Programming Lab 3

Practical No. 3

To study web browser and its Developer Tools option.

2019BTECS00058 Devang K Batch: T7

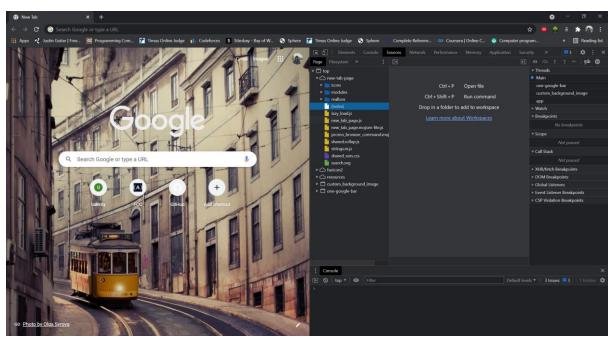
Problem Statement 1:

Install different web browsers on your machine. Go through the Developer Tools option of the browser.

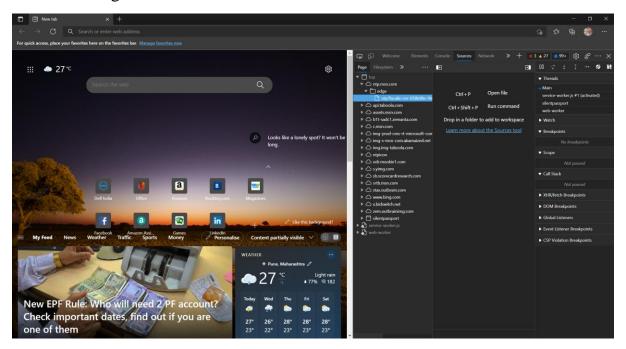
We shall use 2 browsers – Chrome and Edge.

We access the Developer Tools using Ctrl + Shift + I

Google Chrome:



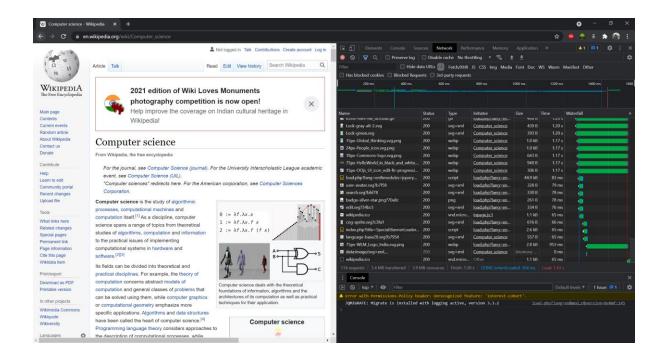
Microsoft Edge:



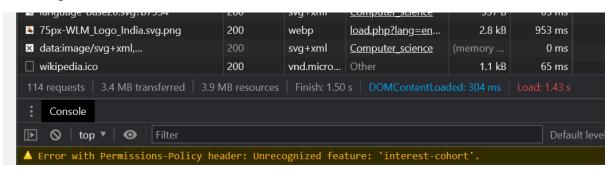
Problem Statement 2:

- 1. Visit https://en.wikipedia.org/wiki/Computer_science on various browsers.
- 2. Using browser's Developer Tools option find out how many requests-response cycles are needed to load the page fully on your machine?

On Chrome, we look into the networks tab.

