

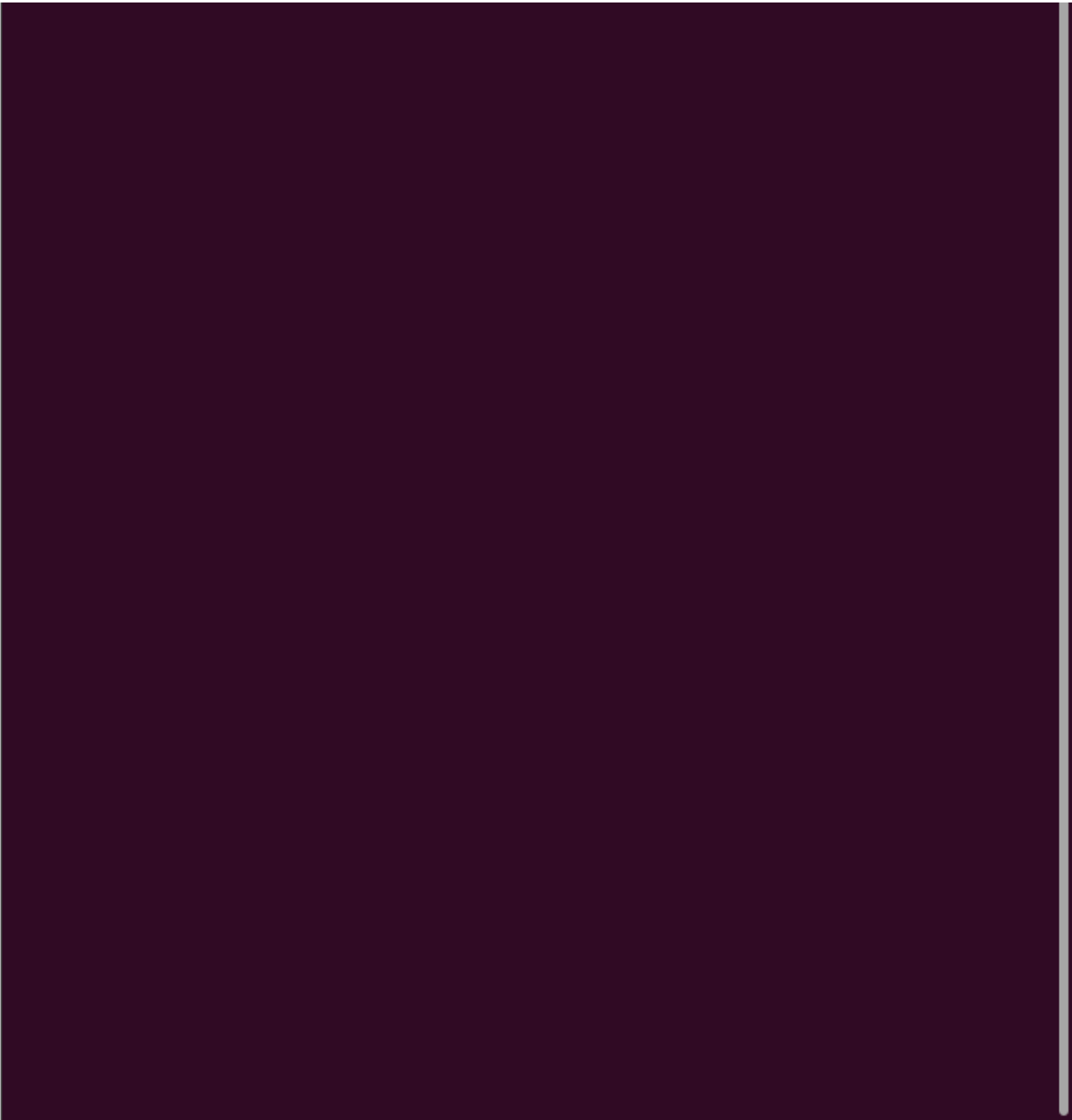
Lab3

Screenshots

2021A7PS2077G

```
joel@joel-VirtualBox: ~/Downloads
joel@joel-VirtualBox:~/Downloads$ l
code_1.82.1-1694163687_amd64.deb
Lab3_Question.pdf
linux-5.19.8.tar.xz
ReadingMaterial_SystemCall_KernelRecompilation.pdf
root_shell_history
user_shell_history
joel@joel-VirtualBox:~/Downloads$ sudo cp linux-5.19.8.tar.xz /usr/src/
```

```
root@joel-VirtualBox: /usr/src
joel@joel-VirtualBox:~/Downloads$ sudo su
root@joel-VirtualBox:/home/joel/Downloads# cd /usr/src/
root@joel-VirtualBox:/usr/src# tar -xvf linux-5.19.8.tar.xz
```



