Studying HTTP

Using **Chrome DevTool**, **cURL**, **Postman**

Learning Outcomes

Compare performance of HTTP/1.X and HTTP/2

Understanding HTTP Request/Response mechanisms by using

- Chrome Dev Tools
- curl command
- Postman

Comparison HTTP/1.X and HTTP/2

Go to

https://http2.golang.org/gophertiles

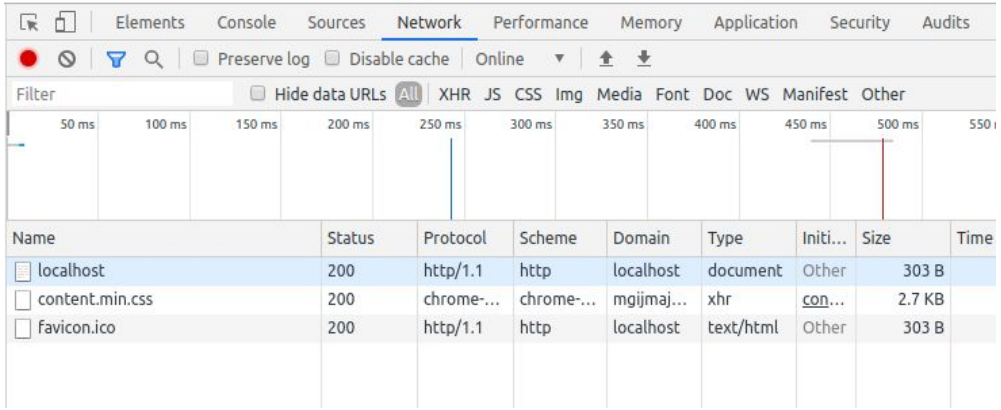
A grid of 180 tiled images

[HTTP/2, 0s latency] [HTTP/1, 0s latency]
[HTTP/2, 30ms latency] [HTTP/1, 30ms latency]
[HTTP/2, 200ms latency] [HTTP/1, 200ms latency]
[HTTP/2, 1s latency] [HTTP/1, 1s latency]

Chrome DevTools

Go to **Settings -> More Tools -> Developer Tools**

OR Press **Ctrl+Shift+I**



Tool Reference

https://developers.google.com/web/tools/chrome-devtools

https://developers.google.com/web/tools/chrome-devtools/network/reference

Comparison HTTP/1.X and HTTP/2

Click on the HTTP/1 version links and observe performance on Chrome Dev Tools

Click on the HTTP/2 version links and observe the performance on Chrome Dev Tools

Compare the performance between the two versions for same latency

[HTTP/2, 0s latency] [HTTP/1, 0s latency]
[HTTP/2, 30ms latency] [HTTP/1, 30ms latency]
[HTTP/2, 200ms latency] [HTTP/1, 200ms latency]
[HTTP/2, 1s latency] [HTTP/1, 1s latency]

Comparison HTTP/1.X and HTTP/2

Check

- the number of requests,
- the file size transferred
- the load time for each versions at the status bar of the Chrome DevTool as shown below

