

Module: R0: The Missing Semester

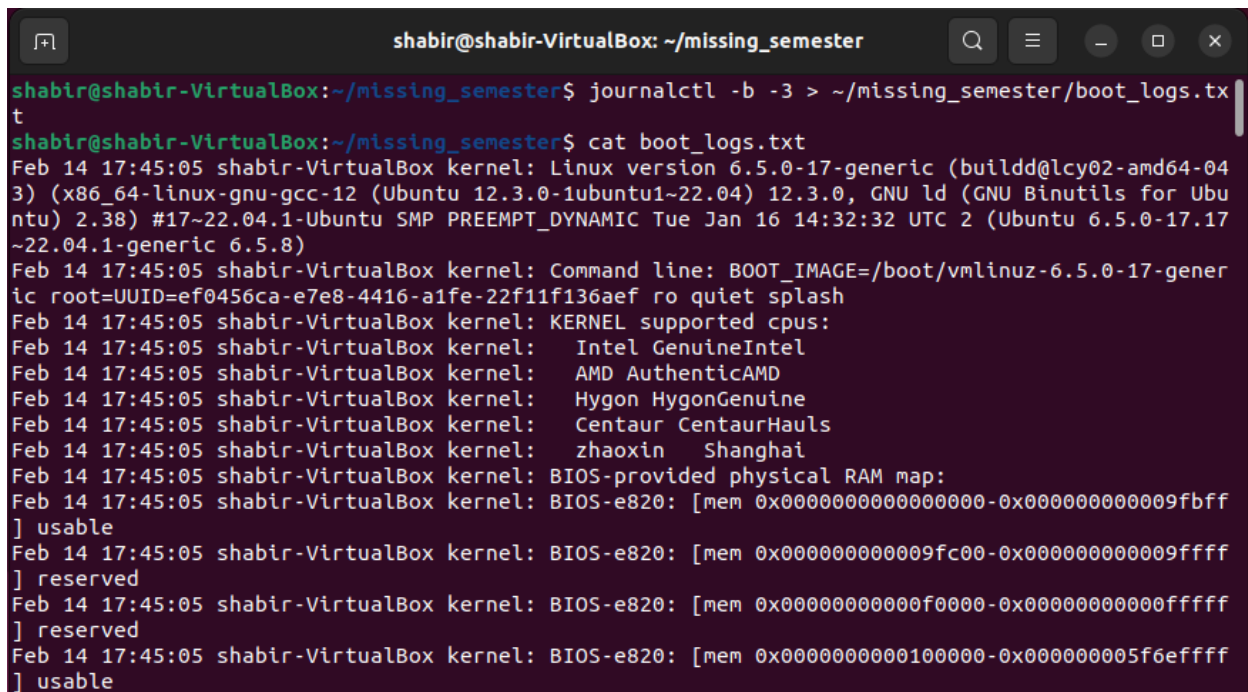
Section: Data Wrangling Task: 05

Task:

Look for boot messages that are not shared between your past three reboots (see `journalctl`'s `-b` flag). Break this task down into multiple steps. First, find a way to get just the logs from the past three boots. There may be an applicable flag on the tool you use to extract the boot logs, or you can use `sed '0,/STRING/d'` to remove all lines previous to one that matches `STRING`. Next, remove any parts of the line that always varies (like the timestamp). Then, de-duplicate the input lines and keep a count of each one (`uniq` is your friend). And finally, eliminate any line whose count is 3 (since it was shared among all the boots).

Explanation:

The first step is to extract logs from the last three boots. I have used the command **`journalctl -b -3`**. This will give me the log from the last three reboots. Then, after get the logs from last 3 reboots, I saved the logs in a text file '**`boot_logs.txt`**'. The output of this command is shown below,



```
shabir@shabir-VirtualBox: ~/missing_semester
shabir@shabir-VirtualBox:~/missing_semester$ journalctl -b -3 > ~/missing_semester/boot_logs.txt
shabir@shabir-VirtualBox:~/missing_semester$ cat boot_logs.txt
Feb 14 17:45:05 shabir-VirtualBox kernel: Linux version 6.5.0-17-generic (buildd@lcy02-amd64-04
3) (x86_64-linux-gnu-gcc-12 (Ubuntu 12.3.0-1ubuntu1~22.04) 12.3.0, GNU ld (GNU Binutils for Ubu
ntu) 2.38) #17~22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Tue Jan 16 14:32:32 UTC 2 (Ubuntu 6.5.0-17.17
~22.04.1-generic 6.5.8)
Feb 14 17:45:05 shabir-VirtualBox kernel: Command line: BOOT_IMAGE=/boot/vmlinuz-6.5.0-17-gener
ic root=UUID=ef0456ca-e7e8-4416-a1fe-22f11f136aef ro quiet splash
Feb 14 17:45:05 shabir-VirtualBox kernel: KERNEL supported cpus:
Feb 14 17:45:05 shabir-VirtualBox kernel: Intel GenuineIntel
Feb 14 17:45:05 shabir-VirtualBox kernel: AMD AuthenticAMD
Feb 14 17:45:05 shabir-VirtualBox kernel: Hygon HygonGenuine
Feb 14 17:45:05 shabir-VirtualBox kernel: Centaur CentaurHauls
Feb 14 17:45:05 shabir-VirtualBox kernel: zhaoxin Shanghai
Feb 14 17:45:05 shabir-VirtualBox kernel: BIOS-provided physical RAM map:
Feb 14 17:45:05 shabir-VirtualBox kernel: BIOS-e820: [mem 0x0000000000000000-0x000000000009fbff
] usable
Feb 14 17:45:05 shabir-VirtualBox kernel: BIOS-e820: [mem 0x000000000009fc00-0x000000000009ffff
] reserved
Feb 14 17:45:05 shabir-VirtualBox kernel: BIOS-e820: [mem 0x00000000000f0000-0x00000000000fffff
] reserved
Feb 14 17:45:05 shabir-VirtualBox kernel: BIOS-e820: [mem 0x0000000000100000-0x00000000005f6effff
] usable
```