Activities Terminal Sep 13 23:00

add_syscall.c - linux-5.19.8 - V root@joel-VirtualBox: /usr/src/linux-5.19.8

File Edit Selection View Go Run Terminal Help

EXPLORER

- LINUX-5.19.8
 - .vscode
 - add_syscall
 - add_syscall.o.cmd
 - built-in.a.cmd
 - modules.order.cmd
 - add_syscall.c
 - add_syscall.h
 - add_syscall.o
 - built-in.a
 - Makefile
 - modules.order
 - arch
 - alpha
 - arc
 - arm
 - arm64
 - csky
 - hexagon
 - ia64
 - loongarch
 - m68k
 - microblaze
 - mips
 - nios2
 - openrisc
 - parisc
 - powerpc
 - riscv
 - s390
 - sh
 - sparc
 - OUTLINE
 - TIMELINE

add_syscall.c

```
11 SYSCALL_DEFINE2(add_syscall, int, pid
12 struct task_struct *task;
13 struct mm_struct *mm;
14 struct sysinfo sys_info;
15
16 unsigned long res = -1;
17 if (pid < 0)
18     return 5;
19 if (opt < 0 || opt > 3)
20     return 6;
21
22 task = pid_task(find_vpid(pid), P
23 if (!task)
24     return 7;
25
26 mm = task->mm;
27 if (!mm)
28     return 8;
29
30 if (opt == 0)
31     res = (mm->total_vm) << PAGE_
32 else if (opt == 1)
33     res = get_mm_rss(mm) << PAGE_
34 else if (opt == 2) {
35     si_meminfo(&sys_info);
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORT

compilation terminated.

root@joel-VirtualBox: /usr/src/linux-5.19.8# g

root@joel-VirtualBox: /usr/src/linux-5.19.8#

* History restored

root@joel-VirtualBox: /usr/src/linux-5.19.8#

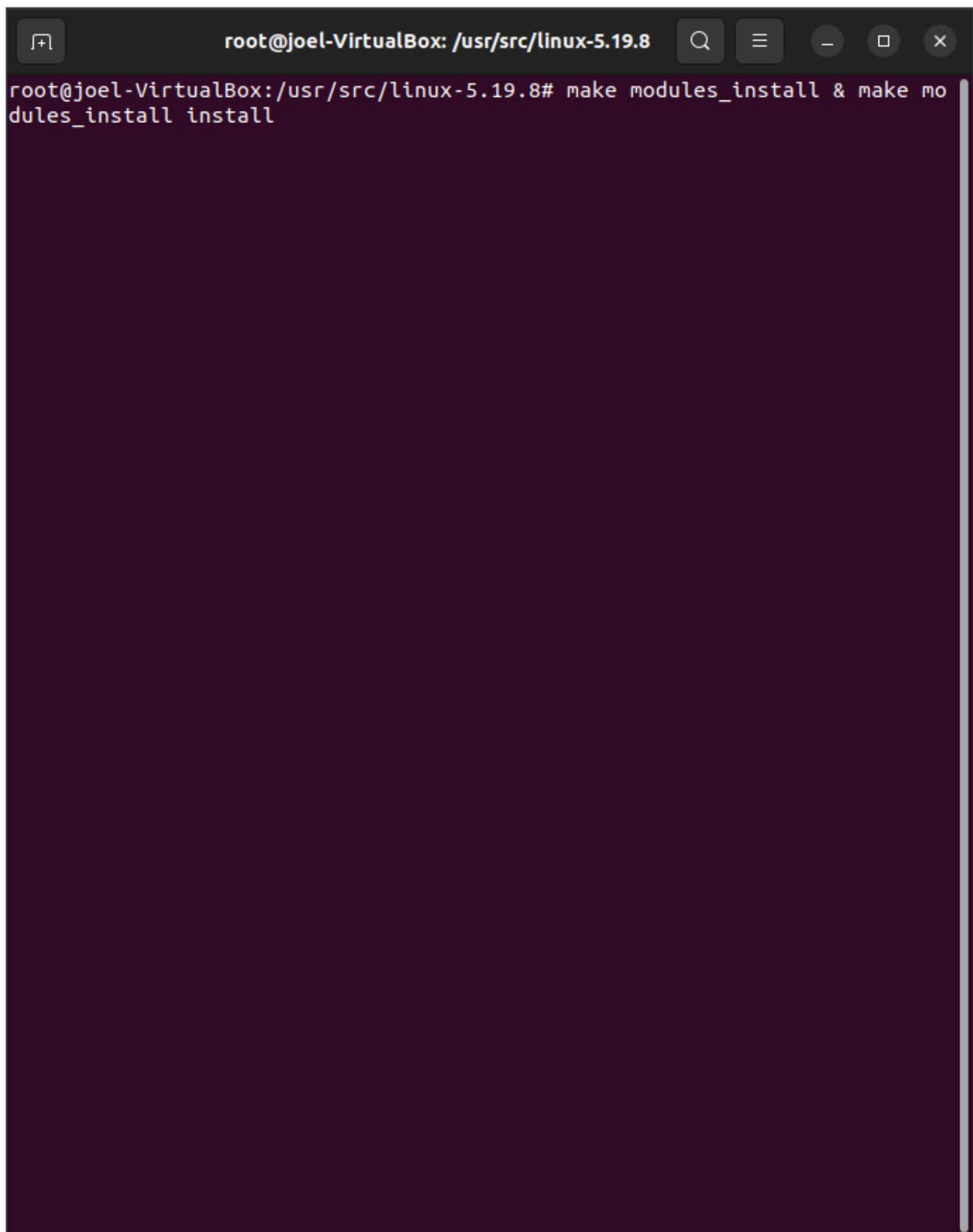
* History restored

root@joel-VirtualBox: /usr/src/linux-5.19.8#

* History restored

root@joel-VirtualBox: /usr/src/linux-5.19.8#

0 0 0

A terminal window with a dark background and light-colored text. The window title bar at the top shows 'root@joel-VirtualBox: /usr/src/linux-5.19.8' along with standard window control icons (minimize, maximize, close). The terminal content shows a command prompt 'root@joel-VirtualBox:/usr/src/linux-5.19.8#' followed by the command 'make modules_install & make modules_install install'. The rest of the terminal area is empty, indicating the command has not yet been executed or the output is not visible.

