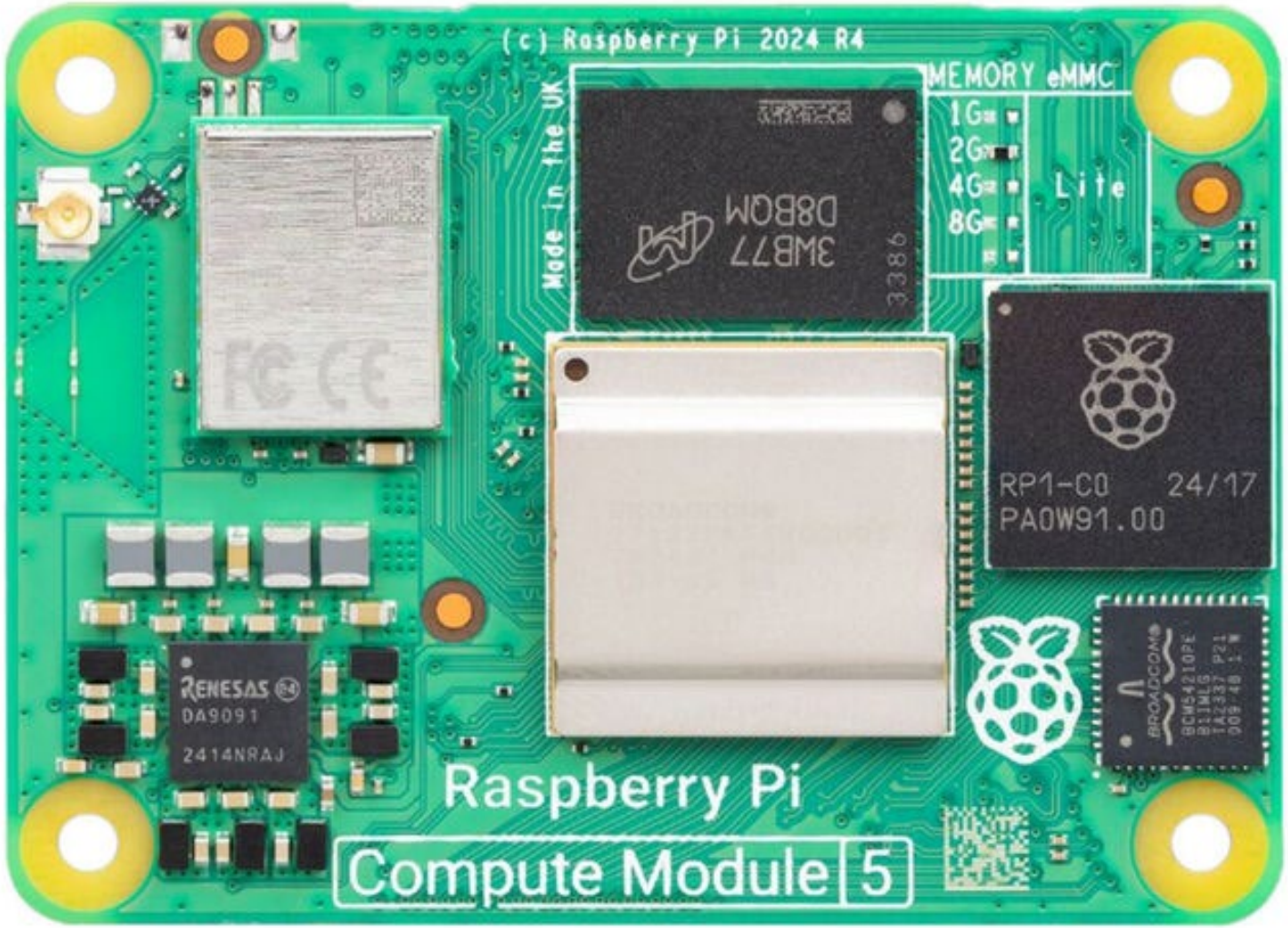
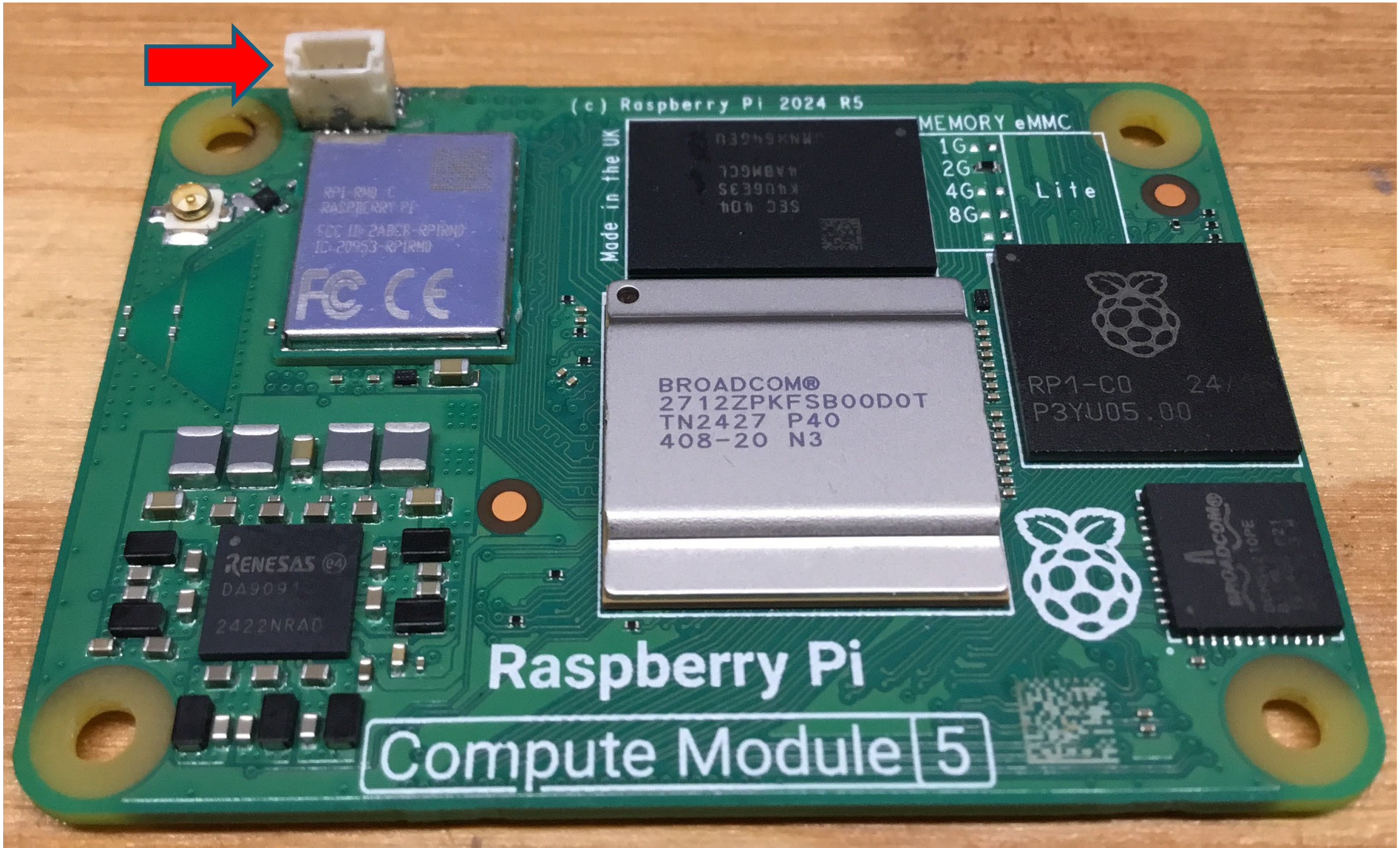
Yocto Project Raspberry Pi CM5

