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# HTTP Interactive with Server

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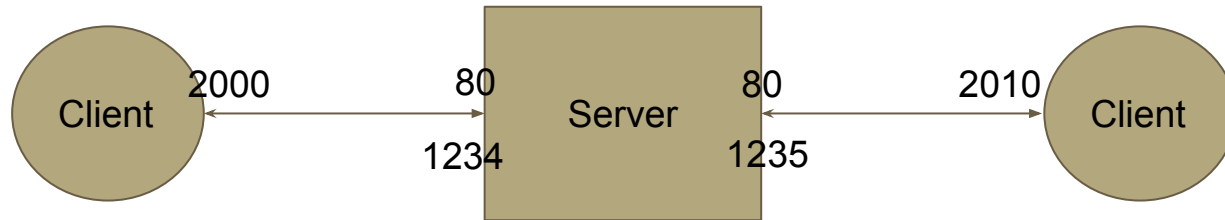
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# Agenda

- Basic HTTP
- XHR
- JSON

# HTTP - Hypertext Transfer Protocol

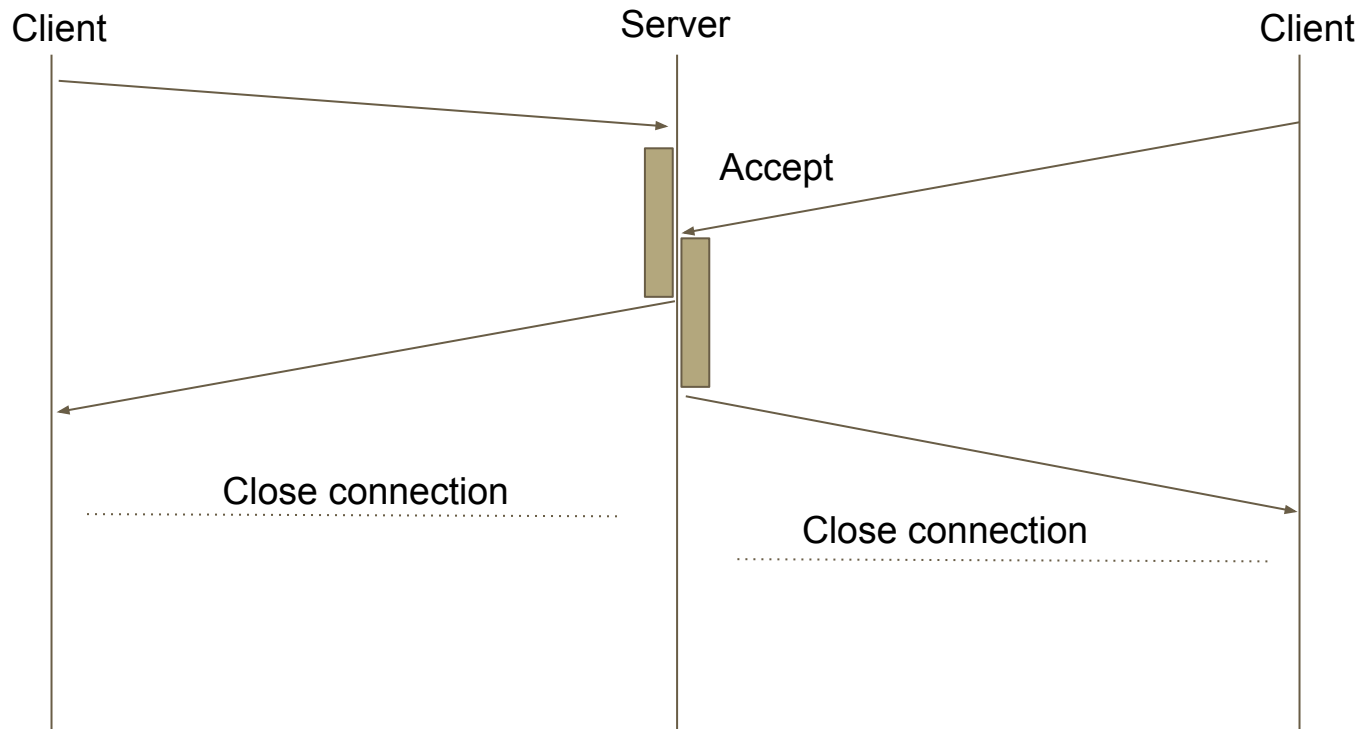
- Is a communication protocol used to send data from one program to another over the internet.
- At one end of the data transfer is a server and at the other end is a client.
- The client is often browser-based, but might also be a standalone program (cURL, Postman,...).
- The server binds to a host and port.



# HTTP

- The server can handle many requests at a single time, as follows:
  - Server listens
  - Client connects
  - Server accepts and receives request (and continues to listen)
  - Server can continue to accept other requests
  - Server writes response of request or several, possibly interleaved, requests
  - Server finally ends (closes) the response(s).

# HTTP



# HTTP

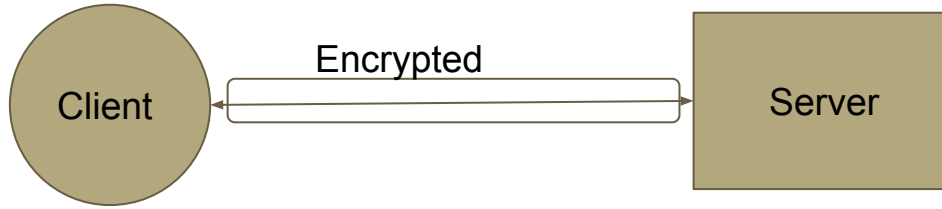
- The protocol is basically stateless, a transaction consisting of
  - Connection: The establishment of a connection by the client to the server - when using TCP/IP port 80 is the well-known port, but other non-reserved ports may be specified in the URL;
  - Request: The sending, by the client, of a request message to the server;
  - Response: The sending, by the server, of a response to the client;
  - Close: The closing of the connection by either both parties.

# HTTP

- HTTP Session: is a sequence of network request-response transactions
- Request methods: GET, HEAD, POST, PUT, DELETE, TRACE, OPTIONS, CONNECT, PATCH
- Status code: is a three-digit integer, and the first digit identifies the general category of response:
  - **1xx** indicates an informational message only
  - **2xx** indicates success of some kind
  - **3xx** redirects the client to another URL
  - **4xx** indicates an error on the client's part
  - **5xx** indicates an error on the server's part

# HTTPS

- HTTP Over SSL; HTTP Over TLS; HTTP Secure
- It base on HTTP with connection encrypted by TLS or SSL
- Normally server listen HTTPS on port 443





# XHR

- Short for XMLHttpRequest
- A web API allow to perform HTTP/ HTTPS request from browser to web server.
- Provides an easy way to retrieve data from a URL without having to do a full page refresh and enables a Web page to update just a part of the page

Syntax:

```
var myRequest = new XMLHttpRequest();
```

# JSON

- A data format
- Human-readable
- Key-value pair

Ex:

```
{  
  "first_name": "Huy"  
  "last_name": "Do",  
  "email": "huy.do@htklabs.com"  
}
```

# JSON

- Issue:
  - Special characters, such as “, NULL
- Parse in Javascript
  - Encode:

```
jsonString = JSON.stringify(data)
```

- Decode:

```
data = JSON.parse(jsonString)
```

# Assignment

1. Implement a simple web server (Using node)

Write XHR to request to this server

2. Implement XHR request to google.com
3. What is problem? How to overcome problem in 2 (3 solutions)



# Q&A



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**Thanks for your listening!**

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