```
root@joel-VirtualBox: /usr/src/linux-5.19.8
root@joel-VirtualBox:/usr/src/linux-5.19.8# make modules_install & make modules_install install
```

```
root@joel-VirtualBox: /usr/src/linux-5.19.8
update-initramfs: Generating /boot/initrd.img-linux-5.19.8
W: missing /lib/modules/linux-5.19.8
W: Ensure all necessary drivers are built into the linux image!
depmod: ERROR: Bad version passed linux-5.19.8
cat: /var/tmp/mkinitramfs_dBmpcI/lib/modules/linux-5.19.8/modules.builtin:
  No such file or directory
W: Can't find modules.builtin.modinfo (for locating built-in drivers' firm
ware, supported in Linux >=5.2)
dpkg: warning: version 'linux-5.19.8' has bad syntax: version number does
not start with digit
dpkg: warning: version 'linux-5.19.8' has bad syntax: version number does
not start with digit
dpkg: warning: version 'linux-5.19.8' has bad syntax: version number does
not start with digit
dpkg: warning: version 'linux-5.19.8' has bad syntax: version number does
not start with digit
depmod: ERROR: Bad version passed linux-5.19.8
root@joel-VirtualBox:/usr/src/linux-5.19.8# update grub
Command 'update' not found, did you mean:
  command 'pupdate' from deb pbuilder-scripts (22)
  command 'lupdate' from deb qtchooser (66-2build1)
  command 'xupdate' from deb libxml-xupdate-libxml-perl (0.6.0-3.1)
  command 'uupdate' from deb devscripts (2.22.1ubuntu1)
  command 'zupdate' from deb zutils (1.11-1)
Try: apt install <deb name>
root@joel-VirtualBox:/usr/src/linux-5.19.8# update-grub
Sourcing file `/etc/default/grub'
Sourcing file `/etc/default/grub.d/init-select.cfg'
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-6.2.0-32-generic
Found initrd image: /boot/initrd.img-6.2.0-32-generic
Found linux image: /boot/vmlinuz-6.2.0-26-generic
Found initrd image: /boot/initrd.img-6.2.0-26-generic
Found linux image: /boot/vmlinuz-5.19.8
Found initrd image: /boot/initrd.img-5.19.8
Found linux image: /boot/vmlinuz-5.19.8.old
Found initrd image: /boot/initrd.img-5.19.8
Found memtest86+ image: /boot/memtest86+.elf
Found memtest86+ image: /boot/memtest86+.bin
Warning: os-prober will not be executed to detect other bootable partition
s.
Systems on them will not be added to the GRUB boot configuration.
Check GRUB_DISABLE_OS_PROBER documentation entry.
done
root@joel-VirtualBox:/usr/src/linux-5.19.8#
```