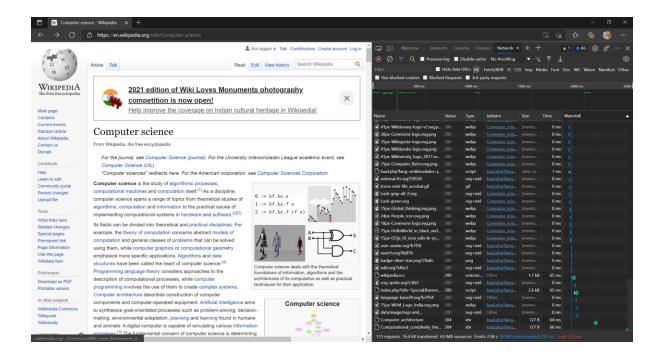


Looking closer, we find:

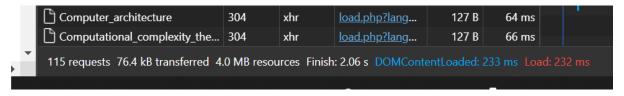


A total of 114 request-response cycles were needed to load the page fully.

On Edge:

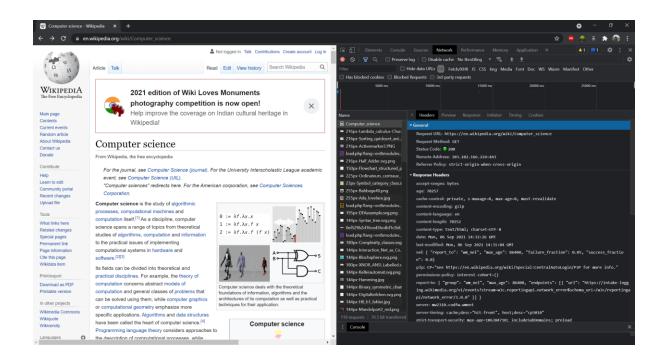


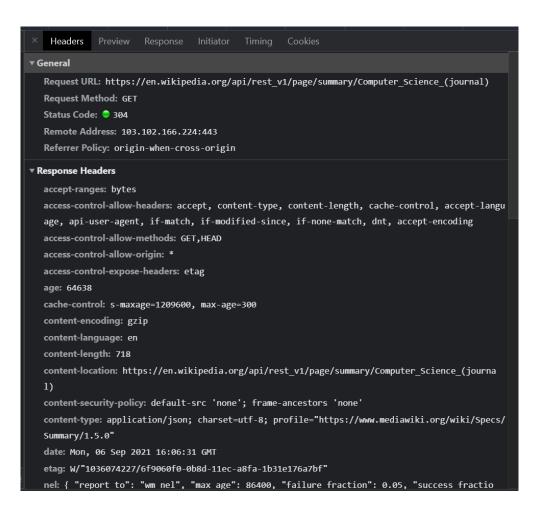
Looking closer, we find:



- 115 request-response cycles on Edge.
- 3. Using browser's Developer Tools option get the header information of the page.

On chrome, we look in networks tab and select the main HTMl file that is received.

