UCSD Embedded Linux Assignment 3

By

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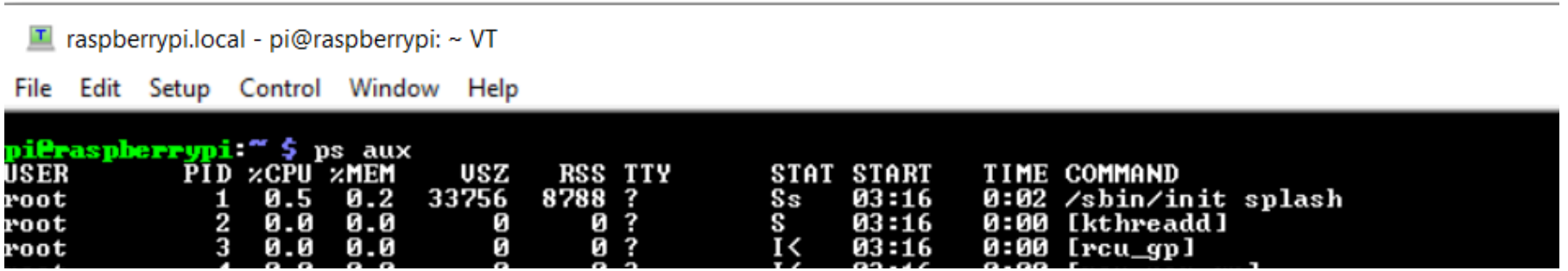
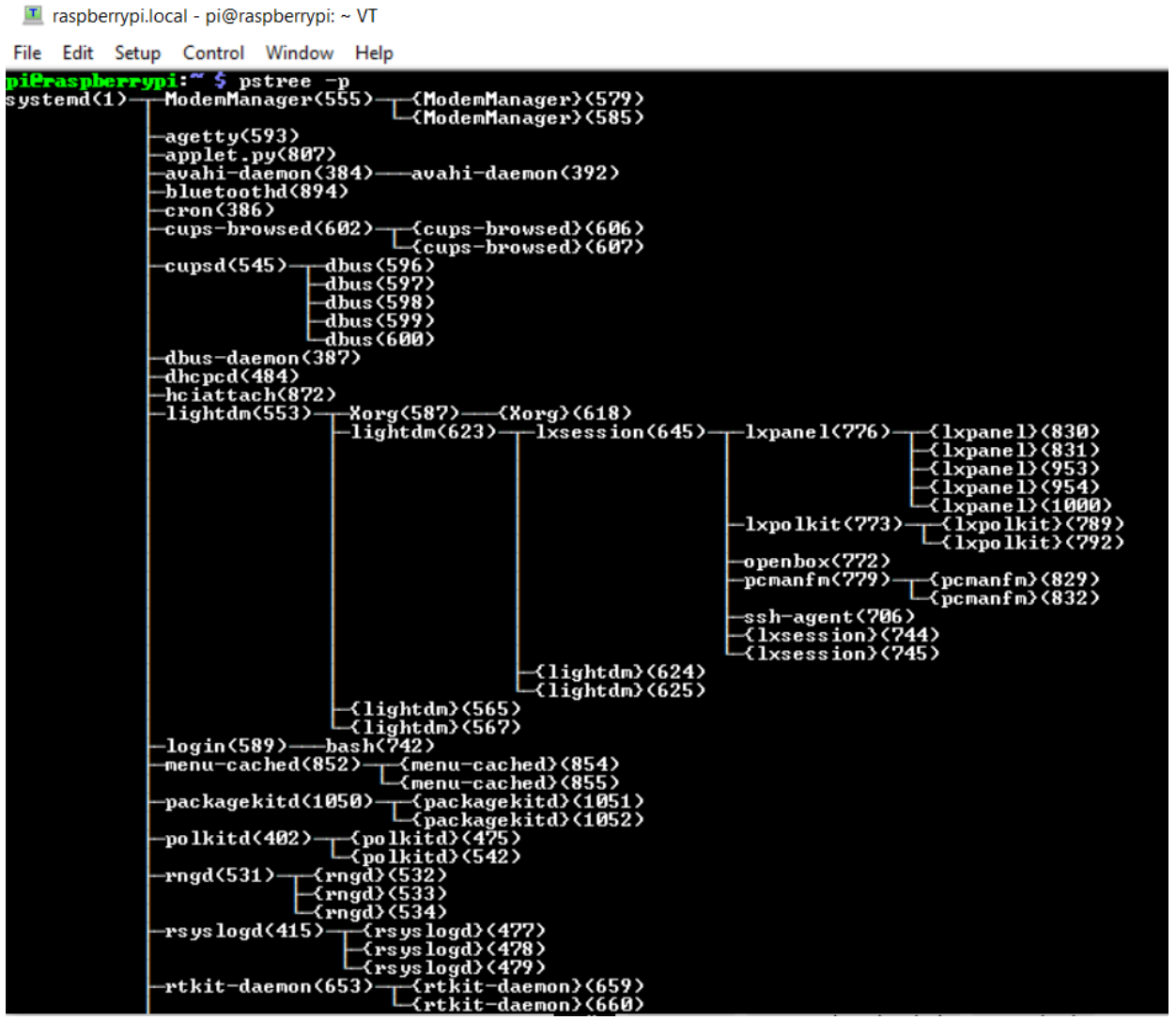
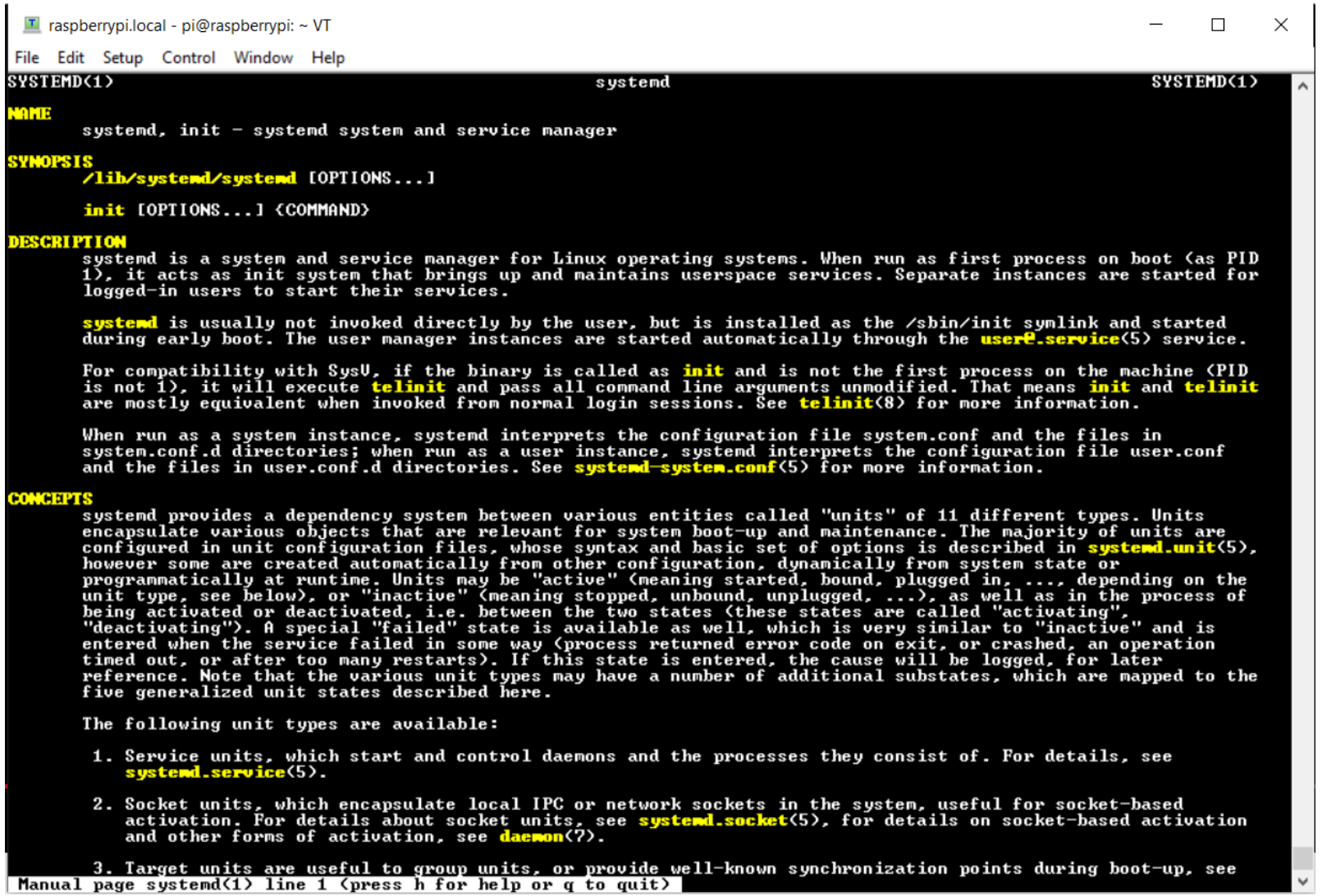
Step 1. /sbin/init