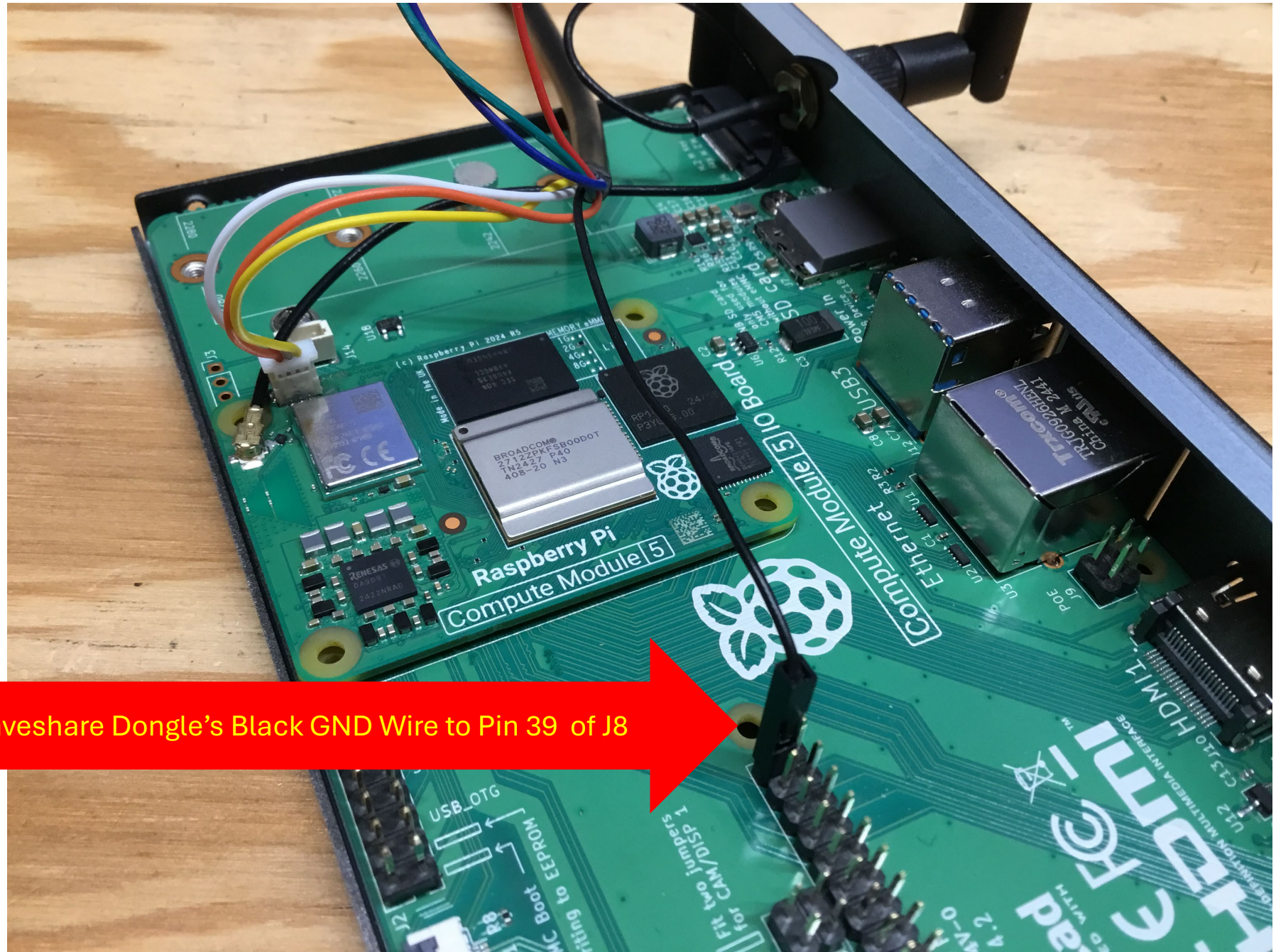


Add Debug UART Header



Waveshare USB To TTL Dongle

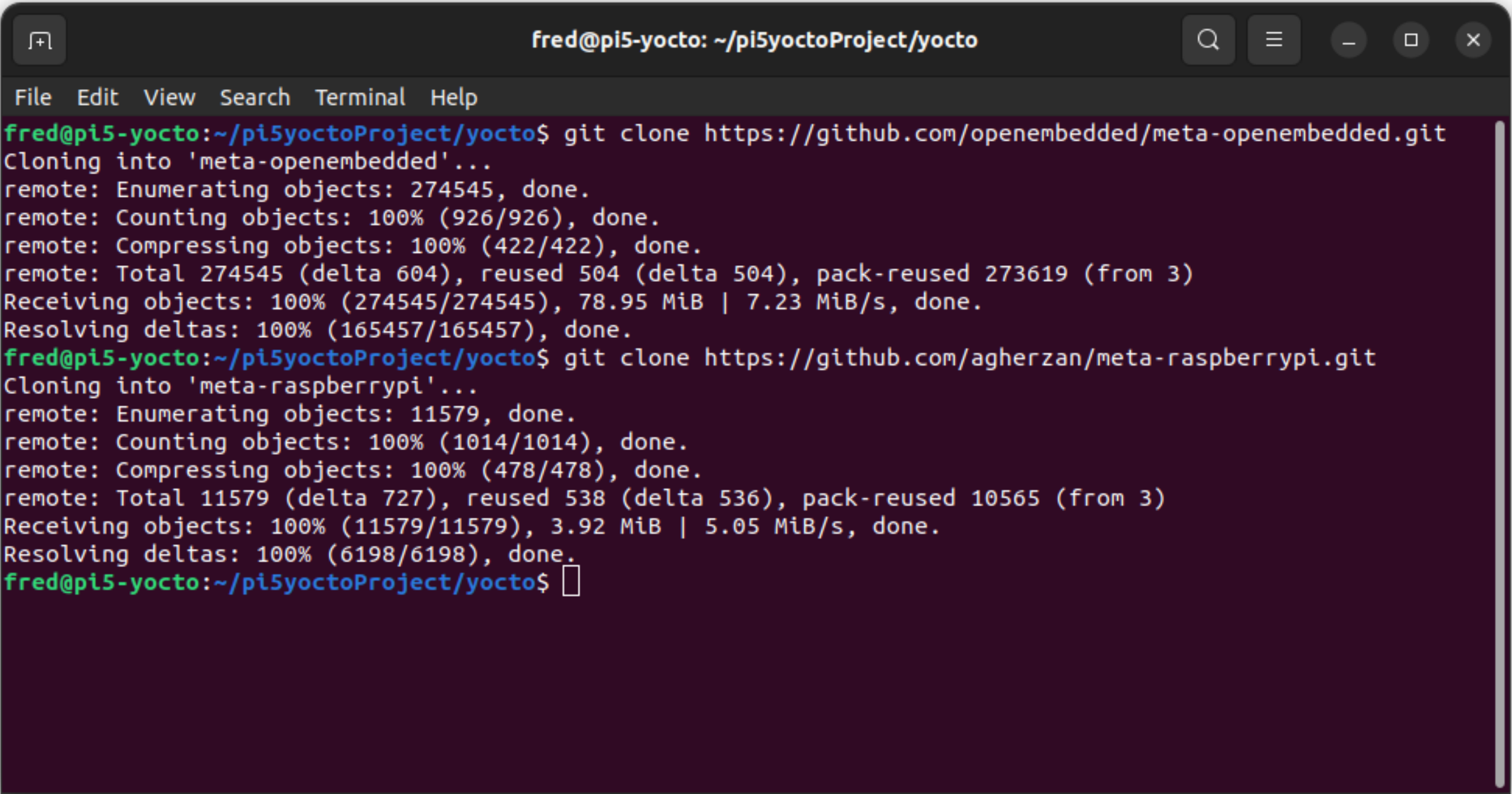
Waveshare USB To TTL Dongle



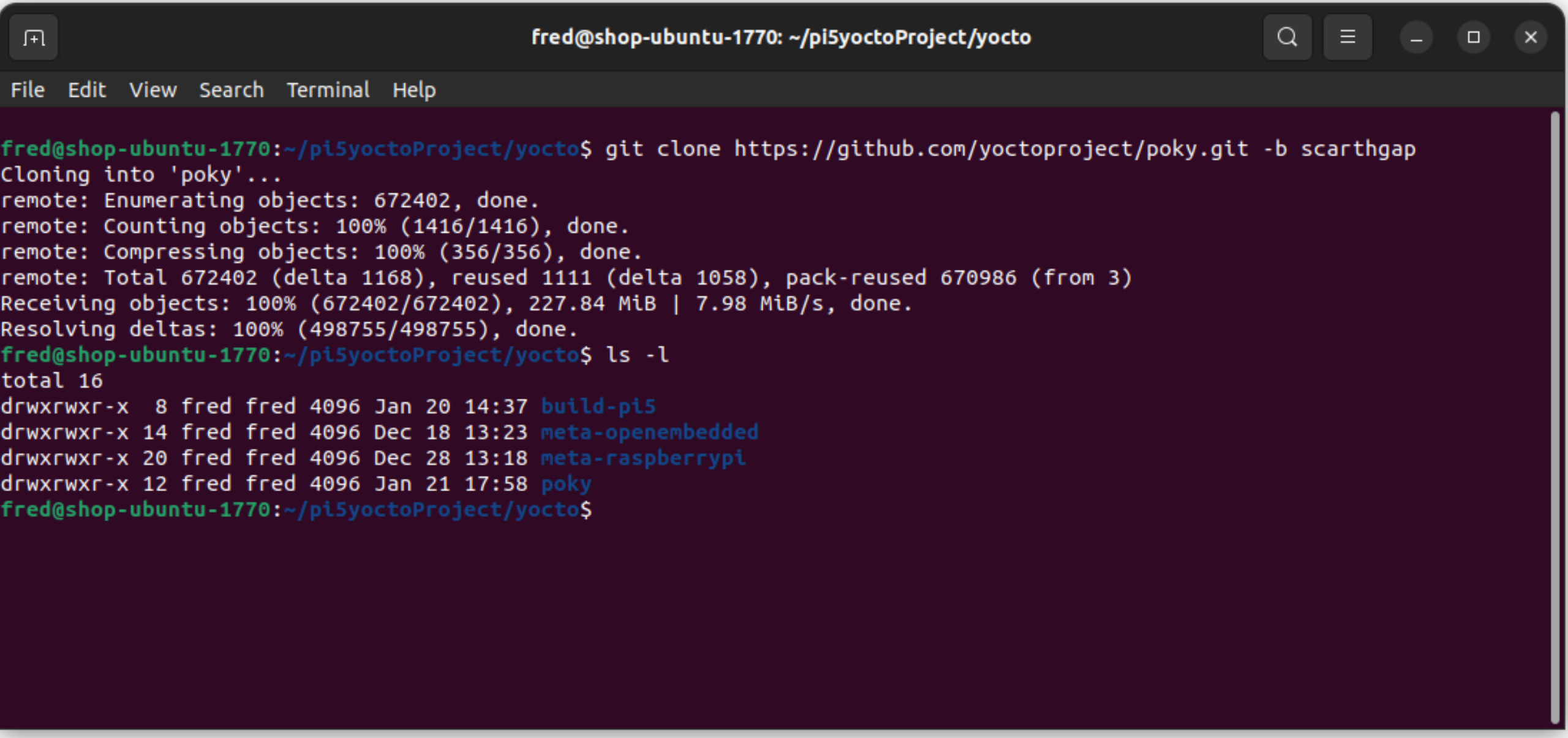
