



Assignment 01

Course: Computer Networks
Submitted To: Sir Faran Mahmood
Submission Date: March 14, 2023
Submitted By:
Muhammad Ahsan Ali (200901025)
Batch & Section: BS-CS-01-A

Task

- Hosting a Cyber Blog

Topic for Blog

- Cyber Attack on Instagram 2020

Opensource Web Servers Used

- APACHE HTTP SERVER
- NGINX

Task Requirements

1. Test the webpage on:

- Laptop and desktop PC
- Cell phone (both portrait/landscape) and finally on projector in room 6401 (or laptop with min brightness) with direct bright sunlight falling.

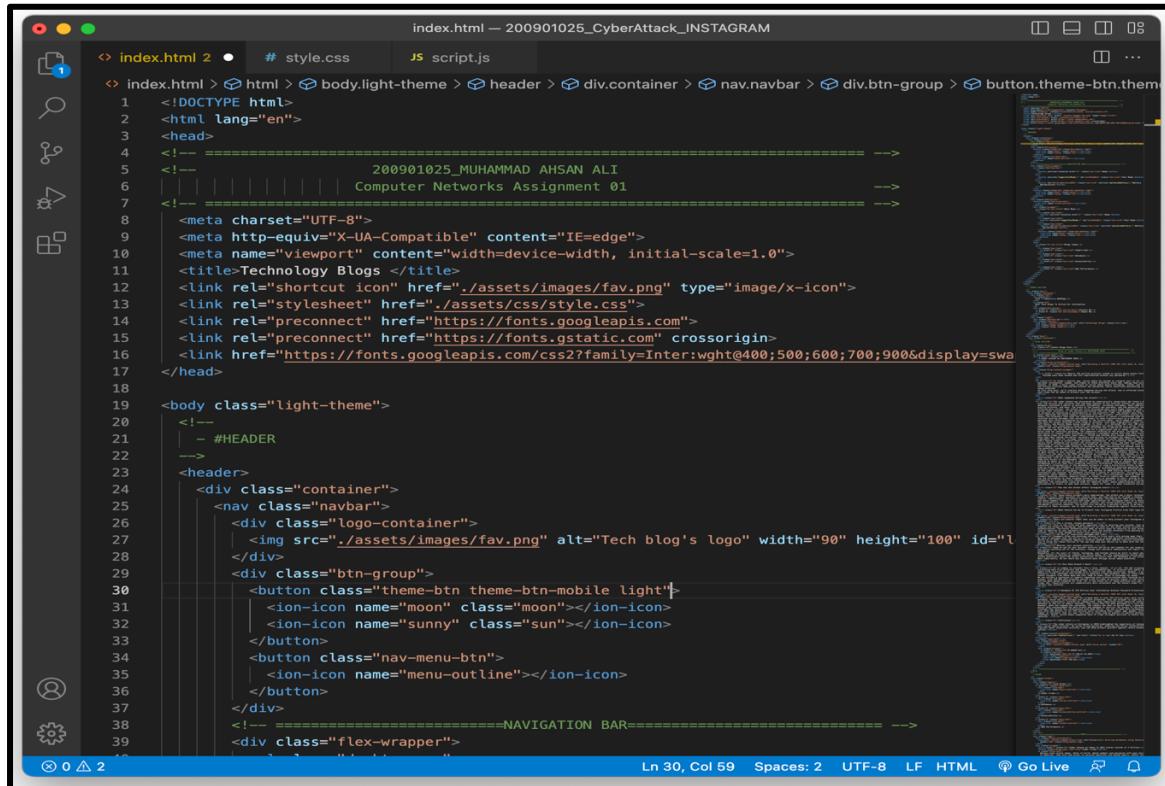
2. Incorporate a control panel at the top right corner of webpage with following features:

- Dark mode button/toggle
- Text only mode button/toggle
- Battery optimized mode (should switch to this mode automatically if battery < 10%)

3. Compare the loading times on two different servers as chosen earlier. Use chrome dev tools to benchmark performance / delays.

Html Code

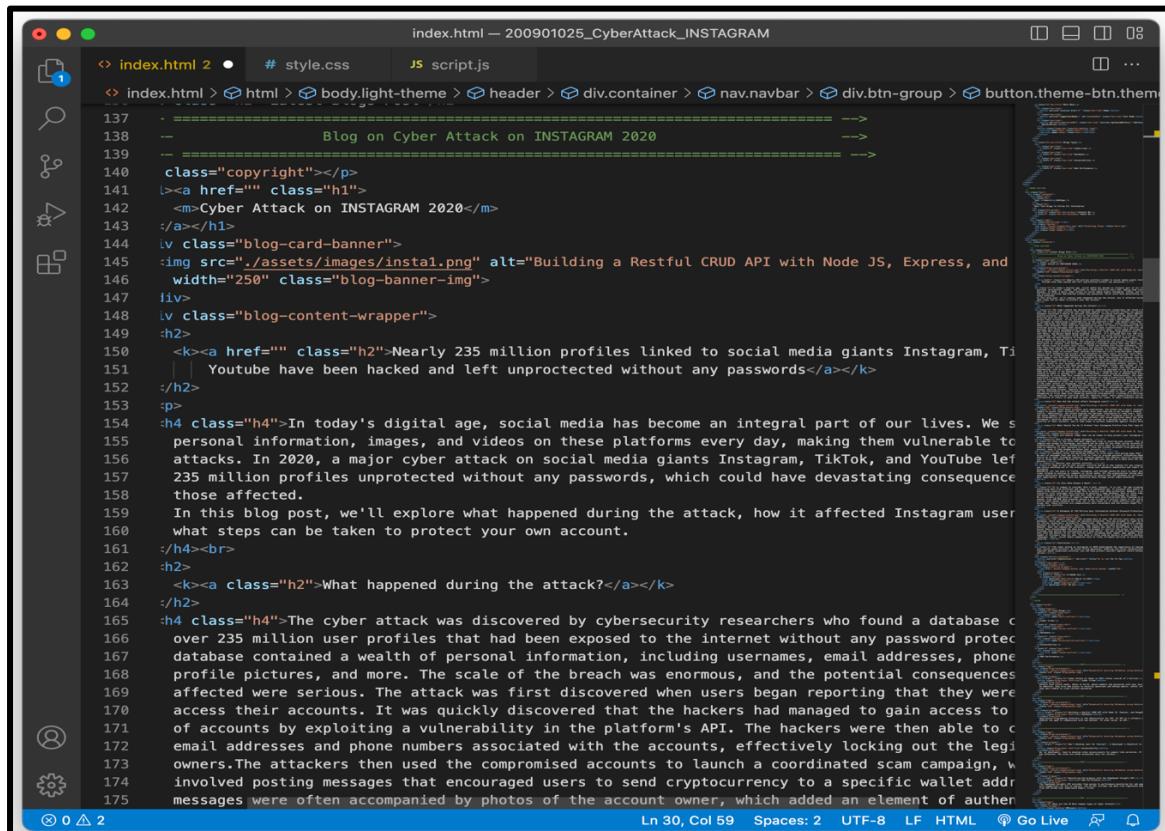
1.



```
index.html — 200901025_CyberAttack_INSTAGRAM
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4 <!-- ===== -->
5 <!-- 200901025_MUHAMMAD AHSAN ALI -->
6 <!-- Computer Networks Assignment 01 -->
7 <!-- ===== -->
8 <meta charset="UTF-8">
9 <meta http-equiv="X-UA-Compatible" content="IE=edge">
10 <meta name="viewport" content="width=device-width, initial-scale=1.0">
11 <title>Technology Blogs </title>
12 <link rel="shortcut icon" href="./assets/images/fav.png" type="image/x-icon">
13 <link rel="stylesheet" href="./assets/css/style.css">
14 <link rel="preconnect" href="https://fonts.googleapis.com">
15 <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin="anonymous">
16 <link href="https://fonts.googleapis.com/css2?family=Inter:wght@400;500;700;900&display=swap" rel="stylesheet">
17 </head>
18
19 <body class="light-theme">
20 <!-- #HEADER -->
21 <div class="container">
22 <nav class="navbar">
23 <div class="logo-container">
24 
26 <div class="btn-group">
27 <button class="theme-btn theme-btn-mobile light">
28 | <ion-icon name="moon" class="moon"></ion-icon>
29 | <ion-icon name="sunny" class="sun"></ion-icon>
30 </button>
31 <button class="nav-menu-btn">
32 | <ion-icon name="menu-outline"></ion-icon>
33 </button>
34 </div>
35 <!-- ===== -->
36 <div class="flex-wrapper">
37 <!-- ===== -->
38 </div>
39 </div>
```

Ln 30, Col 59 Spaces: 2 UTF-8 LF HTML ⚡ Go Live ⌂ ⌂

2.

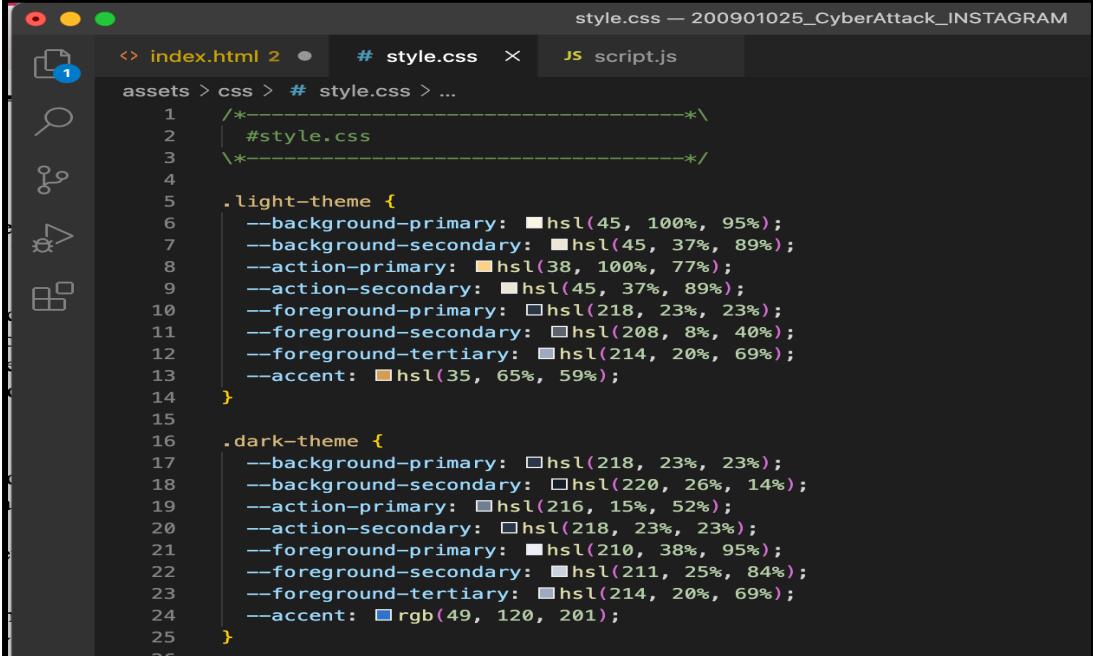


```
index.html — 200901025_CyberAttack_INSTAGRAM
137 <!-- ===== -->
138 <!-- Blog on Cyber Attack on INSTAGRAM 2020 -->
139 <!-- ===== -->
140 <class="copyright"></p>
141 <a href="#" class="h1">
142 <m>Cyber Attack on INSTAGRAM 2020</m>
143 </a></h1>
144 <div class="blog-card-banner">
145 
146 </div>
147 <div class="blog-content-wrapper">
148 <h2>
149 <k><a href="#" class="h2">Nearly 235 million profiles linked to social media giants Instagram, TikTok, and YouTube have been hacked and left unprotected without any passwords</a></k>
150 </h2>
151 <p>
152 <h4 class="h4">In today's digital age, social media has become an integral part of our lives. We share personal information, images, and videos on these platforms every day, making them vulnerable to attacks. In 2020, a major cyber attack on social media giants Instagram, TikTok, and YouTube left 235 million profiles unprotected without any passwords, which could have devastating consequences for those affected.
153 In this blog post, we'll explore what happened during the attack, how it affected Instagram users, and what steps can be taken to protect your own account.
154 </h4><br>
155 <h2>
156 <k><a class="h2">What happened during the attack?</a></k>
157 </h2>
158 <h4 class="h4">The cyber attack was discovered by cybersecurity researchers who found a database containing over 235 million user profiles that had been exposed to the internet without any password protection. The database contained a wealth of personal information, including usernames, email addresses, phone numbers, profile pictures, and more. The scale of the breach was enormous, and the potential consequences were serious. The attack was first discovered when users began reporting that they were unable to access their accounts. It was quickly discovered that the hackers had managed to gain access to over 235 million accounts by exploiting a vulnerability in the platform's API. The hackers were then able to compromise these accounts and use them to send spam messages, steal sensitive information, and even launch DDoS attacks.
159 The attackers then used the compromised accounts to launch a coordinated scam campaign, where they would send messages encouraging users to send cryptocurrency to a specific wallet address. These messages were often accompanied by photos of the account owner, which added an element of authenticity to the scam.
160 </h4>
```

