HTTP INSIGHTS
A GUIDE TO MASTERING
HTTP METHODS & STATUS CODES

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HTTP

What Is HTTP

➢ **HTTP stands for Hypertext Transfer Protocol.**

➢ **Designed in the early 1900's.**

➢ **HTTP is a request-response protocol in the client-server model**

HTTP

REQUEST

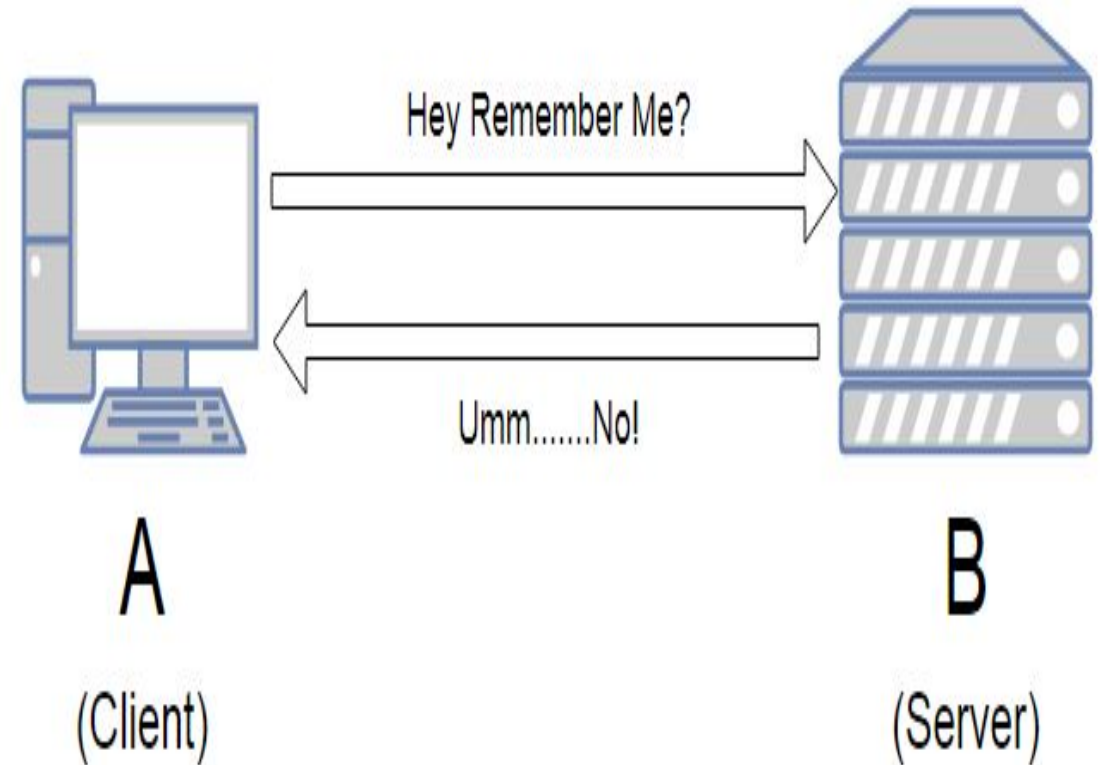RESPONSE

Client   Server
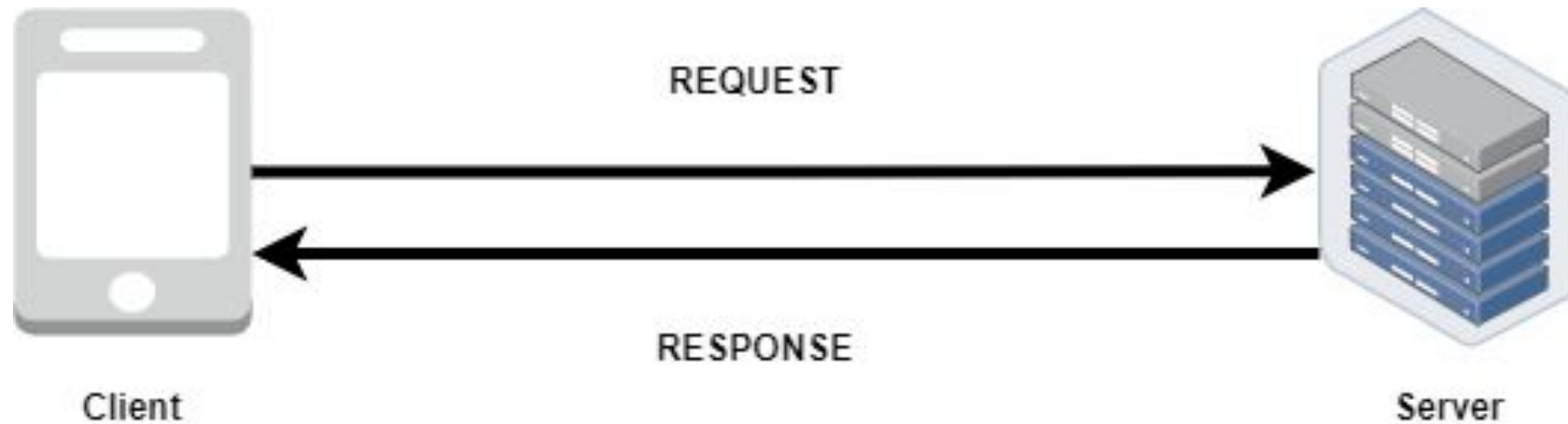
Basic Aspects Of HTTP

- ## HTTP Is Simple
  - ○ HTTP is generally designed to be human readable.

- ## HTTP Is Extensible
  - ○ Can be extended and adapted to support new features, functionalities, and protocols.

- ## HTTP Is Stateless
  - ○ No link between two requests being successively carried out on the same connection.

Hey Remember Me?

Umm.......No!