Connect Waveshare Dongle’s Black GND Wire to Pin 39 of J8

Install Essential Build Packages

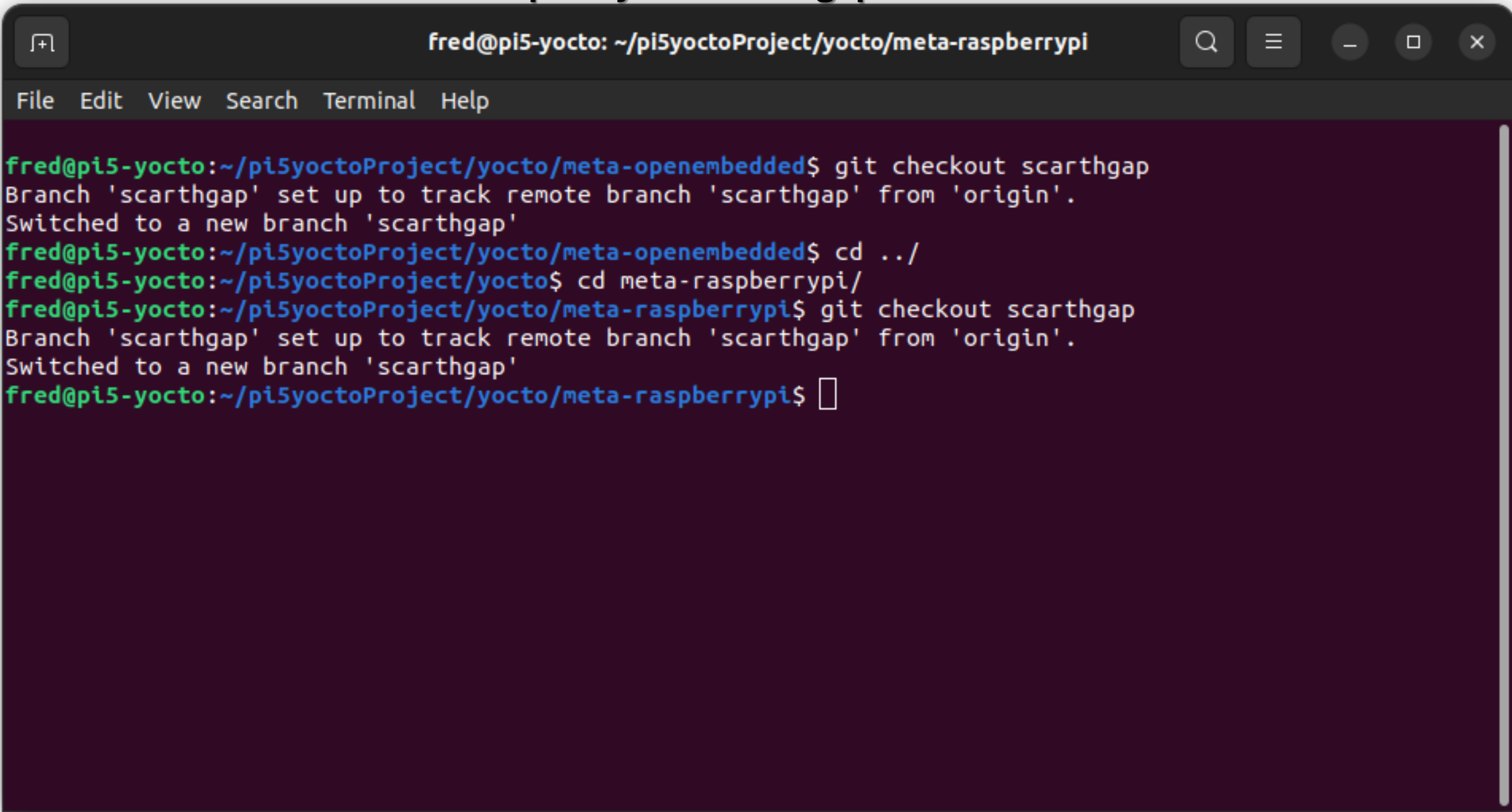
Clone meta-openembedded and meta-raspberrypi