```

Joel@joel-VirtualBox: ~/assignment
Joel@joel-VirtualBox:~/Desktop$ cd ~/assignment/
Joel@joel-VirtualBox:~/assignment$ ls
driver.c  driver.o  header.h  Makefile  test.out*  wrapper.c  wrapper.o
Joel@joel-VirtualBox:~/assignment$ make clean
rm -f *.o *.out
Joel@joel-VirtualBox:~/assignment$ make
gcc -c driver.c
gcc -c wrapper.c
gcc driver.o wrapper.o -o test.out
Joel@joel-VirtualBox:~/assignment$ ./test.out 1538 0
6465171456
Joel@joel-VirtualBox:~/assignment$ ./test.out 1538 1
361988096
Joel@joel-VirtualBox:~/assignment$ ./test.out 1538 2
1312456
Joel@joel-VirtualBox:~/assignment$ ./test.out 1538 3
12
Joel@joel-VirtualBox:~/assignment$

```

```

top - 22:43:30 up 2 min, 1 user, load average: 0.14, 0.06, 0.02
Tasks: 254 total, 1 running, 253 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.0 us, 0.0 sy, 0.0 ni, 99.9 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 10531.6 total, 9251.3 free, 677.0 used, 603.3 buff/cache
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used, 9718.9 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM    TIME+  COMMAND
 1538 Joel       20   0 6313644 352172 149596 S   1.0   3.3   0:11.24 gnome-shell
 435 root       20   0 1762032 26476 15956 S   0.3   0.2   0:00.18 snapd
    1 root       20   0 166208 11536 8236 S   0.0   0.1   0:00.00 systemd
    2 root       20   0      0      0      0 S   0.0   0.0   0:00.00 kthreadd
    3 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 rcu_gp
    4 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
    5 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 netns
    6 root       20   0      0      0      0 I   0.0   0.0   0:00.00 kworker/0:
    7 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/0:
    8 root       20   0      0      0      0 I   0.0   0.0   0:00.16 kworker/u2:
    9 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/0:
   10 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 mm_percpu
   11 root       20   0      0      0      0 I   0.0   0.0   0:00.00 ksoftirqd/
   12 root       20   0      0      0      0 S   0.0   0.0   0:00.00 rcu_tasks
   13 root       20   0      0      0      0 I   0.0   0.0   0:00.03 rcu_preem
   14 root       rt   0      0      0      0 S   0.0   0.0   0:00.01 migration/
   15 root       20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/0
   16 root       20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/1
   17 root       rt   0      0      0      0 S   0.0   0.0   0:00.17 migration/1
   18 root       20   0      0      0      0 S   0.0   0.0   0:00.00 ksoftirqd/1
   19 root       20   0      0      0      0 I   0.0   0.0   0:00.00 kworker/1:
   20 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/1:
   21 root       20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/2
   22 root       rt   0      0      0      0 S   0.0   0.0   0:00.17 migration/2
   23 root       20   0      0      0      0 S   0.0   0.0   0:00.00 ksoftirqd/2
   24 root       20   0      0      0      0 I   0.0   0.0   0:00.00 kworker/2:
   25 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/2:
   26 root       20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/3
   27 root       rt   0      0      0      0 S   0.0   0.0   0:00.17 migration/3
   28 root       20   0      0      0      0 S   0.0   0.0   0:00.00 ksoftirqd/3
   29 root       20   0      0      0      0 I   0.0   0.0   0:00.00 kworker/3:
   30 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/3:
   31 root       20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/4
   32 root       rt   0      0      0      0 S   0.0   0.0   0:00.17 migration/4
   33 root       20   0      0      0      0 S   0.0   0.0   0:00.00 ksoftirqd/4
   34 root       20   0      0      0      0 I   0.0   0.0   0:00.00 kworker/4:
   35 root       0 -20      0      0      0 I   0.0   0.0   0:00.00 kworker/4:
   36 root       20   0      0      0      0 S   0.0   0.0   0:00.00 cpuhp/5

```