A
(Client)

B
(Server)

How Do Clients And Servers Communicate

Clients and servers communicate by exchanging individual messages
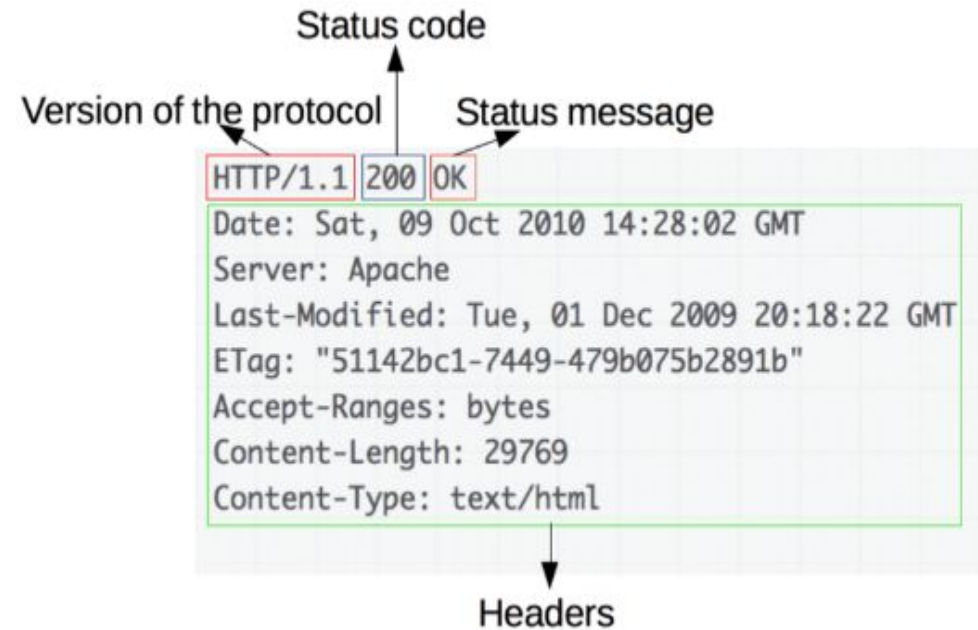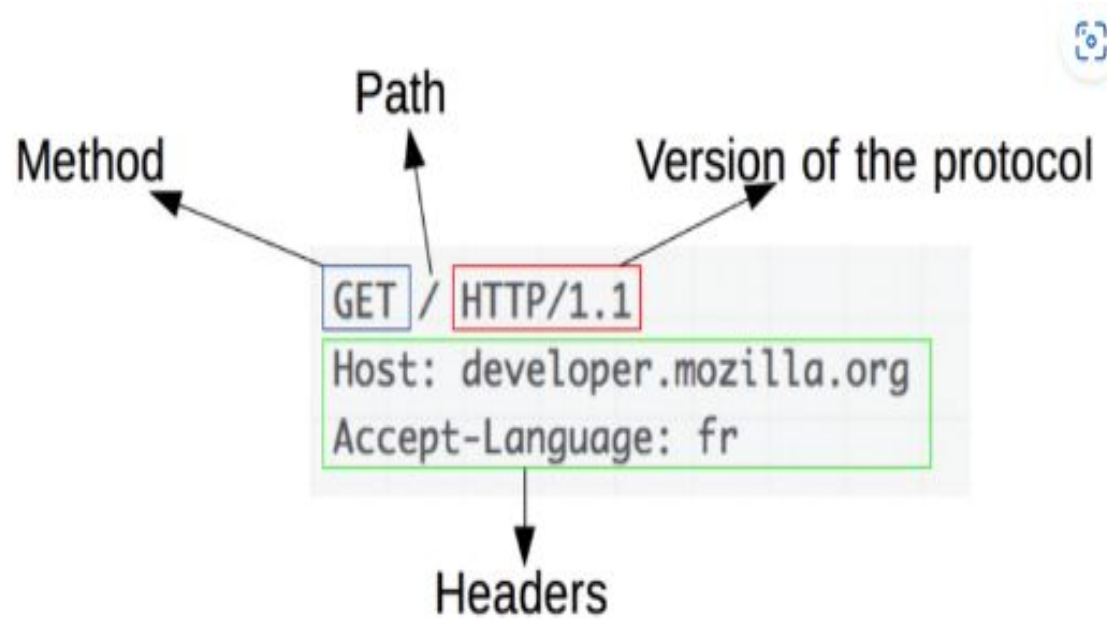
Messages

Sent By Client   Requests
Sent By Server   Responses

➢ **HTTP Methods**
- HTTP Methods are used to make a request to the server

➢ **HTTP Status Codes**
- HTTP Status Codes are used in responses.

➢ **HTTP Headers**
- Headers are used in REQUESTS As Well As RESPONSES

How Do Clients And Servers Communicate
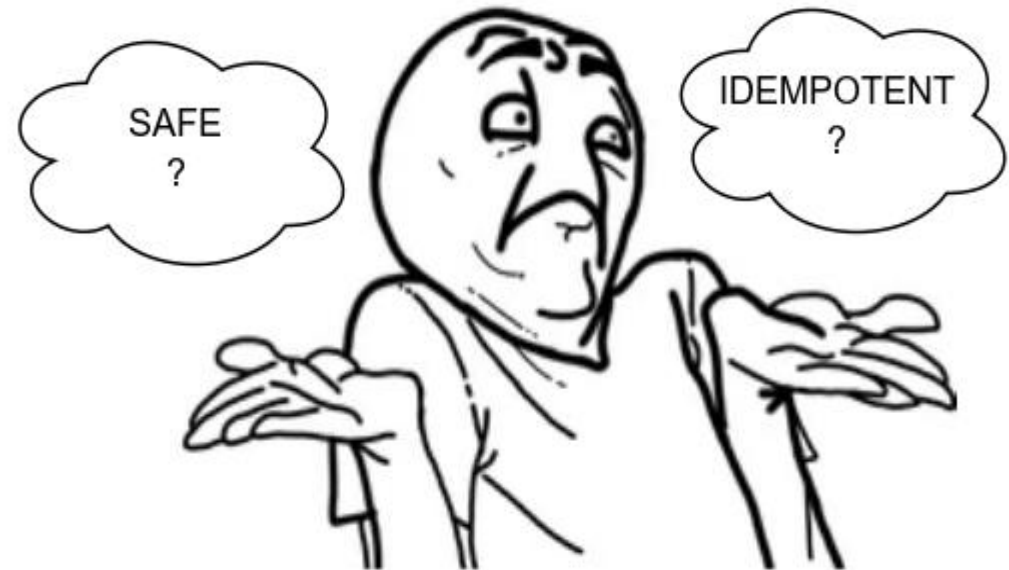
HTTP METHODS

