Software Req. Engineering

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Project Title:

Netflix

Phase 2

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SRS DOCUMENT

1. Introduction:

1.1. Purpose Of Document

This article is written to determine a software requirement description for NETFLIX. A social video streaming network, Netflix allows users to watch, share, like, dislike, and comment on videos. First, the purpose and scope of this paper will be explained, followed by a brief description of the NETFLIX system, so that you have a general understanding of the report. In addition, detailed descriptions are provided for system features such as uploading, watching, sharing, and subscribing to videos. Following the presentation of the websites, the specific requirements will be explored. The final portion will address both functional and non-functional needs.

1.2. Feasibility of the Product

Netflix is a feasible business model. It has a strong track record of profitability and growth, and it has a large and loyal customer base. Netflix is also well-positioned to compete in the increasingly competitive streaming market. Netflix feasibility with respect to TELOS i.e., Technical Aspect, Economic Aspects, Legal Aspects, Operational Aspects and Scheduling Aspects.

1.2.1. Technical Feasibility

Netflix has a strong technical infrastructure that can support its large and growing customer base. Netflix also has a team of experienced engineers who can innovate and improve the technical infrastructure on an ongoing basis.

1.2.2. Economic Feasibility

Netflix is a profitable company with a strong financial position. Netflix has a large and growing customer base, and it is generating positive cash flow. This financial position allows Netflix to invest in new content and features, and it also gives Netflix a buffer against any unexpected challenges.

1.2.3. Legal Feasibility

Netflix operates in a complex legal environment, but it has a team of experienced lawyers who can navigate the legal landscape and ensure that Netflix follows all applicable laws and regulations.The payment tool used by Netflix is also legal and registered through a regulatory body.

1.2.4. Operational Feasibility

Netflix has a strong track record of operational excellence. Netflix has been able to scale its operations to meet the needs of its growing customer base. Netflix also has a team of

experienced operations professionals who can resolve operational challenges quickly and efficiently.

1.2.5. Scheduling Feasibility

Netflix has a good track record of meeting its deadlines. Netflix has a team of experienced project managers who can develop and execute project plans effectively.

1.3. Product Scope (Netflix)

Netflix is an **existing software** that allows users to watch, share, like, dislike, and comment on videos. Here in this document, we will have a new feature of **collaborative viewing**. In **1997**, Netflix, Inc., began its journey to revolutionise the entertainment industry. As a testament to its success, over **230** million members in **190 countries** have been part of Netflix's nearly **26-year journey**, far exceeding initial expectations and setting a precedent for innovation within the sector.

1.4. Intended Audience

Typical Users include individuals with internet access and devices, such as **students, teachers, and members of social networks**, social media networks, semantic networks, etc., who use Netflix to view online movies.

2. Overall Description

2.1. System Context

- **Users**: The main stakeholders of Netflix are the users who use the platform. Their needs and feedback play a role in determining Netflix's success.
- **Developers**: The team of developers at Netflix holds the responsibility of constructing and maintaining the system. They strive to ensure that the platform is reliable, secure and capable of scaling as needed.
- **Stakeholders**: Apart from users and developers there are stakeholders involved in the Netflix ecosystem including investors, partners, suppliers, and government regulators.
- **Competitors**: Netflix faces competition from streaming services such as Hulu, Amazon Prime Video and HBO Max.
- **Technology impact**: Netflix is influenced by advancements in technology like streaming devices and the increasing availability of high-speed internet.
- **Regulations**: Various regulations surrounding content and privacy govern Netflix's operations.
- **Social and cultural influence**: The broader social and cultural context significantly affects how Netflix operates. Criticism has been raised regarding their portrayal of groups, like women and minorities.

