

CLOUD APPLICATION AND DEVELOPEMENT

TITLE

MEDIA STREAMING WITH IBM CLOUD VIDEO
STREAMING

SUBMITTED BY

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PHASE 1 – PROBLEM DEFINITION AND DESIGN THINKING

INTRODUCTION:-

Media streaming with IBM Cloud Video Streaming is a powerful and versatile solution for delivering live and on-demand video content to audiences across the globe. Whether you are a content creator, business, or organization looking to distribute video content online, IBM Cloud Video Streaming provides a comprehensive platform to make it happen. In this introduction, we'll explore the key features, benefits, and components of IBM Cloud Video Streaming.

Key Features:

Live and On-Demand Streaming	IBM Cloud Video Streaming supports both live and on-demand video streaming. Whether you're broadcasting a live event or sharing pre-recorded content, this platform can handle your needs.
Video Monetization	You can monetize your video content through various methods such as pay-per-view, subscription models, or advertising, helping you generate revenue from your video assets.
High-Quality Streaming	IBM Cloud Video Streaming ensures high-quality video delivery with adaptive streaming technology, which automatically adjusts the video quality based on the viewer's internet connection, ensuring a seamless viewing experience.
Content Security	Protect your content with features like encryption, password protection, and domain restriction. This helps safeguard your video assets from unauthorized access.

Analytics and Insights	Gain valuable insights into viewer behaviour and engagement with analytics tools. This data can help you refine your content and marketing strategies.
Customization and Branding	Customize the video player and viewer experience to match your brand's identity, giving your audience a consistent and immersive experience.
Global Content Delivery	IBM Cloud Video Streaming leverages a global content delivery network (CDN) to ensure low-latency, high-performance streaming to viewers worldwide

BENEFITS:

Scalability	Whether you have a small audience or a global following, the platform can scale to accommodate your needs, ensuring that your content reaches your audience reliably.
Cost-Effective	IBM Cloud Video Streaming offers flexible pricing models, allowing you to choose the plan that aligns with your budget and usage requirements.
Reliability	With IBM's cloud infrastructure and robust content delivery network, you can trust that your video content will be available to viewers when they need it.
User Engagement	Engage your audience with interactive features like chat, polls, and Q&A, enhancing the viewer experience and fostering community engagement.
Support and Integration	IBM provides comprehensive support and integration options, making it easier for you to implement the platform into your existing workflows and applications.

COMPONENTS:

IBM Cloud Video Streaming comprises several key components:

Streaming Manager	This is the central platform for managing your video content. It allows you to upload, organize, and schedule your live and on-demand videos.
Video Delivery Network	IBM's global CDN ensures fast and reliable delivery of your content to viewers worldwide.
Video Player	A customizable video player that can be embedded on your website or app, providing a seamless viewing experience for your audience.
Analytics and Monetization Tools	Access analytics data to gain insights into viewer behaviour and monetize your content effectively.

PLATFORM DEFINITION:

Features: -

- ✚ User registration
- ✚ Video upload
- ✚ On-demand streaming
- ✚ Social sharing

USER INTERFACE DESIGN: -

Goals: -

- ✚ Seamless viewing experience
- ✚ User-friendly design
- ✚ Intuitive navigation

VIDEO UPLOAD: -

Requirements: -

- ✚ Supported formats
- ✚ Metadata management
- ✚ Secure upload process

STREAMING INTEGRATION: -

Components: -

- ✚ Security measures
- ✚ Content delivery
- ✚ IBM Cloud Video Streaming

USER EXPERIENCE: -

Priorities: -

- ✚ Social interaction
- ✚ Device compatibility

WORKFLOW: -

1. Users register and log in to the platform.
2. Users can upload videos with metadata.
3. Uploaded videos are stored securely.
4. Content is indexed in the content database.
5. Users can search and discover content.
6. Streaming servers utilize IBM Cloud Video Streaming services for adaptive video playback.
7. Users can interact with content through comments and sharing.
8. Payment gateways are used for monetization if applicable.
9. CDNs assist in efficient content delivery to users worldwide.

USER INTERFACE DESIGN: -

User interface (UI) design in media streaming platforms is crucial for creating a user-friendly, engaging, and intuitive experience for viewers. A well-designed UI can significantly impact user satisfaction and the success of your media streaming service.

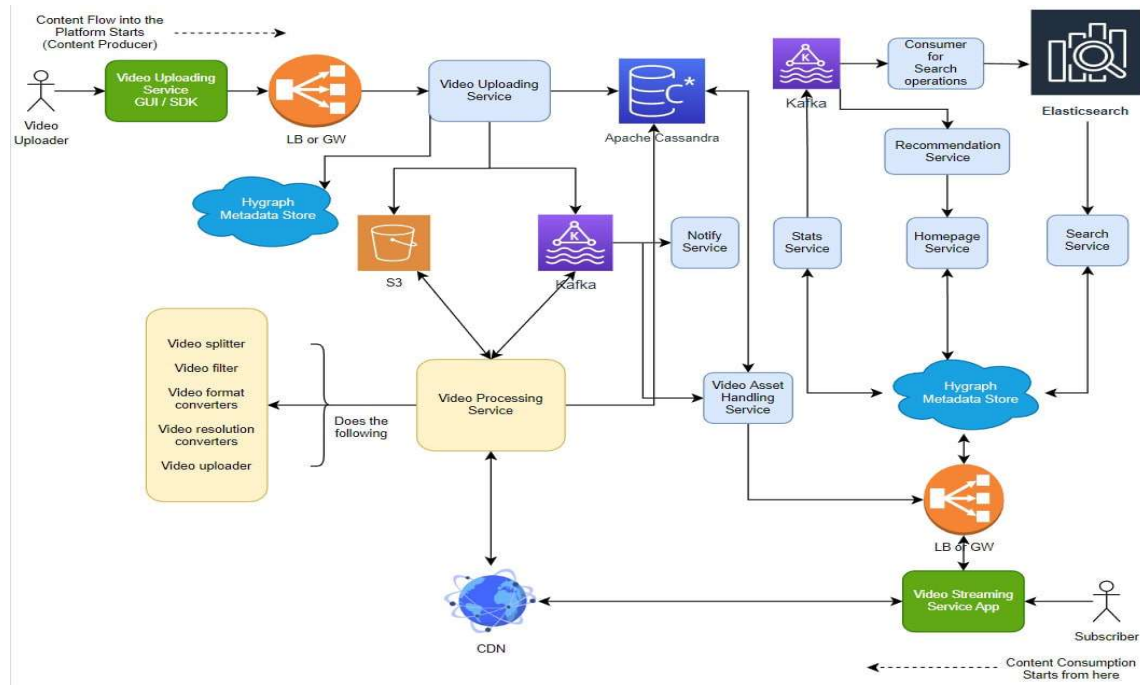
KEY CONSIDERATIONS OF UI:

CONTENT DISCOVERY	<div>1. Search and Filters</div> <div>2. Recommendations</div> <div>3. Categories and Genres</div>
HOME PAGE LAYOUT	<div>1. Featured Content</div> <div>2. Personalization</div>
VIDEO PLAYER INTERFACE	<div>1. Quality Settings</div> <div>2. Playback Controls</div> <div>3. Clean Design</div>
USER PROFILES	<div>1. User Accounts</div> <div>2. Switching Profiles</div>
NAVIGATION AND MENUS	<div>1. Eye-Catching Thumbnails</div> <div>2. Title and Description</div>
PROGRESS TRACKING	<div>1. Viewing Progress</div> <div>2. Watchlist</div>
INTERACTIVE FEATURES	<div>1. Chat and Comments</div> <div>2. Ratings and Reviews</div>
ACCESSIBILITY	<div>1. Keyboard Shortcuts</div> <div>2. Captioning and Subtitles</div>

There also some other important design features are there:

1. Responsive Design
2. Branding and Customization
3. Performance Optimization
4. Security and User Privacy

ARCHITECTURE FOR VIDEO STREAMING:

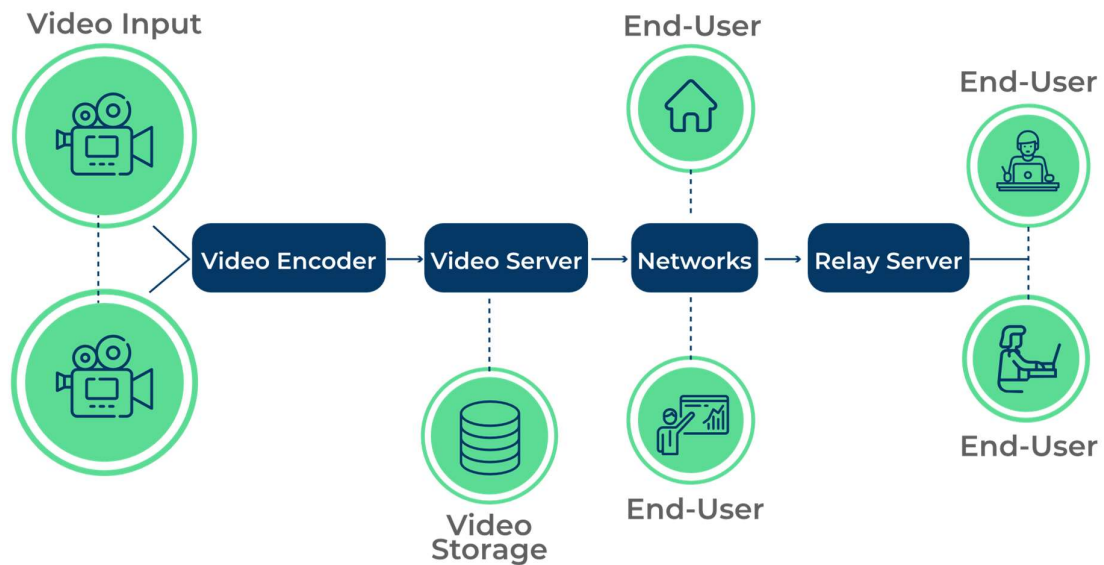


In this architecture, the subscriber wants to make a connection with the video streaming application.

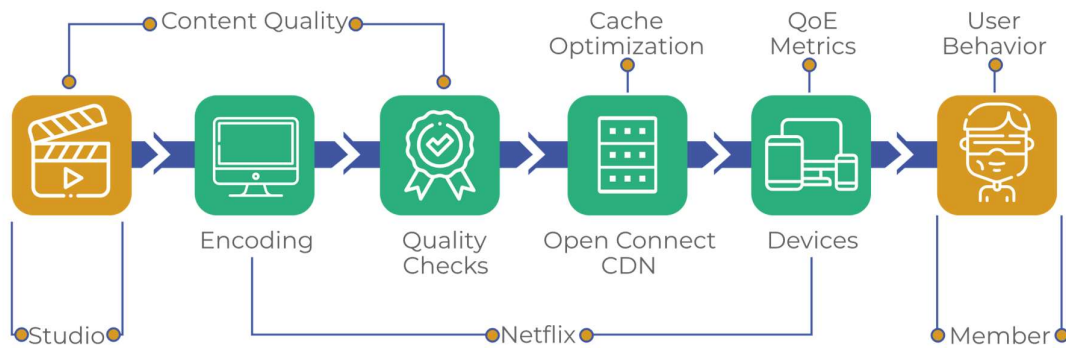
The components involve are:

- 1.video uploading services like GUI/SDK.
- 2.Video processing services like S3/Kafka
- 3.In video processing services there are
 - Video splitter,
 - Video splitter
 - Video format convertors
 - Video resolution Convertors
 - Video uploaders

VIDEO STREAMING APP ARCHITECTURE: -



VIDEO ENCODING ARCHITECTURE: -



This is the media streaming with IBM cloud video streaming. It describes the process of **Platform Definition, User Interface Design, Video Upload, Streaming Integration and User Experience.**

PHASE 2 – INNOVATION

Innovation In Media Streaming with IBM Cloud Video Streaming

it's possible that there have been significant innovations and developments in this field with IBM Cloud Video Streaming or similar services. Here are some potential innovations and trends that could have occurred in media streaming with IBM Cloud Video Streaming or similar platforms:

1. **Improved Video Quality:** One of the key areas of innovation in media streaming is continually improving video quality. This could include support for higher resolutions (such as 4K and 8K), better compression algorithms for reduced bandwidth consumption, and enhanced support for high dynamic range (HDR) content.

Continuous Quality Improvement Cycle



2. **Low Latency Streaming:** Reducing latency is crucial for real-time applications like live sports streaming and online gaming. Innovations in low-latency streaming technologies can offer viewers a more immersive and interactive experience.
3. **AI-Enhanced Content Delivery:** IBM Cloud Video Streaming may have integrated AI and machine learning technologies to optimize content delivery. This could involve predictive analytics for content popularity, personalized content recommendations, and content delivery network (CDN) optimizations.



4. **Multi-Platform Streaming:** Innovation in media streaming often involves supporting a wide range of devices and platforms. IBM Cloud Video Streaming may have expanded its compatibility with smart TVs, gaming consoles, mobile devices, and other emerging platforms.