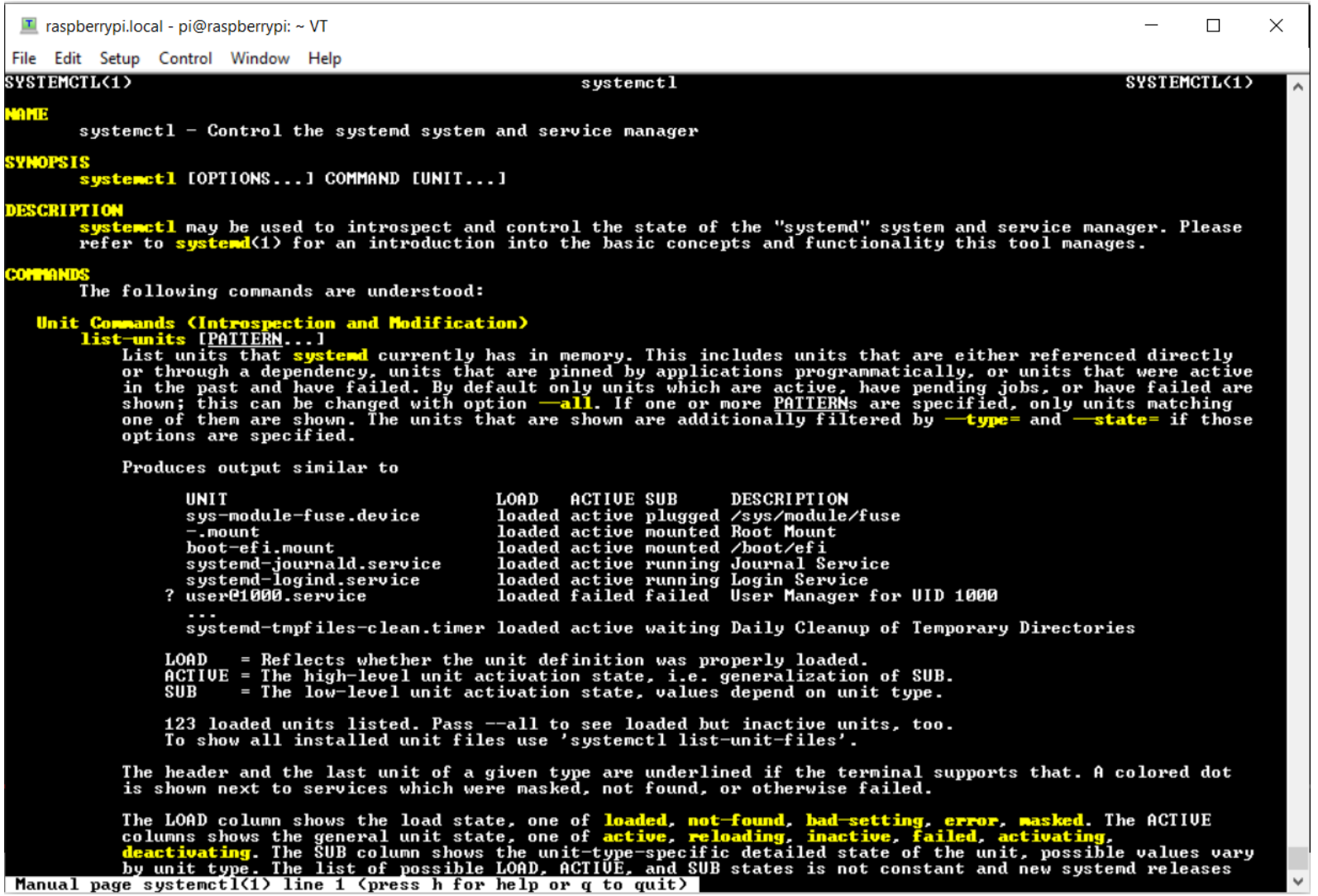
Step 2. pstree -p



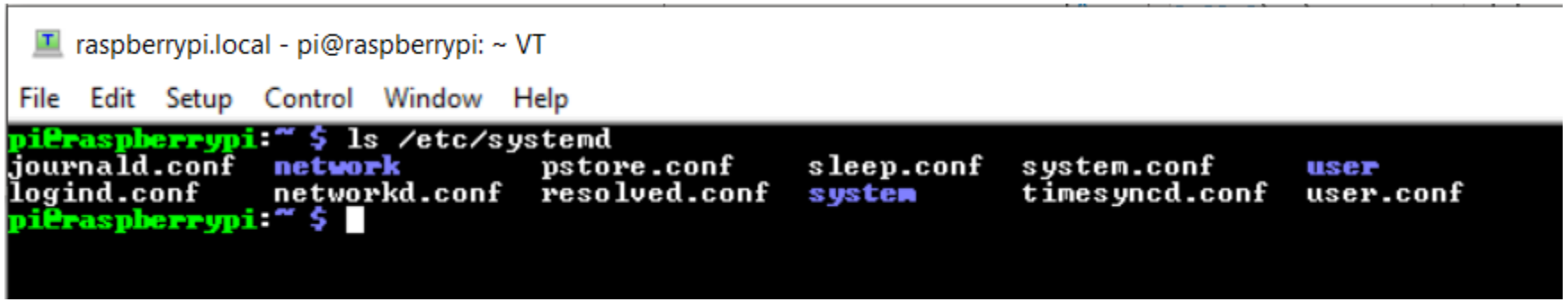
Step 3. man systemd



Step 4. man systemctl



Step 5. /etc/systemd



Step 6. /etc/systemd/system.conf

raspberrypi.local - pi@raspberrypi: ~ VT

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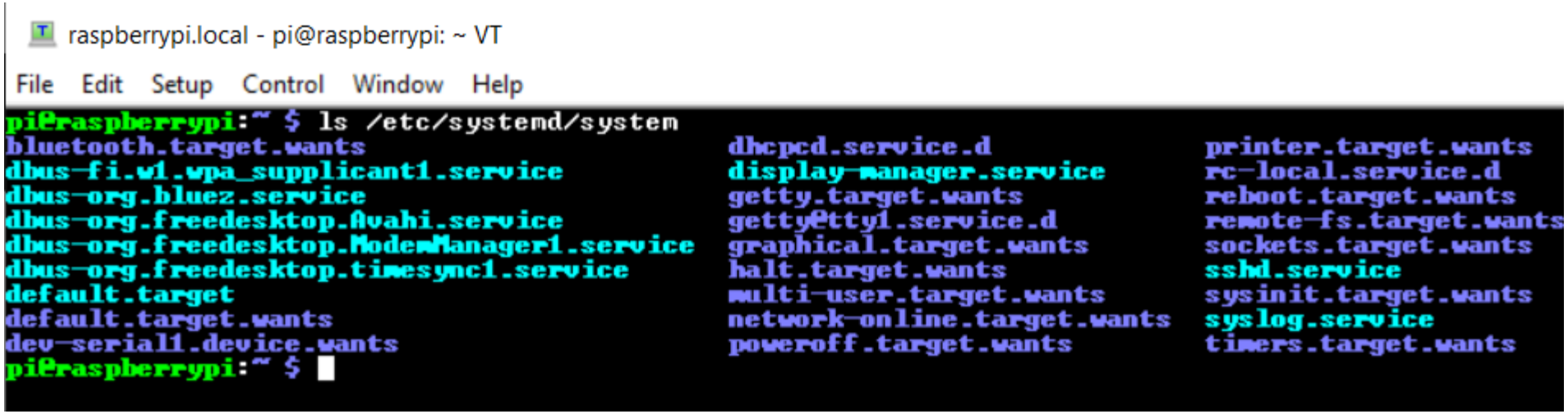
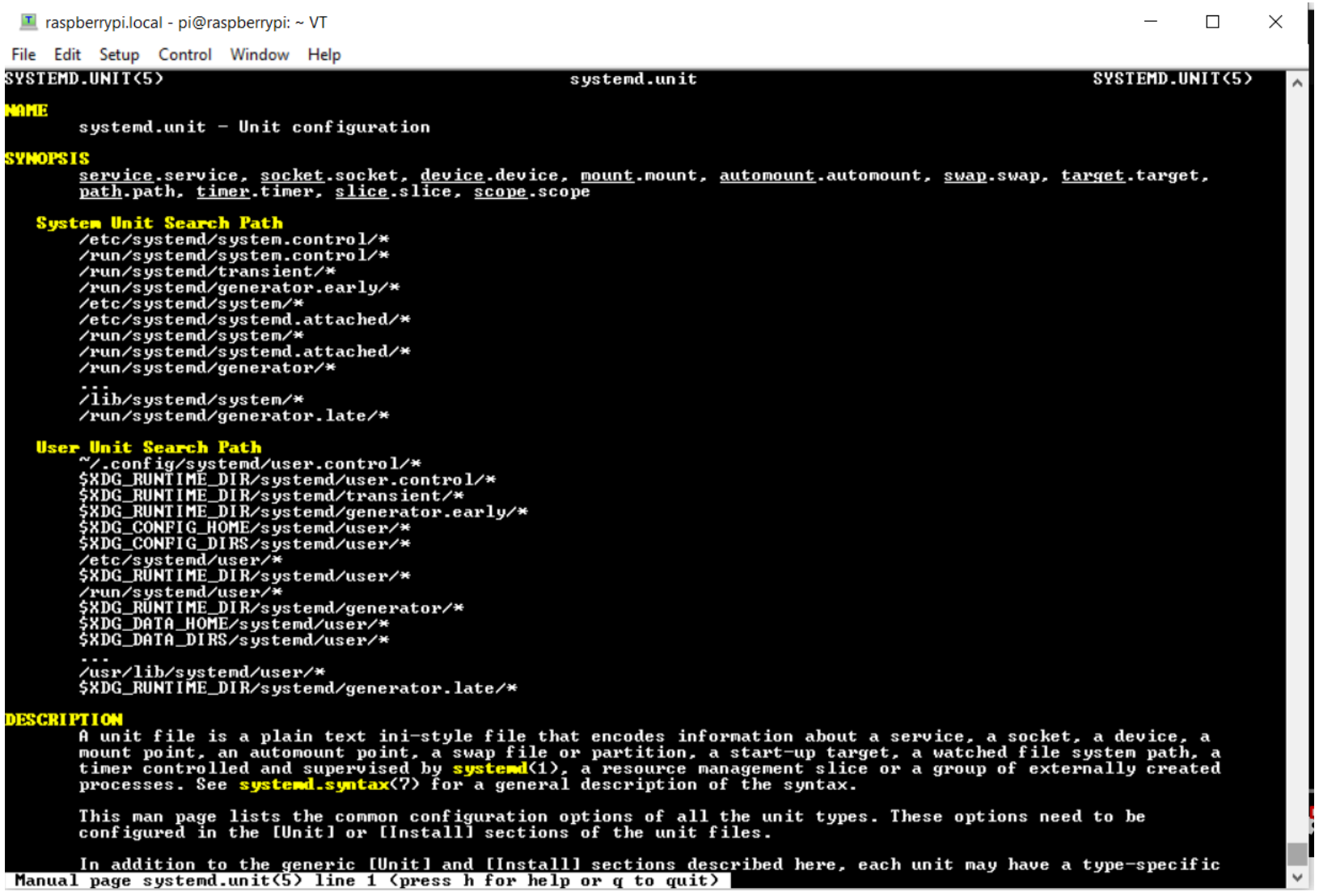
```
pi@raspberrypi:~ $ cat /etc/systemd/system.conf
#  This file is part of systemd.
#
#  systemd is free software; you can redistribute it and/or modify it
#  under the terms of the GNU Lesser General Public License as published by
#  the Free Software Foundation; either version 2.1 of the License, or
#  (at your option) any later version.
#
# Entries in this file show the compile time defaults.
# You can change settings by editing this file.
# Defaults can be restored by simply deleting this file.
#
# See systemd-system.conf(5) for details.

[Manager]
#LogLevel=info
#LogTarget=journal-or-kmsg
#LogColor=yes
#LogLocation=no
#LogTime=no
#DumpCore=yes
#ShowStatus=yes
#CrashChangeVT=no
#CrashShell=no
#CrashReboot=no
#CtrlAltDelBurstAction=reboot-force
#CPUAffinity=1 2
#NUMAPolicy=default
#NUMAMask=
#RuntimeWatchdogSec=0
#RebootWatchdogSec=10min
#ShutdownWatchdogSec=10min
#KExecWatchdogSec=0
#WatchdogDevice=
#CapabilityBoundingSet=
#NoNewPrivileges=no
#SystemCallArchitectures=
#TimerSlackNSec=
#StatusUnitFormat=description
#DefaultTimerAccuracySec=1min
#DefaultStandardOutput=journal
#DefaultStandardError=inherit
#DefaultTimeoutStartSec=90s
#DefaultTimeoutStopSec=90s
#DefaultTimeoutAbortSec=
#DefaultRestartSec=100ms
#DefaultStartLimitIntervalSec=10s
#DefaultStartLimitBurst=5
#DefaultEnvironment=
#DefaultCPUAccounting=no
#DefaultIOAccounting=no
```