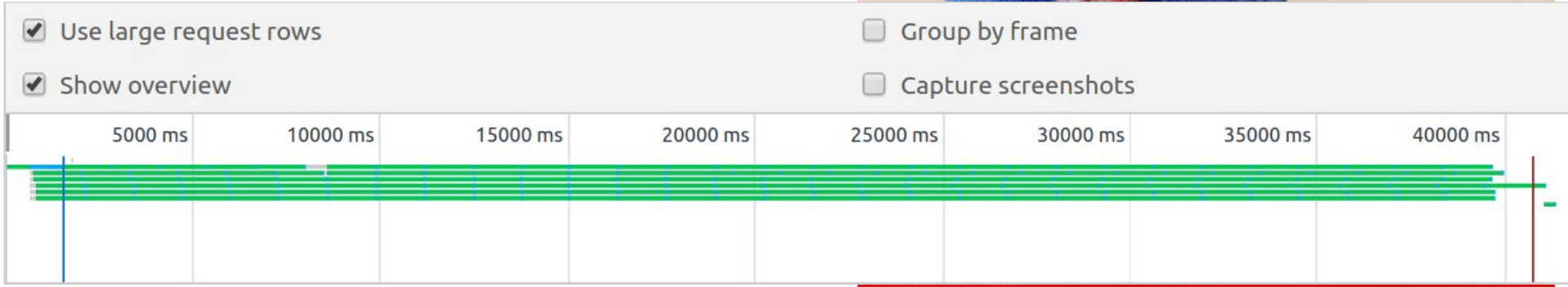
[HTTP/2, 0s latency] [HTTP/1, 0s latency]
[HTTP/2, 30ms latency] [HTTP/1, 30ms latency]
[HTTP/2, 200ms latency] [HTTP/1, 200ms latency]
[HTTP/2, 1s latency] [HTTP/1, 1s latency]

184 requests | 187 KB transferred | 164 KB resources | Finish: 41.28 s | DOMContentLoaded: 1.52 s | Load: 40.70 s

Comparison HTTP/1.X and HTTP/2

At the top observe the number of TCP connections established for each version

[HTTP/2, 0s latency] [HTTP/1, 0s latency]
[HTTP/2, 30ms latency] [HTTP/1, 30ms latency]
[HTTP/2, 200ms latency] [HTTP/1, 200ms latency]
[HTTP/2, 1s latency] [HTTP/1, 1s latency]

