Name: Rajat Bramhankar

Reg.No: 12301391

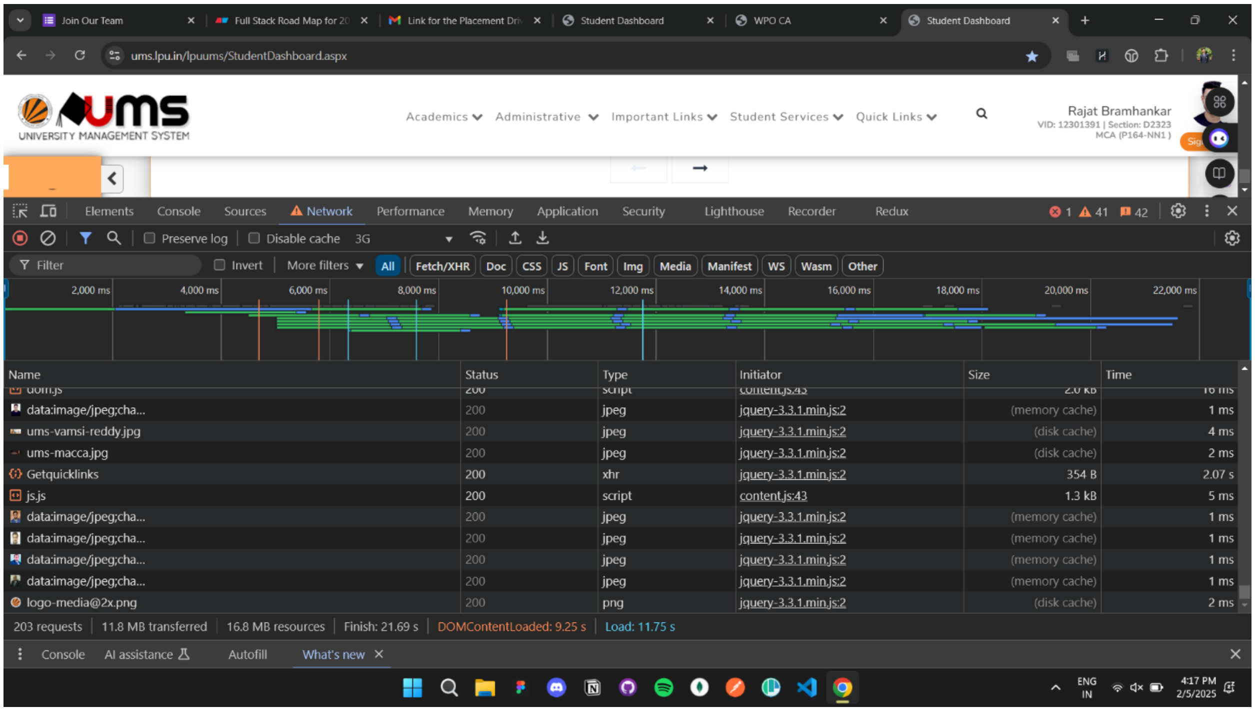
Sub: Web performance Optimization

Test: CA-1

Set: B

1. Create a custom network throttling profile in Chrome DevTools to simulate a 3G connection. Use this profile to monitor the performance of a webpage and suggest optimizations for improving the experience on slower networks.