2.2. Context Facets

Subject Facet	
Content Genre	Netflix categorizes content into genres such as Action, Comedy, Drama, Science Fiction, and more, making it easier for users to explore content based on their interests.
User Preferences	User preferences are implicit subject facets. Netflix's recommendation system tailors content suggestions based on individual user preferences, viewing history, and ratings.
Originals and Exclusives	Netflix Originals represent a subject facet encompassing exclusive content produced or licensed by Netflix. Users can explore this category for unique content.
My List	"My List" is a user-generated subject facet where users can save content they intend to watch later, creating a personalized list of titles.
Subscription plans and payment methods	Subscription plans and payment methods are important subject facets of Netflix's context because they affect the user experience in several ways
Ratings and reviews	Netflix uses ratings and reviews to identify popular and unpopular content. This information can be used to decide which content to acquire, produce, and market.
Usage Facet	
Content Discovery and Recommendation	Netflix employs a recommendation engine that analyses user's viewing history, ratings, and interactions with content to provide personalized recommendations. Users can discover new content based on their preferences.
Content Downloading and Streaming	Netflix allows users to stream content at various quality levels based on their internet connection. Additionally, users can download content for offline viewing on mobile devices
User Profiles and Preferences	Netflix supports multiple user profiles within a single account. Each profile has its viewing history, recommendations, and settings, catering to individual preferences and ensuring a personalized experience.
Content Interaction	Users can rate and review content on Netflix, providing feedback and influencing future recommendations. The "Continue Watching" feature allows users to pick up where they left off in a series or movie.
Playback Features	Features like "Skip Intro" allow users to skip opening credits, enhancing the viewing experience. Netflix also offers an "Auto-Play" feature that automatically starts the next episode in a series.
Collaborative viewing	Netflix could allow users to watch content together in real-time, even if they are not in the same physical location. This would allow users to share their viewing experiences with friends and family members.
IT system Facet	
Server Hardware	Netflix uses a mix of commodity and custom-built servers to handle streaming demands.
Content Delivery Software	Netflix uses databases for user account management, recommendation algorithms, and analytics.
Database Systems	Proprietary CDN software ensures efficient content delivery.
Content Recommendation Algorithms	Netflix has developed its recommendation algorithms in-house.
Mobile Apps and Web Frontend	Netflix has mobile apps for iOS and Android platforms. The website is a crucial user interface for Netflix.

Security Tools	Various security tools and protocols protect user data and content.
Development Facet	
Agile Development	Netflix follows agile development methodologies, allowing for flexibility and rapid feature deployment.
Continuous Integration/Continuous Deployment (CI/CD)	Netflix uses CI/CD pipelines to streamline development, testing, and deployment processes.
Data-Driven Development	Data and user feedback play a crucial role in shaping new features and improvements.
Cross-Functional Teams	Development teams at Netflix consist of engineers, designers, and product managers, fostering collaboration.
Testing and Quality Assurance	Rigorous testing and QA processes ensure a high-quality user experience.
Global Development Teams	Development teams are distributed worldwide to address regional needs and preferences.

2.3. Elicitation Techniques

As we are going to introduce a **new feature of collaborative viewing,** we will use the following elicitation techniques.

- **Document Centric**
- **Survey** (*for the latest feature to be introduced*)

2.3.1. Document Centric

As the system was built before we would first need to identify the relevant documents that contain requirements. This could include user stories, use cases, requirements specifications, and other documents.

Once we have identified the relevant documents, we would need to review them carefully to understand the requirements. We would then need to synthesize the requirements from the different documents into a single set of requirements.

The synthesized requirements would then need to be reviewed with users and stakeholders to ensure that they are complete, accurate, and feasible.

Elicitation evidence (Document + Video):

Below are references to some documents and articles that would help the system:

Blog Link:

https://www.simform.com/blog/netflix-devops-case-study/

https://netflixtechblog.com/

https://netflixtechblog.com/how-we-build-code-at-netflix-c5d9bd727f15

Netflix's vision and mission statement

Video Link:

https://www.youtube.com/watch?v=gUikoy-YqB0

https://www.youtube.com/watch?v=E4GlV98m6ac

2.3.2. Survey

We will send out surveys to Netflix users to gather feedback on the collaborative viewing feature. What features would they like to see? What features are most important to them?

Here are some specific questions we would ask users to elicit requirements for the collaborative viewing feature:

- **What types of content** would you like to watch with others using the collaborative viewing feature?
- **How often would you use** the collaborative viewing feature?
- **What features** are most important to you in a collaborative viewing experience?
- How important is it to you **to be able to start and stop watching** content at the **same time as others**?
- How important is it to you to be **able to see each other's reactions** to the content?
- What **other features** would you like to see in the collaborative viewing feature?