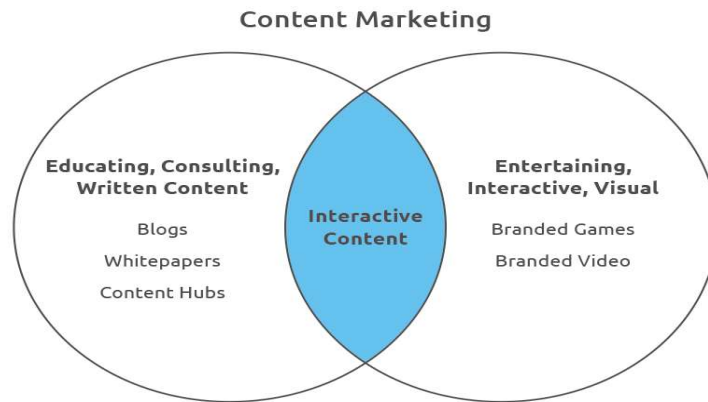


5. **Security Enhancements:** Given the importance of content security, innovations in encryption, digital rights management (DRM), and content watermarking may have been implemented to protect media content from piracy and unauthorized access.



6. **Interactivity and Engagement:** Streaming services are increasingly focused on enhancing viewer engagement. This could include interactive features like live

chatpolls, and viewer participation in live events, all integrated into the streaming.



7. **Global Reach:** Expanding the reach of media streaming to a global audience often requires innovations in content delivery and localization. IBM Cloud Video Streaming may have developed more efficient ways to deliver content to viewers worldwide.



8. **Content Monetization:** Innovations in advertising technology and subscription management may have been integrated to help content providers effectively monetize their content.



9. **Analytics and Insights:** Advanced analytics tools might have been developed to provide content creators and businesses with valuable insights into viewer behavior, helping them make data-driven decisions.
10. **Accessibility Features:** Innovations in media streaming often include improved accessibility features, such as closed captioning, audio descriptions, and support for multiple languages, to make content more inclusive.

Detailed comprehension on problem statement

IBM Cloud Video Streaming is a comprehensive platform that provides a range of services and tools for media streaming. It's designed to help businesses and content creators deliver high-quality video content to their audiences, whether for live streaming events, on-demand video, or other media streaming needs. Here are some key features and components of IBM Cloud Video Streaming:

1. **Content Delivery Network (CDN):** IBM Cloud Video Streaming utilizes a global CDN to ensure efficient and reliable content delivery. This means that your videos are distributed across multiple servers worldwide, reducing latency and ensuring smooth playback for viewers across different regions.
2. **Live Streaming:** The platform supports live streaming for a wide range of use cases, including webinars, conferences, sports events, and more. You can broadcast live video to a global audience with low-latency streaming options.
3. **Video-on-Demand (VOD):** IBM Cloud Video Streaming allows you to upload and manage on-demand video content. This is ideal for creating libraries of pre-recorded videos, such as training materials, educational content, or entertainment.
4. **Monetization:** You can monetize your video content through various means, including pay-per-view, subscription models, and advertising. The platform offers tools to help you manage and track revenue generated from your videos.
5. **Security:** IBM Cloud Video Streaming provides robust security features to protect your content. This includes access controls, digital rights management (DRM), and encryption to prevent unauthorized access and piracy.
6. **Analytics and Insights:** The platform offers analytics tools to help you understand viewer behavior. You can track metrics such as viewer engagement, geographic data, and video performance, enabling data-driven decisions and content optimization.
7. **Customization:** You can customize the player and the viewing experience to match your brand. This includes features like custom logos, color schemes, and player behavior.
8. **Interactive Features:** IBM Cloud Video Streaming supports interactive features like live chat, polls, and Q&A sessions, enhancing viewer engagement during live events.

9. **Multi-Platform Support:** Your content can be streamed across a variety of devices, including desktop computers, smartphones, tablets, smart TVs, and gaming consoles. This ensures your audience can access your content on their preferred platform.
10. **APIs and Integration:** The platform offers APIs and integration options, allowing you to integrate IBM Cloud Video Streaming with other tools and platforms to streamline your workflows.
11. **Content Management:** You can organize and manage your video content within the platform, making it easy to upload, categorize, and distribute your videos.
12. **Accessibility Features:** IBM Cloud Video Streaming supports accessibility features like closed captioning and audio descriptions to make your content inclusive to a broader audience.

PHASE 3 – DEVELOPMENT PART -1

Project Objectives:

In this part we will begin building our project. We start building the virtual cinema platform using IBM Cloud Video Streaming. We will define the platform's features and design an intuitive user interface. We will set up user registration and authentication mechanisms to ensure secure access to the platform.

Project Tasks:

1:Authentication Introduction:

TASK:

A. Why Authentication ?:

Access Control: Authentication ensures only authorized users can use the app, preventing unauthorized access to content.

User Data Protection: It safeguards sensitive user information, like payment details and viewing history, from potential breaches.

Personalization: Authentication allows for the creation of user profiles, enabling tailored content recommendations and user experiences.

Revenue Protection: It enforces subscription limits, ensuring fair usage and protecting the app's financial interests

B. What is the use of application:

Functionality: Applications are designed to perform specific tasks or provide functionality, such as communication, productivity, entertainment, or information access.

User Convenience: Applications enhance user convenience by offering intuitive interfaces, streamlined access to services, and efficient ways to perform tasks on various devices.

Solving Problems: Applications address specific needs and problems, whether it's managing finances, tracking fitness, editing photos, or connecting with others, making life more efficient and enjoyable.

Economic and Social Impact: Applications contribute to economic growth and influence society by creating job opportunities, driving innovation, and connecting people globally through social and communication apps.

c. Why authentication ?:

Security: Authentication ensures that only authorized users can access the app, protecting sensitive data and preventing unauthorized access or breaches.

Personalization: Authentication allows the app to create and maintain user profiles, enabling personalized experiences, recommendations, and tailored content.

Access Control: It enforces subscription limits and user privileges, preventing misuse and protecting the app's revenue model.

Trust and Accountability: Authentication establishes trust with users, as they know their data is secure, and it helps maintain accountability by tracking and logging user activities within the app..

d. Application of authentication :

Cybersecurity: Used to protect networks and data from unauthorized access.

Finance and Banking: Ensures secure online transactions and identity verification.

Healthcare: Safeguards electronic health records and patient data.

