LOCATION FINDER

Test Document

Abstract

This document overviews the testing done for the Location Finder application.

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Contents

Document Overview

This document contains test cases and corresponding test data that we conducted to ensure that the application, Location Finder (dcgps.c), is working as intended.

The test cases will be divided according to features implemented in the application:

1. Menu Screen
2. Reading GPS data
3. Viewing current location in Google Maps
4. Viewing GPS wandering distance

Menu Screen Tests

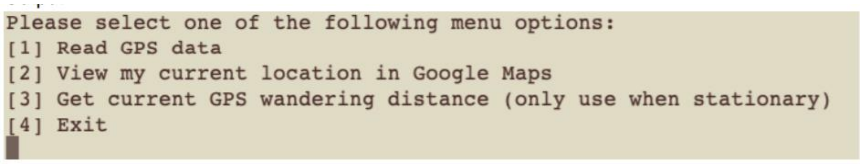
This category focuses on the proper user interface being displayed on the menu screen. The application's response to valid and invalid user input will be tested as well in this category.

Menu Screen

Expected: When the application starts, the user will be shown a menu and prompted to choose among the following options:

1. Read GPS data
2. View my current location in Google Maps
3. Get current GPS wandering distance (only use when stationary)
4. Exit

Output:



Passed (Yes or No): Yes

Menu Screen – Option 1

Expected: The user will be shown GPS data when they enter ‘1’ as input.

Output:

```
Option 1 selected
1 Satellites currently visible!
PRN:   6 Elevation: 90, Azimuth: 177, SNR: 29, Used: Y
2019-11-04T23:09:58.300Z: n/a
```

```
8 Satellites currently visible!
PRN:   3 Elevation: 75, Azimuth: 273, SNR: 36, Used: Y
PRN:  23 Elevation: 45, Azimuth: 273, SNR: 39, Used: Y
PRN:  14 Elevation: 29, Azimuth: 076, SNR: 32, Used: Y
PRN:   6 Elevation: 14, Azimuth: 325, SNR: 34, Used: Y
PRN:  22 Elevation: 71, Azimuth: 180, SNR: 27, Used: Y
PRN:  31 Elevation: 46, Azimuth: 058, SNR: 30, Used: Y
PRN:  25 Elevation: 09, Azimuth: 028, SNR: 28, Used: Y
PRN:   9 Elevation: 14, Azimuth: 268, SNR: 33, Used: Y
2019-11-04T23:15:45.300Z: Latitude: 49.251759 N; Longitude: -123.002938 W
```

Passed (Yes or No): Yes

Menu Screen – Option 2

Expected: The user will be shown their current location in Google Maps when they enter ‘2’ as input if a GPS fix is available.

Output:

```
Option 2 selected
Program window launching... close the browser to continue the program!
```

Passed (Yes or No): Yes

Menu Screen – Option 3

Expected: The user will be shown the current GPS wandering distance when they enter ‘3’ as input.

Output:

```
Option 3 selected

Running Option 3: Must have been stationary for the duration of runtime.
Reporting on any implict wandering due to GPS inaccuracies.
Disclaimer: Feature only updates when fix established
Total distance wandered: 0.000000 meters
```

Passed (Yes or No): Yes

Menu Screen – Option 4

Expected: The application will be terminated when the user enters ‘4’ as input.

Output:

```
4
Exiting the program...
```

Passed (Yes or No): Yes

Menu Screen – Invalid Input

Expected: The user will be shown a message to enter a valid input when the user enters an invalid input.

Output:

```
jh
Invalid response, please select a valid menu item.
```

Passed (Yes or No): Yes

Viewing GPS Data Tests

The following test cases focus on how the GPS data is displayed on the console screen while the application is running.

GPS Satellite Data Display

Expected: The application will show the GPS satellites that are in view, as well as their PRN, Elevation, Azimuth, SNR, and whether they are used or not.

Output:

```
10 Satellites currently visible!
PRN:   3 Elevation: 76, Azimuth: 267, SNR: 38, Used: Y
PRN:  23 Elevation: 46, Azimuth: 273, SNR: 34, Used: Y
PRN:  14 Elevation: 27, Azimuth: 076, SNR: 36, Used: Y
PRN:   6 Elevation: 15, Azimuth: 324, SNR: 36, Used: Y
PRN:  22 Elevation: 69, Azimuth: 177, SNR: 34, Used: Y
PRN:  31 Elevation: 44, Azimuth: 057, SNR: 34, Used: Y
PRN:  25 Elevation: 08, Azimuth: 027, SNR: 37, Used: Y
PRN:   9 Elevation: 15, Azimuth: 268, SNR: 35, Used: Y
PRN:   1 Elevation: 22, Azimuth: 208, SNR: 19, Used: Y
PRN:  26 Elevation: 27, Azimuth: 117, SNR: 22, Used: Y
2019-11-04T23:19:09.000Z: Latitude: 49.251481 N; Longitude: -123.002813 W
```

Passed (Yes or No): Yes

Current Coordinates Display

Expected: When a fix is detected, the application will show the current coordinates, as well as a timestamp showing when the coordinates were taken.

Output:

```
2019-11-04T23:19:19.000Z: Latitude: 49.251481 N; Longitude: -123.002813 W
```

Passed (Yes or No): Yes

No GPS Fix Display

Expected: When a fix is not detected, the application will show the "n/a" as well as a timestamp showing when the attempt was made to detect a fix.

