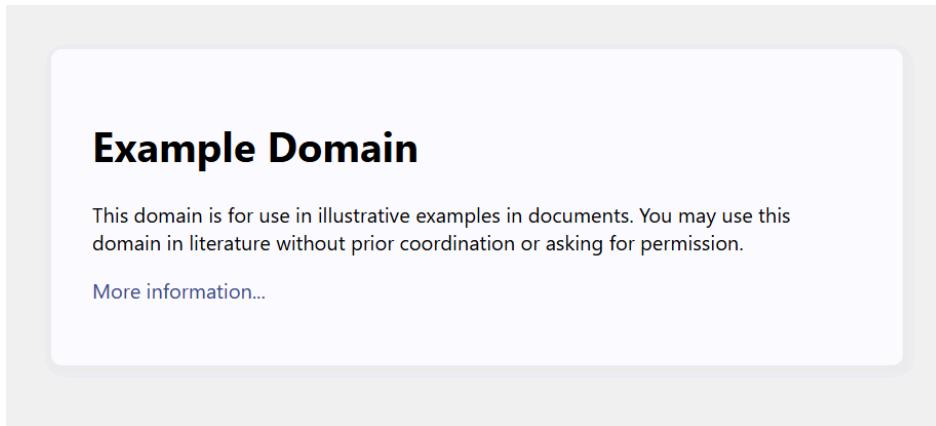
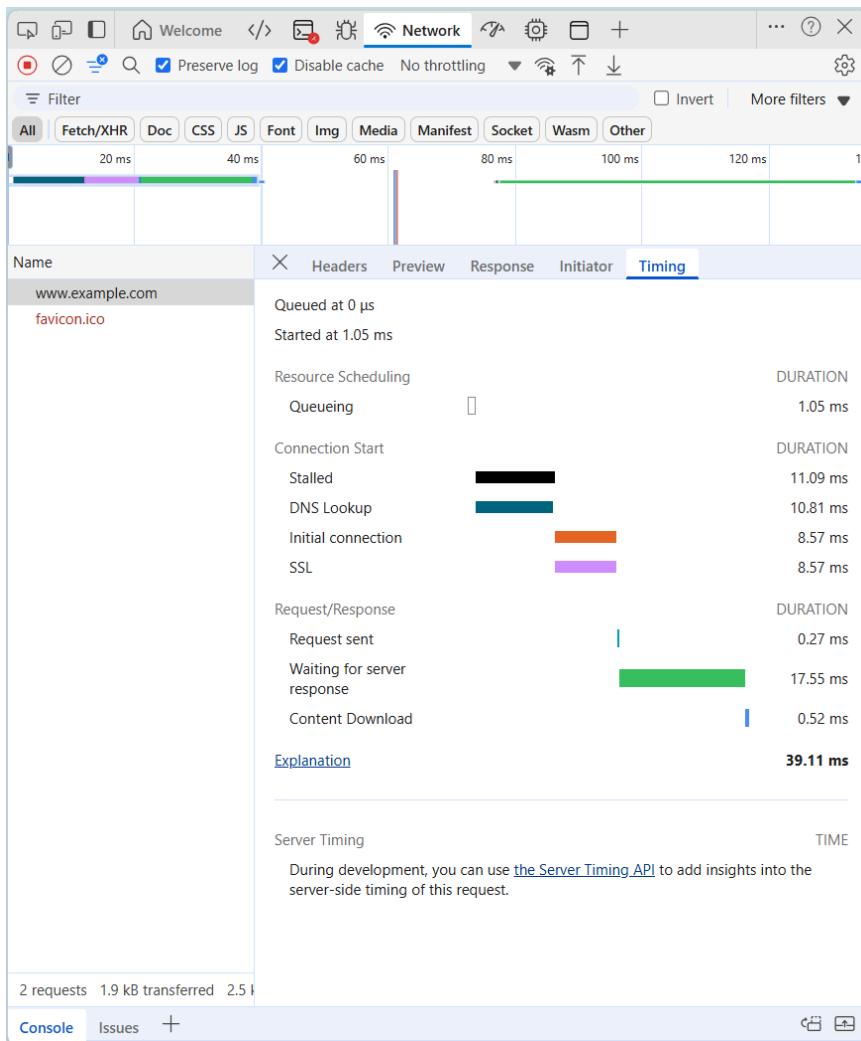


Lab Manual Part A

Scene 1 — You (the Client) enter the web



Scene 2 — “Where is example.com?” (DNS & first contacts)



### Scene 3 — “Knock, knock” (TCP + TLS)

The screenshot shows a browser window with the title "Scene 3 — “Knock, knock” (TCP + TLS)". The top navigation bar includes icons for back, forward, search, and other browser functions, followed by "Privacy and security" which is underlined in blue, indicating it is the active tab. Below the navigation bar, there are two main sections: "Privacy" and "Security".