E-commerce: Secures user accounts and online transactions to prevent fraud

2: Why authentication for this application:

TASK:

A. Security:

Access Control: Authentication serves as a gatekeeper, allowing only authorized individuals to access systems, data, and resources, thus preventing unauthorized entry.

Data Protection: Authentication safeguards sensitive information and confidential data from exposure to unauthorized users, reducing the risk of data breaches.

Dentity Verification: It ensures that users are who they claim to be, enhancing overall system security by reducing the risk of impersonation or unauthorized access.

Audit Trails: Authentication systems help create detailed logs of user activities, facilitating forensic analysis and accountability in the event of security incidents or breaches.

B. Check user's count:

Usage Monitoring: Authentication can track the number of users accessing a system, helping administrators monitor usage patterns and detect any irregularities.

Access Limitations: By counting and managing user access, authentication can enforce subscription limits, ensuring fair usage and revenue protection for services.

Resource Management: Monitoring user counts assists in resource allocation and optimization, ensuring that system performance remains consistent even during peak usage.

Security: Verifying user counts can help detect and prevent unauthorized access or suspicious activities, enhancing the overall security of the system.

c. Reduce account exploitation:

Identity Verification: Authentication methods verify the identity of users, reducing the risk of unauthorized individuals gaining access to accounts.

Multi-Factor Authentication (MFA): MFA adds an extra layer of security, making it significantly more challenging for attackers to exploit accounts, even if they have stolen login credentials.

Account Recovery: Authentication helps in establishing secure processes for account recovery, preventing unauthorized access even when users forget their credentials.

User Behavioral Analysis: Some authentication systems use behavioral analysis to detect anomalies in user behavior, further reducing the risk of account exploitation by identifying suspicious activities.

3: Program (Coding Part):

TASK:

A. Coding for authentication:

Code part -1: unauth-page

```
"use client"; import { signIn } from "next-auth/react";  
  
import { motion } from "framer-motion"; import { PlusIcon }  
from "@heroicons/react/24/outline"; import { useRouter } from  
"next/navigation"; import { useState } from "react";  
  
const questions = [  
  {  
  
    ques: "What is Netflix?",  
  
    ans: `Netflix is a streaming service that offers a wide variety of award-winning TV shows,  
    movies, anime, documentaries and more – on thousands of internet- connected devices.  
    You can watch as much as you want, whenever you want, without a single ad – all for one`  
  }  
];
```


low monthly price. There's always something new to discover, and new TV shows and movies are added every week!`,

},

{

ques: "How much does Netflix cost", ans: `Watch Netflix on your smartphone, tablet, Smart TV, laptop, or streaming device, all for one fixed monthly fee. Plans range from ₹ 149 to ₹ 649 a month.

No extra costs, no contracts.`,

},

{

ques: "What can I watch on Netflix?", ans: `Watch anywhere, anytime. Sign in with your Netflix account to watch instantly on the web at netflix.com from your personal computer or on any internet-connected device that offers the Netflix app, including smart TVs, smartphones, tablets, streaming media players and game consoles.

You can also download your favourite shows with the iOS, Android, or Windows 10 app. Use downloads to watch while you're on the go and without an internet connection. Take Netflix with you anywhere.` , },

{

ques: "How do I cancel?", ans: `Netflix is flexible. There are no annoying contracts and no commitments. You can easily cancel your account online in two clicks. There are no cancellation fees – start or stop your account anytime.` , },

{

ques: "What can I watch on Netflix?", ans: `Netflix has an extensive library of feature films, documentaries, TV

shows, anime, award-winning Netflix originals, and more. Watch as much as you want, anytime you want.` ,

},

{

ques: "Is Netflix good for kids?", ans: `The Netflix Kids experience is included in your membership to give parents control while kids enjoy family-friendly TV shows and films in their own space.

Kids profiles come with PIN-protected parental controls that let you restrict the maturity rating of content kids can watch and block specific titles you don't want kids to see.`,

```
},  
];
```

```
function UnauthBanner({ router }) {  
  return (  
    <div className="h-[65vh] sm:h-[90vh] xl:h-[95vh] bg-cover bg-no-repeat bg-  
      [url('https://assets.nflxext.com/ffe/siteui/vlv3/84526d58-475e-4e6f-9c81-  
      d2d78ddce803/e3b08071-f218-4dab-99a2-80315f0922cd/LK-en-20221228-  
      ppsignuptwoweeks-perspective_alpha_website_small.jpg')] border-b-8 border-gray-800  
    ">  
      <div className="bg-black bg-opacity-70 h-[100vh]  
        "  
        >  
          <div className="flex items-center justify-between">  
             router.push("/")}  
            />  
            <div className="flex mr-4 sm:mr-10">  
              <button onClick={() => signIn("github")} className="h-8 px-1 sm:px-4 m-2 text-  
                white bg-[#e50914] rounded"  
                >  
                Sign In  
              </button>  
            </div>  
          </div>
```

```

    </div>

    <div className="h-[55vh] sm:h-[80vh] w-[90%] md:w-[80%] mx-[5%] md:mx-[10%] flex
flex-col items-center justify-center text-white text-center">

      <h1 className="text-2xl sm:text-4xl lg:text-5xl xl:text-6xl sm:px-[15%] md:px-[15%]
lg:mx-14 lg:px-[7%] xl:px-[15%] font-medium"> Unlimited movies, TV shows, and more..

    </h1>

    <h2 className="text-lg sm:text-1xl lg:text-2xl font-medium m-2 sm:m- 4">

      Watch anywhere. Cancel anytime.

    </h2>

    <div className="flex justify-center">

      <button onClick={() => signIn("github")} className="bg-red-600
      hover:bg-[#e50914] p-4 rounded"

        >

          Sign In to Get Started

        </button>

      </div>

    </div>

  </div>

</div>

);
}

```

```

export default function UnauthPage() {
  const router = useRouter();
  const [showCurrentAns, setShowCurrentAns] = useState(null);

  return (
    < motion.div initial={{
      opacity: 0 }}

```

```

whileInView={{ opacity: 1 }} viewport={{ once:
true }}
>
<main>
  <div className="bg-[#000000]">
    <UnauthBanner router={router} />
    <div className="border-b-8 border-gray-800 pb-8">
      <div className="flex flex-col h-[85vh] lg:h-[95vh] text-white px-8 sm:px-14 md:px-28
lg:px-48 xl:px-80 mt-3 sm:mt-14">
        <h1 className="mb-5 text-xl sm:text-3xl md:text-4xl lg:text-5xl text- bold text-center
px-14 md:px-0">
          Frequently asked questions
        </h1>
        {questions.map((item, index) => (
          <div className="flex flex-col gap-3">
            <div onClick={() => setShowCurrentAns(showCurrentAns === index ? null :
index)}
              className="flex justify-between p-3 lg:p-5 mt-2 bg-[#303030] cursor-pointer"
            >
              <h2>{item.ques}</h2>
              <PlusIcon className="h-7 w-7" color="white" />
            </div>
            {showCurrentAns === index && (
              <div className="p-3 lg:p-5 mt-2 bg-[#303030] cursor-pointer"> {item.ans}
            </div>
            )}
          </div>
        )}}
      </div>
    </div>
  </main>