2.4. Design and Implementation Constraints

How many users can access or are online at once is referred to as server capacity. The more users there are, the more network traffic there will be, which will cause the service to go down. Updating a personal firewall is difficult since it must be designed such that network traffic is not blocked, slowing down the machine. The user system's firewall and the server's firewall shouldn't conflict.

2.5. User Requirements

- **Content Variety:** Users expect access to a wide variety of TV shows and movies across different genres and languages.
- **User-Friendly Interface:** The interface shall be easy to navigate and allow users to search for content easily.
- **High-Quality Streaming:** Users expect high-quality video and audio streaming to ensure an immersive viewing experience.
- **Personalized Recommendations:** The platform shall provide personalized recommendations based on individual preferences and viewing history.
- **Multiple User Profiles:** Users shall be able to create multiple user profiles for different family members or friends.
- **Offline Viewing:** The option to download content for offline viewing is a desirable feature for users.
- **Queue or Watchlist Feature:** Users expect a queue or watchlist feature to save titles for future viewing.
- **Customer Support:** The platform shall provide reliable customer support for technical issues or inquiries.
- **Affordable Pricing:** Users expect affordable pricing for subscription fees.

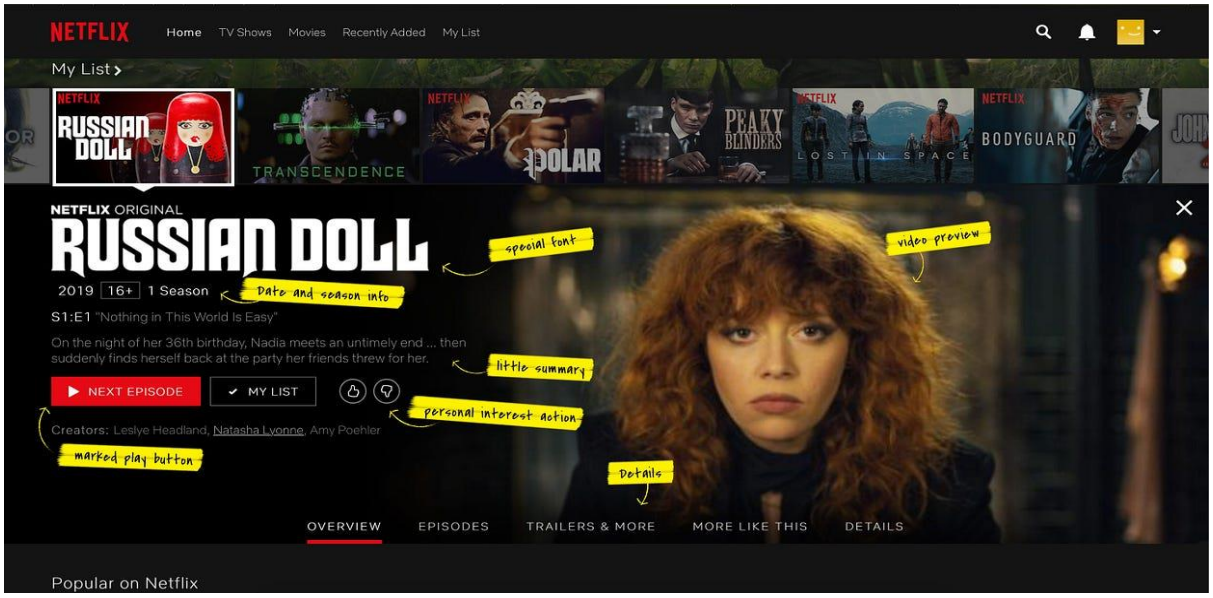
- **Compatibility with Multiple Devices:** The platform will be compatible with multiple devices and platforms for flexibility in viewing.