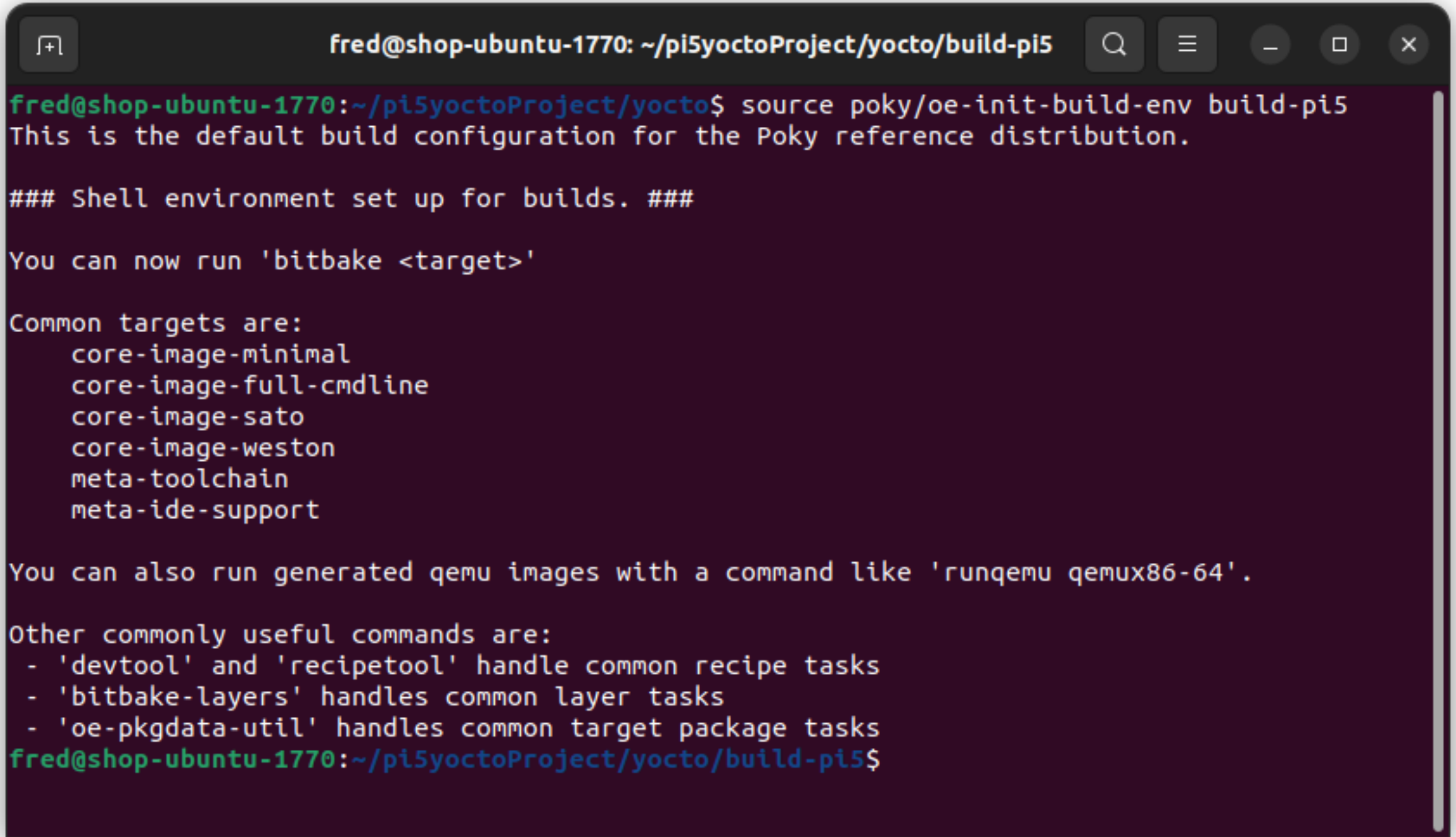
Clone Poky


fred@shop-ubuntu-1770: ~/pi5yoctoProject/yocto
File Edit View Search Terminal Help
fred@shop-ubuntu-1770:~/pi5yoctoProject/yocto$ git clone https://github.com/yoctoproject/poky.git -b scarthgap
Cloning into 'poky'...
remote: Enumerating objects: 672402, done.
remote: Counting objects: 100% (1416/1416), done.
remote: Compressing objects: 100% (356/356), done.
remote: Total 672402 (delta 1168), reused 1111 (delta 1058), pack-reused 670986 (from 3)
Receiving objects: 100% (672402/672402), 227.84 MiB | 7.98 MiB/s, done.
Resolving deltas: 100% (498755/498755), done.
fred@shop-ubuntu-1770:~/pi5yoctoProject/yocto$ ls -l
total 16
drwxrwxr-x 8 fred fred 4096 Jan 20 14:37 build-pi5
drwxrwxr-x 14 fred fred 4096 Dec 18 13:23 meta-openembedded
drwxrwxr-x 20 fred fred 4096 Dec 28 13:18 meta-raspberrypi
drwxrwxr-x 12 fred fred 4096 Jan 21 17:58 poky
fred@shop-ubuntu-1770:~/pi5yoctoProject/yocto$

Specify the scarthgap Branch



Initialize the Build Shell Environment



Populate the bblayers.conf File

bblayers.conf

yocto > build-pi5 > conf > bblayers.conf

```
# POKY_BBLAYERS_CONF_VERSION is increased each time build/conf/bblayers.conf
# changes incompatibly
POKY_BBLAYERS_CONF_VERSION = "2"

BBPATH = "${TOPDIR}"
BBFILES ?= ""

BBLAYERS ?= " \
  /home/fred/pi5yoctoProject/yocto/poky/meta \
  /home/fred/pi5yoctoProject/yocto/poky/meta-poky \
  /home/fred/pi5yoctoProject/yocto/poky/meta-yocto-bsp \
  /home/fred/pi5yoctoProject/yocto/meta-openembedded/meta-oe \
  /home/fred/pi5yoctoProject/yocto/meta-openembedded/meta-python \
  /home/fred/pi5yoctoProject/yocto/meta-openembedded/meta-networking \
  /home/fred/pi5yoctoProject/yocto/meta-raspberrypi \
  "
```

Set the Default Machine

local.conf

yocto > build-pi5 > conf > local.conf

```
17  # Machine Selection
18  #
19  # You need to select a specific machine to target the build with. There are a selection
20  # of emulated machines available which can boot and run in the QEMU emulator:
21  #
22  #MACHINE ?= "qemuarm"
23  #MACHINE ?= "qemuarm64"
24  #MACHINE ?= "qemumips"
25  #MACHINE ?= "qemumips64"
26  #MACHINE ?= "qemuppc"
27  #MACHINE ?= "qemux86"
28  #MACHINE ?= "qemux86-64"
29  #
30  # There are also the following hardware board target machines included for
31  # demonstration purposes:
32  #
33  #MACHINE ?= "beaglebone-yocto"
34  #MACHINE ?= "genericarm64"
35  #MACHINE ?= "genericx86"
36  #MACHINE ?= "genericx86-64"
37  #
38  # This sets the default machine to be qemux86-64 if no other machine is selected:
39  MACHINE ??= "raspberrypi5"
```

Enable Compute Module 5 SSH Server

local.conf

yocto > build-pi5 > conf > local.conf

```
125  # Extra image configuration defaults
126  #
127  # The EXTRA_IMAGE_FEATURES variable allows extra packages to be added to the generated
128  # images. Some of these options are added to certain image types automatically. The
129  # variable can contain the following options:
130  #  "dbg-pkgs"        - add -dbg packages for all installed packages
131  #                      (adds symbol information for debugging/profiling)
132  #  "src-pkgs"        - add -src packages for all installed packages
133  #                      (adds source code for debugging)
134  #  "dev-pkgs"        - add -dev packages for all installed packages
135  #                      (useful if you want to develop against libs in the image)
136  #  "ptest-pkgs"      - add -ptest packages for all ptest-enabled packages
137  #                      (useful if you want to run the package test suites)
138  #  "tools-sdk"       - add development tools (gcc, make, pkgconfig etc.)
139  #  "tools-debug"     - add debugging tools (gdb, strace)
140  #  "eclipse-debug"   - add Eclipse remote debugging support
141  #  "tools-profile"   - add profiling tools (oprofile, lttng, valgrind)
142  #  "tools-testapps"  - add useful testing tools (ts_print, aplay, arecord etc.)
143  #  "debug-tweaks"    - make an image suitable for development
144  #                      e.g. ssh root access has a blank password
145  # There are other application targets that can be used here too, see
146  # meta/classes-recipe/image.bbclass and
147  # meta/classes-recipe/core-image.bbclass for more details.
148  # We default to enabling the debugging tweaks.
149  EXTRA_IMAGE_FEATURES ?= "debug-tweaks"
150  EXTRA_IMAGE_FEATURES:append ?= " ssh-server-openssh "
```

Enable I2C – *nano* Text Editor – WiFi via wpa_supplicant.conf

local.conf

yocto > build-pi5 > conf > local.conf

```
285
286  # CONF_VERSION is increased each time build/conf/ changes incompatibly and is used to
287  # track the version of this file when it was generated. This can safely be ignored if
288  # this doesn't mean anything to you.
289  CONF_VERSION = "2"
290
291  # Enable the UART
292  # Enable I2C Support
293  # Enable nano text editor
294  # Enable WiFi configuration via wpa-supplicant.conf
295  # synaptics-killswitch is required
296  ENABLE_UART = "1"
297
298  ENABLE_I2C = "1"
299  KERNEL_MODULE_AUTOLOAD:rpi += " i2c-dev"
300  IMAGE_INSTALL:append = " i2c-tools"
301  IMAGE_INSTALL:append = " nano"
302  IMAGE_INSTALL:append = " wpa-supplicant"
303  LICENSE_FLAGS_ACCEPTED = "synaptics-killswitch"
```