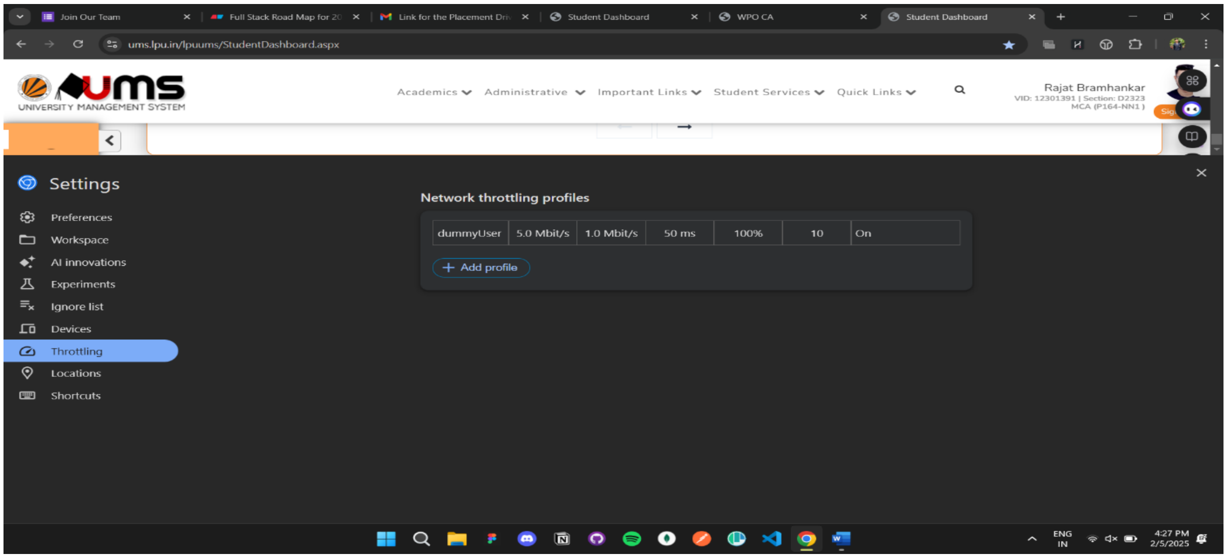
➔ 3G Network Speed



Name	Status	Type	Initiator	Size	Time
dom.js	200	script	content.js:43	2.0 kB	16 ms
data:image/jpeg;cha...	200	jpeg	jquery-3.3.1.min.js:2	(memory cache)	1 ms
ums-vamsi-reddy.jpg	200	jpeg	jquery-3.3.1.min.js:2	(disk cache)	4 ms
ums-macca.jpg	200	jpeg	jquery-3.3.1.min.js:2	(disk cache)	2 ms
Getquicklinks	200	xhr	jquery-3.3.1.min.js:2	354 B	2.07 s
js.js	200	script	content.js:43	1.3 kB	5 ms
data:image/jpeg;cha...	200	jpeg	jquery-3.3.1.min.js:2	(memory cache)	1 ms
data:image/jpeg;cha...	200	jpeg	jquery-3.3.1.min.js:2	(memory cache)	1 ms
data:image/jpeg;cha...	200	jpeg	jquery-3.3.1.min.js:2	(memory cache)	1 ms
data:image/jpeg;cha...	200	jpeg	jquery-3.3.1.min.js:2	(memory cache)	1 ms
logo-media@2x.png	200	png	jquery-3.3.1.min.js:2	(disk cache)	2 ms

203 requests | 11.8 MB transferred | 16.8 MB resources | Finish: 21.69 s | DOMContentLoaded: 9.25 s | Load: 11.75 s

➔ Custom Profile

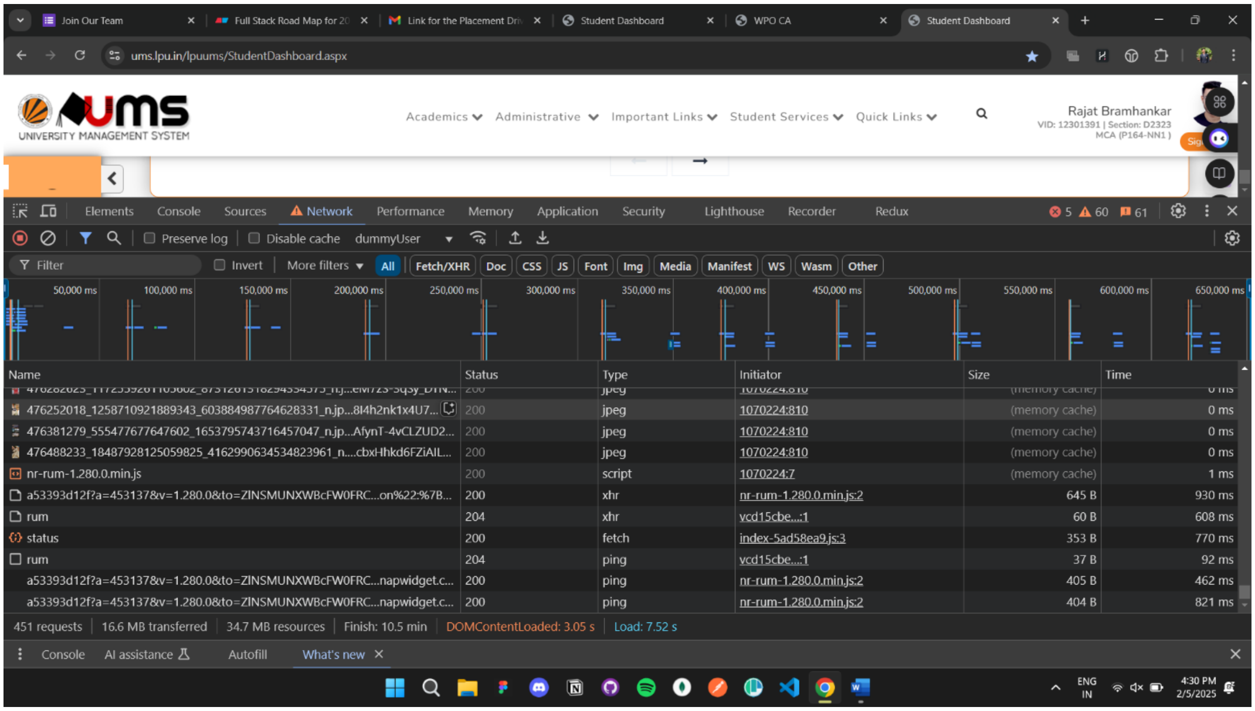


Network throttling profiles

dummyUser	5.0 Mbit/s	1.0 Mbit/s	50 ms	100%	10	On

+ Add profile

Result After Custom Profile creation:



Name	Status	Type	Initiator	Size	Time
476252018_1258710921889343_603884987764628331_n.jp...8l4h2nk1x4U7...	200	jpeg	1070224:810	(memory cache)	0 ms
476381279_555477677647602_1653795743716457047_n.jp...AfynT-4vCLZUD2...	200	jpeg	1070224:810	(memory cache)	0 ms
476488233_18487928125059825_4162990634534823961_n....cbxHhkd6FZiAIL...	200	jpeg	1070224:810	(memory cache)	0 ms
nr-rum-1.280.0.min.js	200	script	1070224:7	(memory cache)	1 ms
a53393d12f?a=453137&v=1.280.0&to=ZINSMUNXWBcFW0FRC...on%22:%7B...	200	xhr	nr-rum-1.280.0.min.js:2	645 B	930 ms
rum	204	xhr	vcd15cbe...:1	60 B	608 ms
status	200	fetch	index-5ad58ea9.js:3	353 B	770 ms
rum	204	ping	vcd15cbe...:1	37 B	92 ms
a53393d12f?a=453137&v=1.280.0&to=ZINSMUNXWBcFW0FRC...napwidget.c...	200	ping	nr-rum-1.280.0.min.js:2	405 B	462 ms
a53393d12f?a=453137&v=1.280.0&to=ZINSMUNXWBcFW0FRC...napwidget.c...	200	ping	nr-rum-1.280.0.min.js:2	404 B	821 ms

451 requests | 16.6 MB transferred | 34.7 MB resources | Finish: 10.5 min | DOMContentLoaded: 3.05 s | Load: 7.52 s

2. Create a homepage that includes a hero image and multiple content images. Use srcset attribute to deliver high-resolution images for desktops and smaller, optimized images for mobile devices.

● Use tools like Google PageSpeed Insights, Lighthouse, or WebPageTest to audit the webpage's performance on both desktop and mobile.

● Measure the following metrics:

o Largest Contentful Paint (LCP): Evaluate how quickly the largest visible image loads.

o Total Page Size: Compare total page size on mobile vs desktop.

o Network Requests: Count the number of requests and their sizes for images on each platform.

o Bandwidth Usage: Analyze data consumption differences on mobile and desktop.

Code:

```
<!DOCTYPE html>

<html lang="en-gb">
```

```
<head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
  <title>Responsive Image with Media Queries</title>
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <style type="text/css">
   img {
    width: 100%;
    content: url('img2.jpeg');
   }
   @media (min-width: 600px) {
    img {
     width: 66%;
     content: url('img3.jpeg');
    }
   }
   @media (min-width: 960px) {
    img {
     width: 50%;
     content: url('img4.jpeg');
    }
   }
   @media (min-width: 1300px) {
    img {
     width: 66%;
     content: url('img9.jpeg');
    }
   }
  </style>
 </head>
  <body>
   <img src="img2.jpeg" alt=""
     srcset="
      img2.jpeg 300w,
      img3.jpeg 600w,
      img4.jpeg 1200w,
      img9.jpeg.jpg 1400w
     "
     sizes="
      100vw
      (min-width:600px) 66vw,
      (min-width:960px) 50vw,
     "
   >
   <p>Image width is displayed in the bottom left corner of each image.</p>
  </body>
</html>
```

Before Optimized (Mobile):

