

Lecture - 1

SWE 4537 (Server Programming)

Web Application

→ Multiple users, same version of an app.

→ Doesn't need to be installed.

for a web app to operate, it needs -

1. Web Server -

2. Database -

Safari, Chrome

↑
web client

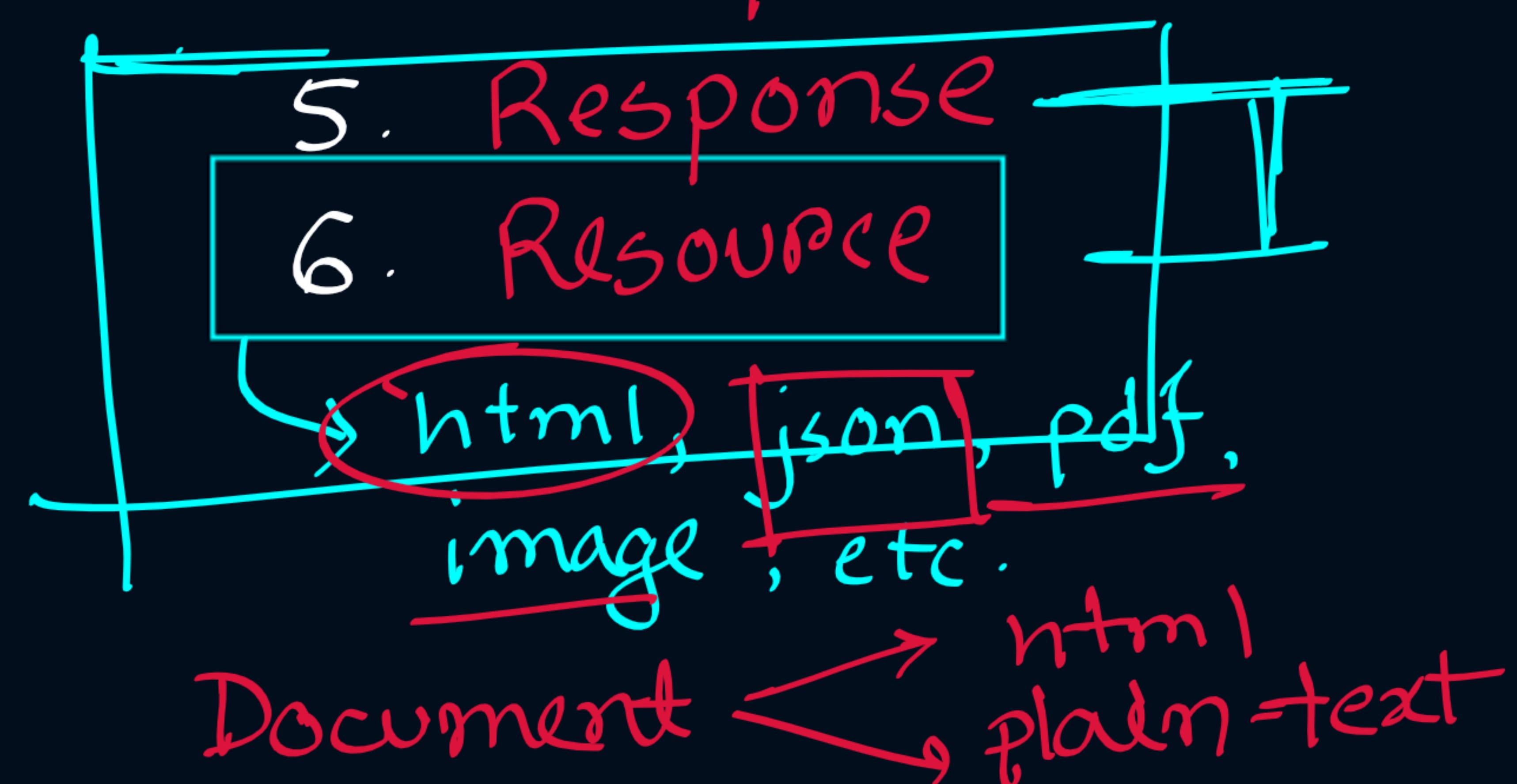
user-agent → something that can talk to a web server.

Serves web content.

