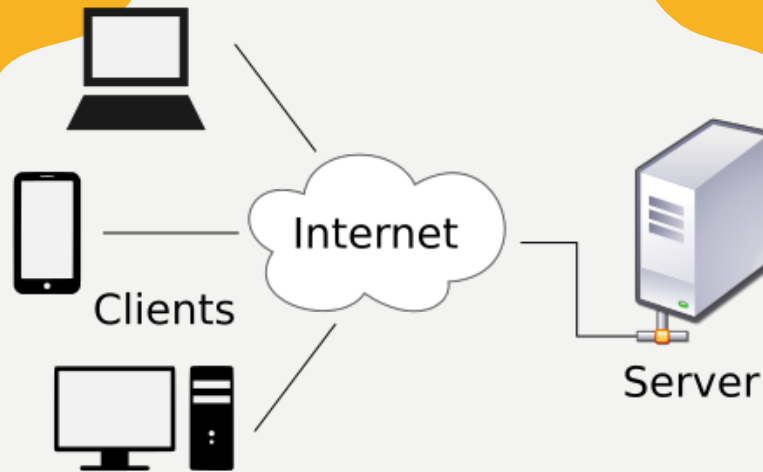# CLIENT-SERVER

HOW WEB APPLICATIONS ARE DELIVERED OVER THE INTERNET

NETWORK STACK

OSI Layer	Protocol
7. Application	HTTP, FTP, SMTP ...more including DNS
6. Presentation	
5. Session	
4. Transport	TCP (packets)
3. Network	IP (e.g. 172.217.4.46)