The next step is to remove the timestamp and other variants. The command I have used **`sed 's/^[[[:alpha:]]+ [0-9]]+ [0-9:]]+ //' boot_logs.txt > clean_logs.txt`**. The '`sed`' command removes the timestamp. Then, after the modification, I save this log into the new file '**`clean_logs.txt`**'.

```

shabir@shabir-VirtualBox: ~/missing_semester
shabir@shabir-VirtualBox:~/missing_semester$ sed 's/^[[:alpha:]]\+ [0-9]\+ [0-9:]\+ //' boot_logs.txt > clean_logs.txt
shabir@shabir-VirtualBox:~/missing_semester$ cat clean_logs.txt
shabir-VirtualBox kernel: Linux version 6.5.0-17-generic (buildd@lcy02-amd64-043) (x86_64-linux-gnu-gcc-12 (Ubuntu 12.3.0-1ubuntu1~22.04) 12.3.0, GNU ld (GNU Binutils for Ubuntu) 2.38) #17~22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Tue Jan 16 14:32:32 UTC 2 (Ubuntu 6.5.0-17.17~22.04.1-generic 6.5.8)
shabir-VirtualBox kernel: Command line: BOOT_IMAGE=/boot/vmlinuz-6.5.0-17-generic root=UUID=ef0456ca-e7e8-4416-a1fe-22f11f136aef ro quiet splash
shabir-VirtualBox kernel: KERNEL supported cpus:
shabir-VirtualBox kernel: Intel GenuineIntel
shabir-VirtualBox kernel: AMD AuthenticAMD
shabir-VirtualBox kernel: Hygon HygonGenuine
shabir-VirtualBox kernel: Centaur CentaurHauls
shabir-VirtualBox kernel: zhaoxin Shanghai
shabir-VirtualBox kernel: BIOS-provided physical RAM map:
shabir-VirtualBox kernel: BIOS-e820: [mem 0x0000000000000000-0x000000000009fbff] usable
shabir-VirtualBox kernel: BIOS-e820: [mem 0x000000000009fc00-0x000000000009ffff] reserved
shabir-VirtualBox kernel: BIOS-e820: [mem 0x00000000000f0000-0x00000000000fffff] reserved
shabir-VirtualBox kernel: BIOS-e820: [mem 0x0000000000100000-0x00000000005f6effff] usable
shabir-VirtualBox kernel: BIOS-e820: [mem 0x00000000005f6f0000-0x00000000005f6fffff] ACPI data
shabir-VirtualBox kernel: BIOS-e820: [mem 0x00000000fec00000-0x00000000fec00fff] reserved
shabir-VirtualBox kernel: BIOS-e820: [mem 0x00000000fee00000-0x00000000fee00fff] reserved
shabir-VirtualBox kernel: BIOS-e820: [mem 0x00000000fffc0000-0x00000000ffffffff] reserved

```

Then, In the next step de-duplicate the input lines and count them with the help of **sort** and **uniq** commands. Then, eliminate those log whose count is 3. For this purpose, I have used the command **sort clean_logs.txt | uniq -c | awk '\$1 < 3 {print \$0}' > unique_logs.txt**.

```

shabir@shabir-VirtualBox: ~/missing_semester
shabir@shabir-VirtualBox:~/missing_semester$ sort clean_logs.txt | uniq -c | awk '$1 < 3 {print $0}' > unique_logs.txt
shabir@shabir-VirtualBox:~/missing_semester$ cat unique_logs.txt
1 asyncCallback@resource:///org/gnome
/gjs/modules/core/overrides/Gio.js:114:23
1 E: Failed to fetch http://pk.archiv
e.ubuntu.com/ubuntu/dists/jammy-backports/InRelease
1 E: Some index files failed to downl
oad. They have been ignored, or old ones used instead.
1 _onGeoclueVanished@resource:///org/
gnome/shell/ui/status/location.js:169:9
1 shabir-VirtualBox accounts-daemon[413]: started daemon version 22.07.5
1 shabir-VirtualBox acpid[415]: 8 rules loaded
1 shabir-VirtualBox acpid[415]: starting up with netlink and the input layer
1 shabir-VirtualBox acpid[415]: waiting for events: event logging is off
1 shabir-VirtualBox alsactl[572]: alsa-lib main.c:1412:(snd_use_case_mgr_open) error: fai
led to import hw:0 use case configuration -2
1 shabir-VirtualBox alsactl[572]: Found hardware: "ICH" "Analog Devices AD1980" "AC97a:41
445370" "0x1028" "0x0177"
1 shabir-VirtualBox alsactl[572]: Hardware is initialized using a generic method
1 shabir-VirtualBox alsactl[572]: /usr/sbin/alsactl: load_state:1689: Cannot open /var/li
b/alsa/asound.state for reading: No such file or directory
1 shabir-VirtualBox anacron[416]: Anacron 2.3 started on 2024-02-14
1 shabir-VirtualBox anacron[416]: Normal exit (0 jobs run)

```