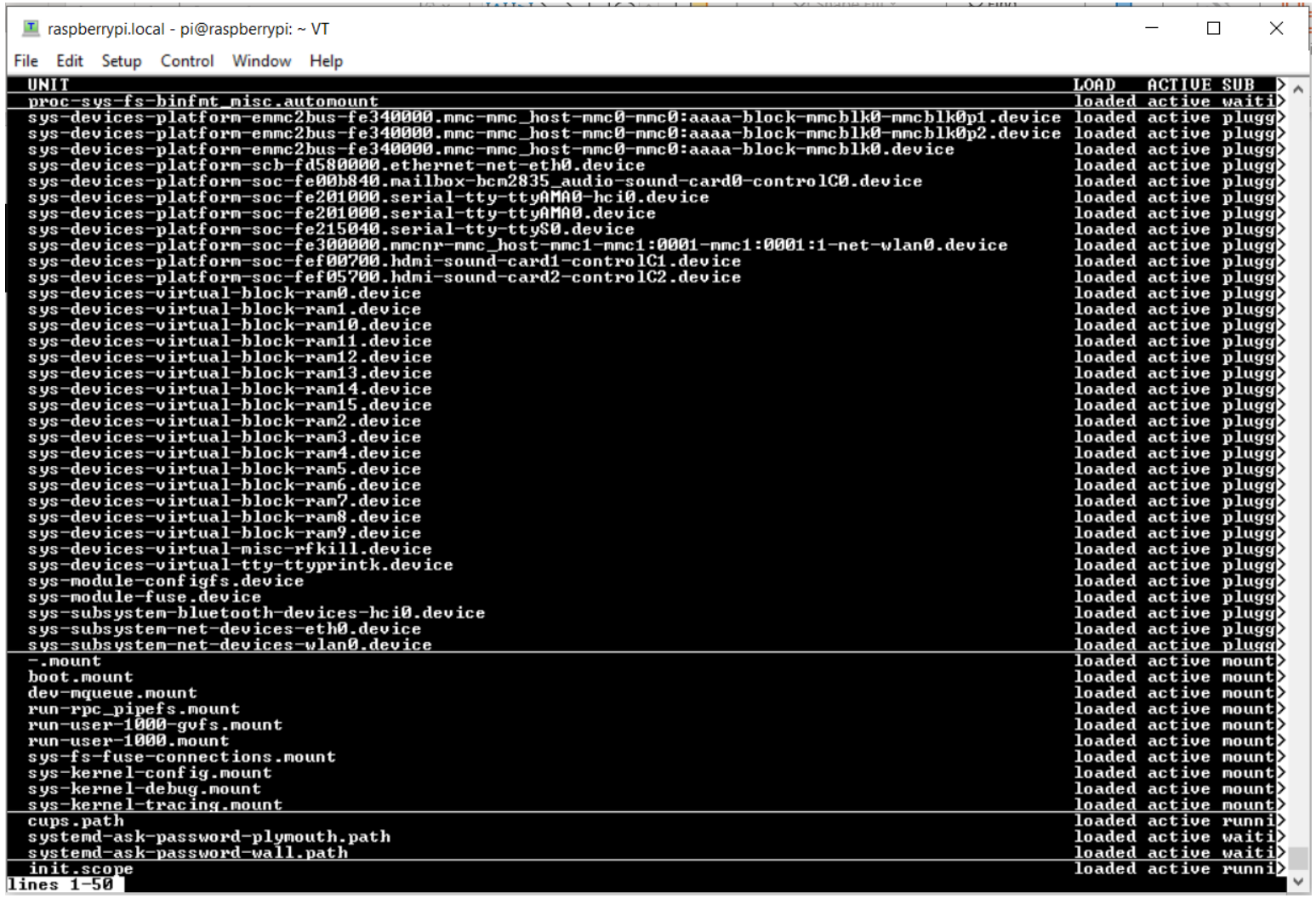
Step 7. /etc/systemd/system



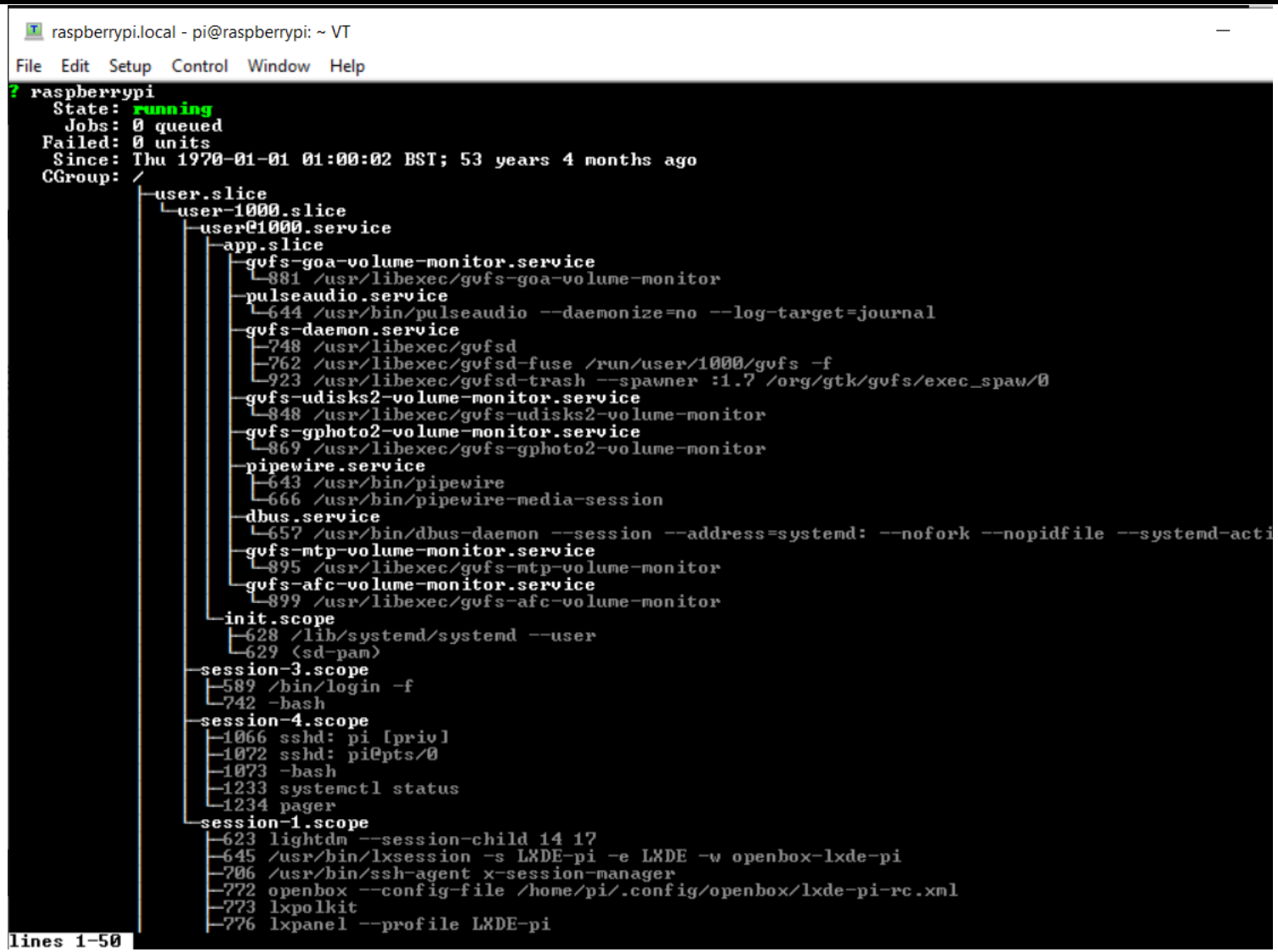
Step 8. man systemd.unit.



