

Hypertext Transfer Protocol (HTTP)

Hypertext Transfer Protocol (HTTP)

- In addition to protocols that dictate how information is communicated from machine to machine and application to application (IP and TCP, respectively), it is frequently the case that the application itself has a system of rules for how to interpret the data that was sent.
- HTTP is one such example of an *application layer protocol*, which specifically dictates the format by which clients request web pages from a server, and the format via which servers return information to clients.

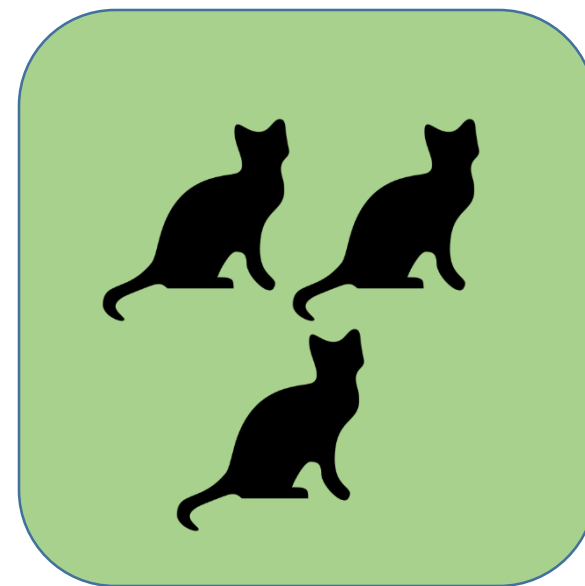
Hypertext Transfer Protocol (HTTP)

- Other application layer protocols include:
 - File Transfer Protocol (FTP)
 - Simple Mail Transfer Protocol (SMTP)
 - Data Distribution Service (DDS)
 - Remote Desktop Protocol (RDP)
 - Extensible Message and Presence Protocol (XMPP)

Hypertext Transfer Protocol (HTTP)



You

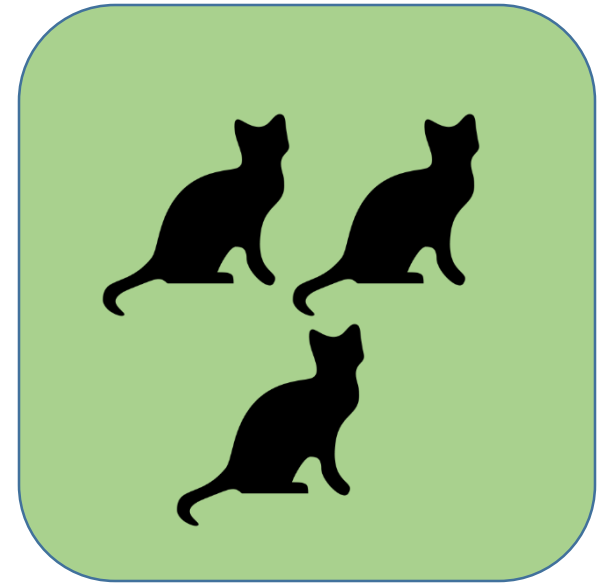
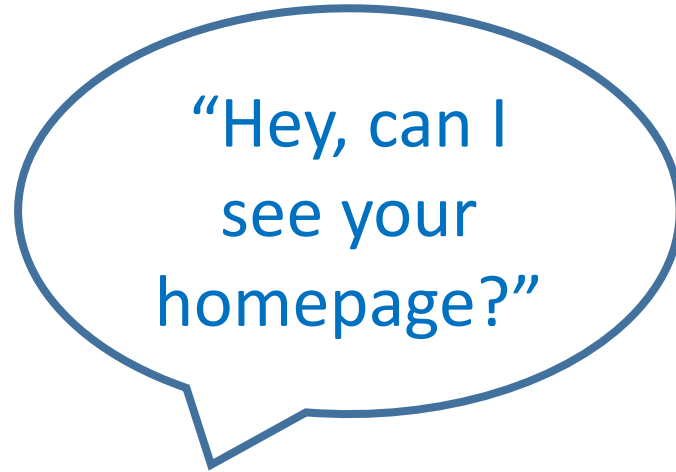


cats.com

Hypertext Transfer Protocol (HTTP)



