



Web/App Development Club Induction Assignment

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I. Case Study

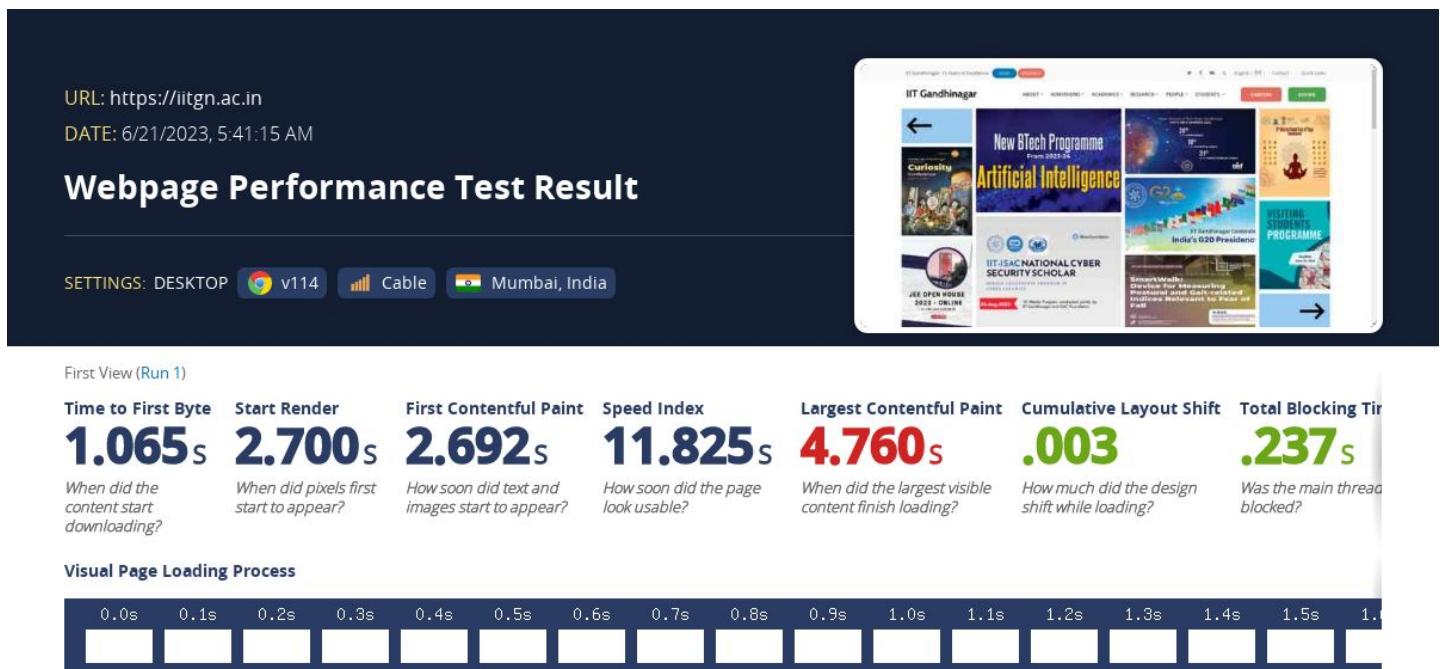
The following is the detailed case study of two websites iitgn.ac.in, imbd.com and an app, InSIIT. The study includes the performance analysis, UI & UX along with Tech Stack Analysis of all the above mentioned sites and applications.