**Privacy** section:

- Controls**: Represented by a gear icon.
- Third-party cookies**: Represented by a cookie icon.

**Security** section:

- Overview**: Represented by a lock icon, and this option is currently selected, indicated by a blue background and white text.
- Main origin**: Represented by a lock icon.

Under "Main origin":

- Reload to view details**

**Security overview** section:

This page is secure (valid HTTPS).

**Certificate** - valid and trusted

The connection to this site is using a valid, trusted server certificate issued by DigiCert Global G3 TLS ECC SHA384 2020 CA1.

[View certificate](#)

**Connection** - secure connection settings

The connection to this site is encrypted and authenticated using QUIC, X25519, and AES\_256\_GCM.

**Resources** - all served securely

All resources on this page are served securely.

## Scene 4 — “May I have the page?” (HTTP request)

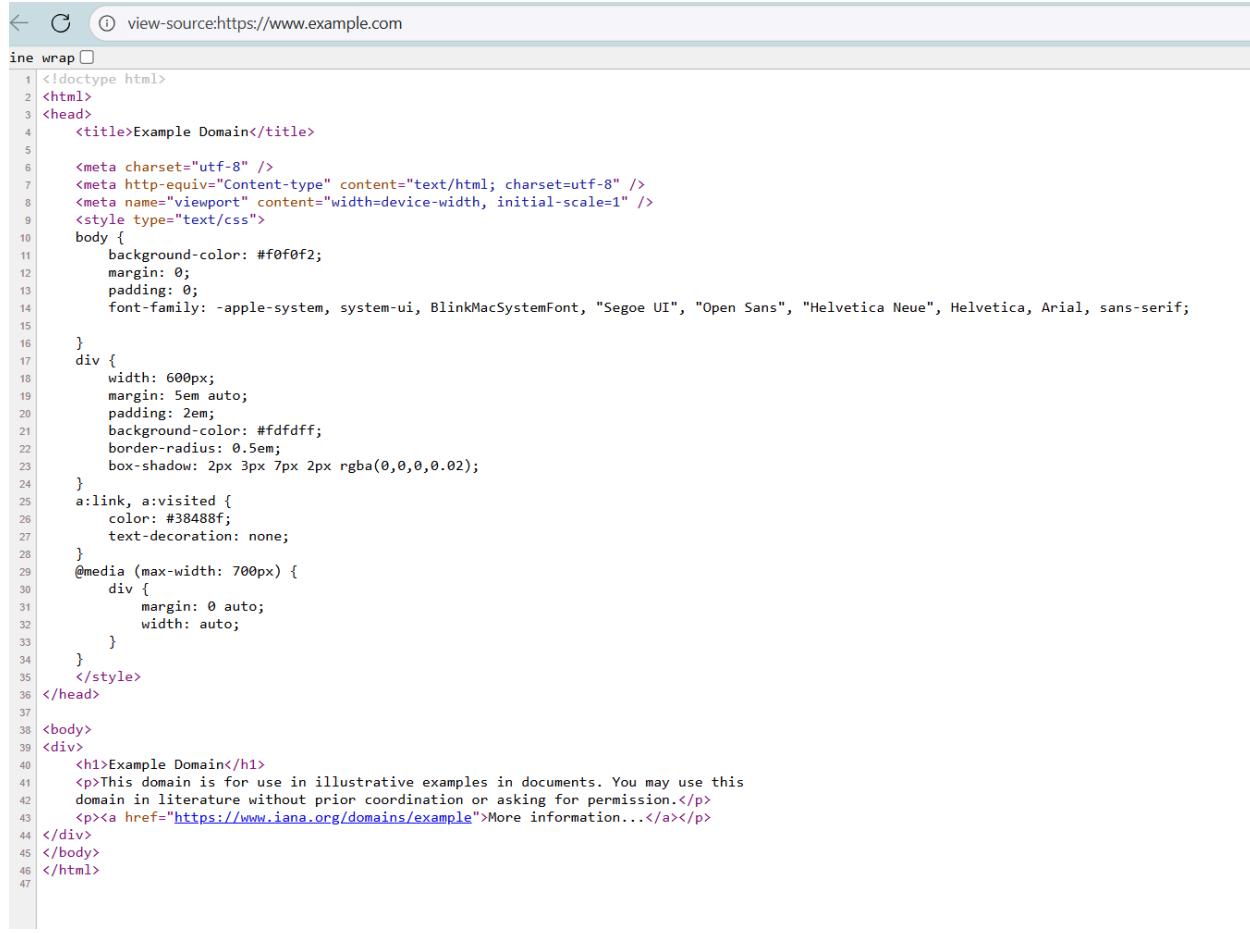
The screenshot shows the NetworkMiner interface with a single captured request for the favicon of www.example.com. The request details are as follows:

- Method: GET
- Status: 200 OK
- Headers: strict-origin-when-cross-origin
- Timestamp: 5:17 GMT
- Content-Type: html+xml,application/xml;q=0.9

A context menu is open over the request, with the "Copy as cURL (cmd)" option highlighted. Other options in the menu include "Copy URL", "Copy as cURL (bash)", "Copy as PowerShell", "Copy as fetch", "Copy as fetch (Node.js)", "Copy response", "Copy all URLs", "Copy all as cURL (cmd)", "Copy all as cURL (bash)", "Copy all as PowerShell", "Copy all as fetch", "Copy all as fetch (Node.js)", and "Copy all as HAR (sanitized)".

```
curl
^"https://www.example.com/" ^
-H ^"accept:
text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7" ^
-H ^"accept-language: en-US,en;q=0.9" ^
-H ^"cache-control: no-cache" ^
-H ^"pragma: no-cache" ^
-H ^"priority: u=0, i" ^
-H ^"sec-ch-ua: ^\"Chromium\";v=^\"140\" , ^\"Not=A?Brand\";v=^\"24\" ,
^\"Microsoft Edge\";v=^\"140\"^\"^" ^
-H ^"sec-ch-ua-mobile: ?0" ^
-H ^"sec-ch-ua-platform: ^\"Windows\"^\"^" ^
-H ^"sec-fetch-dest: document" ^
-H ^"sec-fetch-mode: navigate" ^
-H ^"sec-fetch-site: none" ^
-H ^"sec-fetch-user: ?1" ^
-H ^"upgrade-insecure-requests: 1" ^
-H ^"user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML,
like Gecko) Chrome/140.0.0.0 Safari/537.36 Edg/140.0.0.0"
```

