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Assignment : PA1

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Description :

The goal of this Programming Assignment 1 is to build a functional web server.

Details:

As part of Programming Assignment 1, I have implemented a web server program which supports multi-threading. And it accepts and responds to HTTP requests. The web server listens for connections on a socket and clients connect to this socket and retrieve files from the server. The client sends request to the web server and once connection is established then connection is kept alive for 3secs. If the user does not enter any filename then in that case index.html is the default file. Depending on the request, this web server replies with the appropriate response codes 200, 400, 403, 404, 500. Coding is done in python language and Port no used is 8080.

List of Files :

1. Readme.pdf
2. server.py

Instructions for running the Program :

To start the web server run below command in the terminal of Mac/Linux OS.

```
python3 server.py -document_root './' -port 8080
```

Screenshots of successful creation of the Web server using port 8080 with incoming request logs :

```
Ketoss-MacBook-Pro:document_root ketoss$ python3 server.py -document_root './' -port 8080
Server host and portlocalhost:8080
Server directory:./
['GET', '/computertyping.gif', 'HTTP/1.1']
['GET', '/favicon.ico', 'HTTP/1.1']
['GET', '/flower.png', 'HTTP/1.1']
['GET', '/sea.jpg', 'HTTP/1.1']
['GET', '/textfile.txt', 'HTTP/1.1']
['GET', '/', 'HTTP/1.1']
['GET', '/media/scuedu/style-assets/stylesheets/f.css', 'HTTP/1.1']
['GET', '/media/institutional-pages/news-amp-events/Claire_Alford_20220921_JG_0153_pp.jpg', 'HTTP/1.1']
['GET', '/media/institutional-pages/news-amp-events/campusbeautystudents.jpg', 'HTTP/1.1']
['GET', '/media/institutional-pages/news-amp-events/Stranger_Things_logo.png', 'HTTP/1.1']
['GET', '/media/institutional-pages/news-amp-events/Inauguration_20221006_JL_9200.JPG', 'HTTP/1.1']
['GET', '/media/institutional-pages/giving/images/campaign-banner.png', 'HTTP/1.1']
['GET', '/media/offices/umc/web-design/crowd-pic-NEW_0001_20211203_Soccer_Fans_4446.jpg', 'HTTP/1.1']
['GET', '/media/institutional-pages/news-amp-events/irinaraiacu400x400-360x360.jpg', 'HTTP/1.1']
['GET', '/media/institutional-pages/news-amp-events/BSolomon-360x288.jpg', 'HTTP/1.1']
['GET', '/media/institutional-pages/news-amp-events/ackerman-400x400.jpg', 'HTTP/1.1']
['GET', '/assets/images/favicons/manifest.json', 'HTTP/1.1']
['GET', '/assets/images/favicons/favicon-32x32.png', 'HTTP/1.1']
['GET', '/assets/images/favicons/favicon-16x16.png', 'HTTP/1.1']
['GET', '/assets/images/favicons/favicon-96x96.png', 'HTTP/1.1']
['GET', '/video.mp4', 'HTTP/1.1']
['GET', '/assets/images/favicons/android-chrome-192x192.png', 'HTTP/1.1']
```

Screenshots of successful connections:

1) **Default page** - URL: localhost:8080

The screenshot displays a web browser window with the address bar showing 'localhost:8080'. The page content includes a notification banner about immunization requirements, the Santa Clara University logo, a search bar, and a video player titled 'The Inauguration of'. The browser's developer tools are open, showing the Network tab with a list of requests and the Headers tab for the selected request.

Network Tab:

Name	Headers	Preview	Response	Initiator	Timing	Cookies
localhost	General					
scu.js						
instant-notification.js						
hw.js						
ENG.jpg						
BasketballFans-small.jpg						
campus-small.jpg						
SCU-Commencement-2019...						
dancers-small.jpg						
cultural-small.jpg						
gzb1rny.css						
all.css						
scu.css						

Headers Tab (Selected Request):

General

- Request URL: http://localhost:8080/
- Request Method: GET
- Status Code: 200 OK
- Remote Address: 127.0.0.1:8080
- Referrer Policy: strict-origin-when-cross-origin