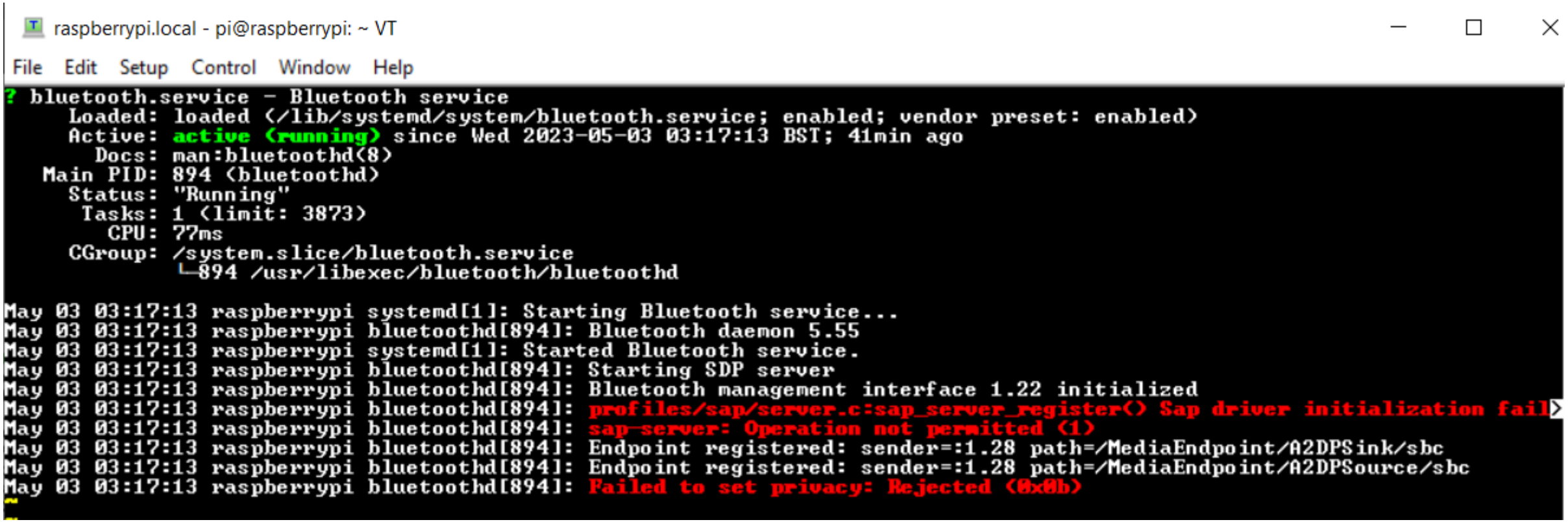
Step 9. systemctl



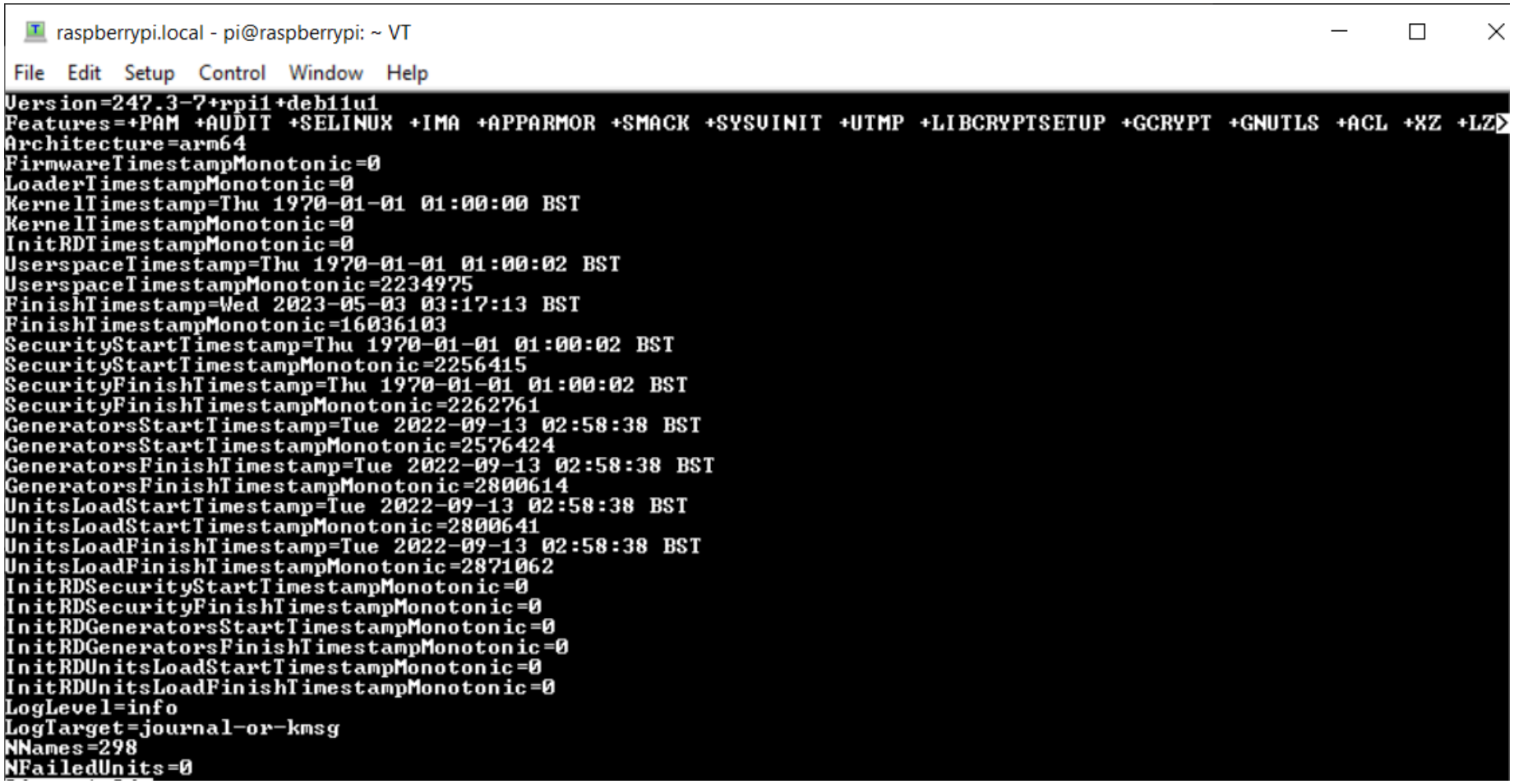
Step 10. systemctl status



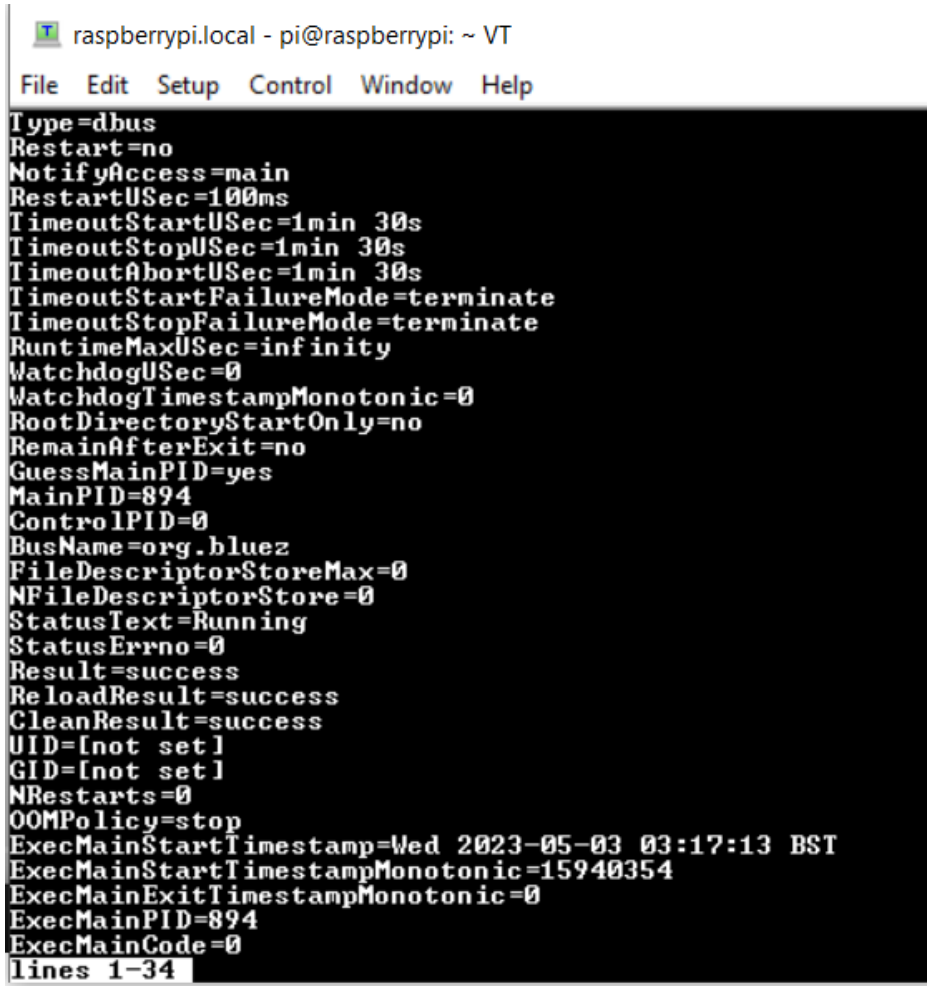
Step 11. systemctl status bluetooth



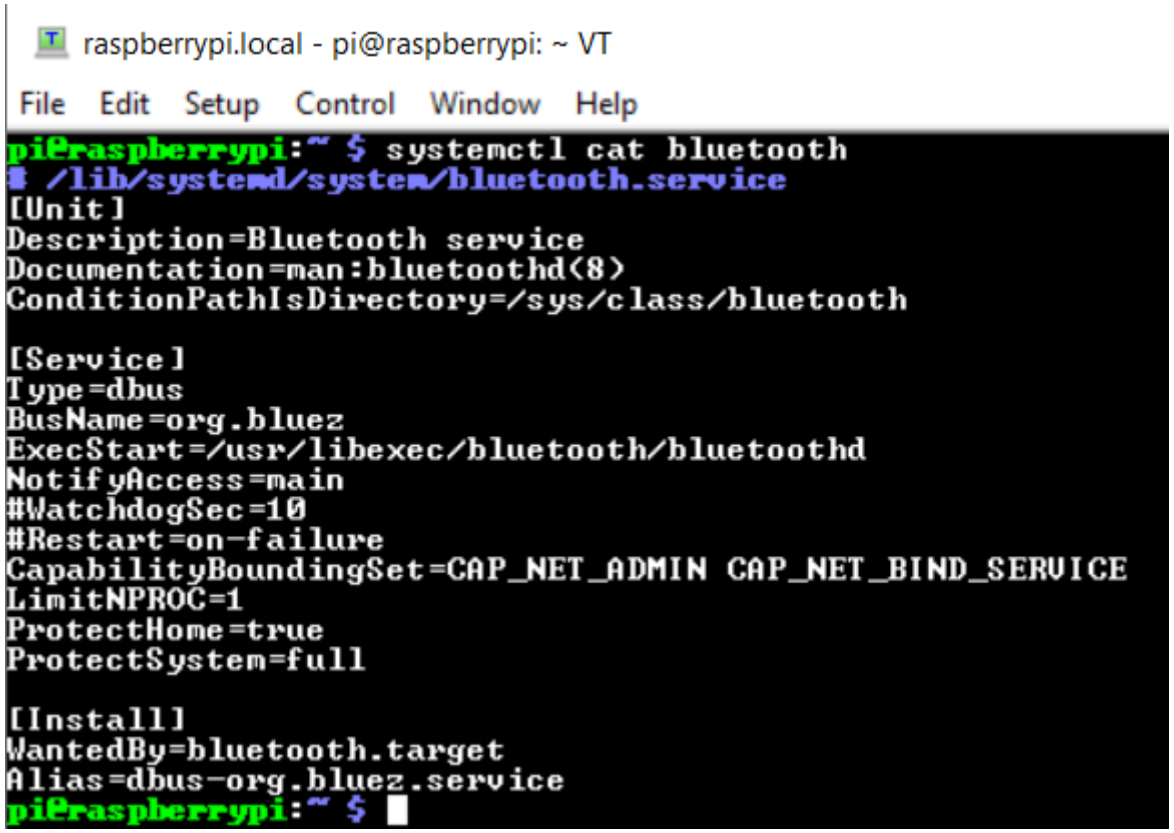