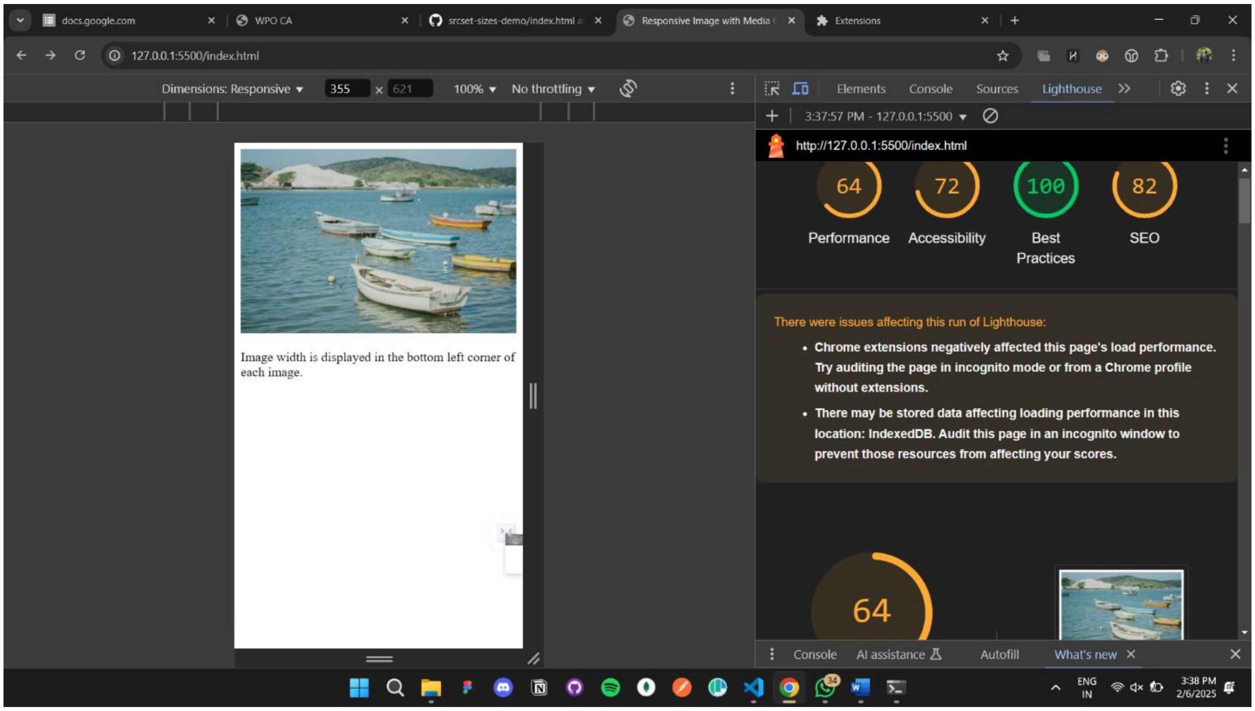


Image width is displayed in the bottom left corner of each image.

64 Performance
72 Accessibility
100 Best Practices
82 SEO

There were issues affecting this run of Lighthouse:

- Chrome extensions negatively affected this page's load performance. Try auditing the page in incognito mode or from a Chrome profile without extensions.
- There may be stored data affecting loading performance in this location: IndexedDB. Audit this page in an incognito window to prevent those resources from affecting your scores.

64

Before Optimized (Desktop):

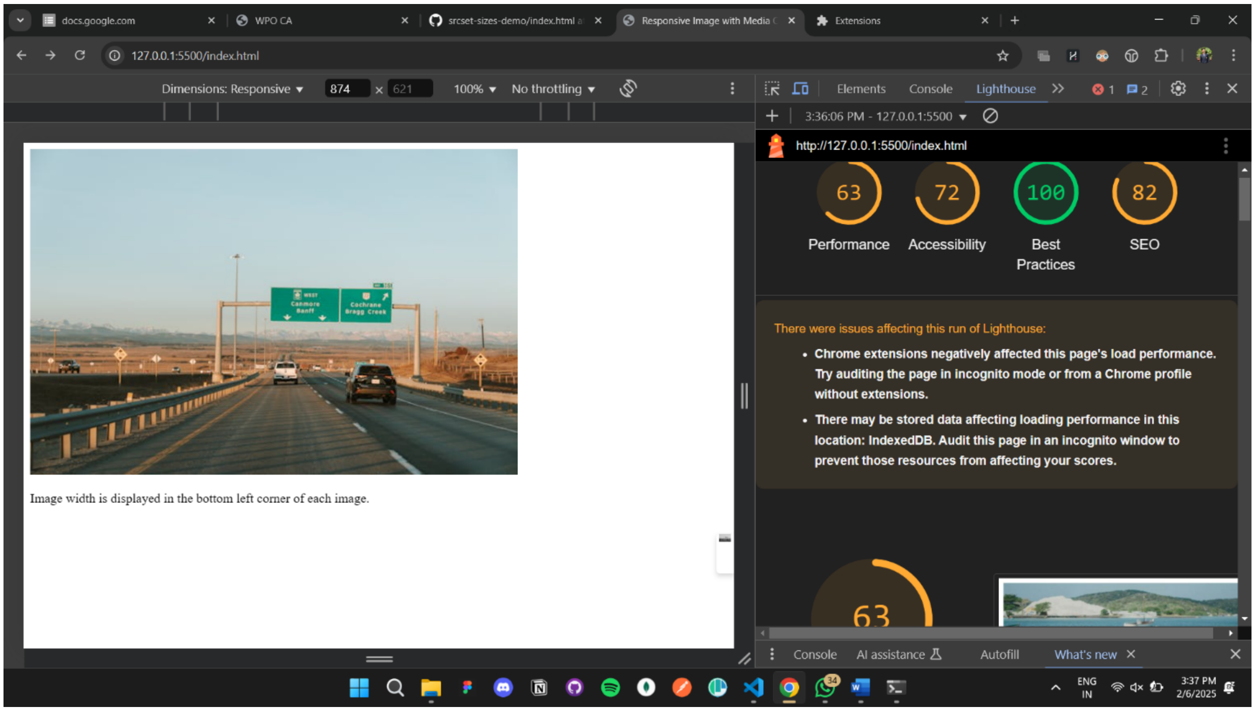


Image width is displayed in the bottom left corner of each image.

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There were issues affecting this run of Lighthouse:

- Chrome extensions negatively affected this page's load performance. Try auditing the page in incognito mode or from a Chrome profile without extensions.
- There may be stored data affecting loading performance in this location: IndexedDB. Audit this page in an incognito window to prevent those resources from affecting your scores.

