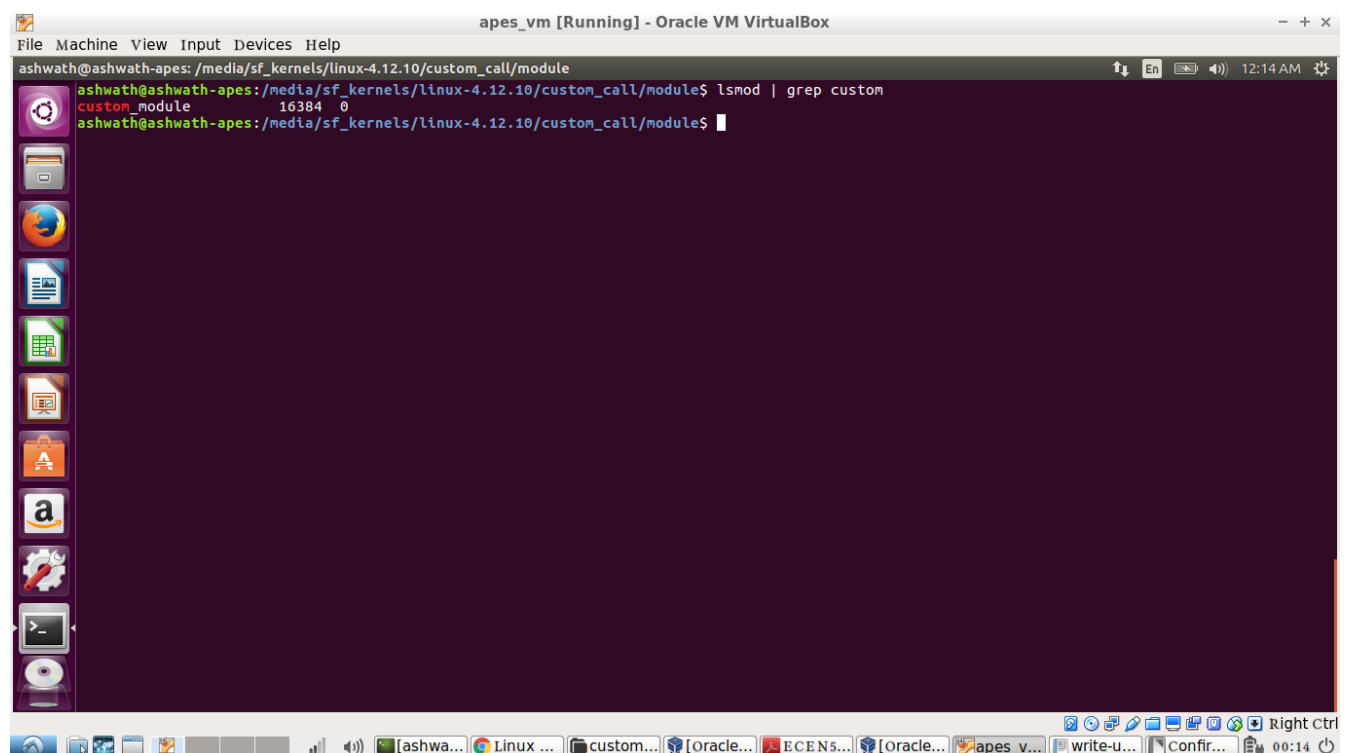
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Module removed log:



```
ashwath@ashwath-apes: /media/sf_kernels/linux-4.12.10/custom_call/module
1469.166779] Number of times the timer has expired 271
1469.677792] Number of times the timer has expired 272
1470.189685] Number of times the timer has expired 273
1470.701000] Number of times the timer has expired 274
1471.213050] Number of times the timer has expired 275
1471.725023] Number of times the timer has expired 276
1472.236468] Number of times the timer has expired 277
1472.748286] Number of times the timer has expired 278
1473.259945] Number of times the timer has expired 279
1473.772272] Number of times the timer has expired 280
1474.283634] Number of times the timer has expired 281
1474.795048] Number of times the timer has expired 282
1475.307370] Number of times the timer has expired 283
1475.818461] Number of times the timer has expired 284
1476.331228] Number of times the timer has expired 285
1476.841950] Number of times the timer has expired 286
1477.353042] Number of times the timer has expired 287
1477.865728] Number of times the timer has expired 288
1478.377394] Number of times the timer has expired 289
1478.889237] Number of times the timer has expired 290
1479.401045] Number of times the timer has expired 291
1479.912602] Number of times the timer has expired 292
1480.424303] Number of times the timer has expired 293
1480.936400] Number of times the timer has expired 294
1481.447883] Number of times the timer has expired 295
1481.959692] Number of times the timer has expired 296
1482.471302] Number of times the timer has expired 297
1482.982895] Number of times the timer has expired 298
1483.494895] Number of times the timer has expired 299
1484.006502] Number of times the timer has expired 300
1484.518310] Number of times the timer has expired 301
1485.031452] Number of times the timer has expired 302
1485.541795] Number of times the timer has expired 303
1486.053863] Number of times the timer has expired 304
1486.565582] Number of times the timer has expired 305
1487.077058] Number of times the timer has expired 306
1487.215053] A custom module has been removed
ashwath@ashwath-apes: /media/sf_kernels/linux-4.12.10/custom_call/module$
```

lsmod output:



```
ashwath@ashwath-apes: /media/sf_kernels/linux-4.12.10/custom_call/module
ashwath@ashwath-apes: /media/sf_kernels/linux-4.12.10/custom_call/module$ lsmod | grep custom
custom_module                16384 0
ashwath@ashwath-apes: /media/sf_kernels/linux-4.12.10/custom_call/module$
```