Web Server

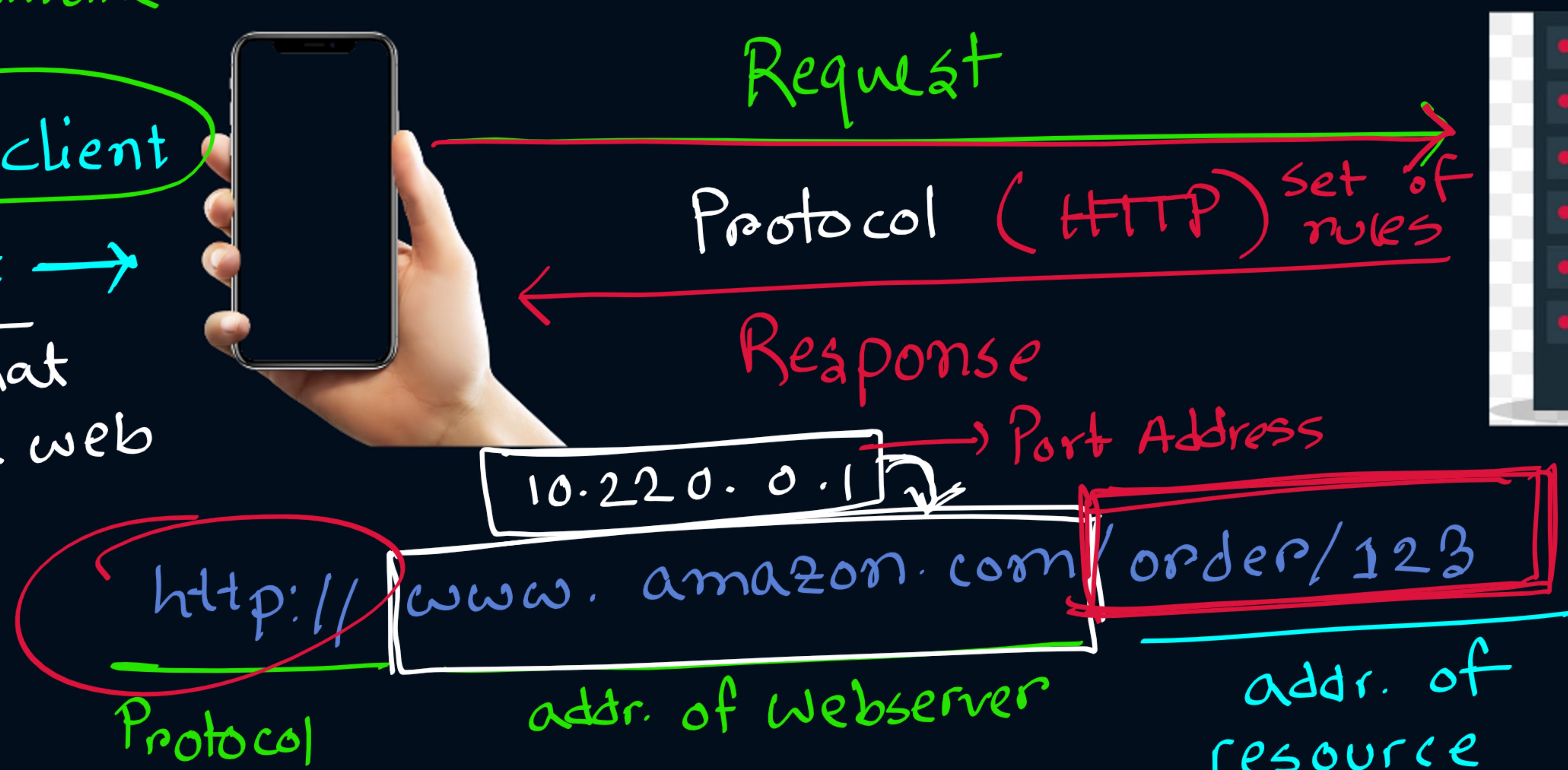
1. Listens -
2. On a port
3. for a request
4. Transport Protocol (HTTP, HTTPS)

→ Physical device with Network connection?
→ Hardware? Software?
→ No Request? sits Idle.



default port
HTTP - 80
HTTPS - 443

1 Machine
1 IP Addr.
Multiple Ports



web server
A network application, listening to some port.

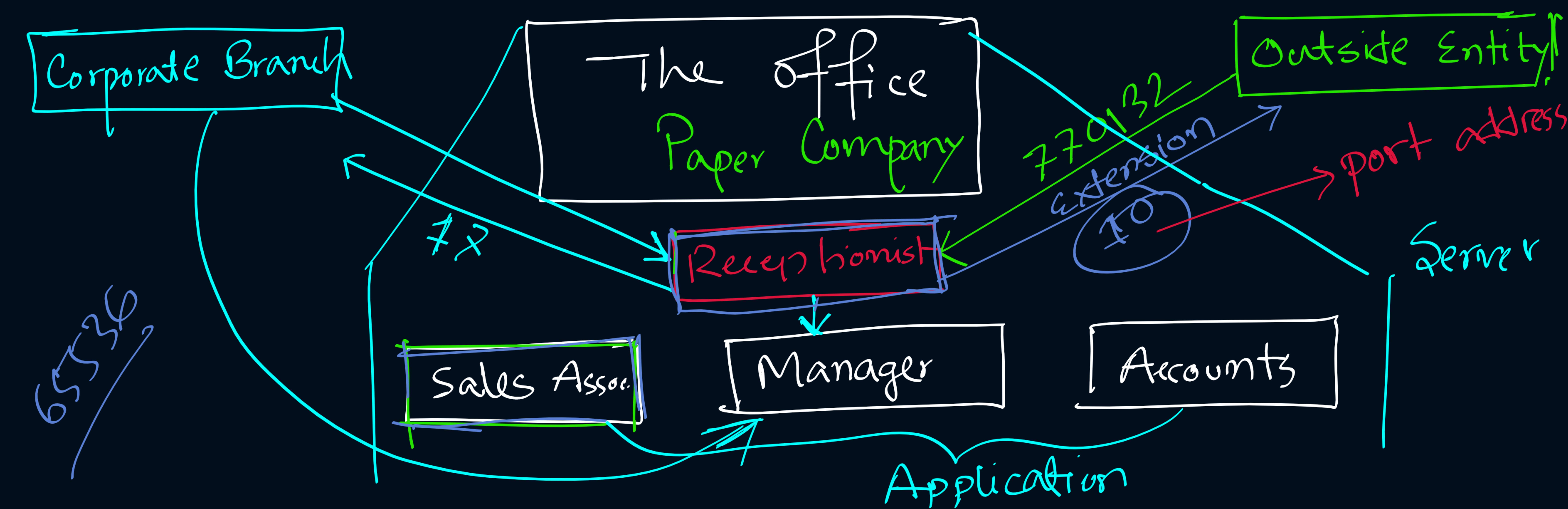
SMTP
Mail Server

Request (URL - Uniform Resource Locator)