A. IITGN official Website.

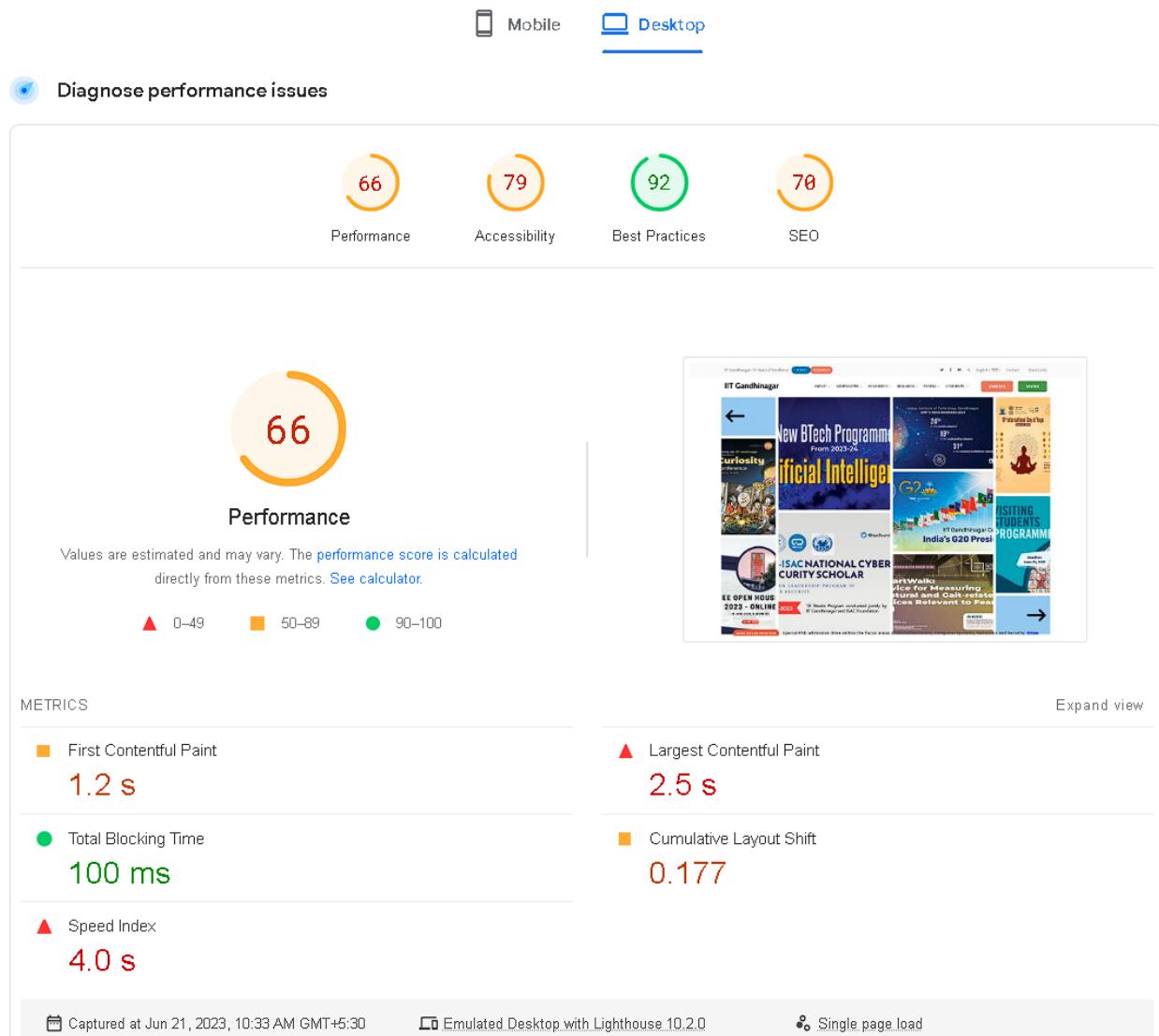
It is the official website of the Indian Institute of Technology Gandhinagar (IITGN). It serves as a crucial platform for the institute, offering important information about its academic programs, faculty, research, events, and campus facilities. The website plays a vital role in communicating with prospective students, current students, faculty, staff, and the wider community. It serves as a central hub for accessing resources, news, and updates, facilitating seamless interaction and engagement for all stakeholders of IITGN.

Performance Analysis:

The following is a test result for the page load time conducted on iitgn.ac.in using WebPageTest.org (location Mumbai). This tool helps in measuring the different metrics that affect the overall page loading speed of the site.