Enable I2C – *nano* Text Editor – WiFi Via wpa_supplicant.conf

local.conf

yocto > build-pi5 > conf > local.conf

```
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```
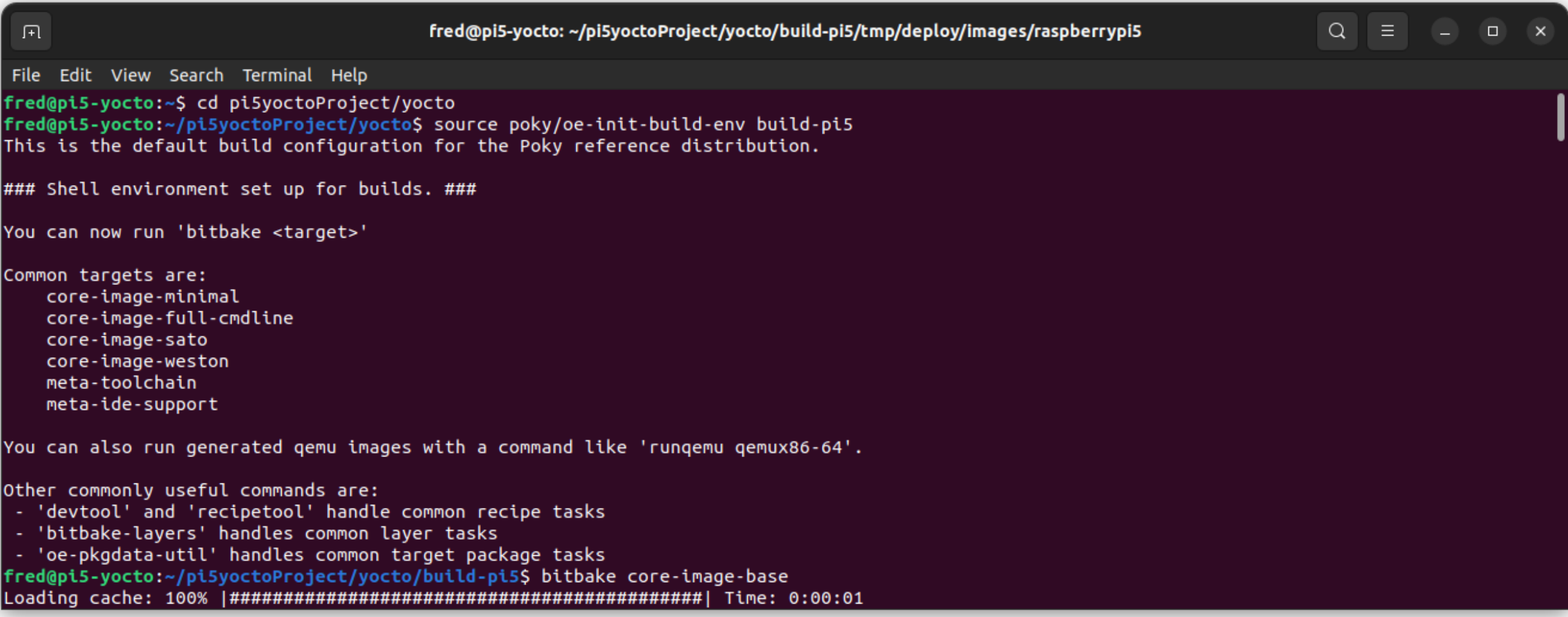