HTTP Methods

- HTTP Verbs

- Standardized commands or actions that are used in the HTTP

- Defines what action should be taken with a resource on a web server.
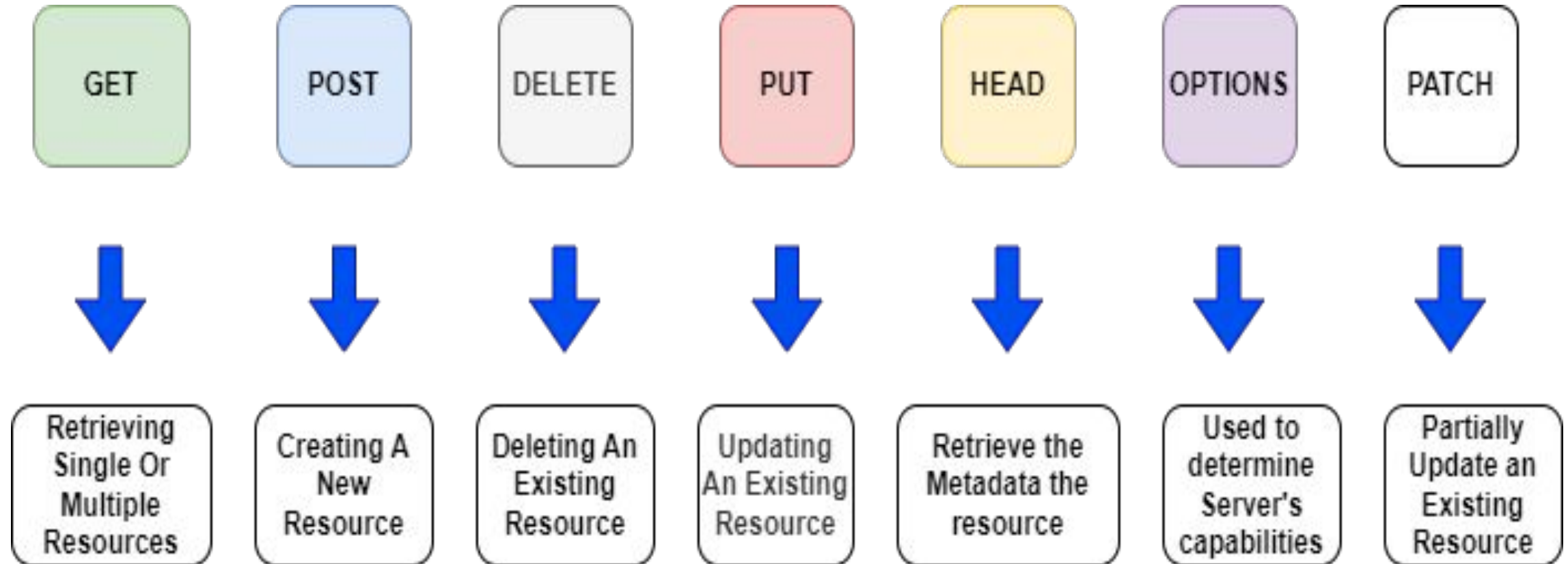
- Sent in the HTTP Requests