Another evaluation from Google's PageSpeed Insights about the overall performance of the site along with the metrics is provided below.



With a First Contentful Paint (FCP) time of 1.2 seconds, the website swiftly displays its initial content, reflecting its responsiveness and delivering a pleasing initial user experience. The Largest Contentful Paint (LCP) time of 2.5 seconds, although acceptable, suggests some potential for improvement in rendering the largest content element. Enhancing the LCP time can further optimize the website's performance.

UX Evaluation:

The strengths of the UX design of the website are described below;

1. Information Architecture: The website has a well-structured and logical information architecture, making it easy for users to find relevant information. The main

navigation menu and clear categorization help users navigate through different sections seamlessly.

2. Content Presentation: The website effectively presents information about academic programs, faculty, research, events, and campus facilities. The content is concise, well-organized, and easy to understand, providing a positive user experience.
3. Responsiveness: The website appears to be responsive, adapting well to different screen sizes and devices. This allows users to access the site and its content on various platforms, enhancing the overall user experience.

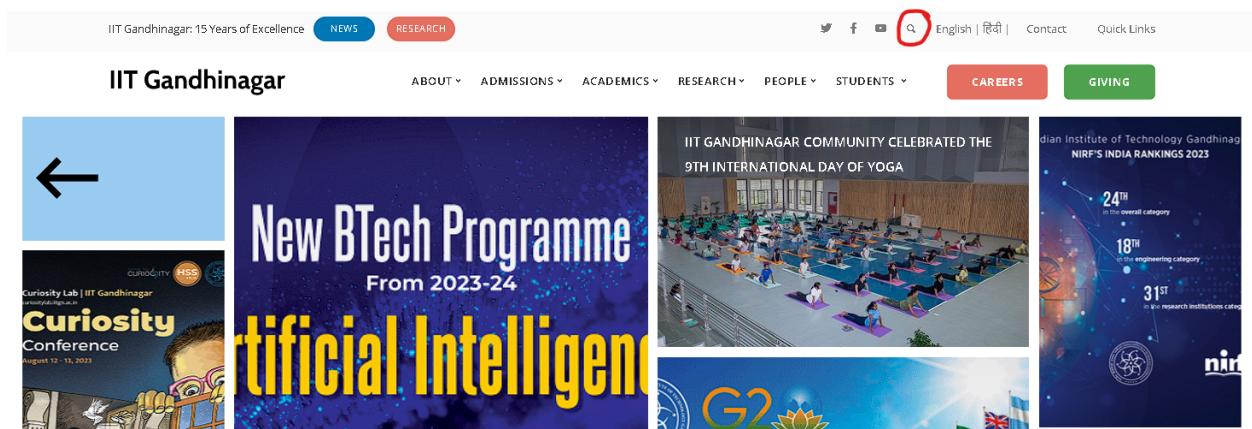
Suggestions for improvement:

1. Separate location for the Notification bar: Due to the overlapping of the Notification bar and the images of the events behind, it becomes difficult to access the Notifications.



The issue has been highlighted in the above image.

2. Information Accessibility: Provide a prominent search bar on the website to allow users to quickly find specific information. This will enhance the accessibility and convenience of locating desired content.



The present search bar is hidden under the lens icon at top right (circled) which makes it difficult to search the site for required information.

3. Streamlined Forms: Optimize forms by reducing the number of required fields and providing clear instructions. Simplifying the form submission process will improve user experience, especially for tasks such as admissions or event registrations.
4. Personalization: Implement personalized content recommendations based on user preferences and browsing history. This will enhance engagement and create a more tailored experience for each user.

