

Video streaming platform

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Chapter 1

Software Requirement Specifications

Chapter 1: Software Requirement Specifications

1. Introduction

1.1 Purpose

This document is intended to provide a software requirement specification for the social video streaming website. The purpose of this document is to outline the specific requirements needed to develop and maintain the website. The scope of this document includes the description of the streaming system, its features, and the specific requirements for the website.

social video streaming is a popular online streaming platform that allows users to watch a variety of movies, TV shows, documentaries, and other videos. Users can also interact with the platform by liking or disliking videos, commenting on them, and sharing them with others. The platform also offers subscription options that allow users to access premium content.

The system features of include uploading videos, watching videos, sharing videos, subscribing to premium content, and interacting with other users. Uploading videos allows users to share their own content on the platform, while watching videos allows users to view content that is available on the platform. Sharing videos enables users to share videos with others through various social media platforms, while subscribing to premium content allows users to access exclusive content on the website. Interacting with other users includes liking and disliking videos, commenting on videos, and following other users.

In terms of specific requirements, streaming must be accessible to users with various devices and internet speeds. The website should also be optimized for different web browsers, such as Chrome, Firefox, Safari, and Edge. The website should also provide an easy-to-use interface that allows users to navigate and search for content easily.

Functional requirements for include the ability to search for content using keywords, the ability to create and manage user accounts, the ability to provide recommendations to users based on their viewing history, and the ability to offer a seamless playback experience. Non-functional requirements include data security, reliability, scalability, and performance.

This document provides a comprehensive software requirement specification. It outlines the purpose and scope of the document, describes the system features, and provides specific requirements for the website. The functional and non-functional requirements outlined in this document will help ensure that provides a high-quality streaming experience to its users.

1.2 Document Conventions

IEEE template SRS Documents.

1.3 Intended Audience and Reading Suggestions

In addition, this document may also be of interest to users of the video streaming website, such as students, teachers, and anyone who has internet access and devices to watch online movies. Reading this document can provide users with a better understanding of the features and requirements of the website, and how it functions behind the scenes.

To make the most of this document, readers should have a basic understanding of software development and web technologies. They should also be familiar with common web browsers and internet usage. It is recommended that readers take the time to review the document thoroughly to gain a better understanding of the requirements and features of video streaming platform.

1.4 Product Scope

The popularity of TV content remains high, but the traditional TV experience, where channels broadcast programs at specific times on non-portable screens with complex remote controls, is losing favor to on-demand, personalized, and screen-agnostic internet TV. This shift is a rare occurrence in the entertainment industry. Radio had been the dominant form of home entertainment media for almost half a century until the advent of TV in the 1950s and 1960s. Linear video in the home was a significant improvement over radio, and large companies emerged to meet consumer demand over the last six decades. The current era of internet TV, which began about a decade ago, is likely to be substantial and long-lasting as the internet's ubiquity and versatility make it a powerful tool worldwide.

2 Overall Description

2.1 Product Perspective

This app is a platform developed to provide a vast array of award-winning TV shows, movies, documentaries, and other content to anyone with access to thousands of internet-connected devices. The platform is designed to enable customers to enjoy unlimited viewing of its content without any commercial interruptions

2.2 Product Functions

Video streaming is an online streaming service that provides a wide range of movies, TV shows, documentaries, and original content to its subscribers. The main functions include:

Streaming video content: primary function is to stream a variety of video content directly to a user's device. Subscribers can choose from a wide range of movies, TV shows, and documentaries, and start watching them instantly on their smartphones, tablets, smart TVs, gaming consoles, and other devices.

Personalized recommendations: advanced algorithms to recommend movies and TV shows to its subscribers based on their viewing history, preferences, and ratings. The more a user watches on Netflix, the better the recommendations become.

Customization user profiles: Allows users to create multiple profiles under one account, with each profile having its own personalized recommendations and watch history. This feature is particularly useful for households with multiple viewers who have different tastes in content.

Downloadable content: Allows users to download select movies and TV shows to their devices for offline viewing. This feature is particularly useful for people who want to watch content while traveling or in areas with limited internet connectivity.

Parental controls: Offers parental controls that allow parents to restrict access to certain content based on its maturity level. This feature helps ensure that children only have access to age-appropriate content.

Original content: Produces and releases its own original content, including movies, TV shows, and documentaries. These productions have been very successful and have won numerous awards, such as the Academy Awards and the Emmys.

Multiple language options: Offers content in many languages and provides subtitles and dubbing in different languages to cater to its diverse user base.

2.3 User Classes and Characteristics

The system will have two levels of users. The first level will be the general users who will use the software to search for and stream movies and television shows. These users will only have access to the front-end of the system, which includes the user interface and search functionality.

The second level of users will be the system developers. They will have access to the back-end of the system and be able to modify the search capabilities of the system. They will determine which sites the system will search based on factors such as site safety, compatibility with the software, search speed, and usefulness of the site's results for users. The developers will be authorized to modify and refine the system's search algorithm to enhance its effectiveness and efficiency.

2.4 Operating Environment

The operating environment for the Netflix system includes the following devices:

Personal computers (PCs) or laptops running:

Windows 7

Windows 8

Windows 8.1

Windows 10

Mac OS X

Linux Smart TVs, cellphones, tablets (Android or iOS), and other internet-connected devices.

The software is designed to be compatible with these operating systems and devices, allowing users to access the Netflix platform on a variety of devices.

