
Software Requirements Specification

for

ResearchTube

Version 1.0 approved

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17.01.2022

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COCOMO }
04/04/2023

Use-Case Diagram
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Sequence
Diagram
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Class Diagram
Test Case
Modularization }
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Name	Date	Reason For Changes	Version
ResearchTube	17/01/22	-	1.0

1. Introduction

1.1 Purpose

ResearchTube is an application intended to provide a detailed explanation of a Research paper by the author itself. Various journals can host their own channels wherein they would publish the video along with the paper. The purpose of ResearchTube is to make Research Papers simpler to understand through video format.

1.2 Document Conventions

SRS: Software Requirement Specification.

The document was created based on the IEEE template for System Requirement Specification Documents.

1.3 Intended Audience and Reading Suggestions

Intended Audience:

ResearchTube will be widely available for extensive research work by professional scholars as well as PhD students.

Undergrad and Postgrad students will also benefit from a deep understanding of a topic of interest through the application, eliminating the requirement of understanding the formalities of a paper.

The document will be primarily useful for developers to update, modify or create functionalities based on different market requirements.

1.4 Product Scope

Research Papers are extremely dense and complicated to understand. A lecture on the other hand makes it simpler and easier to grasp a concept in its entirety. In the modern age of the internet, reading through a dense paper is a tale of the past. Instead, the authors themselves could break down the paper in one or a series of lectures for people to understand. It not only makes complex topics more graspable, but it will also reach more people, since more people are willing to watch videos than read through the dense languages. A lecture video on the internet has a few million views, whereas the book on the same topics sells a few thousand copies. The attention of science would be wider, impacting the society at large in becoming more rational, and better thinkers.

2. Overall Description

2.1 Product Perspective

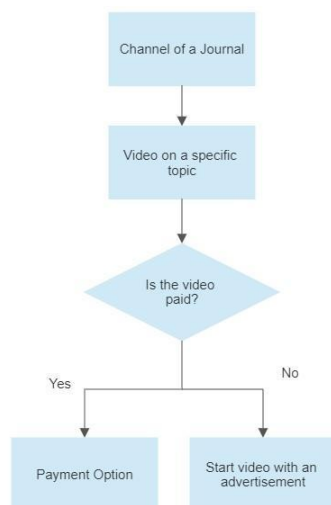
ResearchTube will hold various Science Journals as channels where the published paper will also be explained by the author through one or a series of lectures.

Research Papers are published by various journals who hold their esteemed position through years of trustworthiness among readers. By enabling the journals to publish their own channels in ResearchTube, they can bring their whole audience and further multiply their audience many folds through this app. They can choose to monetize their videos to gain revenue, a part of which would be shared to the app. The journals which are essentially free can also run their channels by providing advertisements, and share a part of their revenue to the app.

2.2 Product Functions

The major function of the product are as follows:

- Creating channels for Journals
- Uploading videos under those channels
- Account creation for users
- Payment system for accessing paid journal videos
- Watching videos with options of altering playback speed, video quality etc
- Display information of authors like contact information, number of papers published and associated institution



2.3 User Classes and Characteristics

Sl. no	User Classes	Characteristics
1	Journals	This class can Upload lecture videos of the authors whose research paper is published in the journal
2	Users	This class will watch the videos
3	Authors	This class will create a profile to display their professional information
4	Advertisers	This class provides advertisements on free videos
5	Admin	This class can access all the features in the application

2.4 Operating Environment

This product will work as:

- Web-based application on any browser. Accessible from PC, mobile phones, and tablets.
- Android and IOS application

2.5 Design and Implementation Constraints

The application will be built using standard webpage designing tools such as HTML, CSS and JavaScript. For accessing videos, a special window within the webpage would be allocating with special features like altering playback speed, changing video quality etc.

Software Constraint: To prevent piracy, screengrabs and screen-recording would be prohibited.

2.6 User Documentation

A document containing step by step manual of how to use the application for different functions should be provided in the application. A document for developers would also be provided.

