

# Testing documentation – Dumb GPSD terminal client

Keir Foster, Alex Xia

**\*Actual result is the results in the following iteration, after the solution has been implemented**

| Num | Test Case   | Expected Result   | Actual Result*   | Passed                                      |
|-----|---|---|--|---|
| 1   | User calls executable in terminal with: ./dcgps                                   | Program opens in the open terminal  | As expected  | YES   |
| 2   | User clicks on executable   | Program opens in a new terminal   | First it asks u whether to directly execute, or execute in a terminal. Direct execute option doesn't work. Execute in terminal opens a new terminal and program runs fine. Noted in user manual.   | YES   |
| 3   | User calls start on GPS device connected but gpsd daemon not running              | The gpsd daemon will be undefined and will throw an exception   | As expected. Additionally, we caught the exception, so program doesn't die, just prints out an error message and return to start.  | YES   |
| 4   | User calls start on no GPS device connected and gpsd daemon running               | The gpsd daemon will return a json object with nulls(n/a), and program will return error message in console, and return to start state. | Surprisingly, the gpsd daemon returned a perfectly formatted json object, but with all fields null. So it would print n/a, and stop printing. However, no exceptions were thrown, and it'd stay in connected mode until user disconnects using hotkey. | YES   |
| 5   | User starts program, starts reading GPS data, then pulls out GPS dongle.          | The gpsd daemon will throw exception of some sort.  | Surprisingly, the gpsd daemon did not throw an exception. It reacted the same way as start program with daemon and no dongle, just stops feeding data.   | YES   |
| 6   | User loads program by calling it in terminal, then enters exit                    | Program dies, and returns to normal terminal  | Just as expected   | YES   |
| 7   | User loads program by double clicking it, then enters exit                        | Program dies, and terminal dies with it   | Just as expected   | YES   |
| 8   | User uses disconnect hotkey while disconnected                                    | Program will print out new prompt on new line because catch all exception clause was added.   | Just as expected   | YES   |
| 9   | User runs program, gpsd and dongle correctly configured, with no satellite signal | Program will keep printing time UTC system time string.   | Prints out a series of "n/a"s. Because even that is null.  | YES, bc program does not stop continuous re |

|    |   |  |  |     |
|----|---|--|--|-----|
| 10 | User runs program, gpsd and dongle correctly configured, with not enough satellites for a fix of longitude and latitude | Program prints whatever satellite information it can from the $\leq 3$ satellites, UTC time, but not longitude and latitude  | Just as expected. Surprisingly, even 1 satellite is enough to generate a TPV report object and fill in the TPV time field. | YES |
| 11 | User runs program, gpsd and dongle correctly configured, with enough satellites for a fix of longitude and latitude     | Program prints all satellite info on all satellite signals received,. The fix would fill in the longitude and latitude fields in the TPV object, and those would be printed out in deg, min, sec , direction format. | Just as expected.  | YES |