2.5 Design and Implementation Constraints

The server capacity refers to the number of users who can access or be online at once. As the number of users increases, network traffic also increases, which can cause the server to become overloaded and slow down or even crash.

In order to maintain optimal performance and prevent downtime, the server should have sufficient capacity to handle the expected traffic. The system should also have measures in place to manage and prioritize traffic during peak usage times.

Personal firewall and updating can be a difficult task, as it requires balancing security with network performance. The firewall should be configured in such a way that it does not block legitimate network traffic and cause the system to slow down.

Moreover, the server's firewall should not conflict with the firewall of the user's system, as this could cause issues with connectivity and performance. It is important to ensure that the server's firewall is properly configured and that it does not create any unnecessary obstacles for users.

2.6 User Documentation

User Documentation for Video Streaming Platform

Creating an Account

give your email and a password.

Choose a plan that suits your needs and enter your payment information.

Browsing and Searching for Content

Once you have logged in, you will see the homepage with various categories and recommendations.

You can browse for content by clicking on categories or by using the search bar to look for specific titles or genres.

You can also browse by language, release year, and ratings.

Playing Content

Click on the thumbnail of the content you wish to watch.

Once on the title page, you can read a synopsis, watch a trailer, or add the title to your list.

You can control the playback using the player controls, such as pause, rewind, and fast forward.

Managing Your Account

From there, you can manage your membership, update your payment information, and view your billing history.

You can also manage your profile, including your language preferences and viewing history.

2.7 Assumptions and Dependencies

The assumptions and dependencies for streaming's system include the reliance on third-party data centers to host their Open Connect service, which includes thousands of instances communicating with each other using Java processes to handle content exchange, caching, and streaming. The infrastructure runs on commodity hardware running Linux Ubuntu and Java EE 7, and if a node fails, a new one can be brought up easily. Additionally, video encoding is often done on Windows machines using a Java-based framework, taking advantage of Java's portability among platforms for flexibility.

3.External Interface Requirements

3.1 User Interface

The user interface for a video streaming platform should be user-friendly, visually appealing, and easy to navigate.

Home page: A well-organized home page that displays various categories of content such as movies, TV shows, documentaries, and more.

Search bar: A search bar that allows users to quickly find the content they are looking for by typing in keywords.

Content pages: Pages that display detailed information about the selected content, including trailers, ratings, descriptions, and cast information.

Watchlist: A feature that allows users to save content they want to watch for later.

Recommendations: A section that suggests content to users based on their viewing history and preferences.

User profile: A user profile that displays account information, watch history, and preferences.

Playback controls: Standard playback controls such as play, pause, rewind, fast-forward, and volume control.

Subtitles and closed captioning: Options for users to enable or disable subtitles and closed captioning.

Quality settings: Options for users to adjust the quality of the video based on their internet connection.

Feedback and support: A feature that allows users to provide feedback, report issues, or request assistance from customer support.

Overall, the user interface should be intuitive and provide a seamless experience for users to browse, select, and watch content.

3.2 Hardware Interfaces

The hardware interfaces for a video streaming platform may include:

Internet Connection: A stable and fast internet connection is essential for accessing the video streaming platform.

Device: Users can access the platform through various devices such as desktops, laptops, smartphones, tablets, smart TVs, gaming consoles, etc.

Audio/Video Hardware: Users can watch the videos on various audio/video hardware devices such as speakers, headphones, home theater systems, etc.

Screen: Users can view the videos on the screens of their devices, which can vary in size and resolution.

Input devices: Users can interact with the video streaming platform using input devices such as a mouse, keyboard, touchpad, touch screen, remote control, etc.

Storage devices: Users may need to connect external storage devices such as external hard drives, flash drives, SD cards, etc., to store downloaded videos for offline viewing.

Display devices: Users may need to connect display devices such as projectors, external monitors, etc., to display the videos on a larger screen.

3.3 Software Interfaces

The video streaming platform may have the following software interfaces:

Operating System Interfaces: The platform must be compatible with different operating systems such as Windows, MacOS, Linux, iOS, and Android.

Web Browser Interfaces: The platform should be accessible through popular web browsers such as Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge.

Video Codecs: The platform should support different video codecs such as H.264, H.265, VP9, AV1, etc. to ensure that the video can be played on various devices.

Content Management Systems: The platform may integrate with different content management systems such as WordPress, Drupal, and Joomla to manage and publish content.

Payment Gateway: The platform must integrate with a payment gateway to enable users to subscribe to premium content and pay for it.

Social Media Integration: The platform may integrate with social media platforms such as Facebook, Twitter, and Instagram to allow users to share content with their friends.

Analytics Tools: The platform may integrate with analytics tools such as Google Analytics to track user behavior and improve the user experience.

Content Delivery Networks (CDN): The platform may integrate with CDN providers such as Akamai, Cloudflare, and Amazon CloudFront to deliver content quickly and reliably to users around the world

3.4 Communications Interfaces

Internet Protocol (IP): The platform should support the standard IP protocol for data communication over the internet.

Web Services: The platform should support web services for communication with external applications or services. This can include APIs for integrating with social media platforms, billing systems, or other third-party applications.

Streaming Protocols: The platform should support streaming protocols such as HTTP Live Streaming (HLS), Dynamic Adaptive Streaming over HTTP (DASH), or Real-Time Messaging Protocol (RTMP) for delivering video content to users.