UI Evaluation:

Few of the strengths of the website is highlighted below;

1. Visual Design: The website features a clean and professional visual design. The color scheme, typography, and use of white space create a visually appealing interface. The branding elements of IIT Gandhinagar are incorporated well, maintaining consistency throughout the site.
2. Navigation: The navigation menu is prominently placed, making it easy for users to explore different sections of the website. However, the dropdown menus could be improved by providing more context or visual cues to assist users in understanding the content within each category.
3. Interactive Elements: The website lacks interactive elements that engage users and encourage exploration. Incorporating interactive elements such as animations, sliders, or interactive infographics can enhance user engagement and make the site more visually dynamic.



Suggestions for UI Improvement:

1. Visual Hierarchy: Establish a clear visual hierarchy by using appropriate font sizes, color contrasts, and spacing. Highlight important sections and key information to guide users' attention effectively.
2. Consistent Branding: Ensure consistent branding elements, such as the institute's logo, color scheme, and typography, throughout the website. Consistency in design will strengthen the institute's identity and create a cohesive user experience.
3. Visual Imagery: Utilize high-quality and relevant images to visually enhance the website. Incorporate images that showcase the campus, faculty, and student life to provide a more immersive and engaging experience.
4. Responsive Design: Optimize the website for various devices and screen sizes. Ensure that the content and layout adapt smoothly to different resolutions, providing an optimal viewing experience for users on desktops, tablets, and mobile devices.

Tech Stack Analysis:

Determining the complete tech stack of a website usually requires direct access to the website's repository or official confirmation. However, making an educated guess and monitoring the network traffic can provide insights into the frameworks and technologies used. The tech stack analysis is divided into four sections: front-end, back-end, database, and hosting. Each section will be discussed in detail below

1. Frontend: The website uses the basic HTML, CSS and Javascript format. They also use a CSS framework like Bootstrap for styling, given the responsive nature of the website.
2. Backend: The server side technology is harder to determine without direct access to the server. But considering a mix of popular services like PHP, Java might be the best guess.
3. Database: They likely may be using MySQL for the storing and managing website's data.



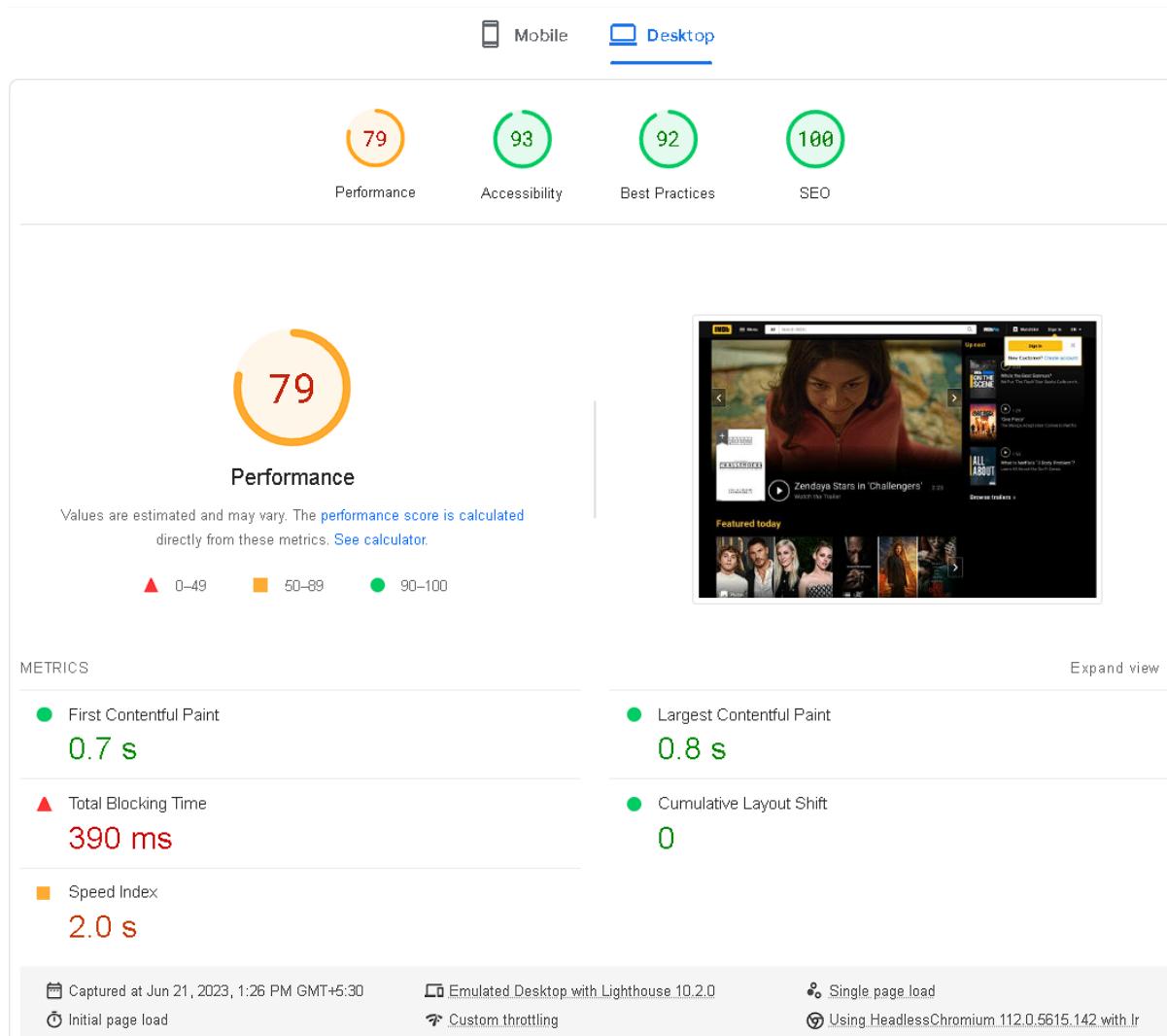
4. Hosting: The website appears to be hosted on an Apache or Nginx server.