Ln 30, Col 59 Spaces: 2 UTF-8 LF HTML ⚡ Go Live ⌂ ⌂

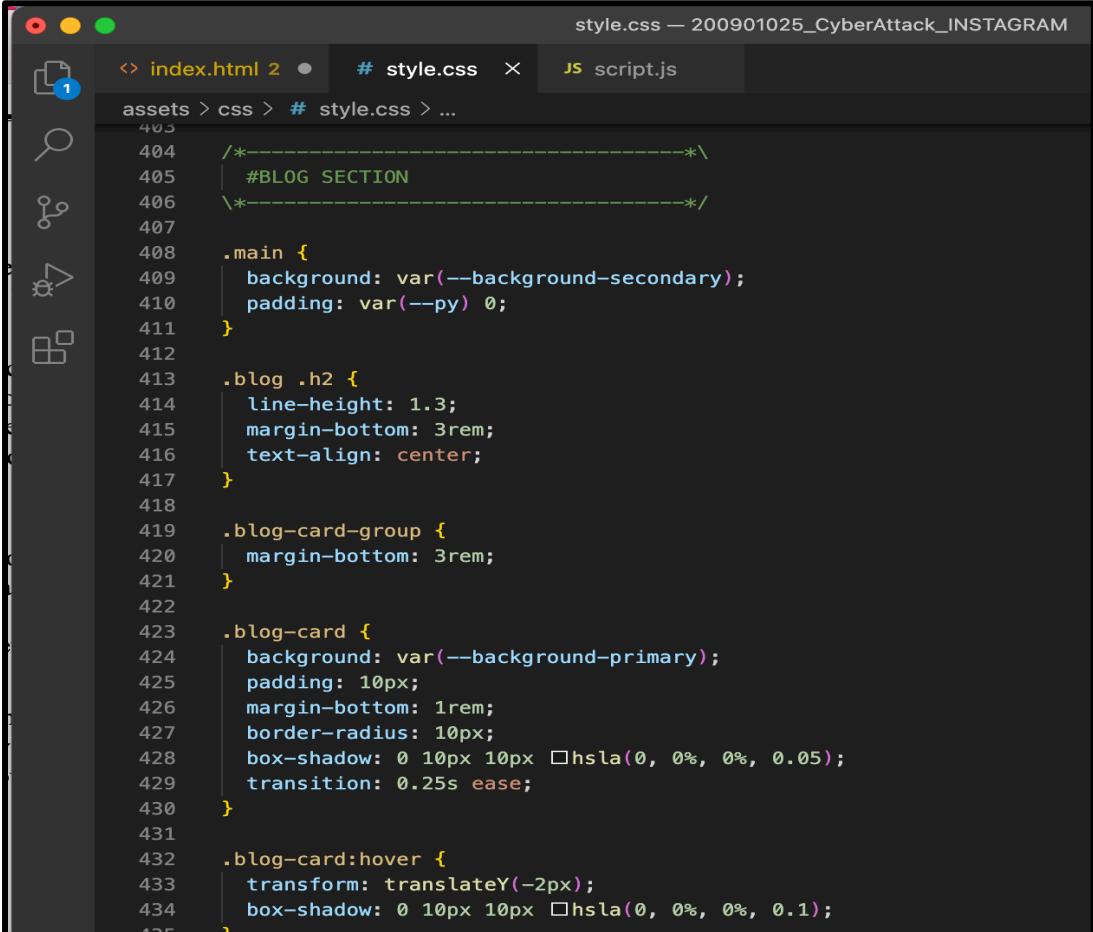
CSS Code

1.



```
style.css — 200901025_CyberAttack_INSTAGRAM
<> index.html 2 ● # style.css ✘ JS script.js
assets > css > # style.css > ...
1  /*-----\
2  | #style.css
3  \-----*/
4
5  .light-theme {
6    --background-primary: hsl(45, 100%, 95%);
7    --background-secondary: hsl(45, 37%, 89%);
8    --action-primary: hsl(38, 100%, 77%);
9    --action-secondary: hsl(45, 37%, 89%);
10   --foreground-primary: hsl(218, 23%, 23%);
11   --foreground-secondary: hsl(208, 8%, 40%);
12   --foreground-tertiary: hsl(214, 20%, 69%);
13   --accent: hsl(35, 65%, 59%);
14 }
15
16 .dark-theme {
17   --background-primary: hsl(218, 23%, 23%);
18   --background-secondary: hsl(220, 26%, 14%);
19   --action-primary: hsl(216, 15%, 52%);
20   --action-secondary: hsl(218, 23%, 23%);
21   --foreground-primary: hsl(210, 38%, 95%);
22   --foreground-secondary: hsl(211, 25%, 84%);
23   --foreground-tertiary: hsl(214, 20%, 69%);
24   --accent: rgb(49, 120, 201);
25 }
26
```

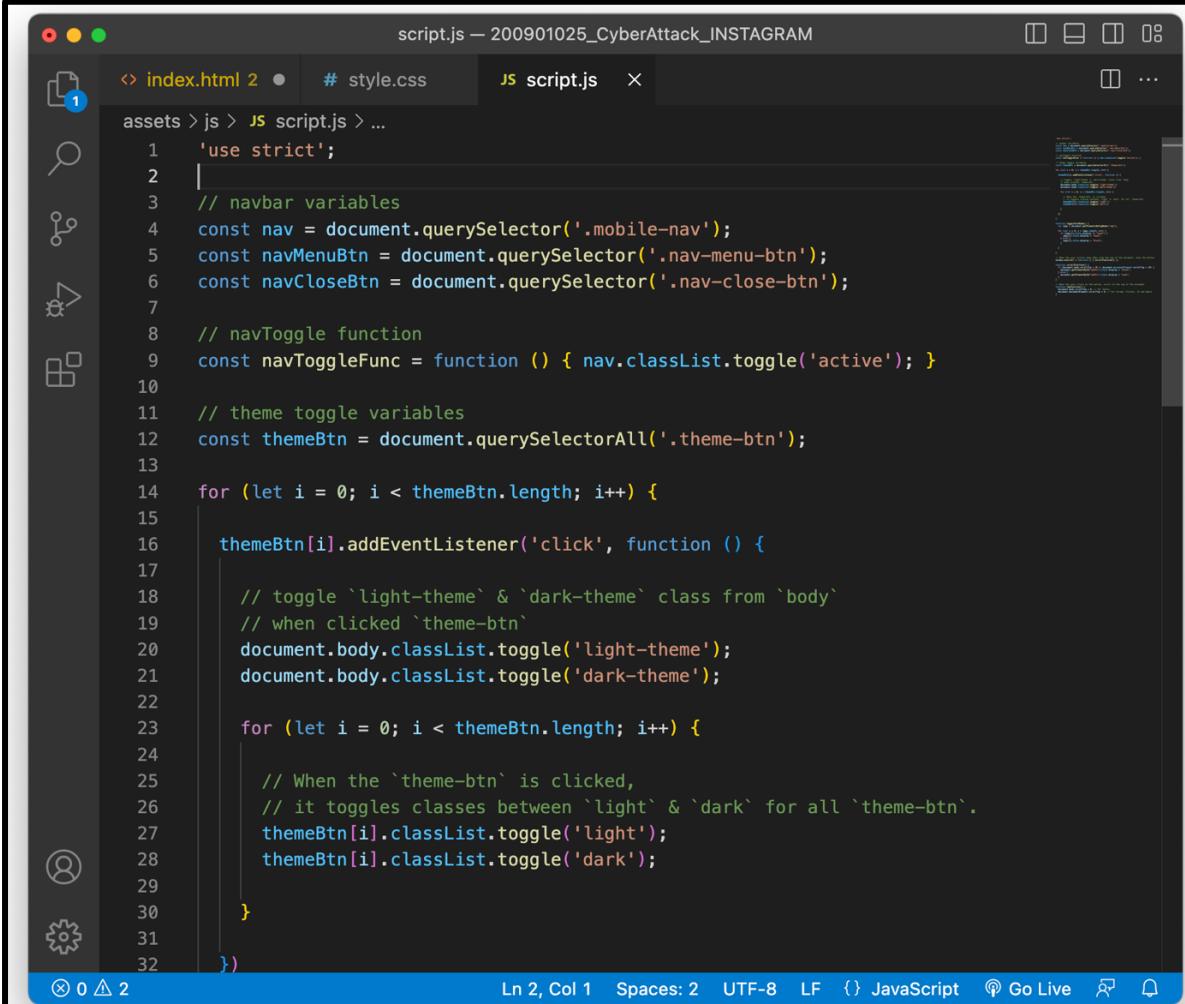
2.



```
style.css — 200901025_CyberAttack_INSTAGRAM
<> index.html 2 ● # style.css ✘ JS script.js
assets > css > # style.css > ...
403
404  /*-----\
405  | #BLOG SECTION
406  \-----*/
407
408  .main {
409    background: var(--background-secondary);
410    padding: var(--py) 0;
411  }
412
413  .blog .h2 {
414    line-height: 1.3;
415    margin-bottom: 3rem;
416    text-align: center;
417  }
418
419  .blog-card-group {
420    margin-bottom: 3rem;
421  }
422
423  .blog-card {
424    background: var(--background-primary);
425    padding: 10px;
426    margin-bottom: 1rem;
427    border-radius: 10px;
428    box-shadow: 0 10px 10px hsla(0, 0%, 0%, 0.05);
429    transition: 0.25s ease;
430  }
431
432  .blog-card:hover {
433    transform: translateY(-2px);
434    box-shadow: 0 10px 10px hsla(0, 0%, 0%, 0.1);
435  }
```

JavaScript Code

1.



The screenshot shows a code editor window titled "script.js — 200901025_CyberAttack_INSTAGRAM". The editor has a dark theme with syntax highlighting for JavaScript. The code is organized into several sections:

```
'use strict';
// navbar variables
const nav = document.querySelector('.mobile-nav');
const navMenuBtn = document.querySelector('.nav-menu-btn');
const navCloseBtn = document.querySelector('.nav-close-btn');

// navToggle function
const navToggleFunc = function () { nav.classList.toggle('active'); }

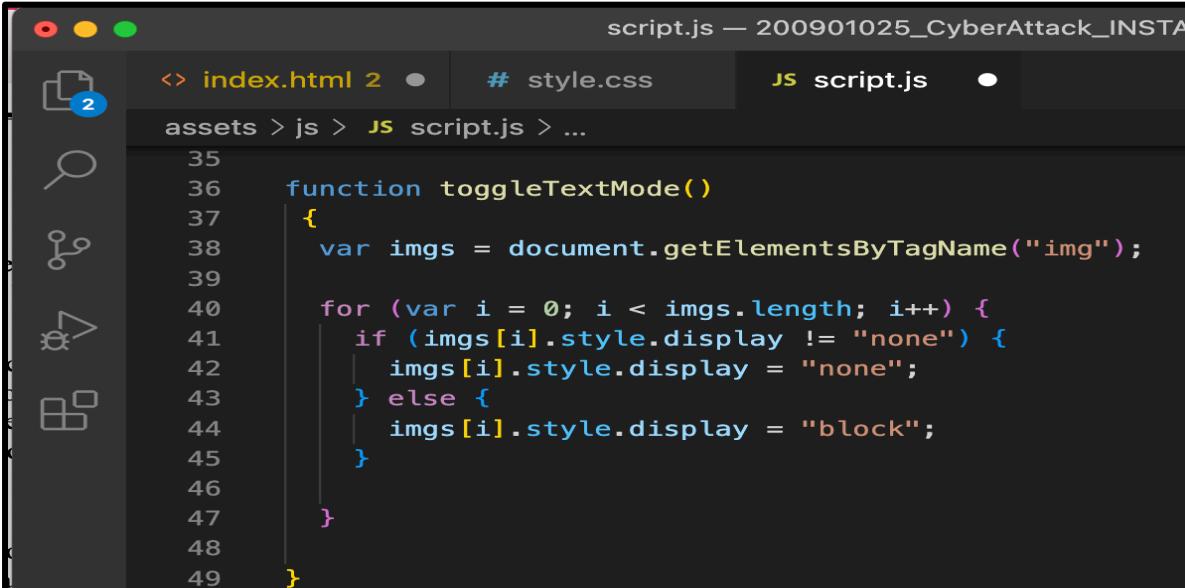
// theme toggle variables
const themeBtn = document.querySelectorAll('.theme-btn');

for (let i = 0; i < themeBtn.length; i++) {
    themeBtn[i].addEventListener('click', function () {
        // toggle `light-theme` & `dark-theme` class from `body`
        // when clicked `theme-btn`
        document.body.classList.toggle('light-theme');
        document.body.classList.toggle('dark-theme');

        for (let i = 0; i < themeBtn.length; i++) {
            // When the `theme-btn` is clicked,
            // it toggles classes between `light` & `dark` for all `theme-btn`.
            themeBtn[i].classList.toggle('light');
            themeBtn[i].classList.toggle('dark');
        }
    })
}
```

The status bar at the bottom indicates "Ln 2, Col 1" and "Spaces: 2".

