01 - Assignment One

Web Development Ecosystem

***Complete the tasks below. If you need help, please use the learning content provided for each topic. Have fun!***

## HTTPS, HTTP, HTTP/2

### [ Learn: [1](https://codedelegance.com/blog/2017/07/02/Vanilla-Node-js-Web-Server-1/), [2](https://kinsta.com/learn/what-is-http2/), [3](https://developers.google.com/web/fundamentals/performance/http2), [4](https://frontendmasters.com/books/front-end-handbook/2019/#4) ]

1. In the following you can find the content of an HTTP Request. Answer to the following questions, indicating where (e.g., in which field) in the HTTP Request you can find the answer:  
    *GET /martignon/index.html HTTP/1.1*

*Host: cs.unibg.it*

*User Agent: Mozilla/5.0 (Macintosh; U; PPC Mac OS X; en) AppleWebKit/124*

*(KHTML, like Gecko) Safari/125*

*Accept: ext/xml, application/xml, application/xhtml+xml, text/html;q=0.9,*

*text/plain;q=0.8, image/png,\*,\*;q=0.5*

*Accept-Language: it*

*Keep-Alive: 300*

*Connection: keep-alive*

* 1. What is the requested URL? **cs.unibg.it /martignon/index.html**
  2. Which version of HTTP is used? **1.1**
  3. Does the browser ask for a persistent or a non-persistent connection? **Persistent**
  4. What is, in your opinion, the utility in indicating the type (and version) of browser used by the client in the HTTP Request? **The information of the browser type is needed to determine how the browser returns data whether it’s on a computer or mobile device.**

1. An HTTP client sends the following message:  
    *GET http://cs.unibg.it /index.html HTTP/1.1*

*User-agent: Mozilla/4.0*

*Accept: text/html, image/gif, image/jpeg*

*If-modified-since: 27 Feb 2017 08:10:00*

* 1. Write down two feasible responses of the HTTP server (only the status line)

**HTTP/1.1 200 OK**

**HTTP/1.1 304 Not Modified**

* 1. Assuming that the message is sent through a Proxy, specify the behavior of the Proxy itself. **The Proxy crosschecks if the resource is available in the local cache. If it’s not available, it forwards the message to the server.**

**If it is available, it crosschecks the date associated to the resource and if it’s older than the one noted in the message “If-modified-since”, it forwards the message to the server.**

## DNS & Domain Names

### [ Learn: [1](https://frontendmasters.com/books/front-end-handbook/2019/#4.3), [2](https://docs.microsoft.com/en-us/windows-server/administration/windows-commands/nslookup), [3](https://www.computerhope.com/nslookup.htm) ]

1. What is an Internet Standard **- an Internet Standard is a normative specification of a technology or methodology applicable to the Internet.**, and which document defines the DNS protocol? **The Domain Name Server**
2. Which design strategies enable the DNS to scale?
3. Demonstrate the interaction of the resolver library with the DNS servers.
   1. Using **nslookup**, manually replay all name-server requests emitted by the resolver library and its primary name server when searching for an A record for the name unknown.tu-dresden.de.
   2. Did one of the DNS answers come from a name server's cache? If yes: How would the request-answer sequence have differed if all the participating name server's caches would have been empty?
4. Besides translating names to IP addresses, which other information is stored in DNS?
5. Try looking up a well-known address: type www.microsoft.com. Notice that the query returns several IP addresses (Microsoft load-balances Web traffic by using multiple servers in the same DNS record).
6. Try looking up a nonexistent host: type www.fubijar.com. Notice that your server complains that it can't find the address. This is normal behavior.
7. Change the server to a nonexistent host (try making up a private IP address that you know isn't a DNS server on your network, like 10.10.10.10). Do this by typing server ipAddress. Nslookup will try to turn the IP address into a hostname. Eventually it will display a message telling you that the new default server is using the IP address you specified.
8. Try doing another lookup of a known DNS name. Type www.microsoft.com. Notice that nslookup is contacting the server you specified and that the lookup times out after a few seconds.