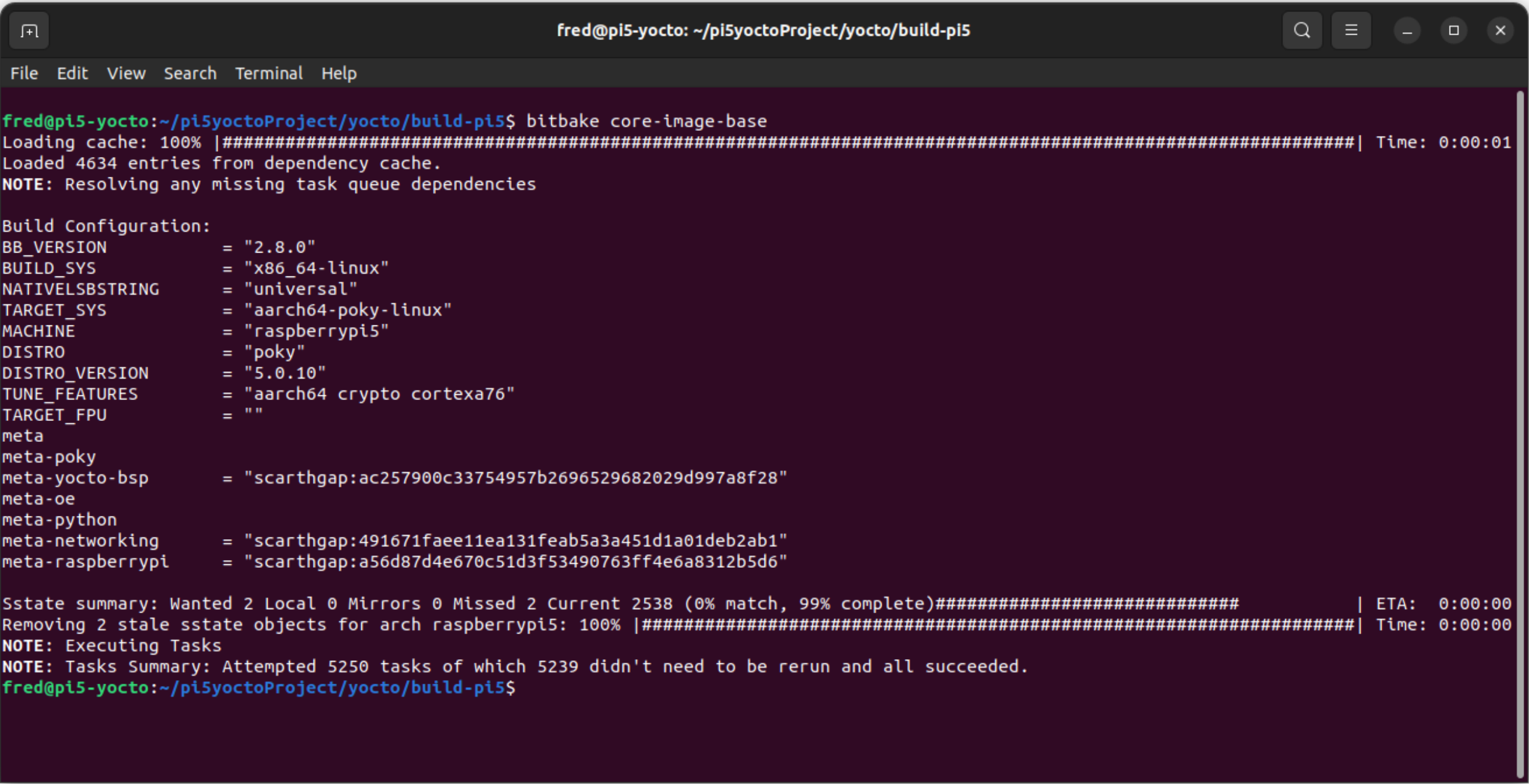
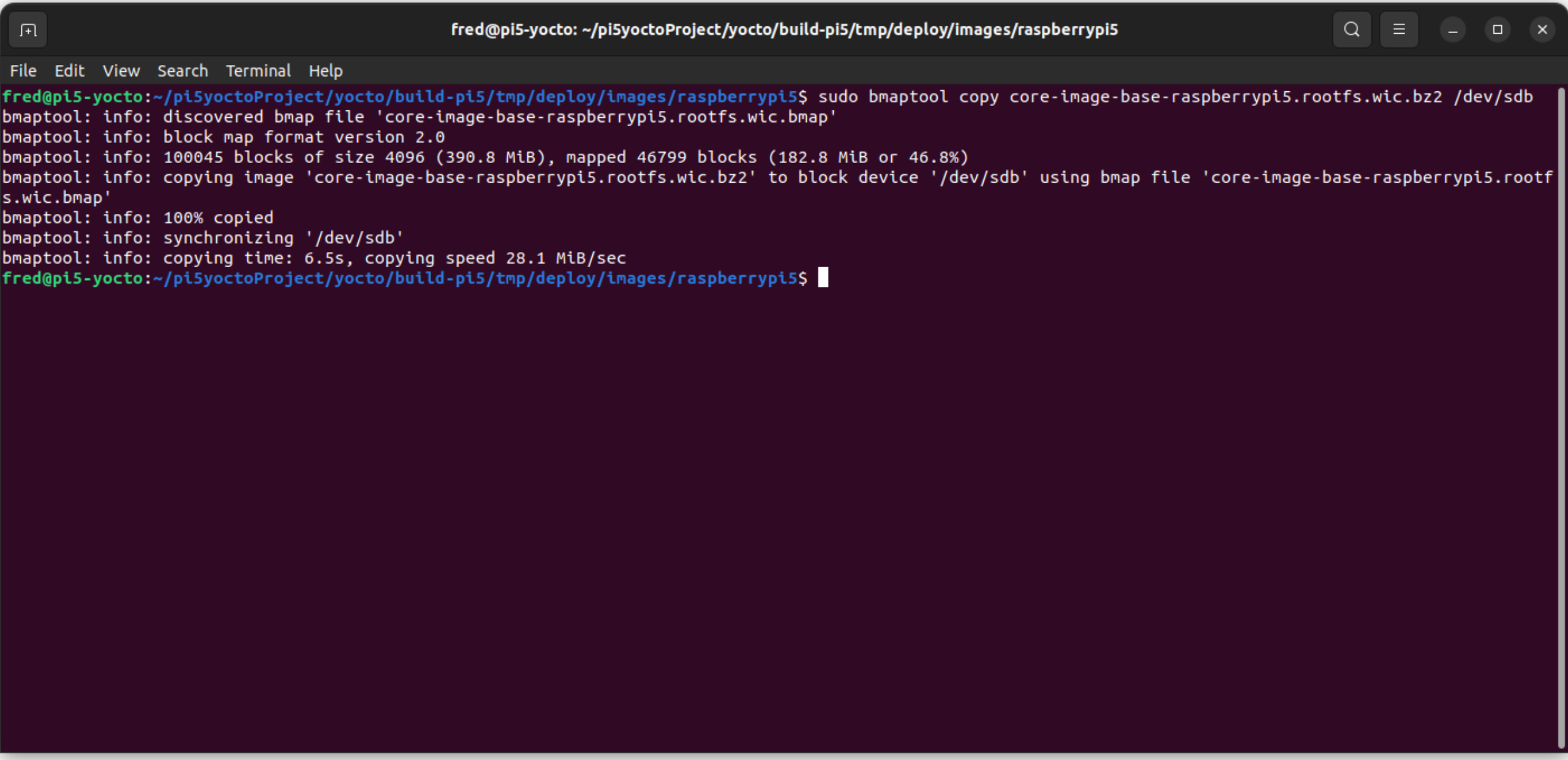

Execute BitBake



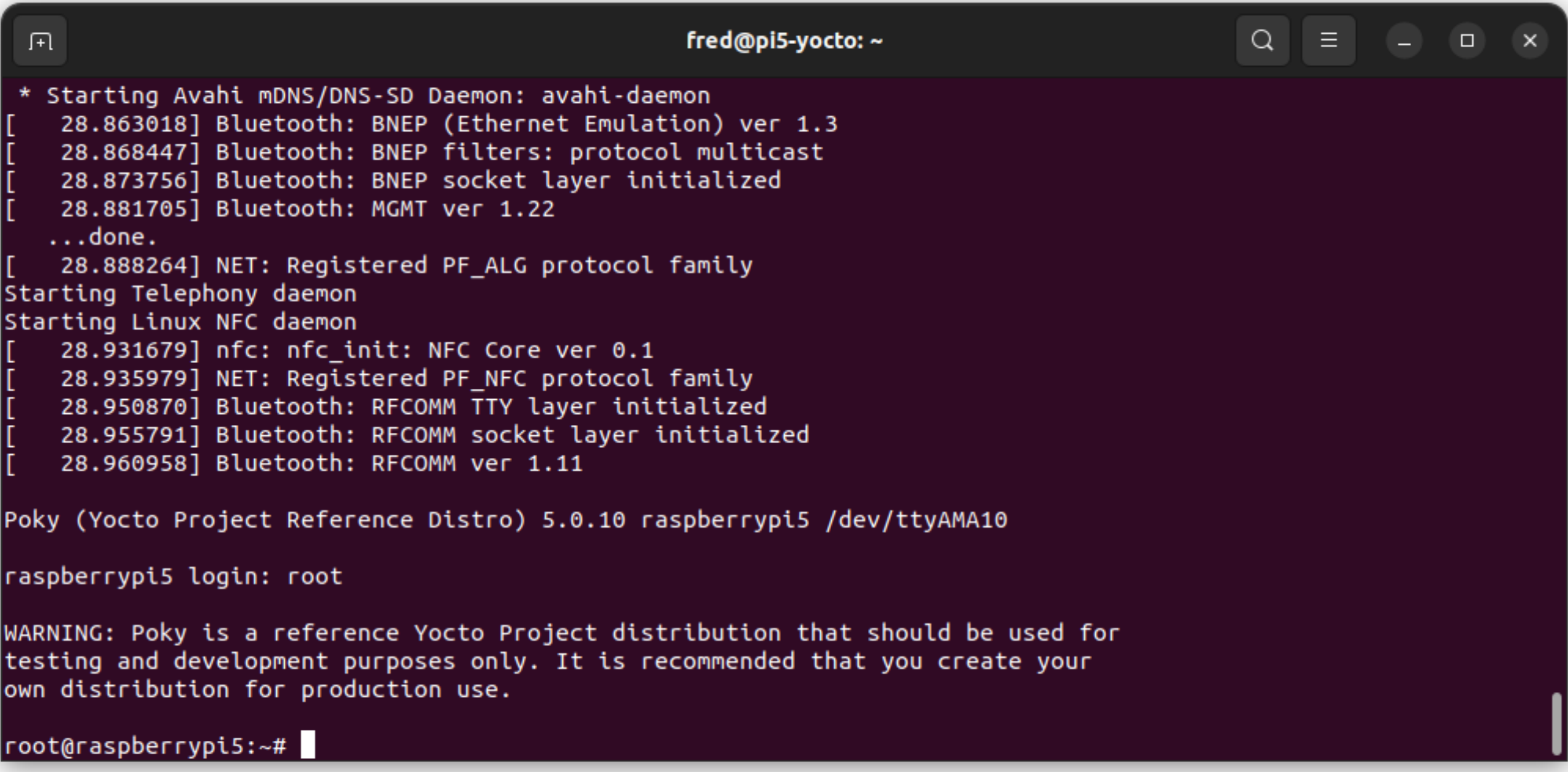
Execute BitBake



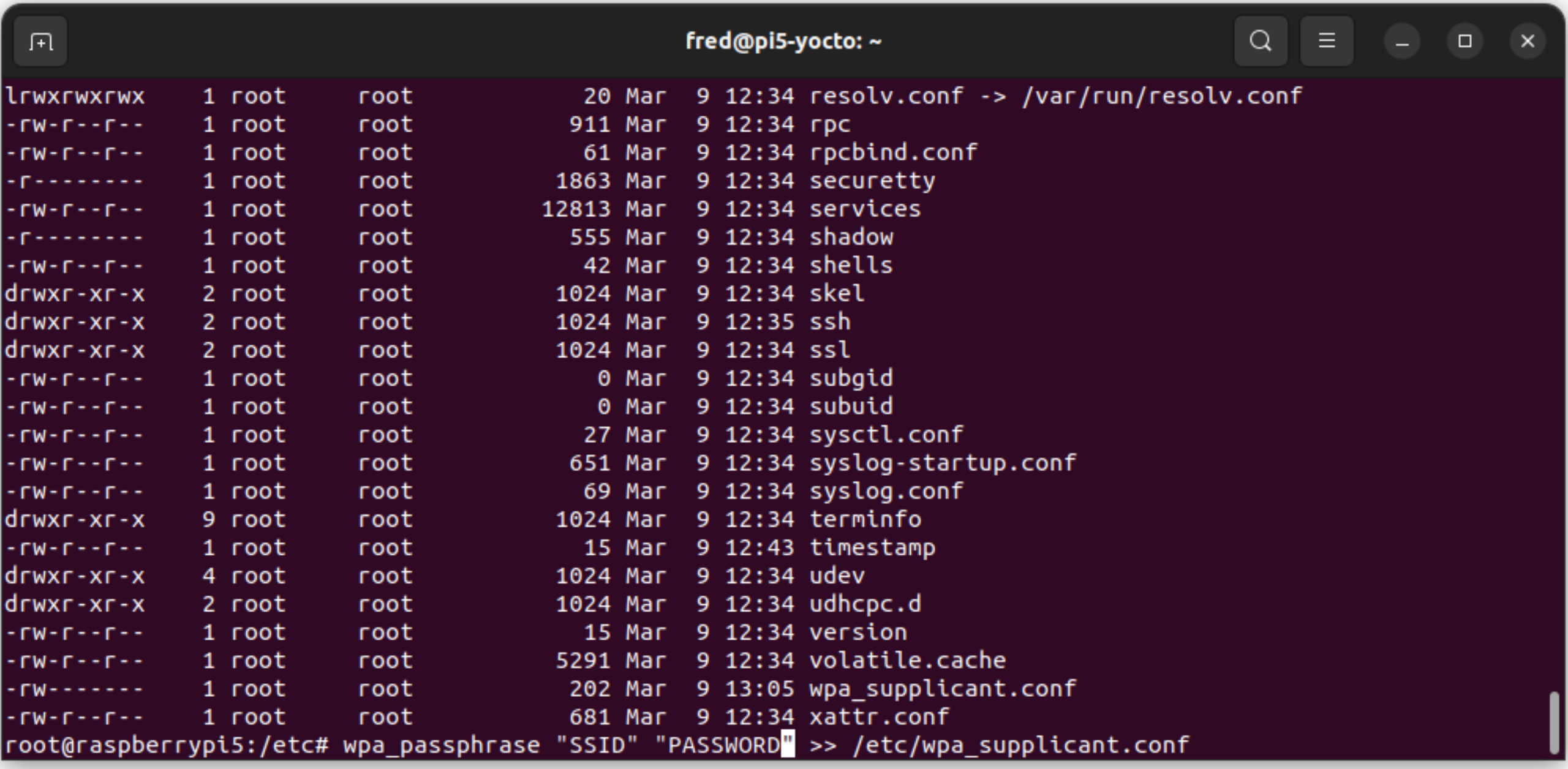
Copy Compute Module 5 Yocto Image to microSD Card