2.



The screenshot shows a code editor window titled "script.js — 200901025_CyberAttack_INSTA". The editor has a dark theme with syntax highlighting for JavaScript. The code defines a function named "toggleTextMode" which iterates through all images on the page and toggles their visibility:

```
function toggleTextMode()
{
    var imgs = document.getElementsByTagName("img");

    for (var i = 0; i < imgs.length; i++) {
        if (imgs[i].style.display != "none") {
            imgs[i].style.display = "none";
        } else {
            imgs[i].style.display = "block";
        }
    }
}
```

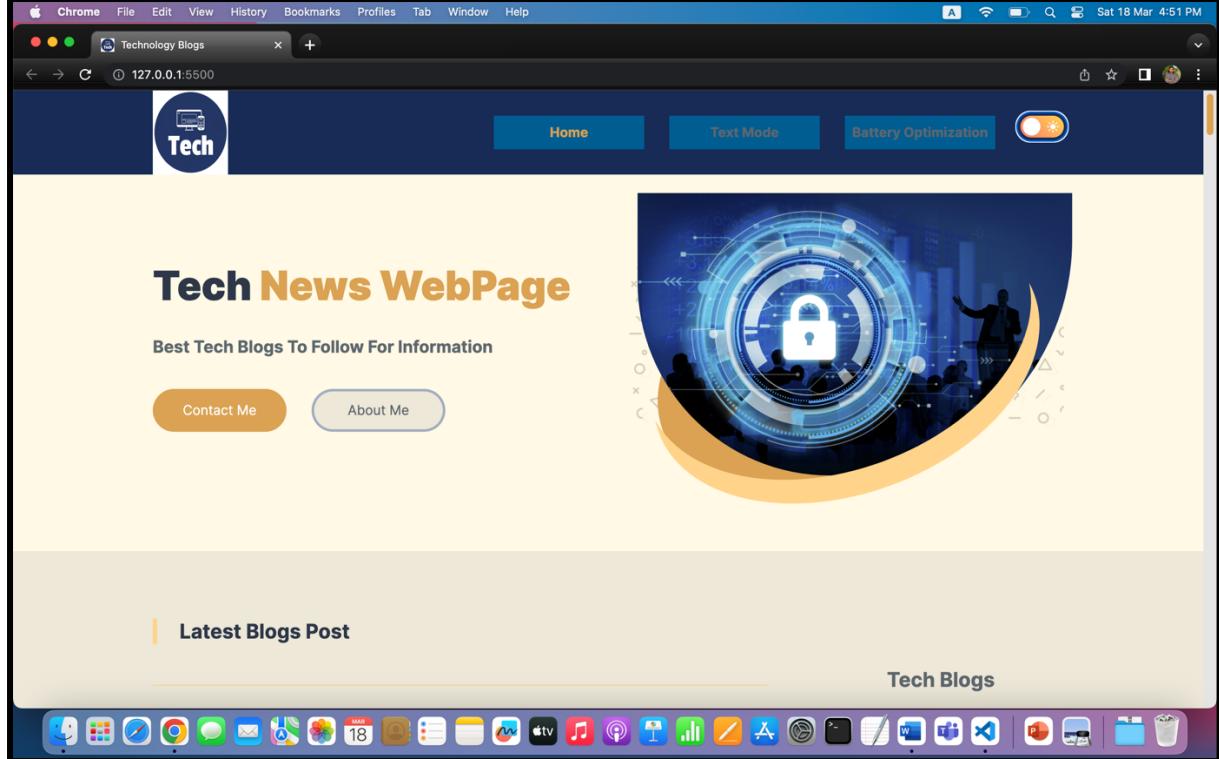
Code Documentation

- The Web Page that presents a blog on **Cyber Attack on Instagram 2020** has navigation bar that is contained within a `<div>` element with the class name "**flex-wrapper**". The navigation bar itself is defined by a `` element with the class name "**desktop-nav**". The navigation bar contains three buttons, each defined by an `` element. The first button has the label "**Home**" and when clicked, it will take the user to the homepage of the website. The second button has the label "**Text Mode**" and when clicked, it will toggle the text mode of the website. The third button has the label "**Battery Optimization**" and when clicked, it will optimize the battery of the user's device.
- Lastly, the navigation bar contains a button with the class name "**theme-btn**" that toggles the theme of the website between light and dark mode. The button contains two icons, "**moon**" and "**sunny**", which represent the dark and light mode respectively. When the button is clicked, the theme of the website will change between light and dark mode.
- The CSS styles are responsible for determining how the page is arranged, what colors are used, and what the text looks like. There are two modes available: a light mode and a dark mode, as well as a header and footer that are fixed in place.
- The JavaScript defines several functions for various actions on a webpage. The first section of the code defines variables for the mobile navigation menu and its associated buttons. The second section defines variables for theme toggle buttons and adds event listeners to toggle the light-theme and dark-theme classes on the body element, as well as toggle the light and dark classes on all theme-btn elements.
- The **toggleTextMode** function hides all **img** elements on the webpage if they are visible and shows them if they are hidden.
- The next section uses the **window.onscroll** event to trigger the **scrollFunction** function when the user scrolls down 20px from the top of the document. If the user has scrolled down 20px, the **myBtn** button is displayed; otherwise, it is hidden. The **topFunction** function is called when the **myBtn** button is clicked, and it scrolls the page to the top by setting the **scrollTop** property of both the body and **documentElement** elements to 0.
- Overall, this code is meant to add functionality to a webpage, including a mobile navigation menu, theme toggling, image hiding, and a scroll-to-top button.

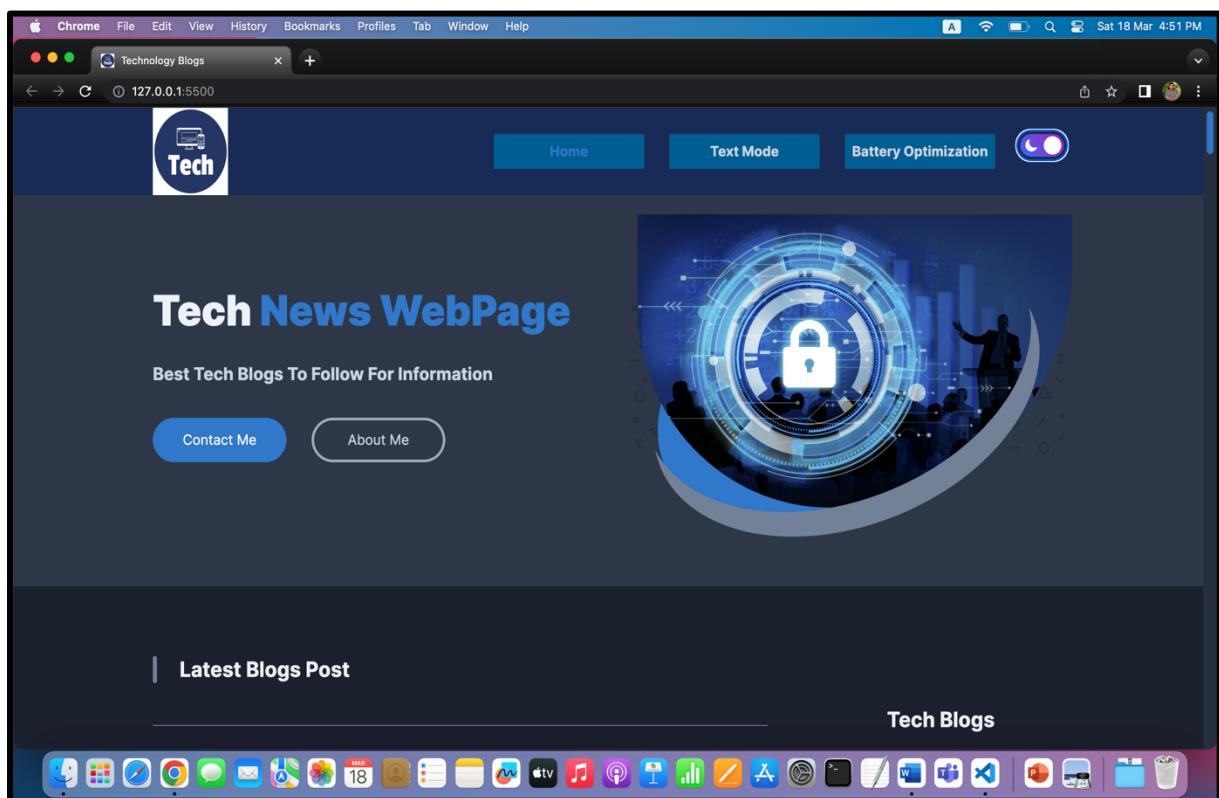
1. Test the webpage on

Testing the webpage on Laptop and Desktop PC

1.



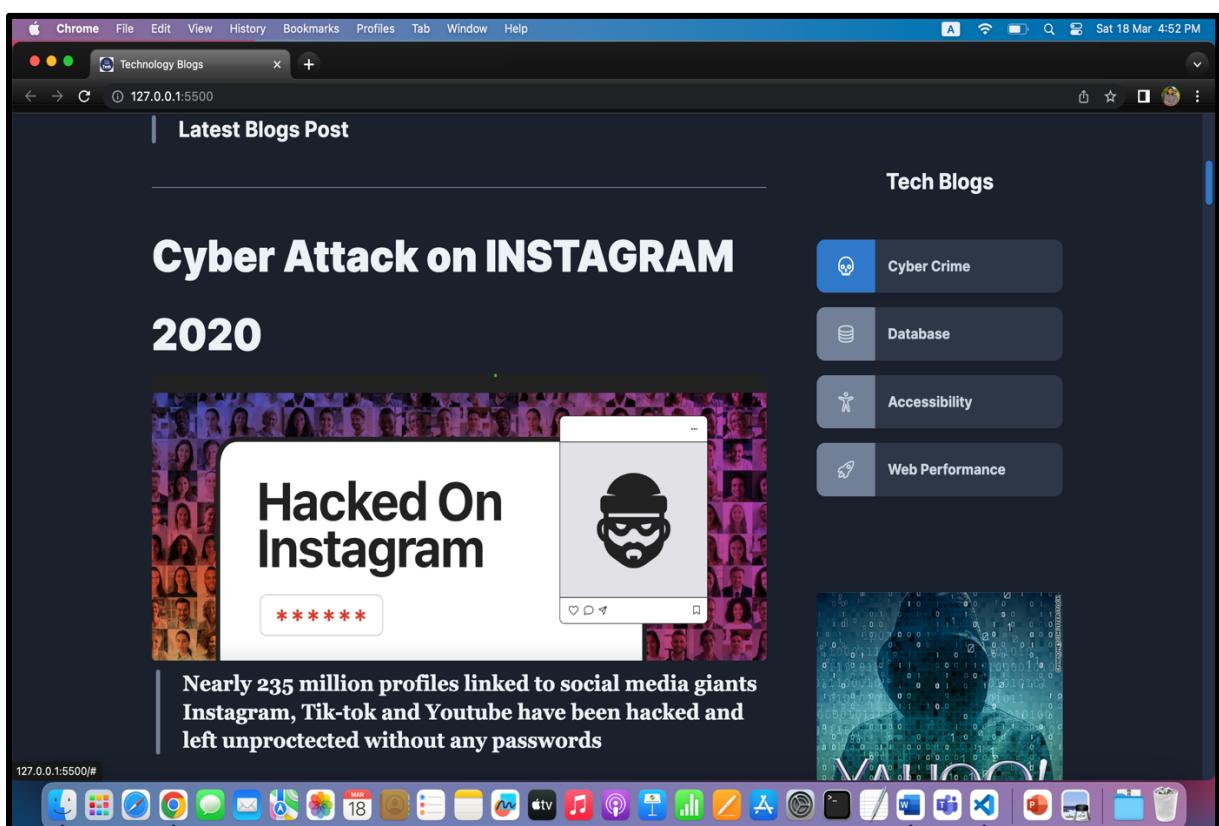
2.



3.



4.



5.



#Supply Chain Attacks
#Insider Threats
#DNS Tunneling
#IoT-Based Attacks

Let's Talk

Do you want to learn more about how I can help you to overcome your problems? Let us have a conversation.



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Email Address

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What Should You Do To Protect Your Instagram Profile From That Type Of Data Breach?



6.

activity, you can help protect yourself against future attacks. Stay safe online!

