

Homework Report: Linux Kernel Modules

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We used Ubuntu 16.04 with 2 CPU cores to run the experiments. Fixed code for our kernel can be found at <https://github.com/filipre/sample-kernel-modules>.

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```
rene@rene-VirtualBox:~/Development/os-report-modules$ less /var/log/syslog | grep 'LOWLEVEL'
Nov 10 11:29:39 rene-VirtualBox kernel: [ 2992.069003] [LOWLEVEL]: Entering module.
Nov 10 11:29:39 rene-VirtualBox kernel: [ 2992.069006] [LOWLEVEL]: array[0] = [0]
Nov 10 11:29:39 rene-VirtualBox kernel: [ 2992.069007] [LOWLEVEL]: array[1] = [1]
Nov 10 11:29:39 rene-VirtualBox kernel: [ 2992.069007] [LOWLEVEL]: array[2] = [2]
[...]
Nov 10 11:29:39 rene-VirtualBox kernel: [ 2992.069346] [LOWLEVEL]: array[1018] = [1018]
Nov 10 11:29:39 rene-VirtualBox kernel: [ 2992.069346] [LOWLEVEL]: array[1019] = [1019]
Nov 10 11:29:39 rene-VirtualBox kernel: [ 2992.069346] [LOWLEVEL]: array[1020] = [1020]
Nov 10 11:29:39 rene-VirtualBox kernel: [ 2992.069347] [LOWLEVEL]: array[1021] = [1021]
Nov 10 11:29:39 rene-VirtualBox kernel: [ 2992.069347] [LOWLEVEL]: array[1022] = [1022]
```

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```
rene@rene-VirtualBox:~/Development/os-report-modules$ less /var/log/syslog | grep 'KMALLOC_TEST'
Nov 10 11:37:10 rene-VirtualBox kernel: [ 3442.547915] [KMALLOC_TEST]: Entering module.
Nov 10 11:46:07 rene-VirtualBox kernel: [ 3442.548054] [KMALLOC_TEST]: could not allocate 8388608 bytes
```

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```
rene@rene-VirtualBox:~/Development/os-report-modules$ less /var/log/syslog | grep 'SLAB_TEST'
Nov 10 11:46:07 rene-VirtualBox kernel: [ 3979.354563] [SLAB_TEST]: Entering module.
Nov 10 11:50:51 rene-VirtualBox kernel: [ 3979.354570] [SLAB_TEST]: ptr1 = {42, 42}; ptr2 = {43, 42}
```

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```
rene@rene-VirtualBox:~/Development/os-report-modules$ less /var/log/syslog | grep 'HIGHMEM'
```

```

Nov 10 11:59:12 rene-VirtualBox kernel: [ 4764.578923] [HIGHMEM]: Entering module.
Nov 10 11:59:12 rene-VirtualBox kernel: [ 4764.578925] [HIGHMEM]: array[0] = [0]
Nov 10 11:59:12 rene-VirtualBox kernel: [ 4764.578925] [HIGHMEM]: array[1] = [1]
Nov 10 11:59:12 rene-VirtualBox kernel: [ 4764.578925] [HIGHMEM]: array[2] = [2]
[...]
Nov 10 11:59:12 rene-VirtualBox kernel: [ 4764.579262] [HIGHMEM]: array[1018] = [1018]
Nov 10 11:59:12 rene-VirtualBox kernel: [ 4764.579263] [HIGHMEM]: array[1019] = [1019]
Nov 10 11:59:12 rene-VirtualBox kernel: [ 4764.579263] [HIGHMEM]: array[1020] = [1020]
Nov 10 11:59:12 rene-VirtualBox kernel: [ 4764.579263] [HIGHMEM]: array[1021] = [1021]
Nov 10 11:59:12 rene-VirtualBox kernel: [ 4764.579264] [HIGHMEM]: array[1022] = [1022]

```

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```

rene@rene-VirtualBox:~/Development/os-report-modules$ less /var/log/syslog | grep 'PERCPU'
Nov 13 16:25:59 rene-VirtualBox kernel: [ 64.227740] [PERCPU]: Entering module.
Nov 13 16:25:59 rene-VirtualBox kernel: [ 64.228069] [PERCPU]: cpu[0] = 1
Nov 13 16:25:59 rene-VirtualBox kernel: [ 64.229562] [PERCPU]: cpu[0] = 2
Nov 13 16:26:00 rene-VirtualBox kernel: [ 64.229652] [PERCPU]: cpu[1] = 1
Nov 13 16:26:00 rene-VirtualBox kernel: [ 64.747736] [PERCPU]: cpu[1] = 2
Nov 13 16:26:00 rene-VirtualBox kernel: [ 64.748344] [PERCPU]: cpu[0] = 3
Nov 13 16:26:00 rene-VirtualBox kernel: [ 64.748349] [PERCPU]: cpu[0] = 4
Nov 13 16:26:00 rene-VirtualBox kernel: [ 65.260113] [PERCPU]: cpu[1] = 3
Nov 13 16:26:00 rene-VirtualBox kernel: [ 65.260114] [PERCPU]: cpu[0] = 5
Nov 13 16:26:01 rene-VirtualBox kernel: [ 65.260118] [PERCPU]: cpu[0] = 6
[...]

```

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```

rene@rene-VirtualBox:~/Development/os-report-modules$ less /var/log/syslog | grep 'PERCPU2'
Nov 13 16:29:53 rene-VirtualBox kernel: [ 37.117584] [PERCPU2]: Entering module.
Nov 13 16:29:53 rene-VirtualBox kernel: [ 37.117930] [PERCPU2]: cpu[1] = 1
Nov 13 16:29:53 rene-VirtualBox kernel: [ 37.118075] [PERCPU2]: cpu[1] = 2
Nov 13 16:29:54 rene-VirtualBox kernel: [ 37.118609] [PERCPU2]: cpu[0] = 1
Nov 13 16:29:54 rene-VirtualBox kernel: [ 37.626593] [PERCPU2]: cpu[1] = 3
Nov 13 16:29:54 rene-VirtualBox kernel: [ 37.626599] [PERCPU2]: cpu[0] = 2
Nov 13 16:29:54 rene-VirtualBox kernel: [ 37.626600] [PERCPU2]: cpu[1] = 4
Nov 13 16:29:54 rene-VirtualBox kernel: [ 38.139805] [PERCPU2]: cpu[1] = 5
Nov 13 16:29:54 rene-VirtualBox kernel: [ 38.139810] [PERCPU2]: cpu[1] = 6
Nov 13 16:29:55 rene-VirtualBox kernel: [ 38.139844] [PERCPU2]: cpu[0] = 3
Nov 13 16:29:55 rene-VirtualBox kernel: [ 38.653787] [PERCPU2]: cpu[0] = 4
[...]

```