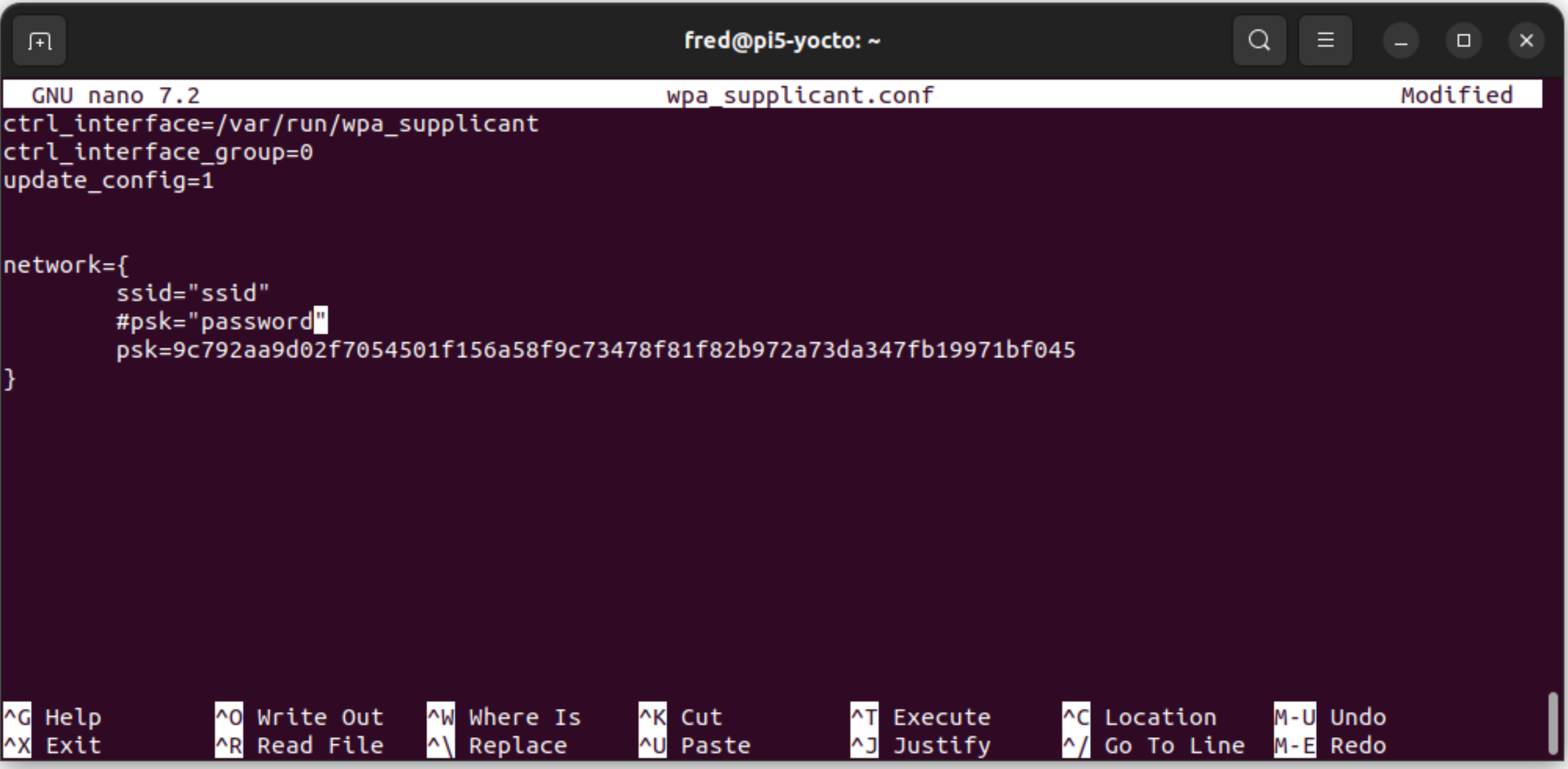
Boot the microSD Card Image and Login



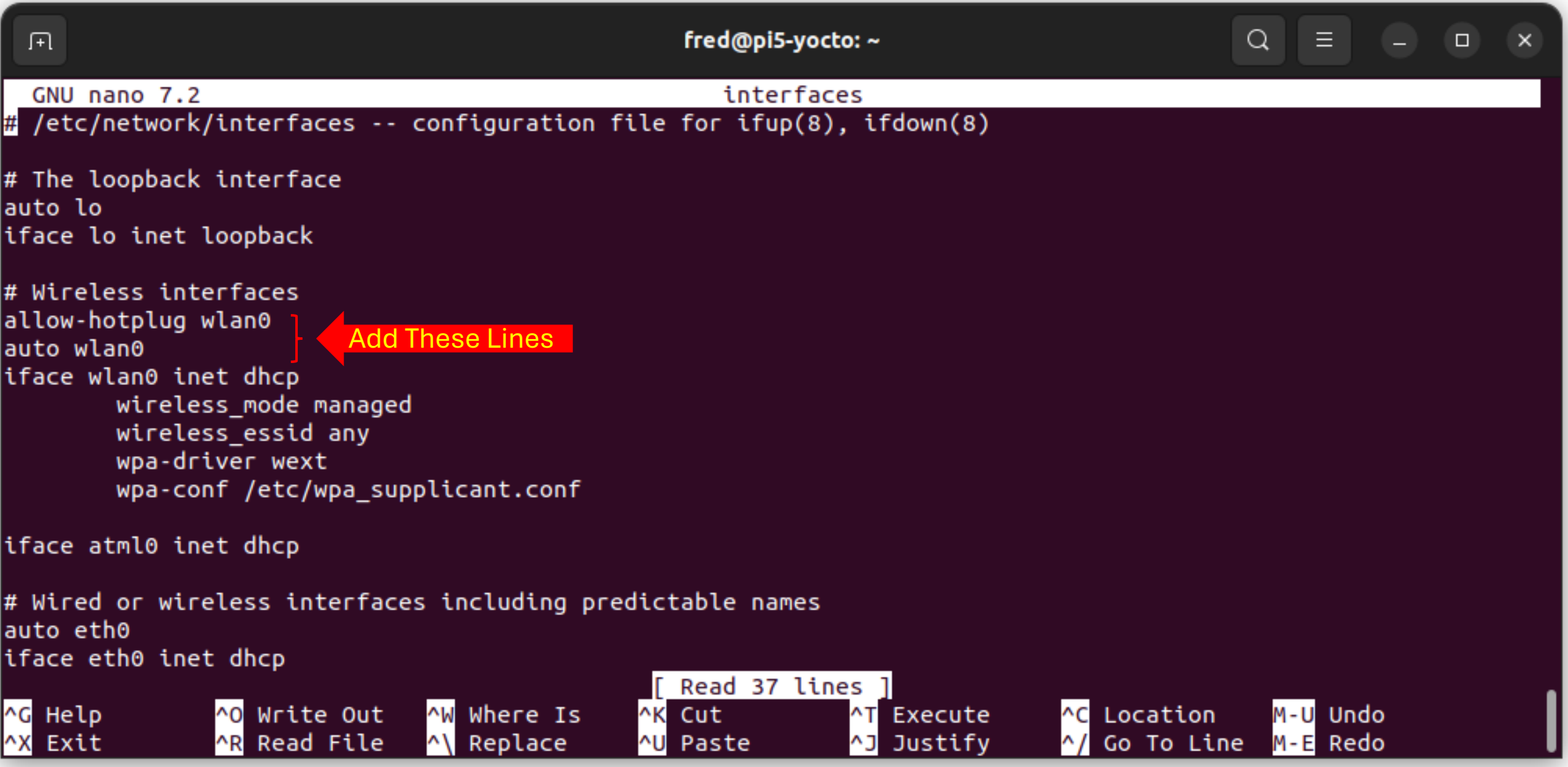
Configure wpa_supplicant.conf



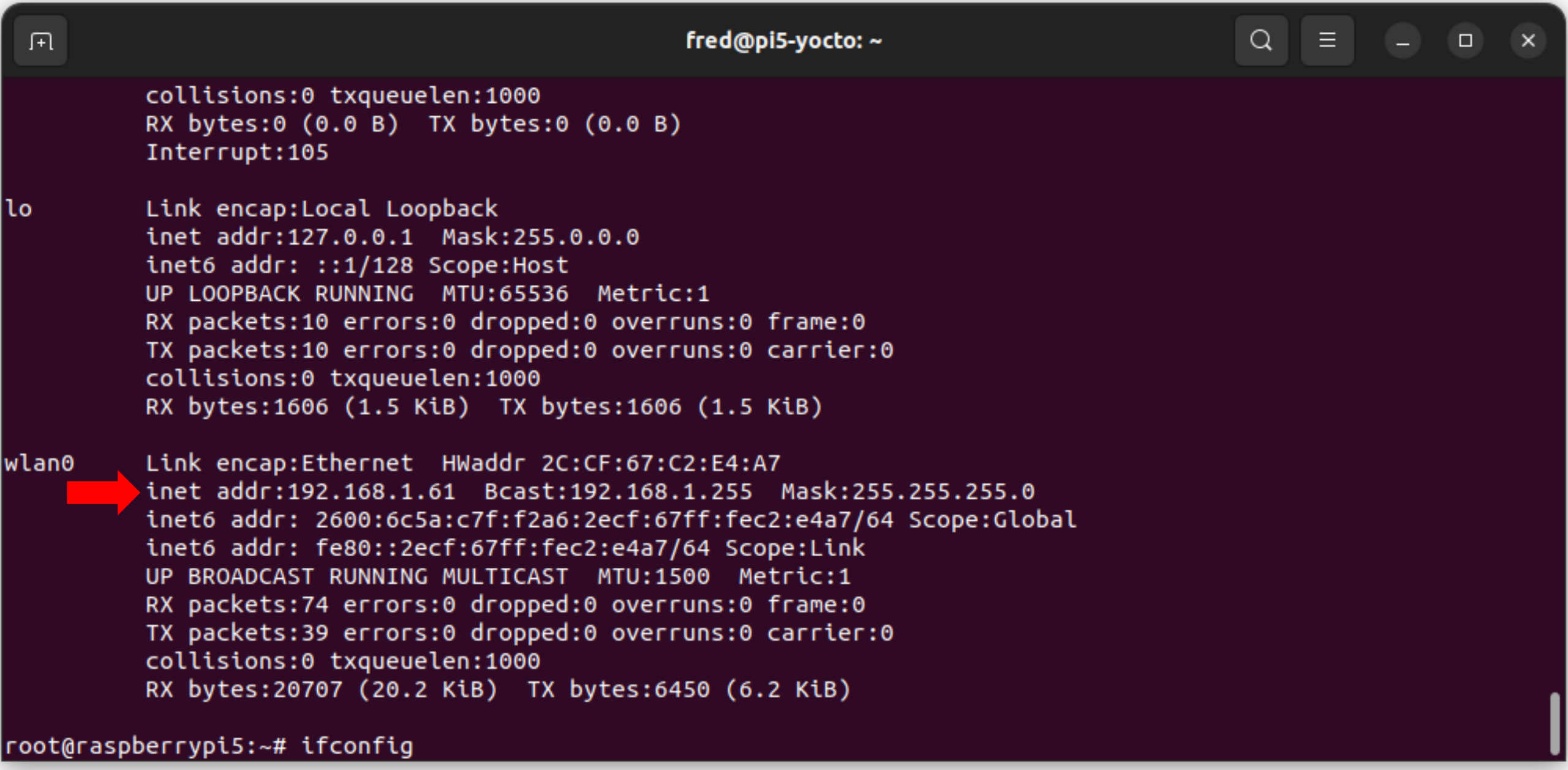
Configure wpa_supplicant.conf