Response Headers

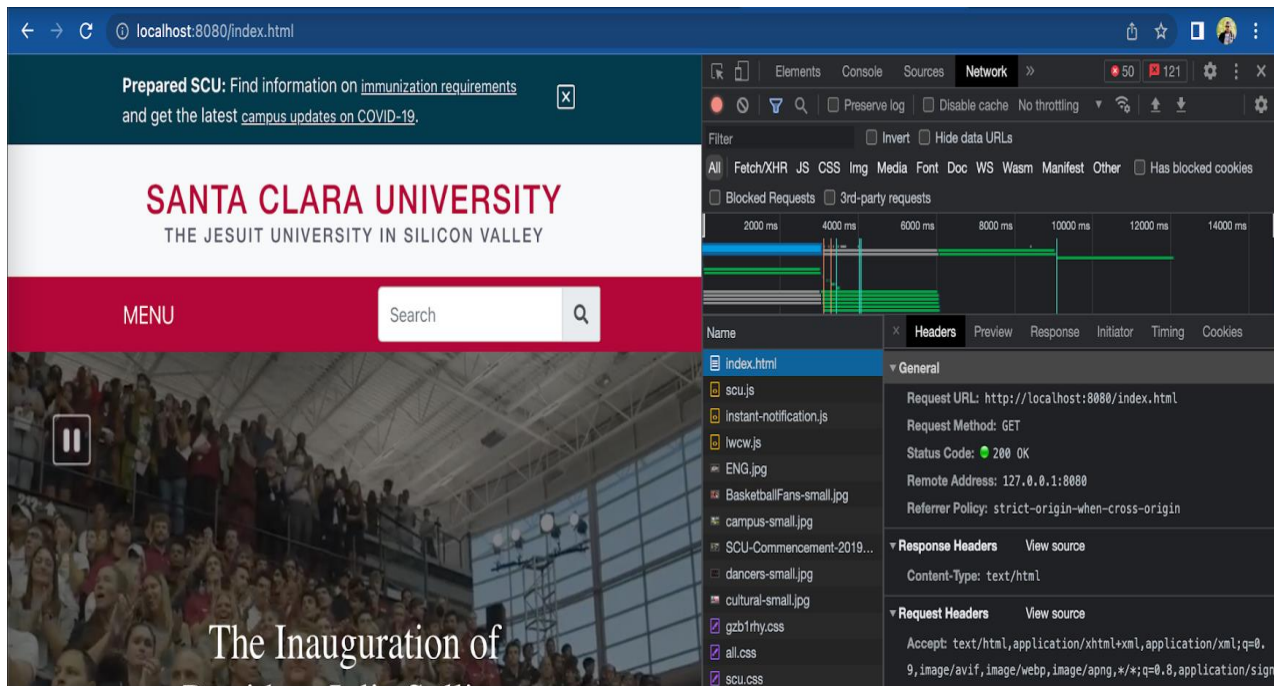
- Content-Type: text/html

Request Headers

- Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/sign...