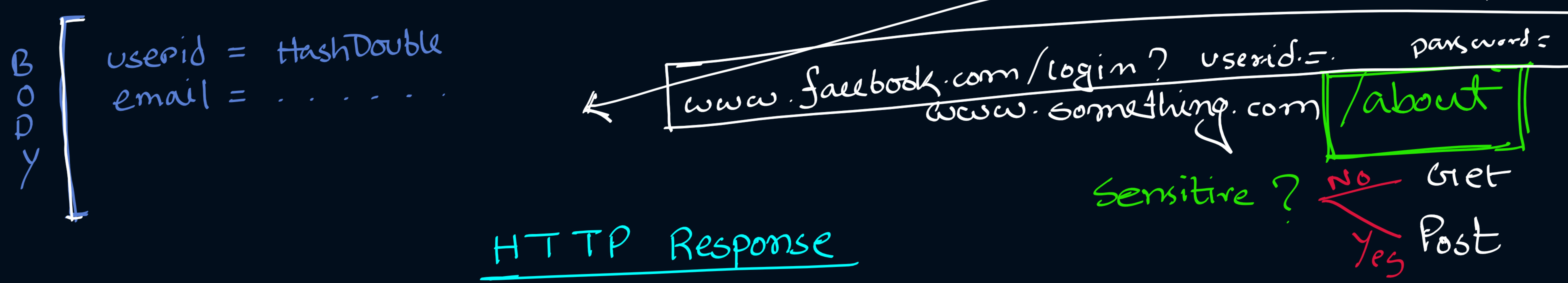
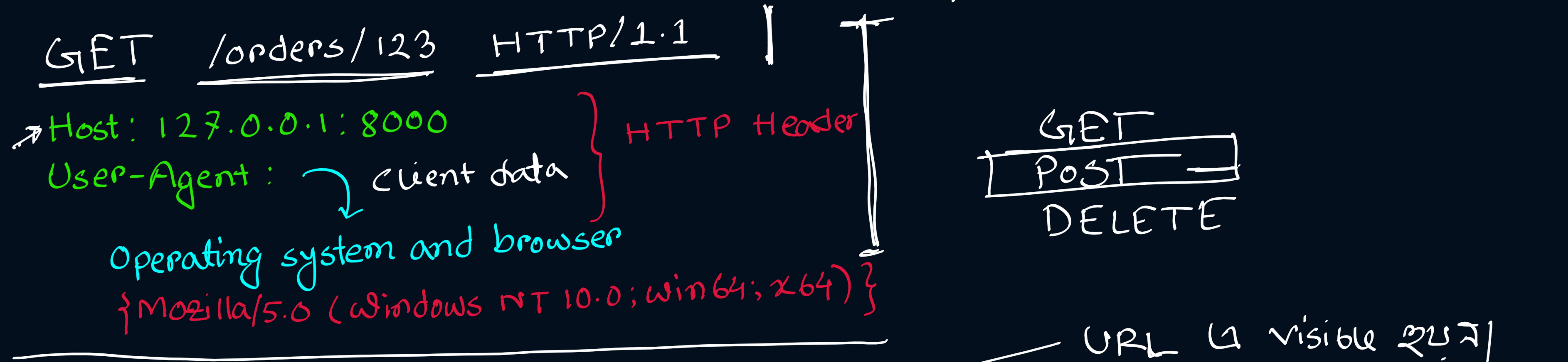
* A web application is a piece of software, which can be accessed from a browser.

* A web server can host multiple Applications.

IP - [127.0.0.1]:[7777]
! 5000



HTTP Requests ↗ Application Layer Protocol
 ↗ Hypertext Transfer Protocol



HTTP/1.1 200 OK (Success)

Content-length: 88

Content-Type: text/html

Connection: Closed

Header: Image/JPG, Application/JSON

Body: text/plain, text/html

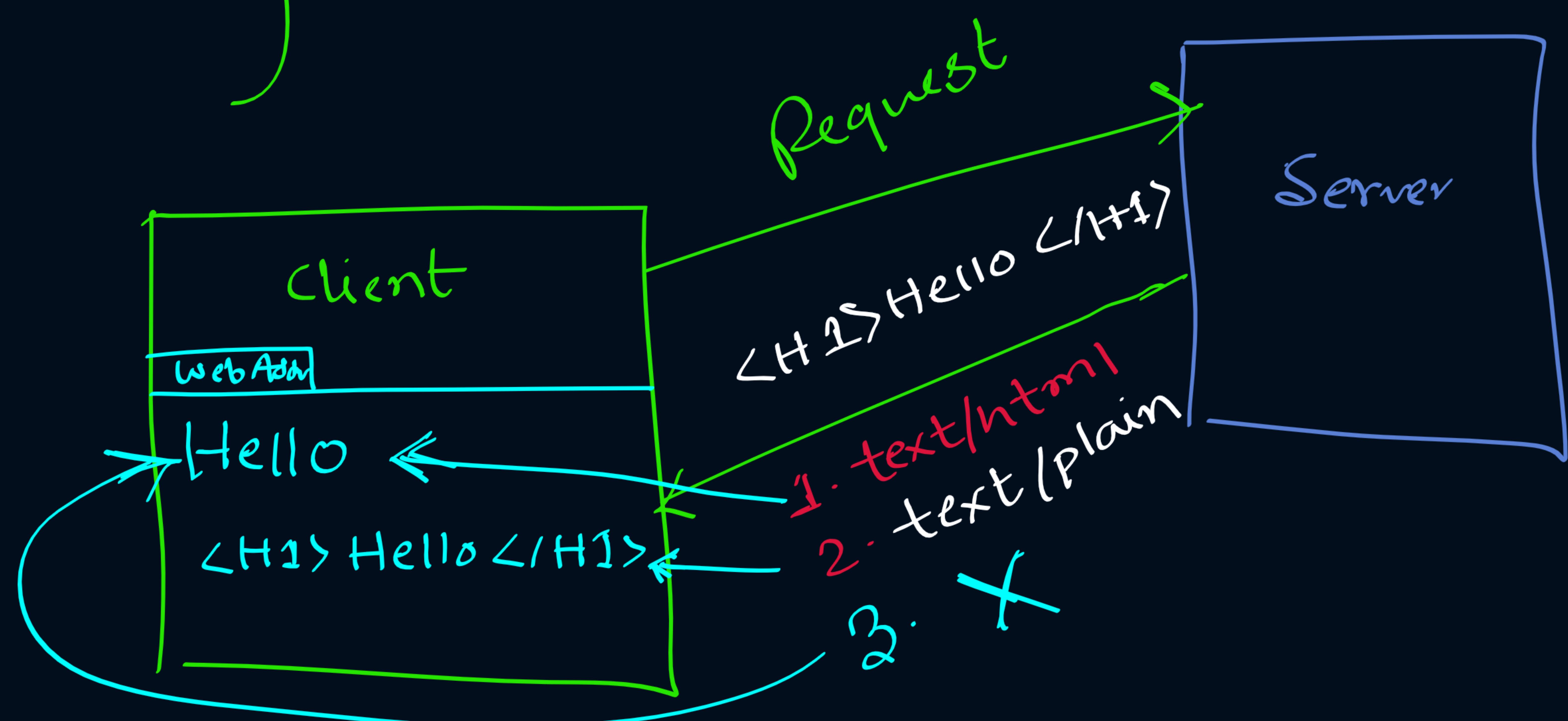
200 } Successful Response.