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 M.AHSAN ALI
March 12, 2023 • 30 min



Tech News WebPage
Best Tech Blogs To Follow For Information

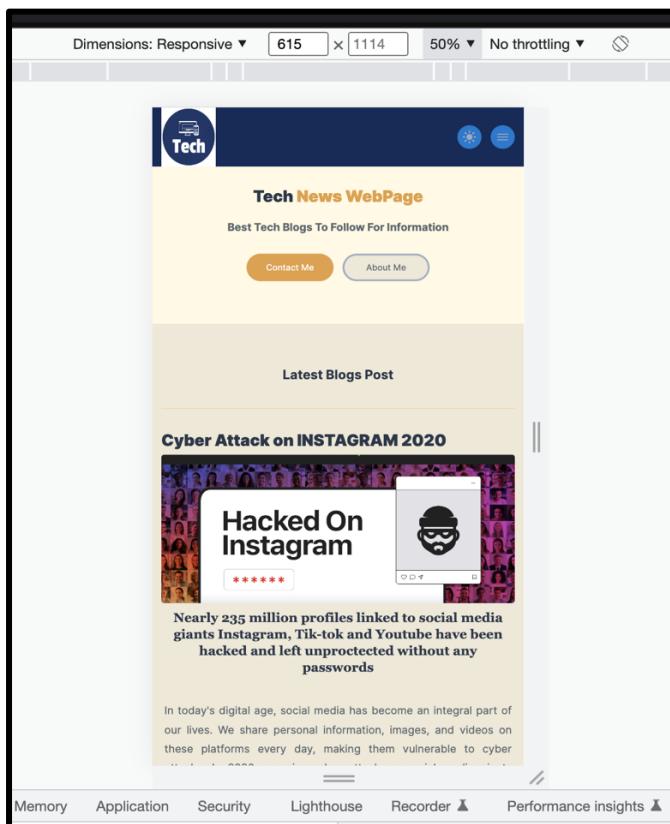
Designed By
Muhammad Ahsan Ali UI/UX Designer Computer Science Student Institute Of Space Technology

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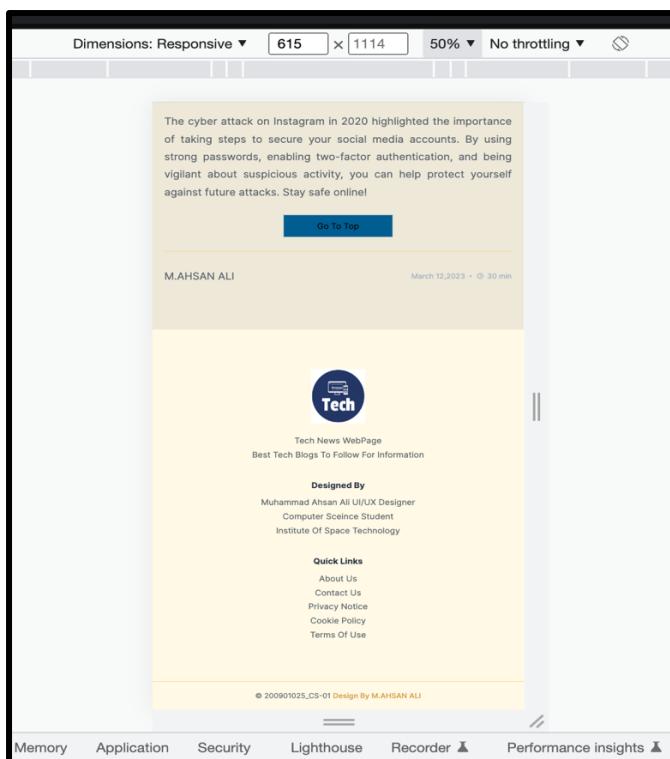
Testing the webpage on Cell phone (both portrait/landscape)

Responsiveness On Portrait Mode

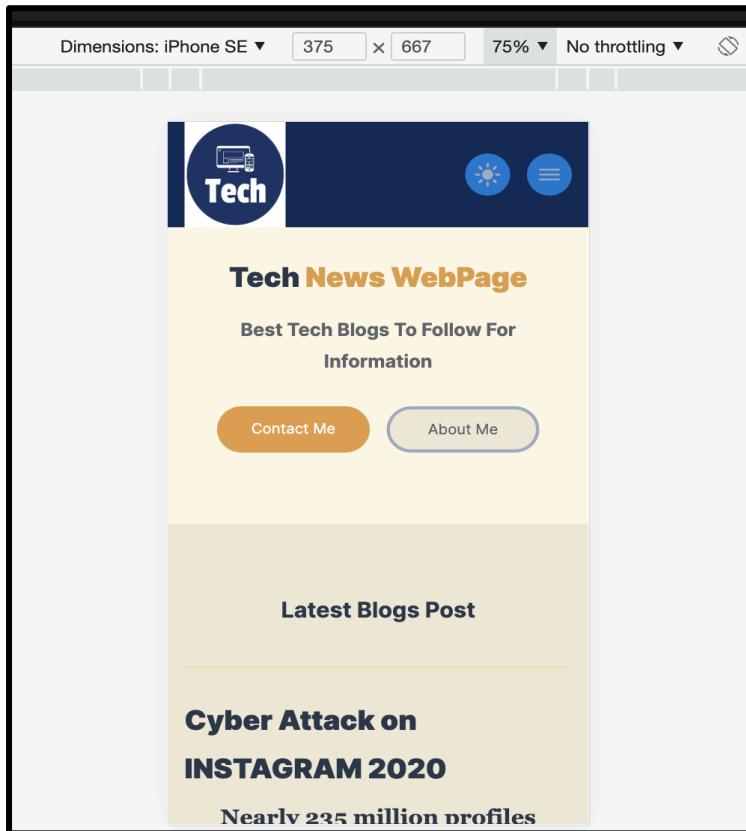
1.



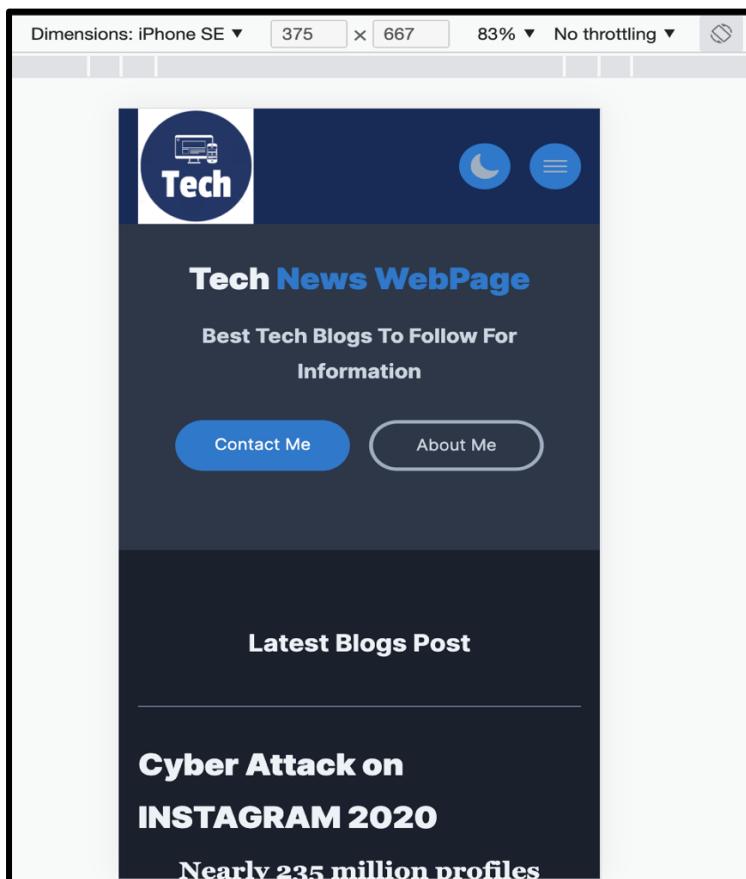
2.



3. iPhone SE Portrait Mode

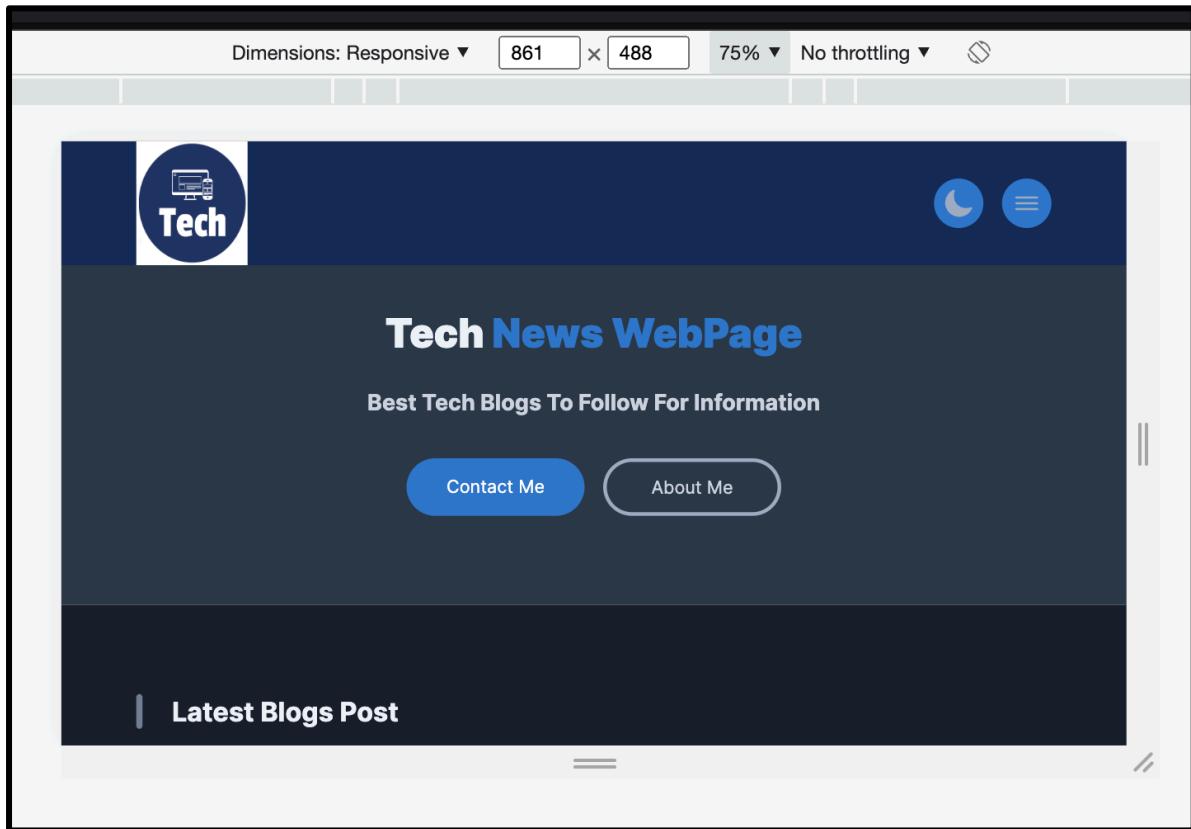


4.



Responsiveness On Landscape Mode

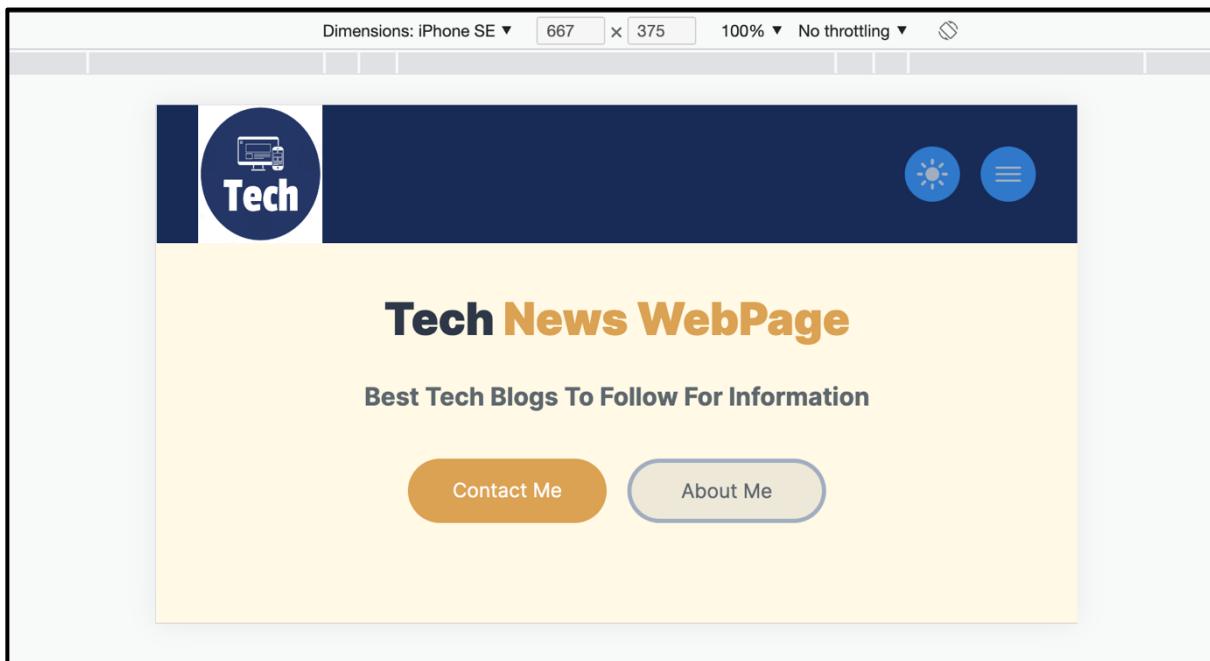
1.