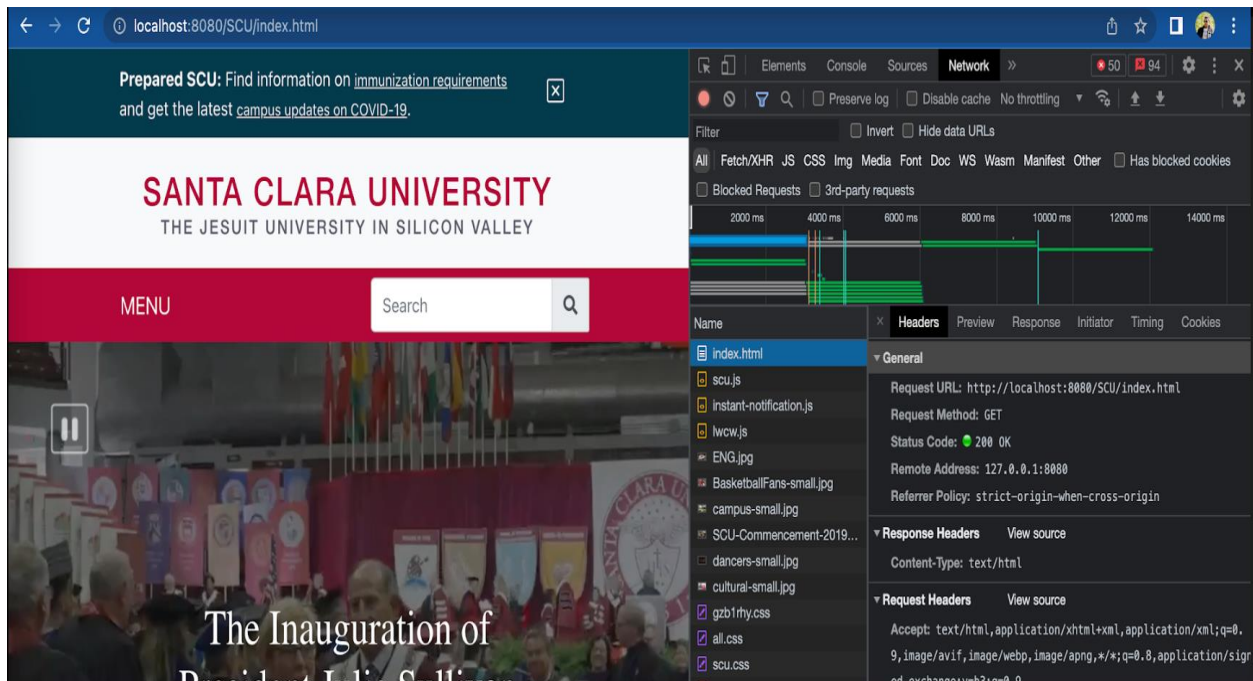
2) HTML file type –

URL : localhost:8080/index.html

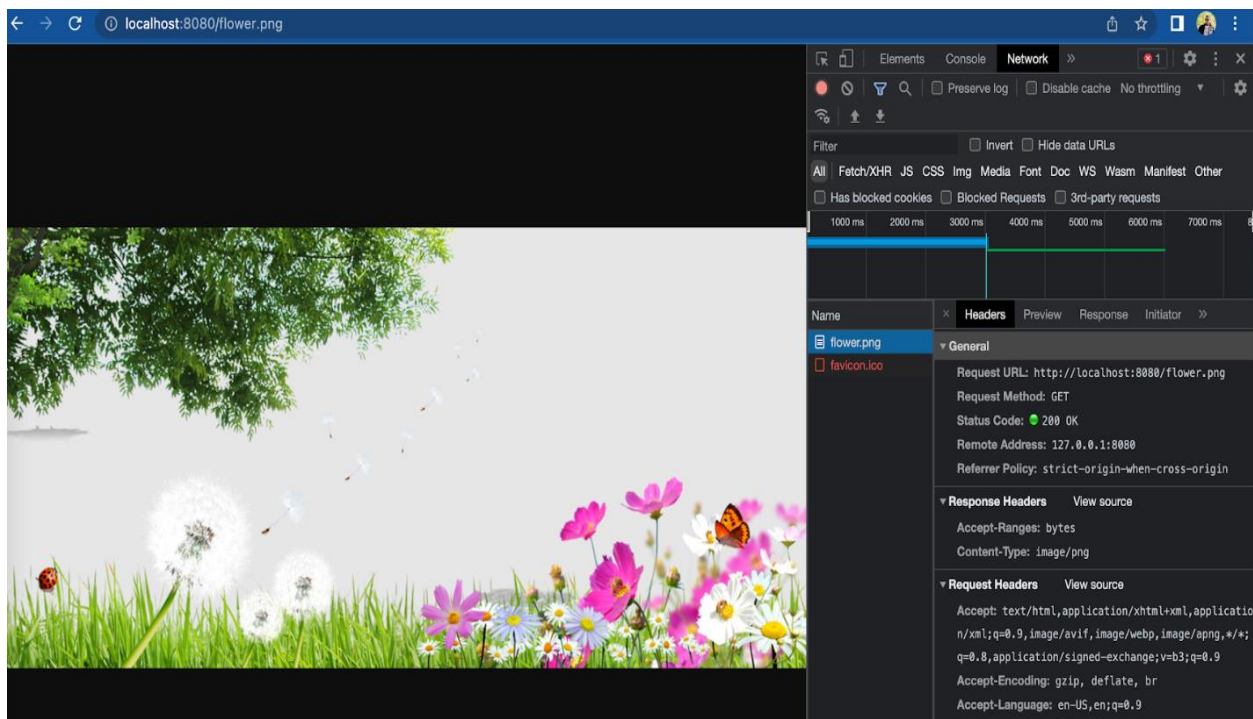


Accessing Index html from one folder called SCU.

