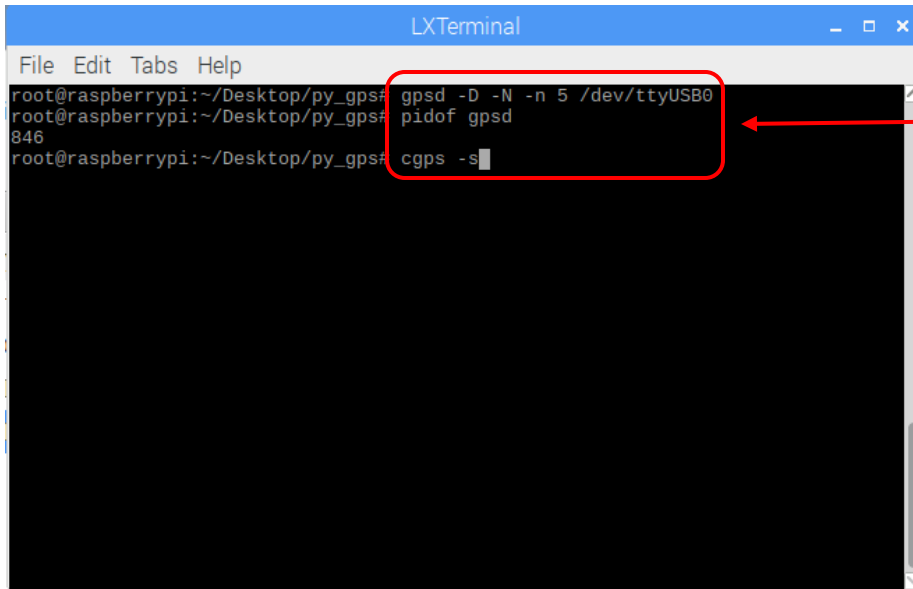


# User Manual

## Step 1 (set-up)

Open a terminal and navigate to the project root folder. Enter ***gpsd -D -N -n 5 /dev/ttyUSB0*** to start gpsd. Enter ***pidof gpsd*** to check if the process is running in the background. Enter ***cgps -s*** to check if the gps runs.



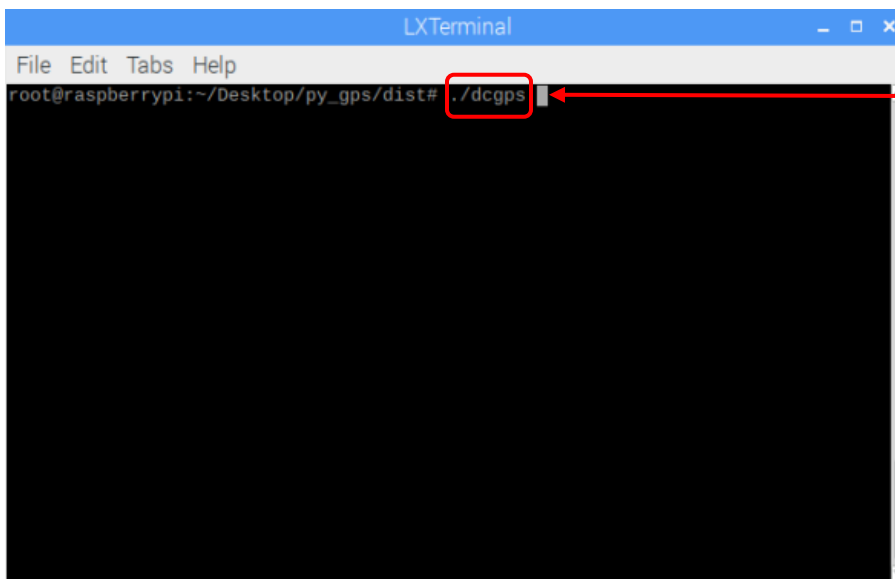
A screenshot of an LXTerminal window titled "LXTerminal". The terminal shows the following commands and output:

```
root@raspberrypi:~/Desktop/py_gps# gpsd -D -N -n 5 /dev/ttyUSB0
root@raspberrypi:~/Desktop/py_gps# pidof gpsd
846
root@raspberrypi:~/Desktop/py_gps# cgps -s
```

A red rectangle highlights the first three lines of the terminal output, and a red arrow points from the right towards the rectangle.