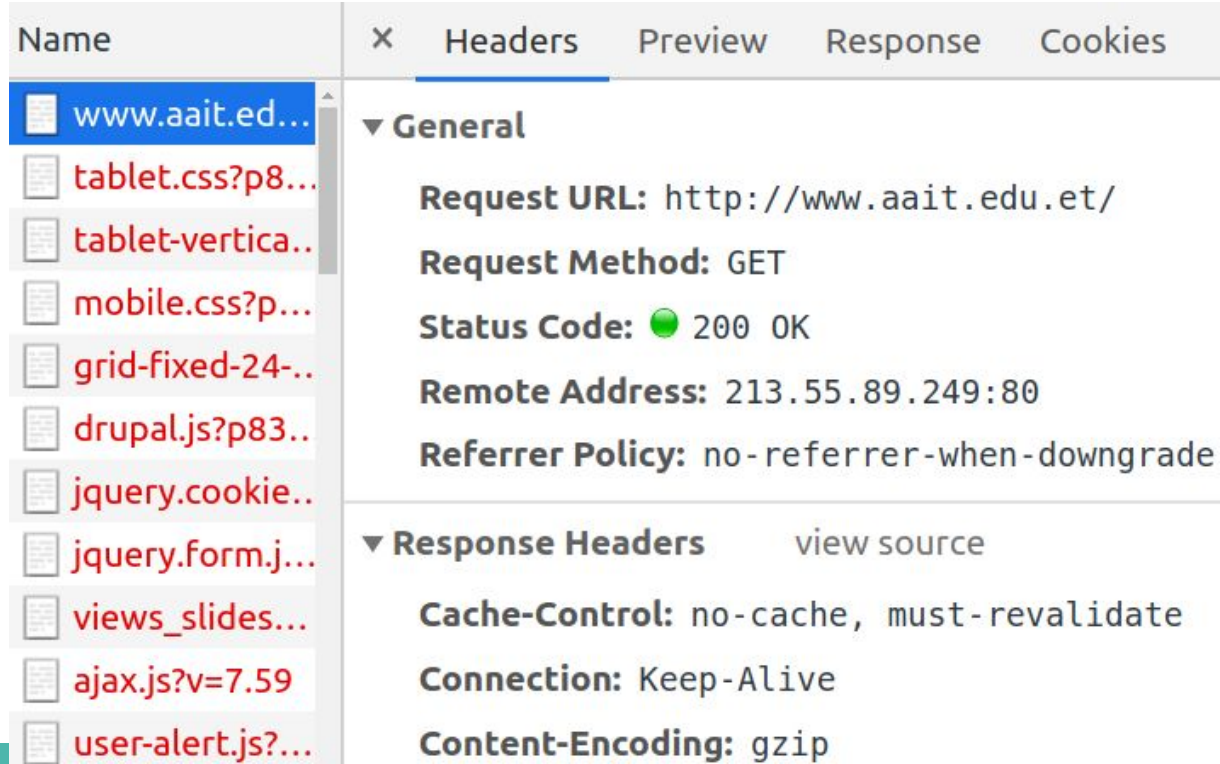


Study HTTP Request/Response [Chrome Dev Tool]

Go to **www.aait.edu.et**

Open **Chrome Dev Tool** and select the **Network** Tab

Select the first resource and then select the Headers section



Study HTTP Request/Response [Chrome Dev Tool]

What HTTP version is the site serving?

Study the HTTP General, Request and Response headers by referencing the following document or by searching the particular head component on Google

`https://developer.mozilla.org/en-US/docs/Web/HTTP/Headers`

What version of HTTP does Google use?

Study HTTP Request/Response [curl]

Installing curl

Ubuntu and Debian

```
apt install curl
```

Redhat and Centos

```
yum install curl
```

MacOS

```
brew install curl
```

Study HTTP Request/Response [curl]

Installing curl

Windows

Available on windows 10 version 1803 or later

If not available download and install it from the following link

`https://curl.haxx.se/windows/`

Reference: `https://ec.haxx.se/`

`https://linuxacademy.com/guide/13852-understanding-curl-and-http-headers/`

How to HTTP with curl

GET	`curl http://www.example.com`
POST	`curl -d “data to post” http://www.example.com`
PUT	`curl -T file1 http://example.com/new/res/file0`
HEAD	`curl -I http://www.example.com`

How to HTTP with curl

You can ask curl to both ask for compressed content and automatically and transparently uncompress gzipped data when receiving content encoded gzip by using `--compressed`

```
curl --compressed http://example.com/
```

How to HTTP with curl

To tell curl to do an authenticated HTTP request, you use the `-u`, `--user` option to provide username and password

```
curl --user bet:p@$$w0rd http://example.com/
```

How to HTTP with curl

You can make curl ask for a range with `-r` or `--range`. If you want the first 200 bytes out of something:

```
curl -r 0-199 http://example.com
```

How to HTTP with curl

Sending "URL encoded" `POST` request

```
curl -d 'name=admin&shoesize=12' http://example.com/
```

`POST`ing with curl's `-d` option will make it include a default header that looks like `Content-Type: application/x-www-form-urlencoded`

However, if you `POST JSON` to a server and want to more accurately tell the server about what the content is you can do like the following

```
curl -d '{json}' -H 'Content-Type: application/json'
https://example.com
```

How to HTTP with curl

You can customize request headers

To change the `Host:` header, do this:

```
curl -H "Host: test.example" http://example.com/
```

To add a `Elevator: floor-9` header, do this:

```
curl -H "Elevator: floor-9" http://example.com/
```

To switch off the **User-Agent:** header, do this:

```
curl -H "User-Agent:" http://example.com/
```

How to HTTP with curl

With curl you set the referer header with **`-e`** or **`--referer`**, like this:

```
curl --referer http://comes-from.example.com
https://www.example.com/
```

When a user clicks on a link on a web page and the browser takes the user away to the next URL, it will send the new URL a "referer" header in the new request telling it where it came from. That is the referer header

How to HTTP with curl

Ask a server to only deliver a response if the resource has been modified after a particular time:

```
curl --time-cond "1 Jul 2019"
https://www.example.org/file.html
```

This is example of conditional requests.