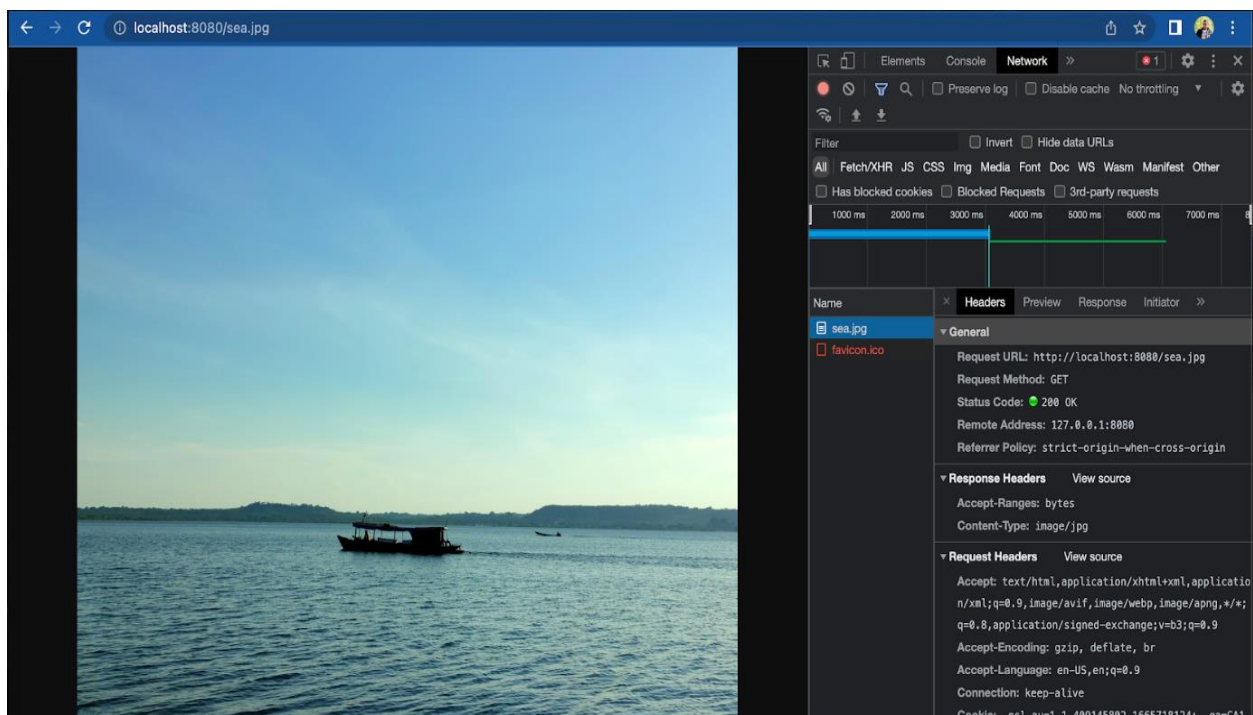
URL: localhost:8080/SCU/index.html



3) Accessing **png image** format.
URL: localhost:8080/flower.png