### Significant Test Cases Captured Below

Test Case3: gpsd daemon not running

```

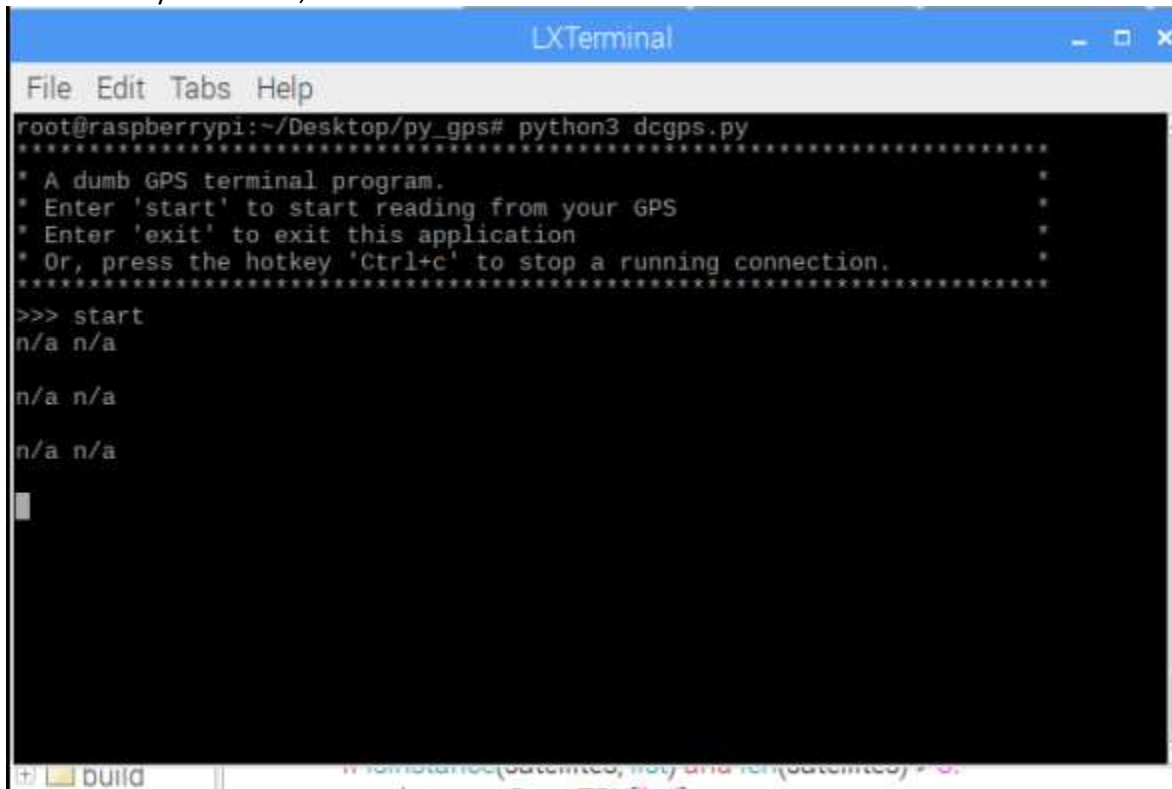
LXTerminal
File Edit Tabs Help
root@raspberrypi:/home/pi# cd /root/Desktop/py_gps/
root@raspberrypi:~/Desktop/py_gps# python3 dcgps.py
*****
* A dumb GPS terminal program.                                *
* Enter 'start' to start reading from your GPS                *
* Enter 'exit' to exit this application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

GPSDSocket.connect exception is--> [Errno 111] Connection refused
GPS3 gpsd connection at '127.0.0.1' on port '2947' failed

GPS3 send command fail with [Errno 32] Broken pipe
Warning: [Errno 107] Transport endpoint is not connected
*****
* 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.*
*****
>>> 

```

Test Case 3: yes daemon, no device



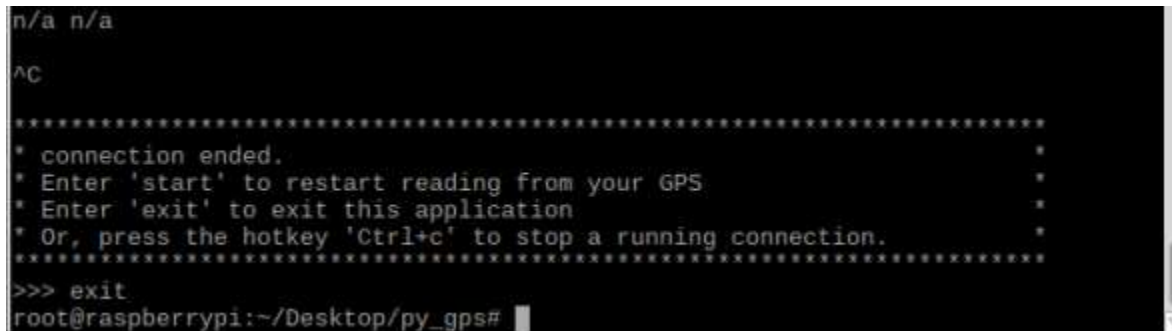
```
LXTerminal
File Edit Tabs Help
root@raspberrypi:~/Desktop/py_gps# python3 dcgps.py
*****
* A dumb GPS terminal program.                                     *
* Enter 'start' to start reading from your GPS                     *
* Enter 'exit' to exit this application                             *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

n/a n/a

n/a n/a

█
```