User Messaging: The platform should have messaging interfaces to allow users to communicate with each other, for example, in a chat room or through private messaging.

Notifications: The platform should have notification interfaces to notify users of new content, updates, or system alerts.

Payment Gateway: The platform should support payment gateways for users to make payments for subscription or purchase of content. The communication interface should be secure and encrypted to ensure user data protection.

4. System Features

Some potential features for a video streaming platform include:

User profiles: allowing users to create personalized accounts with their viewing history, preferences, and saved content.

Search and browse: enabling users to easily search for specific titles, genres, or actors, and browse through recommended content based on their viewing history.

Content recommendations: providing personalized content recommendations to users based on their viewing history and preferences.

Video playback: providing smooth and high-quality video playback on a variety of devices, with options for resolution and closed captioning.

Pause and resume: allowing users to pause and resume video playback at any time, even across different devices.

Multiple device support: allowing users to access the platform on a variety of devices, including smartphones, tablets, laptops, smart TVs, and game consoles.

Social features: enabling users to share their viewing activity with friends and family, as well as engage in discussions and recommendations within the platform.

Parental controls: allowing parents to set viewing restrictions for their children, such as age ratings or content categories.

Download for offline viewing: allowing users to download content for offline viewing on compatible devices.

5. Other Nonfunctional Requirements

5.1 Performance Requirements:

those are the recommended minimum internet speeds for streaming video content according to Netflix:

0.5 Mbps for any streaming

1.5 Mbps for standard definition (DVD) quality

5.0 Mbps for high definition (HD) quality

7.0-12.0 Mbps for Super HD and 3D quality

It's important to note that these are just recommendations and the actual required speed may vary depending on the specific platform, the quality of the video being streamed, and other factors such as network congestion.

5.2 Safety Requirements

Data Encryption: All sensitive information such as user login credentials, payment information, and personal data should be encrypted to prevent data breaches and hacking attempts.

Firewall Protection: The platform should be protected by firewalls to prevent unauthorized access to the system and to protect against malicious attacks.

Regular Software Updates: The software used in the platform should be updated regularly to fix any security vulnerabilities and to improve the overall security of the platform.

Secure Network: The network used for the platform should be secure, and all data transmissions should be encrypted to prevent interception by third parties.

User Verification: Users should be verified before they are allowed to access the platform to prevent unauthorized access.

Content Restrictions: The platform should restrict the sharing or streaming of illegal or inappropriate content, which can also protect users from potential legal issues.

Parental Controls: The platform should have parental controls that allow parents to restrict access to inappropriate content for children.

Privacy Policy: The platform should have a clear and comprehensive privacy policy that outlines how user data is collected, used, and protected.

5.3 Security Requirements

User authentication and authorization: The platform should ensure that only authorized users have access to the system, and that they can only access the content they are allowed to.

Secure data transmission: All data transmitted over the network should be encrypted to prevent unauthorized access, interception or modification.

Secure storage of data: All data stored on the platform's servers should be encrypted to prevent unauthorized access or theft.

Protection against hacking and malware: The platform should be protected against hacking attempts and malware attacks, through the use of firewalls, intrusion detection systems, antivirus software, and other security measures.

Secure payment processing: If the platform allows for payment transactions, it should have secure payment processing methods to ensure the safety of users' financial information.

Compliance with data privacy laws: The platform should comply with data privacy laws such as GDPR, CCPA, and others to ensure the protection of users' personal data.

Regular security audits: The platform should undergo regular security audits and assessments to identify and address any vulnerabilities and ensure that security measures are up-to-date.

Disaster recovery and business continuity: The platform should have a disaster recovery plan in place to ensure that data can be recovered in the event of a disaster.

5.4 Software Quality Attributes:

Software quality attributes for a video streaming platform could include:

Performance: The platform should have high performance, delivering smooth and uninterrupted video streaming, with minimal buffering or loading times.

Reliability: The platform should be reliable, with a high uptime and minimal downtime, to ensure that users can access and stream content at any time without interruptions or errors.

Scalability: The platform should be able to scale up or down to handle an increasing or decreasing number of users and traffic, without affecting the quality or performance of the streaming service.

Usability: The platform should have a user-friendly interface and easy-to-use features, making it easy for users to find and stream content, adjust settings, and navigate the platform.

Security: The platform should have robust security features to protect user data, prevent unauthorized access, and ensure that user information and activities are secure.

Compatibility: The platform should be compatible with a wide range of devices and operating systems, including desktops, laptops, smartphones, tablets, and smart TVs.

Accessibility: The platform should be accessible to all users, including those with disabilities, by offering features such as closed captioning, audio descriptions, and other assistive technologies.

Maintainability: The platform should be easy to maintain, update, and troubleshoot, with minimal downtime or disruptions to the streaming service.

5.5 Business Rules

Here are some potential business rules for a video streaming platform:

- Only registered users can access the content on the platform.
- Users can only access content that they have paid for or have a subscription to.
- The platform must comply with all copyright laws and licensing agreements.
- Users are not allowed to share their login information with others.
- The platform must be available 24/7 with minimal downtime for maintenance or updates.
- All user data must be kept confidential and secure.
- The platform must provide accurate and reliable recommendations based on a user's viewing history and preferences.
- Any user-generated content must be reviewed and approved before it is made available on the platform.
- The platform must provide customer support for any technical issues or billing inquiries.
- Any changes to pricing, subscription plans, or terms of service must be communicated clearly to users in advance.