Types Of Method

➢ **Safe Method**

➢ **Idempotent Method**

➢ **Non-Safe Method**

Common HTTP Methods And Their Uses

:CEFALO

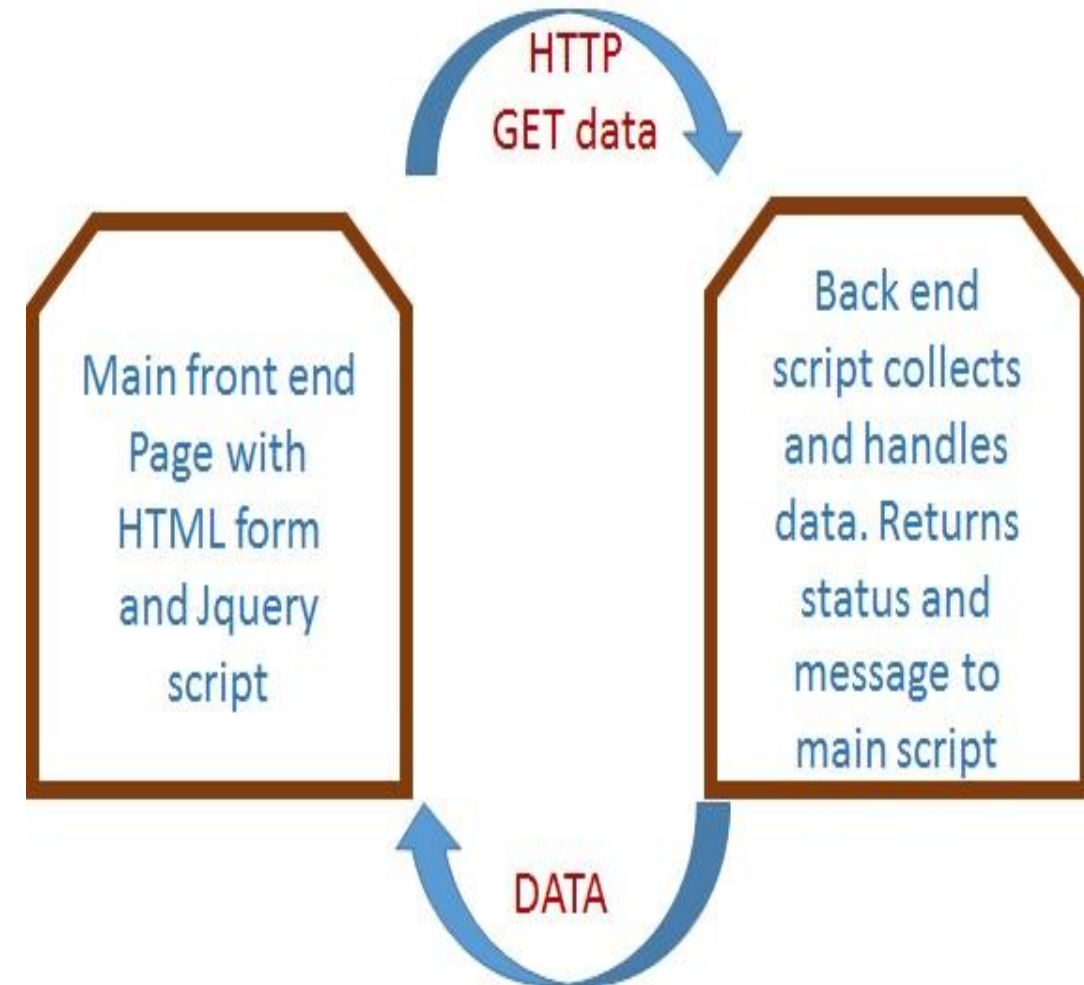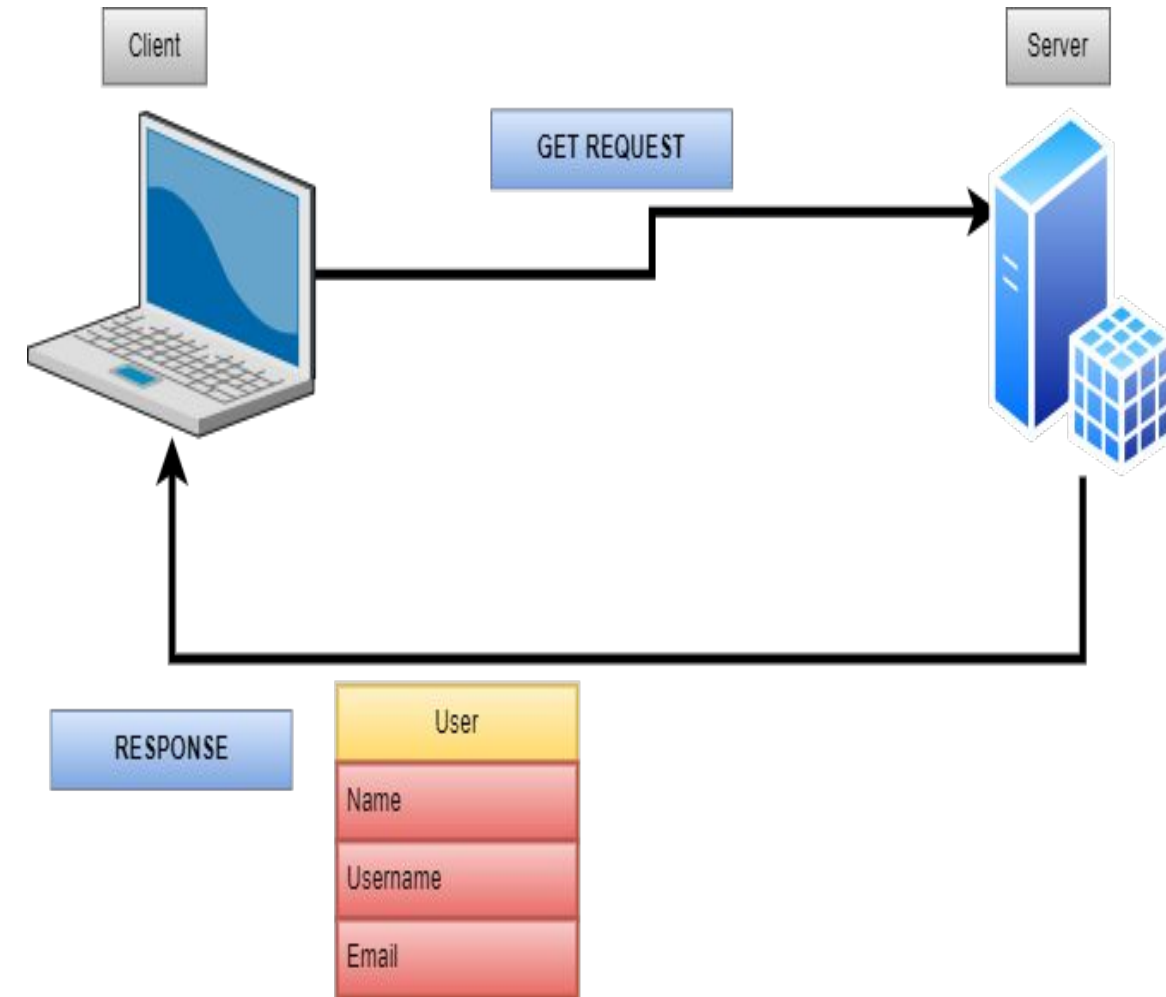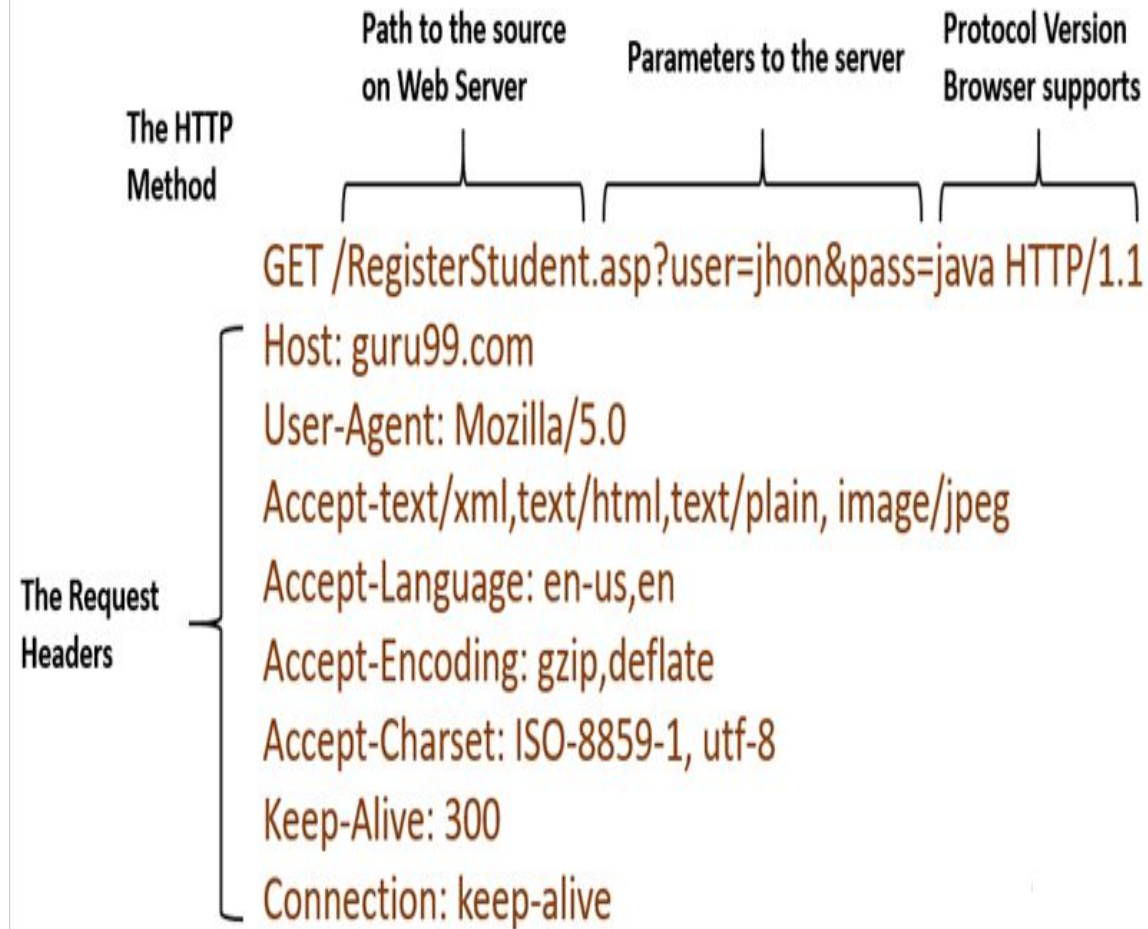| GET	POST	DELETE	PUT	HEAD	OPTIONS	PATCH
↓	↓	↓	↓	↓	↓	↓
Retrieving Single Or Multiple Resources	Creating A New Resource	Deleting An Existing Resource	Updating An Existing Resource	Retrieve the Metadata the resource	Used to determine Server's capabilities	Partially Update an Existing Resource