Conditional requests are requests that contain a condition in the sense that it asks the server to only deliver a response body if the associated condition evaluates true.

How to HTTP with curl

curl supports HTTP/2 for both HTTP:// and HTTPS:// URLs

To ask a server to use HTTP/2, just:

```
curl --http2 http://example.com/
```

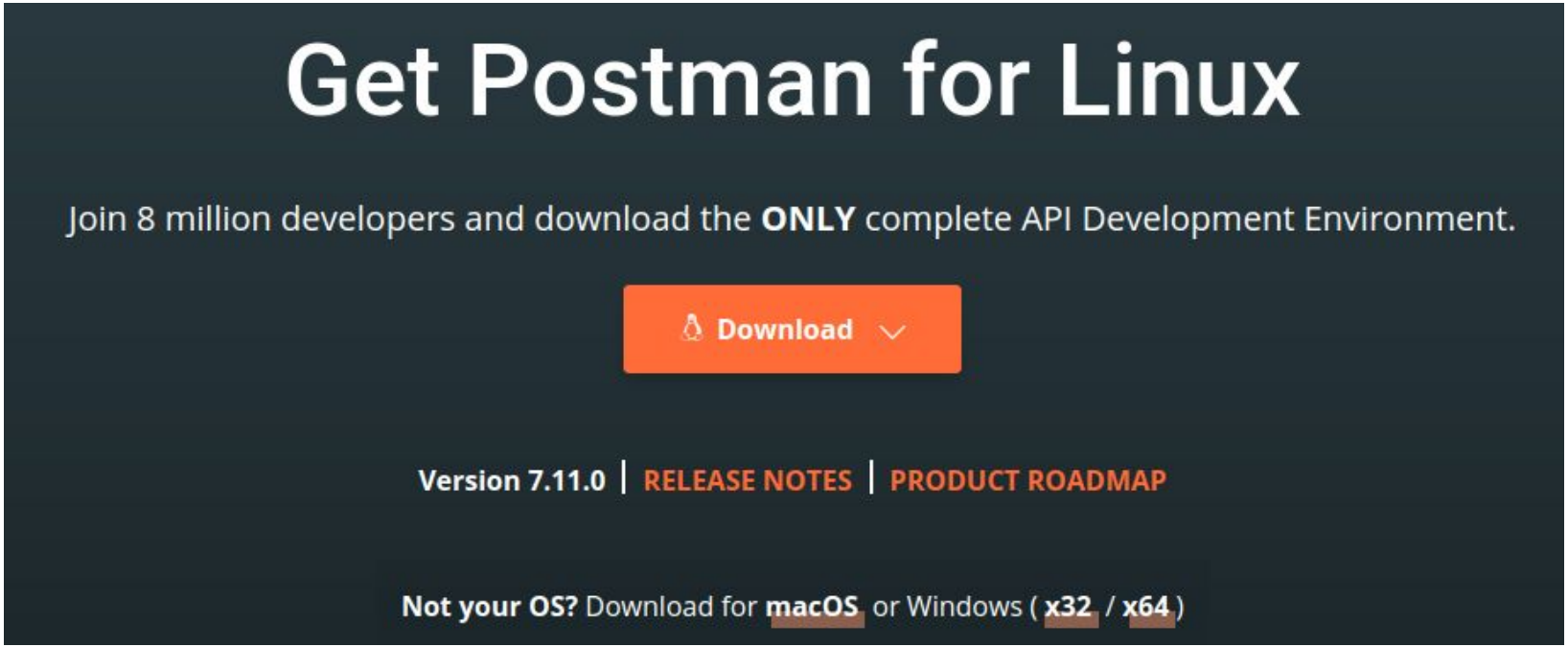
How to HTTP with curl

curl HTTP cheat sheet

Verbose	hide progress	extra info	Write output	Timeout
-v --trace-ascii <file>	-s	-w "format"	-O -o <file>	-m <seconds>
POST	**multipart formpost**	**PUT**	**HEAD**	**Custom method**
-d "string" -d @file	-F name=value -F name=@file	-T <file>	-I	-X "METHOD"
Basic auth	**read cookiejar**	**write cookiejar**	**send cookies**	**user-agent**
-u user:password	-b <file>	-c <file>	-b "c=1; d=2"	-A "string"
Use proxy	**Headers, add/remove**	**follow redirects**	**gzipped response**	**Insecure HTTPS**
-x <host:port>	-H "name: value" -H "name:"	-L	--compressed	-k

