An-Najah National University

Faculty Of Engineering

Computer Engineering Department

Graduation Project 1

Cinematic

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1. Acknowledgement

I want to convey my honest thankfulness and appreciation to Allah, the Almighty, for providing me with the strength to complete this project. Additionally, I want to thank Dr. Suleiman Abu Kharmeh, my supervisor, for his advice and assistance in the development process of this application. I also want to express my thanks to the Graduation Projects Committee for giving me the opportunity to work on this project and contribute to the creation of a tool that will hopefully have an impact on the entertainment industry. While it has been a great learning experience, this application is far away from perfectness, and the room for improvement in every aspect is extensive, but I hope it is a step in the correct way to introducing a competitive platform on the local and global stages, fostering innovation and meeting the diverse needs of our users.

I would also like to express my sincere gratitude to my family and friends for their love, encouragement, and patience during the long hours spent working on this project.

2. Disclaimer

This report was written by the student ***Mosab Dwaikat*** at the Computer Engineering Department, Faculty of Engineering, An-Najah National University. It has not been altered or corrected, other than editorial corrections. it may contain language as well as content errors. The views expressed in it together with any outcomes and recommendations are solely those of the student. An-Najah National University accepts no responsibility or liability for the consequences of this report being used for a purpose other than the purpose for which it was commissioned.

3. Abstract

The Cinematic streaming platform is a revolutionary initiative designed to address the dynamic landscape of the entertainment industry in the Middle East. In recent years, digital technology has transformed content consumption, making streaming platforms the primary source for movies and TV shows. While this shift has been embraced globally, the Middle East has often been underserved, lacking platforms that cater specifically to its diverse cultural preferences.

This graduation project presents the development and implementation of Cinematic. The project aims to bridge the gap in entertainment content availability, empower local content creators, and provide a tailored cinematic experience for the Middle Eastern audience. The platform places a strong emphasis on user-centric design, sustainable monetization models, and cultural relevance.

The objectives encompass addressing content limitations, overcoming content creator hesitancy, and ensuring a seamless and cost-effective entertainment experience. The significance of this project lies in its potential to contribute to the cultural enrichment of the global entertainment landscape while fostering innovation and meeting the diverse needs of Middle Eastern users.

The theoretical foundation is rooted in user-centric design principles and insights from economic theories and business models, ensuring the platform's alignment with evolving digital entertainment trends. Building upon successful initiatives in the streaming industry, the project leverages lessons learned from global and regional streaming services, as well as user-generated content platforms.

The methodology encompasses a comprehensive approach to development, including tools, methods, and programming languages. React JS, Material UI, Node.js, Express.js, Stripe, and MongoDB form the technological backbone, ensuring efficiency, scalability, and a seamless user experience. The development process considers constraints such as content licensing challenges, technical infrastructure variations, and the need for effective user acquisition and retention strategies.

The system features a user-friendly landing page, a secure login process, an intuitive registration page, a dynamic home screen, a robust search page, and an information panel for detailed content exploration. The play page serves as the heart of the streaming experience, while admin statistics, customer support, Stripe Dashboard, and a comprehensive Help Center enhance the overall platform functionality.

Content

Table of Figures

4. Introduction

4.1 Background and motivation

For years now, the entertainment industry has been undergoing a significant transformation with the advent of digital technology. Streaming platforms have become the primary source of content consumption, offering users the flexibility to watch their favorite movies and TV shows anytime, anywhere. Recognizing this change, the development of this streaming website aims to address the evolving needs of the audience.

While the western audience has already embraced this change, the Middle East region has often been overlooked by the majority of streaming services, leaving a void in catering to the diverse preferences of its audience. Recognizing this gap, this project aims to fill the void by introducing a dedicated streaming website that focuses on delivering an extensive collection of movies and TV shows tailored to suit the Arabic and Islamic society and culture in the Middle East.

The motivation behind this initiative comes from the desire to provide a comprehensive and localized entertainment solution for the Middle Eastern audience. By understanding the region's rich cultural tapestry, and the unique viewing preferences, this streaming platform aims to become the go-to destination for users seeking a curated and immersive cinematic experience.

4.2 Objectives

The objectives for this application are to address the problem of the limited entertainment content in the Middle East, and the reluctance of content creators to deliver their content to the area, while also focusing on providing the audience with a smooth and entertaining experience with efficient costs.

4.3 Importance

The significance of this project lies in its potential to bridge the gap between global entertainment trends and the unique culture of the Middle East. By offering a platform dedicated to the region, we aim to empower local filmmakers and content creators, providing them with a spotlight to showcase their work to a broader audience. Additionally, the platform serves as a cultural ambassador, facilitating cross-cultural understanding by curating content that reflects the traditions of the Middle East.

Moreover, in an era dominated by global streaming giants, our platform seeks to provide an alternative that caters specifically to the Middle Eastern audience, offering a more personalized and culturally appropriate viewing experience. This initiative not only fills a market void but also contributes to the cultural enrichment of the global entertainment landscape.

4.4 Report Organization

The report is organized into several sections, each addressing specific aspects of the Cinematic streaming platform development. The structure is outlined as follows:

- Acknowledgment: Expresses gratitude to Allah and acknowledges the support received during the project, highlighting the role of the supervisor and the Graduation Projects Committee.
- Disclaimer: States the origin of the report, any editorial corrections made, and disclaims responsibility for unintended use of the report.
- Abstract: Provides a concise overview of the Cinematic streaming platform project, outlining its objectives, theoretical foundation, methodology, and expected impact on the entertainment industry in the Middle East.
- Introduction: Highlights the Background and motivation, Objectives, and the Importance of the project
- Previous Work: Analyzes successful initiatives in the streaming and entertainment industry, drawing lessons from global and regional streaming platforms as well as user-generated content platforms.
- Methodology: Demonstrates the Tools, Methods, and Programming Languages used, and the Constraints faced.
- System Features: Explores each component of the Cinematic streaming platform.
- Results, Discussion, and Conclusion.
- Future Work: Outlines the roadmap for future enhancements
- References.

5. Theoretical Background

The foundation of our streaming platform rests on several theoretical principles that align with the evolving landscape of digital entertainment and user engagement.

User-Centric Design: Incorporating principles of user-centric design, our platform aims to prioritize the needs and preferences of the viewers. This involves creating a friendly interface, personalized recommendation algorithms, and features that enhance the overall user experience.