Test Case 6: exit command works

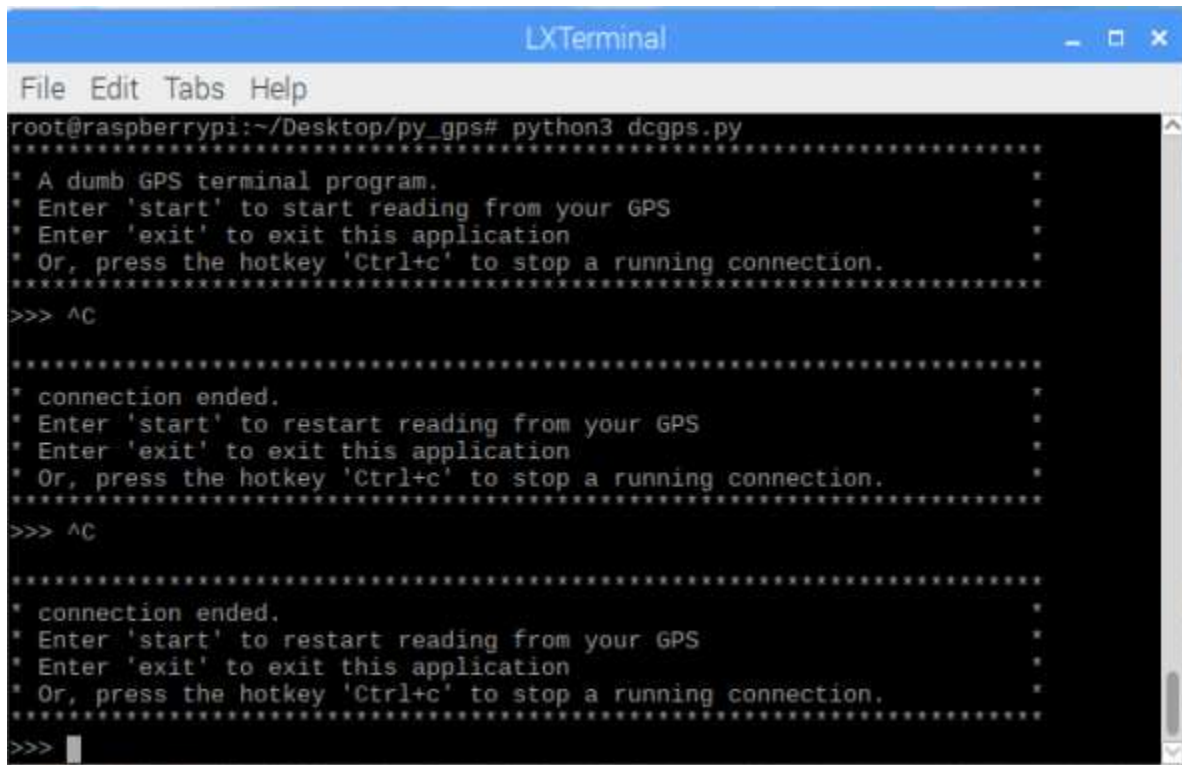


```
n/a n/a

^C

*****
* 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# █
```