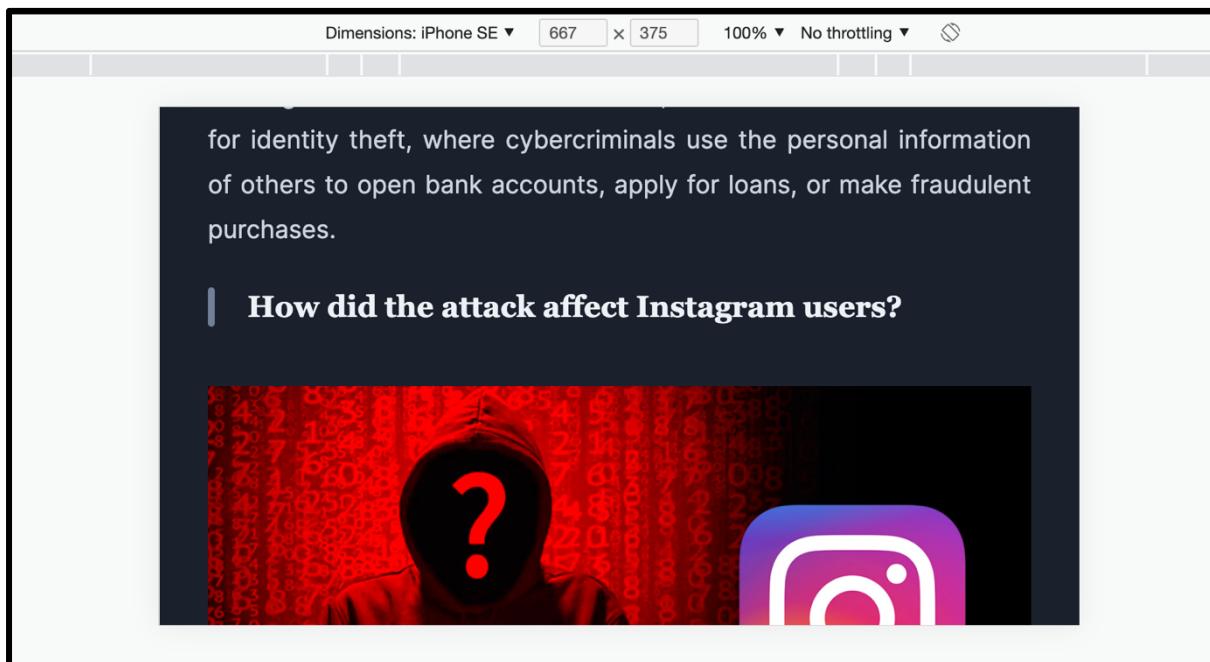
2.



3. iPhone SE Landscape Mode

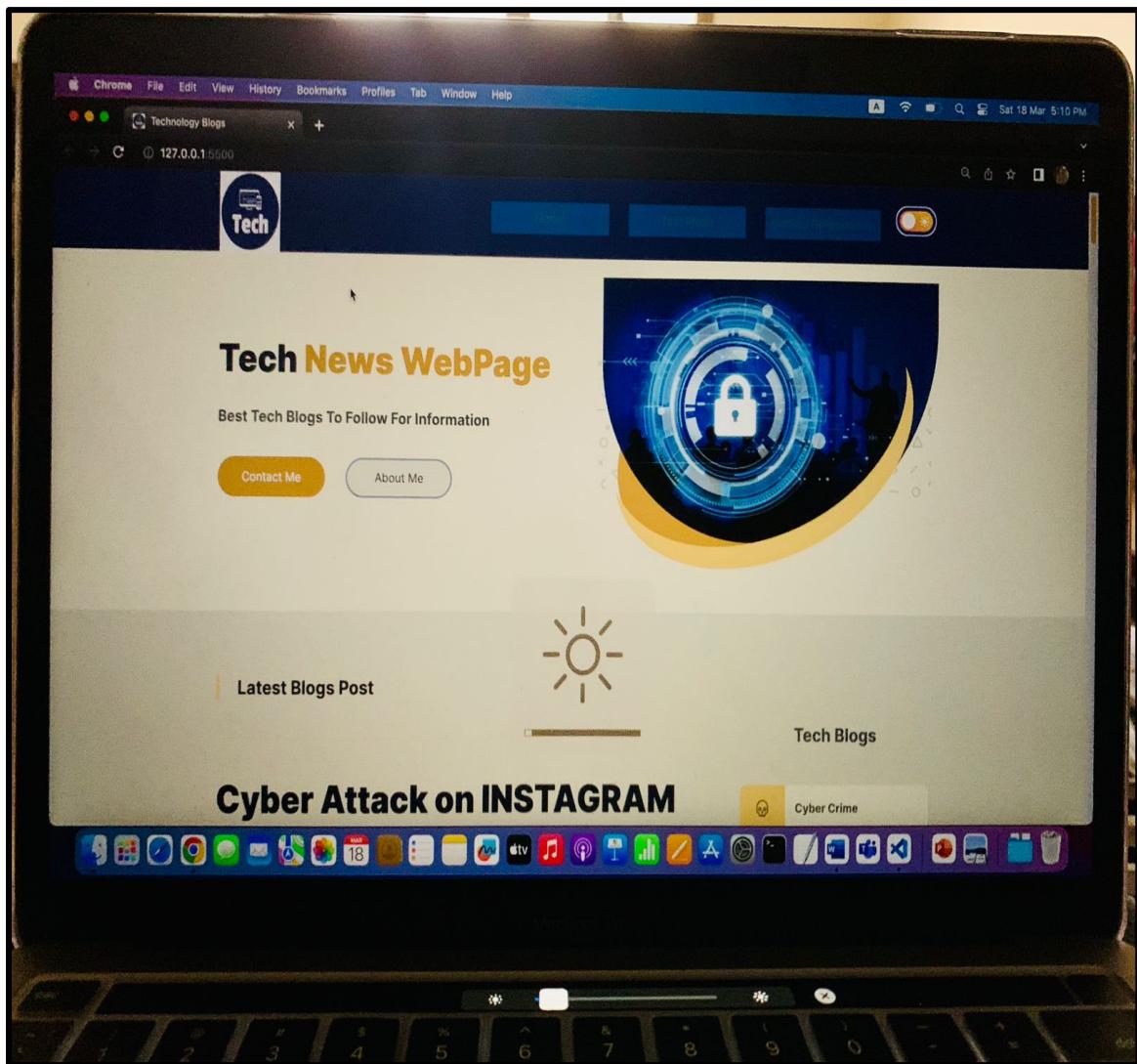


2.



Testing the webpage on with direct bright sunlight falling

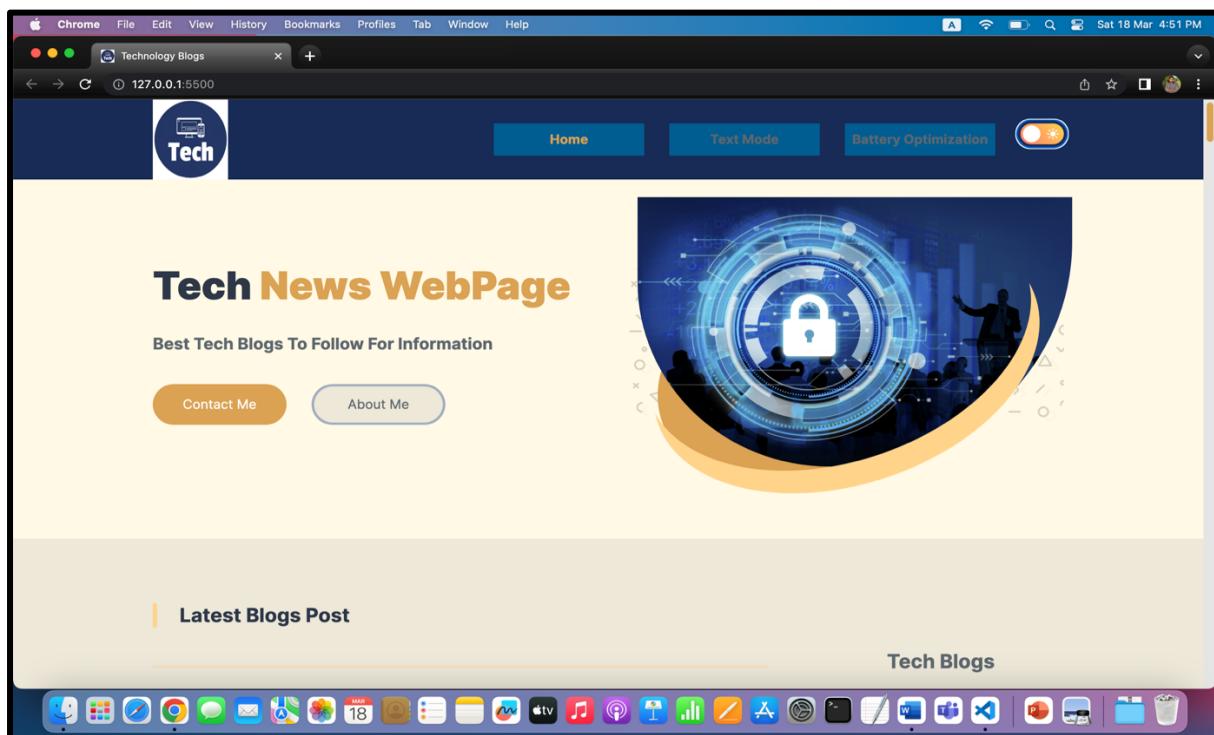
1.



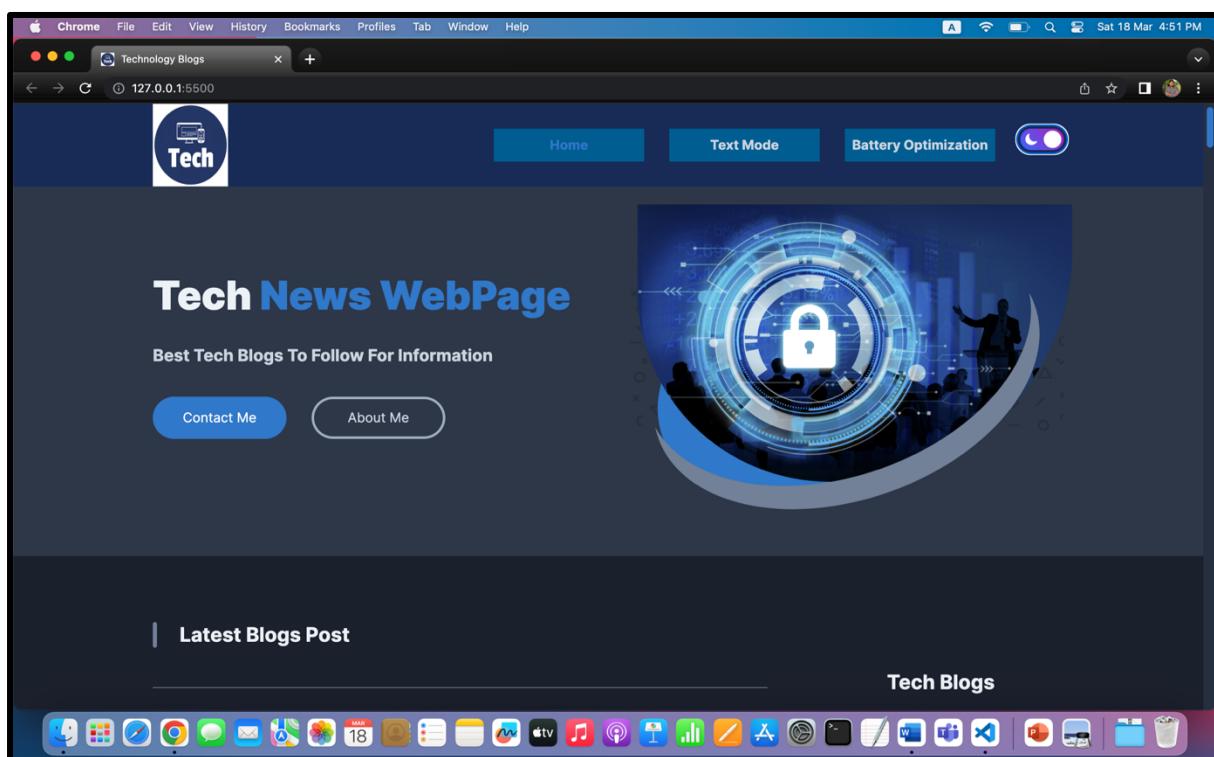
2. Incorporate a control panel at the top right corner of webpage with following features.