Monetization Models: Insights from economic theories and business models contribute to the development of sustainable monetization strategies. Balancing affordability for users with revenue generation mechanisms such as subscription models, advertisements, and potential partnerships is crucial for the long-term viability of the platform.

6. Previous Work:

Our project builds upon the foundations laid by earlier successful initiatives in the streaming and entertainment industry. By studying and learning from the strengths and shortcomings of previous platforms, we aim to refine and innovate within the context of the Middle Eastern market.

*Global Streaming Platforms: Platforms like Netflix, Hulu, and Amazon Prime Video have set industry standards for content delivery and user experience. Analyzing their success factors helps us identify best practices while tailoring our approach to suit the unique needs of the Middle East.

*Regional Streaming Services: Examining the strategies of regional streaming services, where available, provides valuable insights into catering to diverse cultural preferences. Understanding how these platforms have adapted to local markets informs our efforts to create a platform tailored specifically for the Middle East.

*User-Generated Content Platforms: Platforms that successfully incorporate user-generated content, such as YouTube and IMDb, offer valuable lessons in community building. We aim to leverage these insights to create an interactive space where users can contribute, share, and connect over their shared love for movies and TV shows.

7. Methodology

The successful development and implementation of our live streaming platform in the Middle East involves a systematic and comprehensive approach. Based on research conducted on streaming platforms, including data collection, analysis and processing. Furthermore, it describes the tools, methods and systems used to develop the platform and present the results.

7.1 Tools, Methods and Programming Languages

The development of our streaming platform involves the selection of tools, methodologies, and programming languages to ensure efficiency, scalability, and a seamless user experience.

7.1.1 Client Side

User-Centric Design: Implement a user-centric design approach to prioritize user experience. Design intuitive navigation, clear information architecture, and visually engaging layouts and animations.

Responsive Design: Utilizing Material UI [2] kit to ensure a responsive design that seamlessly adapts to various screen sizes and devices. Prioritize mobile responsiveness to accommodate the diverse range of devices used.

Component-Based Architecture: Leverage React JS's [1] component-based architecture to modularize the user interface. Break down the interface into reusable components, such as headers, footers, and content cards, for efficient development, testing, and maintenance.

State Management: Utilize React JS's state management to handle dynamic data and user interactions. Implement stateful components to manage the changing states of the user interface, enhancing the interactivity of the platform.

React Hooks: Implement React Hooks for stateful logic and side effects, enhancing the functionality of components. Use hooks like useState and useEffect, and creating custom hooks, to manage component state and perform asynchronous operations, ensuring smooth interactions.

7.1.2 Server Side

Node.js for Server-Side Logic: Node.js [3], with its event-driven architecture and non-blocking I/O, has been chosen as the foundation for the server-side development of our streaming platform. Node.js allows for scalable and efficient server-side logic. It facilitates handling concurrent connections, making it well-suited for real-time applications such as streaming platforms.

Express.js [4] Framework: To streamline server-side development and create RESTful APIs, we adopted the Express.js framework. Express simplifies route handling, middleware integration, and request/response processing. Its minimalist approach aligns with the project's need for a lightweight and flexible backend.

Payment Processing with Stripe [5]: For secure and reliable payment processing, the Stripe API is integrated into our server-side architecture. Stripe's developer-friendly API enables smooth handling of transactions, subscription management, and ensures PCI compliance. By incorporating Stripe, our platform can seamlessly handle subscription-based models, enhancing user convenience and emphasizing security.

Security Libraries:

Bcrypt [6] for Password Hashing: To enhance user security, bcrypt is employed for password hashing. Storing securely hashed passwords mitigates the risk of data breaches and unauthorized access. Bcrypt's adaptive hashing algorithm adds an extra layer of protection against password-related vulnerabilities.

JsonWebToken [7] for Authentication: jsonwebtoken (JWT) is used for secure user authentication. JWTs are employed to generate and validate tokens, enhancing the platform's security by securely transmitting user credentials between the client and server. This approach ensures that authentication is reliable and tamper resistant.

Real-Time Communication with Socket.io: Socket.io has been implemented to enable real-time communication between the users and the support team. Socket. Io's bidirectional communication capabilities enhance the overall user experience by providing instant feedback and interaction.

7.1.3 Database

MongoDB [8]: MongoDB, a NoSQL database, is chosen for its flexibility and scalability. Its document-oriented structure is suitable for managing diverse content types, user data, and metadata associated with movies and TV shows. Mongoose, an ODM (Object Document Mapper) for MongoDB and Node.js, facilitates smooth interaction with the database.

Figure 1: node.js and mongoDB

7.2 Constraints

The development of a streaming platform for the Middle East is not without its challenges. Identifying and addressing these constraints is crucial for ensuring a successful and resilient application.

- Content Licensing Challenges: Securing licensing agreements for a diverse range of movies and TV shows, considering regional restrictions and cultural sensitivities, can be challenging.

- Technical Infrastructure and Internet Speeds: Varied internet speeds across the Middle East may affect streaming quality and user experience.
- Monetization Challenges: Identifying effective and culturally suitable monetization strategies while maintaining affordability for users is a balancing act.
- User Acquisition and Retention: Attracting and retaining a user base in a competitive streaming market is a significant challenge.
- Technology Evolution: Constraint: Rapid advancements in technology may necessitate constant updates and evolution of the platform.