2. Data link	Ethernet
1. Physical	IEEE 802.3ah

NETWORK STACK

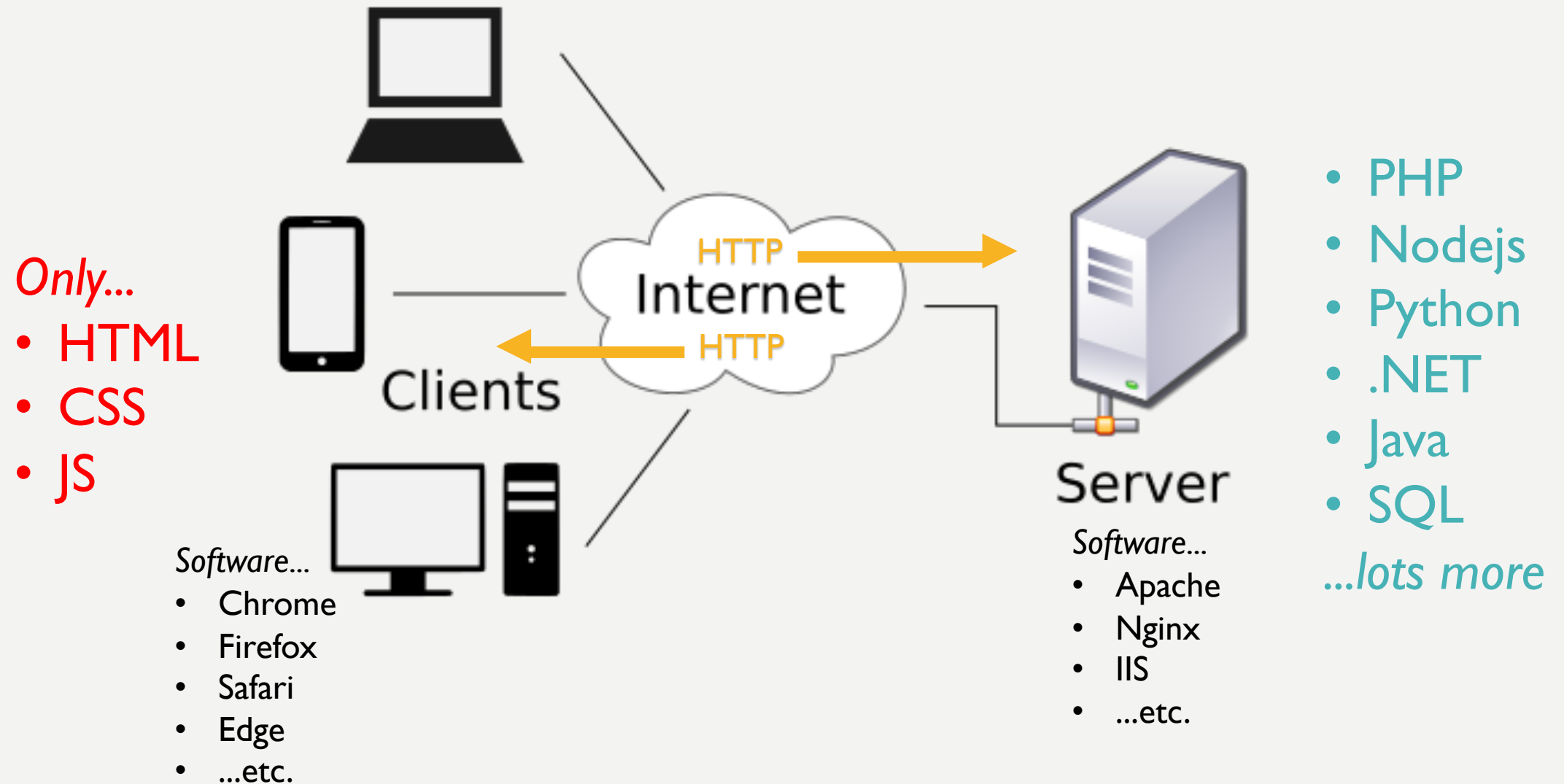| OSI Layer	Protocol
7. Application	HTTP, FTP, SMTP ...more including DNS
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1. Physical	IEEE 802.3ah