<!DOCTYPE html>
<html>
<body>
<h1>Hello!</h1>
</body>
</html>

```
response.write();  

response.end();  

response.end()
```



o

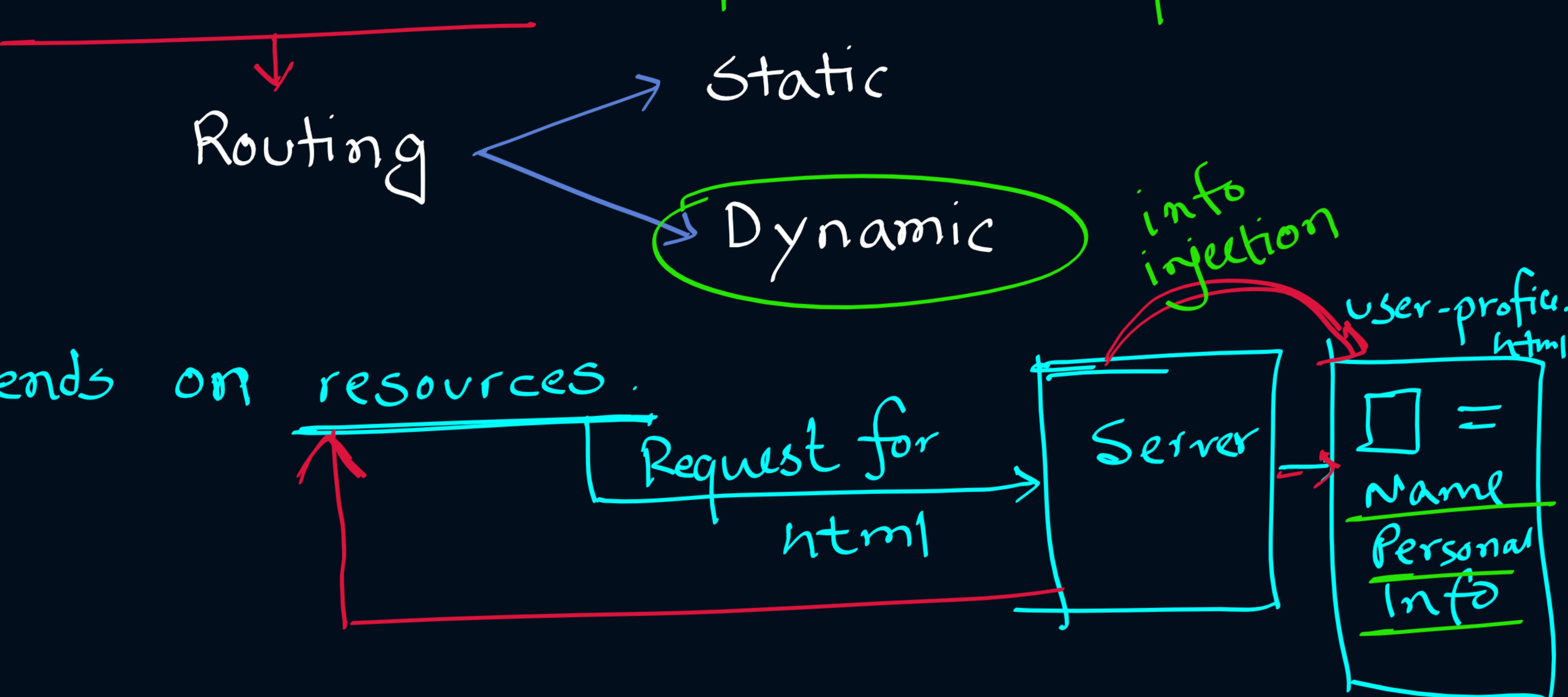
Static Vs Dynamic Web Applications

How web servers decide what to respond with?

which resource to return , based on a particular request

< a > < /a >

Depends on resources.