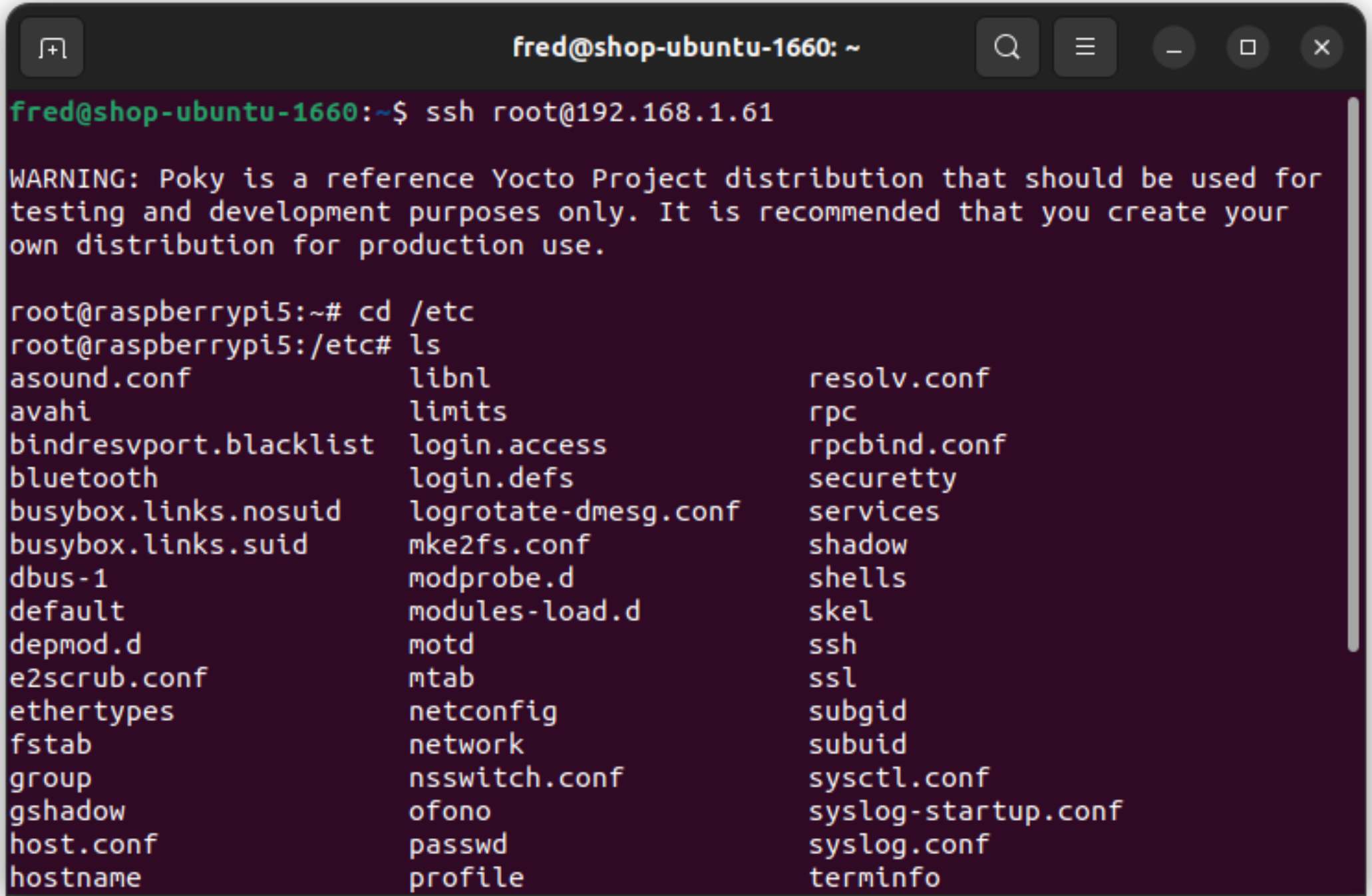
Configure /etc/network/interfaces



Reboot and Execute ifconfig Command



SSH Into the Compute Module 5 From a Remote Linux System



FileZilla SSH Access From a Remote Linux System