8. System Features

8.1 Landing page

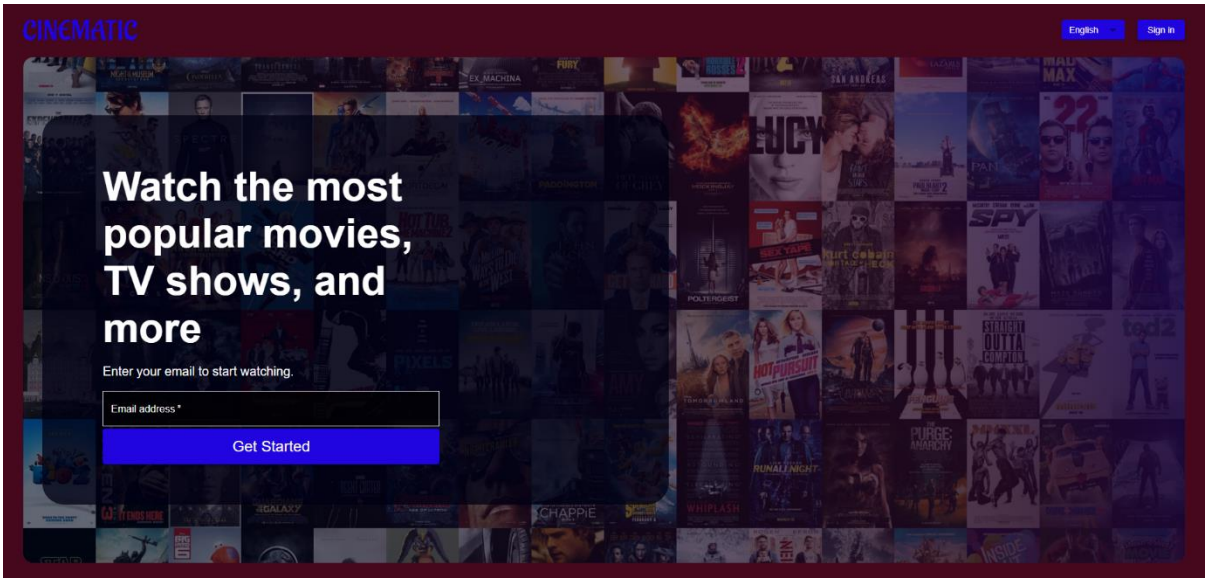

Figure 2: Landing page

The landing page is the first screen users see when they enter the website, It serves as a connector to the Login or Register pages, providing a user-friendly introduction to the website. This screen allows users to smoothly transition between the login and registration processes. The user is asked to enter their email and after verifying, the users will be directed to the login page if they already registered, or to the Signup page if not.

8.2 Login page

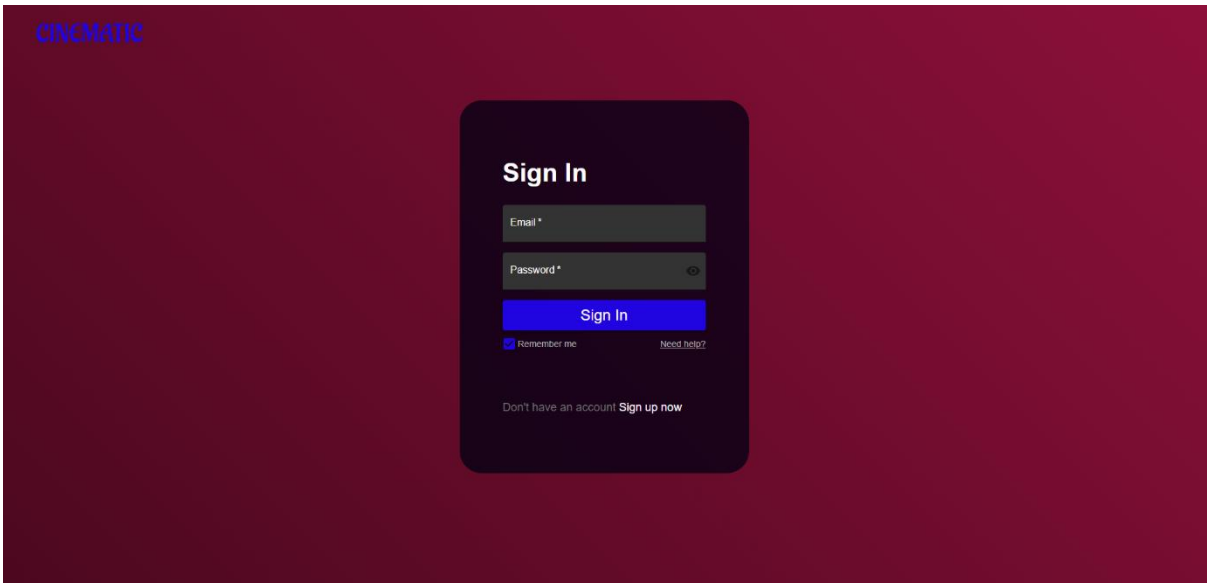

Figure 3: Login page

The Login page plays a pivotal role in our application's user interface, acting as the primary entry point for users to authenticate and access their accounts. We've implemented a validation mechanism for both email and password fields during the login process, prioritizing the security and precision of user information. Email validation ensures that the entered email adheres to the correct format, while password validation involves scrutinizing aspects such as length and other constraints. Moreover, the password undergoes encryption before establishing a connection with the server, bolstering the overall security measures in place.

To enhance user convenience, we've integrated a "Remember Me" feature. When activated, this function securely stores the user's login credentials, ensuring easy access to their accounts even after closing and reopening the application. This feature significantly elevates the login experience, particularly for returning users, streamlining the process for added efficiency.

Furthermore, the Login page presents options for individuals without an existing account to sign up effortlessly. By simply clicking on the signup button, they can initiate the account creation process. Additionally, for users who may have forgotten their password, we've included a "help" button. This button triggers a password recovery process based on the user's email, offering a straightforward solution for account access.

8.3 Register page

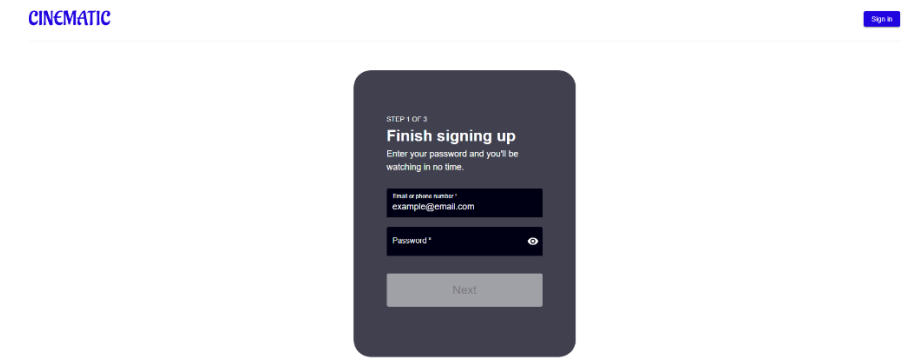

Figure 4: Register page (a)