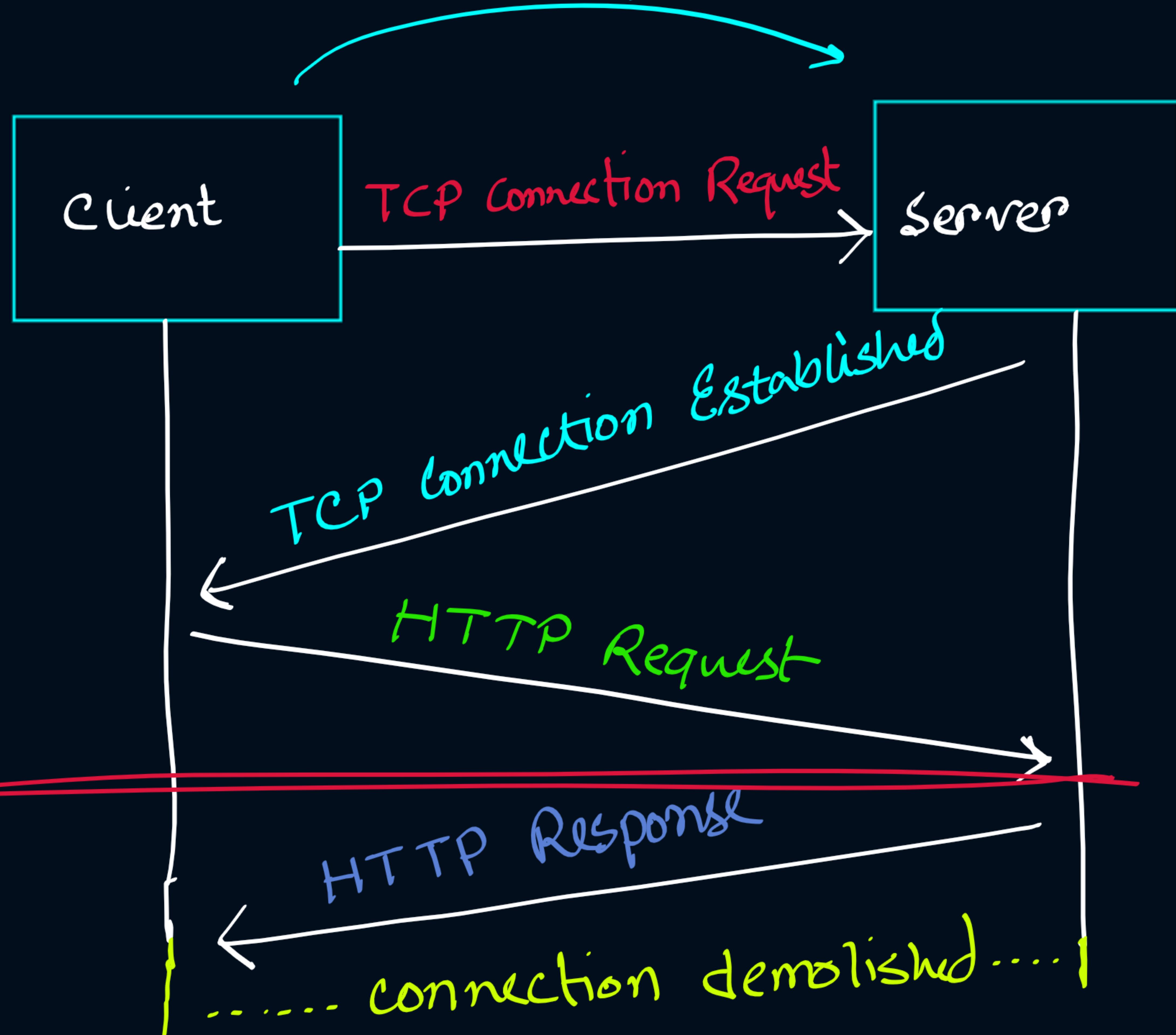


Lecture 2

HTTP

- stateless protocol
- application layer protocol
- TCP/IP based
- connectionless
- media independent