You

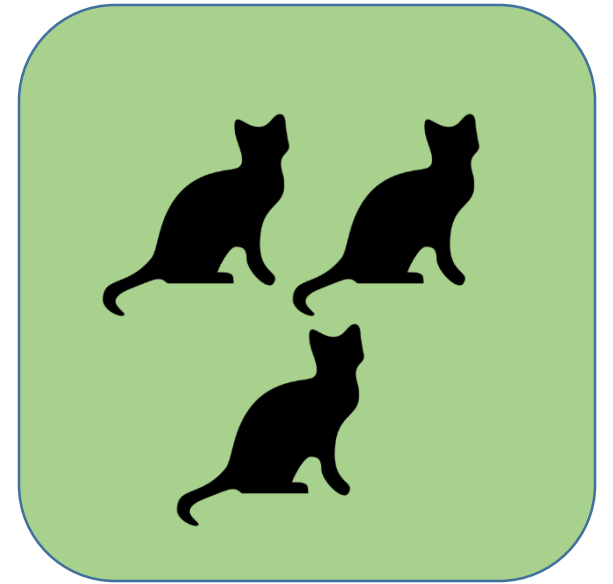
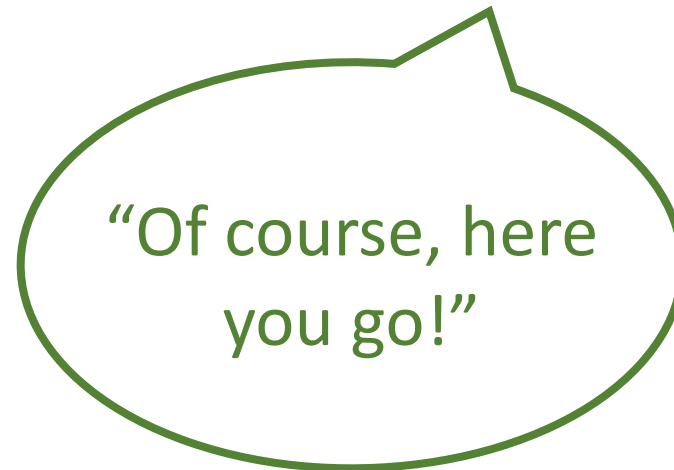
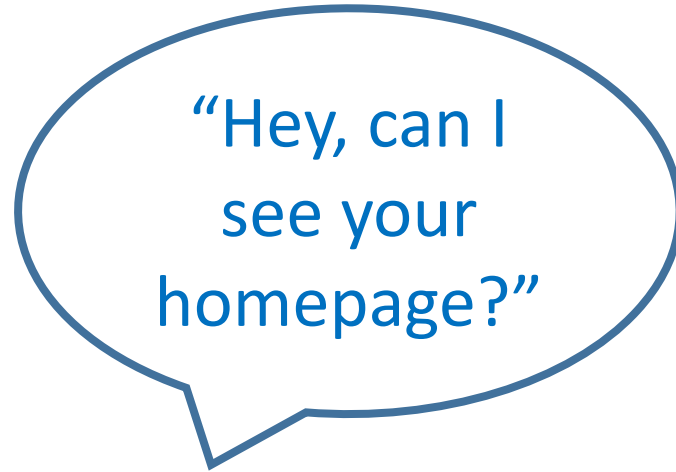


cats.com

Hypertext Transfer Protocol (HTTP)



You



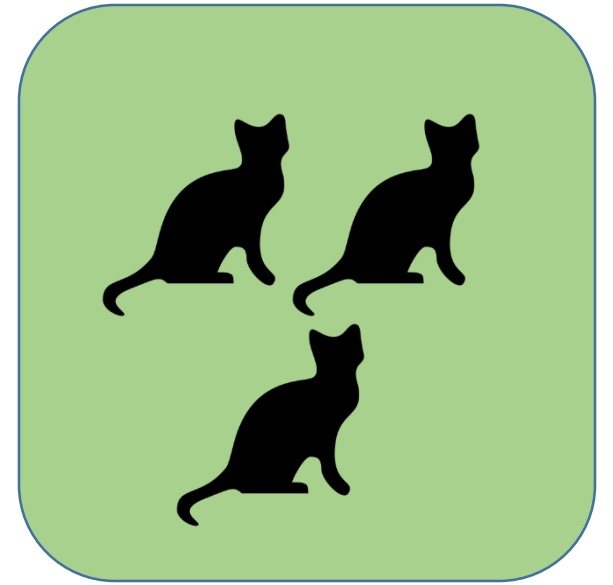
cats.com

Hypertext Transfer Protocol (HTTP)