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After Optimized (Mobile):

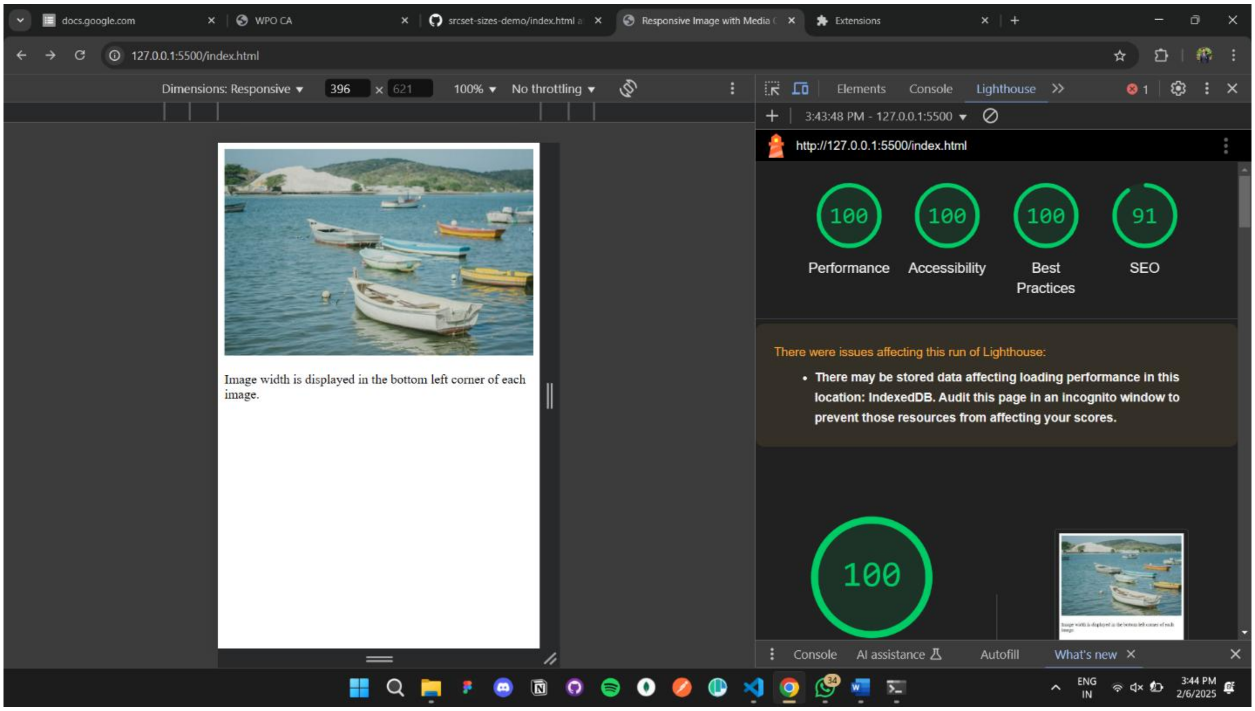


Image width is displayed in the bottom left corner of each image.

100	100	100	91
Performance	Accessibility	Best Practices	SEO

There were issues affecting this run of Lighthouse:

- There may be stored data affecting loading performance in this location: IndexedDB. Audit this page in an incognito window to prevent those resources from affecting your scores.

100

After Optimized (Laptop):

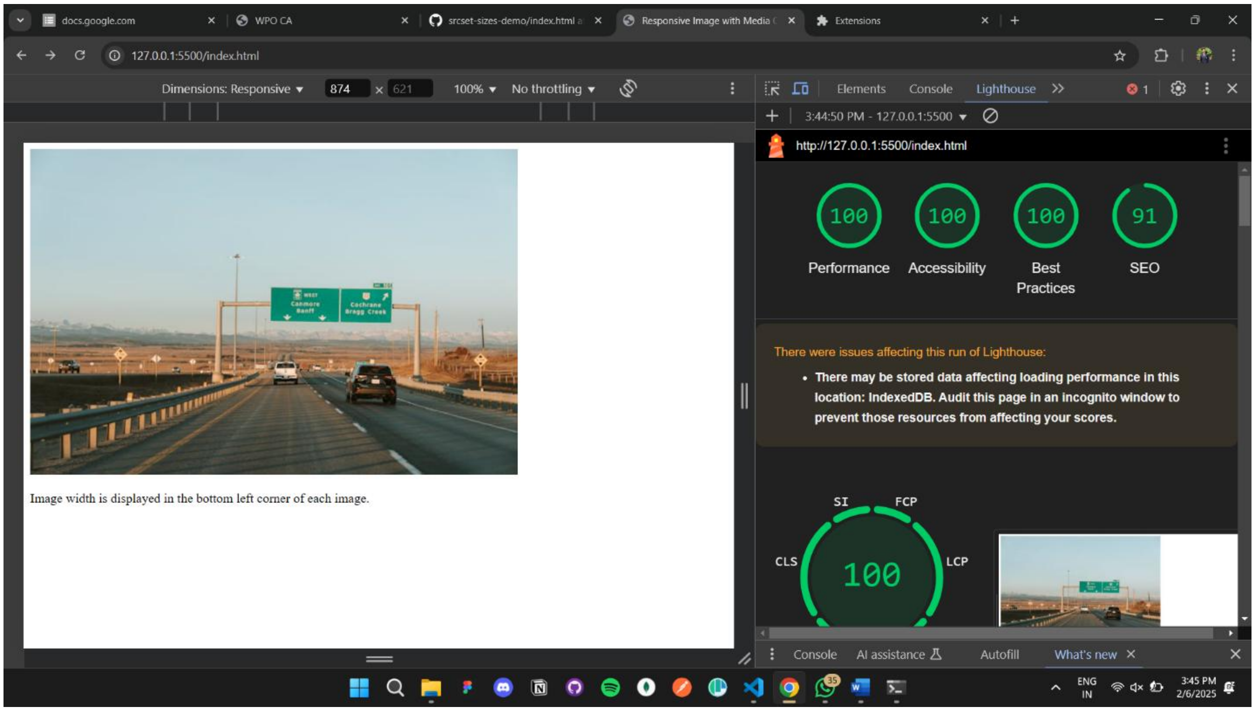


Image width is displayed in the bottom left corner of each image.