2.7 Assumptions and Dependencies

- It is assumed the user would have enough memory space and internet connection while using the app, or accessing the website.
- The platform itself along with the videos would be hosted on Cloud servers provided by AWS, or any other trustworthy cloud servers.

- The platform will use certain third-party payment management app which would allow international transactions such as PayPal.
- It is assumed that the Journals hosting on the application are recognized Journals with no fraudulency, or blatant corruption and favoritism.
- Advertisers have received permission from required authorities to run their ads.

3. External Interface Requirements

3.1 User Interfaces

The application would contain GUI which would be user-friendly. The backend would be capable of providing high speed video streaming, which would load videos faster without lag. Payment system should be done with minimal clicks to access the videos faster.

3.2 Hardware Interfaces

- Processor: Pentium or higher
- RAM: 8GB or higher

3.3 Software Interfaces

On User End:

- Operating System: MacOS, Windows XP or higher, Linux, Unix.
- For mobile phones: Android OS 8 or higher. iOS 12 or above.

On Server End

- Data would be stored in databases such as MySQL.
- Windows operating system with Windows 8 or higher.
- Email servers, SMS servers for authentication of users and authors.

3.4 Communications Interfaces

This application will communicate with the users with automated emails, and SMS.

4. System Features

This section illustrates and provides an overview of the main functions of the application. Addition of further functions shall be done based on requirements of the users.

4.1 Search Box

4.1.1 Description and Priority

This feature allows the user to search for a particular video, author, or a journal.

Priority: High

4.1.2 Stimulus/Response Sequences (S-Stimulus, R-Response)

1. S: The user taps on the search box

R: A list of most frequently searched topics appear below the search box. The user can either select one of the given topics or search for a different topic using the keyboard.

2. S: The user searches for a topic, author or journal either by selecting the list of entering through the keyboard.

R: The most appropriate results showed based on the search. The result might be a list of videos, journals, authors, or a combination of the all or few of them.

3. S: The user enters an ineligible search

R: Display: “Your search item did not match any of our results. Please try the following:

1. Rephrasing the words.
2. Check for any spelling errors.
3. Maybe you can research on the topic and let us know 😊”

4.1.3 Functional Requirements

REQ-1: Names of the journals along with its logo will be shown.

REQ-2: The thumbnail of videos along with its name will be shown.

REQ-3: This software should allow user to search on any preferred language.

4.2 Recommended Videos and Topics

4.2.1 Description and Priority

This feature shows combination of the most popular videos on the application and videos based on the viewing habits of the customer.

Priority: Medium

Cost: High

Benefit: Moderately High

4.2.2 Stimulus/Response Sequences (S-Stimulus, R-Response)

S: The user loads/reloads the website or the app.

R: Shows a list of most popular videos on the app and videos based on the viewing habits of the user. It will also display the video thumbnail.

S: The user presses the back button from watching a video or from the search results page.

R: Shows a list of most popular videos on the app and videos based on the viewing habits of the user. It will also display the video thumbnail.

4.2.3 Functional Requirements

REQ-1: The user should be able to select any of the videos displayed.

REQ-2: The videos based on user's interest should in accordance with the past watching behavior of the user. The following should be considered as relevant videos for a user:

1. The video is of a similar topic.
2. The video is under the same section of the journal frequently watched by the user.
3. The video is from the same author whose videos are frequently watched by the user.

4.3 Login

4.3.1 Description and Priority

This function lets the user login in their previous accounts. Journals cannot log in using this feature. It is only applicable for users and authors. Journals need to log in officially and formular (specified in the Other Requirements part of the SRS)

Priority: High

4.3.2 Stimulus/Response Sequences

S: The User click on the Login button on the application.

R: It opens a page which asks Email Address and password of the user. It also contains a Forgot Password Option and a "New User? Register" Option.

S: The User clicks on a specific video without logging in.

R: It opens a page which asks Email Address and password of the user. It also contains a Forgot Password Option and a "New User? Register" Option.

S: The User enters correct email address and password.

R: Redirects to the home page or the page with the video where it had received the Login Option from.

S: The User enters wrong email or password.