## Step 2 (launch)

Open a terminal and navigate to the executable file ***dcgps***. Open the executable with the command ***./dcgps***



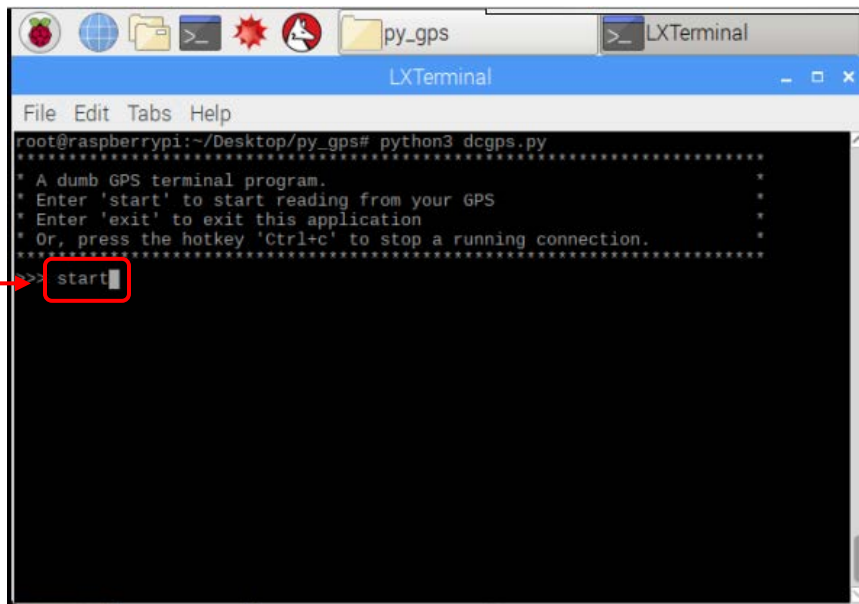
A screenshot of an LXTerminal window titled "LXTerminal". The terminal shows the following command and prompt:

```
root@raspberrypi:~/Desktop/py_gps/dist# ./dcgps
```

A red rectangle highlights the command `./dcgps`, and a red arrow points from the right towards the rectangle.

### Step 3 (controls)

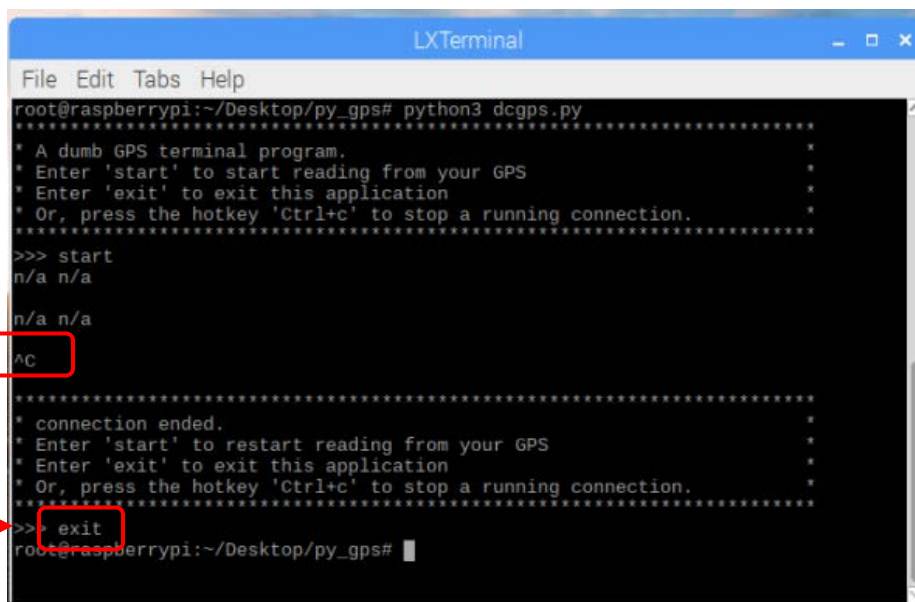
To start receiving GPS data, enter **start**. To exit the application, enter **exit**.



```
root@raspberrypi:~/Desktop/py_gps# python3 dcgps.py
*****
* A dumb GPS terminal program.                               *
* Enter 'start' to start reading from your GPS               *
* Enter 'exit' to exit this application                      *
* Or, press the hotkey 'Ctrl+c' to stop a running connection.*
*****
>>> start
```