```

```

    </motion.div>

  );

}

Coding Part -2 : account-form :
"use client";
import { motion } from "framer-motion";

export default function AccountForm({
  showAccountForm,
  formData,
  setFormData,
  handleSave
}) {
  return (
    showAccountForm && (
      <motion.div initial={{ opacity: 0 }} whileInView={{ opacity: 1 }} viewport={{ once: true }}>
        <div className="px-8 py-8 h-[300px] fixed top-[10px] gap-3 flex flex-col items-start right-[10px] bg-black opacity-[0.85] z-[999]">
          <div className="flex flex-col gap-5">
            <input name="name" type="text" value={formData["name"]} onChange={(e) => setFormData({ ...formData, [e.target.name]: e.target.value, }} />
            <input name="pin" type="password" value={formData["pin"]} onChange={(e) => setFormData({ ...formData, [e.target.name]: e.target.value, }} />
          </div>
        </div>
      </motion.div>
    )
  );
}

```

```

    }
    maxLength={4} placeholder="Enter
    your PIN"
    className="px-5 py-3 rounded-lg placeholder:text-red-700 text-lg text- [#e5b109]
outline-none focus:outline-none"
  />
  <button
    onClick={handleSave}
    className="border p-4 bg-[#e5b109] outline-none rounded-lg text-black
text-lg font-bold"
    >Save</button>
  </div>
</div>
</motion.div>
)
);
}

```

Coding part -3 : auth-provider :

```
"use client";
```

```
import { SessionProvider } from "next-auth/react";
```

```
export default function NextAuthProvider({ children }) {
  return <SessionProvider>{children}</SessionProvider>;
}
```

4:Tools and system requirements used:

Code Editor: VS code.

Frame work : React.js

1.6 GHz or faster processor

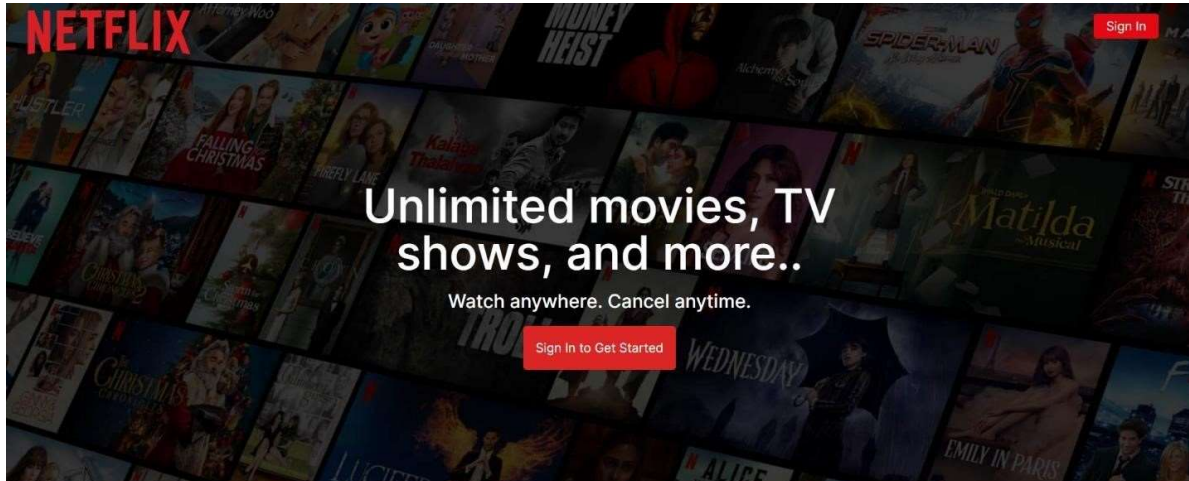
1 GB of RAM

OS X Yosemite

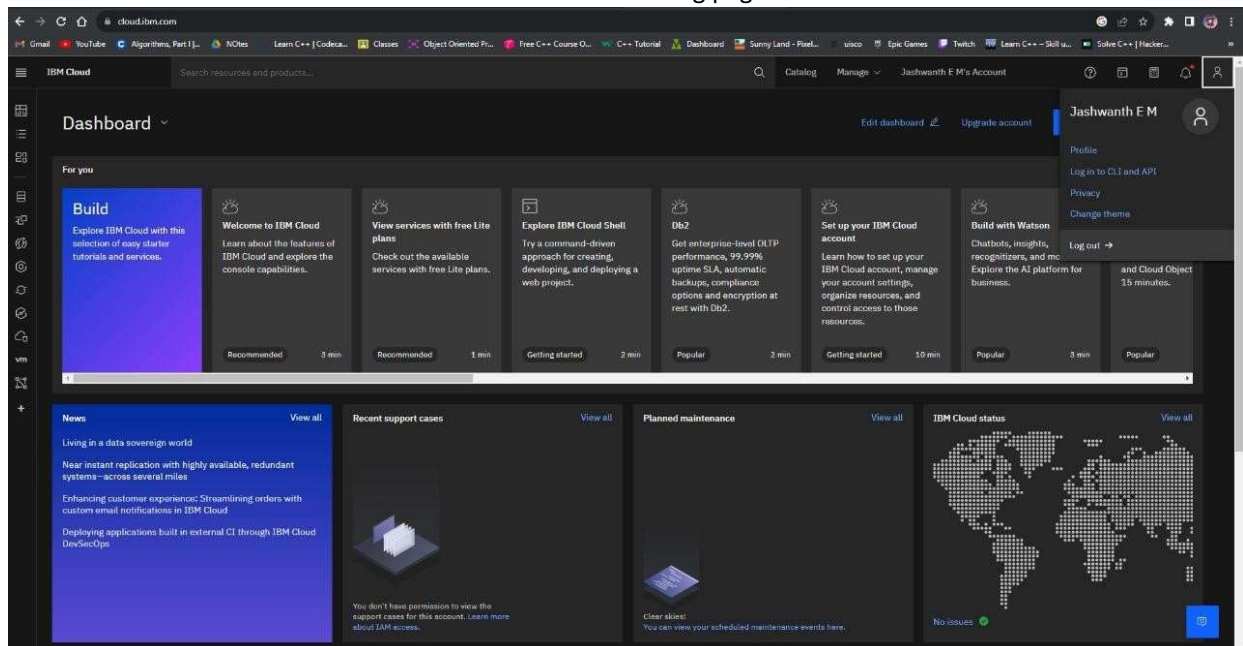
Windows 7 (with .NET Framework 4.5)