Other requirements

Here are some other requirements for a video streaming platform:

Content Management: The platform should allow for easy management of content, including adding new videos, editing metadata, and deleting videos.

Search and Navigation: The platform should have a robust search feature that allows users to easily find the content they are looking for. Additionally, it should have an intuitive navigation system that allows users to browse content by genre, release date, and other relevant categories.

User Profiles: The platform should allow users to create profiles, where they can save their favorite content, create watchlists, and receive personalized recommendations.

Social Sharing: The platform should allow users to share content on social media platforms like Facebook, Twitter, and Instagram.

Analytics: The platform should provide analytics and insights to content creators, including information on video views, user engagement, and other relevant metrics.

Payment Processing: The platform should have a secure payment processing system that allows users to subscribe to premium content or purchase individual videos.

Customer Support: The platform should have a robust customer support system that includes online help documentation, email support, and live chat support.

1.5 References

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http://robertdaigle.com/wpcontent/uploads/2014/01/BowenDaigleDionValentine_NetflixCaseStudy.pdf.

DOC]IEEE Software Requirements Specification Template

https://web.cs.dal.ca/~hawkey/srs_template-ieee

<https://www.scribd.com/doc/111111111/Final-SRS-Document>

SRS Example – Computer Science and Engineering

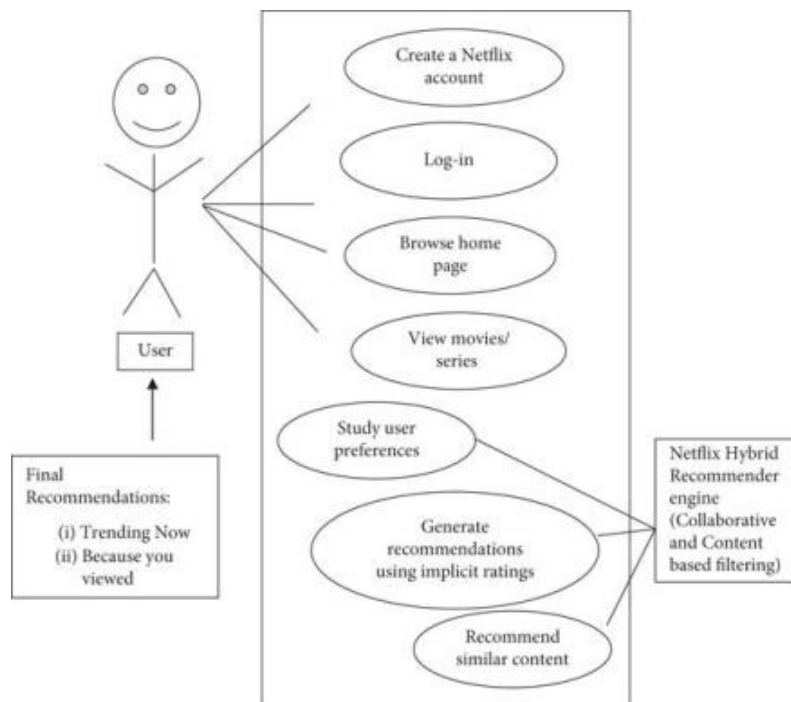
www.cse.msu.edu/~chengb/Papers/SRSEExample-webapp

