

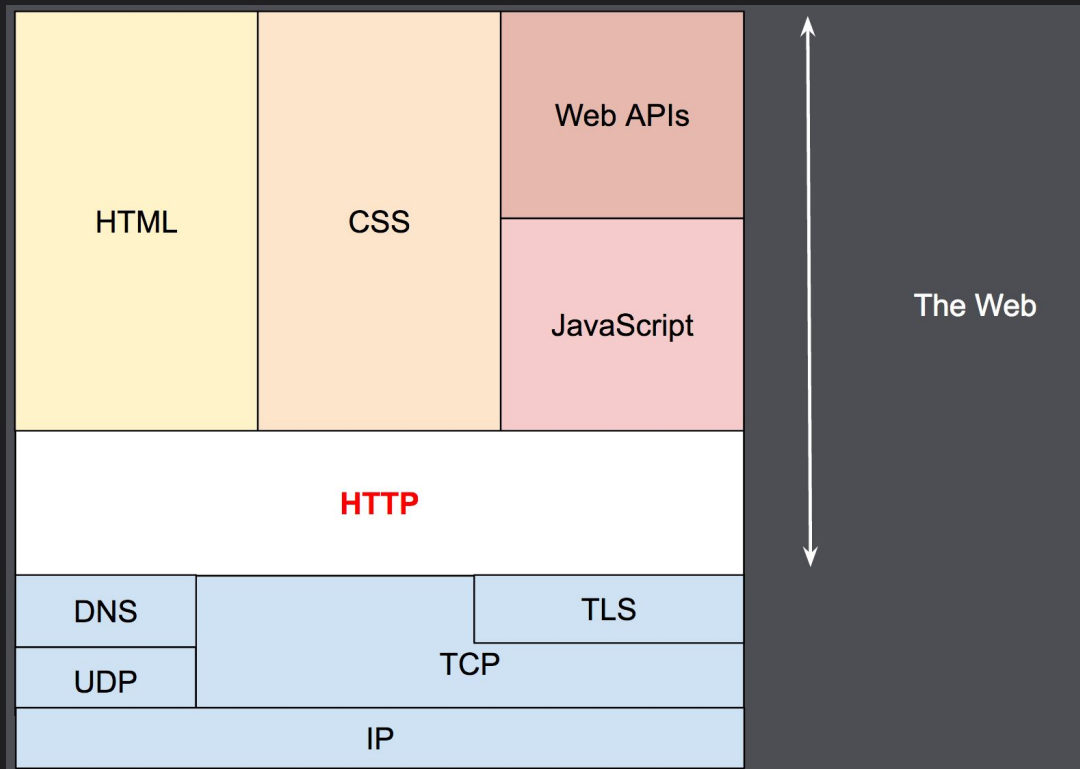
# HTTP

CS 272 Software Development

# Terminology

- **Uniform Resource Locator (URL)**
  - Identifies web pages and other resources
- **Hypertext Transport Protocol (HTTP)**
  - Transfers web pages from server to client (browser)
- **Hypertext Markup Language (HTML)**
  - Creates web pages (parsed/displayed by browser)

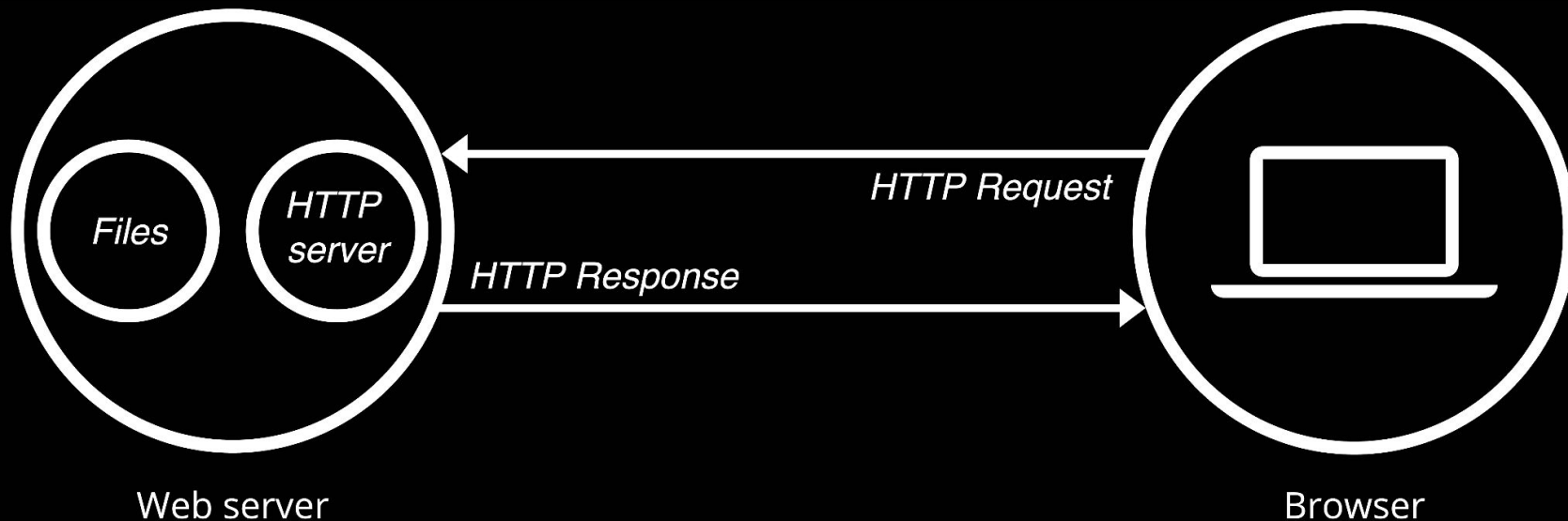




<https://developer.mozilla.org/en-US/docs/Web/HTTP/Overview>



# Client-Server Overview



[https://developer.mozilla.org/en-US/docs/Learn/Common\\_questions/What\\_is\\_a\\_web\\_server](https://developer.mozilla.org/en-US/docs/Learn/Common_questions/What_is_a_web_server)