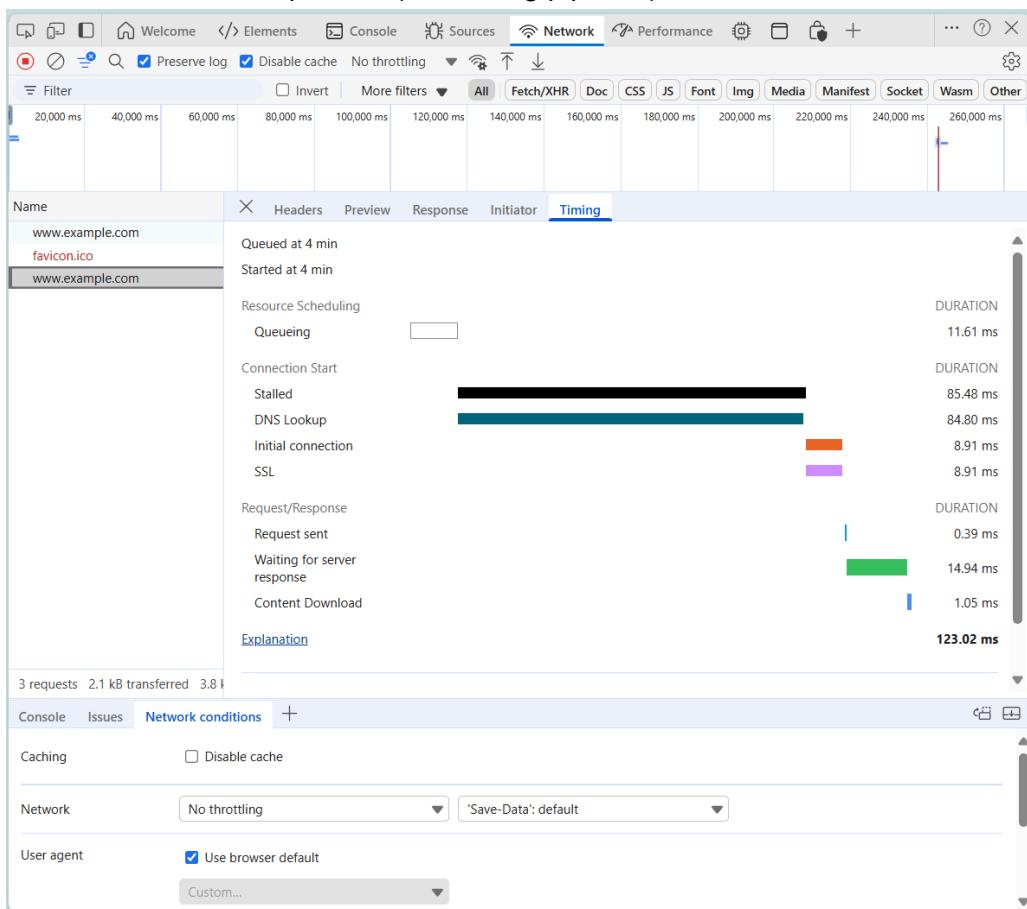
## Scene 5 — “Here you go” (HTTP response)



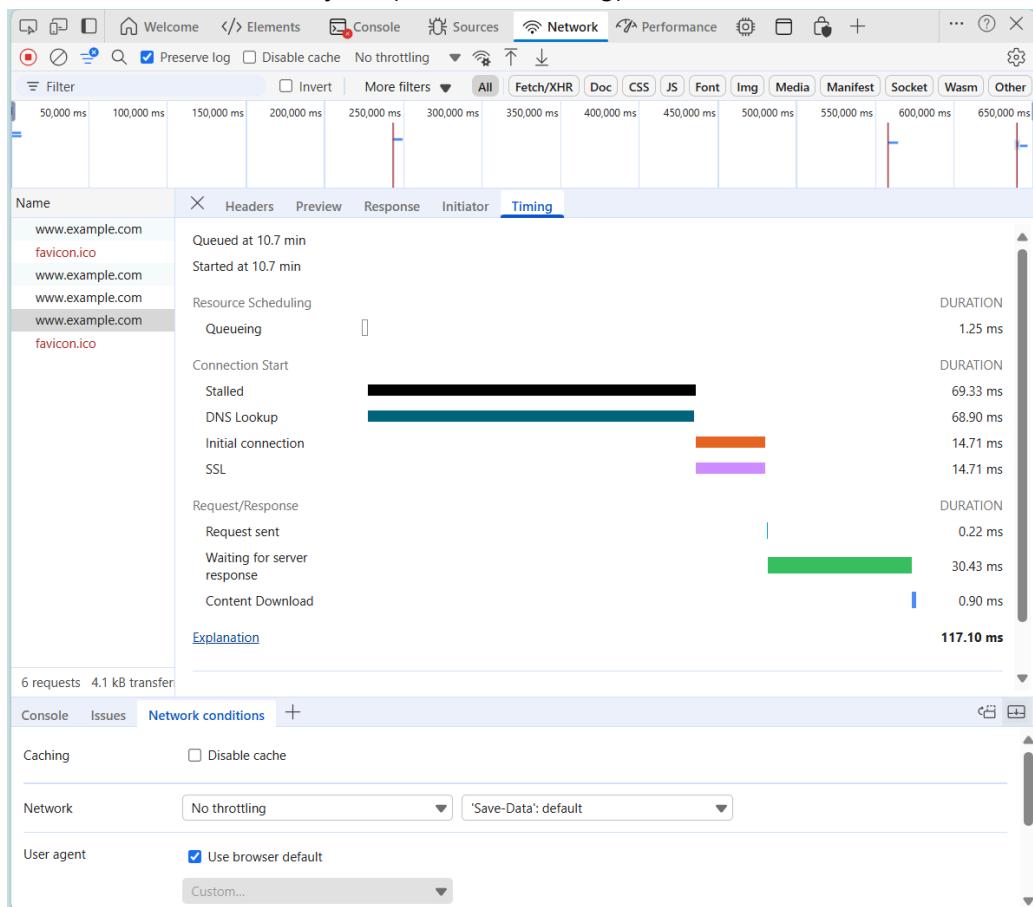
The screenshot shows a browser window with the URL `view-source:https://www.example.com`. The page content is a plain white space, indicating that the browser is displaying the source code rather than the rendered page. The code itself is a standard HTML document with a head section containing meta tags for charset, content-type, and viewport, and a body section with a central div and some CSS styles.

```
ine wrap □
1 <!doctype html>
2 <html>
3 <head>
4   <title>Example Domain</title>
5
6   <meta charset="utf-8" />
7   <meta http-equiv="Content-type" content="text/html; charset=utf-8" />
8   <meta name="viewport" content="width=device-width, initial-scale=1" />
9   <style type="text/css">
10  body {
11    background-color: #f0f0f2;
12    margin: 0;
13    padding: 0;
14    font-family: -apple-system, system-ui, BlinkMacSystemFont, "Segoe UI", "Open Sans", "Helvetica Neue", Helvetica, Arial, sans-serif;
15  }
16  div {
17    width: 600px;
18    margin: 5em auto;
19    padding: 2em;
20    background-color: #fdfdff;
21    border-radius: 0.5em;
22    box-shadow: 2px 3px 7px 2px rgba(0,0,0,0.02);
23  }
24  a:link, a:visited {
25    color: #38488f;
26    text-decoration: none;
27  }
28  @media (max-width: 700px) {
29    div {
30      margin: 0 auto;
31      width: auto;
32    }
33  }
34  </style>
35 </head>
36 </body>
37 <div>
38   <h1>Example Domain</h1>
39   <p>This domain is for use in illustrative examples in documents. You may use this
40   domain in literature without prior coordination or asking for permission.</p>
41   <p><a href="https://www.iana.org/domains/example">More information...</a></p>
42 </div>
43 </body>
44 </html>
```