Chapter 2

Use Case Analysis

Chapter 2: Use Case Analysis

2.1 Use Case Model

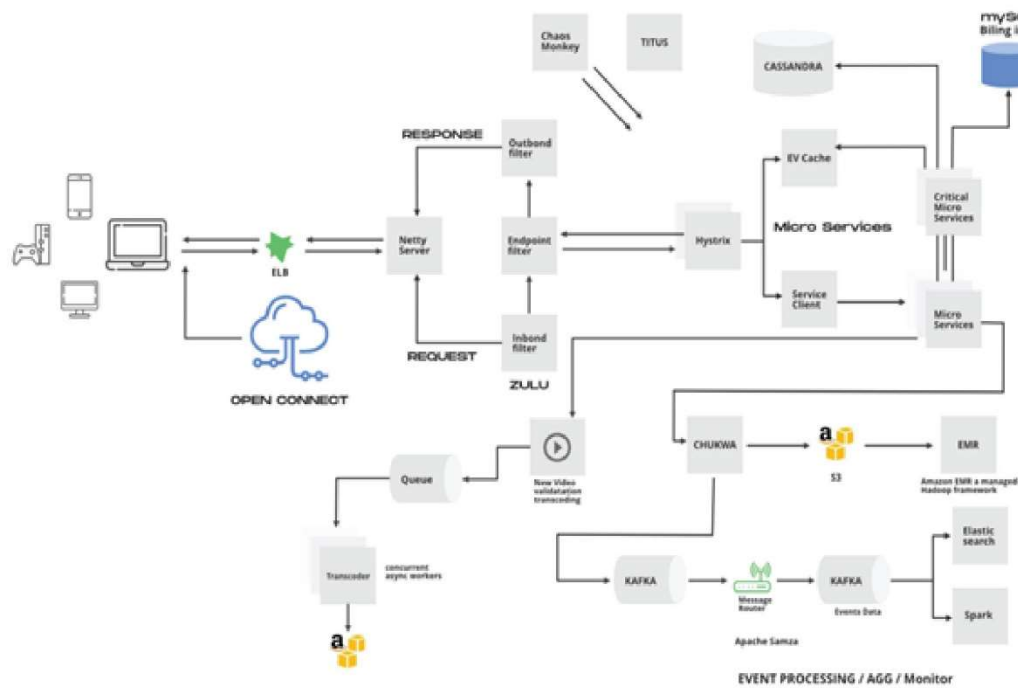


Chapter 3

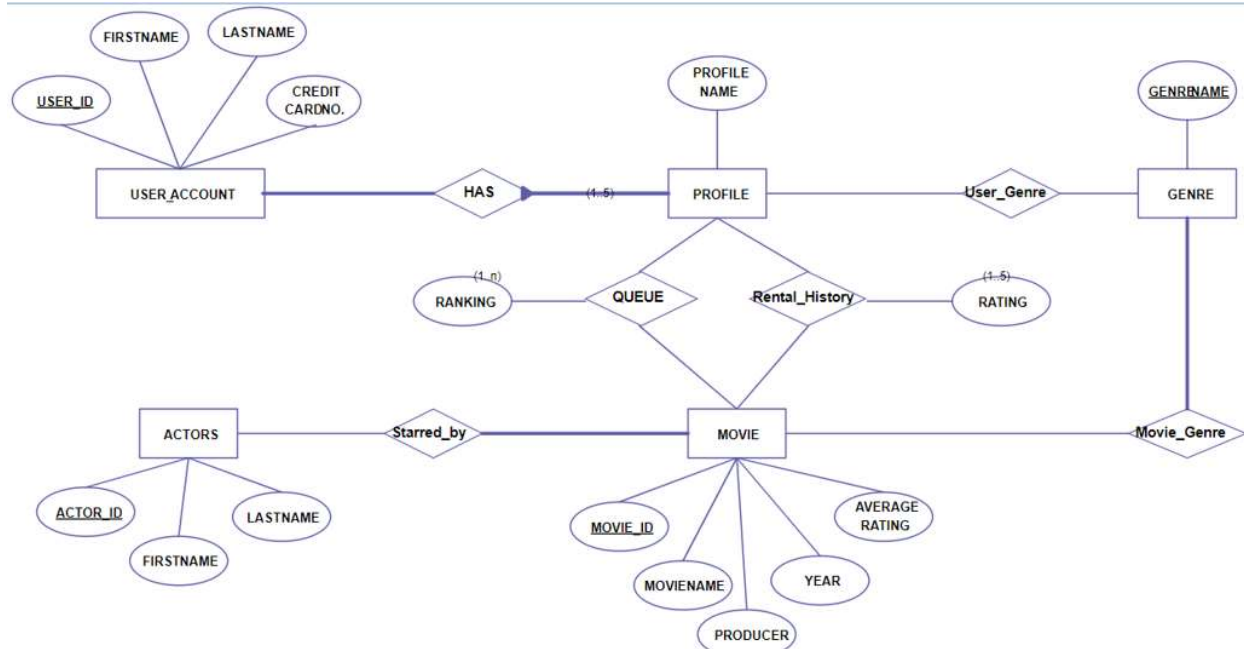
System Design