# HTTP Evolution

Version	Year	Description
v0.9	1990	Simple one line protocol
v1.0, v1.1	1996/7	Headers, status codes, reusable connections, ...
HTTP/2	2015	Binary instead of text protocol
HTTP/3	2022	Uses multiplexed transport protocol

[https://developer.mozilla.org/en-US/docs/Web/HTTP/Basics\\_of\\_HTTP/Evolution\\_of\\_HTTP](https://developer.mozilla.org/en-US/docs/Web/HTTP/Basics_of_HTTP/Evolution_of_HTTP)



# HTTP Request Methods

- GET
- HEAD
- POST
- PUT
- DELETE
- PATCH
- CONNECT
- OPTIONS
- TRACE

<https://developer.mozilla.org/en-US/docs/Web/HTTP/Methods>



# Submitting Data

- **GET Method**

- Encoded data in URL as query string  
(e.g. <https://www.google.com/search?q=usfca>)
- Good for getting or retrieving specific data

- **POST Method**

- Encodes data in request message body
- Good for posting data to be stored on server



# HTTP/1.1 GET 302 Found

```
$ telnet 138.202.168.1 80
```

```
GET /~cs272/simple/hello.html HTTP/1.1
```

```
Host: www.cs.usfca.edu
```

```
HTTP/1.1 302 Found
```

```
...
```

```
Location: https://www.cs.usfca.edu/~cs272/simple/hello.html
```

```
Content-Length: 233
```

```
Content-Type: text/html; charset=iso-8859-1
```

COMMAND vs INPUT vs OUTPUT (abbreviated) · <http://www.cs.usfca.edu/~cs272/simple/hello.html>





# HTTP/1.1 GET 200 OK

```
$ openssl s_client -connect www.cs.usfca.edu:443 -crlf
```

```
GET /~cs272/simple/hello.html HTTP/1.1
```

```
Host: www.cs.usfca.edu
```

```
Connection: close
```

```
HTTP/1.1 200 OK
```

```
...
```

```
Content-Length: 305
```

```
Connection: close
```

```
Content-Type: text/html; charset=utf-8
```

COMMAND vs INPUT vs OUTPUT (abbreviated) · <https://www.cs.usfca.edu/~cs272/simple/hello.html>



# HTTP/1.1 GET 404 NOT FOUND

```
$ openssl s_client -connect www.cs.usfca.edu:443 -crlf
```

```
GET /~cs272/nowhere.html HTTP/1.1
```

```
Host: www.cs.usfca.edu
```

```
Connection: close
```

```
HTTP/1.1 404 Not Found
```

```
...
```

```
Content-Length: 196
```

```
Connection: close
```

```
Content-Type: text/html; charset=iso-8859-1
```

COMMAND vs INPUT vs OUTPUT (abbreviated) · <https://www.cs.usfca.edu/~cs272/nowhere.html>



# HTTP/1.1 DELETE 405 Not Allowed

```
$ openssl s_client -connect www.cs.usfca.edu:443 -crlf
```

```
DELETE /~cs272/simple/hello.html HTTP/1.1
```

```
Host: www.cs.usfca.edu
```

```
Connection: close
```

```
HTTP/1.1 405 Method Not Allowed
```

```
...
```

```
Allow: GET,POST,OPTIONS,HEAD
```

```
Content-Length: 223
```

```
Content-Type: text/html; charset=iso-8859-1
```

COMMAND vs INPUT vs OUTPUT (abbreviated) · <https://www.cs.usfca.edu/~cs272/simple/hello.html>



# HTTP/1.1 DELETE 405 Not Allowed

```
$ openssl s_client -connect www.cs.usfca.edu:443 -crlf
```

```
OPTIONS /~cs272/simple/hello.html HTTP/1.1
```

```
Host: www.cs.usfca.edu
```

```
Connection: close
```

```
HTTP/1.1 200 OK
```

```
...
```

```
Allow: GET,POST,OPTIONS,HEAD
```

```
Content-Length: 0
```

```
Content-Type: text/html; charset=utf-8
```

COMMAND vs INPUT vs OUTPUT (abbreviated) · <https://www.cs.usfca.edu/~cs272/simple/hello.html>



# HTTP/1.1 GET 418 Teapot

```
$ openssl s_client -connect www.google.com:443 -crlf
```

```
GET /teapot HTTP/1.1
```

```
Host: www.google.com
```

```
Connection: close
```

```
HTTP/1.1 418 I'm a Teapot
```

```
Content-Type: text/html; charset=ISO-8859-1
```

```
...
```

```
The requested entity body is short and stout.
```

```
Tip me over and pour me out.
```

COMMAND vs INPUT vs OUTPUT (abbreviated) · <https://www.google.com/teapot>



# Questions?