R: Displays: "Either email address or password is incorrect"

4.3.3 Functional Requirements

REQ-1: The user should be correctly logged in.

REQ-2: The user should be redirected to the page it landed to the login page from.

REQ-3: The password should be shown as *****

4.4 Sign Up

4.4.1 Description and Priority

This function lets new users sign in either as an author or as a viewer. Journals cannot sign up using this feature. Journal sign ups need to be done officially and formally (specified in the Other Requirements part of the SRS)

Priority: High

4.4.2 Stimulus/Response Sequences

S: Clicks on “New User? Register” option on the login page.

R: Asks: Are you an Author or a Viewer?

S: Clicks on Author

R: A form with the following information is asked:

1. Name
2. Email Address
3. Institution/Organization Name
4. Date of Birth
5. Research Topics
6. Field of Interest
7. Published Research Papers
8. New Password
9. Verify Password
10. Verify Email Address
11. Enter OTP sent through email

S: Clicks on User

R: A form with the following information is asked:

1. Name
2. Email Address
3. Areas of Interest
4. New Password
5. Verify Password
6. Verify Email Address
7. Enter OTP send through email

4.4.3 Functional Requirements

REQ-1: The email should be verified by sending an OTP to the email address and verifying that OTP.

REQ-2: A public profile of the author has to be maintained. Whenever a Journal mentions the author in a paper, the profile should be attached as a hyperlink to the name.

1.1 Forgot Password

4.5.1 Description and Priority

In case the user forgets the password associated with the email address. An email will be sent to the user containing the link of resetting the Password.

Priority: High

4.5.2 Stimulus/Response Sequences

S: User clicks on “Forgot Password” option in the login page.

R: “Enter your email address” box appears.

S: User enters correct email

R: An automated response containing a link of Resetting the Password appears to the user email.

4.5.3 Functional Requirements

REQ-1: Checking the email with the entered email.

REQ-2: If the email entered is incorrect more than three times, or requests more than 3 resends, then logout the account from all devices, and suspend the account for a day.

1.2 Payment Option

4.6.1 Description and Priority

This feature allows the user to pay to the Journal for accessing a paid video.

Priority: High

4.6.2 Stimulus/Response Sequences

S: Clicks on a paid video

R: Displays a window: “This video is under <Name of Journal> and requires <Price> to access. Press Pay to Continue”

S: User clicks on Pay.

R: Redirects user to the third-party payment application.

4.6.3 Functional Requirements

REQ-1: The payment option should be shown in the local currency of the user adjusted to the local value in addition to international bank transfer.

REQ-2: On successful payment the video should be available to user forever.

1.3 Watching a Video or Series of Videos

4.7.1 Description and Priority

Once the video has been paid for, or after watching the advertisement before the video this functionality enables the use to watch the video itself. The User can alter the playback speed of the video along with video quality.

Priority: High

4.7.2 Stimulus/Response Sequences

S: User has made successful payment for the video

R: The video starts (the first video of the series, if there are several videos). There are options of altering speed and quality are in the bottom right hand side of the window.

S: The user has finished watching the ads before the video.

R: The video starts (the first video of the series, if there are several videos). There are options of altering speed and quality are in the bottom right hand side of the window.

S: The user clicks on a video from the Recently Watched Section the application.

R: The video starts (the video of the series, if there are several videos). There are options of altering speed and quality are in the bottom right hand side of the window.

S: The user clicks on the playback speed option.

R: A list “0.5x 1x 1.5x 2x” appears where the user can click any of them to the speed of the video.

S: The user clicks on the video quality option.

R: A list “360p 480p 720p 1080p” appears where the user can click any of them to alter the quality of the video.

4.7.3 Functional Requirements

REQ-1: On increasing the speed, the video playback will increase which would require the server to sent data at twice the speed.

REQ-2: The videos which are watched should be recorded because it would be further shown on the Recently Watched Section of the application.

1.4 Recently Watched

4.8.1 Description and Priority

This feature maintains a history of all the videos watched by the User.

Priority: Low

4.8.2 Stimulus/Response Sequences

S: The User clicks on the Recently Watched section of the application.