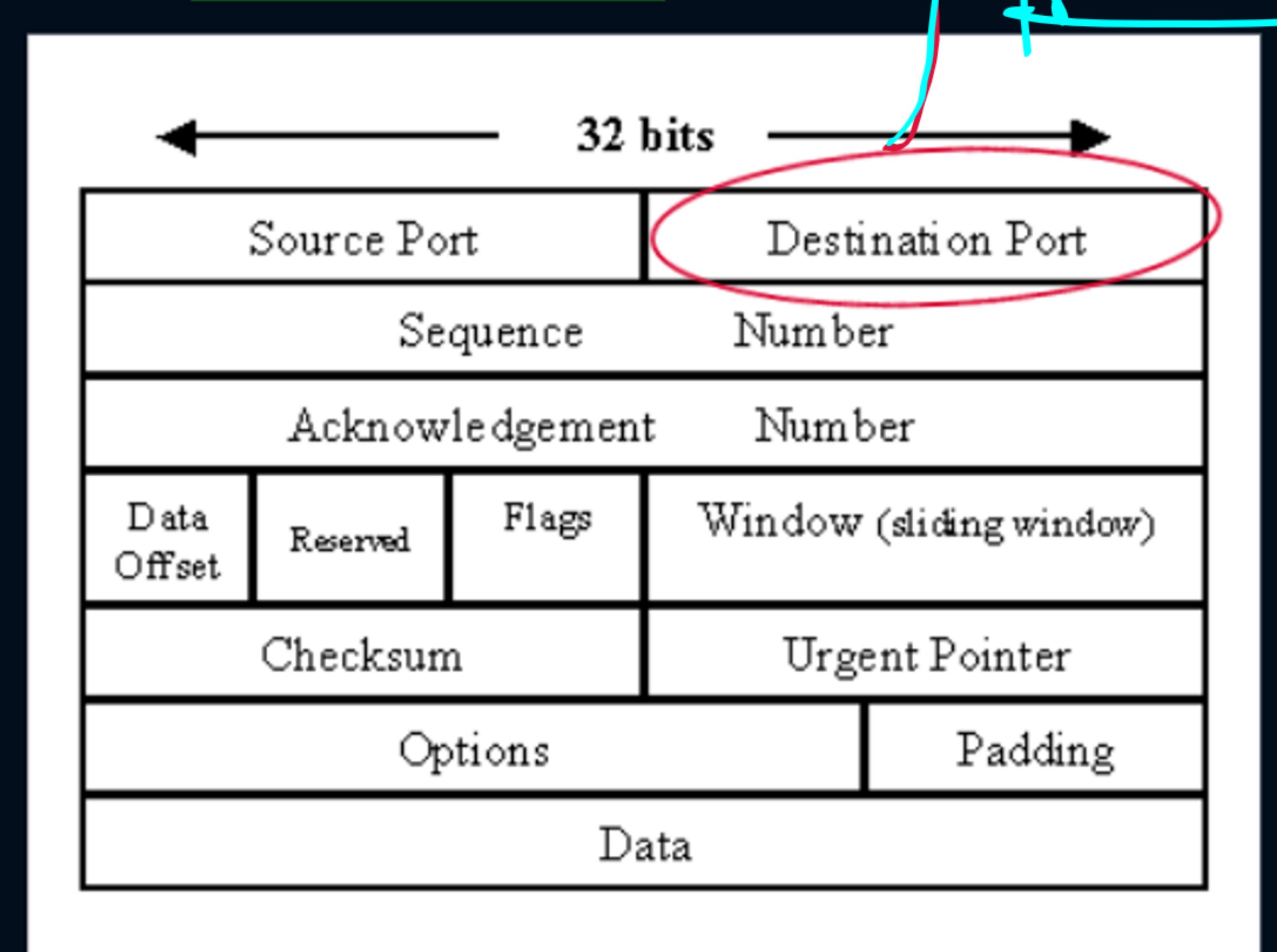
Message Format Request
Response

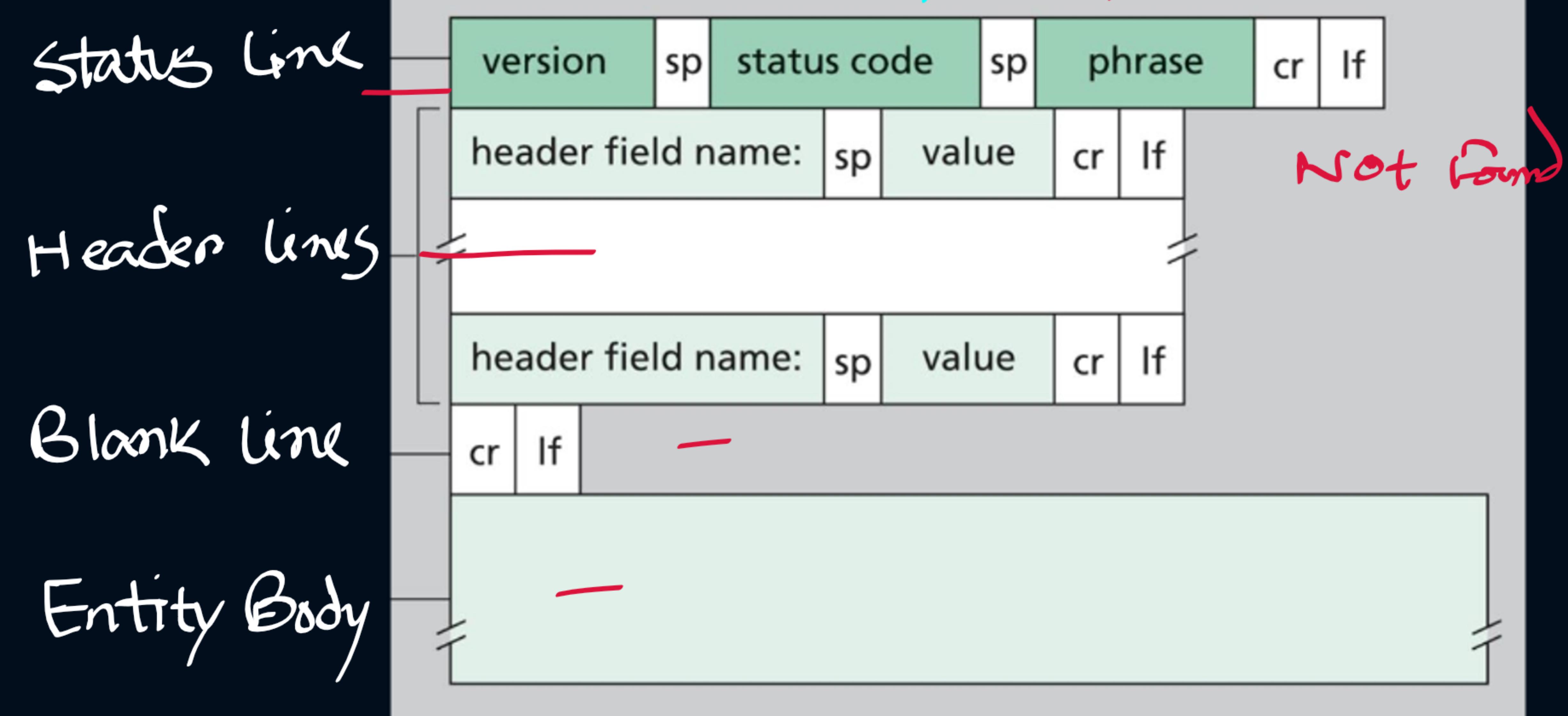
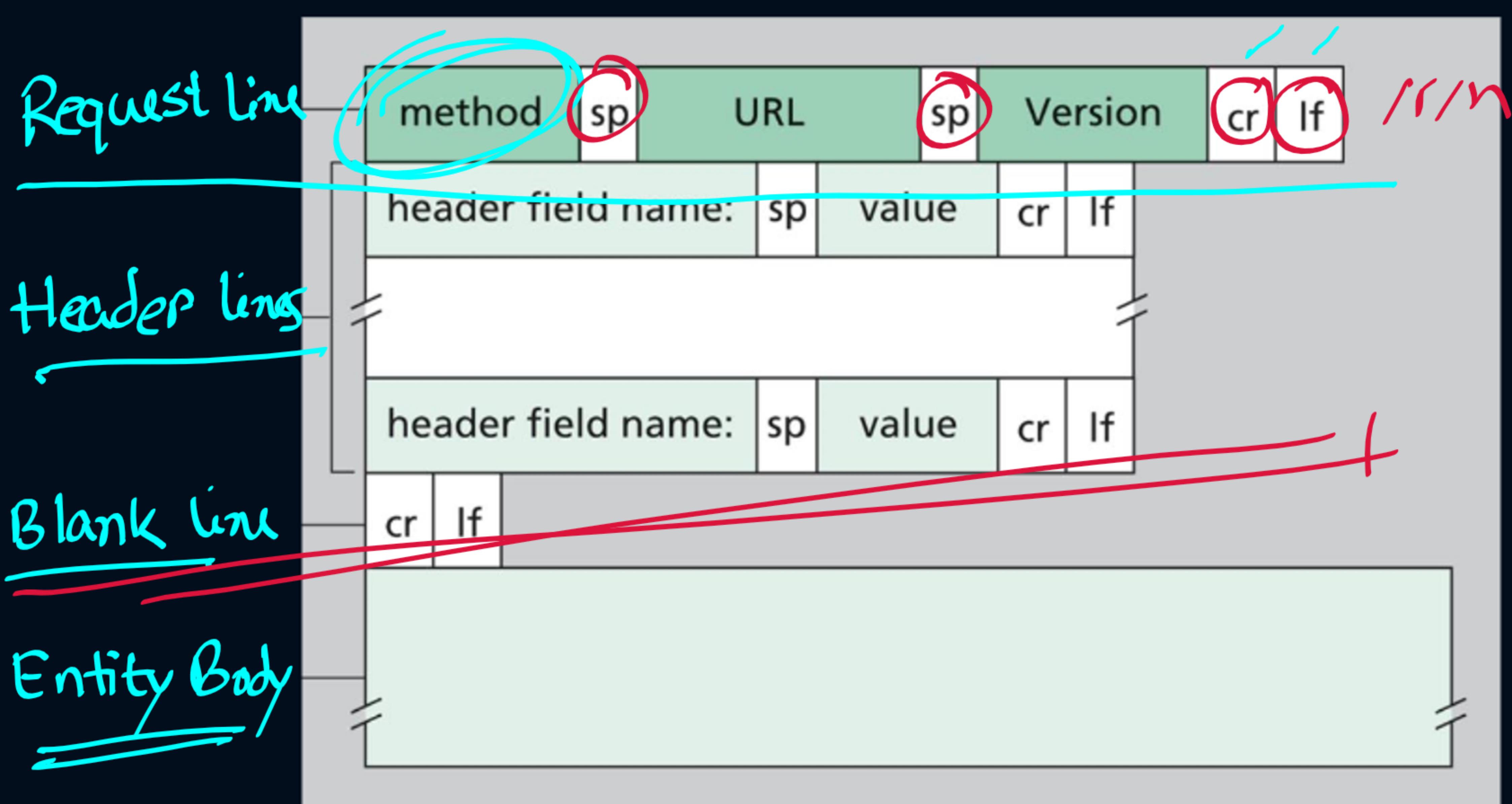