Linux with GLIBCXX version 3.4.15

5:Final output (sample screenshots):



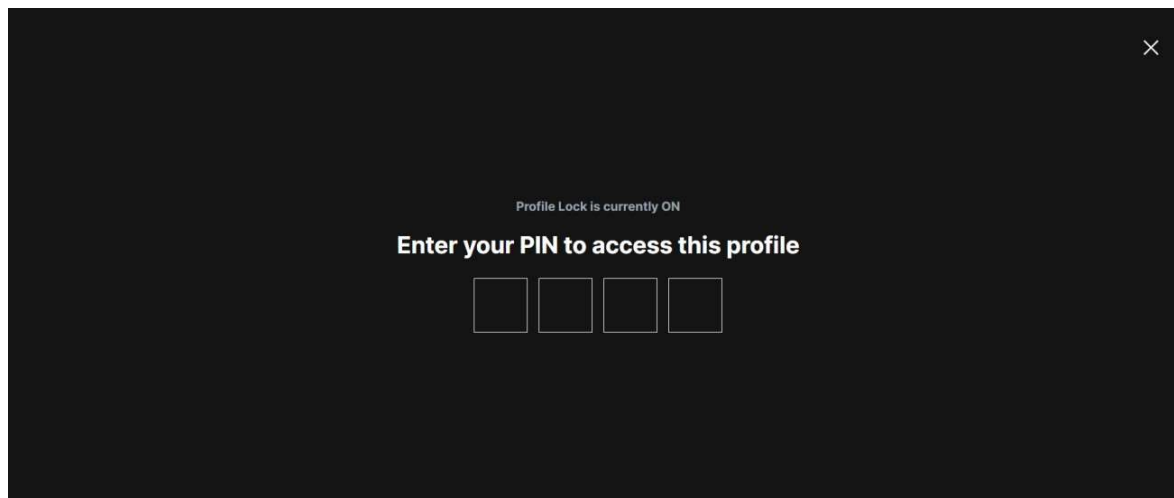
Screen shot - 1 : Landing page



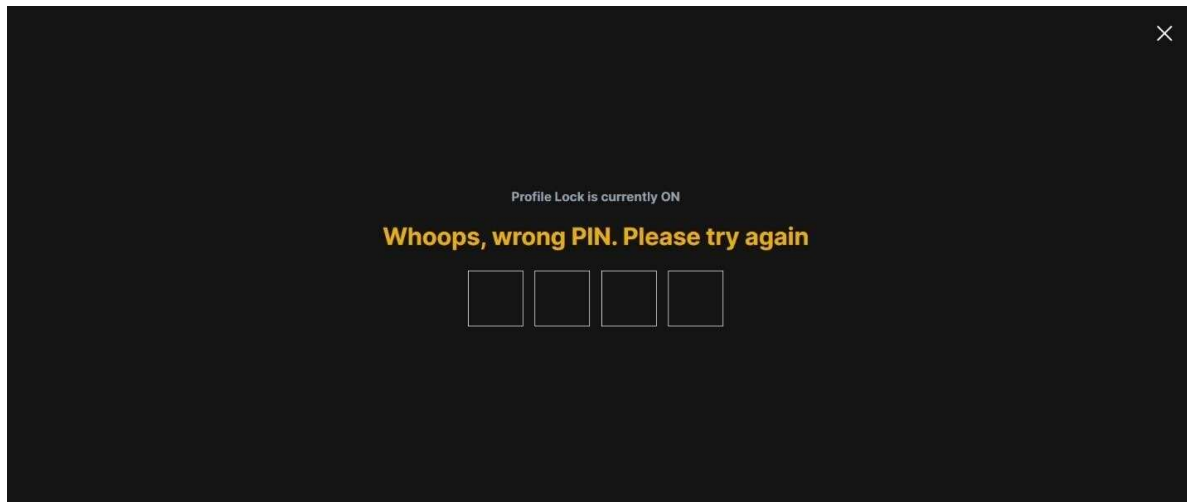
Screen shot - 2 : Using IBM cloud account for backend



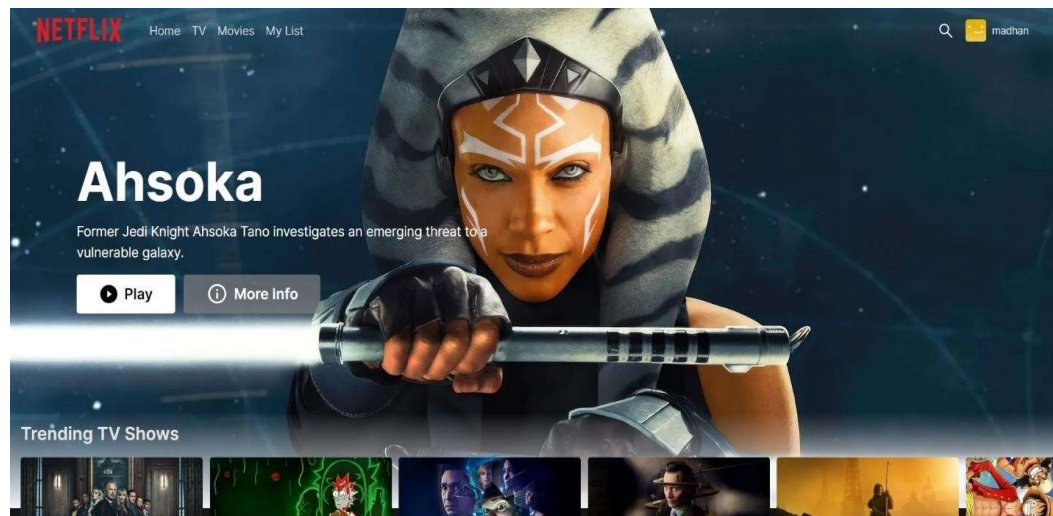
Screen shot - 3 : Authenticate each user



Screen shot - 4 : Authenticate using PIN



Screen shot - 5 : When users enter wrong pin



Screen shot – 6 : Final Page after login

Conclusion:

In Phase 3 of Media streaming app project, our objective is to achieve these milestones through the successful completion of tasks. These innovative features will provide users with a more engaging and personalized show watching experience, leading to increased user satisfaction and retention.

