

# Understanding the web basics @PyLadies Berlin



Mei Li Triantafyllidi @ 

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For ...

beginners in web

About ...

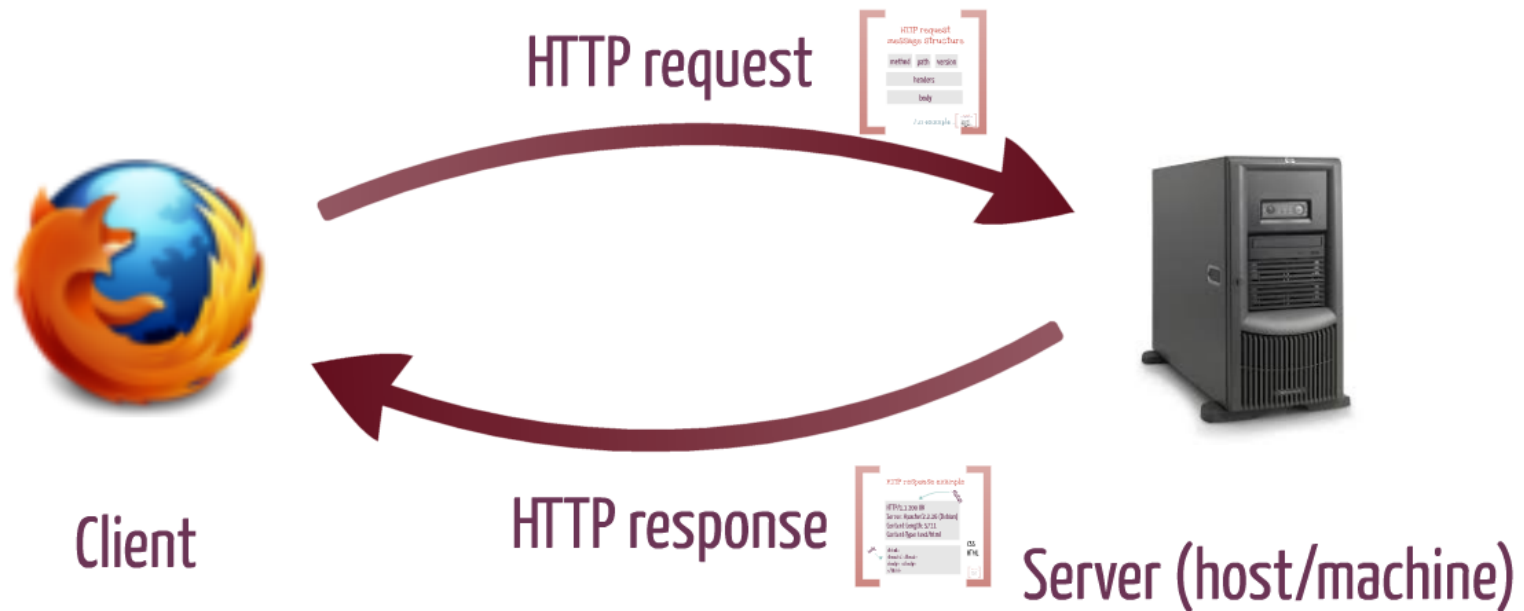
- getting a page
- interactive web
- big picture

# web basics

## HTTP

HyperTextTransferProtocol

when we type a URL in the  
browser...



# HTTP

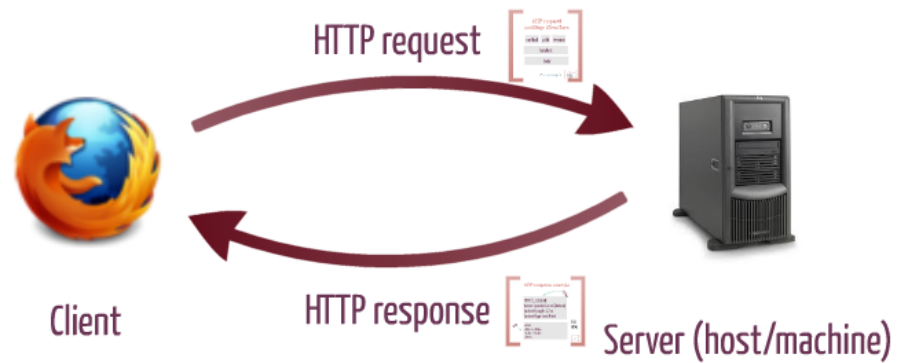
HyperTextTransferProtocol

## web basics

### HTTP

HyperText Transfer Protocol

when we type a URL in the  
browser...