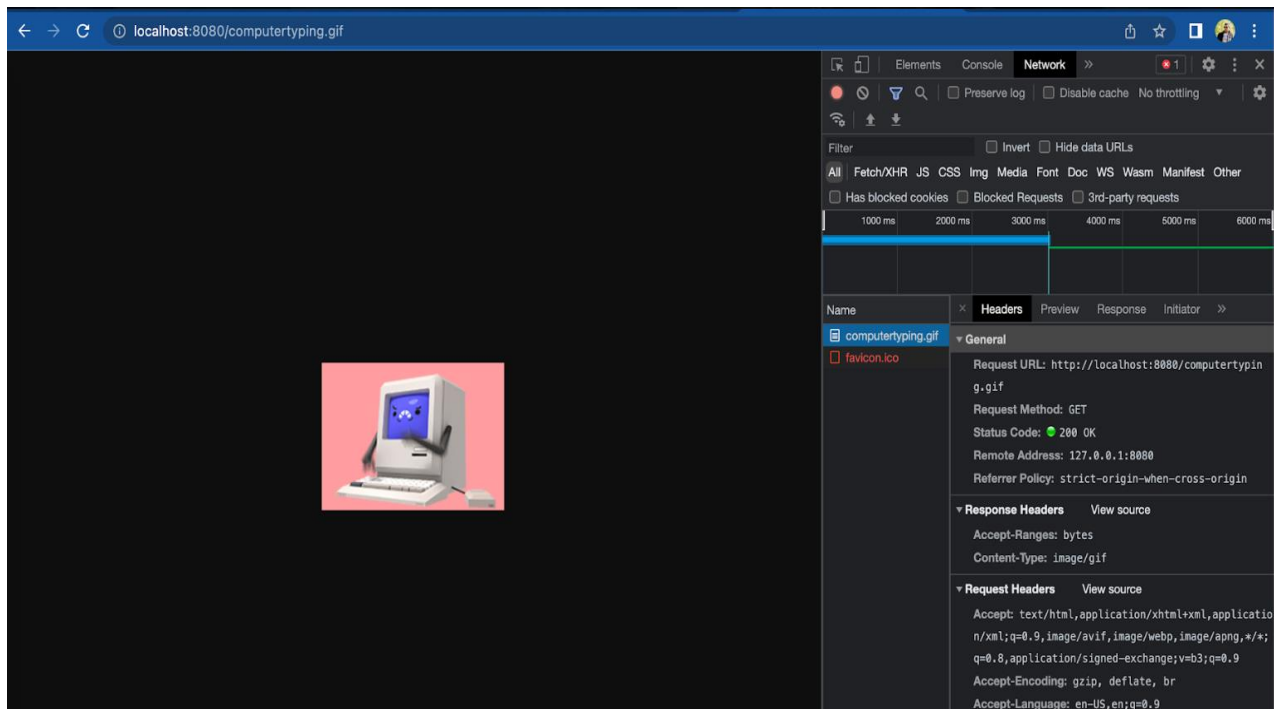


4) Accessing **jpg image** format.
URL: localhost:8080/sea.jpg



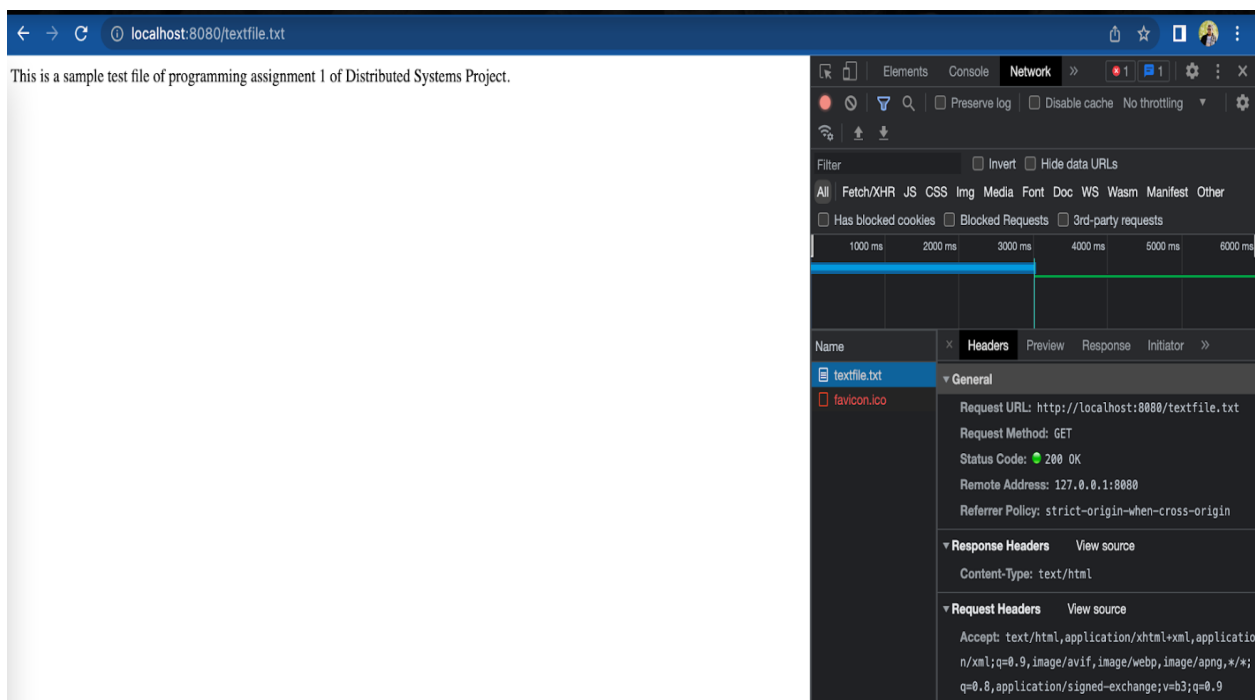
5) Accessing **gif** format.