PHASE 4 : DEVELOPMENT PART -2

ABSTRACT

The landscape of media streaming is undergoing a profound transformation, and IBM Cloud Video Streaming emerges as a leading player in this dynamic environment. This project delves deeply into the realm of media streaming, with a specific focus on IBM's cloud service. IBM Cloud Video Streaming provides an extensive suite of features and capabilities, offering organizations the means to seamlessly deliver, manage, and protect high-quality video content to audiences around the globe.

Within this exploration, we thoroughly examine the key components and functionalities of IBM Cloud Video Streaming, encompassing comprehensive content management tools, live streaming capabilities, and the dynamic realm of video-on-demand services. We shed light on the platform's user-friendly interfaces and advanced analytics tools, empowering content providers to gain invaluable insights into viewer engagement patterns and preferences, thus allowing for the refinement of content delivery strategies. Furthermore, we highlight the paramount importance of the robust security measures and content protection mechanisms implemented by IBM Cloud Video Streaming. These measures ensure that sensitive content remains safeguarded in an increasingly interconnected digital landscape, offering peace of mind to content creators and distributors. Through a comprehensive analysis of real-world case studies and practical implementations, this project underscores how IBM Cloud Video Streaming can be a transformative force for organizations seeking to deliver captivating media content efficiently and securely, ultimately enhancing their digital presence and engagement with audiences worldwide.

Phase 4: Development Part 2

Project Objectives:

In this part we will continue building our project.

Especially, building the platform by integrating video streaming services and enabling on-demand playback. Integrate IBM Cloud Video Streaming services to enable smooth and high-quality video playback.

Project Tasks:

A: How to stream and watch videos:

TASK:

1. Content Licensing and Acquisition:

- Content licensing is the process of securing the rights to stream movies and TV shows on your platform, often through negotiations with studios and production companies.
- Acquiring a diverse library of content is crucial for attracting and retaining subscribers. This may involve purchasing, licensing, or producing original content.
- Ensuring that you have the legal rights to stream the content and adhering to copyright laws is essential to avoid legal issues.

2. Content Delivery and Streaming Infrastructure:

- Building a robust content delivery network (CDN) is crucial for ensuring a smooth streaming experience. CDNs store and distribute content to users from servers located strategically around the world.
- Adaptive streaming technologies, like DASH or HLS, are used to adjust video quality based on the user's internet connection, providing the best possible experience.
- Content encryption and digital rights management (DRM) are used to protect content from unauthorized access and piracy.

3. User Experience and App Development:

- Developing user-friendly apps for various devices (smartphones, smart TVs, etc.) is essential for attracting and retaining users.
- Personalization algorithms and recommendation systems help users discover content tailored to their preferences.

- Implementing features like offline downloads, user profiles, and seamless cross-device synchronization enhances the overall user experience.

4.Content Protection:

- Digital Rights Management (DRM): Netflix employs DRM to prevent unauthorized copying and distribution of their content.
- Account security: Passwords, multi-factor authentication, and security protocols help protect user accounts.
- Anti-piracy measures: Netflix actively combats piracy by monitoring and reporting unauthorized distribution.

B: How to upload

videos: TASK:

1. Content Preparation:

- Quality standards: Videos must meet specific resolution, format, and encoding requirements to ensure high-quality streaming.
- Metadata inclusion: Metadata such as title, description, cast, and genre must be provided for cataloging and search purposes.
- Content categorization: Videos are categorized into genres, types, and languages to assist with content organization.

2. Content Delivery to Netflix:

- Secure delivery: Content is transferred to Netflix's secure servers using encryption and secure protocols.
- Submission guidelines: Content providers adhere to specific submission guidelines, including file formats and delivery methods.
- Delivery schedule: Providers coordinate with Netflix for content release schedules and updates.

3. Quality Control and Testing:

- Encoding and transcoding: Netflix may re-encode uploaded videos to ensure compatibility with various devices and network speeds.
- Quality checks: Netflix performs quality control tests to maintain their high streaming standards.
- Compatibility testing: Content is tested across multiple devices and platforms to ensure seamless playback.

4. Content Publishing and Distribution:

- Geo-restrictions: Netflix determines in which regions content is available based on licensing agreements.
- Release strategy: Netflix decides when and how content is made available for streaming to subscribers.

- Content updates: Ongoing maintenance and updates are necessary for a dynamic content library.

C: How to create an application like Netflix, using an IBM

Cloud TASK:

1. Infrastructure and Cloud Services:

- Compute and Storage: Utilize IBM Cloud's virtual machines and object storage to host and deliver video content efficiently.
- Content Delivery Network (CDN): Leverage IBM's CDN services to ensure rapid and scalable content distribution to users across the globe.
- Scalability: IBM Cloud offers auto-scaling capabilities, allowing your app to handle varying loads and peak traffic times.

2. Database and Analytics:

- Data Management: Use IBM's databases to efficiently store and manage user data, preferences, and content metadata.
- Analytics: Employ IBM Watson or other analytics tools to understand user behavior, providing personalized content recommendations.
- Content Management: Use databases for cataloging and organizing the vast library of videos, enabling efficient search and content delivery.

3. Security and Compliance:

- Data Encryption: Implement strong encryption protocols to protect user data and content during transit and storage.
- Access Control: Ensure that only authorized users can access sensitive data and features within the app.
- Compliance Tools: Leverage IBM's compliance and security tools to meet industry standards and regulations, ensuring data privacy and protection.

4. Machine Learning and AI:

- Personalization: Utilize IBM Watson or other AI technologies to deliver personalized content recommendations to users.
- Content Optimization: Apply AI for content tagging, quality analysis, and metadata enhancement to improve search and discovery.
- User Insights: Analyze user data with AI to gain insights into viewing habits, helping shape content acquisition and creation strategies.

Integrating IBM Cloud services into your app development process can enhance scalability, security, and AI-driven features, making it a strong foundation for creating a Netflix-like streaming platform.

D:Tools and system requirements used:

Code Editor: VS code.