You

GET / HTTP/1.1
Host: cats.com
...



cats.com

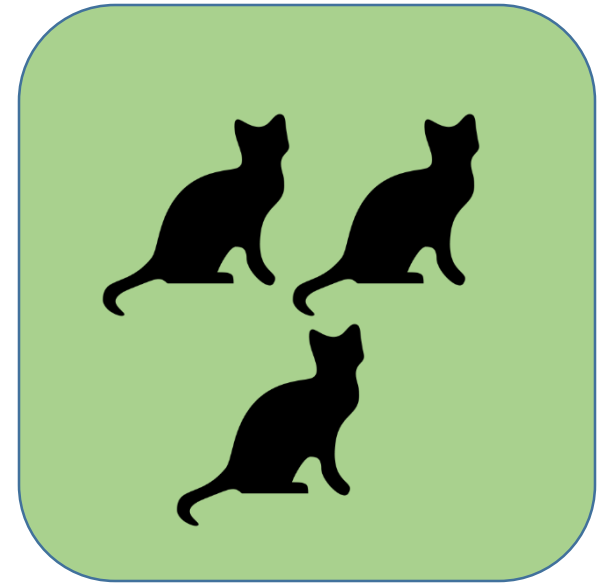
Hypertext Transfer Protocol (HTTP)



You

GET / HTTP/1.1
Host: cats.com
...

HTTP/1.1 200 OK
Content-type: text/html
...

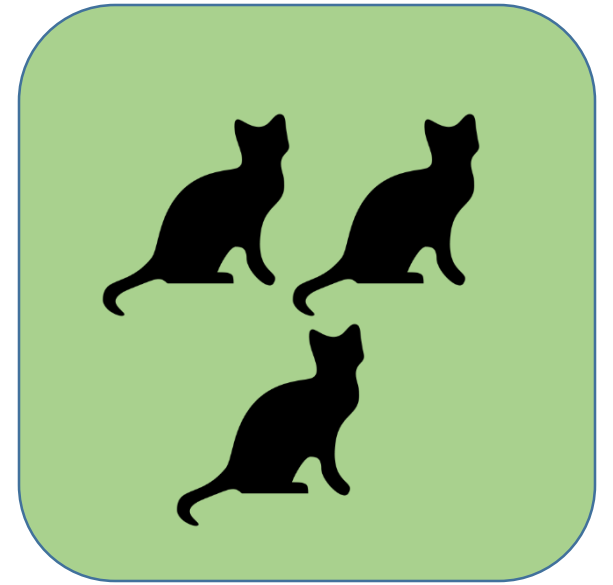
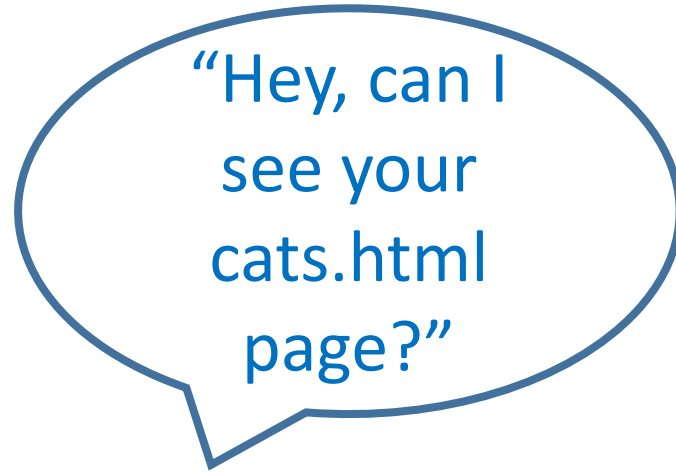


cats.com

Hypertext Transfer Protocol (HTTP)