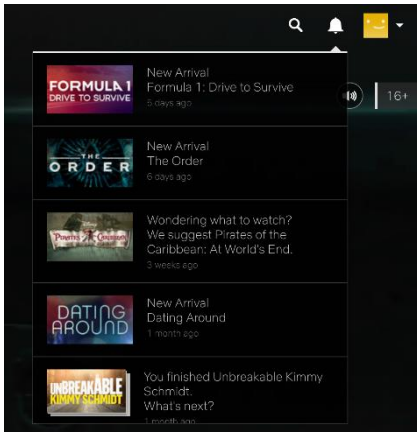
2.6. Operating Environment

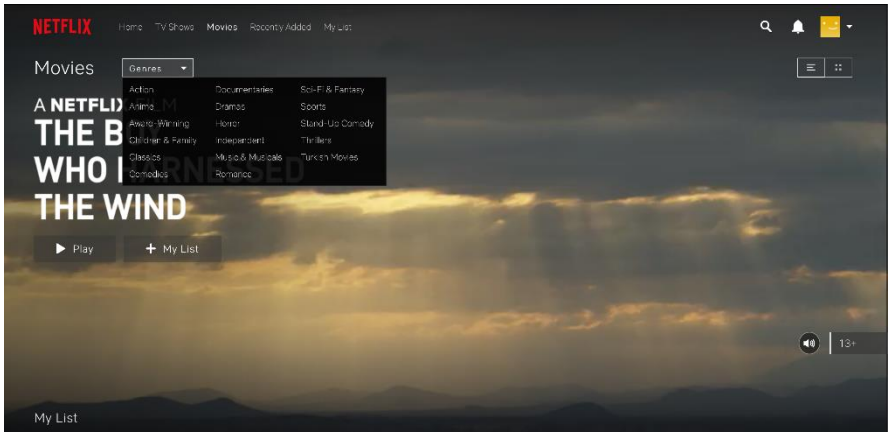
- **Hardware:** Netflix relies on a cloud-based infrastructure that uses a network of servers and data centres to store and stream content.
- **Software:** Netflix uses a variety of software tools and technologies to manage its operations, including content management systems, recommendation engines, and analytics platforms.
