

Project 3 Report: Memory Management

CSE 3320:Operating Systems

GROUP 3

Hamilton Nguyen 1000538439

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Partners: Marvin Willington 1001660133

1 Part 1: Virtual Memory Address Statistics

According to the specifications stated in part 1 for project 2, all steps were carried out, however upon source code compilation without errors, it is unsuccessful since for unknown reason it did not show the results in the dmesg. We have followed every painstaking step to printout the results in the dmesg, however we cannot determine the unknown issues with the kernel version 5.0.1. Refer to figure 1 and 2 for attempt compilation of the source files. Please refer to the source files in the attachment.

2 Part 2: Virtual Memory Address Process

According to the specifications stated in part 2 for project 2, all steps were carried out, however upon source code compilation without errors, it is unsuccessful since for unknown reason it did not show the results in the dmesg. We have followed every painstaking step to printout the results in the dmesg, however we cannot determine the unknown issues with the kernel version 5.0.1. Refer to figure 3 and 4 for attempt compilation of the source files. Please refer to the source files in the attachment.

```

1375 tty1 00:00:00 gsd-keyboard
1380 tty1 00:00:00 gsd-media-keys
1385 tty1 00:00:00 gsd-mouse
1404 tty1 00:00:00 gsd-printer
1412 ? 00:00:00 colord
1430 tty1 00:00:02 nautilus-deskto
1437 tty1 00:00:00 gsd-disk-utilit
1479 ? 00:00:00 evolution-calen
1484 ? 00:00:00 gvfsd-trash
1510 ? 00:00:00 evolution-calen
1512 ? 00:00:00 dconf-service
1515 tty1 00:00:00 ibus-engine-sim
1528 ? 00:00:00 evolution-addre
1539 ? 00:00:00 evolution-addre
1561 ? 00:00:00 gvfsd-metadata
1597 ? 00:00:02 gnome-terminal-
1606 pts/0 00:00:00 bash
1689 ? 00:00:00 kworker/3:4-eve
1691 ? 00:00:00 kworker/3:5-mm_
1696 ? 00:00:00 loop17
1703 tty1 00:00:03 gnome-software
1705 tty1 00:00:00 update-notifier
1726 ? 00:00:00 fwupd
1798 tty1 00:00:00 deja-dup-monito
1835 ? 00:00:00 kworker/u8:2-ev
1841 pts/0 00:00:00 ps
~/Downloads/linux-5.0.1/p3$ ./test_stats
Enter a process id:
1404
~/Downloads/linux-5.0.1/p3$ dmesg
0.000000 Linux version 5.0.1 (zinah@zinah-VirtualBox) (gcc version 7.4.0 (Ubuntu 7.4.0-1ubuntu1-18.04.1)) #4 SMP Tue Feb 18
15:20:51 CST 2020

```

Figure 1: part 1: ps -A was entered, process id entered as 1484, and dmesg was enter.

```

10.304067] [drm] Extended Fifo.
10.304067] [drm] Pitchlock.
10.304067] [drm] Irq mask.
10.304068] [drm] GMR.
10.304068] [drm] Traces.
10.304068] [drm] GMR2.
10.304069] [drm] Screen Object 2.
10.304070] [drm] Max GMR ids is 8192
10.304071] [drm] Max number of GMR pages is 1048576
10.304071] [drm] Max dedicated hypervisor surface memory is 507904 kiB
10.304072] [drm] Maximum display memory size is 16384 kiB
10.304073] [drm] VRAM at 0xf0000000 size is 16384 kiB
10.304073] [drm] MMIO at 0xf1000000 size is 2048 kiB
10.328398] [TTM] Zone kernel: Available graphics memory: 2018366 kiB
10.328401] [TTM] Initializing pool allocator
10.328409] [TTM] Initializing DMA pool allocator
10.328981] [drm] Supports vblank timestamp caching Rev 2 (21.10.2013).
10.328982] [drm] No driver support for vblank timestamp query.
10.332333] [drm] Screen Objects Display Unit initialized
10.332394] [drm] width 720
10.332411] [drm] height 400
10.332427] [drm] bpp 32
10.338824] [drm] Fifo max 0x00200000 min 0x00001000 cap 0x00000355
10.354358] [drm] DX: no.
10.354359] [drm] Atomic: yes.
10.354359] [drm] SM4 1: no.
10.354379] [drm:vmw_host_log [vmwgfx]] "ERROR" failed to send host log message.
10.354391] [drm:vmw_host_log [vmwgfx]] "ERROR" failed to send host log message.
10.807516] fbcon: svgadrmfb (fb0) is primary device
10.894021] Console: switching to colour frame buffer device 100x37
10.896330] [drm] Initialized vmwgfx 2.15.0 20180704 for 0000:00:02.0 on minor 0
12.070873] sed: init: b: 0000-00-00-00: white list rate for 1028-0177 is 48000