Dark mode/Light Mode

Light mode



Dark mode



Dark mode Button/Light mode Button Functionality

- The **dark theme** and **light theme** are two different styles for a webpage that changes the appearance of the page, particularly the background color, text color, and other design elements.
- In this code, the light-theme class sets the background color of the page to a **light color**, and the dark-theme class sets the background color to a **dark color**. The other design elements on the page are also adjusted accordingly to match the chosen theme.
- By using the `classList.toggle` method, the code toggles between the light-theme and dark-theme classes when the user clicks on a theme-btn.
- This CSS code defines the variables for the colors of the dark and light theme. These themes are used to style the web page and are toggled through the **themeBtn** buttons.
- The light-theme is defined by a **light color palette**, with pastel shades of blues and greens for the background and action buttons. The foreground-primary color is a dark shade of blue, while foreground-secondary is a lighter shade. foreground-tertiary is a light gray, and the accent color is a shade of yellow.
- On the other hand, the dark theme is defined by a **dark color palette**, with dark shades of blue and gray for the background and action buttons. The foreground-primary color is a light shade of gray, while foreground-secondary is a darker shade. foreground-tertiary is the same light gray as the light-theme, and the accent color is a shade of blue.
- These color schemes provide a contrast to each other and allow the user to switch between different themes depending on their preference or the environment in which they are using the web page.

Text only mode Button

1. Before clicking Text Mode Button

Tech Blogs

Cyber Attack on INSTAGRAM

2020

Nearly 235 million profiles linked to social media giants Instagram, Tik-tok and Youtube have been hacked and left unprotected without any passwords

In today's digital age, social media has become an integral part of our lives. We share personal information, images, and videos on these platforms every day, making them vulnerable to cyber attacks. In 2020, a major cyber attack on social media giants Instagram, TikTok, and YouTube left nearly 235 million profiles unprotected without any passwords, which could have devastating consequences for those affected. In this blog post, we'll explore what happened during the attack, how it affected Instagram users, and what steps can be taken to protect your own account.

Tech Blogs

- Cyber Crime
- Database
- Accessibility
- Web Performance

Cyber Attack on Yahoo in 2013 stolen records of 3 billion

2. After clicking Text Mode Button

Tech Blogs

Cyber Attack on INSTAGRAM

2020

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In today's digital age, social media has become an integral part of our lives. We share personal information, images, and videos on these platforms every day, making them vulnerable to cyber attacks. In 2020, a major cyber attack on social media giants Instagram, TikTok, and YouTube left nearly 235 million profiles unprotected without any passwords, which could have devastating consequences for those affected. In this blog post, we'll explore what happened during the attack, how it affected Instagram users, and what steps can be taken to protect your own account.

Tech Blogs

- Cyber Crime
- Database
- Accessibility
- Web Performance

Cyber Attack on Yahoo in 2013 stolen records of 3 billion

Cyber Crime

Hackers have stolen names, dates of birth, phone numbers and passwords with poor...

Text mode Button Functionality

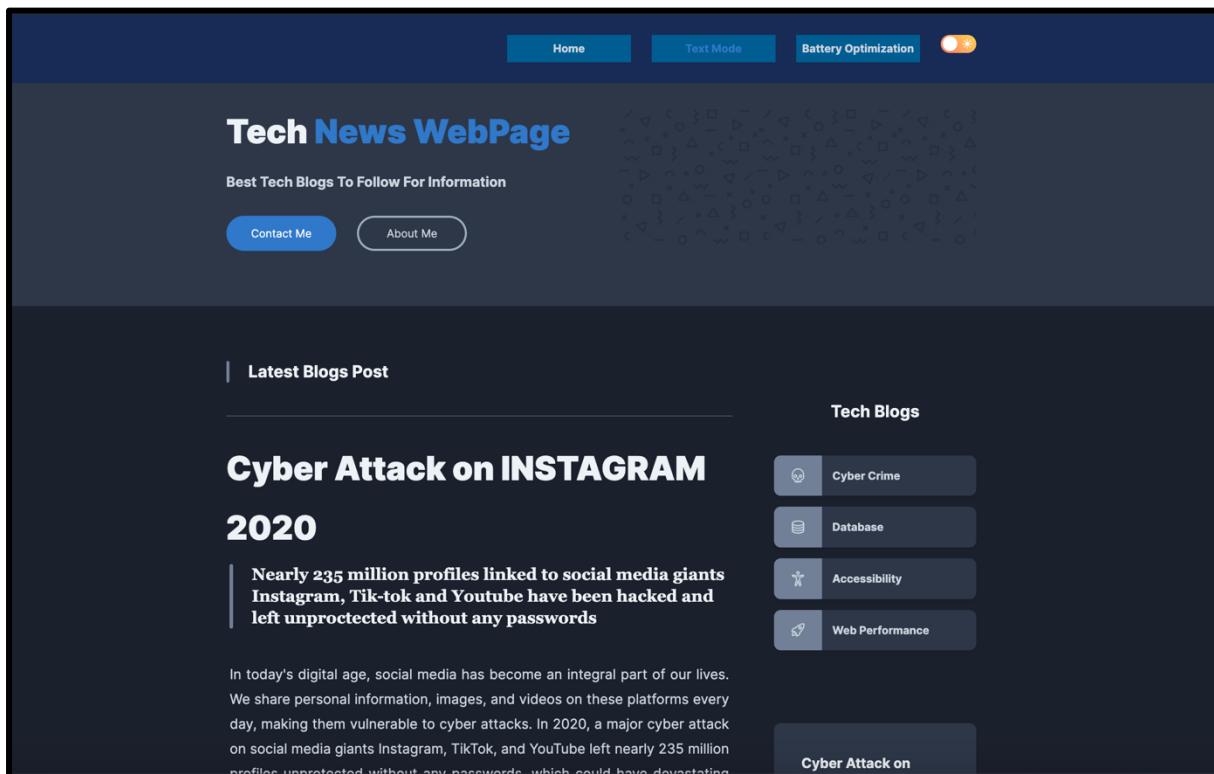
- The function **toggleTextMode** appears to be a function that toggles the display of all **img** elements on a webpage.
- When the function is called, it retrieves all **img** elements using the **getElementsByName** method and stores them in the **imgs** variable.
- Then, it loops through each **img** element using a for loop and checks if the display property of the element is set to "none". If the property is not "none", meaning the image is currently being displayed, the function sets the display property to "none" which hides the image. If the property is "none", meaning the image is currently hidden, the function sets the display property to "block" which shows the image.
- Overall, the function can be used to toggle the display of images on a webpage, effectively allowing the user to switch between a text-only view and a view that includes images.

Battery Optimized mode (should switch to this mode automatically if battery < 10%)

1. Before going to Battery Optimized Mode



2. After going to Battery Optimized Mode if battery < 10%)

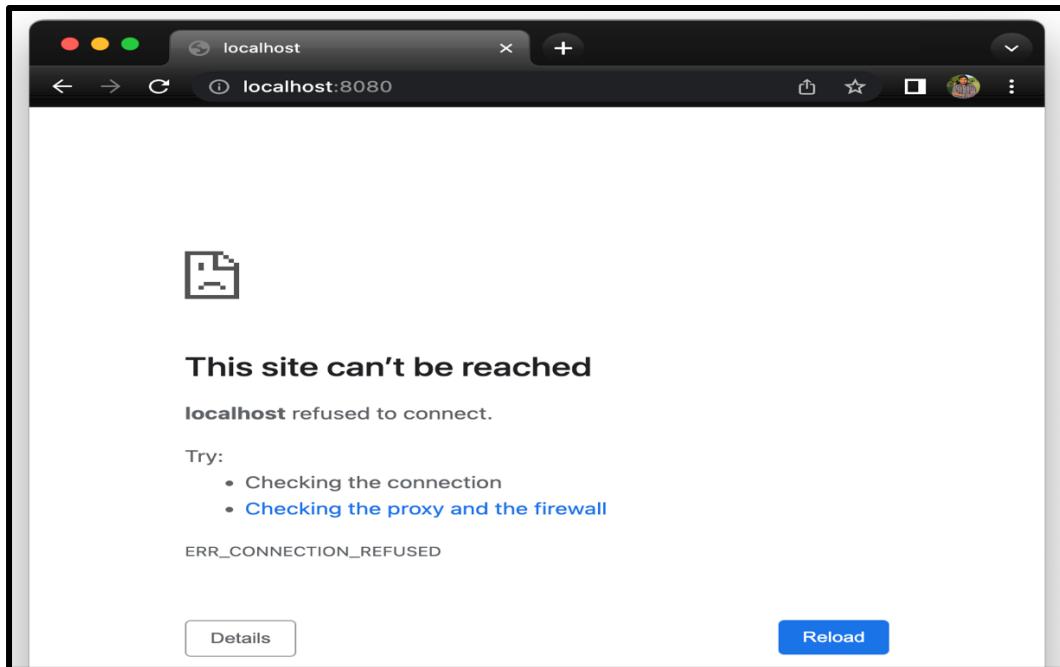


Battery Optimized Mode Functionality

- The given function **optimizeBattery()** uses the Battery Status API to check the current battery level of the device and switches the website to a battery optimized mode if the battery level is **below 10%**.
- But we use **Two Conditional Statements** in the Code.
- The **first conditional** statement checks if the **battery level** is less than **0.1**, If it is less than 0.1, it switches to battery optimized mode and hides all images on the webpage.
- The **second conditional** statement use only when **User** clicks the **Battery Optimization button** then, it again switches to battery optimized mode and hides all images on the webpage.
- In the battery optimized mode, the website's theme is toggled between the **light and dark themes**, which are defined using CSS classes. Additionally, all images on the website are hidden by setting their display property to "none", which can help reduce power consumption on devices with small batteries.
- If the battery level is above 10%, the website is switched back to normal mode, which involves resetting the website's background color, text color, and image display properties to their default values.
- Overall, the function aims to provide a more battery-friendly experience for website users by adapting the website's design and behavior based on the current battery level of the device.

3. Compare the loading times on two different servers as chosen earlier. Use chrome dev tools to benchmark performance / delays.

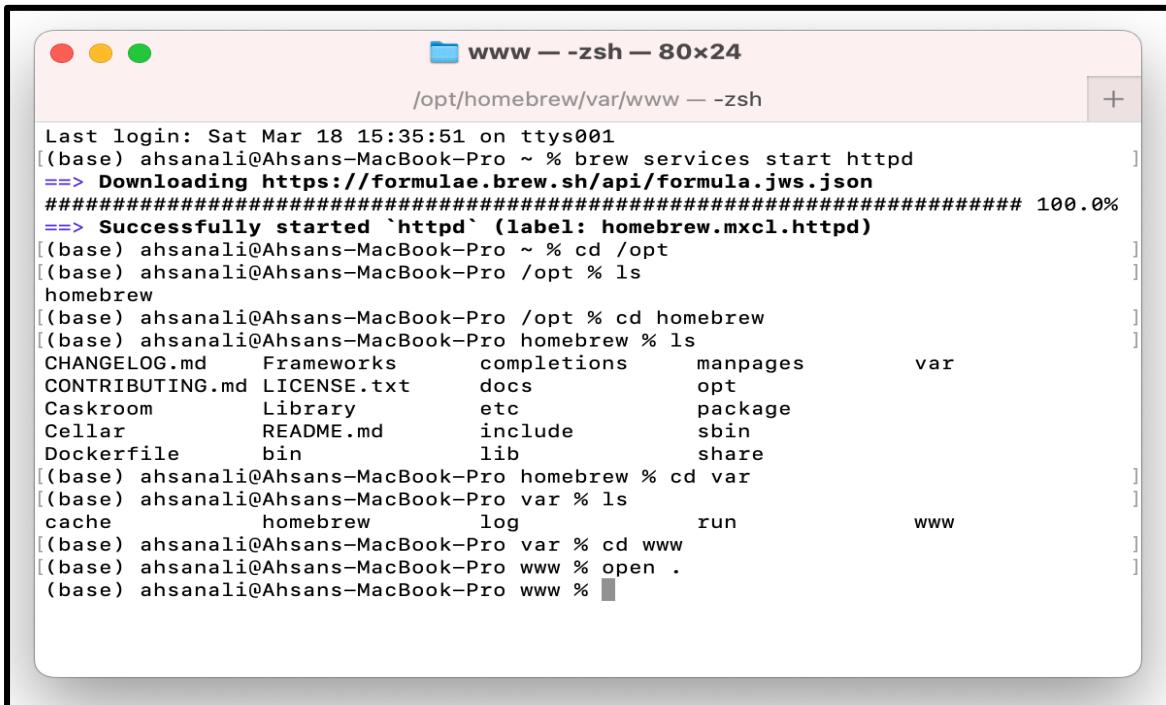
Before Local Hosting



After Local Hosting



Starting of APACHE Server



```
www -- zsh -- 80x24
/opt/homebrew/var/www -- zsh

Last login: Sat Mar 18 15:35:51 on ttys001
[(base) ahsanali@Ahsans-MacBook-Pro ~ % brew services start httpd
==> Downloading https://formulae.brew.sh/api/formula.jws.json
#####
Successfully started `httpd` (label: homebrew.mxcl.httpd)
[(base) ahsanali@Ahsans-MacBook-Pro ~ % cd /opt
[(base) ahsanali@Ahsans-MacBook-Pro /opt % ls
homebrew
[(base) ahsanali@Ahsans-MacBook-Pro /opt % cd homebrew
[(base) ahsanali@Ahsans-MacBook-Pro homebrew % ls
CHANGELOG.md Frameworks completions manpages var
CONTRIBUTING.md LICENSE.txt docs opt
Caskroom Library etc package
Cellar README.md include sbin
Dockerfile bin lib share
[(base) ahsanali@Ahsans-MacBook-Pro homebrew % cd var
[(base) ahsanali@Ahsans-MacBook-Pro var % ls
cache homebrew log run www
[(base) ahsanali@Ahsans-MacBook-Pro var % cd www
[(base) ahsanali@Ahsans-MacBook-Pro www % open .
(base) ahsanali@Ahsans-MacBook-Pro www %
```