## Scene 6 — “Paint the picture” (Rendering pipeline)



## Scene 7 — “I remember you” (Browser caching)



## Scene 8 — “Signals and meanings” (Protocols & versions)

Name	Status	Protocol	Type	Initiator	Size	Time	Priority	Fulfilled by
<code>www.example.com</code>	200	h2	document	Other	841 B	44 ms	Highest	
<code>favicon.ico</code>	404	h3	text/html	Other	1.3 kB	230 ms	High	
<code>www.example.com</code>	304	h2	document	Other	12 B	111 ms	Highest	
<code>www.example.com</code>	304	h2	document	Other	12 B	131 ms	Highest	
<code>www.example.com</code>	200	h3	document	Other	669 B	116 ms	Highest	
<code>favicon.ico</code>	404	h3	text/html	Other	1.3 kB	111 ms	High	
<code>www.example.com</code>	304	h3	document	Other	12 B	118 ms	Highest	

## Scene 9 — “When things go wrong” (Status codes & errors)

The screenshot shows the Network tab in the Chrome DevTools. A single request is listed:

Name	Headers
www.example.com favicon.ico	Request URL: https://www.example.com/does-not-exist.png Request Method: GET Status Code: 404 Not Found Remote Address: [2600:140a:1000:8::17d5:e6c6]:443 Referrer Policy: strict-origin-when-cross-origin
www.example.com does-not-exist.png	Accept-Ranges: bytes Alt-Svc: h3=":443"; ma=93600 Cache-Control: max-age=0, no-cache, no-store Content-Length: 1256 Content-Type: text/html Date: Sun, 28 Sep 2025 21:14:25 GMT Etag: "84238dfc8092e5d9c0dac8ef93371a07:1736799080.121134" Expires: Sun, 28 Sep 2025 21:14:25 GMT Last-Modified: Mon, 13 Jan 2025 20:11:20 GMT Pragma: no-cache Quic-Version: 0x00000001

At the bottom left, it says 8 requests 5.4 kB transferred.