UNIFORM RESOURCE LOCATORS (URLS)

...a type of URI

*A Uniform Resource Identifier (**URI**) is a string of characters that unambiguously identifies a particular resource. A concrete syntax and associated protocols define each **URI**. The most common form of **URI** is the Uniform Resource Locator (URL), frequently referred to informally as a web address.*
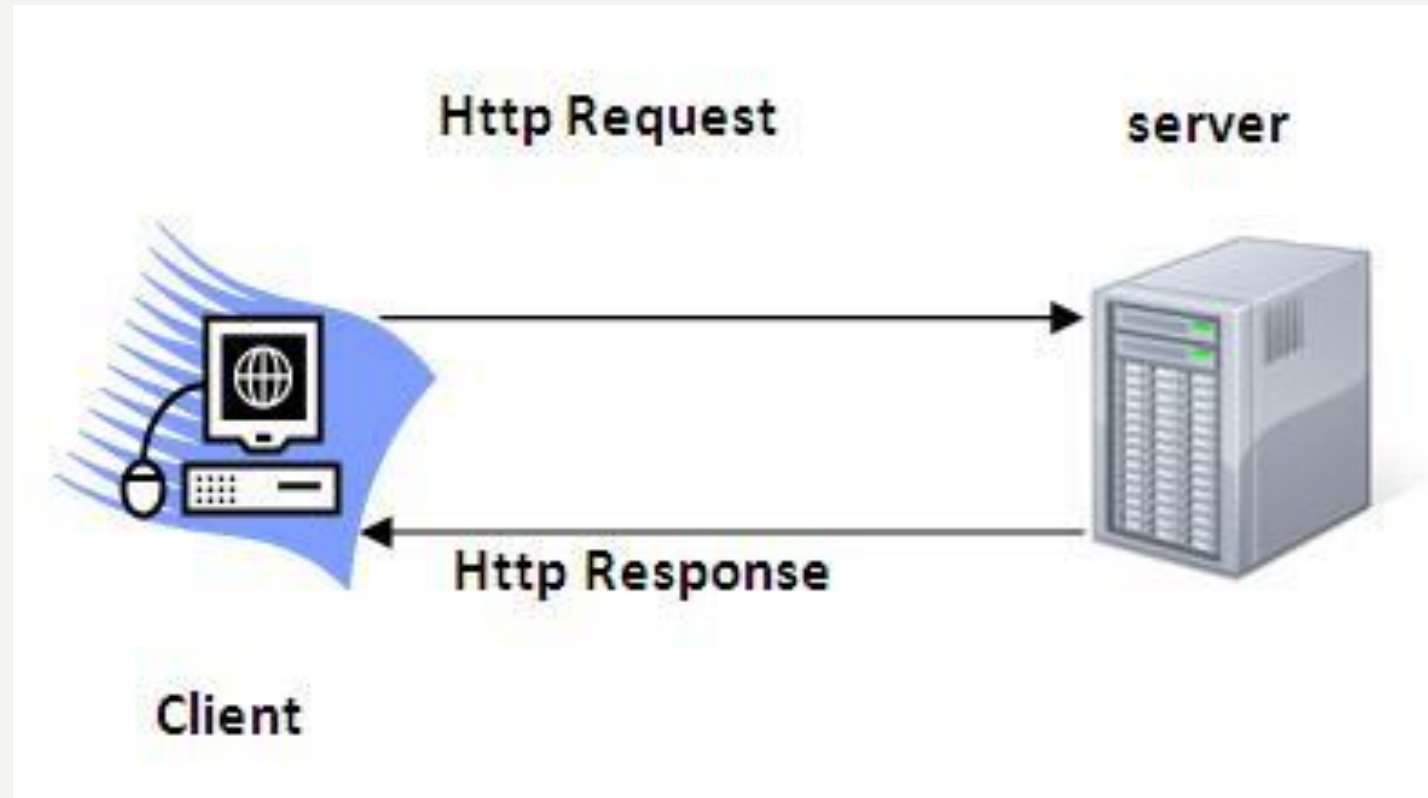
Type	Protocol	Sub-domain or machine name	Domain and TLD	Path
HTML	https://	www	rochester.edu	/index.html /college/honesty/index.html
Other resource	https://	cs	rochester.edu	/people/visitors/kostin_robert/assets/images/kostin.jpg
Script	https://		rkostin.com	contact.php
Query	https://		google.com	/search?tbm=isch&q=robert+kostin
Data	http://	www	example.com	/api/users/8675309

PROGRAMMING LANGUAGES

Only...
- HTML
- CSS
- JS

Clients

Software...
- Chrome
- Firefox
- Safari
- Edge
- ...etc.

HTTP

Internet

HTTP

Server

Software...
- Apache
- Nginx
- IIS
- ...etc.