B. IMDB Official Website

IMDb is a popular online database for movies, TV shows, and celebrities. It serves as a comprehensive platform for accessing information related to the entertainment industry. With a vast collection of film and TV data, IMDb allows users to browse through a wide range of content, including movie details, ratings, reviews, cast information, and more. It provides a valuable resource for film enthusiasts, industry professionals, and casual viewers alike.

Performance Analysis:

The following is a performance test of IMDb, conducted through Google's PageSpeed Insights. The results and the observations are discussed below.





FCP(First Contentful Paint) of 0.7s indicates that the first piece of content on the website appears relatively quickly, providing a good initial user experience. A fast FCP contributes to a perceived faster loading speed and can positively impact user engagement. The LCP(Largest Contentful Paint) metric measures the time it takes for the largest element on the page to render. With an LCP of 0.8s, the website achieves a quick rendering of the main content, ensuring that users can view and interact with the primary information without significant delay. TBT(Total Blocking Time) measures the total amount of time during which the main thread was blocked and unable to respond to user input. A TBT of 390 ms indicates a low blocking time, indicating good responsiveness and smooth user interactions on the website. The CLS(Cumulative Layout Shift) metric quantifies the visual stability of the website. A CLS score of 0 indicates no unexpected layout shifts, suggesting that the content is well-organized, and users won't experience sudden movements or elements shifting around while interacting with the website.

User Experience:

UX strengths of the website are discussed below.

1. Visual Design: The overall visual design of IMDb's website is clean and professional, with a suitable color palette and typography choices. The use of high-quality imagery and icons adds visual appeal.
2. Consistency: The UI maintains consistency throughout the website, ensuring that design elements, such as buttons, headers, and menus, are uniform. This consistency enhances usability and familiarity across different sections.
3. Information Organization: The layout of individual pages, such as movie or TV show pages, could be improved to provide better information organization. Clear sections, proper spacing, and visual hierarchy can make it easier for users to find and digest information.
4. Navigation: The main navigation menu is well-placed and accessible, allowing users to explore different sections of the website easily. However, the addition of a breadcrumb trail or a more visible search bar could enhance user navigation further.