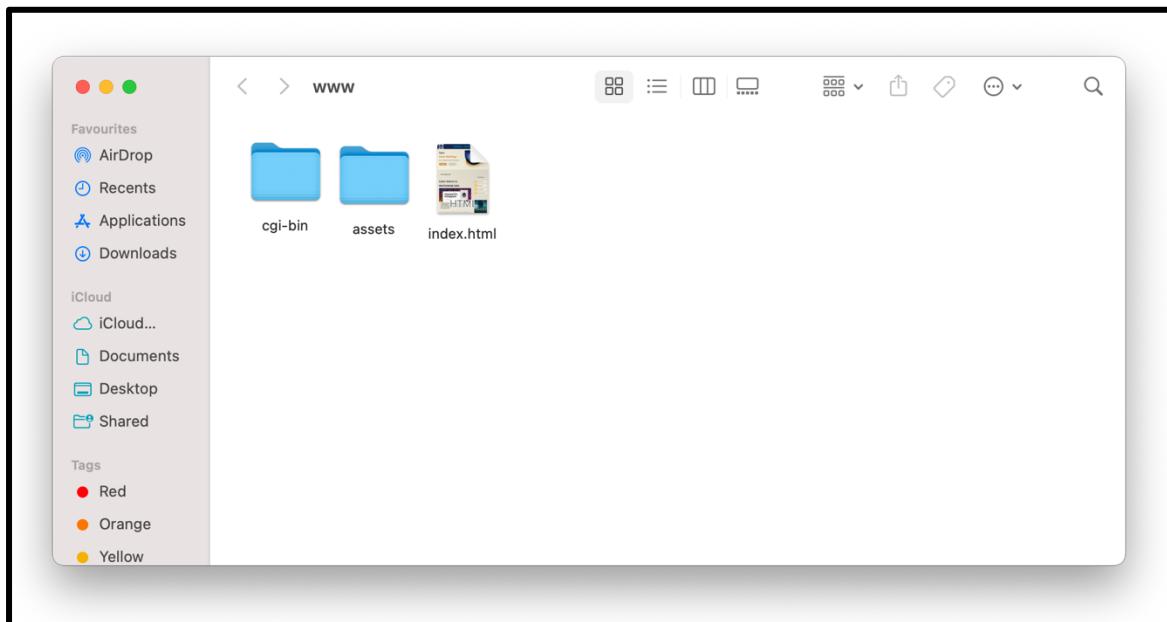
Starting of NGINX Server



```
ahsanali -- zsh -- 80x24
~ -- zsh

[(base) ahsanali@Ahsans-MacBook-Pro ~ % brew services start nginx
==> Successfully started `nginx` (label: homebrew.mxcl.nginx)
(base) ahsanali@Ahsans-MacBook-Pro ~ %
```

Opening Server Files



Comparison between APACHE HTTP SERVER and NGINX Server

- We can check the loading time of an server in Google Chrome using the built-in Developer Tools. Here's how:
- Open Google Chrome and go to the website we want to test the loading time of.
- Right-click anywhere on the page and select "Inspect" or press Command+Option+I (Mac) on your keyboard to open the Developer Tools.
- Click on the "Network" tab in the Developer Tools.
- Refresh the page to start recording the network activity.
- Look for the first entry in the list of requests, which should be the request for the page itself. The "Time" column shows the total time it took to load that request, including the time it took to resolve DNS, establish a connection, and transfer the data. The "Waterfall" chart shows a detailed breakdown of the various stages of the request.
- You can also click on the "Timing" tab to see a more detailed breakdown of the various stages of the request.
- The loading time may vary depending on your network connection speed, the server's response time, and the complexity of the website.

1. APACHE HTTP SERVER

Loading Time

Name	Status	Type	Initiator	Size	Time	Waterfall
localhost	304	document	Other	248 B	2 ms	
style.css	200	stylesheet	(index)		(memory cache) 0 ms	
css2?family=Inter:wght@400;500;600;700;900&display=swap	200	stylesheet	(index)		(memory cache) 0 ms	
fav.png	200	png	(index)		(memory cache) 0 ms	
hero.png	200	png	(index)		(memory cache) 0 ms	
insta1.png	200	png	(index)		(memory cache) 0 ms	
insta2.png	200	png	(index)		(memory cache) 0 ms	
insta3.png	200	png	(index)		(memory cache) 0 ms	

- Webpage takes Load Time of 47 ms on Nginx Server.

Name	Status	Type	Initiator	Size	Time	Waterfall
localhost	304	document	Other	248 B	2 ms	
style.css	200	stylesheet	(index)		(memory cache) 0 ms	
css2?family=Inter:wght@400;500;600;700;900&display=swap	200	stylesheet	(index)		(memory cache) 0 ms	
fav.png	200	png	(index)		(memory cache) 0 ms	
hero.png	200	png	(index)		(memory cache) 0 ms	
insta1.png	200	png	(index)		(memory cache) 0 ms	
insta2.png	200	png	(index)		(memory cache) 0 ms	
insta3.png	200	png	(index)		(memory cache) 0 ms	

Open Lighthouse to check Performance.

Generate a Lighthouse report Analyze page load

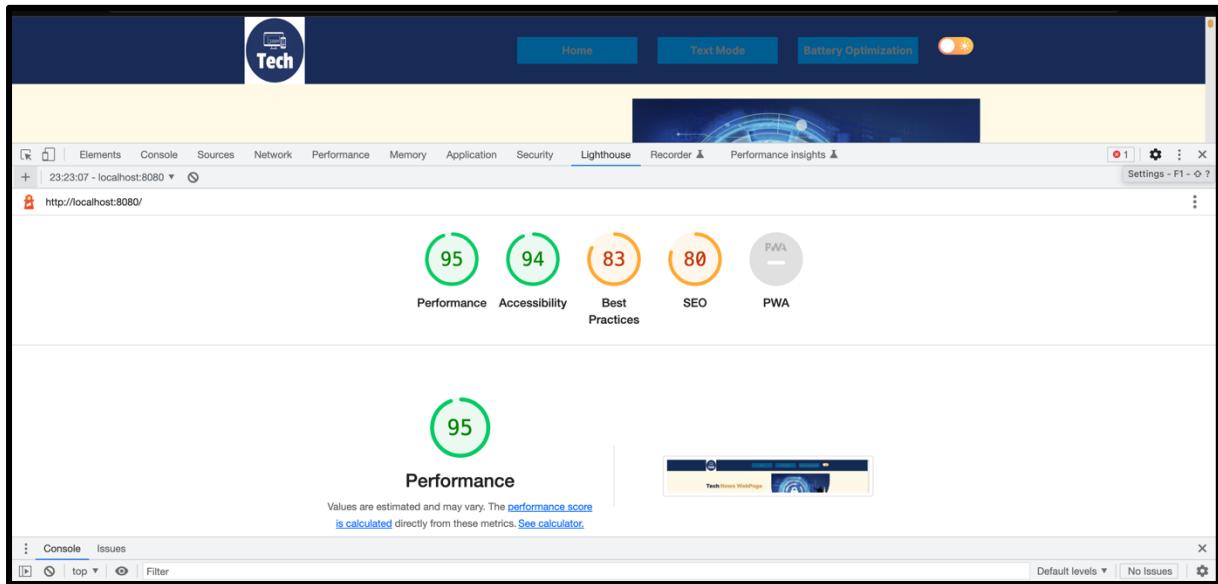
Mode [Learn more](#)
 Navigation (Default)
 Timespan
 Snapshot

Device
 Mobile
 Desktop

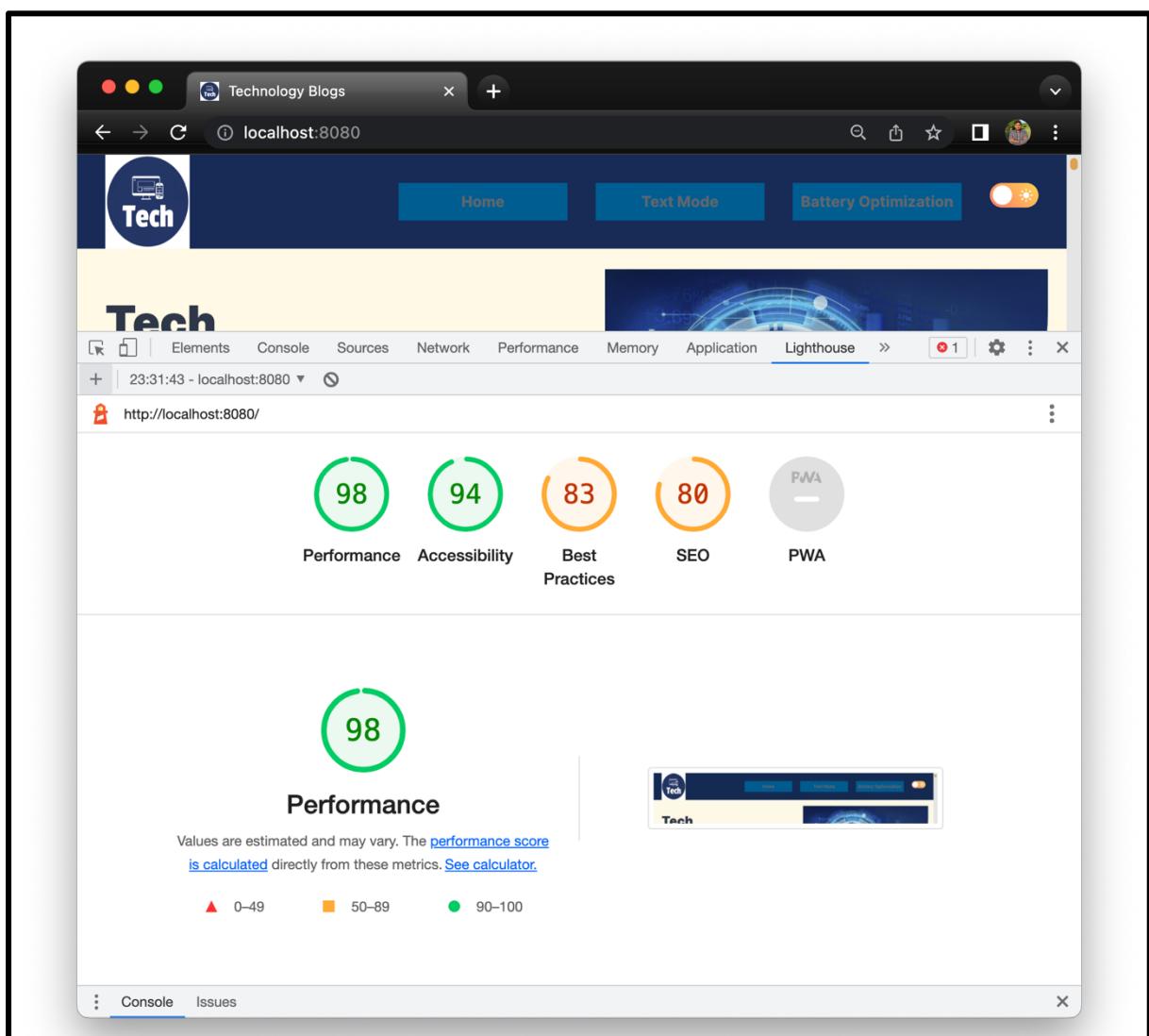
Categories
 Performance
 Accessibility
 Best practices
 SEO
 Progressive Web App