Output:

```
1
Option 1 selected
No satellites visible... re-trying in 5 seconds!
No satellites visible... re-trying in 5 seconds!
No satellites visible... re-trying in 5 seconds!
No satellites visible... re-trying in 5 seconds!
No satellites visible... re-trying in 5 seconds!
Re-select option 1 to continue printing...
```

```
2019-11-04T23:44:19.000Z: n/a
```

Passed (Yes or No): Yes

Viewing Location in Google Maps Tests

The following test cases focus on the proper application actions being done when the user views their current location in Google Maps.

Opening Browser Window

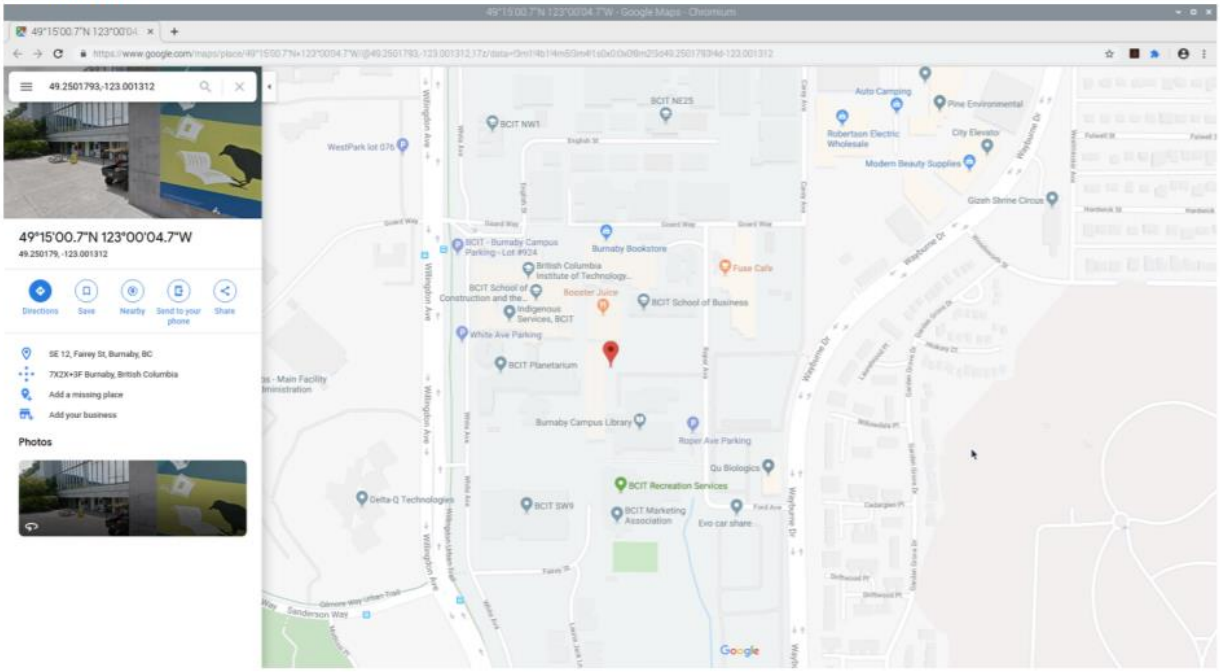
Expected: The program will open the default web browser and load a Google Maps page showing the user's current location. This will be done as soon as a GPS fix has been detected.

Output:

In terminal:

```
Option 2 selected
Program window launching... close the browser to continue the program!
```

In browser:



Passed (Yes or No): Yes

Closing Browser Window

Expected: The menu option screen will be shown to the user once they close the browser window opened when a GPS fix was detected,

Output:

```
Option 2 selected
Program window launching... close the browser to continue the program!
Please select one of the following menu options:
[1] Read GPS data
[2] View my current location in Google Maps
[3] Get current GPS wandering distance (only use when stationary)
[4] Exit
```

Passed (Yes or No): Yes

Viewing Wandering Distance Tests

The following test cases focus on the proper application actions being done when the user views their current GPS wandering distance.

Updating Wandering Distance (Fix)

Expected: When a fix has been established, the program will show the total distance wandered, and will update it continuously in real-time.

Output:

Output #1:

```
Running Option 3: Must have been stationary for the duration of runtime.
Reporting on any implict wandering due to GPS inaccuracies.
Disclaimer: Feature only updates when fix established
Total distance wandered: 0.004793 meters
```

Output #2:

```
Running Option 3: Must have been stationary for the duration of runtime.
Reporting on any implict wandering due to GPS inaccuracies.
Disclaimer: Feature only updates when fix established
Total distance wandered: 0.012268 meters
```

Passed (Yes or No): Yes

Passed (Yes or No): Yes

Updating Wandering Distance (No Fix)

Expected: When a fix has not been established, the program will show the current total distance wandered, and will continue displaying the same value until a fix has been detected.

Output:

```
Running Option 3: Must have been stationary for the duration of runtime.
Reporting on any implict wandering due to GPS inaccuracies.
Disclaimer: Feature only updates when fix established
Total distance wandered: 0.000000 meters
```

Passed (Yes or No): Yes