100	100	100	91
Performance	Accessibility	Best Practices	SEO

There were issues affecting this run of Lighthouse:

- There may be stored data affecting loading performance in this location: IndexedDB. Audit this page in an incognito window to prevent those resources from affecting your scores.

100

3. Demonstrate usage of media queries to optimize the page load time in different devices.

   Media queries enhance page load performance by loading only necessary resources based on device screen size. Here are key benefits:

- **Selective Image Loading**: Load different images for various screen sizes, ensuring only required images are fetched, which reduces load time.

- **Tailored CSS**: For larger screens, use animations and heavier CSS files; for smaller screens, load lighter styles to improve performance.

By implementing media queries, you can minimize resource usage and enhance overall website efficiency.

Code:

```
<!DOCTYPE html>
<html lang="en-gb">
<head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
  <title>Responsive Image with Media Queries</title>
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <style type="text/css">
   img {
    width: 100%;
    content: url('img2.jpeg');
   }
   @media (min-width: 600px) {
    img {
     width: 66%;
     content: url('img3.jpeg');
    }
   }
   @media (min-width: 960px) {
    img {
     width: 50%;
     content: url('img4.jpeg');
    }
   }
   @media (min-width: 1300px) {
    img {
     width: 66%;
     content: url('img9.jpeg');
    }
   }
  </style>
 </head>
  <body>
   <img src="img2.jpeg" alt="Responsive Image">
   <p>Image width is displayed in the bottom left corner of each image.</p>
  </body>
</html>
```