Plugins
 Publisher Ads

Performance on Desktop

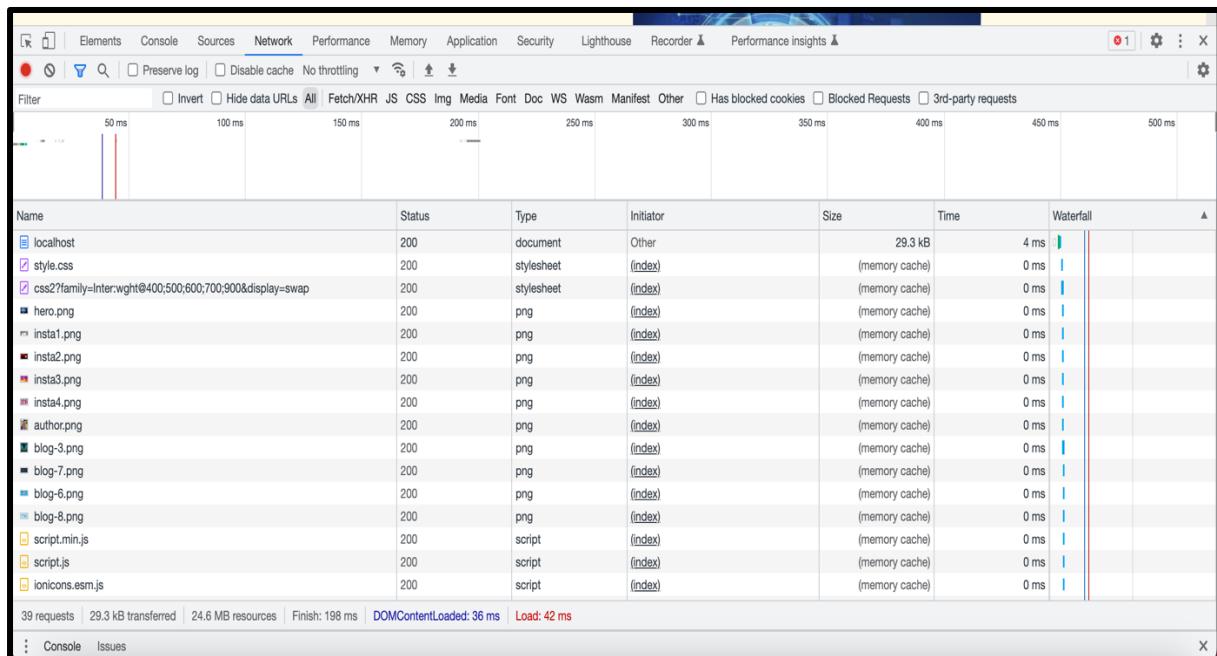
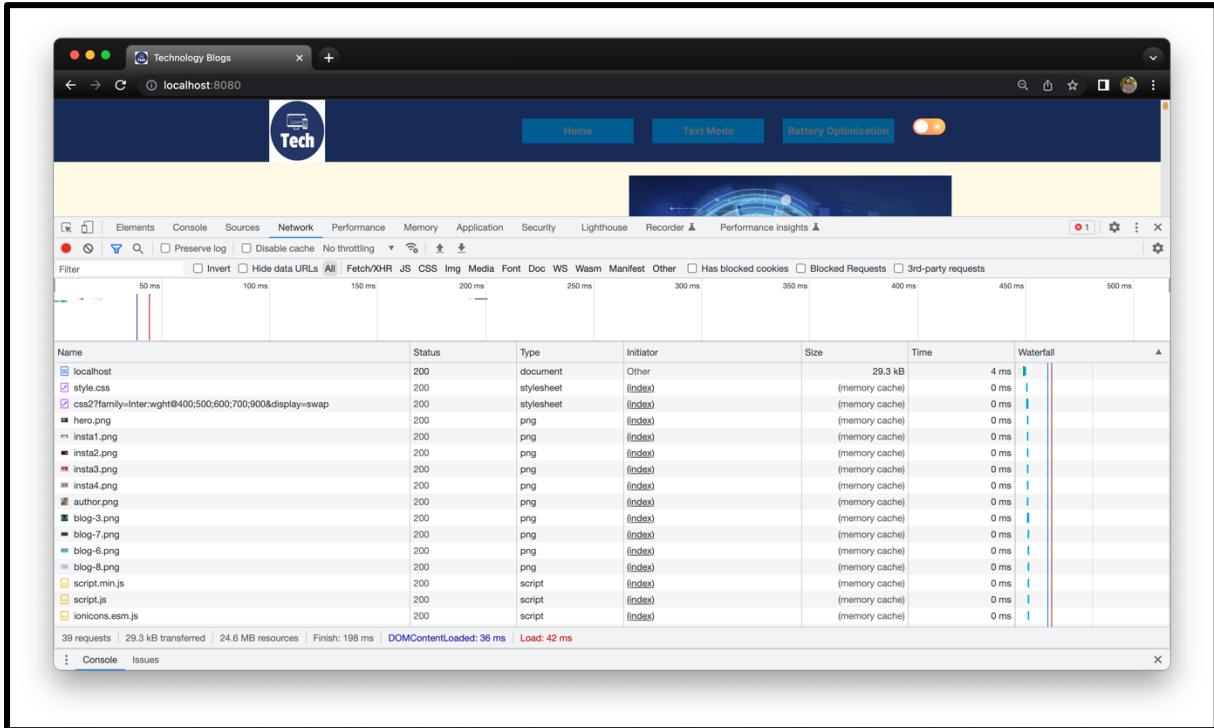


Performance on Mobile



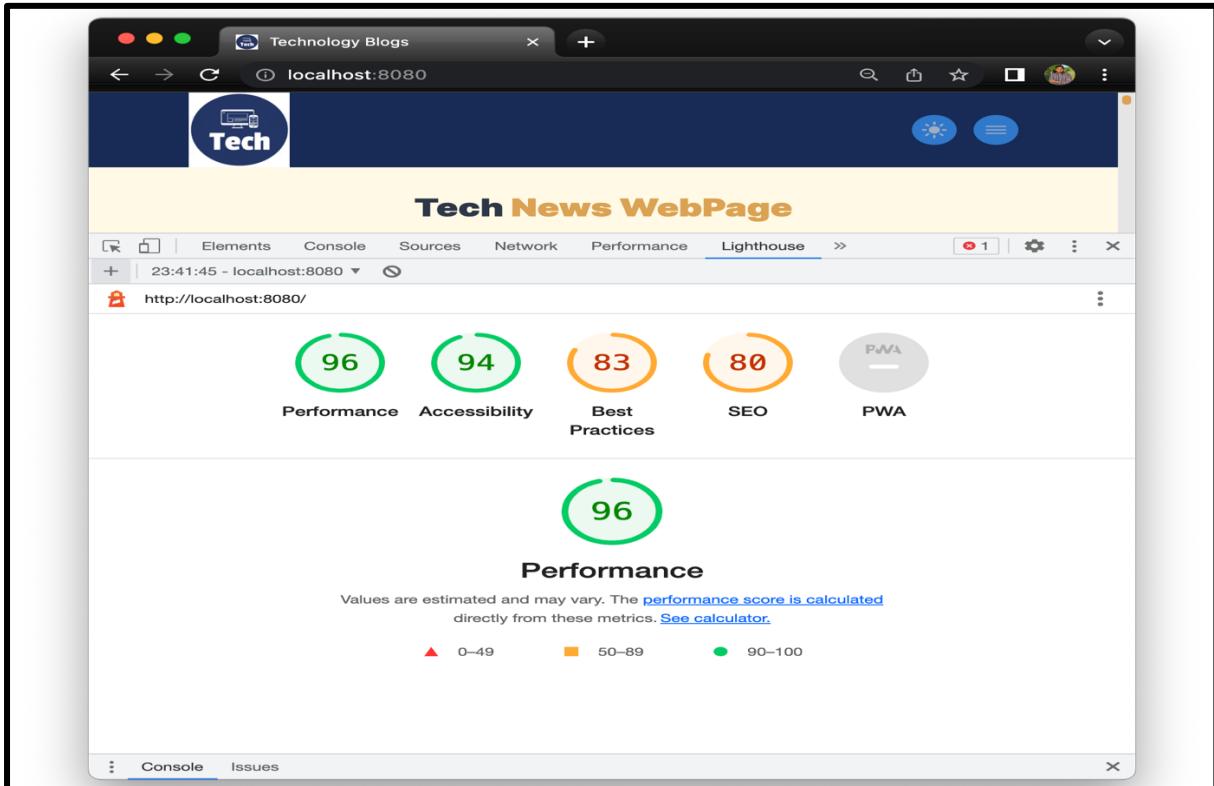
2. NGINX Server

Loading Time

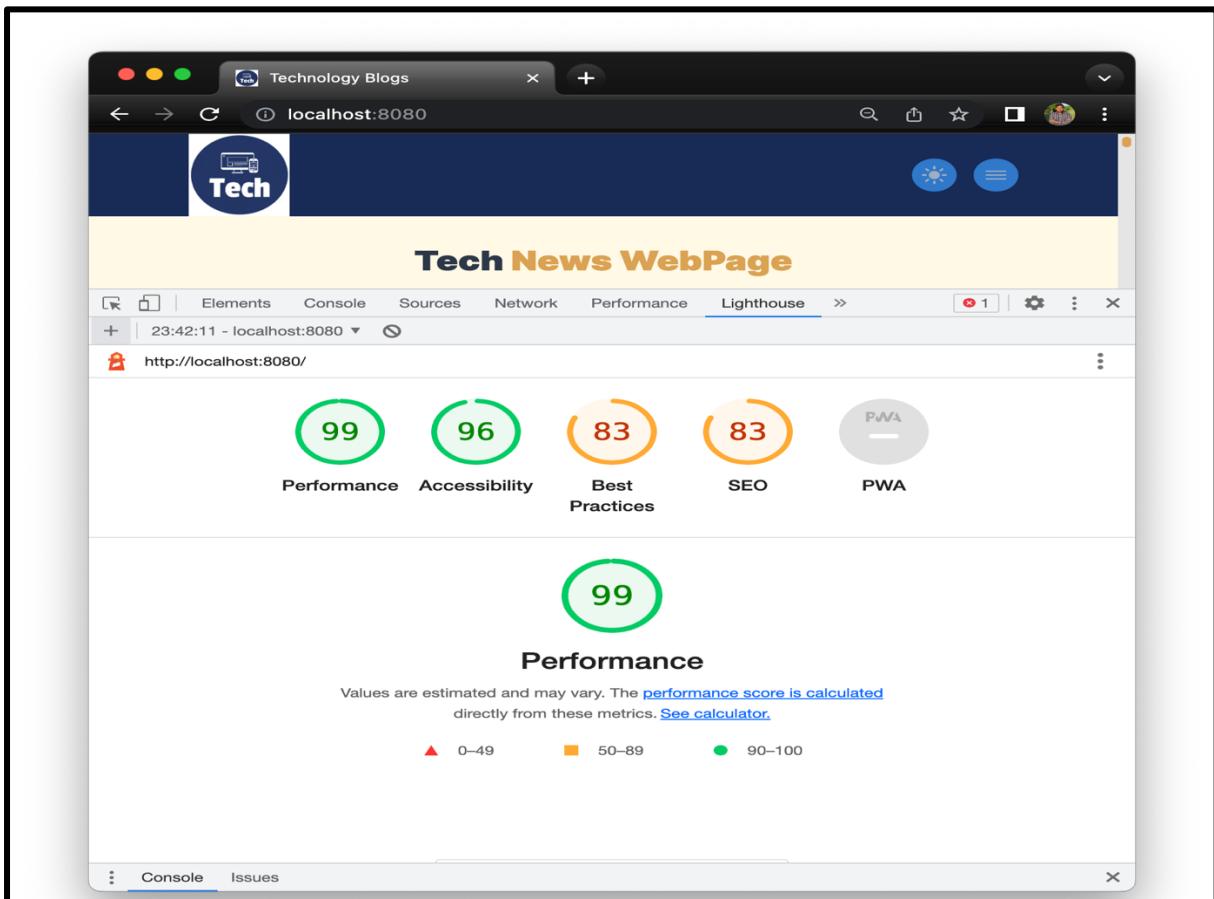


- Webpage takes Load Time of 42 ms on Nginx Server.

Performance on Desktop



Performance on Mobile



Which one is best between APACHE HTTP Server and NGINX Server?

Both Apache HTTP Server and NGINX are popular web servers used for hosting websites and serving web content.

In terms of loading time, NGINX is generally considered to be faster than Apache. This is because NGINX uses an asynchronous, event-driven architecture that allows it to handle a large number of requests with lower system resource usage. Apache, on the other hand, uses a process-based architecture that can result in higher resource usage and slower response times.

When it comes to performance, both servers are capable of handling large amounts of traffic and delivering content quickly. However, NGINX is often considered to be more efficient and scalable than Apache, particularly when serving static content.

Which server is best depending on your specific needs and requirements. Apache has been around for much longer than NGINX and has a larger community of users and contributors, which can make it a more familiar and accessible option for some users. NGINX, on the other hand, is known for its high performance and efficiency and is often preferred for large-scale deployments and high-traffic websites.

Ultimately, the choice between Apache and NGINX will depend on your specific use case and performance requirements but in case of my Webpage the result after reloading the website using localhost is 42ms load time which is less than apache which is 47ms which means it gives good load time performance as compared to apache.

After comparing both loading times **Nginx Server** gives a good load time performance as compared to apache in my machine.