Chapter 3: System Design

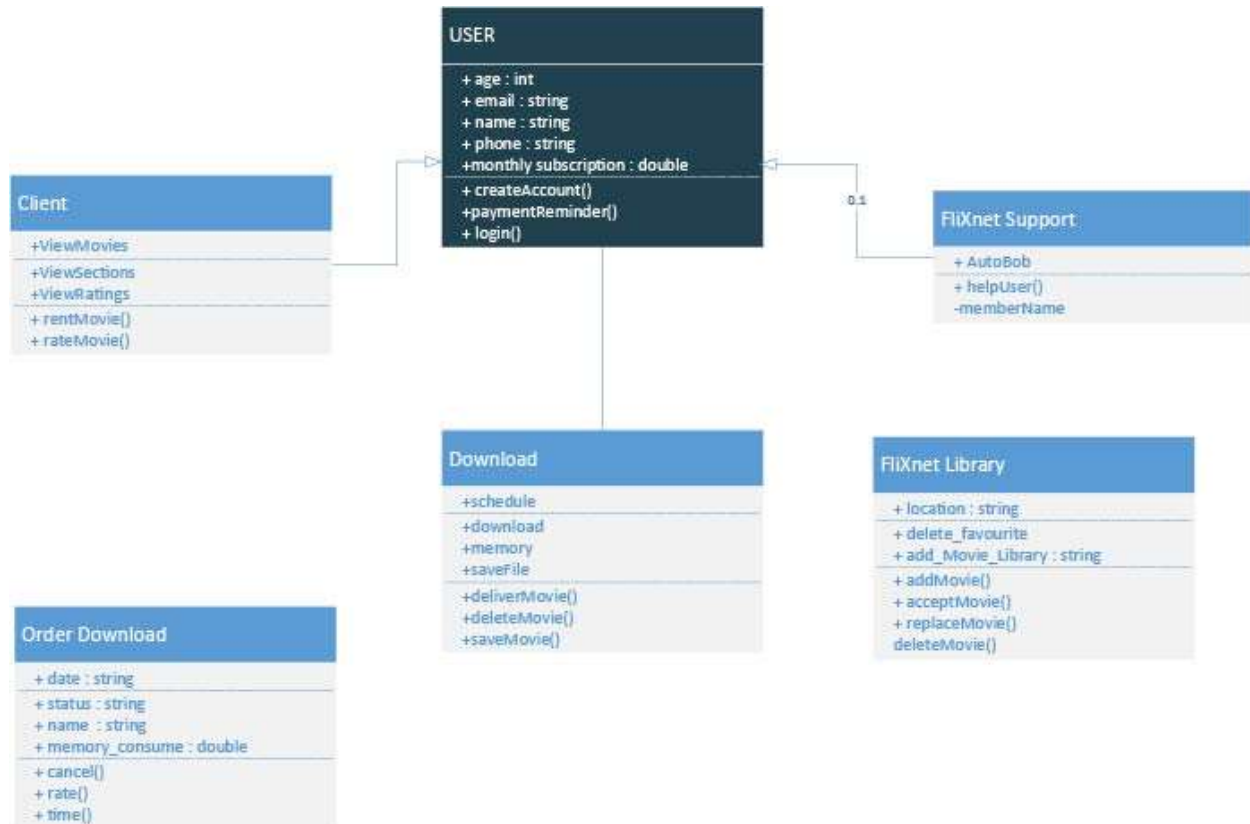
3.1 Architecture Diagram



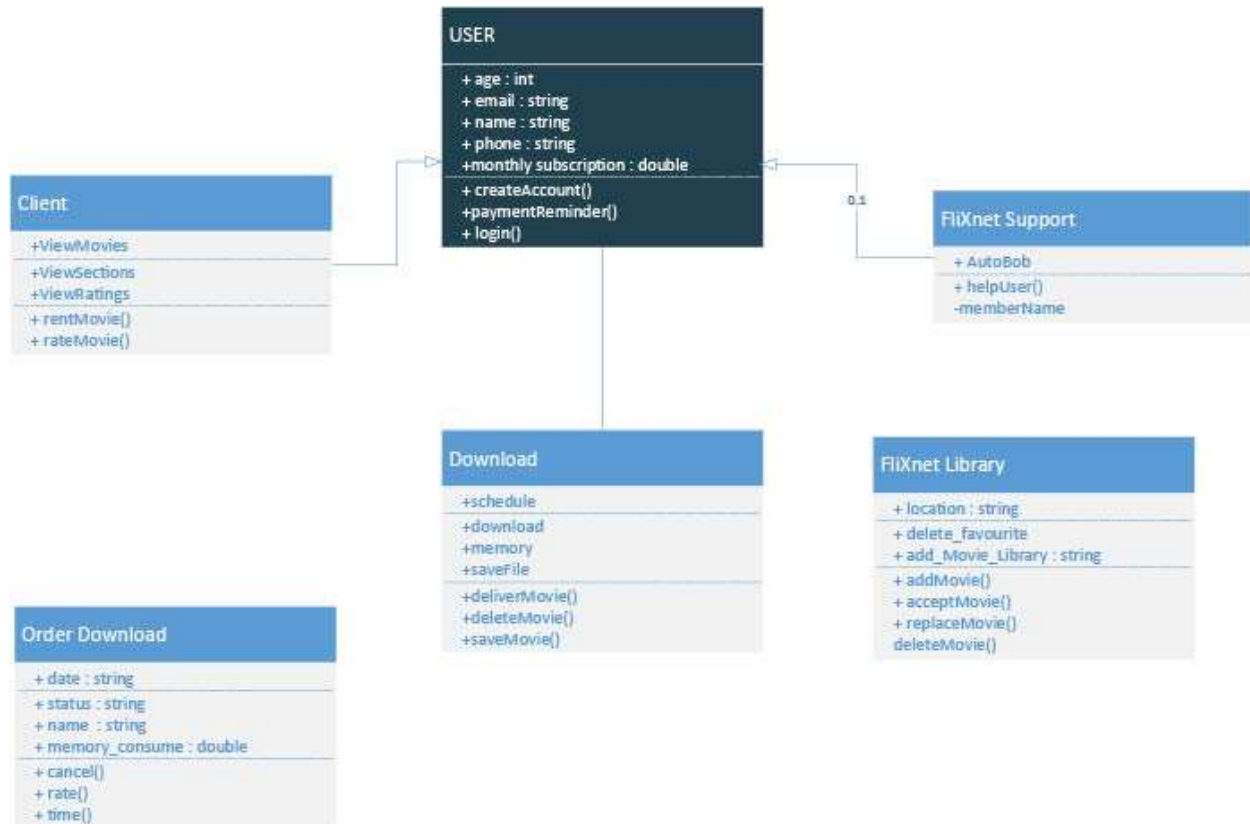
3.2 Entity Relationship Diagram with data dictionary