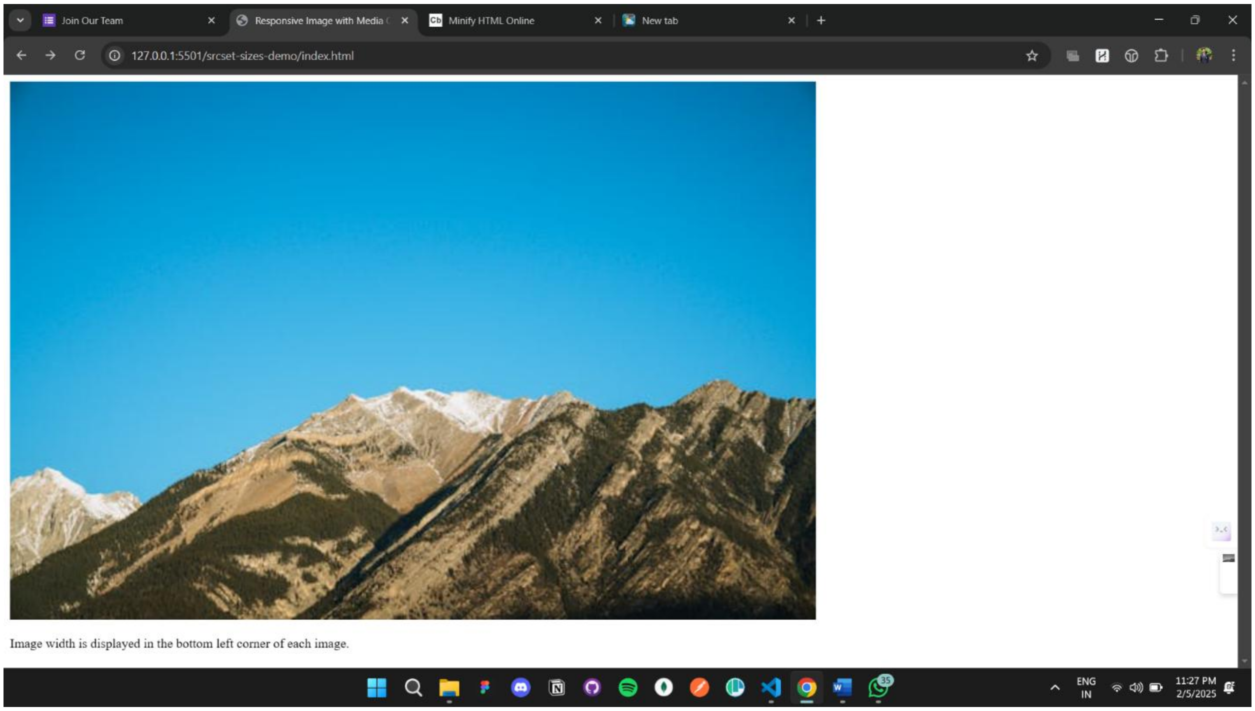
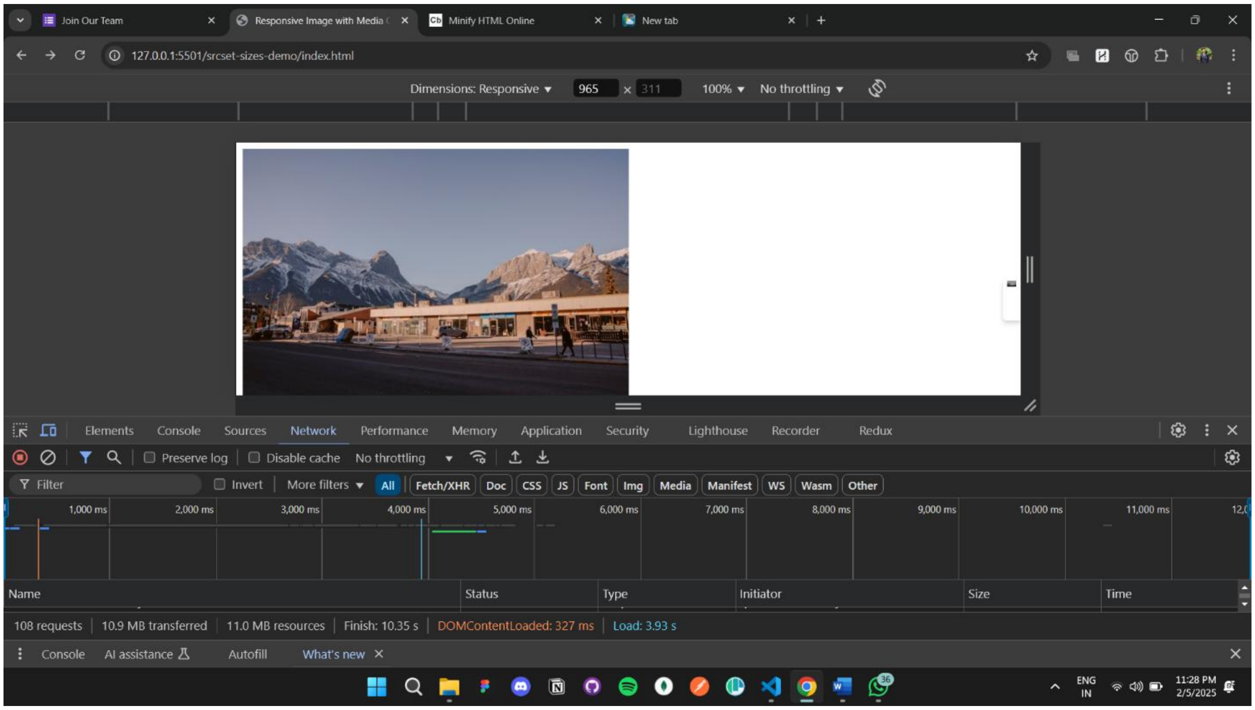

Join Our Team
Responsive Image with Media
Minify HTML Online
New tab
127.0.0.1:5501/srcset-sizes-demo/index.html
ENG
IN
11:27 PM
2/5/2025

Image width is displayed in the bottom left corner of each image.