You

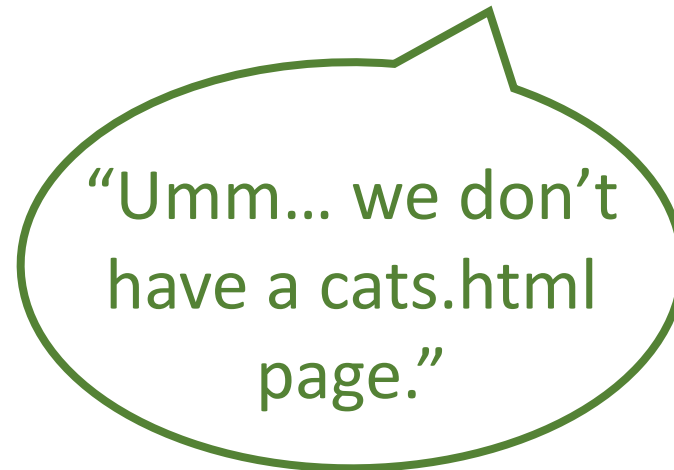


cats.com

Hypertext Transfer Protocol (HTTP)



You



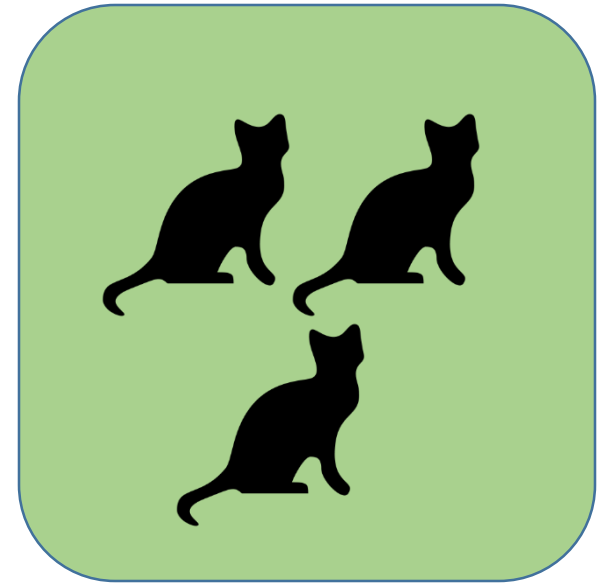
cats.com

Hypertext Transfer Protocol (HTTP)



You

GET /cats.html HTTP/1.1
Host: cats.com
...



cats.com

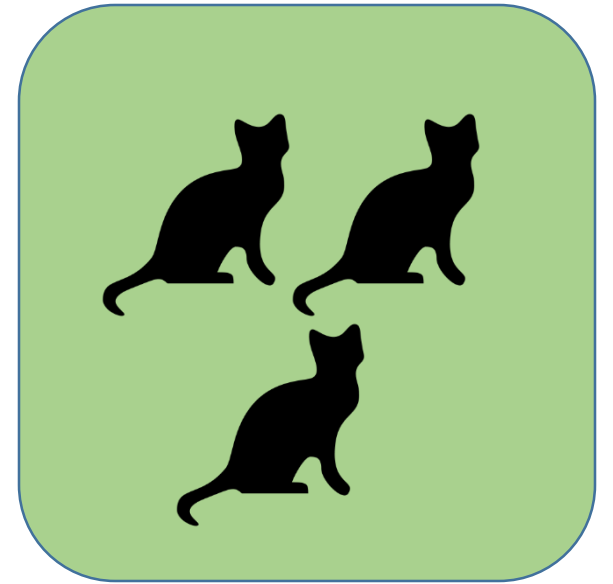
Hypertext Transfer Protocol (HTTP)



You

GET /cats.html HTTP/1.1
Host: cats.com
....

HTTP/1.1 404 Not Found
Content-type: text/html
....



cats.com

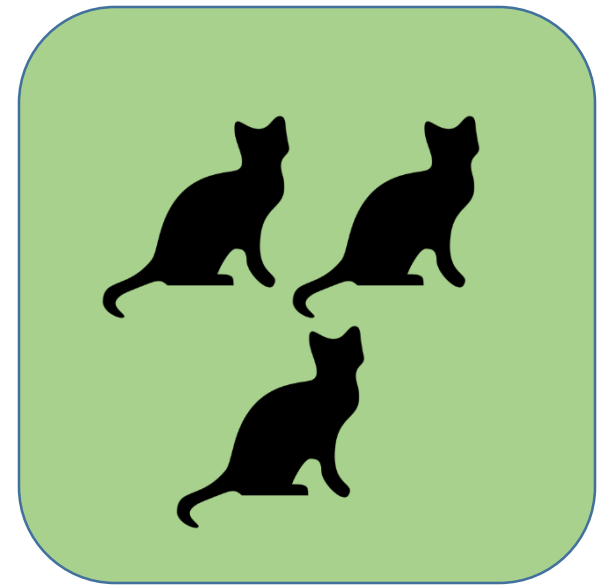
Hypertext Transfer Protocol (HTTP)



You

GET /cats.html HTTP/1.1
Host: cats.com
....