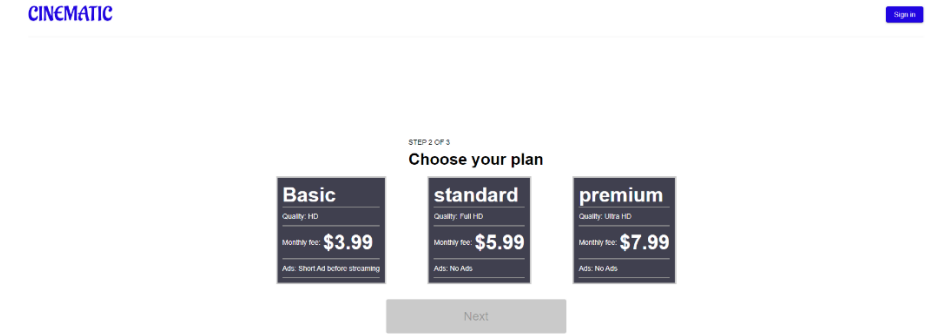

Figure 5: Register page (b)

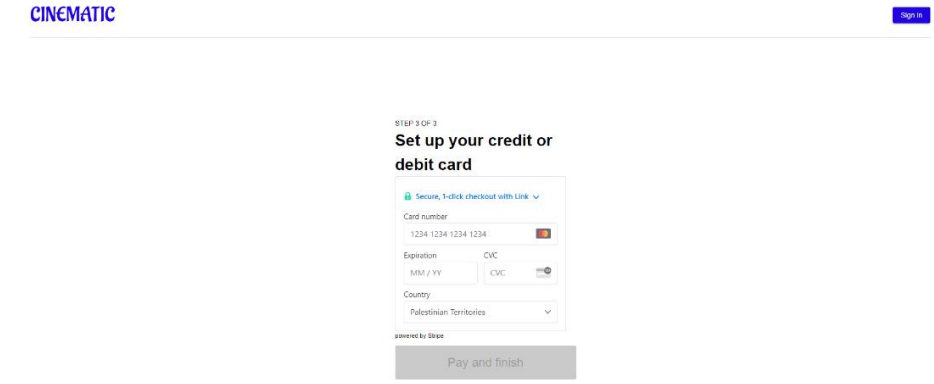

Figure 6: Register page (c)

The Registration page is a vital element of our application, facilitating users in creating their accounts by furnishing necessary information. During this process, users are prompted to input their preferred password, select a payment plan from the available options, and provide their card information.

8.4 Home page

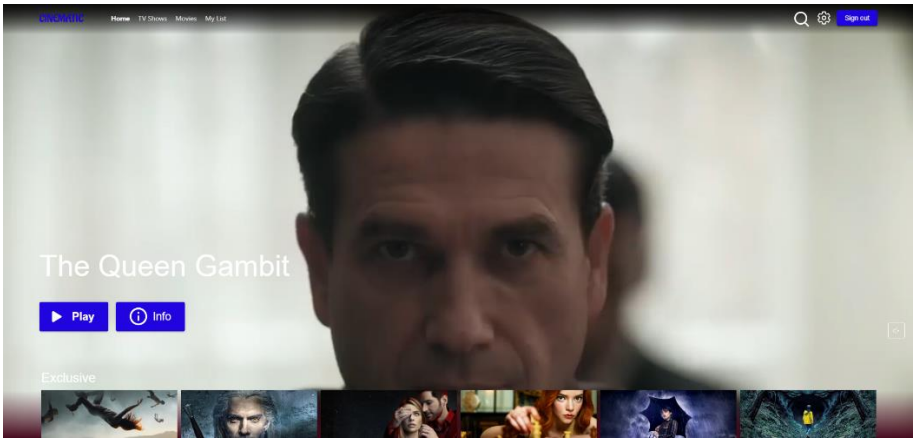

Figure 7: Home page

The Home Screen serves as the central hub of our streaming platform, offering users a dynamic and personalized experience right from the moment they log in. Here's an overview of the key features and functionalities:

- Navigation bar: allows to navigate between different categories of content, search for specific movies or shows, and gives access to the account controls.

Figure 8: Navigation bar

- Hero section: shows information about a recommended movie or show, providing some information about the content, a poster, and a trailer video, also contains control buttons to replay the trailer and mute/unmute.

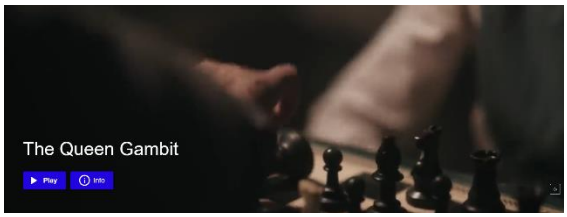

Figure 9: Hero(a)

- Sliders: the main container for content, providing an easy-to-handle method to explore the content provided by the web site.

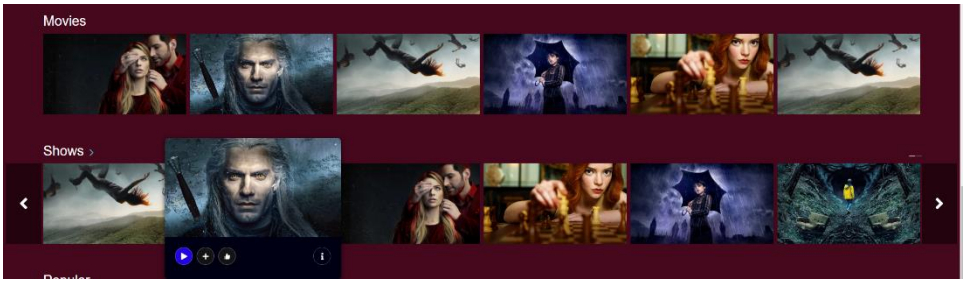

Figure 10: Sliders

- The footer: offers a variety of useful links, including one to contact the support team using a simple chat window (Contact Us)