URL: localhost:8080/computertyping.gif



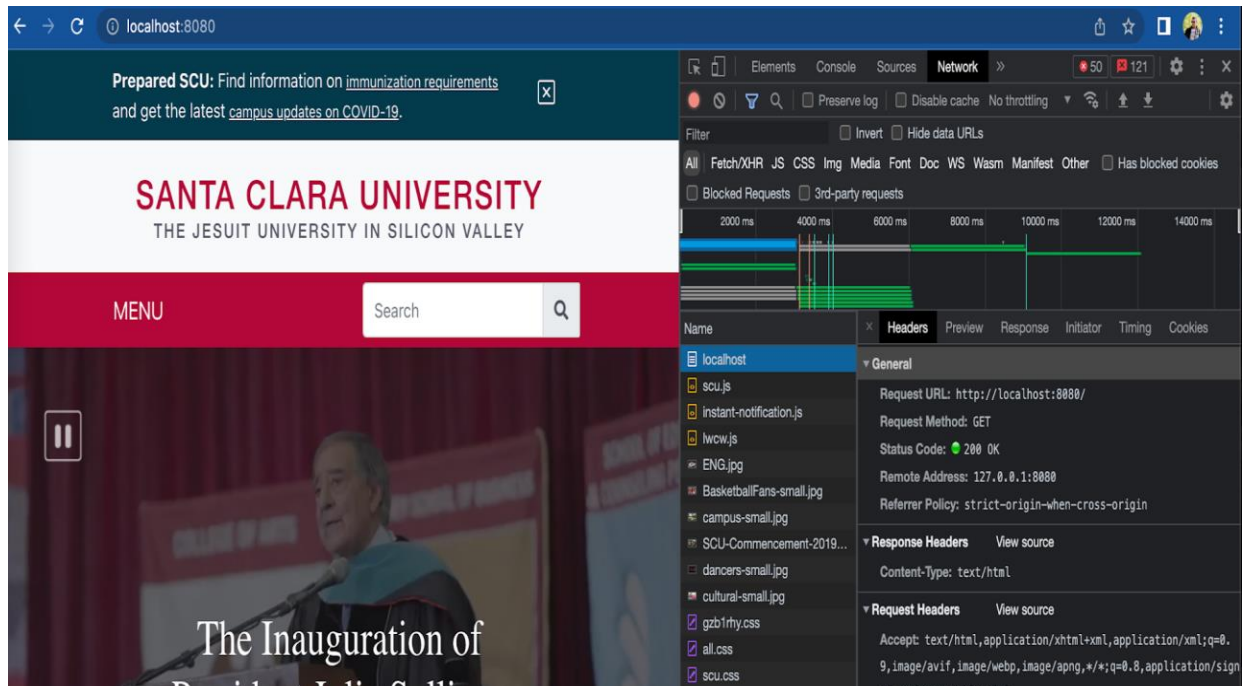
6) Accessing **txt** file type.