HTTP/1.1 404 Not Found
Content-type: text/html
....



cats.com

Hypertext Transfer Protocol (HTTP)

- A line of the form

`method request-target http-version`

- Is a simple example of an *HTTP request line*, a crucial part of an overall HTTP request that a client may make to a server.

Hypertext Transfer Protocol (HTTP)

- A line of the form

`method request-target HTTP/1.1`

- Is a simple example of an *HTTP request line*, a crucial part of an overall HTTP request that a client may make to a server.

Hypertext Transfer Protocol (HTTP)

- A line of the form

GET request-target HTTP/1.1

- Is a simple example of an *HTTP request line*, a crucial part of an overall HTTP request that a client may make to a server.

Hypertext Transfer Protocol (HTTP)

- A line of the form

POST request-target HTTP/1.1

- Is a simple example of an *HTTP request line*, a crucial part of an overall HTTP request that a client may make to a server.

Hypertext Transfer Protocol (HTTP)

- The host name (domain name of the server) is also included as a separate line of the overall HTTP request.
- Taken together, the host name and the request target from the request line specify a specific resource being sought.
- Based on whether the resource exists and whether the server is empowered to deliver that resource pursuant to the client's request, a number of *status codes* can result.

Hypertext Transfer Protocol (HTTP)

- A status code is part of the first line that a server will use to respond to an HTTP request.

`http-version status`

Hypertext Transfer Protocol (HTTP)

- A status code is part of the first line that a server will use to respond to an HTTP request.

HTTP/1.1 status

Hypertext Transfer Protocol (HTTP)

Class	Code	Text	Comments
-------	------	------	----------

Hypertext Transfer Protocol (HTTP)

Class	Code	Text	Comments
Success	200	OK	All is well, valid request and response.

Hypertext Transfer Protocol (HTTP)

Class	Code	Text	Comments
Success	200	OK	All is well, valid request and response.
Redirection	301	Moved Permanently	Page is now at a new location, automatic redirects built in to most browsers.

Hypertext Transfer Protocol (HTTP)

Class	Code	Text	Comments
Success	200	OK	All is well, valid request and response.
Redirection	301	Moved Permanently	Page is now at a new location, automatic redirects built in to most browsers.
	302	Found	Page is now at a new location <i>temporarily</i> .

Hypertext Transfer Protocol (HTTP)

Class	Code	Text	Comments
Success	200	OK	All is well, valid request and response.
Redirection	301	Moved Permanently	Page is now at a new location, automatic redirects built in to most browsers.
	302	Found	Page is now at a new location <i>temporarily</i> .
Client Error	401	Unauthorized	Page typically requires login credentials.

Hypertext Transfer Protocol (HTTP)

Class	Code	Text	Comments
Success	200	OK	All is well, valid request and response.
Redirection	301	Moved Permanently	Page is now at a new location, automatic redirects built in to most browsers.
	302	Found	Page is now at a new location <i>temporarily</i> .
Client Error	401	Unauthorized	Page typically requires login credentials.
	403	Forbidden	Server will not allow this request.

Hypertext Transfer Protocol (HTTP)

Class	Code	Text	Comments
Success	200	OK	All is well, valid request and response.
Redirection	301	Moved Permanently	Page is now at a new location, automatic redirects built in to most browsers.
	302	Found	Page is now at a new location <i>temporarily</i> .
Client Error	401	Unauthorized	Page typically requires login credentials.
	403	Forbidden	Server will not allow this request.
	404	Not Found	Server cannot find what was asked for.

Hypertext Transfer Protocol (HTTP)

Class	Code	Text	Comments
Success	200	OK	All is well, valid request and response.
Redirection	301	Moved Permanently	Page is now at a new location, automatic redirects built in to most browsers.
	302	Found	Page is now at a new location <i>temporarily</i> .
Client Error	401	Unauthorized	Page typically requires login credentials.
	403	Forbidden	Server will not allow this request.
	404	Not Found	Server cannot find what was asked for.
Server Error	500	Internal Server Error	Generic server failure in responding to the otherwise-valid request.