MIME Type

- text/plain
- text/html
- text/csv
- image/jpeg
- image/png
- video/mp4
- application/pdf
- application/zip

0 ~ 65535 16 bits Port Addr.
65536 2¹⁶ ports





HTTP Methods

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

PATCH X

Status Codes

HTTP Request base URL - There is no fixed size.

HEAD
GET HTTP/1.1
Host: developer.mozilla.org
Accept-Language: fr
connection: keep-alive
accept-encoding: gzip
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/70.0.3538.110 Safari/537.36

TRACE
POST /contact_form.php HTTP/1.1
Host: developer.mozilla.org
Content-Length: 64
Content-Type: application/x-www-form-urlencoded
name=Joe%20User&request=Send%20me%20one%20of%20your%20catalogue

name
request=

key = { pair
value }
send me one of your catalogue

HTTP 1.0

HTTP 1.1

name = Joe User

&
request = send me one of your catalogue.

HTTP Response

HTTP/1.1 200 OK
Content-Type: text/html; charset=utf-8
Content-Length: 55743
Connection: keep-alive
Cache-Control: s-maxage=300, public, max-age=0
Content-Language: en-US
Date: Thu, 06 Dec 2018 17:37:18 GMT
ETag: "2e77ad1dc6ab0b53a2996dfd4653c1c3"
Server: meinheld/0.6.1
Strict-Transport-Security: max-age=63072000
Content-Type-Options: nosniff
X-Frame-Options: DENY
X-XSS-Protection: 1; mode=block
Vary: Accept-Encoding, Cookie
Age: 7

<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<title>A simple webpage</title>
</head>
<body>
<h1>Simple HTML5 webpage</h1>
<p>Hello, world!</p>
</body>
</html>

1xx - Informational | The request has been received and process is continuing.

2xx - Success | The action was successfully received, understood & completed.

3xx - Redirection | Further action must be taken to complete the request.

4xx - Client Error | The request contains incorrect syntax.

5xx - Server Error | server failed to fulfill an apparently valid request.