URL: localhost:8080/textfile.txt

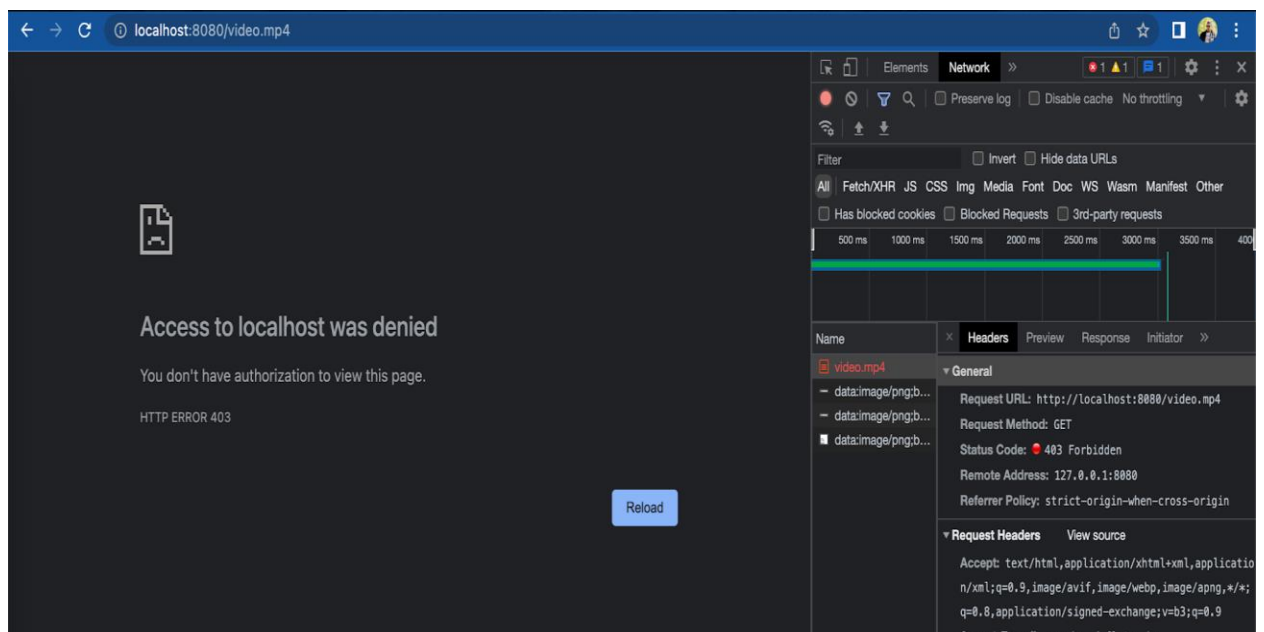


Different Status codes:

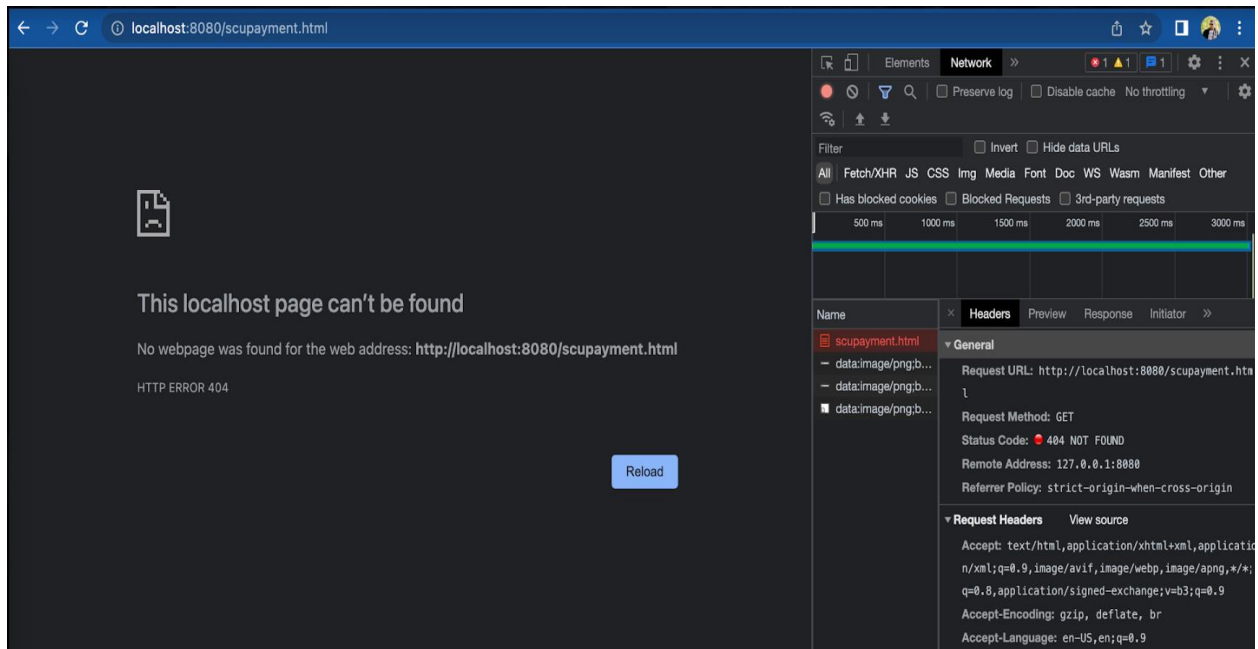
- 1) **Status code = 200 OK** :- We get this status code when everything runs successfully.
URL : localhost:8080