### Step 4 (no data printed)

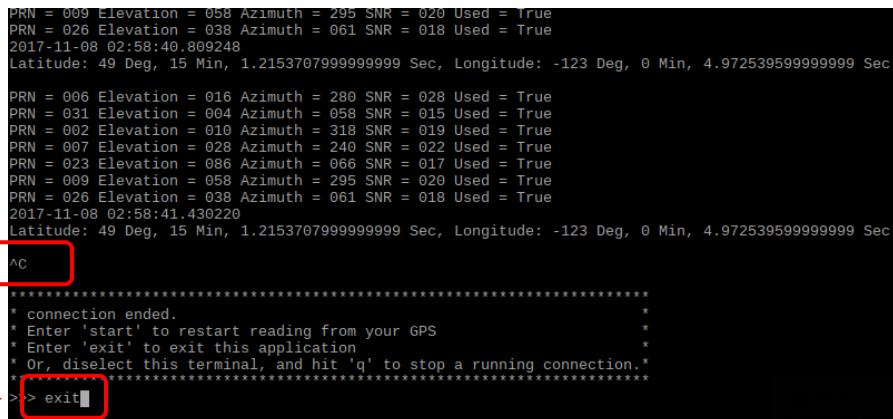
If no GPS data prints to the terminal, your GPS dongle may not be connected or is unable to receive a signal. If this is the case, press the keystroke **ctrl+c** to break out of the receiving loop. Then enter **exit** to terminate the application.



```
root@raspberrypi:~/Desktop/py_gps# python3 dcgps.py
*****
* A dumb GPS terminal program.                               *
* Enter 'start' to start reading from your GPS               *
* Enter 'exit' to exit this application                      *
* Or, press the hotkey 'Ctrl+c' to stop a running connection.*
*****
>>> start
n/a n/a
n/a n/a
n/a n/a
>>> AC
*****
* connection ended.                                         *
* Enter 'start' to restart reading from your GPS           *
* Enter 'exit' to exit this application                    *
* Or, press the hotkey 'Ctrl+c' to stop a running connection.*
*****
>>> exit
root@raspberrypi:~/Desktop/py_gps#
```

## Step 5 (stop, resume, exit)

If you haven't exited the program and GPS data is being printed, you can stop receiving GPS data by pressing the keystroke **ctrl+c**. To exit the application after the previous command, enter **exit** or to resume receiving GPS data enter **start**.



A terminal window showing GPS data output. The output includes PRN numbers, Elevation, Azimuth, SNR, and a timestamp. The terminal shows the command `^C` being entered, followed by a message indicating the connection ended. Below this, instructions are provided: "Enter 'start' to restart reading from your GPS", "Enter 'exit' to exit this application", and "Or, disconnect this terminal, and hit 'q' to stop a running connection." The terminal shows the command `>> exit` being entered.

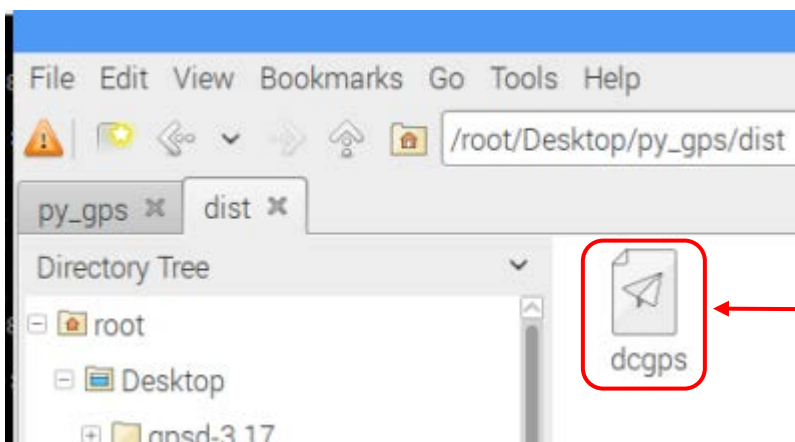
```
PRN = 009 Elevation = 058 Azimuth = 295 SNR = 020 Used = True
PRN = 026 Elevation = 038 Azimuth = 061 SNR = 018 Used = True
2017-11-08 02:58:40.809248
Latitude: 49 Deg, 15 Min, 1.2153707999999999 Sec, Longitude: -123 Deg, 0 Min, 4.9725395999999999 Sec

PRN = 006 Elevation = 016 Azimuth = 280 SNR = 028 Used = True
PRN = 031 Elevation = 004 Azimuth = 058 SNR = 015 Used = True
PRN = 002 Elevation = 010 Azimuth = 318 SNR = 019 Used = True
PRN = 007 Elevation = 028 Azimuth = 240 SNR = 022 Used = True
PRN = 023 Elevation = 086 Azimuth = 066 SNR = 017 Used = True
PRN = 009 Elevation = 058 Azimuth = 295 SNR = 020 Used = True
PRN = 026 Elevation = 038 Azimuth = 061 SNR = 018 Used = True
2017-11-08 02:58:41.430220
Latitude: 49 Deg, 15 Min, 1.2153707999999999 Sec, Longitude: -123 Deg, 0 Min, 4.9725395999999999 Sec

^C
*****
* connection ended.
*
* Enter 'start' to restart reading from your GPS
* Enter 'exit' to exit this application
* Or, disconnect this terminal, and hit 'q' to stop a running connection.*
*****
>> exit
```

## Step 6 (Alternative Start Method)

To start the program from the file explorer, navigate to the **dcgps** executable and double-click the file.



### **Step 7 (open the file)**

In the pop-up window click the *Execute in Terminal* button.