- **Network Infrastructure:** Netflix relies on a robust network infrastructure that includes a content delivery network (CDN) and adaptive bitrate streaming technology to deliver streaming services to users.
- **Partnerships:** Netflix has partnerships with content providers and device manufacturers to expand its content catalogue and reach more users.

2.7. User Interfaces

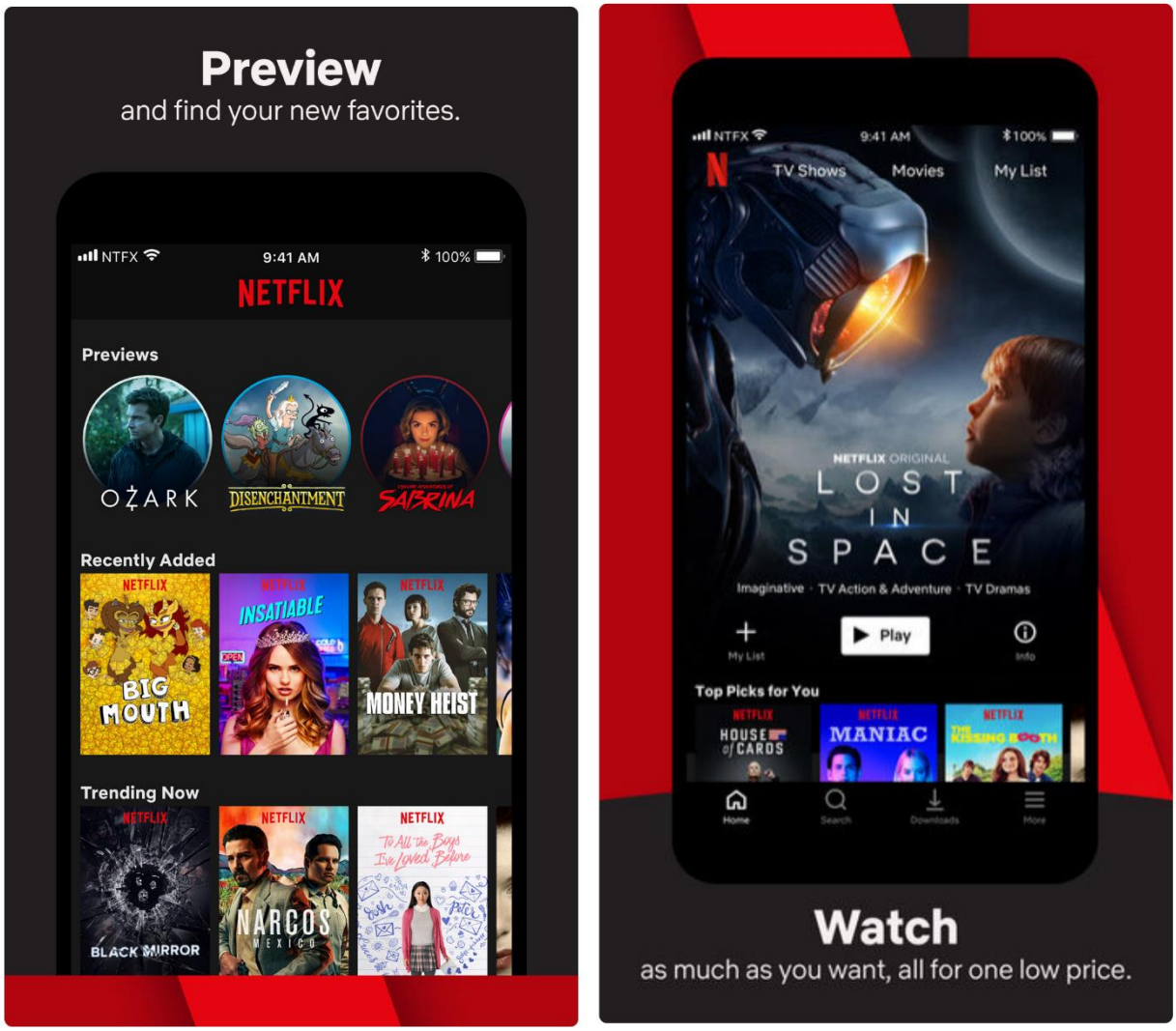
Desktop website Interface:







Mobile Interface:



3. System Features

3.1. Functional Requirements

FR1. **User Registration and Authentication:** Users shall be able to create accounts and log in securely by mobile number or by verifying email addresses.
FR2. **Content Catalog Management:** Netflix shall have a comprehensive catalogue of TV shows and movies that can be searched for and accessed by users.
FR3. **Search for a movie or TV show:** The user shall be able to search for specific content.
FR4. **Streaming and Playback:** Users shall be able to stream and play TV shows and movies without any interruptions or delays.
FR5. **Personalization:** Netflix shall provide personalized recommendations based on user preferences and viewing history.

FR6. **User Profile Management:** Users shall be able to create and manage their profiles, including setting preferences and managing their viewing history.
FR7. **Queue Management:** Users shall be able to add titles to their watchlist or queue for future viewing.
FR8. **Payment Processing:** Netflix will support secure payment processing for subscription fees using an external API. The payment processing functionality should be integrated with the user registration and authentication system.
FR9. **Collaborative Viewing:** Users shall be able to invite friends or family to join a viewing session and watch content together.

3.2. Quality Requirements

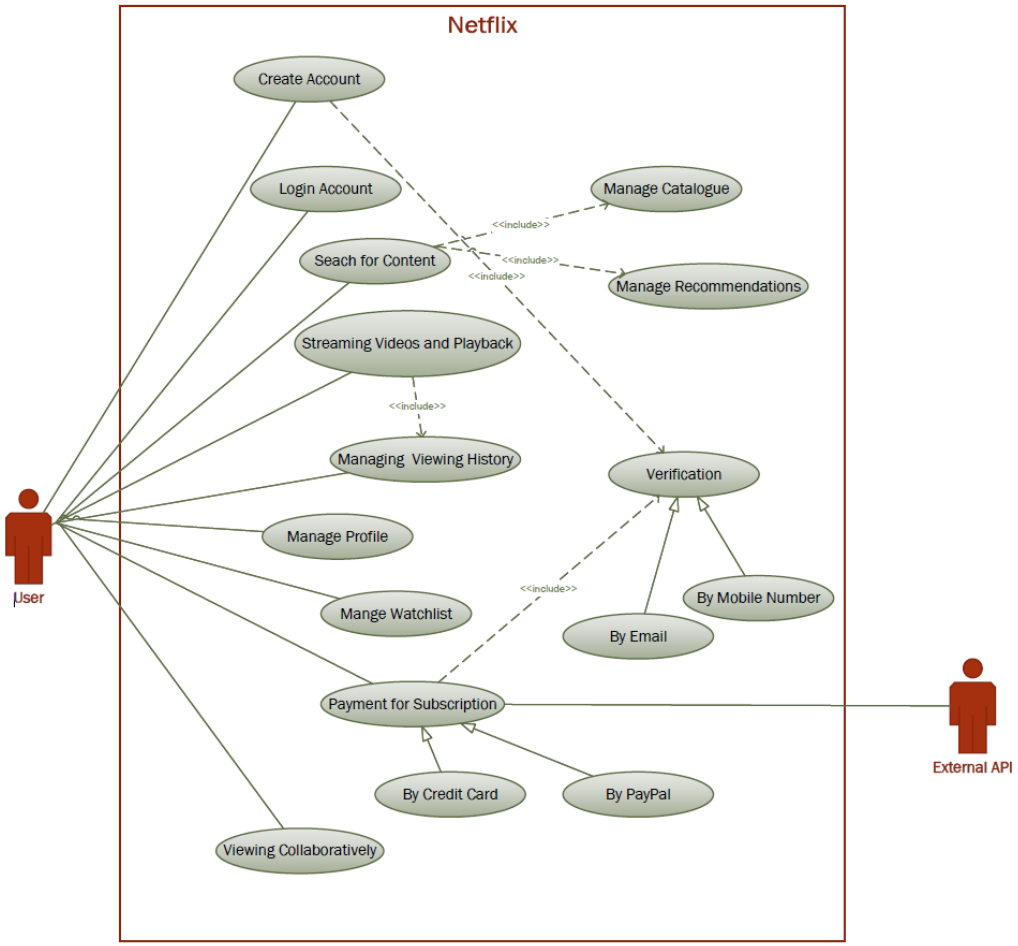
QR1. **Video and Audio Quality:** Netflix shall deliver high-quality video and audio streaming in 4K resolution and with HDR to ensure an immersive viewing experience.
QR2. **Performance and Reliability:** The platform shall have loading times of less than 5 seconds and buffering times of less than 10 seconds to provide a smooth streaming experience.
QR3. **Recommendation Accuracy:** Netflix shall provide accurate and relevant recommendations to enhance user satisfaction, with at least 90% of recommendations being accurate and relevant, and at least 50% of recommendations being watched by users.
QR4. **Security:** The platform shall ensure the security of user information and payment processing by encryption and access control.
QR5. **Customer Support:** Netflix shall offer 24/7 customer support to address technical issues and inquiries.
QR6. **Collaborative Viewing Experience:** The collaborative viewing experience should be easy to use and navigate, with users being able to easily join and leave viewing sessions, control playback, and chat with each other.

3.3. Constraints

C1. **Licensing Agreements:** The availability of certain titles must be limited due to licensing agreements with content providers.
C2. **Internet Connectivity:** A stable internet connection must be maintained for uninterrupted viewing on Netflix.
C3. **Subscription-Based Model:** Users must pay recurring fees to access content on Netflix, as it operates on a subscription-based model.
C4. **Regional Restrictions:** Certain content may be restricted or unavailable in specific regions due to licensing agreements and local laws, and users must abide by these restrictions.

4. Use Case Model

Below is the use case model for Netflix providing the basic overview of the relationship between actors and use cases:



5. Use case Specifications.

5.1. UC-01: Create Account

Section	Content
Designation	UC-01
Name	Create Account
Authors	Emaan Fatima
Priority	High **Importance for system success:** High **Technological risk:** Medium
Criticality	High
Description	This use case outlines the steps and interactions involved in creating a new user account on the Netflix platform. It encompasses the user's registration process, which includes providing personal information and choosing a subscription plan.
Trigger Event	User's intent to create a Netflix account.
Actors	• User: The person who intends to create a Netflix account. • Netflix System