GET Method

➢ GET requests are used to retrieve data from a web server.

➢ GET requests are not used to modify the resource

➢ Responses to GET requests can be cached

➢ GET requests are considered Safe

HTTP
GET data

Main front end
Page with
HTML form
and Jquery
script

Back end
script collects
and handles
data. Returns
status and
message to
main script

DATA

GET Method

HEAD Method

➢ Retrieves metadata about a resource.

➢ Similar to GET but without a response body.

➢ Used to check the availability of the resource.

➢ The HEAD method is often used in cache validation.

➢ Head method is considered Safe
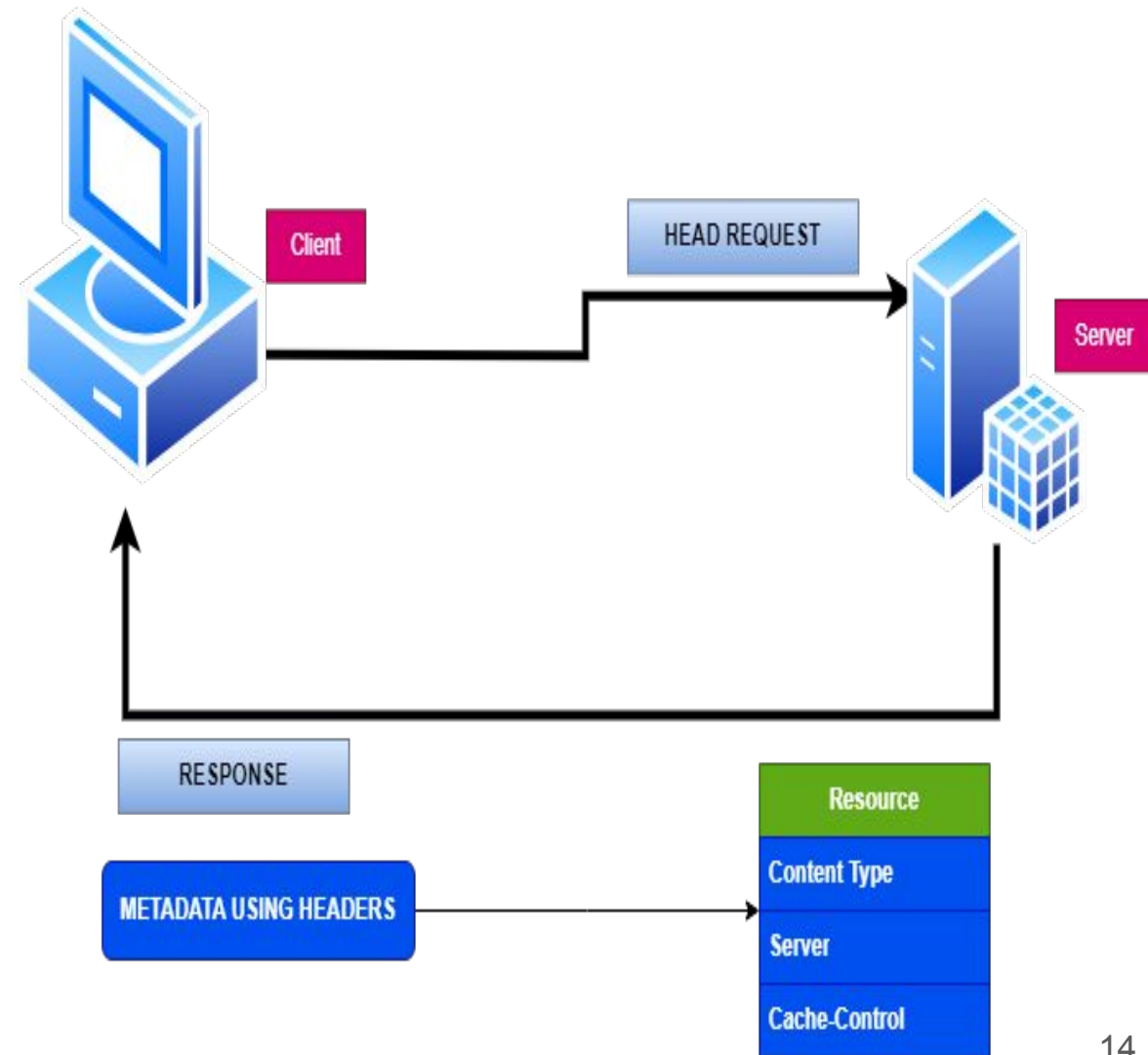
POST Method

➢ Generally Used for form submissions.

➢ Create resources on the server.

➢ Often used for transmitting sensitive information.

```html
<form action="home.html">
    First Name:<br>
    <input type="text" name="first_name">
</br>
    Last Name:<br>
    <input type="text" name="last_name">
</br>
    Email:<br>
    <input type="text" name="email">
</br>
    <input type="submit" name="Submit">

</form>
```

First Name:

Last Name:

Email:

Submit Query

PUT Method And PATCH Method

PUT

➢ Used to request that a resource be updated or created with the provided data.

➢ Includes a request body that contains the data to be stored or updated on the server.

➢ Idempotent

PATCH

➢ To request the server to apply partial modifications to an existing resource.