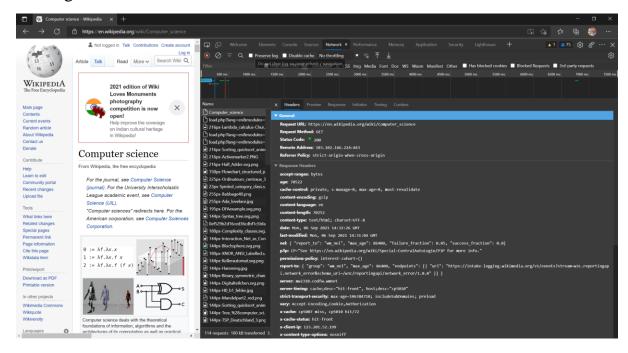




```
Headers Preview Response Initiator Timing Cookies
  etag: W/"1036074227/6f9060f0-0b8d-11ec-a8fa-1b31e176a7bf"
  nel: { "report_to": "wm_nel", "max_age": 86400, "failure_fraction": 0.05, "success_fractio
  n": 0.0}
  permissions-policy: interest-cohort=()
  referrer-policy: origin-when-cross-origin
  report-to: { "group": "wm_nel", "max_age": 86400, "endpoints": [{ "url": "https://intake-logg
  ing.wikimedia.org/v1/events?stream=w3c.reportingapi.network_error&schema_uri=/w3c/reportinga
  pi/network_error/1.0.0" }] }
  server: ATS/8.0.8
  server-timing: cache;desc="hit-front", host;desc="cp5010"
  strict-transport-security: max-age=106384710; includeSubDomains; preload
  vary: Accept-Encoding
  x-cache: cp5008 hit, cp5010 hit/12
  x-cache-status: hit-front
  x-client-ip: 123.201.52.199
  x-content-security-policy: default-src 'none'; frame-ancestors 'none'
  x-content-type-options: nosniff
  x-frame-options: SAMEORIGIN
  x-webkit-csp: default-src 'none'; frame-ancestors 'none'
  x-xss-protection: 1; mode=block
▼ Request Headers
  :authority: en.wikipedia.org
  :method: GET
  :path: /api/rest_v1/page/summary/Computer_Science_(journal)
  accept: application/json; charset=utf-8; profile="https://www.mediawiki.org/wiki/Specs/Summar
```

```
× Headers Preview Response Initiator Timing Cookies
  x-webkit-csp: default-src 'none'; frame-ancestors 'none'
  x-xss-protection: 1; mode=block
▼ Request Headers
  :authority: en.wikipedia.org
  :method: GET
  :path: /api/rest_v1/page/summary/Computer_Science_(journal)
  :scheme: https
  accept: application/json; charset=utf-8; profile="https://www.mediawiki.org/wiki/Specs/Summar
  y/1.2.0"
  accept-encoding: gzip, deflate, br
  accept-language: en
  cookie: WMF-Last-Access=07-Sep-2021; WMF-Last-Access-Global=07-Sep-2021; GeoIP=IN:MH:Pune:1
  8.62:73.73:v4; enwikimwuser-sessionId=06c5baa60cf805ac328a; enwikiwmE-sessionTickLastTickTim
  e=1631008988348; enwikiwmE-sessionTickTickCount=57; enwikiel-sessionId=8fb7bb4f5018dafb62e
  if-none-match: W/"1036074227/6f9060f0-0b8d-11ec-a8fa-1b31e176a7bf"
  referer: https://en.wikipedia.org/wiki/Computer science
  sec-ch-ua: "Google Chrome";v="93", " Not;A Brand";v="99", "Chromium";v="93"
  sec-ch-ua-mobile: ?0
  sec-ch-ua-platform: "Windows"
  sec-fetch-dest: empty
  sec-fetch-mode: cors
  sec-fetch-site: same-origin
  user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)
  Chrome/93.0.4577.63 Safari/537.36
  x-requested-with: XMLHttpRequest
```

On Edge:



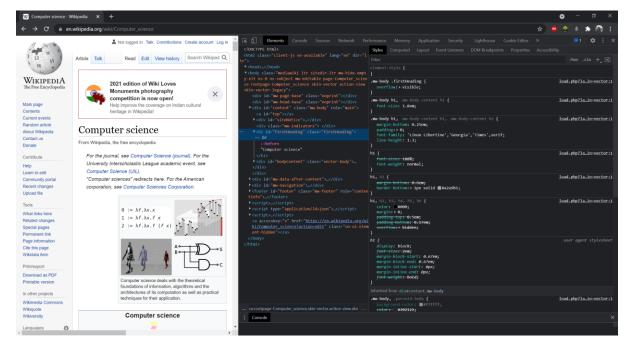
We focus on the request and response headers.

```
X Headers Preview Response Initiator Timing Cookies
  Request URL: https://en.wikipedia.org/wiki/Computer_science
  Request Method: GET
  Status Code: 200
  Remote Address: 103.102.166.224:443
  Referrer Policy: strict-origin-when-cross-origin
Response Headers
  accept-ranges: bytes
  age: 70522
  cache-control: private, s-maxage=0, max-age=0, must-revalidate
  content-encoding: gzip
     ntent-language: en
  content-length: 70252
  content-type: text/html; charset=UTF-8
  date: Mon, 06 Sep 2021 14:32:26 GMT
  last-modified: Mon, 06 Sep 2021 14:31:04 GMT
  nel: { "report_to": "wm_nel", "max_age": 86400, "failure_fraction": 0.05, "success_fraction": 0.0}
  p3p: CP="See https://en.wikipedia.org/wiki/Special:CentralAutoLogin/P3P for more info."
  permissions-policy: interest-cohort=()
  report-to: { "group": "wm_nel", "max_age": 86400, "endpoints": [{ "url": "https://intake-logging.wikimedia.org/v1/events?stream=w3c.reportingap
  i.network_error&schema_uri=/w3c/reportingapi/network_error/1.0.0" }] }
  server: mw2310.codfw.wmnet
  server-timing: cache;desc="hit-front", host;desc="cp5010"
  strict-transport-security: max-age=106384710; includeSubDomains; preload
  vary: Accept-Encoding, Cookie, Authorization
  x-cache: cp5007 miss, cp5010 hit/72
  x-cache-status: hit-front
  x-client-ip: 123.201.52.199
  x-content-type-options: nosniff
```

```
Headers Preview Response Initiator Timing Cookies
i.network_error&schema_uri=/w3c/reportingapi/network_error/1.0.0" }] }
    er-timing: cache;desc="hit-front", host;desc="cp5010"
strict-transport-security: max-age=106384710; includeSubDomains; preload
 ary: Accept-Encoding,Cookie,Authorization
     he: cp5007 miss, cp5010 hit/72
 c-cache-status: hit-front
x-client-ip: 123.201.52.199
:method: GET
:path: /wiki/Computer science
      e: https
  sept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.9
       ncoding: gzip, deflate, br
    pt-language: en-US.en:q=0.9
cache-control: max-age=0
      : WMF-Last-Access=07-Sep-2021; WMF-Last-Access-Global=07-Sep-2021; GeoIP=IN:MH:Pune:18.62:73.73:v4; enwikimwuser-sessionId=aff4f582aa8a981
    4; enwikiel-sessionId=4acaf36b9e59772129e0; enwikiwmE-sessionTickLastTickTime=1631009224819; enwikiwmE-sessionTickTickCount=34
   -ch-ua: "Microsoft Edge";v="93", " Not;A Brand";v="99", "Chromium";v="93"
   -ch-ua-mobile: ?0
   ch-ua-platform: "Windows'
     tch-mode: navigate
sec-fetch-site: none
     agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/93.0.4577.63 Safari/537.36 Edg/93.0.961.38
```

4. Using browser's Developer Tools option go through the DOM, CSS editor and JavaScript debugger options.

On Chrome, we right-click and inspect.