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5. Responsiveness: The website is responsive and adapts well to different screen sizes. However, some improvements could be made to optimize the mobile experience, such as reducing the number of clicks required to access key information.

UX Suggestions:

1. Streamline Navigation: Simplify the navigation by categorizing content and providing clear paths to different sections. Utilize dropdown menus or a mega-menu for easy access to specific genres, top charts, or personalized recommendations.
2. Enhance Search Functionality: Improve the search feature by incorporating auto-suggestions, advanced filters, and refining the search algorithm for more accurate results. Consider adding filters for specific criteria like release year, language, or genre.
3. Personalization and Recommendations: Enhance the personalization aspect by offering more tailored recommendations based on users' viewing history and preferences. Implement features like "You Might Also Like" or "Recommended for You" to help users discover relevant content.
4. Improve Mobile Experience: Optimize the website for mobile devices with responsive design, ensuring seamless navigation, readability, and intuitive touch interactions. Prioritize key features and content for mobile users, considering the limited screen space.

User Interface:

UI strengths of the site are discussed below.

1. Search Functionality: The search feature is prominently placed and functional, allowing users to find movies, TV shows, and celebrities. However, adding advanced filters and refining the search algorithm could improve the accuracy and relevance of search results.
2. Content Discoverability: IMDb offers a vast amount of content, and improving content discoverability could enhance the user experience. Personalized recommendations, curated lists, and browsing options based on genres or trending topics can help users find new and interesting content.

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3. User Engagement: IMDb could focus on increasing user engagement by introducing interactive features. For example, allowing users to rate and review movies, create watchlists, or participate in discussion forums can foster a sense of community and increase user involvement.
 4. Accessibility: IMDb should prioritize accessibility features to ensure that the website is usable by a wide range of users, including those with disabilities. This includes providing alternative text for images, keyboard accessibility, and proper semantic markup.
 5. Performance Optimization: While the website generally performs well, there is room for improvement in terms of page load times and responsiveness. Optimizing images, leveraging browser caching, and minimizing unnecessary scripts and resources can further enhance the user experience.

UI Suggestions:

1. Visual Hierarchy: Establish a clear visual hierarchy by using size, color, and typography to guide users' attention to important elements such as movie titles, ratings, and featured content. Ensure that key information is easily scannable and distinguishable.
2. Consistent Design Language: Maintain a consistent design language across the website, including color palette, typography, and iconography. This creates a cohesive and unified visual experience for users, improving familiarity and ease of use.
3. Enhance Movie/TV Show Pages: Refine the layout of movie and TV show pages to present information in a more organized and visually appealing manner. Use clear sections for synopsis, cast and crew details, trailers, ratings, and reviews, reducing clutter and improving readability.
4. Visual Delight: Add subtle animations or transitions to enhance the overall visual appeal and user engagement. For example, smooth scrolling, fade-in effects, or interactive hover states can make the website feel more dynamic and enjoyable to navigate.

Tech Stack Analysis:

IMDb's tech stack is a combination of various technologies and frameworks that collectively power its website and services. While the specific details of IMDb's tech stack are not publicly disclosed, we can provide an overview based on industry standards and educated guesses.

1. Frontend: The website is heavily based upon React and uses Amazon's CDN for the styling. Also many Javascript frameworks like styled components are used for making the site feel authentic.
2. Backend: IMDb's backend involves various programming languages such as Java, Python or Node.js, to handle server-side processing and data manipulation. It also relies on internal or external APIs to fetch and serve data, such as movie information, ratings, or celebrity details.
3. Database: Since IMDb is owned by Amazon, It mainly utilizes cloud storages like Amazon S3 to store and serve media files, such as images or videos.
4. Hosting: It may use either Apache or Amazon Hosting services for the purpose of hosting. Moreover it also may use Content Delivery Network(CDN) like Cloudflare for distribution of content across various geographical locations, improving website performance and reducing the latency.