➢ Includes a request body that contains the data representing the changes or modifications

➢ Not Idempotent

PUT Method And PATCH Method
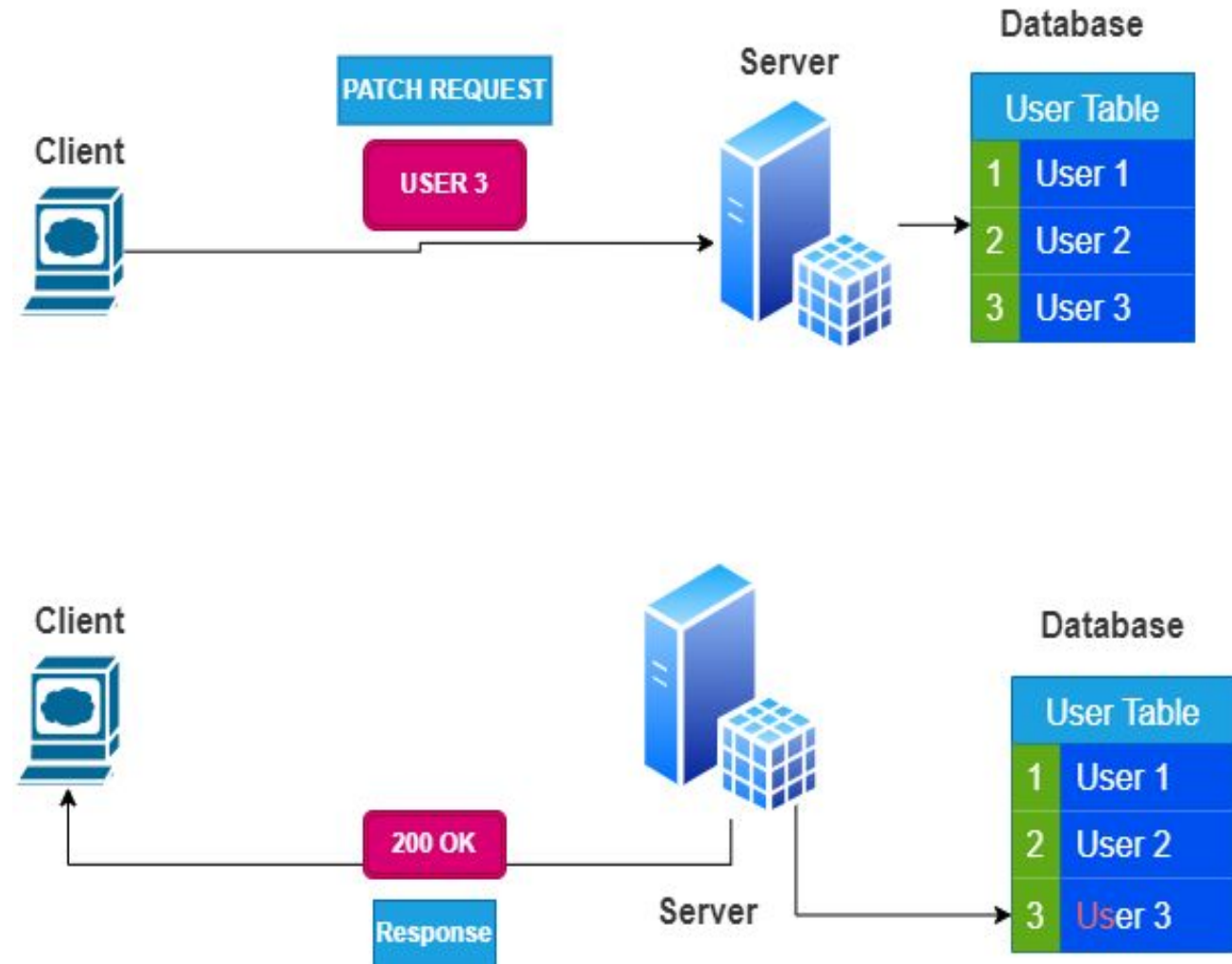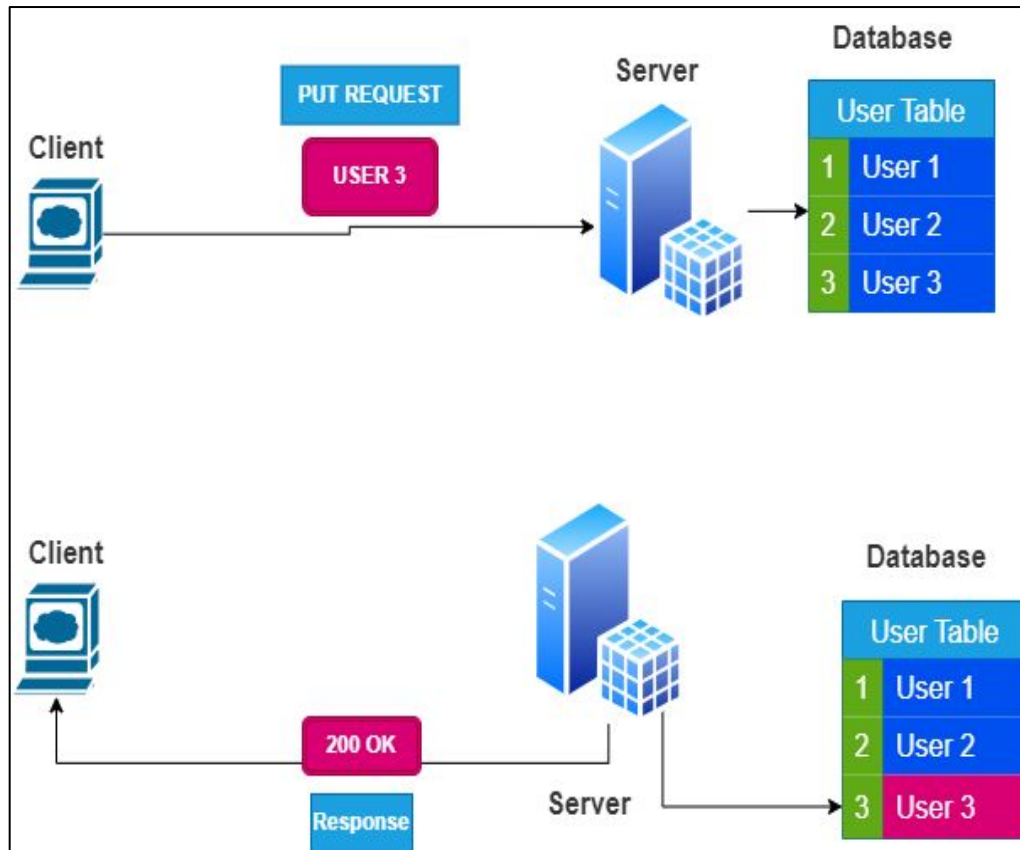
DELETE Method

➢ Request the server to delete a resource.

