Simple GPS Server Example

- CGI
-

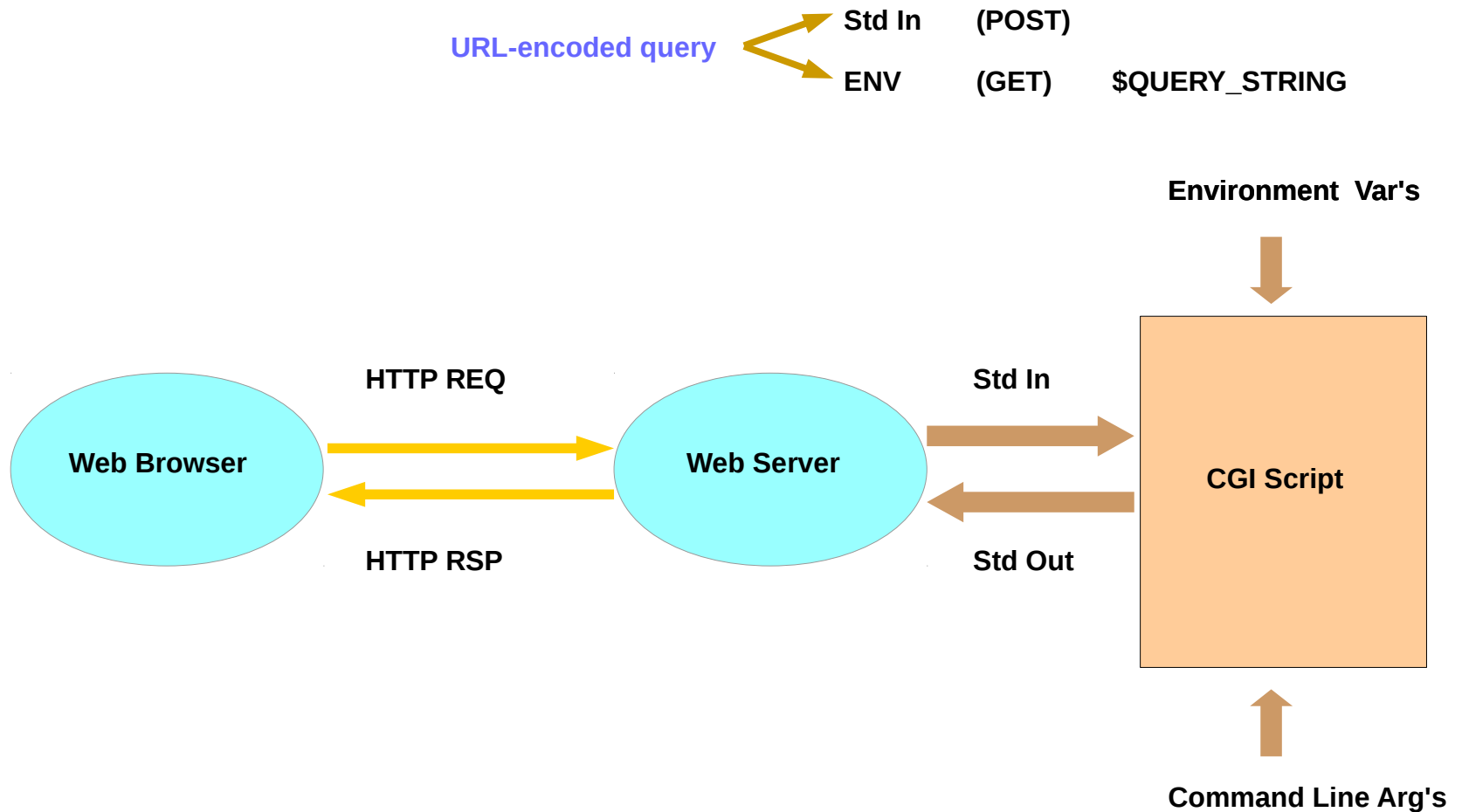Young Won Lim
02/25/2015

Please send corrections (or suggestions) to youngwlim@hotmail.com.

This document was produced by using OpenOffice and Octave.

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HTTP Request and Response

URL-encoded query

Std In   (POST)