Test Case 8: disconnect while disconnected

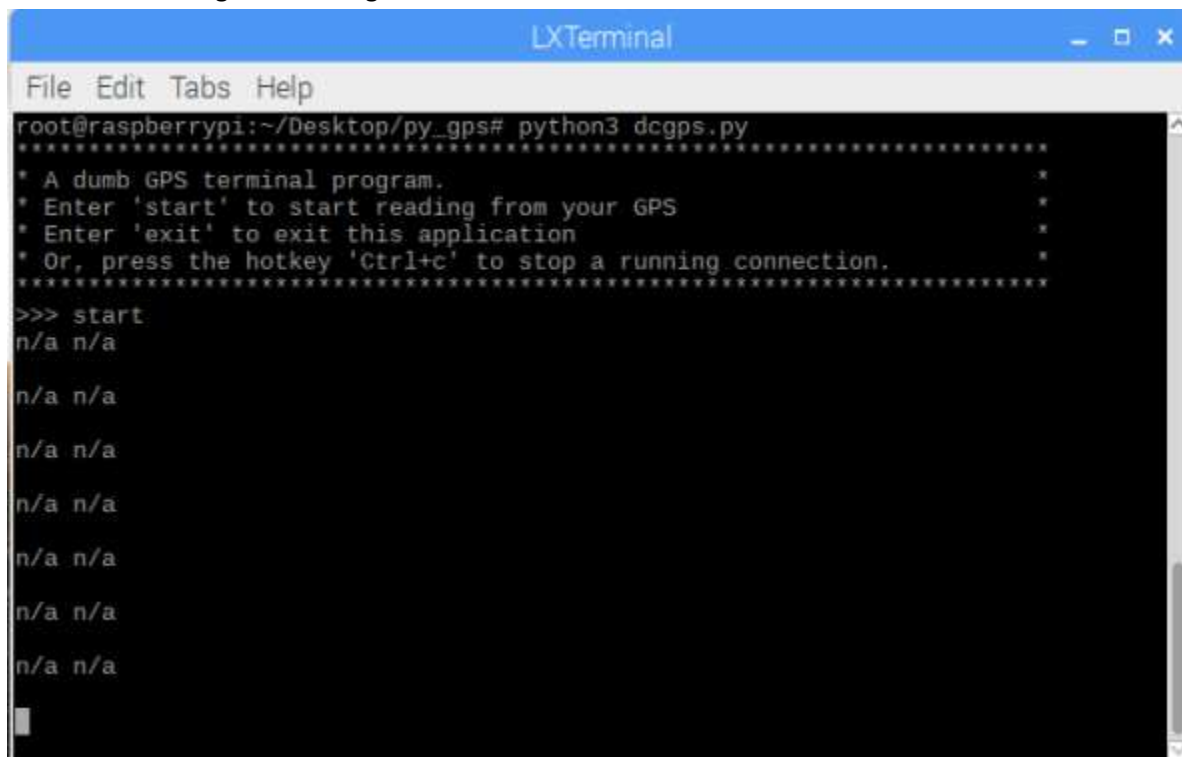


```
root@raspberrypi:~/Desktop/py_gps# python3 dcgps.py
*****
* A dumb GPS terminal program.                                *
* Enter 'start' to start reading from your GPS                *
* Enter 'exit' to exit this application                        *
* Or, press the hotkey 'Ctrl+c' to stop a running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

*****
* 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.*
*****
>>> ^C

*****
* 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.*
*****
>>> 
```

Test Case 9: No signal but dongle and daemon are fine



```
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
n/a n/a
n/a n/a
n/a n/a
n/a n/a

```

Test Case 10: Not enough satellites for fix

```
LXTerminal
File Edit Tabs Help
>>> start
n/a n/a

n/a n/a

n/a n/a

n/a n/a

n/a n/a

PRN = 005 Elevation = 026 Azimuth = 298 SNR = 023 Used = True
2017-11-08T05:24:17.340Z n/a

PRN = 005 Elevation = 026 Azimuth = 298 SNR = 023 Used = True
2017-11-08T05:24:18.330Z n/a

PRN = 005 Elevation = 026 Azimuth = 298 SNR = 023 Used = True
2017-11-08T05:24:19.330Z n/a

PRN = 005 Elevation = 026 Azimuth = 298 SNR = 023 Used = True
2017-11-08T05:24:20.330Z n/a
```

Test Case 11: Enough Satellites for a fix

```
LXTerminal
File Edit Tabs Help
Latitude: 49 Deg, 15 Min, 1.4666796000001199 Sec N
Longitude: 123 Deg, 0 Min, 7.0476912 Sec W

PRN = 007 Elevation = 043 Azimuth = 250 SNR = 031 Used = True
PRN = 006 Elevation = 007 Azimuth = 267 SNR = 018 Used = True
PRN = 009 Elevation = 074 Azimuth = 297 SNR = 022 Used = True
PRN = 030 Elevation = 013 Azimuth = 246 SNR = 023 Used = True
2017-11-08 03:34:08.335133
Latitude: 49 Deg, 15 Min, 1.341594 Sec N
Longitude: 123 Deg, 0 Min, 6.9668928 Sec W

PRN = 007 Elevation = 043 Azimuth = 250 SNR = 031 Used = True
PRN = 006 Elevation = 007 Azimuth = 267 SNR = 018 Used = True
PRN = 009 Elevation = 074 Azimuth = 297 SNR = 022 Used = True
PRN = 030 Elevation = 013 Azimuth = 246 SNR = 023 Used = True
2017-11-08 03:34:08.850183
Latitude: 49 Deg, 15 Min, 1.2304296000000599 Sec N
Longitude: 123 Deg, 0 Min, 6.817694400000001 Sec W

PRN = 007 Elevation = 043 Azimuth = 250 SNR = 031 Used = True
PRN = 006 Elevation = 007 Azimuth = 267 SNR = 018 Used = True
PRN = 009 Elevation = 074 Azimuth = 297 SNR = 022 Used = True
PRN = 030 Elevation = 013 Azimuth = 246 SNR = 023 Used = True
```