➢ DELETE requests typically do not include a request body.

➢ The response body is often omitted.

➢ Idempotent
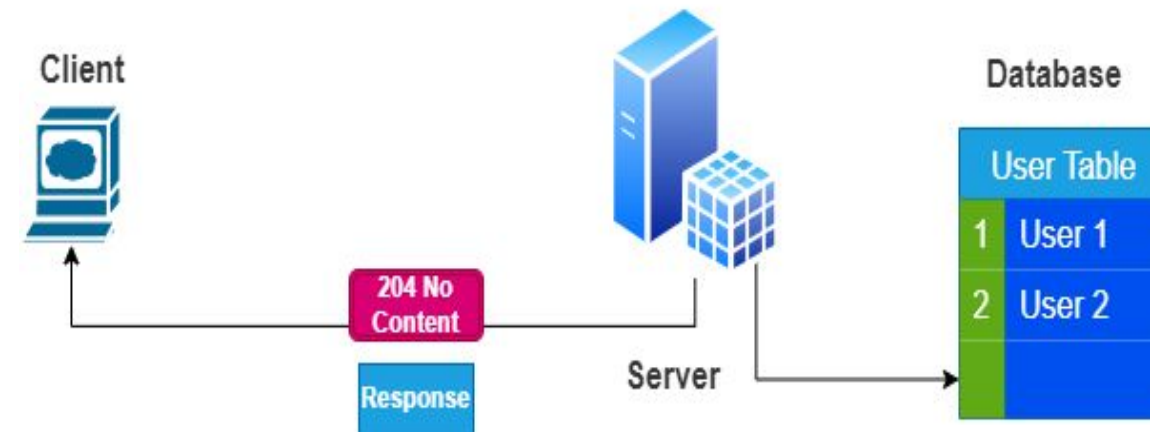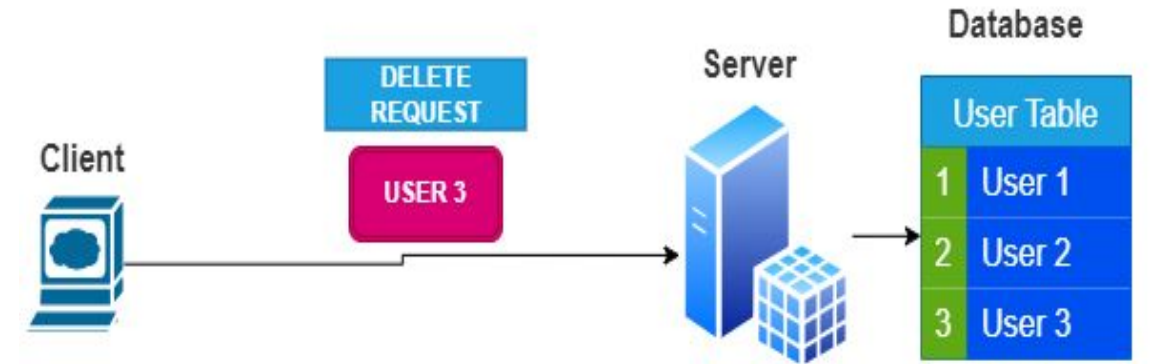
OPTIONS Method

➢ Used to request information about the communication options available for a target resource.

➢ Response includes a list of supported HTTP methods

➢ Preflight Requests In CORS

➢ Safe

OPTIONS Method

Some Confusions

PUT & PATCH, Both are used for updates. Though PUT is Idempotent, PATCH is usually not.

```
{
    Name: Abdullah All Rawaha Anik

    ID: Cefalo-Freshers-ABC

    Deposit: 200

}
```

Some Confusions

➢ DELETE Method is Idempotent.

Client
:
:

Request

DELETE /resources/departments/Sales HTTP/1.1
Host: www.packtpub.com
User-Agent: Java/1.8.0_25
Content-Type:application/json
Accept: application/json

HTTP STATUS CODES

HTTP Status Codes

➢ Provides a way for servers to communicate the outcome of a client's request.

➢ Used in RESPONSES

➢ Three-digit numbers.