ENV   (GET) $QUERY_STRING

Environment Var's

Web Browser

HTTP REQ

HTTP RSP

Web Server

Std In

Std Out

CGI Script

Command Line Arg's

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Software to be installed

Fedora on Raspberry Pi → Pidora

httpd on Pidora

sudo yum install httpd

gpsd on Pidora

sudo yum install gpsd gpsd-clients python-gps

First Start GPS and HTTP Daemon

By the root privilege

systemctl start httpd.service

killall gpsd

gpsd /dev/ttyUSB0 – F /var/run/gpsd.sock

Be sure to plug USB to proper place

```
/var/www:
total used in directory 16 available 3908832
drwxr-xr-x  4 root root 4096 Feb 24 12:02 .
drwxr-xr-x 20 root root 4096 Feb 23 15:26 ..
drwxr-xr-x  2 root root 4096 Feb 24 15:36 cgi-bin
drwxr-xr-x  2 root root 4096 Feb 24 12:03 html
```

```
/var/www/html:
total used in directory 16 available 3908832
drwxr-xr-x 2 root root 4096 Feb 24 12:03 .
drwxr-xr-x 4 root root 4096 Feb 24 12:02 ..
-rw-r--r-- 1 root root  161 Feb 24 12:03 index.html
-rw-r--r-- 1 root root  156 Feb 24 11:29 index.html~
```
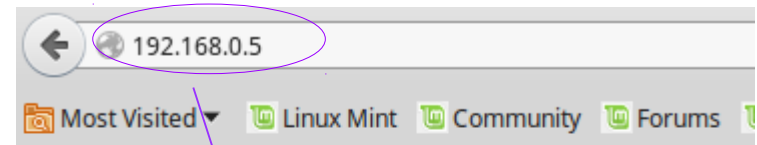
GPS server's IP address

192.168.0.5

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Hello, World!

To get GPS Data

Enter

```
<html>
<head>
</head>
<body>
Hello, World!
<P> To get GPS Data
<form action="cgi-bin/my.cgi">
<div><input type="submit" value="Enter"></div>
</form>
</body>
```

Pressing "Enter" causes this executable to be executed

**Display this html file**

Directory path: /var/www/cgi-bin

File: my.cgi

Directory path: /var/www/html

File: Index.html

HTTP REQ and RSP

Entering URL on the web browser
http://192.168.0.5

Environment Var's

HTTP REQ

Web Browser

HTTP RSP

Web Server
192.168.0.5

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192.168.0.5

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Hello, World!

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<html>
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</form>
</body>
```
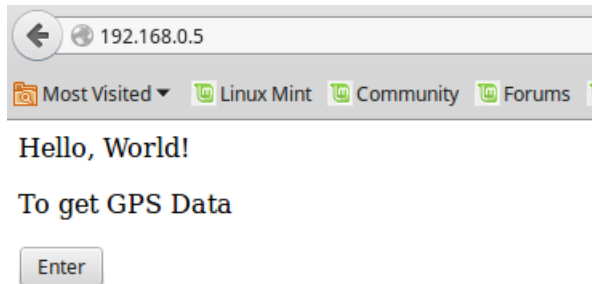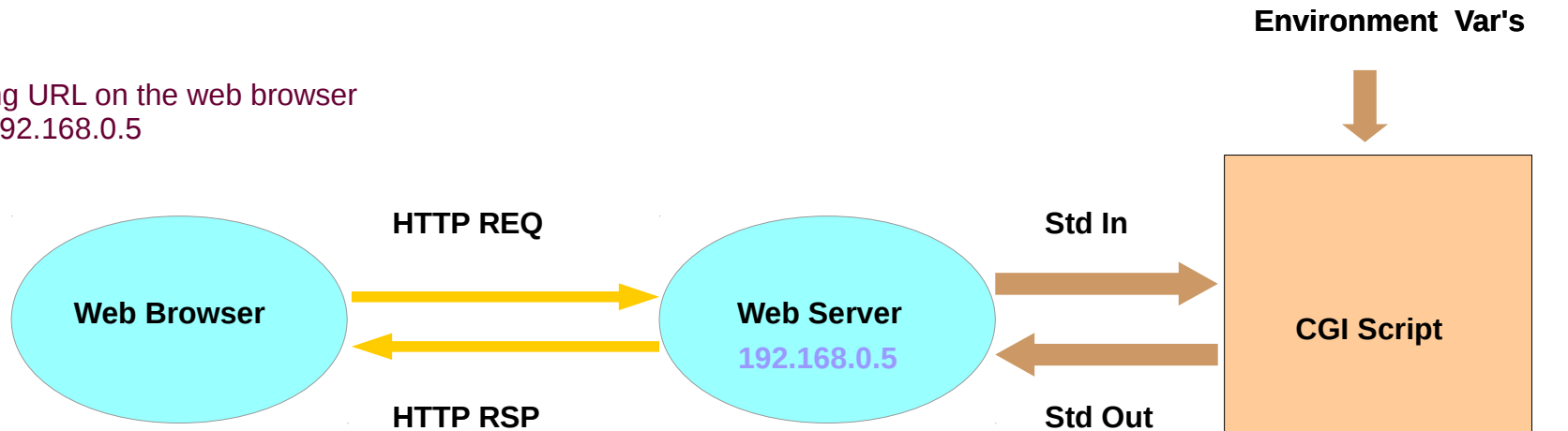
The web browser displays the text stream

Server sends this text stream to the client

my.cgi.c

my.cgi.c