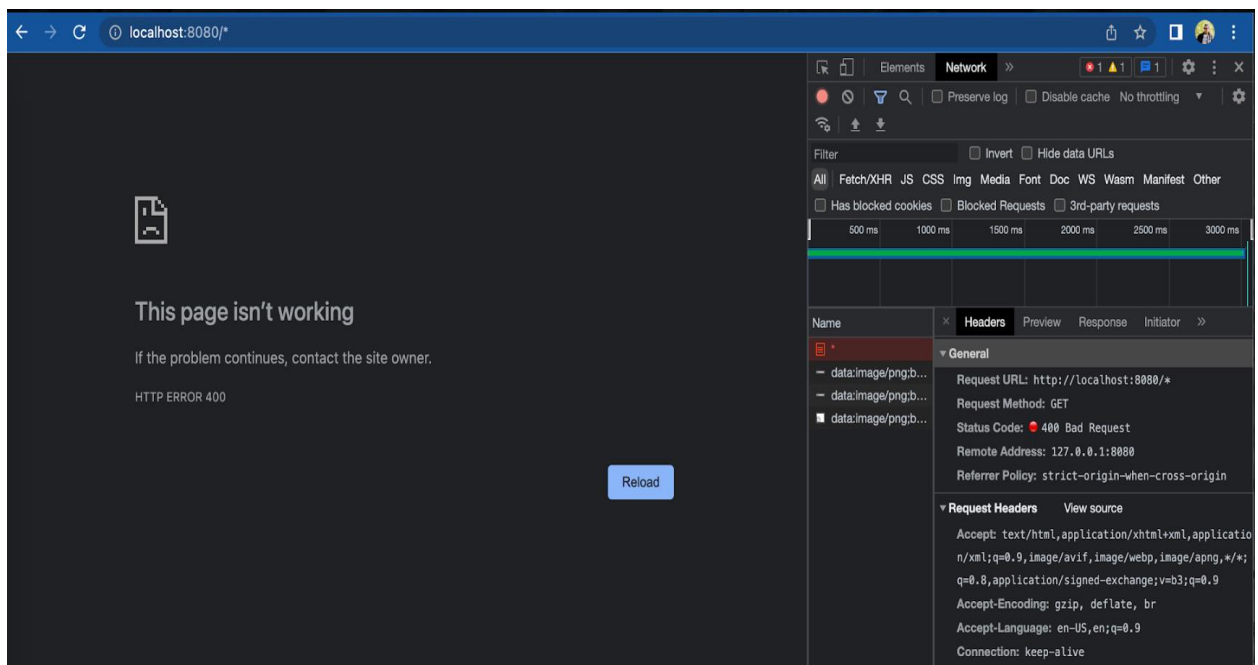
- 2) **Status code – 403 Forbidden** :- We get Forbidden status code of 403 when we try to access video file with extension of .mp4 because .mp4 files are restricted in this scenario.
URL : localhost:8080/video.mp4



- 3) **Status code – 404 NOT FOUND** :- We get this status code when the file or URL that is being accessed is not present on the server.
URL: localhost:8080/scupayment.html



- 4) **Status code : 400 Bad Request** :- We get status code when we there is any special character like * or ! in the URL.
URL: localhost:8080/*



- 5) **Status code : 500 Internal Server Error** :- We get this status code when file has no read permissions.
URL: local:8080/Tiger.jpg