Do you know ?
HTTP response status codes ?
Meaning Http Error Code

404

500
Internal server error

401
UNAUTHORIZED
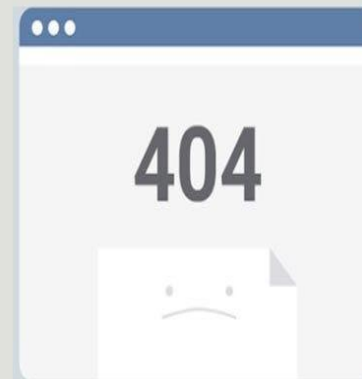
Types Of Status Codes

Grouped Into Five Classes

HTTP STATUS CODES

📢	INFORMATIONAL	1XX
✓	SUCCESS	2XX
➡	REDIRECTION	3XX
⚠	CLIENT ERROR	4XX
⚠	SERVER ERROR	5XX
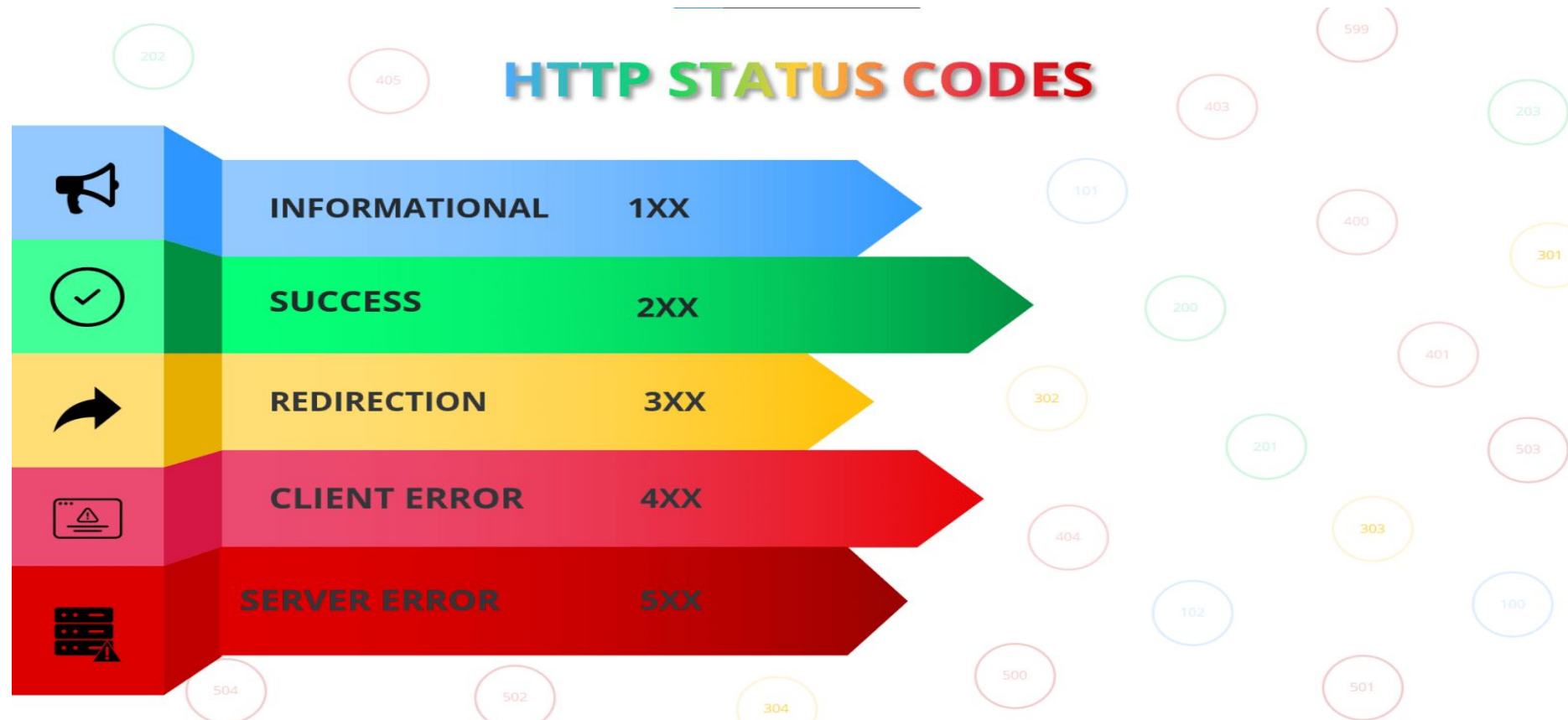
HTTP Status Codes

```
HTTP/1.1 200 OK
Date: Sun, 18 Oct 2009 08:56:53 GMT
Server: Apache/2.2.14 (Win32)
Last-Modified: Sat, 20 Nov 2004 07:16:26 GMT
ETag: "10000000565a5-2c-3e94b66c2e680"
Accept-Ranges: bytes
Content-Length: 44
Connection: close
Content-Type: text/html
X-Pad: avoid browser bug

<html><body><h1>It works!</h1></body></html>
```

Commonly Encountered Status Codes

Successful Responses

Indicates that client's request was successful.

Common Status Codes:
- ➢ 200 Ok
- ➢ 201 Created
- ➢ 202 Accepted
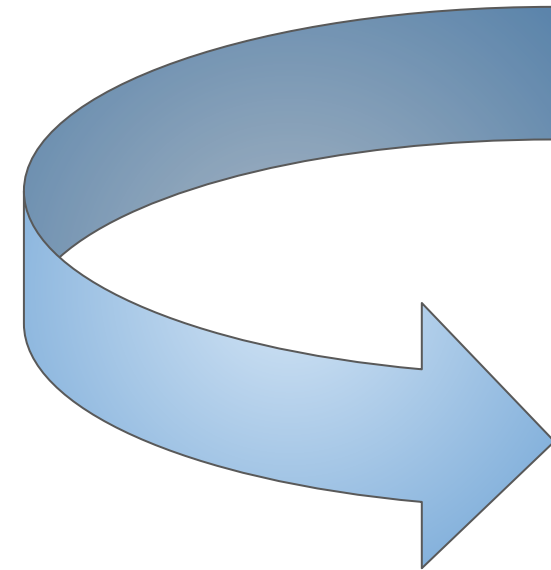- ➢ 204 No Content

Commonly Encountered Status Codes

Redirection Responses

For scenarios where a resource has changed its location, and the client needs to be informed about the new location to retrieve the desired content.

➢ 301 Moved Permanently
➢ 304 Not Modified
➢ 302 Found

REDIRECT

Commonly Encountered Status Codes

Client Error Responses

Indicates that the client seems to have made an error or the request cannot be fulfilled.

➢ 400 Bad Request
➢ 401 Authentication Required
➢ 403 Forbidden
➢ 404 Not Found

Error 404

Woops. Looks like this page doesn't exist.

Commonly Encountered Status Codes

Server Error Responses

The server has encountered an error or incapable of performing the request.

➢ 500 Internal Server Error
➢ 501 Not Implemented
➢ 502 Bad Gateway


```
rick@192.168.56.101's pa
Welcome to Ubuntu 14.04

 * Documentation:  https

   System information as

   System load:  0.0
   Usage of /:    54.8% of
   Memory usage: 8%
   Swap usage:    0%

   Graph this data and ma
      https://landscape.ca

Last login: Sun Oct  1 1
```

Commonly Encountered Status Codes

Informational Responses

It alerts the client to wait for a final response

➢ 100 Continue

```
POST /upload HTTP/1.1
Host: example.com
Content-Length: [size of the file]
Expect: 100-continue
```

```
HTTP/1.1 100 Continue
```

Alternative Uses Status Codes

When the requested resource is not found, whether it doesn't exist or if there was a 401 or 403, for security reasons, the service wants to mask.

In such cases, The Server might use 404.

Figure: 8

References

- https://developer.mozilla.org/en-US/docs/Web/HTTP/Overview
- https://personal.ntu.edu.sg/ehchua/programming/webprogramming/HTTP_Basics.html
- https://developer.mozilla.org/en-US/docs/Web/HTTP/Methods
- https://developer.mozilla.org/en-US/docs/Web/HTTP/Status
- https://restfulapi.net/http-status-codes/
- https://medium.com
- https://freepik.com

THANK YOU SO MUCH