```c
#include <stdio.h>
#include <stdlib.h>

int main(void)
{
  FILE *fp;
  char str[512];
  char *data;

  int pid;

  printf("%s%c%c\n", "Content-Type:text/html;charset=iso-8859-1",13,10);
  printf("<TITLE>GPS Data </TITLE>\n");
  printf("<H3>GPS Data </H3>\n");
  printf("<P>");

  fflush(stdout);


  if ((pid=fork())  == 0 ) {
    system('/var/www/cgi-bin/runscript");
  } else { int status;
    waitpid(pid, &status, 0);
  }

  return 0;
}
```

```
/var/www/cgi-bin:
total used in directory 140 available 3908828
drwxr-xr-x 2 root root  4096 Feb 24 15:36 .
drwxr-xr-x 4 root root  4096 Feb 24 12:02 ..
-rwxr-xr-x 1 root root  6772 Feb 24 15:36 my.cgi
-rw-r--r-- 1 root root  1006 Feb 24 15:35 my.cgi.c
-rwxr-xr-x 1 root root   161 Feb 24 15:27 runscript
```

gcc -o my.cgi my.cgi.c

This bash script (runscript) writes lon & lat values into standard output

runscript

```
/var/www/cgi-bin:
total used in directory 140 available 3908828
drwxr-xr-x 2 root root  4096 Feb 24 15:36 .
drwxr-xr-x 4 root root  4096 Feb 24 12:02 ..
-rwxr-xr-x 1 root root  6772 Feb 24 15:36 my.cgi
-rw-r--r-- 1 root root  1006 Feb 24 15:35 my.cgi.c
-rwxr-xr-x 1 root root   161 Feb 24 15:27 runscript
```

**Gpxlogger writes an xml
 output to the stdout,
which has longitude &
latitude values**

**grep -m 1
Find the first match and exit : the first
occurrence of "lat=" string**

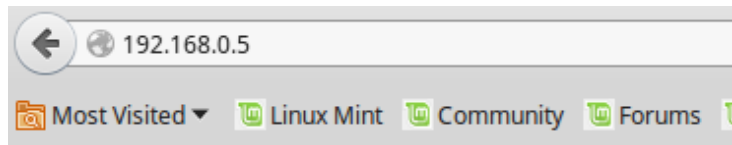```
#!/bin/bash

/usr/bin/killall gpxlogger &> /dev/null

/usr/bin/gpxlogger | grep -m 1 'lat=' | sed 's/<trkpt//; s/>//'

/usr/bin/killall gpxlogger &> /dev/null
```

**s/<trkpt//; s/>//
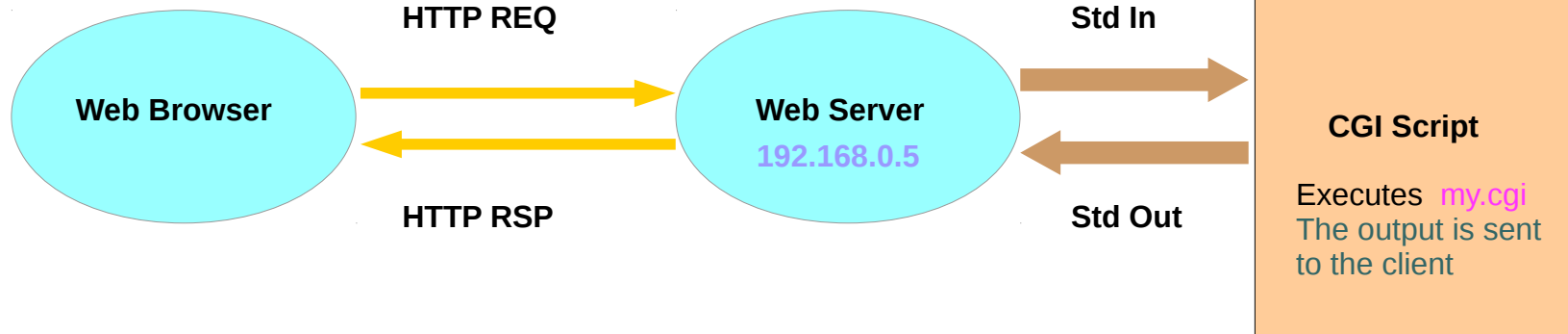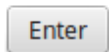Strips away <trkpt and >**

# HTTP RSP

# HTTP Request and Response

192.168.0.5

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Hello, World!

To get GPS Data

**Pressing Enter button**

Enter

**Environment Var's**

**HTTP REQ**

**Std In**

**Web Browser**

**Web Server**
**192.168.0.5**

**CGI Script**

Executes  my.cgi
The output is sent
to the client

**HTTP RSP**

**Std Out**

192.168.0.5/cgi-bin/my.cgi

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**GPS Data**

lat="          " lon="          )"

**Command Line Arg's**

The web browser display the received
contents from the server

# HTTP Request and Response

# Reference

**References**

[1]  http://en.wikipedia.org/
[2]  P.S. Wang, "Standard C++ with objected-oriented programming"

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02/25/2015