Pre-condition	• Netflix's website or mobile application is accessible and functional.
Post-condition	• The user account is created and user can start using the platform.
Result	The user successfully creates a Netflix account and gains access to the platform.
Main Scenario	1. The user launches the Netflix website or mobile application. 2. The user clicks on the "Sign Up" or "Create Account" button. 3. The system displays the registration form, prompting the user to enter the following information: • First Name • Last Name • Email Address • Password 4. The user enters the required information and clicks "Next" or a similar action to proceed. 5. The system validates the entered information, checking for: • Valid email format. • Password strength (e.g., length, complexity). 6. The Netflix system sends a confirmation email to the user's email address. 7. The user clicks the verification link in the email to activate the Netflix account. 8. The system confirms the email verification and logs the user in, granting access to the Netflix content library.
Alternative Scenario	5a. The user's email address is already associated with a Netflix account. 5a1. In this case, the user is prompted to sign in into their existing account. 5b. The user's email address is invalid. 5b1. In this case, the user is prompted to enter a valid email address.
Exception Scenarios	• The Netflix system experiences an outage. In this case, the user may not be able to complete their account creation. The user can try again later or contact Netflix customer support for assistance. • The user's email address is blacklisted. In this case, the user will not be able to create a Netflix account.
Qualities	➢ QR-04 (The account creation process must be secure and protect the user's personal information.)

5.2. UC-02: Login Account

Section	Content
Designation	UC-02
Name	Login Account
Authors	Emaan Fatima
Priority	High **Importance for system success:** High **Technological risk:** Low
Criticality	High
Description	This use case describes the process by which a Netflix customer logs in to their account to access Netflix content.
Trigger Event	The customer visits the Netflix website or app and clicks the "Log in" button.
Actors	• User • Netflix System

Pre-condition	• Netflix's website or mobile application is accessible and functional.
Post-condition	• The user is successfully logged into their Netflix account.
Result	The user gains access to their Netflix account.
Main Scenario	1. The customer visits the Netflix website or app and clicks the "Log in" button. 2. The customer enters their email address and password. 3. The Netflix system verifies the customer's login credentials. 4. The Netflix system logs the customer into their account. 5. The customer is redirected to the Netflix homepage and can access Netflix content.
Alternative Scenario	5a: If the entered credentials are incorrect (e.g., wrong email or password), the system displays an error message and prompts the user to re-enter the correct login information. 5b: If the user has forgotten their password, they can click on a "Forgot Password" link, which will initiate the password reset process. The user will receive an email with instructions on how to reset their password. 5c: If the user has difficulty with their email address or account access, they may be presented with options to contact Netflix support or recover their account.
Exception Scenarios	• The Netflix system experiences an outage. In this case, the customer may not be able to log in to their account. The customer can try again later or contact Netflix customer support for assistance.
Qualities	➢ QR.04 (The login process must be secure and protect the customer's account information.) ➢ QR.05 (The login process must be reliable and available 24/7.)

5.3. UC-03: Search for Content

Section	Content
Designation	UC-03
Name	Streaming Videos and Playback
Authors	Kashmala Ahmad
Priority	Importance for system success: **High** Technological Risk: **High**
Criticality	**High**
Description	Users shall be able to stream and play TV shows and movies seamlessly.
Trigger Event	The user Wishes to watch his videos in a continuous flow and to move to any specific point.
Actors	Netflix Users
Pre-condition	Netflix is active.
Post-condition	The video is playing from the desired point.
Result	Steady Streaming and playback
Main Scenario	1. User Selects a video by clicking on its thumbnail. 2. The user clicks the “Play” Button to start streaming the video. 3. User double clicks on the left side of the screen to go 10 seconds backward or drag the timeline to the specific time. Video starts playing from the desired point.
Alternative Scenario	3.1 Video playback or fast-forward functionality is constrained within the duration of the video content. 4.a1 Upon reaching the end of the current video, Netflix will present a new video recommendation for the user to consider. 4.a2 Alternatively, users have the option to seamlessly transition to the previous video in their viewing history.
Exception Scenarios	1. Trigger Event: Internet Connection is weak or no signal. 2. Netflix website is out of reach.

	3. Netflix website is down.
Qualities	QR1 (Video and Audio Quality) QR2 (High speed)

5.4. UC-04: Streaming and Playback

Section	Content
Designation	UC-04
Name	Search For Content
Authors	Kashmala Ahmad
Priority	Importance for system success: **High** Technological Risk: **High**
Criticality	**High**
Description	Users shall be able to search the content available in their region
Trigger Event	The user Wishes to watch specific content.
Actors	Netflix Users
Pre-condition	Netflix is active.
Post-condition	The desired video is available in the region.
Result	The video is displayed on the screen if available.
Main Scenario	1. User Click on the search bar. 2. Users enter the Name of Desired Content. 3. The system will check if the content is available in the region. Content will be displayed on the screen.
Alternative Scenario	3.1 Video is not available in the region. 4.a1 A "Video Not found" message will be displayed. 4.a2 Related available videos will be suggested.
Exception Scenarios	1. Trigger Event: Internet Connection is weak or no signal.In this case, system will wait for the internet connection and will continue functioning normally. 2. The Netflix system experiences an outage. In this case, the customer may not be able to complete their payment. The customer can try again later or contact Netflix customer support for assistance.
Qualities	QR2 (performance and high reliability) QR3 (Recommendation Accuracy)