R: A list of videos appear along with its thumbnails, in the order of most recently watched to least recently watched.

4.8.3 Functional Requirements

REQ-1: The User should be able to click on any of the videos in the recently watched and would not have to pay once again.

REQ-2: The Progress of the last watched should also be maintained so that the user can continue where user has left last time.

1.5 Purchased Videos

4.9.1 Description and Priority

This function would maintain a list of all the purchased videos paid for by the user.

Priority: Moderately High

4.9.2 Stimulus/Response Sequences

S: The User Clicks on the Purchased Videos section of the application.

R: A list of videos appear along with its thumbnails, in the order of most recently purchased to least recently purchased.

4.9.3 Functional Requirements

REQ-1: The User should be able to click on any of the videos in the recently watched and would not have to pay once again.

1.6 Description Box

4.10.1 Description and Priority

A brief description of the video will be maintained in the description box with additional information like date, name of authors, journal where it was published will also be written.

Priority: Medium

4.10.2 Stimulus/Response Sequences

S: The User clicks on the learn more option under a video.

R: A box description of the video along with date, name of authors (hyperlink to the profile of authors), journal it was published in (hyperlink of the channel of the journal)

4.10.3 Functional Requirements

REQ-1: The data of all the description of the videos should be maintained.

REQ-2: The hyperlink should be attached to each author and journal names.

1.7 Author Profiles

4.11.1 Description and Priority

This function maintains on the profile of various authors along with information regarding which organization the author works for and the papers the author has worked on.

4.11.2 Stimulus/Response Sequences

S: The user searches for the name of the author on the search box.

R: The profile of the author appears along with various information and videos attached to those authors.

S: The user clicks on the description section of the videos where the hyperlink of the author is attached.

R: The profile of the author appears along with various information and videos attached to those authors.

4.11.3 Functional Requirements

REQ-1: The data entered by the author should be maintained and displayed in a proper fashion for easier navigation of the user through the works of the author.

1.8 Journal Channels

4.12.1 Description and Priority

The journals maintain their own channel along with their publications of videos.

4.12.2 Stimulus/Response Sequences

S: The user searches for the name of the journal on the search box.

R: The channel of the journal appears along with various information and videos attached to those journals.

S: The user clicks on the description section of the videos where the hyperlink of the journal is attached.

R: The channel of the journal appears along with various information and videos attached to those journals.

4.12.3 Functional Requirements

REQ-1: The data entered by the journals should be properly maintained and displayed in a user-friendly manner.

4.5 Advertisements

4.12.1 Description and Priority

Advertisements will play at the beginning of each free video.

4.12.2 Stimulus/Response Sequences

S: The user clicks on the video which is free.

R: The advertisements play before the playing the actual video.

4.12.3 Functional Requirements

REQ-1: The advertisements which are over 30 seconds will have a “skip” option after 30 seconds.

REQ-2: Right after the end of the advertisement, the video will be played to the user.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

The application should be either run from web browser or downloaded as an app with proper internet connection for swift functioning. Once a video has started, internet connection must be maintained for proper viewing of the video otherwise the lack of connection might result in lags and history of the same would not be stored. The payment should also be done under proper internet connection.

5.2 Safety Requirements

- The system should be developed such that piracy of materials would not be possible. A suspicious user's profile would be terminated immediately if evidence of piracy is found through the behavior of the said user.
- On any malware attack on any part of the application, it should be recovered immediately without any big loss of data.

5.3 Security Requirements

- The system would log out any user, if the user is found to be inactive for more than 6 months.
- The system's backend servers should only be available to the administrators.
- None of the passwords of any users should be stored directly by the application. It should be encrypted such that on any potential data leak, the passwords are not available.

5.4 Software Quality Attributes

- The interface should be extremely user friendly.
- Watching videos should be done with minimum lag.
- It should be robust, i.e., recover from any crash.
- New feature can be added according to the need of the market.

6. Other Requirements

The channels of the Journals has to be created by the developers themselves after verifying the Journal's credibility among the scientific and other communities. Any user cannot create a channel

for a journal, because it will dilute the credibility of the website and harm the scientific community. After a journal's channel is created, it would be shared with the IT department of the journal for uploading and maintaining the channel.