# HTTP request message structure

method

path

version

headers

body

An example ...

```
HTTP request
http://docs.python.org/2.6/tutorial/
method path version
GET /2.6/tutorial/HTTP/1.1
Host: docs.python.org
User-Agent: Mozilla/5.0
Cookie: 49R32716/MS42h
} headers
..empty body
```

# HTTP request

<http://docs.python.org/2.6/tutorial/>

method

path

version

GET /2.6/tutorial/ HTTP/1.1

Host: docs.python.org

User-Agent: Mozilla/5.0

Cookie: 4983271j97d842h

}

headers

...empty body

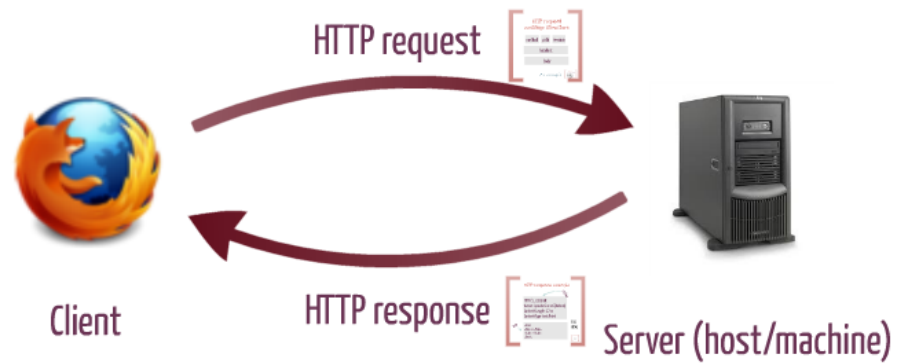


## web basics

### HTTP

HyperText Transfer Protocol

when we type a URL in the  
browser...



# HTTP reSponse example

status



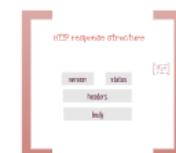
```
HTTP/1.1 200 OK
Server: Apache/2.2.16 (Debian)
Content-Length: 5711
Content-Type: text/html
```

body



```
<html>
<head>../</head>
<body>../</body>
</html>
```

CSS  
HTML



# HTTP response structure

version

status

headers

body

## HTTP response status

- 200 OK
- 3xx redirect (302 FOUND)
- 4xx client error (401, 403, 404)
- 5xx server error (500, 503)

Internal Server  
Error

500 Internal Server Error

Internal Server Error

Internal Server Error

Internal Server Error

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Internal Server Error

# HTTP response status

- 200 OK
- 3xx redirect (302 FOUND)
- 4xx client error (401, 403, 404)
- 5xx server error (500, 503)

# Internal Server Error

The server encountered an internal error or misconfiguration and was unable to complete your request.

Please contact the server administrator, [webmaster@richardknop.com](mailto:webmaster@richardknop.com) and inform them of the time the error occurred, and anything you might have done that may have caused the error.

More information about this error may be available in the server error log.

Additionally, a 500 Internal Server Error error was encountered while trying to use an ErrorDocument to handle the request.

---

*Apache/2.2.9 (Unix) mod\_ssl/2.2.9 OpenSSL/0.9.8e-fips-rhel5 DAV/2  
mod\_auth\_passthrough/2.1 mod\_bwlimited/1.4 FrontPage/5.0.2.2635 Server at  
richardknop.com Port 80*

Lets see it in action

open developers tools..





So far...