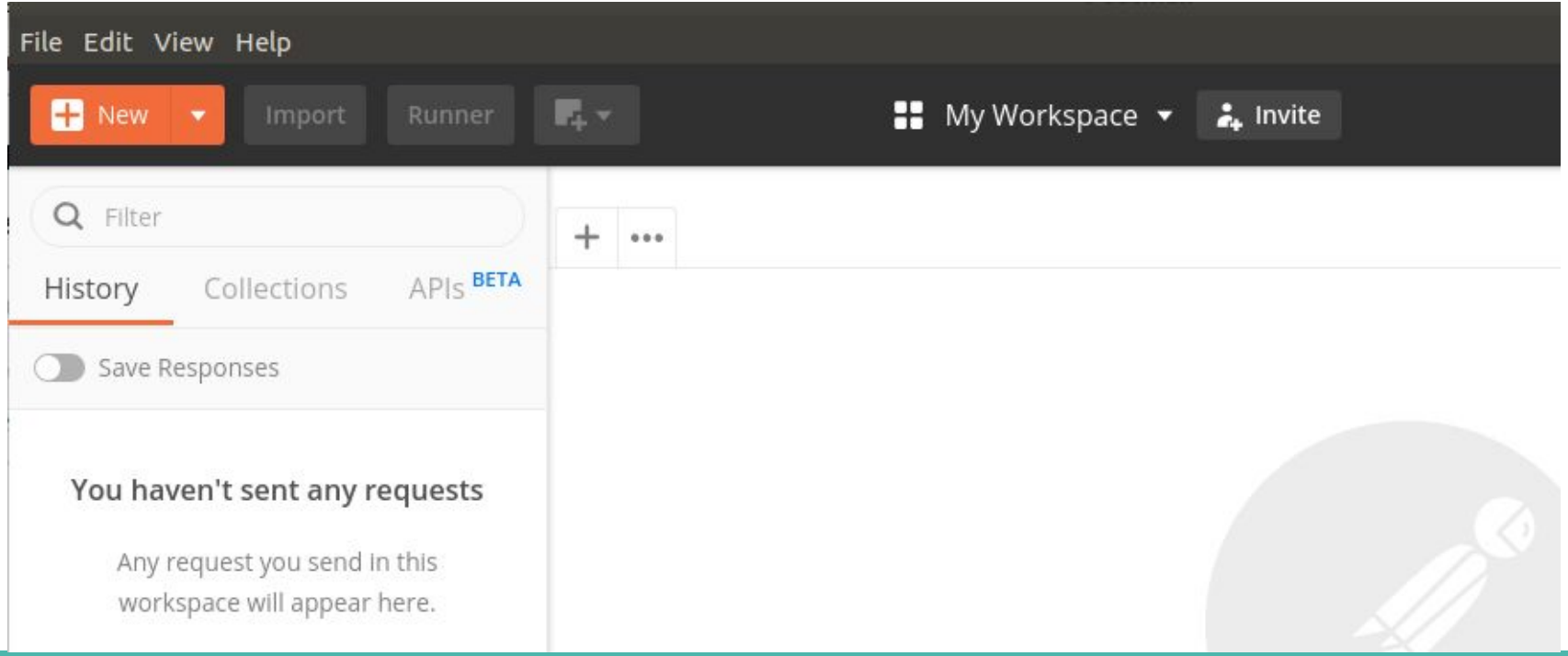
Study HTTP Request/Response [Postman]

Download Postman (`https://www.getpostman.com/downloads/`)



Study HTTP Request/Response [Postman]

New button is where you will create a new request, collection or environment.