Step 12. systemctl show



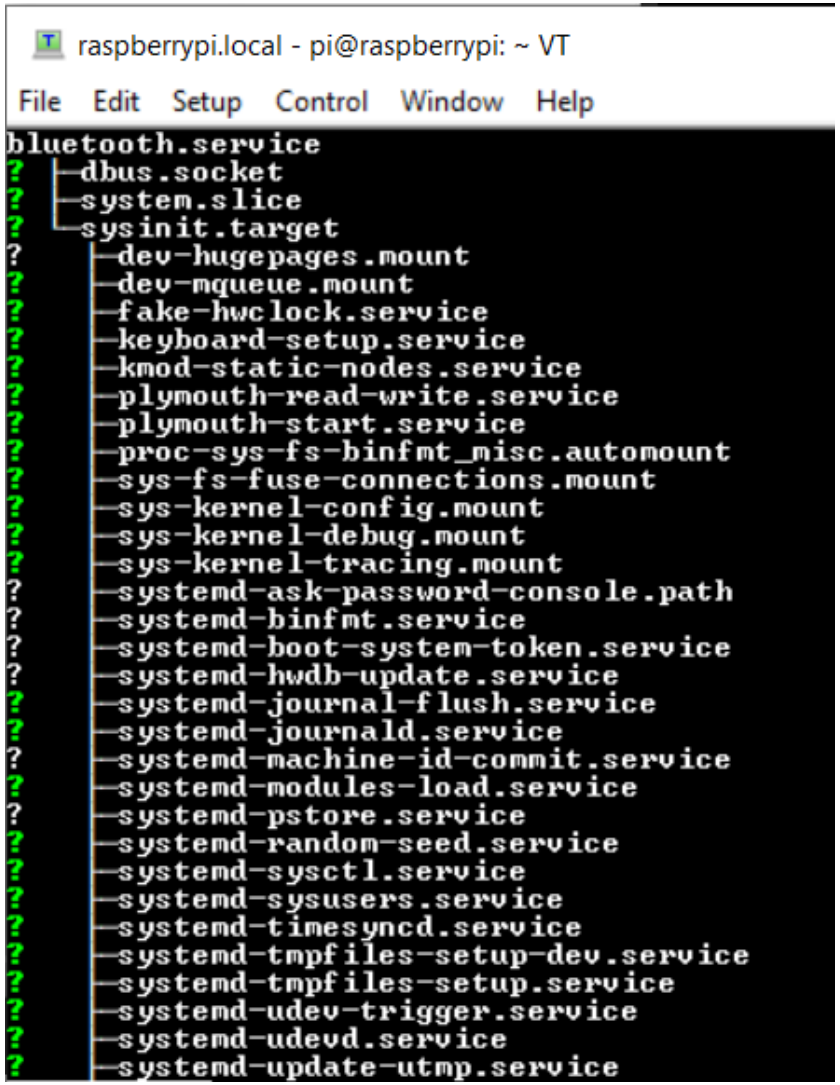
Step 13. systemctl show bluetooth



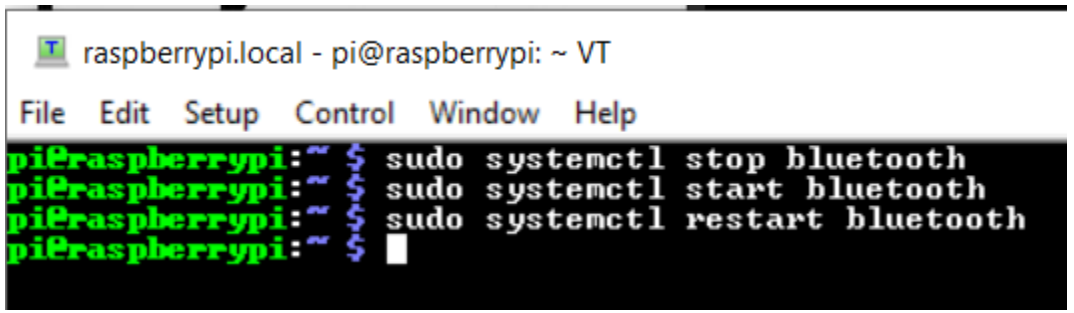
Step 14. systemctl cat bluetooth



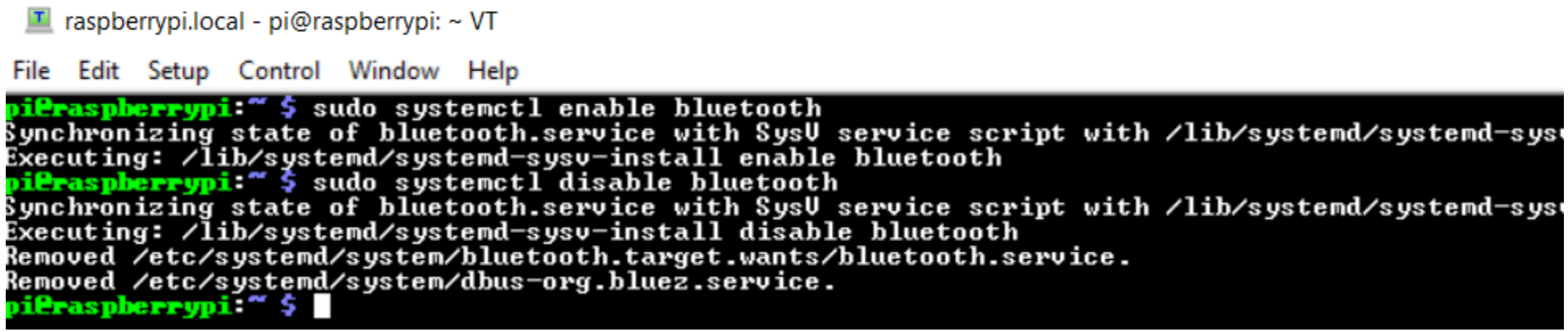
Step 15. systemctl list-dependencies bluetooth