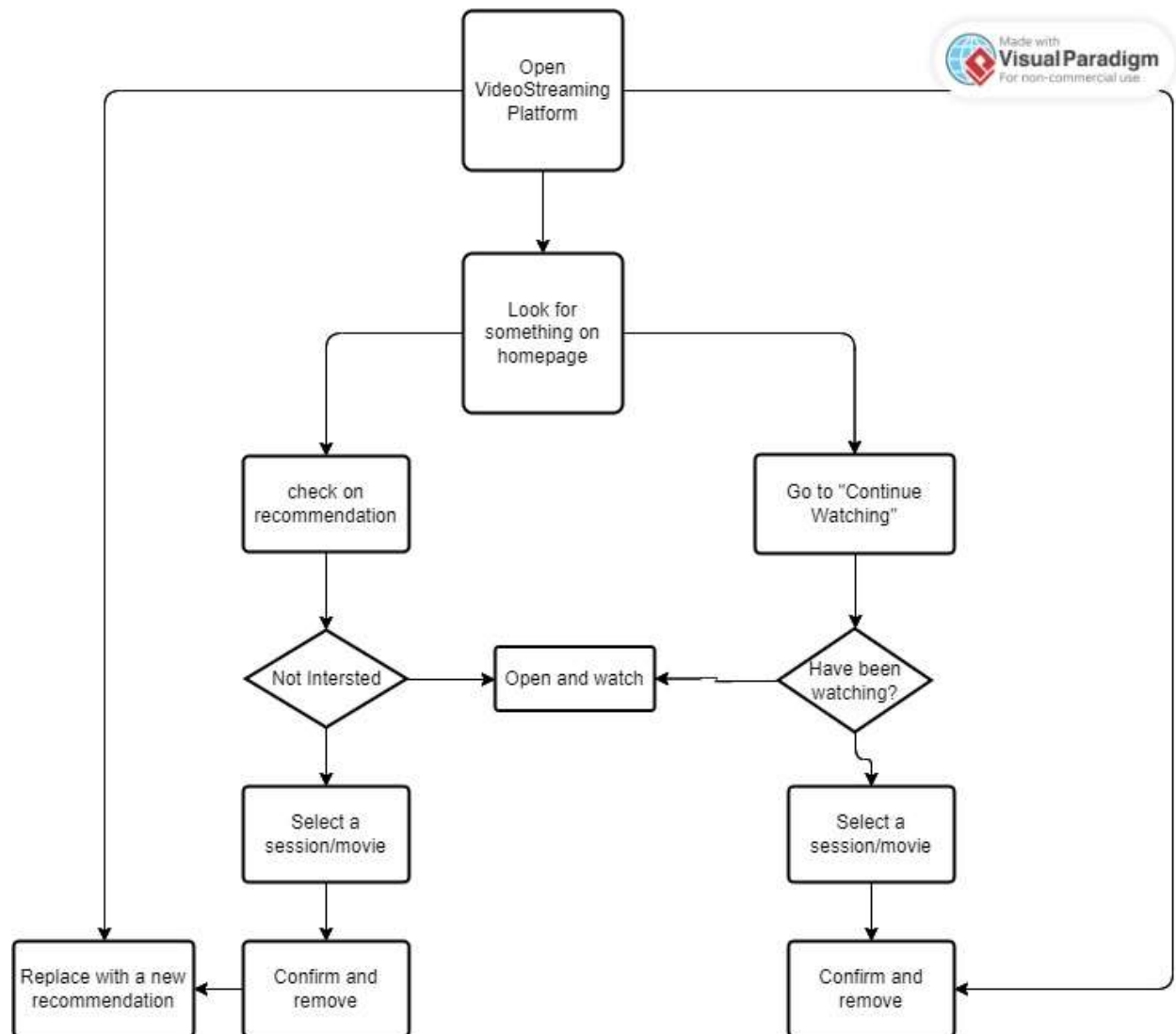
3.3 Class Diagram



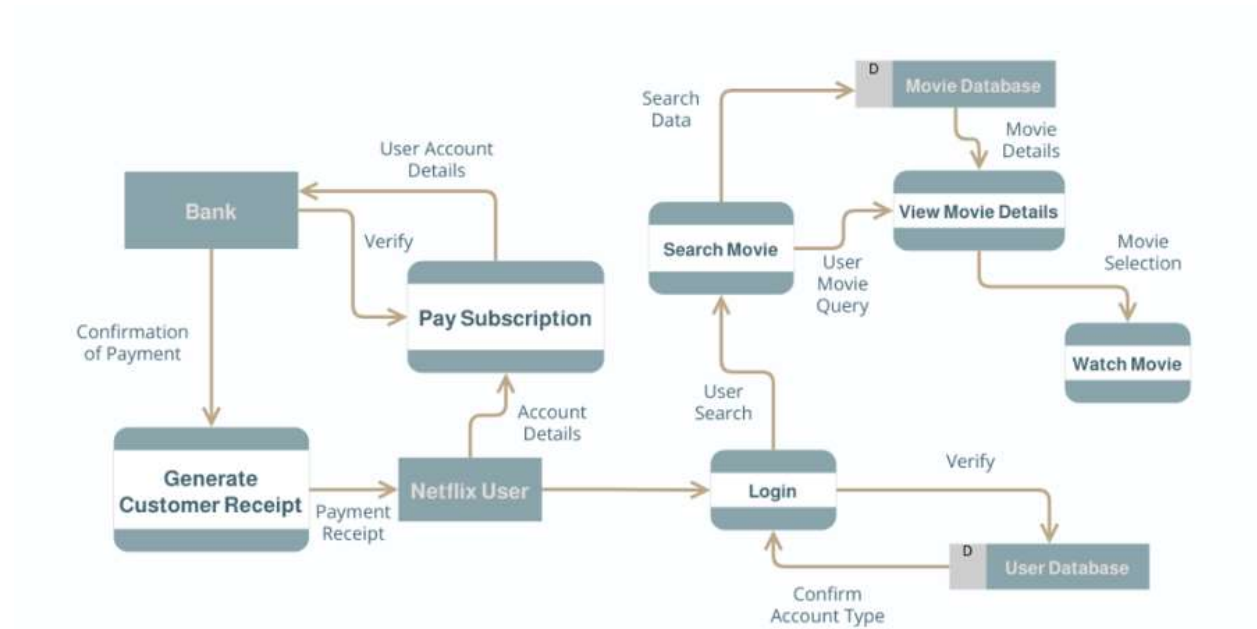
3.4 Sequence / Collaboration Diagram



3.5 Flow chart



3.6 Data Flow diagram



Chapter 4

Test case

Chapter 4: Test case

Test Cases For Video Streaming Applications

- Corroborate the multimedia setting of the device should be applicable for the streaming.
- corroborate the functionality of a proper internet connection in the device needed for video streaming.
- corroborate the functionality of an online streaming player compatible with the device.
- corroborate the functionality of a video that should be uploaded over the internet.
- corroborate the train format of the available video is supported by the video streaming software or online streaming player.
- corroborate the functionality of play & pause functionality while video streaming in the player.
- corroborate the video softening time between streaming software and online video streaming players according to the different internet pets for a video of the same quality.
- corroborate the video quality of any video can be automatically malleable while streaming in a streaming player according to internet connection speed.
- corroborate the video quality of any video can be set manually while streaming in the streaming player at any internet connection speed.
- corroborate the functionality of the progress bar with the timekeeper while streaming video in the player.
- corroborate the functionality of forwarding and backward functionality in the video streaming player while streaming the video.
- corroborate that the video playing speed shouldn't be changed after using forward or backward functionality while streaming.
- corroborate that after using forward or backward functionality while streaming, the audio listening speed shouldn't change, pause, or lead for the video.
- corroborate that while streaming, the video shouldn't be distorted or pixilated.
- corroborate that the voice of the video shouldn't be intruded while streaming at different pets of internet connection.
- corroborate that streaming video should be malleable according to the player's screen sizes.
- corroborate that the Internet connection is lost while streaming the video, also video buffering should be stopped with the Internet connection lost communication.
- corroborate that the video streaming player is retaining the video's last position for capsule, pause that video, and close the player or directly close the streaming player while streaming.
- corroborate whether the video's total duration is displaying or not, and corroborate whether the pause duration & remaining video duration are displaying.

- corroborate the response of the streaming player when the stoner tries to stream a loose video train.
- corroborate the softening functionality if streaming gets broke.
- corroborate that if a video has streamed for some duration and gets broke, move the progress bar of the video backward for some duration and play again so the video will cushion again or not.
