The HTTP Protocol

- HTTP
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Requests (1)

http://host:port/path?query

An HTTP request
from a client to a server
is simply sent using TCP

GET /index.html HTTP/1.1
Host: www.example.com

HTTP/1.1 200 OK
Date: Mon, 23 May 2005 22:38:34 GMT
Server: Apache/1.3.3.7 (Unix) (Red-Hat/Linux)
Last-Modified: Wed, 08 Jan 2003 23:11:55 GMT
Etag: "3f80f-1b6-3e1cb03b"
Accept-Ranges: none
Content-Length: 438
Connection: close
Content-Type: text/html; charset=UTF-8

Request (2)

http://host:port/path?query

GET /index.html HTTP/1.1
Host: www.example.com

GET method

field: value

field:

> Host:
> User-Agent:
> Refer:
>
> Accept:
> Accept-Language:
> Accept-Encoding:
> Accept-Charset:

Response (1)

Status codes

HTTP/1.1 200 OK
Date: Mon, 23 May 2005 22:38:34 GMT
Server: Apache/1.3.3.7 (Unix) (Red-Hat/Linux)
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Connection: close
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1xx: Informational
2xx: Success
3xx: Redirection
4xx: Client Error
5xx: Service Error

1xx:
2xx:
    200 OK:
    206 Partial Content:
3xx:
    301 Moved Permanently
    304 Not Modified:
    307 Temporary Redirect
4xx:
    400 Bad Request
    401 Unauthroized
    404 Not Found
    406 Not Acceptable
    415 Unsupported Media Type
5xx:
    500 Internal Server Error
    501 Not Implemented
    503 Service Unavailable

Response (2)

Field: value

HTTP/1.1 200 OK
Date: Mon, 23 May 2005 22:38:34 GMT
Server: Apache/1.3.3.7 (Unix) (Red-Hat/Linux)
Last-Modified: Wed, 08 Jan 2003 23:11:55 GMT
Etag: "3f80f-1b6-3e1cb03b"
Accept-Ranges: none
Content-Length: 438
Connection: close
Content-Type: text/html; charset=UTF-8

Date:
Server:
Etag:
Content-Length:
Content-Type:
Content-Encoding:
Location:

HTML Forms

Form Handling
Client side languages: Javascript
Server side languages: PHP, JSP

form.html

```
<html>
<body>
 <form action="form_handler.php" method="GET">
   User Name: <input name="user" type="text" />
   <input type="submit" />
 </form>
</body>
</html>
```

form_handler.php

```
<html>
<body>
<?php
 // This will print whatever the user put
 $name = $_GET['user'];
 echo "Hello, ". $name ."!";
?>
</body>
</html>
```

HTTP Request Methods

Form Handling
Client side languages: Javascript
Server side languages: PHP, JSP

GET Method

Requests a representation of the specified resource.
Requests using GET should only retrieve data and should have no other effect.
Query string is in the URI

POST Method

The POST request method is designed to request
that a web server accepts the data enclosed in the request message's body for storage.
Query string will be placed in the body of the HTTP request

GET & PUT

key value pairs

Name: Jonathan Doe
Age: 23
Formula: a + b == 13%!

application/x-www-form-urlencoded

Name=Jonathan+Doe&Age=23&Formula=a+%2B+b+%3D%3D+13%25%21

GET Method

http://host:port/path?Name=Jonathan+Doe&Age=23&Formula=a+%2B+b+%3D%3D+13%25%21

GET /path?Name=Jonathan+Doe&Age=23&Formula=a+%2B+b+%3D%3D+13%25%21

POST Method

POST /path HTTP/1.1
HOST: ...
Content-Type: application/X-www-form-urlencoded
Content-Length: ...
Empty line
Name=Jonathan+Doe&Age=23&Formula=a+%2B+b+%3D%3D+13%25%21

Authentication

IP-address-based
Form-based
HTTP Basic
HTTP Digest

Sessions

Hidden Form Fields
Cookies

SSL and TLS

Secure Sockets Layer (SSL)
Transport Layer Security (TLS)

Client and Server

HTTP architectures

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Proxy

Proxy

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Gateway

Gateway

Tunnel

Tunnel

Intermediate Nodes

A chain of intermediate systems

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Gnuplot and Canvas

In **Gnuplot**,

file:///home/young/myplot.html   W ▾ Wil
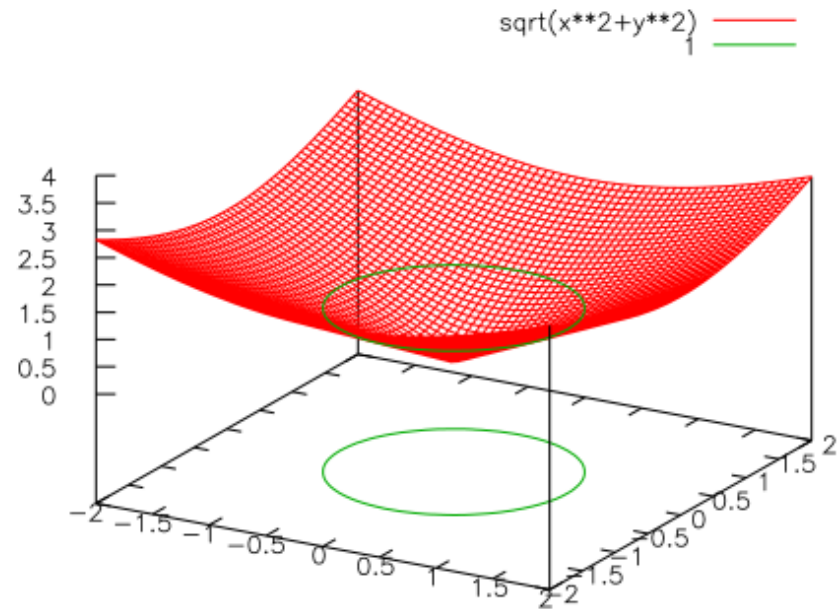
```
set terminal 'canvas'
set output 'myplot.html'

set view 60, 30, 0.85, 1.1
set samples 60, 60
set isosamples 61, 61

set contour both
set cntrparam levels discrete
1, 4

set xrange [-2: 2]
set yrange [-2: 2]
set zrange [0: 4]
splot sqrt(x**2+y**2)
```

sqrt(x**2+y**2)
1

Reference

References

[1] http://en.wikipedia.org/
[2] http://www.w3schools.com/
[3] K.H. Koh, HTML, CSS, Javascript (in Korean)
[4] Gnuplot manual