Step 16. sudo systemctl start/stop/restart bluetooth



Step 17. systemctl enable/disable bluetooth



Step 18. systemctl list-timers

```
pi@raspberrypi:~ $ systemctl list-timers
NEXT                         LEFT          LAST                         PASSED       UNIT                         >
Wed 2023-05-03 06:31:03 BST 2h 16min left Wed 2023-05-03 01:36:28 BST 2h 38min ago apt-daily-upgrade.timer      >
Wed 2023-05-03 06:39:23 BST 2h 24min left Wed 2023-05-03 01:36:28 BST 2h 38min ago apt-daily.timer            >
Thu 2023-05-04 00:00:00 BST 19h left      Wed 2023-05-03 01:36:28 BST 2h 38min ago logrotate.timer           >
Thu 2023-05-04 00:00:00 BST 19h left      Wed 2023-05-03 01:36:28 BST 2h 38min ago man-db.timer              >
Thu 2023-05-04 03:32:00 BST 23h left      Wed 2023-05-03 03:32:00 BST 42min ago    systemd-tmpfiles-clean.timer>
Sun 2023-05-07 03:10:12 BST 3 days left   Wed 2023-05-03 01:36:28 BST 2h 38min ago e2scrub_all.timer         >
Mon 2023-05-08 00:21:21 BST 4 days left   Wed 2023-05-03 01:36:28 BST 2h 38min ago fstrim.timer              >

7 timers listed.
Pass --all to see loaded but inactive timers, too.
lines 1-11/11 (END)
```

Step 19. systemctl list-sockets

raspberrypi.local - pi@raspberrypi: ~ VT

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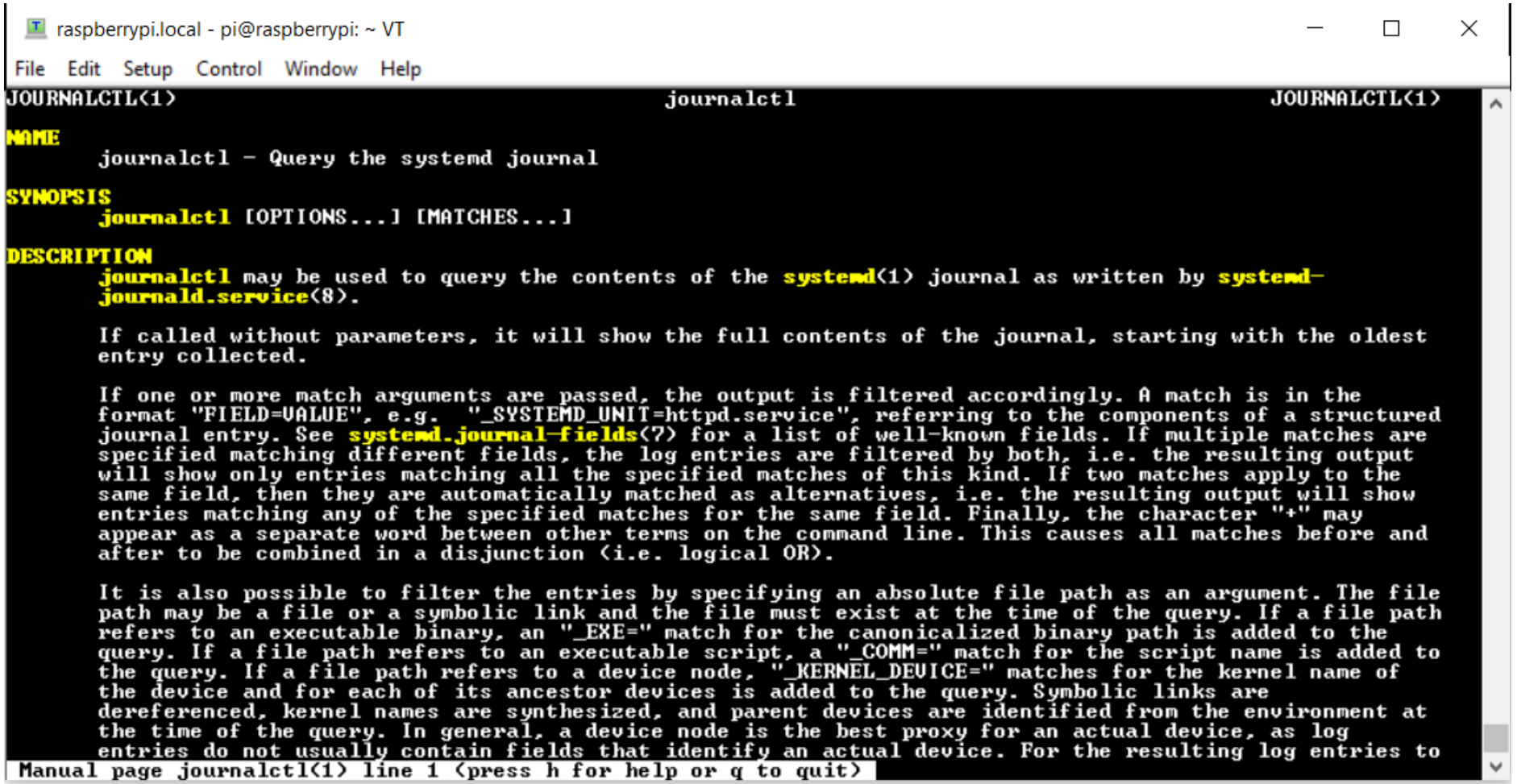
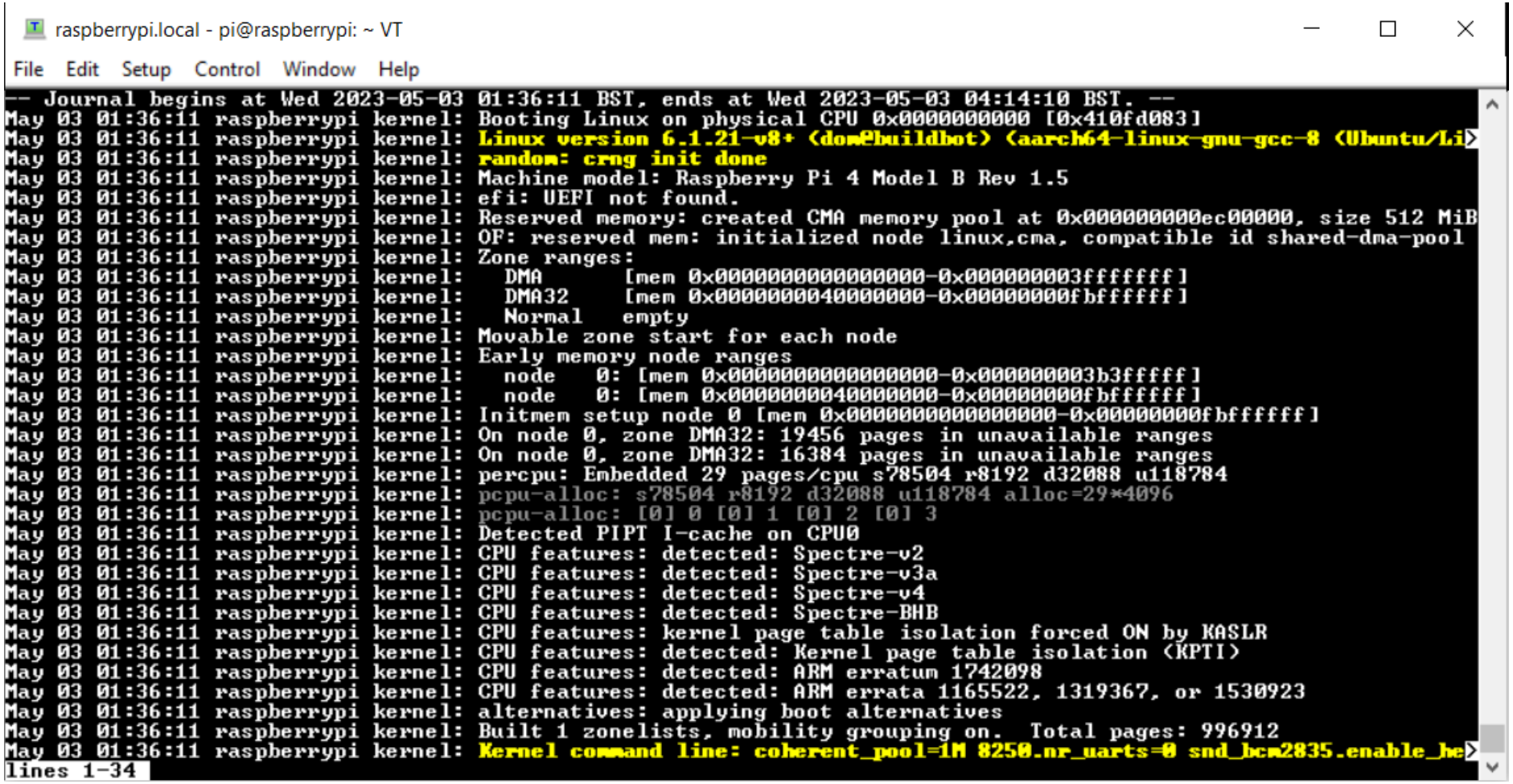
```
pi@raspberrypi:~ $ systemctl list-sockets
LISTEN                          UNIT                           ACTIVATES
/dev/rfkill                     systemd-rfkill.socket          systemd-rfkill.service
/run/avahi-daemon/socket        avahi-daemon.socket            avahi-daemon.service
/run/cups/cups.sock             cups.socket                    cups.service
/run/dbus/system_bus_socket     dbus.socket                    dbus.service
/run/initctl                    systemd-initctl.socket         systemd-initctl.service
/run/systemd/fsck.progress      systemd-fsckd.socket           systemd-fsckd.service
/run/systemd/journal/dev-log    systemd-journald-dev-log.socket systemd-journald.service
/run/systemd/journal/socket     systemd-journald.socket        systemd-journald.service
/run/systemd/journal/stdout     systemd-journald.socket        systemd-journald.service
/run/systemd/journal/syslog     syslog.socket                  rsyslog.service
/run/thd.socket                 triggerhappy.socket            triggerhappy.service
/run/udev/control               systemd-udevd-control.socket   systemd-udevd.service
audit 1                         systemd-journald-audit.socket  systemd-journald.service
kobject-uevent 1                systemd-udevd-kernel.socket    systemd-udevd.service

14 sockets listed.
Pass --all to see loaded but inactive sockets, too.
pi@raspberrypi:~ $
```