Frame work : React.js

1.6 GHz or faster processor

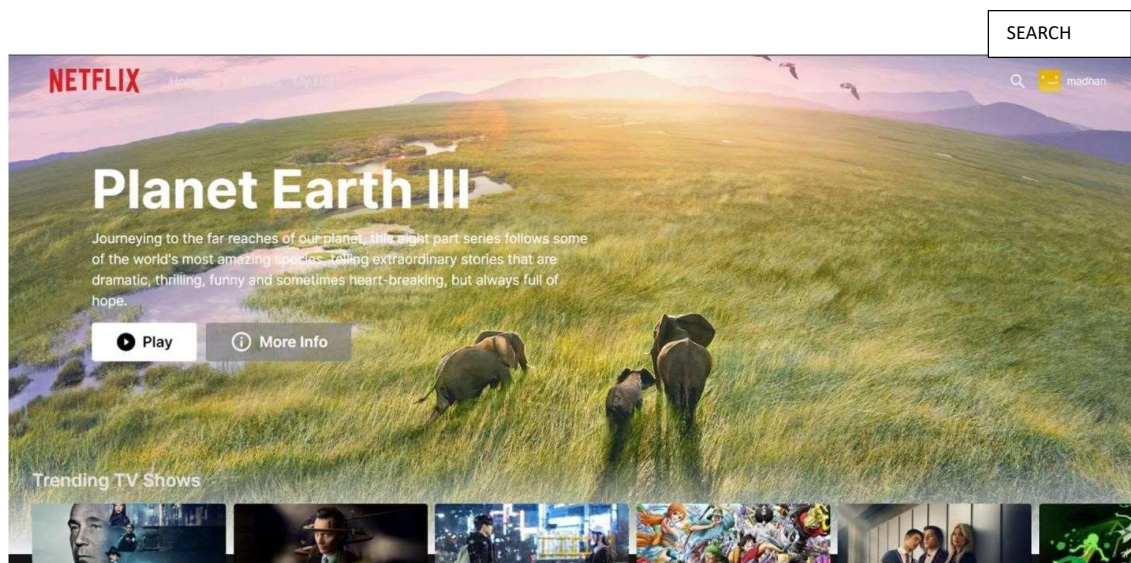
1 GB of RAM

OS X Yosemite

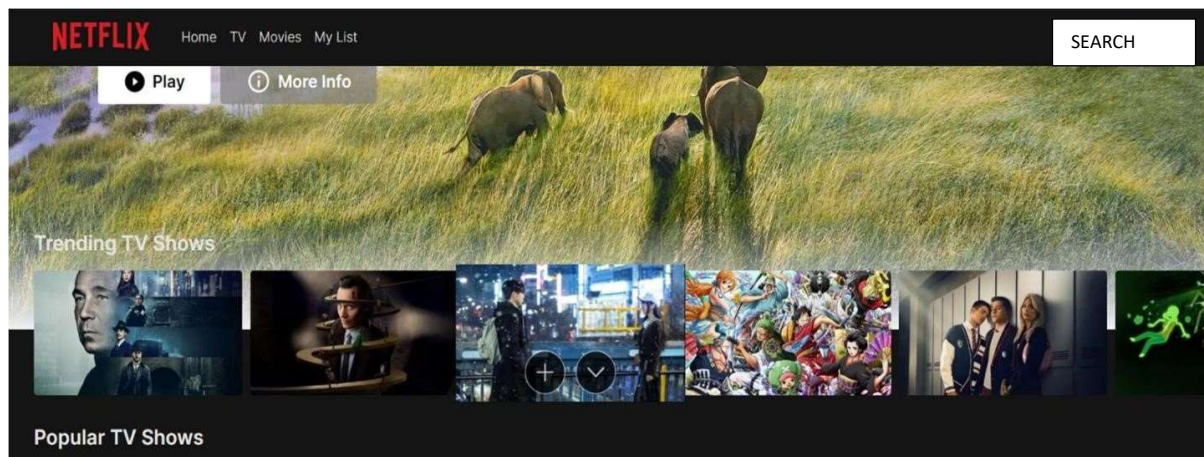
Windows 7 (with .NET Framework 4.5)

Linux with GLIBCXX version 3.4.15

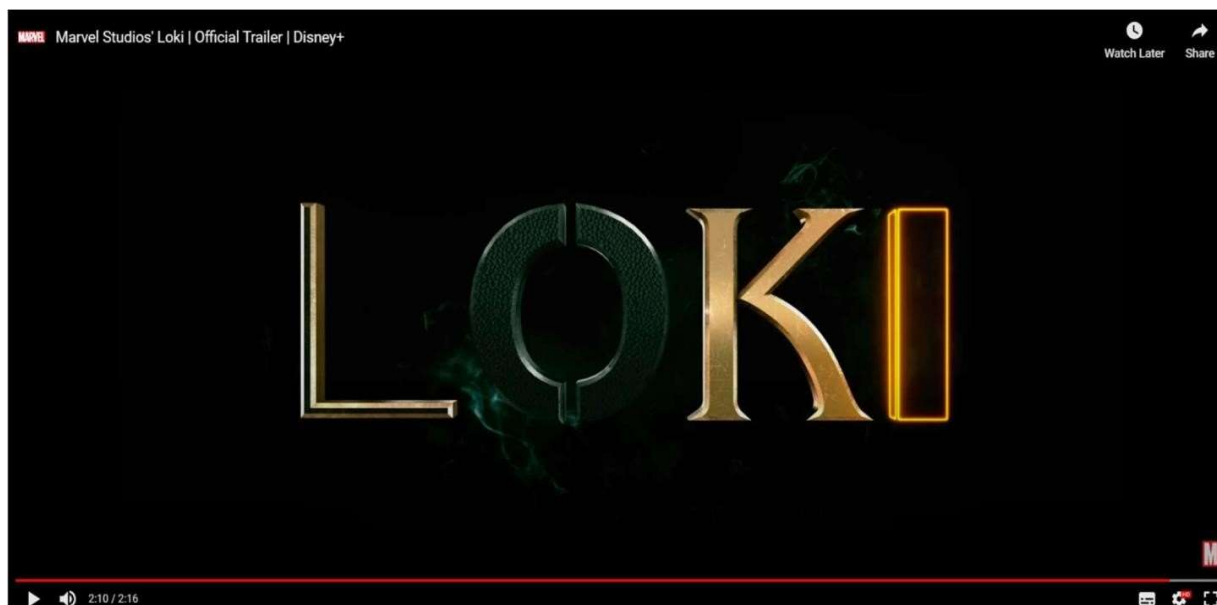
E:Final output (sample screenshots):



Screen shot - 1 : Landing page



Screen shot - 2 : Selecting the video which we need to play



Screen shot - 3 : Streaming the video which we want

Conclusion:

In Phase 4 of Media streaming app project, our objective is to achieve these milestones through the successful completion of tasks. These innovative features will provide users with a more engaging and personalized show watching experience, leading to increased user satisfaction and retention.

THANK YOU!!!!