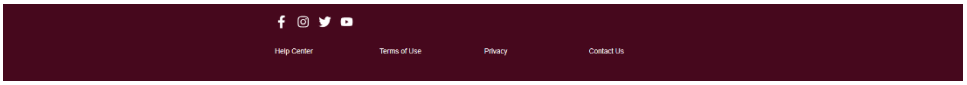

Figure 11: footer

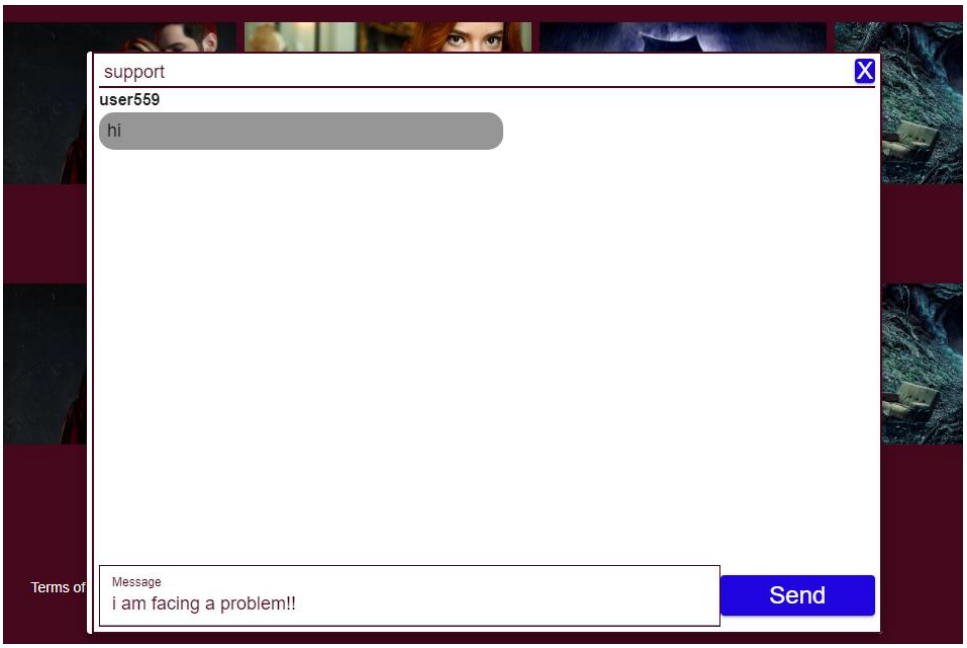

Figure 12: chat window

8.5 Search page

On the Search Page, discover and explore search results tailored to your desired content. This page serves as the gateway to finding and accessing the movies and TV shows that align with your preferences.

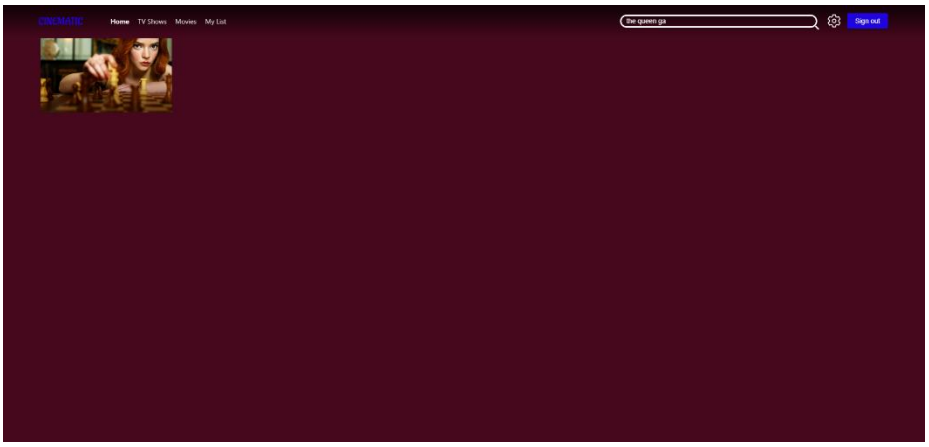

Figure 13: Search page (a)

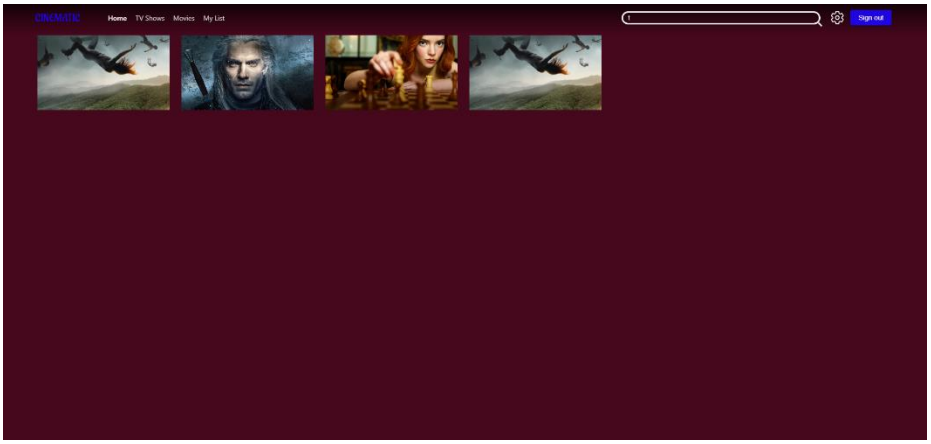

Figure 14: Search page (b)

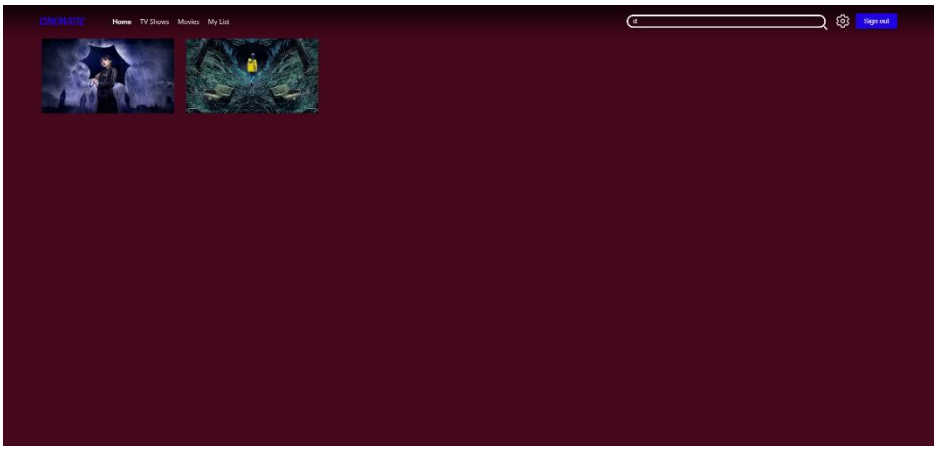

Figure 15: Search page (c)

8.6 Info panel

The Info Panel is a dedicated space that offers an in-depth exploration of movies and TV shows, ensuring users have access to essential details and enhanced interactive features. Here's a detailed breakdown of its components:

- Age Rating and Length: The Info Panel prominently showcases age ratings and runtime, providing users with a quick overview of the suitability and duration of the content.