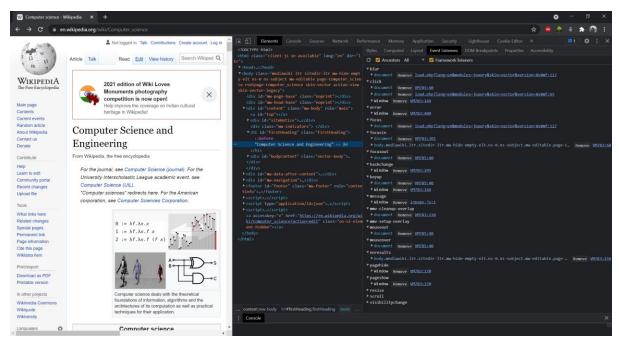


Looking closer,

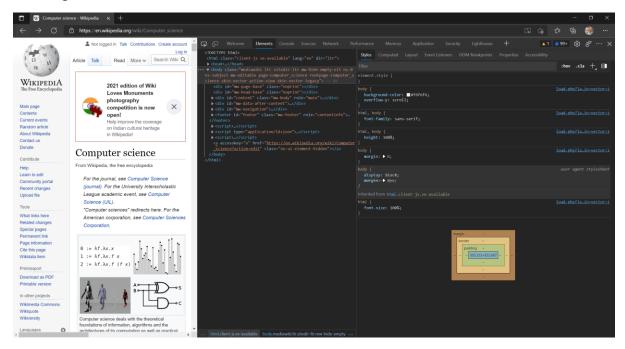
```
🖟 🚹 | Elements Console Sources Network Performance Memory Application Security Lighthouse Cookie Editor »
                                                                                                                                                                                                                   Styles Computed Layout Event Listeners DOM Breakpoints Properties Accessibility
  .mw-body .firstHeading {
   overflow: ▶ visible;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        load.php?la…in=vector:1
                                                                                                                                                                                                                   .mw-body h1, .mw-body-content h1 {
  font-size: 1.8em;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       load.php?la..in=vector:1
                                                                                                                                                                                                                   .mw-body h1, .mw-body-content h1, .mw-body-content h2 {
   margin-bottom: 0.25em;
   padding: > 0;
   font-family: 'Linux Libertine','Georgia','Times',serif;
   line-height: 1.3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       load.php?la..in=vector:1
                <div class="mw-indicators"> </div>
▼<h1 id="firstHeading" class="firstHeading">
                         ::before
"Computer science"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        load.php?la..in=vector:1
                                                                                                                                                                                                                           font-size: 188%;
font-weight: normal;
          \(d\) id="mw-data-after-content">\(\times\)/div>
\(\times\) id="mw-navigation">\(\times\)/div>
\(\times\)/div id="mw-navigation">\(\times\)/div>
\(\times\)/footer id="footer" class="mw-footer" role="content")
}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       load.php?la..in=vector:1
                                                                                                                                                                                                                h1, h2 {
                                                                                                                                                                                                                           margin-bottom: 0.6em;
border-bottom: ▶ 1px solid ■#a2a9b1;
                                                                                                                                                                                                               h1, h2, h3, h4, h5, h6 {
  color: | #000;
  margin: > 0;
  padding-top: 0.5em;
  padding-bottom: 0.17em;
  overflow: > hidden;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       load.php?la...in=vector:1

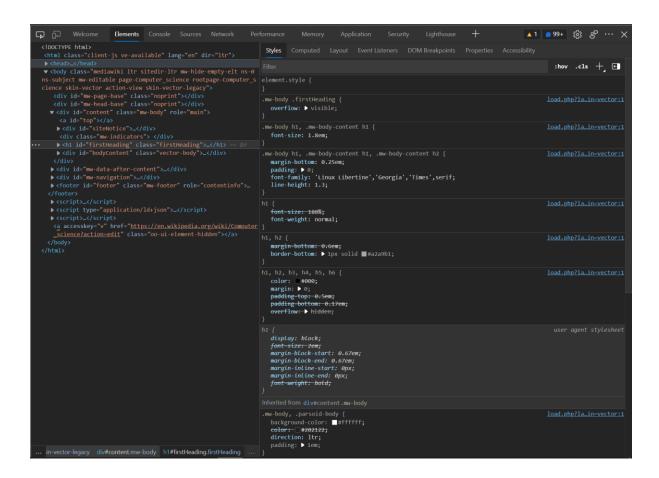
*\cscript type= application/in+json /=\footnote{
*\cscriptts=\scripts=\scripts=\footnote{
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*\cscript
                                                                                                                                                                                                                display: block;
font size: 2em;
margin-block-start: 0.67em;
margin-block-end: 0.67em;
margin-inline-start: 0px;
                                                                                                                                                                                                                Inherited from div#content.mw-body
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       load.php?la..in=vector:1
```

Manipulating some DOM we can experiment on the browser.



On Edge, we find similar UI





We can manipulate some DOM and CSS for testing and debugging