101

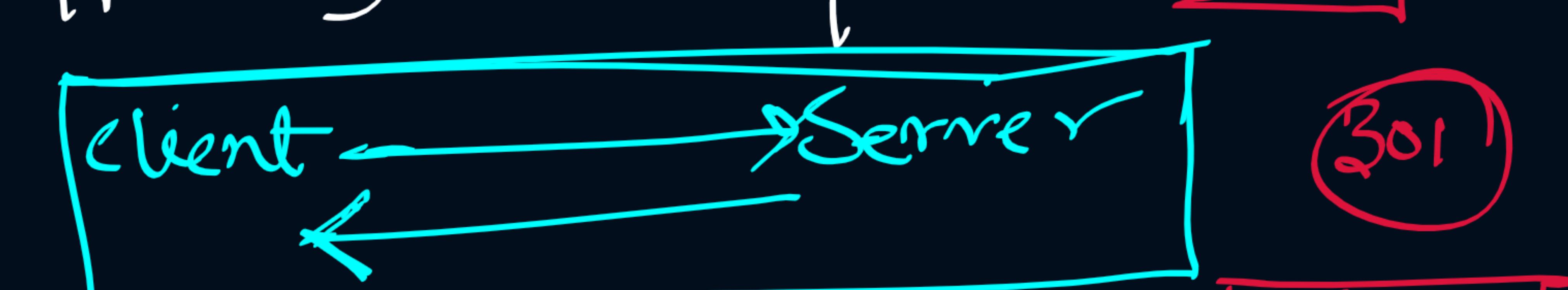
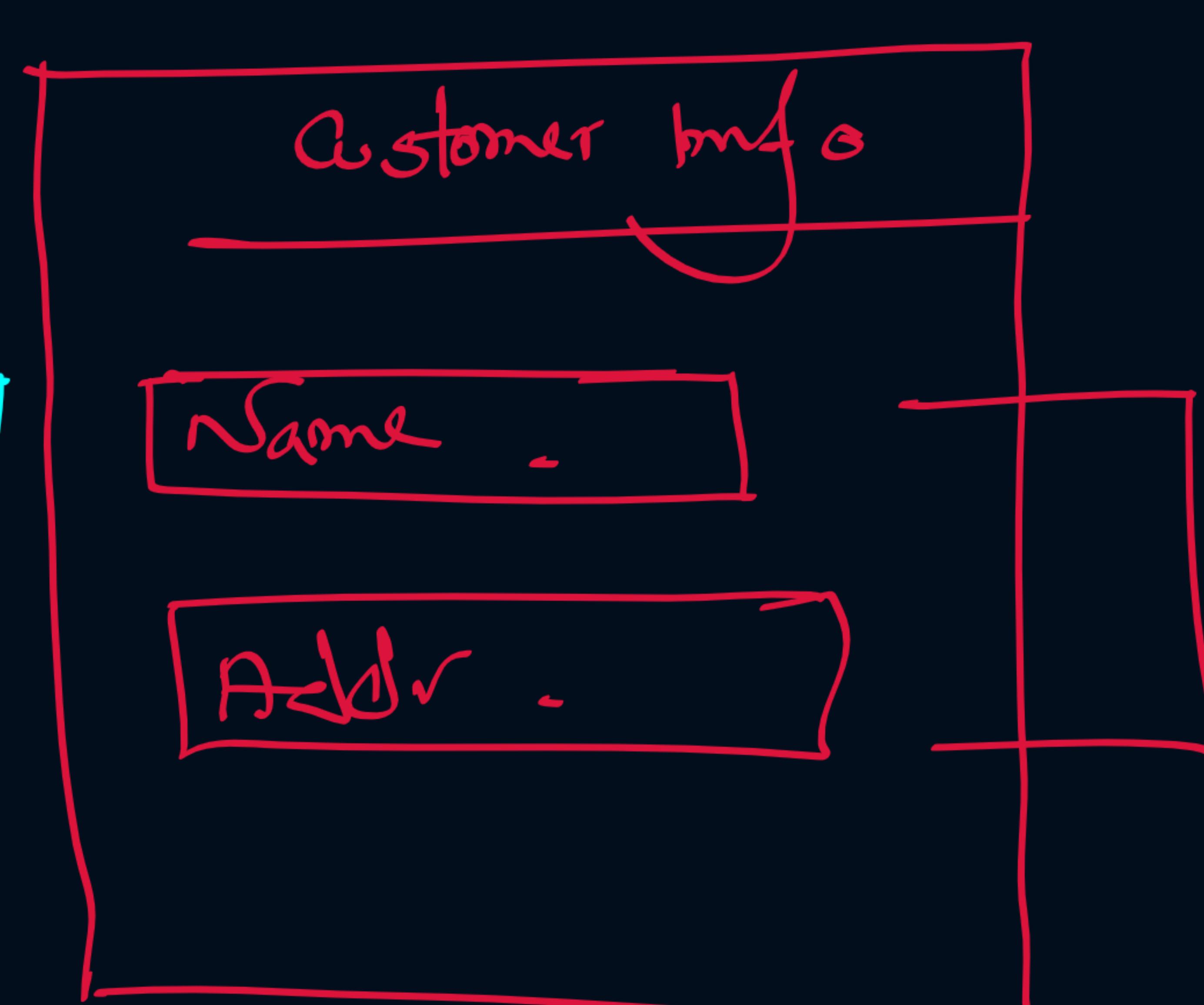
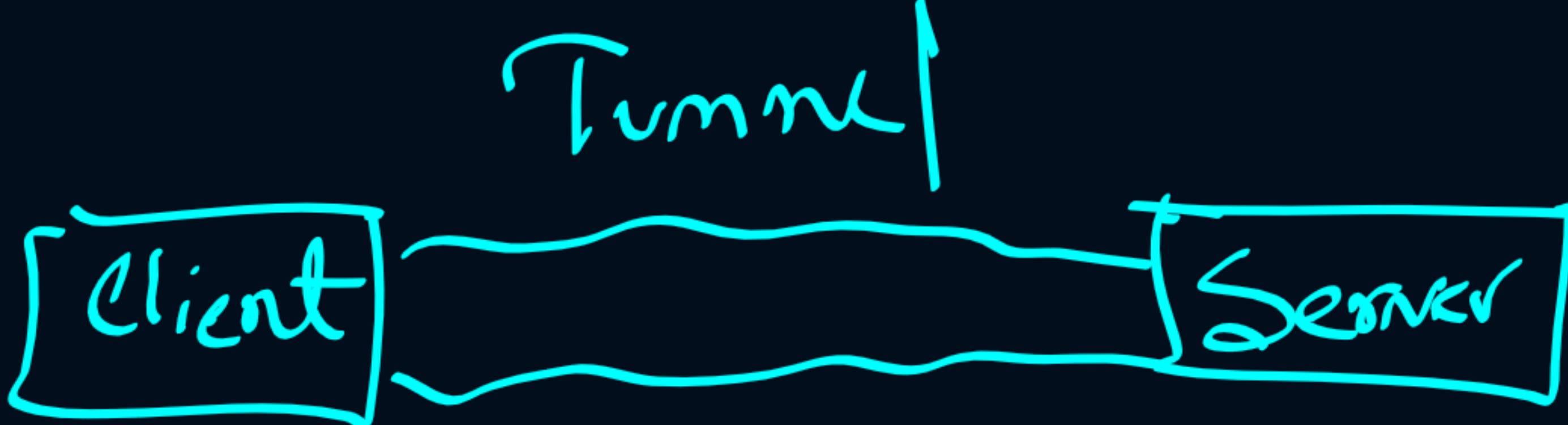
200

202

301

401

403



if you use POST
will not be added to URL

401
403