- Categories and Tags: Users gain insights into the genre and thematic tags associated with the content, allowing for a more nuanced understanding of the movie or TV show's key elements.

- Detailed Description: A comprehensive description provides users with a deeper context and insight into the plot, themes, and overall narrative, aiding in informed decision-making.

- Cast and Production Team: Detailed information about the cast and production team is presented, allowing users to explore the talent behind the scenes and fostering a deeper connection with the content.

- Episode Selector for TV Shows: For TV shows, a user-friendly episode selector simplifies navigation, enabling users to choose their desired episode effortlessly and ensuring a smooth viewing experience.

- Interactive Controls: Users can add the content to their Favorites list directly from the Info Panel, facilitating personalized content curation. Additionally, expressing content appreciation through a like button contributes to refining future recommendations.

- Recommendation Enhancements: The engagement data from the Info Panel, including favorites and likes, is harnessed to tailor and refine recommendations. This iterative process contributes to providing users with content that aligns more closely with their preferences.

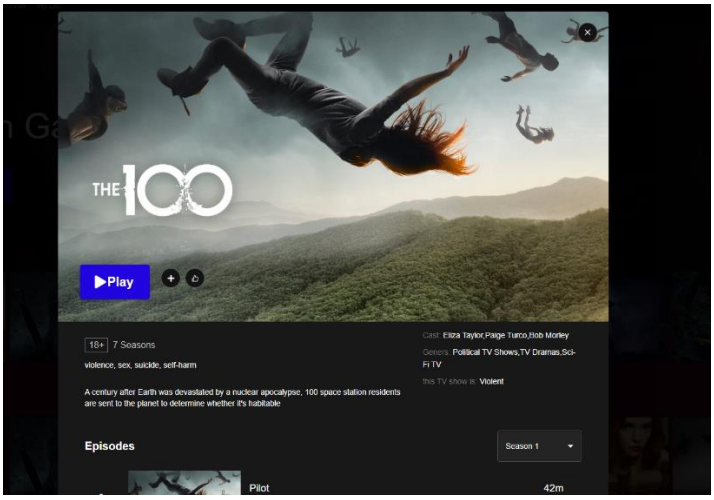

Figure 16: info panel (a)

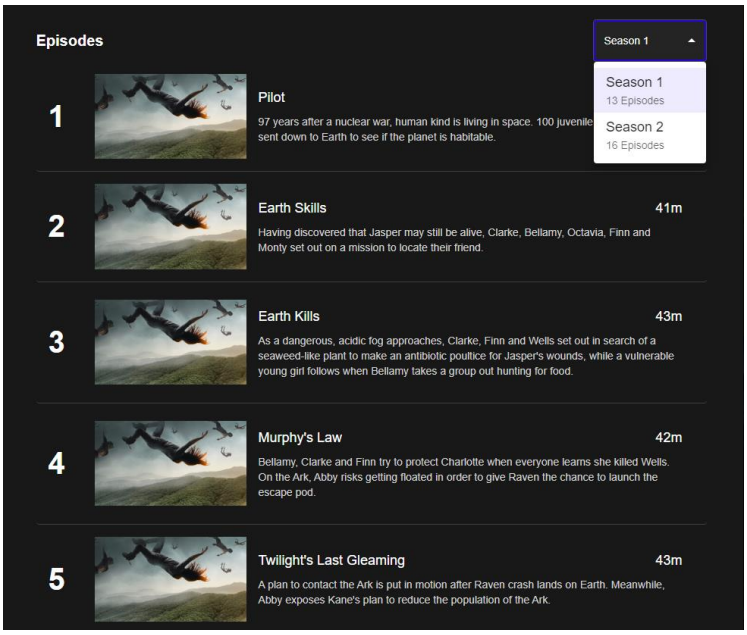

Figure 17: info panel (b) episode selector

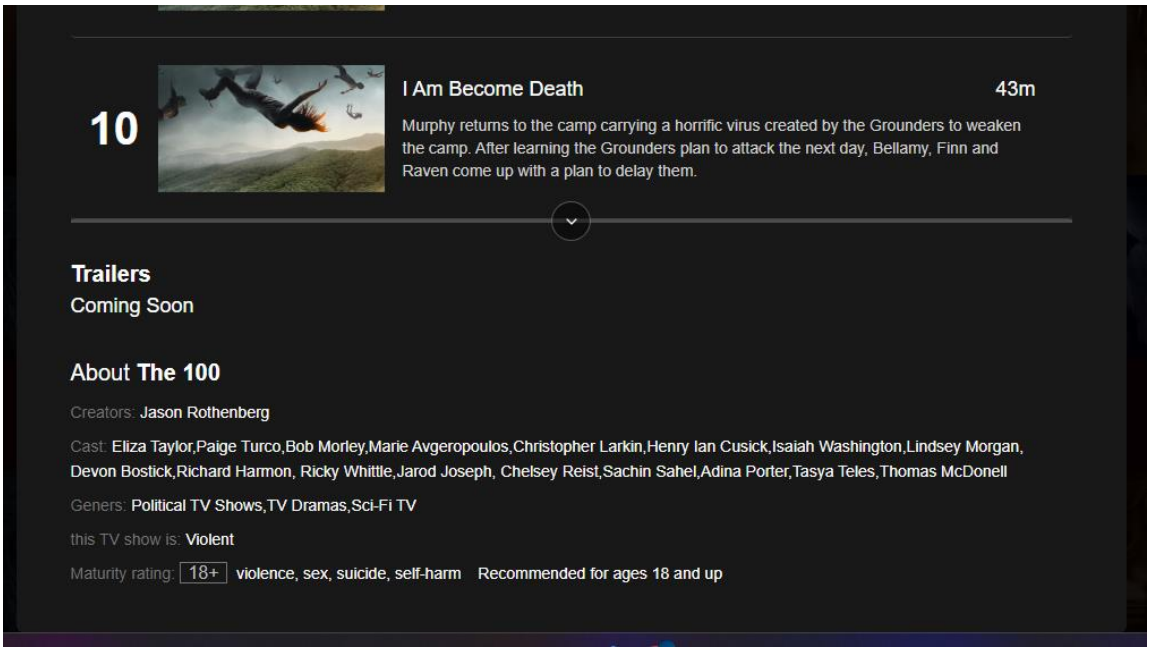

Figure 18: info panel (c)

8.7 The play page

The Play Page is the heart of the streaming experience, designed to be the ultimate destination where users can fully immerse themselves in the joy of watching their favorite movies and TV shows.