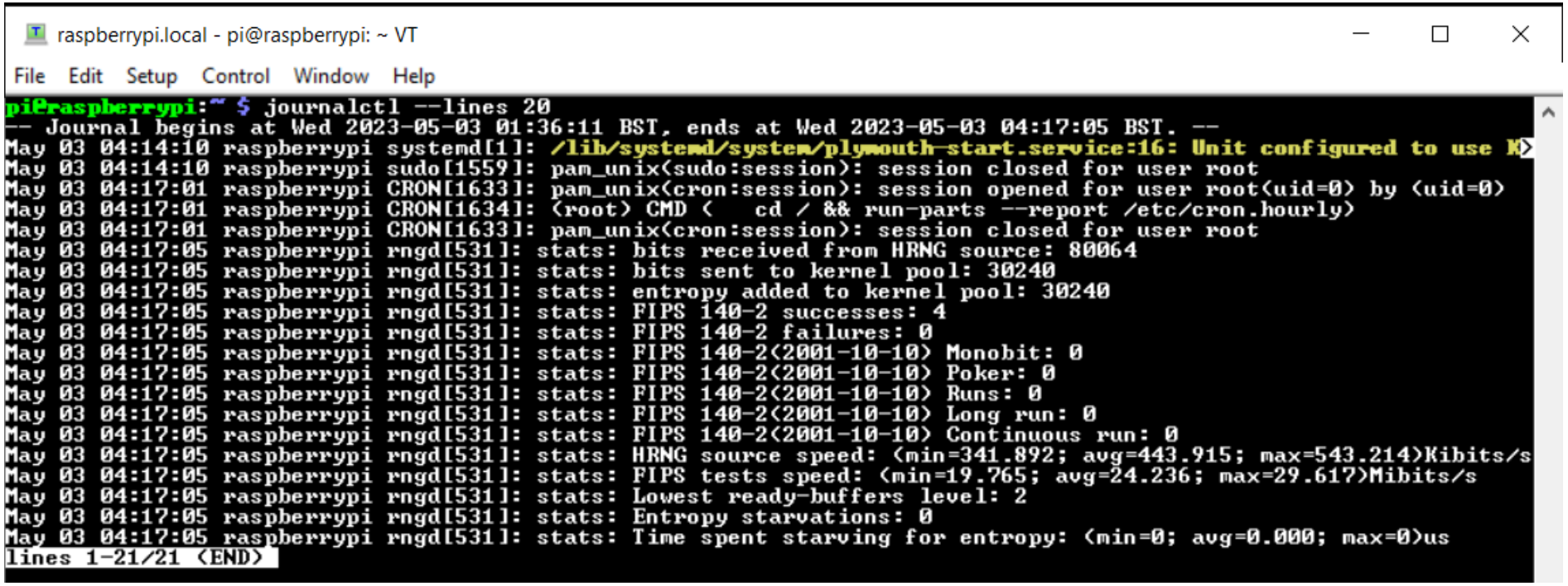
Step 20. man journalctl



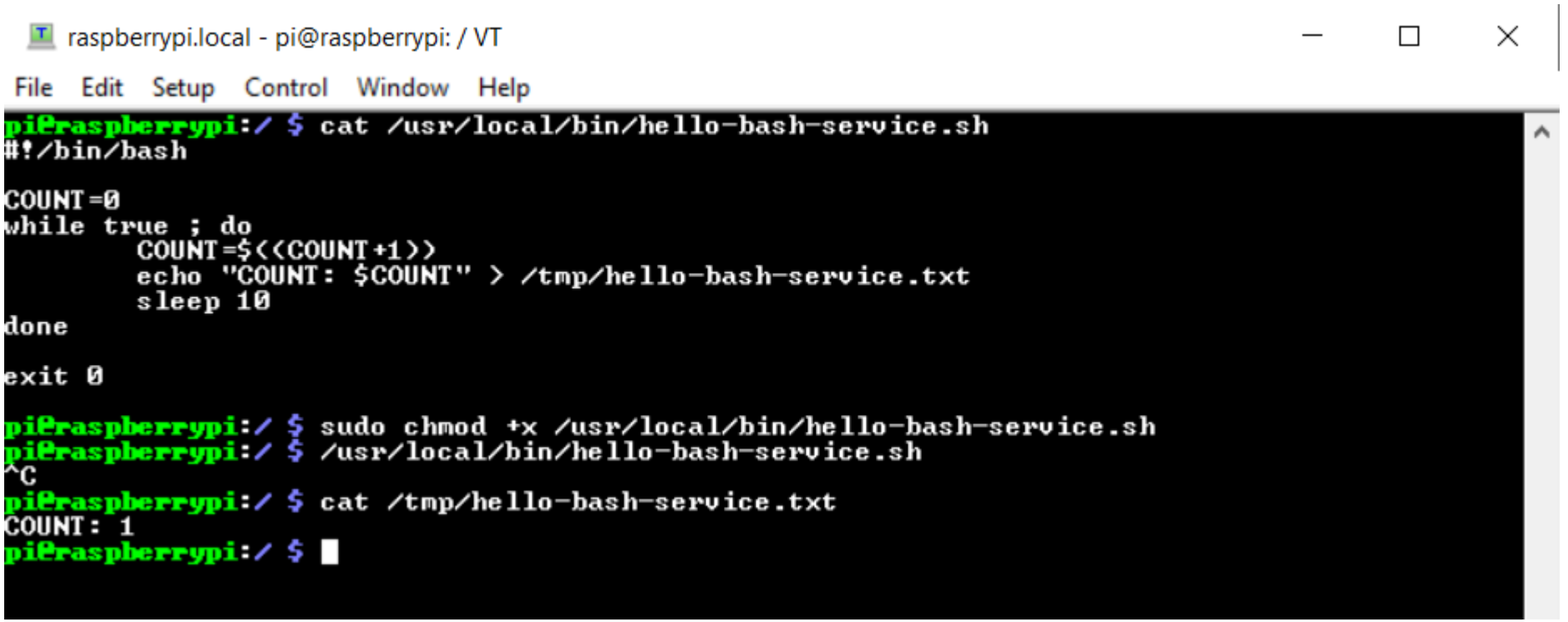
Step 21. journalctl



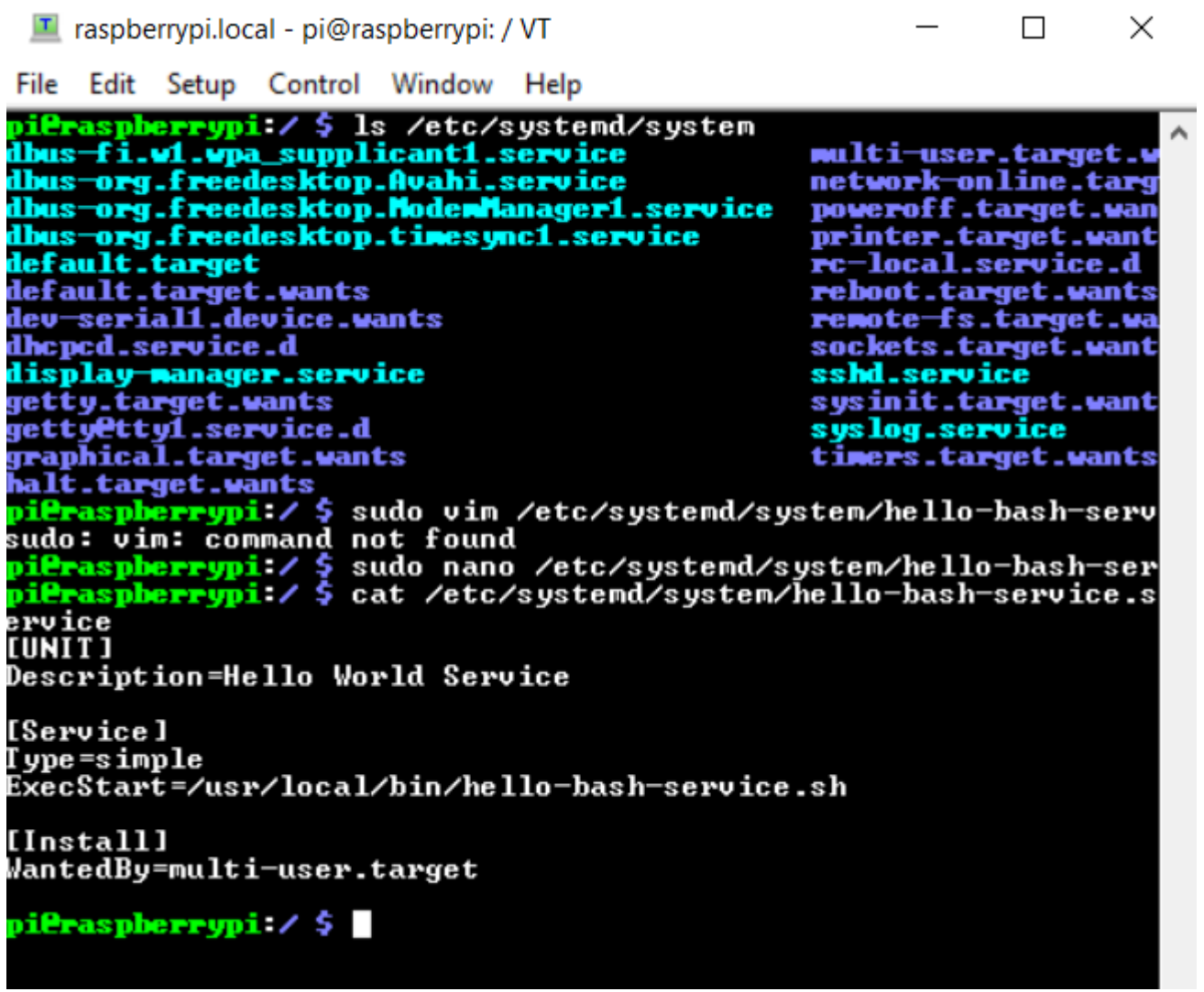
Step 22. journalctl --lines 20



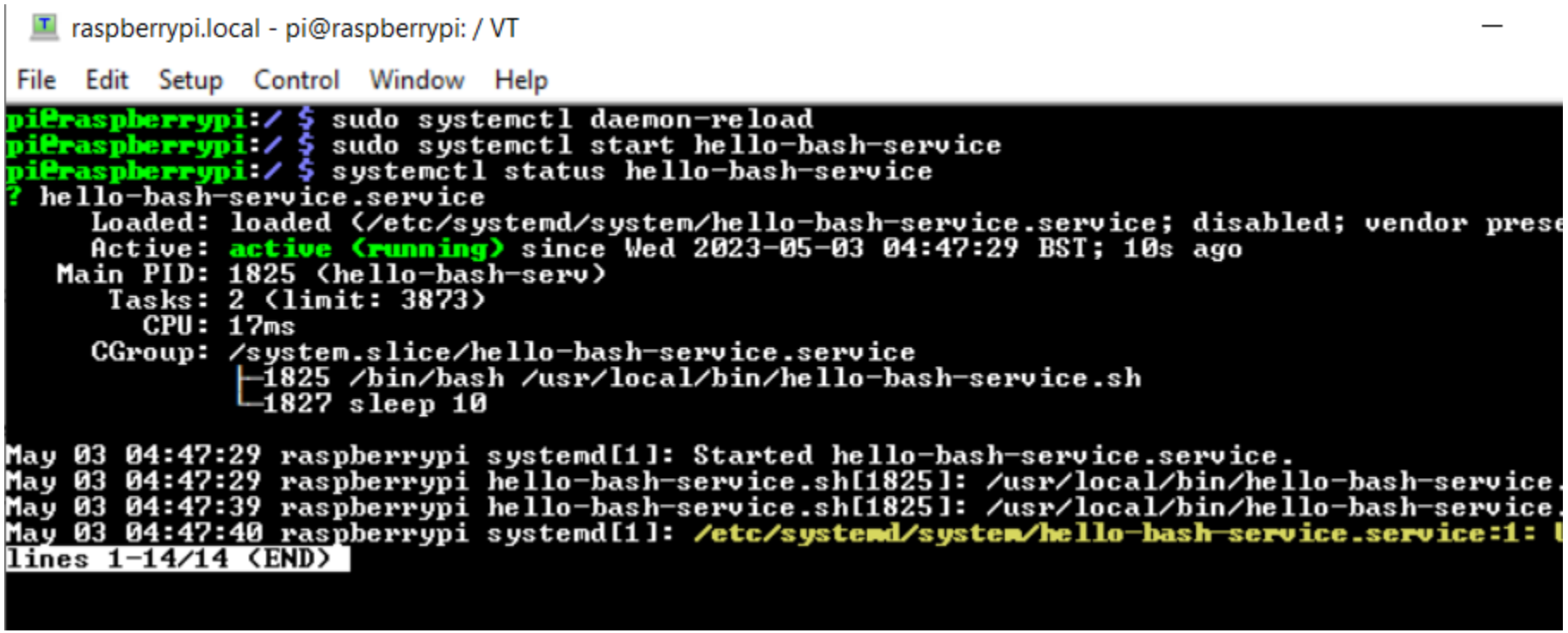
Step 23. Creating a “Hello World” Service - Part 1



Step 24. Creating a “Hello World” Service - Part 2



Step 25. Creating a “Hello World” Service - Part 3



Step 26. Creating a “Hello World” Service - Part 4

```
pi@raspberrypi:/ $ pstree
systemd─┬─ModemManager───2*[{ModemManager}]
        ├─agetty
        ├─applet.py
        ├─avahi-daemon───avahi-daemon
        ├─bluetoothd
        ├─cron
        ├─cups-browsed───2*[{cups-browsed}]
        ├─cupsd───5*[dbus]
        ├─dbus-daemon
        ├─dhcpcd
        ├─hciattach
        ├─hello-bash-serv───sleep
        ├─lightdm─┬─Xorg───{Xorg}
        │         └─lightdm─┬─lxsession─┬─lxpanel───5*[{lxpanel}]
        │                   │           ├─lxpolkit───2*[{lxpolkit}]
        │                   │           ├─openbox
        │                   │           ├─pcmanfm───2*[{pcmanfm}]
        │                   │           ├─ssh-agent
        │                   │           └─2*[{lxsession}]
        │                   └─2*[{lightdm}]
        ├─login───bash
        ├─menu-cached───2*[{menu-cached}]
        ├─packagekitd───2*[{packagekitd}]
        ├─polkitd───2*[{polkitd}]
        ├─rngd───3*[{rngd}]
        ├─rsyslogd───3*[{rsyslogd}]
        ├─rtkit-daemon───2*[{rtkit-daemon}]
        ├─sh───zenity───2*[{zenity}]
        ├─ssh-agent
        ├─sshd───sshd───sshd───bash─┬─hello-bash-serv───sleep