5.5. UC-05: Payment for Subscription

Section	Content
Designation	UC-05
Name	Payment for Subscription
Authors	Nehal
Priority	High **Importance for system success:** High **Technological risk**: Medium
Criticality	High
Description	This use case describes the process by which a Netflix customer makes a payment to subscribe to the Netflix service.
Trigger Event	The customer visits the Netflix website or application and selects the subscription plan that they want.
Actors	• Customer • Netflix system

Pre-condition	• The customer must have a valid payment method. • The customer must have a Netflix account.
Post-condition	• The customer's Netflix account is subscribed to the selected subscription plan. • The customer's payment method is charged the subscription fee.
Result	The user is subscribed to any selected subscription plan.
Main Scenario	1. The customer visits the Netflix website and selects the subscription plan that they want. 2. The customer clicks the "Subscribe" button. 3. The customer enters their payment information. 4. The Netflix system verifies the customer's payment information and processes the payment. 5. The customer's Netflix account is subscribed to the selected subscription plan. 6. The customer receives a confirmation email from Netflix.
Alternative Scenario	4a. The customer's payment is declined. 4a1. In this case, the customer is asked to enter a different payment method or try again later.
Exception Scenarios	• The Netflix system experiences an outage. In this case, the customer may not be able to complete their payment. The customer can try again later or contact Netflix customer support for assistance. • The customer's payment method is fraudulent. In this case, the customer's subscription may be cancelled, and they may be banned from using Netflix.
Qualities	➢ QR.04 (The payment process must be secure and protect the customer's payment information.) ➢ QR.05 (The payment process must be reliable and available 24/7.) ➢ The payment process must be easy to use and convenient for the customer.

5.6. UC-06: Viewing Collaboratively

Section	Content
Designation	UC-06
Name	Viewing Collaboratively
Authors	Nehal
Priority	Medium **Importance for system success:** Medium **Technological risk:** Low
Criticality	Medium
Description	This use case describes the process by which two or more Netflix users can watch a TV show or movie together collaboratively.
Trigger Event	A Netflix user clicks on the "Watch Party" button for a TV show or movie.
Actors	• Netflix user 1 • Netflix user 2 • Netflix system
Pre-condition	• Both Netflix users must have a valid Netflix subscription. • Both Netflix users must be logged into their Netflix accounts.
Post-condition	• Both Netflix users are watching the same TV show or movie at the same time. • Both Netflix users can control the playback of the TV show or movie, such as pausing and rewinding. • Both Netflix users can chat with each other in real time while watching the TV show or movie.

Result	The user will view movies and TV shows collaboratively with friends and family.
Main Scenario	1. Netflix user 1 clicks on the "Watch Party" button for a TV show or movie. 2. Netflix user 1 is prompted to create a link to the Watch Party. 3. Netflix user 1 shares the link with Netflix user 2. 4. Netflix user 2 clicks on the link and joins the Watch Party. 5. Both Netflix users are now watching the same TV show or movie at the same time. 6. Both Netflix users can control the playback of the TV show or movie, such as pausing and rewinding. 7. Both Netflix users can chat with each other in real time while watching the TV show or movie.
Alternative Scenario	6a. One of the Netflix users leaves the Watch Party. 6a1. In this case, the other Netflix user can continue watching the TV show or movie on their own.
Exception Scenarios	• One of the Netflix users' internet connections goes down. In this case, the Watch Party will be terminated and both Netflix users will no longer be able to watch the TV show or movie together.
Qualities	➢ The Watch Party feature must be easy to use and convenient for Netflix users. ➢ QR-05 (The Watch Party feature must be reliable and available 24/7.) ➢ QR-04 (The Watch Party feature must protect the privacy of Netflix users.)