Intuitive Interface: The Play Page boasts an intuitive and user-friendly interface, ensuring that users can easily navigate and access their desired content. Effortless controls contribute to a seamless viewing experience.

Detailed Information: Users can access comprehensive details about the selected content, including cast information, release date, genre, and a brief synopsis. This feature enhances the overall viewing experience by providing additional context and insights.

Figure 19: Play page

8.8 Admin Statistics

The Admin Statistics Dashboard is a tool designed to provide administrators with insights into the performance and dynamics of the streaming platform. This centralized hub offers a detailes of key metrics and data, empowering administrators to make informed decisions and optimize the user experience. This includes an overview of trending content and the views this content is collecting in distinct periods of time. Also including the favorite content for users and the number of registered users the platform reached by far.

Figure 20: Statistics (a)

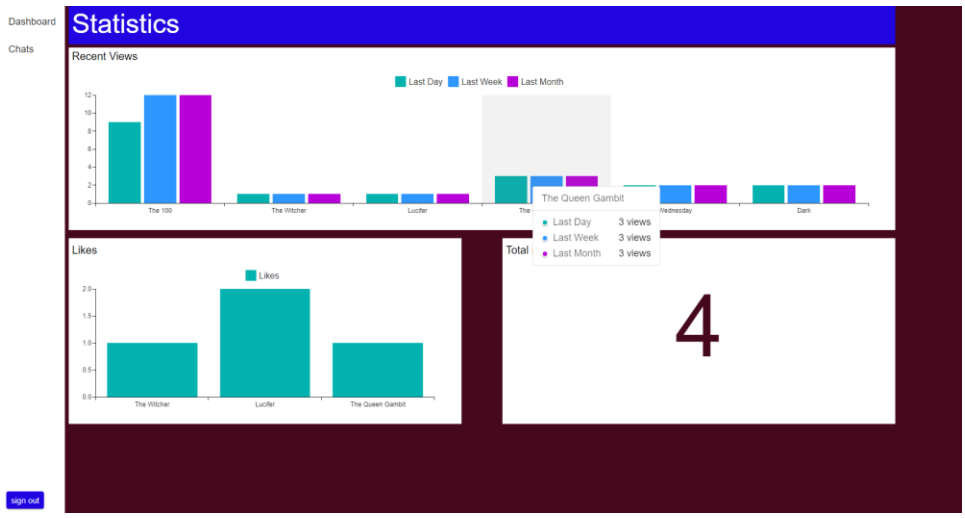

Figure 21: Statistics (b)

8.9 Customer support

Our Customer Support Chat System is a robust feature designed to provide users with real-time assistance, ensuring a smooth and enjoyable experience on the streaming platform. This interactive support system is equipped with various functionalities to address user queries,

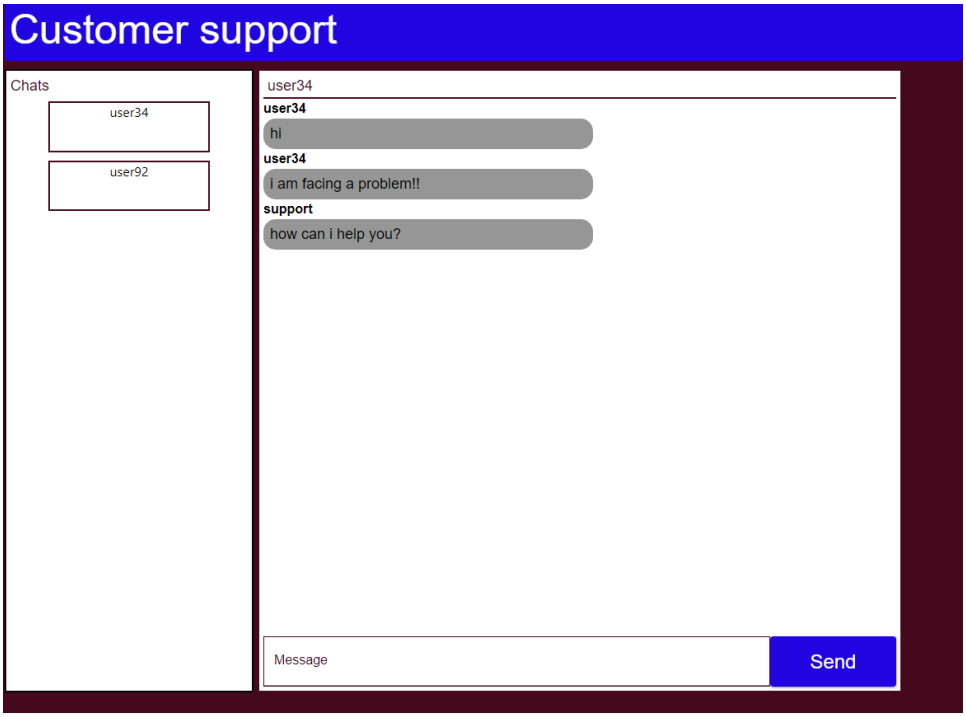

Figure 22: Customer Support

8.10 Stripe Dashboard

The Stripe Dashboard serves as the central command center for managing financial transactions, monitoring revenue, and gaining valuable insights into the financial health of our streaming application. This robust dashboard, powered by Stripe, provides a comprehensive suite of tools and features that empower administrators to efficiently handle payments, analyze financial data, and optimize the overall

monetization strategy.