        │                           └─pstree
        ├─systemd─┬─(sd-pam)
        │         ├─dbus-daemon
        │         ├─gvfs-afc-volume───3*[{gvfs-afc-volume}]
        │         ├─gvfs-goa-volume───2*[{gvfs-goa-volume}]
        │         ├─gvfs-gphoto2-vo───2*[{gvfs-gphoto2-vo}]
        │         └─gvfs-mtp-volume───2*[{gvfs-mtp-volume}]
```

```
pi@raspberrypi:/ $ cat /tmp/hello-bash-service.txt
COUNT: 1
pi@raspberrypi:/ $ sudo systemctl stop  hello-bash-service
pi@raspberrypi:/ $ sudo systemctl status hello-bash-service
? hello-bash-service.service
     Loaded: loaded (/etc/systemd/system/hello-bash-service.service; disabled; vendor pres>
     Active: inactive (dead)

May 03 04:50:09 raspberrypi hello-bash-service.sh[1825]: /usr/local/bin/hello-bash-service>
May 03 04:50:19 raspberrypi hello-bash-service.sh[1825]: /usr/local/bin/hello-bash-service>
May 03 04:50:29 raspberrypi hello-bash-service.sh[1825]: /usr/local/bin/hello-bash-service>
May 03 04:50:37 raspberrypi systemd[1]: Stopping hello-bash-service.service...
May 03 04:50:37 raspberrypi systemd[1]: hello-bash-service.service: Succeeded.
May 03 04:50:37 raspberrypi systemd[1]: Stopped hello-bash-service.service.
May 03 04:50:37 raspberrypi systemd[1]: /etc/systemd/system/hello-bash-service.service:1: >
May 03 04:50:37 raspberrypi systemd[1]: /etc/systemd/system/hello-bash-service.service:1: >
May 03 04:50:49 raspberrypi systemd[1]: /etc/systemd/system/hello-bash-service.service:1: >
May 03 04:50:49 raspberrypi systemd[1]: /etc/systemd/system/hello-bash-service.service:1: >
lines 1-14/14 (END)
```