```

Figure 2: part 1: In the dmesg, no data output that were successfully shown. It is suspected that there is a hardware issues with the Kernel version 5.0.1

```

Process State: 1026
Priority: 120
RT_Priority: 0
Static Priority: 120
Normal Priority: 120
[ 585.394558] Parent Process: kthreadd, PID_Number:2
[ 585.394558]
[ 585.394559] Process: test_stats
PID_Number: 1842
Process State: 0
Priority: 120
RT_Priority: 0
Static Priority: 120
Normal Priority: 120
[ 585.394560] Parent Process: bash, PID_Number:1606
[ 585.394560]

~/Downloads/linux-5.0.1/p3$ pmap 1404
1404: /usr/lib/gnome-settings-daemon/gsd-printer
0000562335bcd000 24K r-x-- gsd-printer
0000562335dd2000 4K r---- gsd-printer
0000562335dd3000 4K rw--- gsd-printer
0000562336a51000 396K rw--- [ anon ]
00007f876c000000 132K rw--- [ anon ]
00007f876c021000 65404K ----- [ anon ]

```

Figure 3: Part 2: Pmap on process id 1484 and Address was entered. However, no data were successfully outputted in dmesg.

```

0007f8791674000 4K rw--- libgobject-2.0.so.0.5600.4
0007f8791675000 1620K r-x-- libgio-2.0.so.0.5600.4
0007f879180a000 2048K ----- libgio-2.0.so.0.5600.4
0007f8791a0a000 28K r---- libgio-2.0.so.0.5600.4
0007f8791a11000 4K rw--- libgio-2.0.so.0.5600.4
0007f8791a12000 8K rw--- [ anon ]
0007f8791a14000 7108K r-x-- libgtk-3.so.0.2200.30
0007f8792105000 2048K ----- libgtk-3.so.0.2200.30
0007f8792305000 44K r---- libgtk-3.so.0.2200.30
0007f8792310000 28K rw--- libgtk-3.so.0.2200.30
0007f8792317000 20K rw--- [ anon ]
0007f879231c000 524K r-x-- libcups.so.2
0007f879239f000 2044K ----- libcups.so.2
0007f879259e000 36K r---- libcups.so.2
0007f87925a7000 4K rw--- libcups.so.2
0007f87925a8000 156K r-x-- ld-2.27.so
0007f8792797000 144K rw--- [ anon ]
0007f87927cf000 4K r---- ld-2.27.so
0007f87927d0000 4K rw--- ld-2.27.so
0007f87927d1000 4K rw--- [ anon ]
0007ffff1afce000 132K rw--- [ stack ]
0007ffff1affa000 12K r---- [ anon ]
0007ffff1affd000 4K r-x-- [ anon ]
fffffffff600000 4K r-x-- [ anon ]
total 508764K
~/Downloads/linux-5.0.1/p3$

```

Figure 4: part1: Reference of pmap on process id 1484 with total memory of 508764 K.