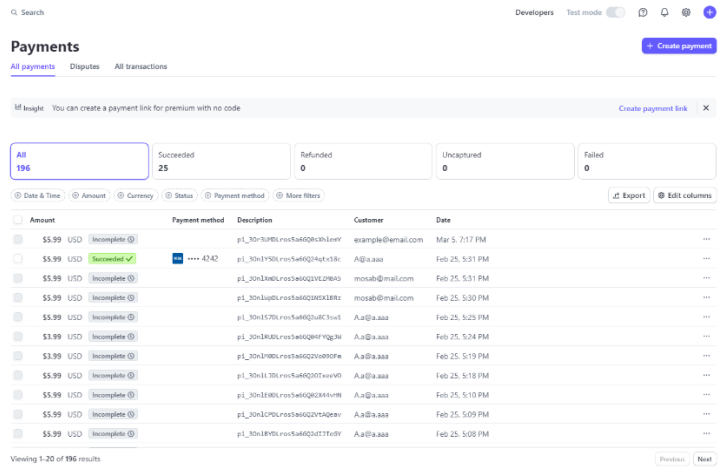

Figure 23: Stripe Dashboard

8.11 Help Center

The Help Center serves as a one-stop destination to address common queries, provide guidance, and offer detailed insights into various aspects of the streaming platform and the most frequent questions. Discover detailed answers to frequently asked questions related to the application's functionality, compatibility with devices, pricing, and troubleshooting tips. The Help Center ensures that users have access to comprehensive information for a smooth and hassle-free app experience.

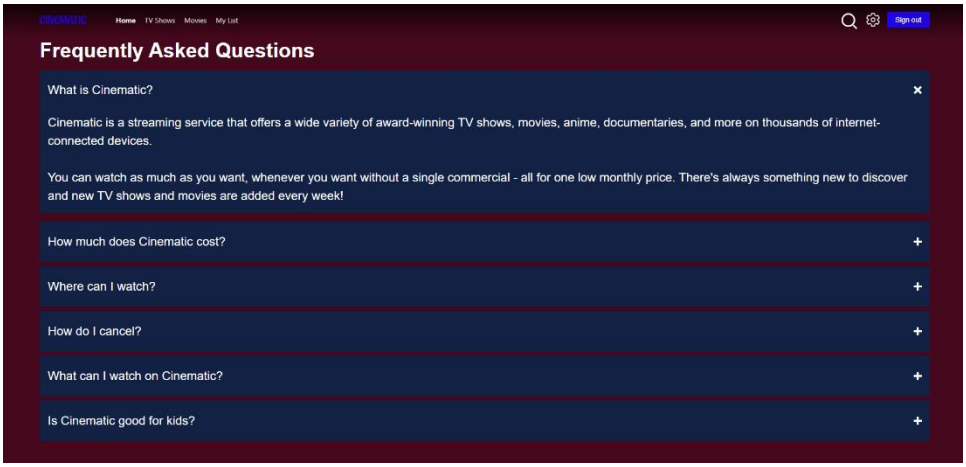

Figure 24: Help center

9. Results and Discussion

9.1 Results

The objectives set forth for this application have been instrumental in reshaping the entertainment landscape in the Middle East, addressing challenges related to limited content availability and content creators' hesitancy. The achieved results showcase the positive impact on the audience experience, content accessibility, and cost efficiency.

9.2 Discussion

Our streaming application tailored for the unique needs of the Middle East prioritizes content diversity, user engagement, and financial sustainability to create an immersive and inclusive entertainment experience. the platform caters to the varied entertainment preferences of the Middle Eastern audience. The enriched content catalog ensures accessibility and inclusivity, addressing the initial challenge of limited content availability in the region.

Our streaming platform prioritizes financial viability and sustainability. Strategic monetization models, cost-effective content acquisition, and responsive adjustments to subscription plans ensure the platform's long-term financial health, paving the way for continued growth.

Understanding and adapting to the cultural aspects of the Middle East, our platform seeks to deepen its cultural relevance, offering content that resonates with a diverse audience across different regions.

The platform values user input as a catalyst for continuous improvement. Actively implementing user suggestions, addressing concerns, and refining features based on feedback creates a collaborative relationship with the user community, enhancing overall user satisfaction.

9.3 Conclusion

In conclusion, the results achieved align closely with the outlined objectives. The streaming platform has successfully addressed content limitations, fostered content creator collaborations, enhanced user experiences, and maintained cost efficiency. This success positions the platform as a transformative force in the Middle East's entertainment landscape, providing a rich and accessible content ecosystem for a diverse and engaged audience.

10. Future Work

The success of our streaming application relies on future endeavors to evolve the application. The following roadmap outlines key areas for enhancement and expansion, ensuring that our platform remains on the right track, and continues to meet the evolving needs of users in the Middle East.

1. Content Enrichment and Original Productions:

Future efforts will focus on continuously expanding and diversifying our content library. Collaborations with local filmmakers, producers, and artists will be prioritized to introduce exclusive and culturally relevant original productions. This strategy aims to offer unique content that resonates with the diverse audience in the Middle East.

2. Custom Video Player Development:

The introduction of a custom video player is pivotal for an enhanced and personalized viewing experience. This player will offer advanced functionalities such as seamless streaming, adjustable playback quality, watching queue, precise resuming, and synchronized multi-device viewing. Customization options, including subtitles, audio tracks, and playback speed, will be integrated to cater to diverse user preferences.

3. AI-Powered Content Recommendations:

Leveraging artificial intelligence (AI) for content recommendations is the next frontier in personalization. Advanced algorithms will analyze user behavior, preferences, and viewing patterns to provide hyper-personalized content suggestions. The integration of AI-driven recommendations ensures that users discover content aligned with their tastes, fostering a more engaging and tailored streaming experience.

4. Enhanced Statistical Analytics:

Improving statistical analytics will be a cornerstone for strategic decision-making. Advanced data analytics tools will provide more comprehensive insights into user engagement, content popularity, and regional preferences. This data-driven approach will guide content acquisition strategies, marketing campaigns, and overall platform optimization.

5. Evolved Chatting System:

Building upon the existing chat system, future development will focus on an evolved and feature-rich communication platform. Enhanced real-time messaging, multimedia sharing, and community-driven discussions will create a vibrant and interactive user space. The evolved chatting system aims to foster a sense of community and social connection among users.

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