- client performs HTTP request
- server processes request
- server returns HTTP response
- browser renders body

... but it's too static

# Interacting with the web

- navigating ....
- filter results
- show a dropdown
- login
- autocomplete

## Navigating

clicking on a link

- new HTTP request
- renders new page

`whatlink.is.gif`

## Query string

- filter results by category
- search for a query

example: `q=python&cat=web`

GET /index.php?category=web&search=python HTTP/1.1  
Host: www.python.org  
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10\_7\_2; rv:11.0) Gecko/20100101 Firefox/11.0

## Client-Side Interaction

### JavaScript

- display/hide a dropdown
- show a pop-up
- animations
- tabs

...manipulates the DOM (Document Object Model)

## POST HTTP request

- send information to the server
- not visible in the URL
- information are included in the body

... request payload

## AJAX

HTTP requests in the background



# Navigating

clicking on a link..

- new HTTP request
- renders new page

```
<a href="/link_to_go">
```

## Interacting with the web

- navigating ...
- filter results
- show a dropdown
- login
- autocomplete

searching  
the marketplace  
search results

searching  
the marketplace  
search results

searching  
the marketplace  
search results

searching  
the marketplace  
search results

searching  
the marketplace  
search results

# Query String

- filter results by category
- search for a query

same path but parametrized....

```
GET /berlin/?categories=mediterranean&online_payment=true HTTP/1.1
Host: www.lieferheld.de
Connection: keep-alive
User-Agent: Mozilla/5.0 (X11; Linux i686)
```

## Interacting with the web

- navigating ...
- filter results
- show a dropdown
- login
- autocomplete

**jQuery.ajax**  
- The main jQuery  
method for making  
asynchronous  
AJAX requests

**\$.getJSON**  
- jQuery method for  
loading JSON data  
from the server

**\$.ajaxSetup**  
- Global AJAX settings  
- \$.ajaxSetup({  
 dataType: 'json',  
 url: 'http://api.jquery.com/'  
})

**\$.ajax**  
- \$.ajax({  
 url: 'http://api.jquery.com/',  
 data: {  
 'name': 'jQuery',  
 'version': '1.4.2'  
 },  
 success: function(data) {  
 // success  
 },  
 error: function(xhr, status, error) {  
 // error  
 },  
 complete: function(xhr, status) {  
 // complete  
 }  
})

**AJAX**  
- HTTP requests in the background

client-side interaction

## JavaScript

- display/hide a dropdown
- show a pop up
- animations
- tabs

... manipulates the DOM (Document Object Model)

# Interacting with the web

- navigating ...
- filter results
- show a dropdown
- login
- autocomplete

## Navigating

clicking on a link.

- new HTTP request
- renders new page

• [helpful link to go!](#)

Query String

- filter results by category
- search for a query

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POST HTTP request

- send information to the server
- not visible in the URL
- information are included in the body

... request payload

client-side interaction

## JavaScript

- display/hide a dropdown
- show a pop up
- animations
- tabs

- ...manipulates the DOM (Document Object Model)

## AJAX

HTTP requests in the background

# POST HTTP request

- send information to the server
- not visible in the URL
- information are included in the body

... request payload

# Interacting with the web

- navigating ....
- filter results
- show a dropdown
- login
- autocomplete

**Navigation**

- clicking on a link
- new HTTP request
- render new page

**Query string**

- filter results by category
- search for a query

**Client-side information**

**JavaScript**

- display/hide information
- store page up
- animation
- etc.

... connected to the DB (Database Object Model)

**POST HTTP request**

- send information to the server
- we receive the data
- information is stored in the bag

request payload

**AJAX**

HTTP requests in the background



# AJAX

HTTP requests in the background

So far

- query string parameters
- JavaScript
- POST HTTP request
- AJAX

... examples



# The Big picture

## Frontend browser/client

- sends HTTP requests
- renders HTML, CSS
- executes JavaScript
- handles redirects
- performs AJAX requests

## Backend Server-Side

- handles HTTP requests
- executes server-side languages eg. Python, PHP, Java, Ruby
- send HTTP responses

the end

questions?