- PHP
- Nodejs
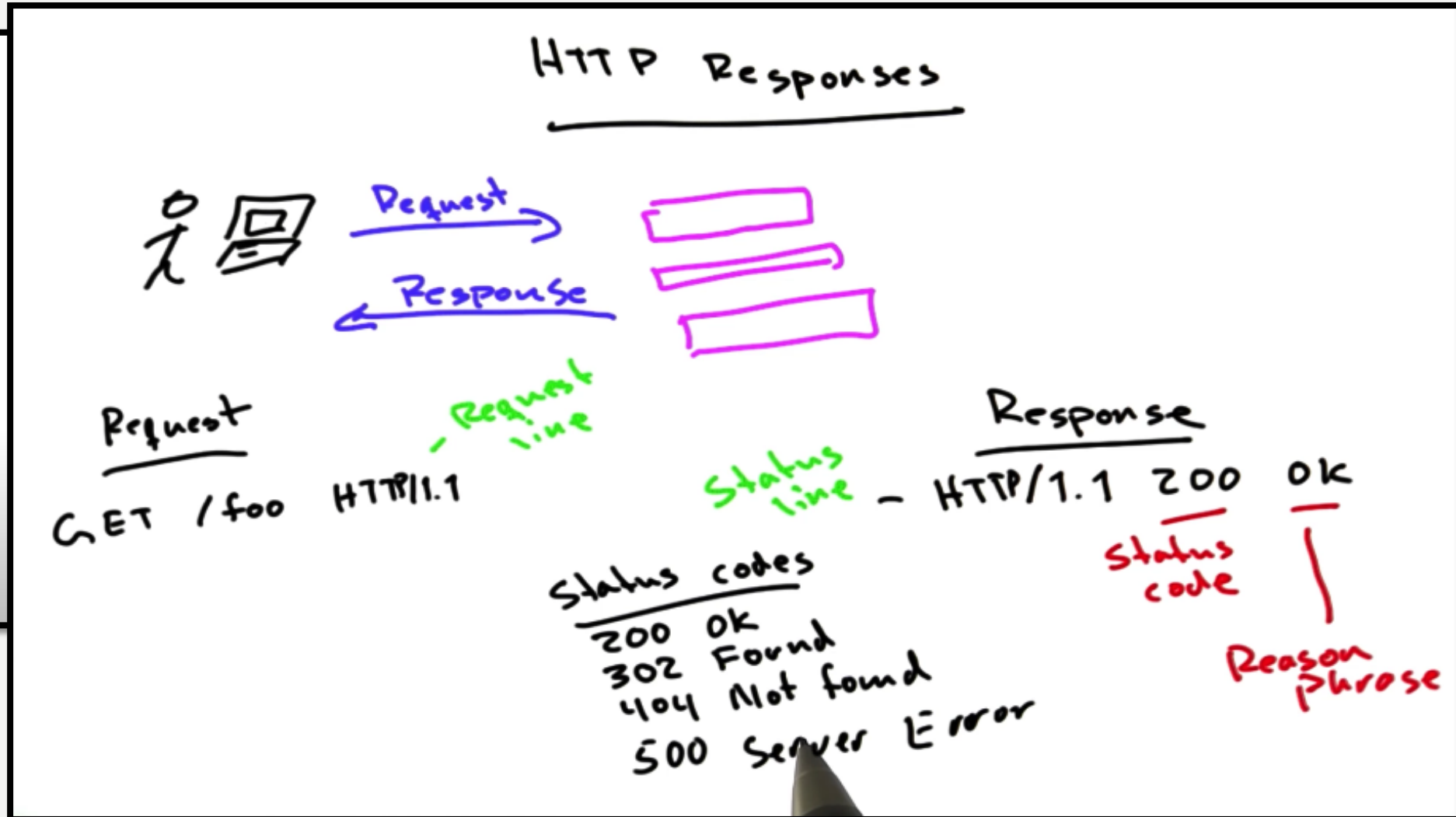- Python
- .NET
- Java
- SQL

...lots more

HYPERTEXT TRANSFER PROTOCOL (HTTP)

The Request/Response Cycle

THE REQUEST/RESPONSE CYCLE
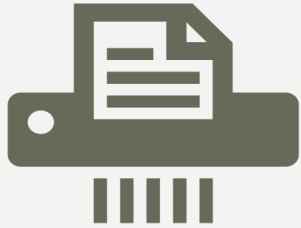
WHY STATELESS?

MORE RELIABLE

CRASH-PROOF

FASTER

EASIER TO WRITE (AND MAINTAIN)