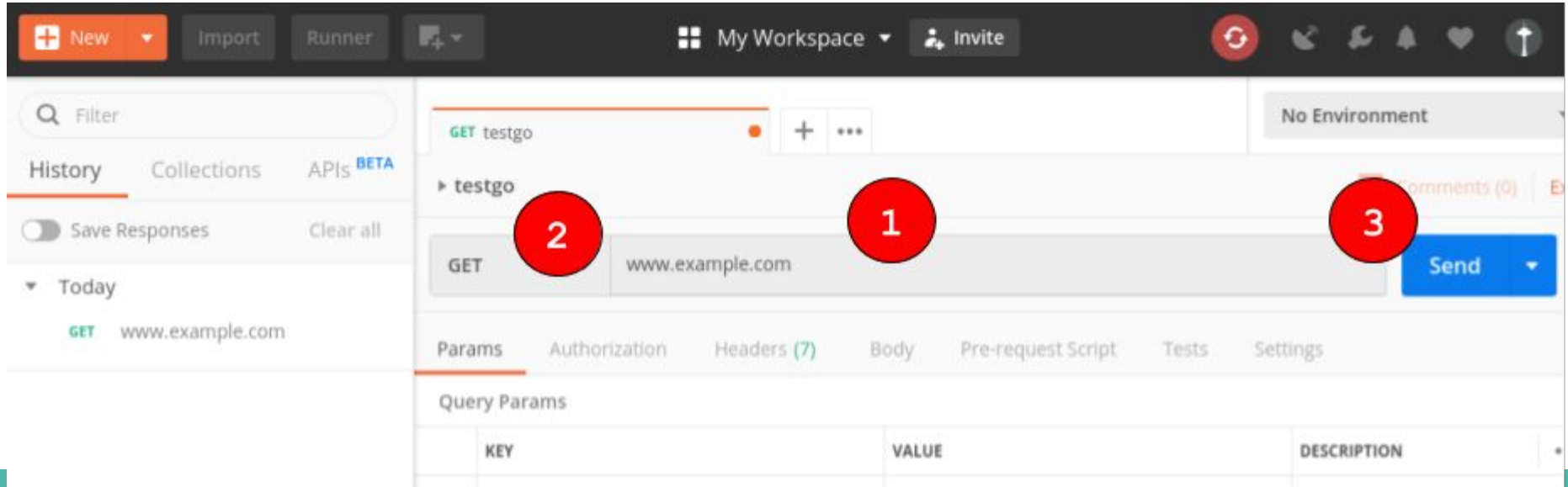
Study HTTP Request/Response [Postman]

Making Get Request

1 Type the **URL**

2 Select the **GET** method

3 Press the **Send** button



Study HTTP Request/Response [Postman]

The response body will is shown at the bottom

Body Cookies Headers (12) Test Results Status: 200 OK Time: 184ms Size: 1015 B

Pretty Raw Preview Visualize BETA HTML

```
1  <!doctype html>
2  <html>
3
4  <head>
5      <title>Example Domain</title>
6
7      <meta charset="utf-8" />
8      <meta http-equiv="Content-type" content="text/html; charset=utf-8" />
9      <meta name="viewport" content="width=device-width, initial-scale=1" />
```

Study HTTP Request/Response [Postman]

You can also see the response header

Body Cookies Headers (12) Test Results Status: 200 OK Time: 364m

	KEY	VALUE
	Content-Encoding	gzip
	Accept-Ranges	bytes
	Cache-Control	max-age=604800
	Content-Type	text/html; charset=UTF-8

Assignment

Study postman in detail by going to the following link

https://www.guru99.com/postman-tutorial.html