- corroborate that if video streaming pause after some duration and plays again, also the video will play from the broke position or again buffer & play from the original position.
- corroborate like share option

J	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Project NAME	video streaming app											
2	Module name	login sign up m&s list responsive	installation	quality like and share									
3	Create by	sharjeel											
4	DATE	5/4/2023											
5	Reviewed by												
6	reviewed date												
7													
8													
9													
10	SCENARIO ID	SCENARIO DESCRIPTION	TEST CASE ID	TEST CASE DESCRIPTION	PRECONDITION	test data	POSTCONDITION	EXPECTED RESULT	ACTUAL RESULT	STATUS	execution by	execution date	comments
11	tc_vs_001	✓ verify the login page	tc_login_001	enter a valid username and password	valid url test data	username,p@ssword	user should able to home screen	successful login	successful	pass	t_002	5/4/2023	no comments
12			tc_login_002	enter a valid username and invalid password	valid url test data	username,p@ssword	invalid username and password	error message	error message	fail	t_002	5/4/2023	
13			tc_login_003	enter a valid username and valid password	valid url test data	username,p@ssword	invalid username and password	error message	error message	fail	t_002	5/4/2023	
14			tc_login_004	enter a valid username and invalid password	valid url test data	username,p@ssword	invalid username and password	error message	error message	fail	t_002	5/4/2023	
15													
16	tc_vs_002	✓ verify the sign up page	tc_signup_001	enter a username and password	valid url test data	username,p@ssword*****	user should able to login screen	successful login	successful	pass	t_003	5/4/2023	
17			tc_signup_002	enter a username and invalid password(8 charleast)	valid url test data	username,p@ssword*****	password least 8 character	not register	not register	fail	t_003	5/4/2023	
18													
19	tc_vs_003	✓ verify the m&s list	tc_m&s_001	available all movies and season list	valid url test data	movies&list	movies&list play correctly	play	play	pass	t_003	5/4/2023	
20	tc_vs_004	✓ Verify the response	tc_rp_001	check responsive all devices	valid url test data	all devices	responsive	responsive	responsive	pass	t_004	5/4/2023	
21	tc_vs_005	✓ verify installation	tc_in_001	check all devices installation	valid url test data	installation	installation	successful	successful	pass	t_005	5/4/2023	
22	tc_vs_006	✓ verify quality	tc_quality_001	check all quality of video	valid url test data	different qualities	360 to 1080 px	allow	apply successful	pass	t_006	5/4/2023	
23	tc_vs_007	✓ verify like and share	tc_like_001	check user can give like to video	valid url test data	like and share	like and share different social web	successful	su	pass	t_007	5/4/2023	
24													
25													
26													
27													
28													
29													