## Serving Web Assets

### [ Learn: [1](https://developer.mozilla.org/en-US/docs/Learn/Common_questions/What_is_a_web_server), [2](https://www.youtube.com/watch?v=JhpUch6lWMw), [3](https://www.youtube.com/watch?v=1ndlRiaYiWQ) ]

1. Nginx
   1. Install [**Nginx for Windows**](https://www.maketecheasier.com/install-nginx-server-windows/)

Graphical user interface, text

Description automatically generated

1. Apache
   1. Install [**Apache for Windows**](https://httpd.apache.org/docs/2.4/platform/windows.html)

Graphical user interface, text, application

Description automatically generated

1. Node.js
   1. Install [**HTTP Server**](https://www.npmjs.com/package/http-server) using NPM
2. 200 OK!
   1. Install [**Web Server for Chrome**](https://chrome.google.com/webstore/detail/web-server-for-chrome/ofhbbkphhbklhfoeikjpcbhemlocgigb?hl=en)

Graphical user interface, text, application

Description automatically generated

1. Abyss
   1. Install [**Abyss Web Server**](https://aprelium.com/abyssws/download.php)

Table

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## Hosting Providers

### [ Learn: [1](https://aws.amazon.com/free/?all-free-tier.sort-by=item.additionalFields.SortRank&all-free-tier.sort-order=asc&awsf.Free%20Tier%20Types=*all&awsf.Free%20Tier%20Categories=*all), [2](https://try.digitalocean.com/freetrialoffer/), [3](https://www.vultr.com/promo/try50/), [4](https://www.youtube.com/playlist?list=PLYxzS__5yYQk7h6aoN5_rvvvC8WUMxAaB) ]

1. AWS
   1. Create an Amazon Web Services account

Graphical user interface, application

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1. Digital Ocean
   1. Create an account at Digital Ocean

Graphical user interface, text, application, email

Description automatically generated

1. Vultr
   1. Create an account at Vultr

Graphical user interface, application, Teams

Description automatically generated

## SSL Certificates

### [ Learn: [1](https://aprelium.com/abyssws/articles/self-signed-cert.html), [2](https://www.sslforfree.com/), [3](https://zeropointdevelopment.com/how-to-get-https-working-in-windows-10-localhost-dev-environment/) ]

1. Using ANY of the servers from the objectives above, install an [**SSL certificate**](https://www.sslforfree.com/) for localhost (127.0.0.1).

Graphical user interface, text, application

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Graphical user interface, table

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**Not sure what to do here to actually install the SSL certificate.**

## Project Layout

1. Create a template directory that mirrors [**THIS ONE**](https://1drv.ms/t/s!AnLYPxKmUDfciLIFQSGgWgEjQaJQLA?e=R8ydd1).

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## Chrome Development Tools

### [ Learn: [0](https://www.udemy.com/course/chrome-devtools-web-developers-tutorial/), [1](https://www.codecademy.com/articles/use-devtools), [2](https://developer.chrome.com/docs/devtools/), [3](https://www.youtube.com/watch?v=x4q86IjJFag), [4](https://www.youtube.com/watch?v=Y3u2groOG-A), [5](https://developers.google.com/web/tools/lighthouse), [6](https://www.youtube.com/watch?v=x4q86IjJFag&t=2s) ]

1. Developer Console
   1. Complete [**THESE EXERCISES**](http://masteringdevtools.com/exercises)
2. Extensions
   1. Install all [**THESE CHROME EXTENSIONS**](https://wpastra.com/chrome-developer-extensions/)

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

**Tried adding Keyframes extension and received below error message.**

Graphical user interface, text, application, chat or text message, email

Description automatically generated

1. Google Lighthouse
   1. Use Google lighthouse to measure five (5) websites. Compare and contrast with [**THIS TOOL**](https://web.dev/measure/).

**Still trying to work some of these out in my head. If my grade is not so hot can I continue to work on and resubmit?**