WAYS TO MAINTAIN STATE IN A STATELESS PROTOCOL

Cookies

Client-side state

Small file → user's web browser

Write user information to the file

Send the file back to the server

Server-side Session

Server-side state

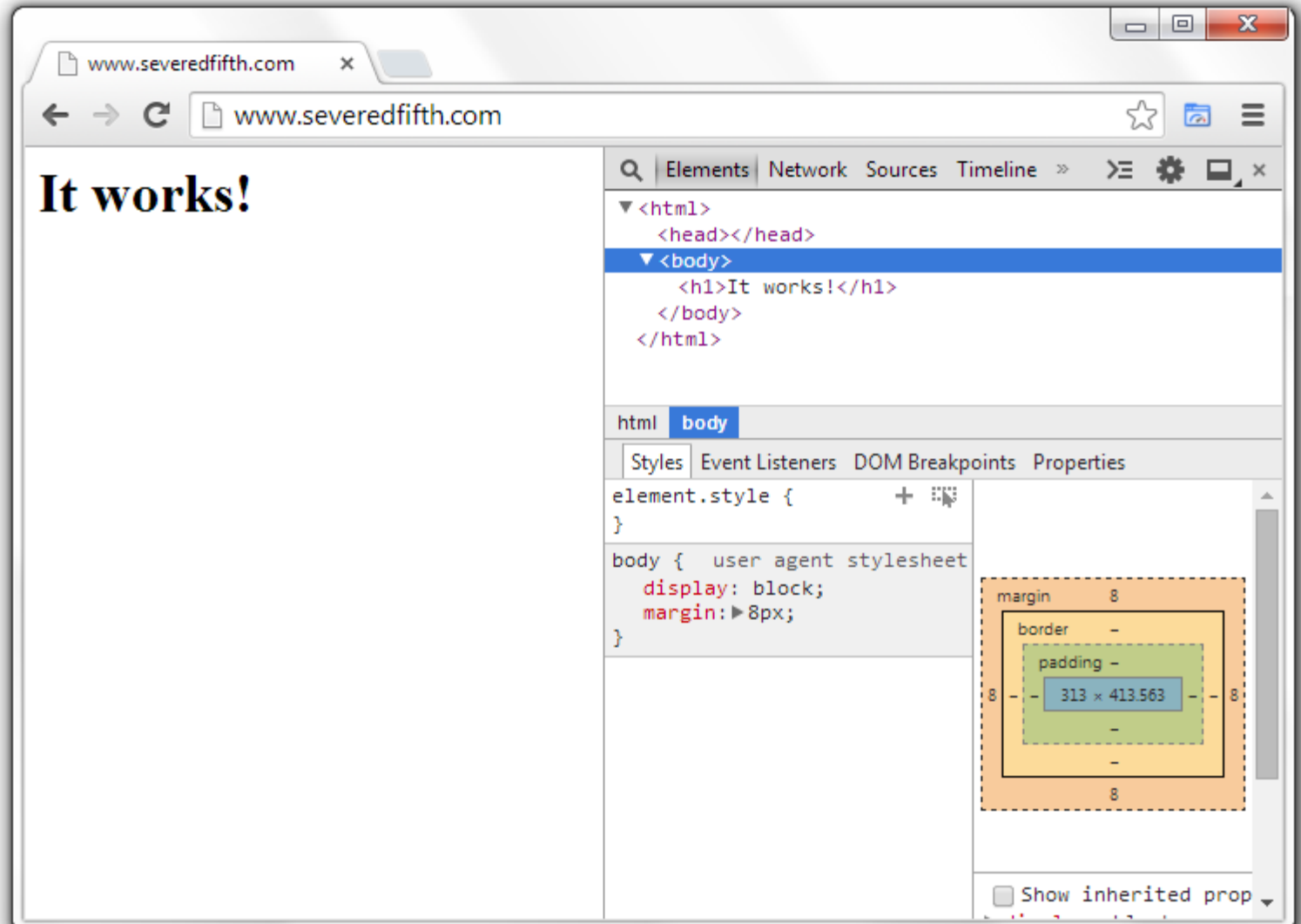PHP function: session_start() → PHP (on the server) remembers

Session variables: $_SESSION

Until: session_unset() and session_destroy()or timeout

MORE HTTP

Use your developer tools...

- Methods
  - GET
  - POST

  ...lots more

- Status Codes
  - 200
  - 404

  ...lots more

- Headers
  - Meta data and content

FIN