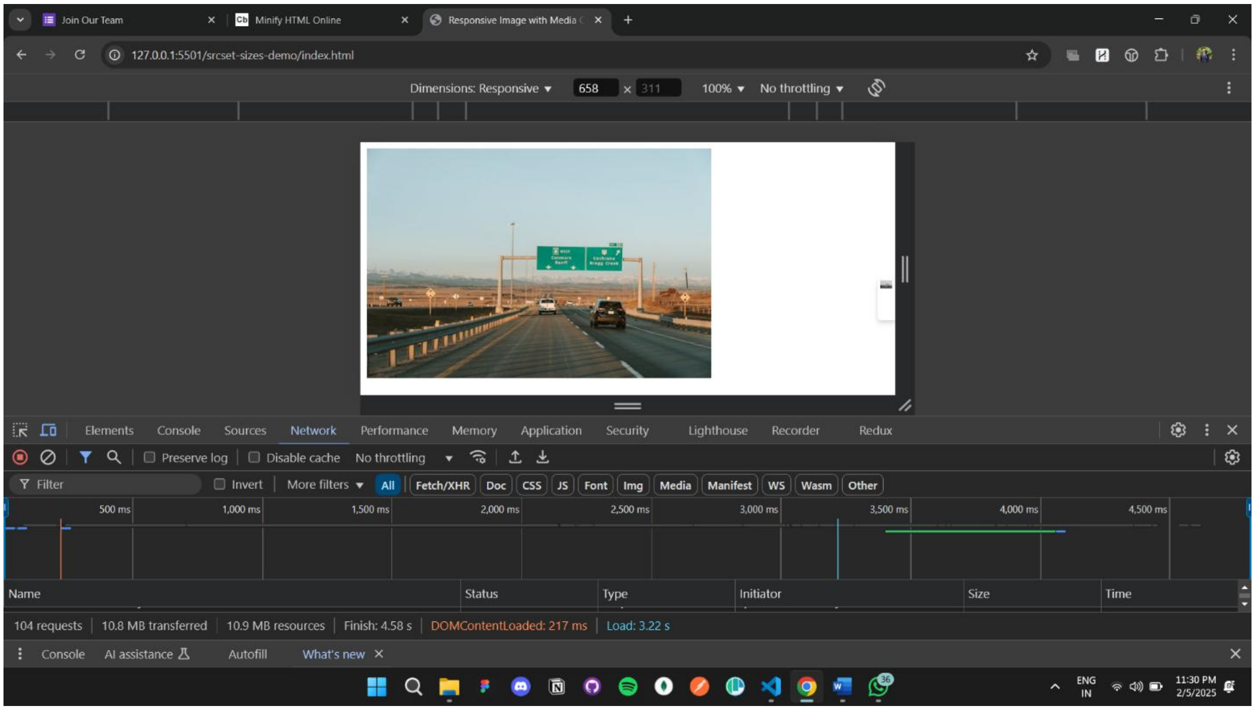


127.0.0.1:5501/srcset-sizes-demo/index.html

Dimensions: Responsive ▾ 965 × 311 100% ▾ No throttling ▾

□ Preserve log □ Disable cache No throttling ▾

108 requests | 10.9 MB transferred | 11.0 MB resources | Finish: 10.35 s | DOMContentLoaded: 327 ms | Load: 3.93 s

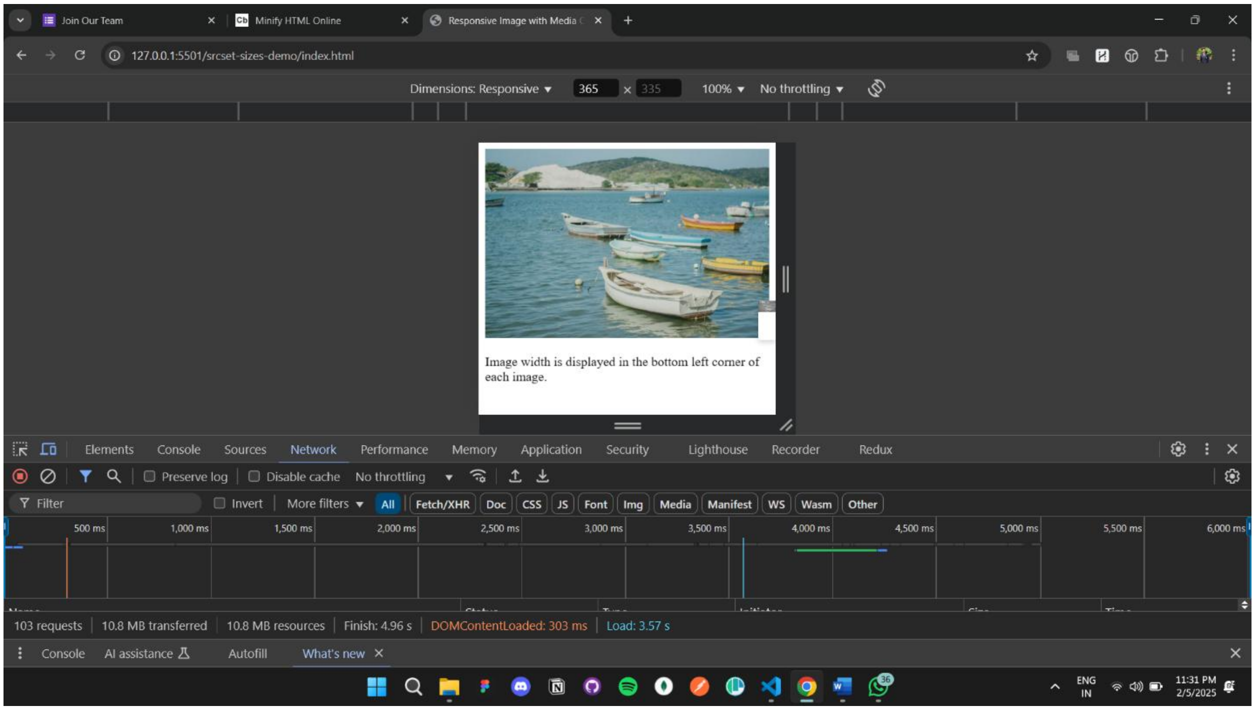


127.0.0.1:5501/srcset-sizes-demo/index.html

Dimensions: Responsive ▾ 658 × 311 100% ▾ No throttling ▾

□ Preserve log □ Disable cache No throttling ▾

104 requests | 10.8 MB transferred | 10.9 MB resources | Finish: 4.58 s | DOMContentLoaded: 217 ms | Load: 3.22 s



127.0.0.1:5501/srcset-sizes-demo/index.html

Dimensions: Responsive ▾ 365 × 335 100% ▾ No throttling ▾

Image width is displayed in the bottom left corner of each image.

103 requests | 10.8 MB transferred | 10.8 MB resources | Finish: 4.96 s | DOMContentLoaded: 303 ms | Load: 3.57 s