If any malpractice is found through the journal, it would be suspended either temporarily or permanently depending on the extent of the misconduct.

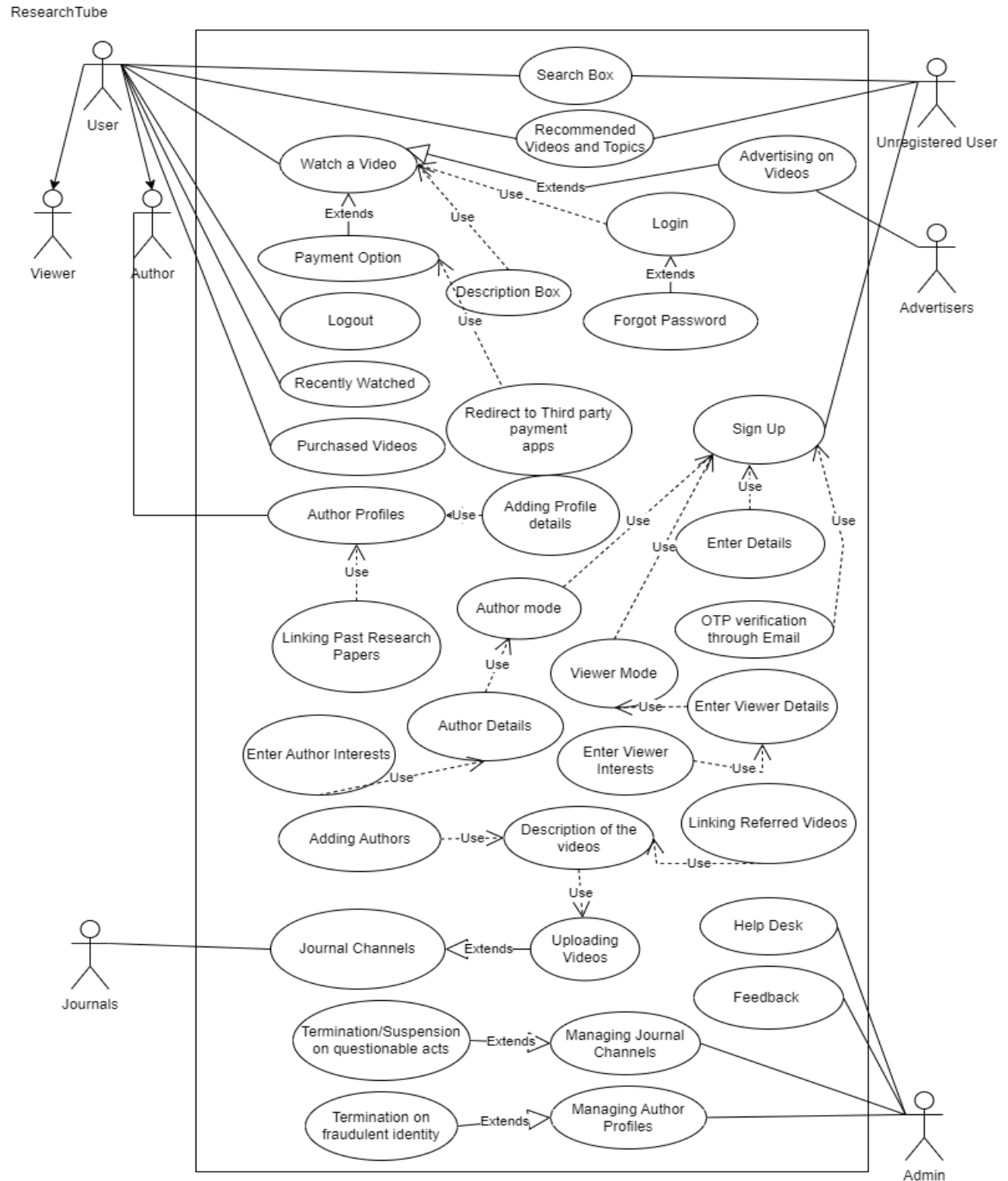
Appendix A: Glossary

S- Stimulus

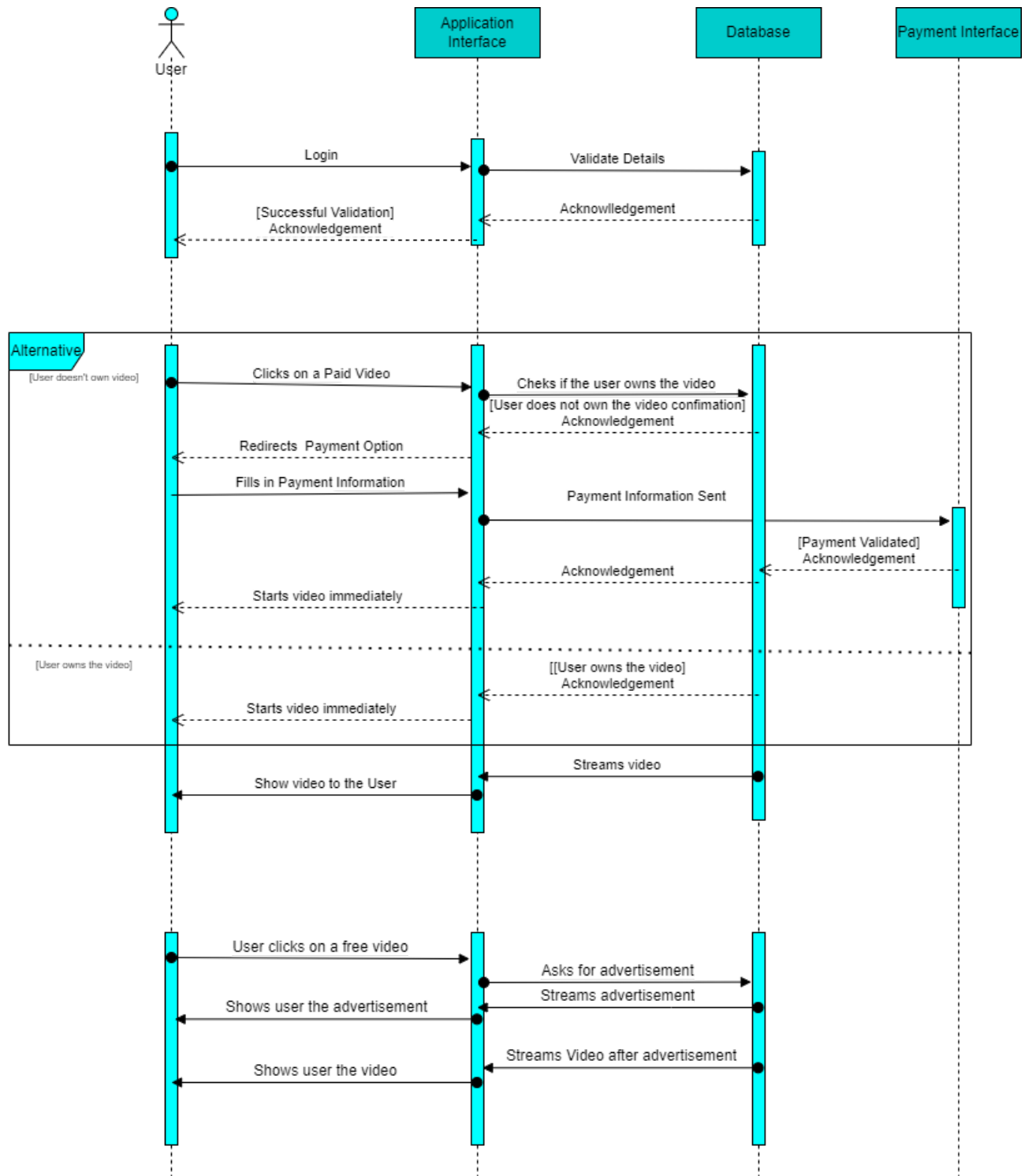
R-Response

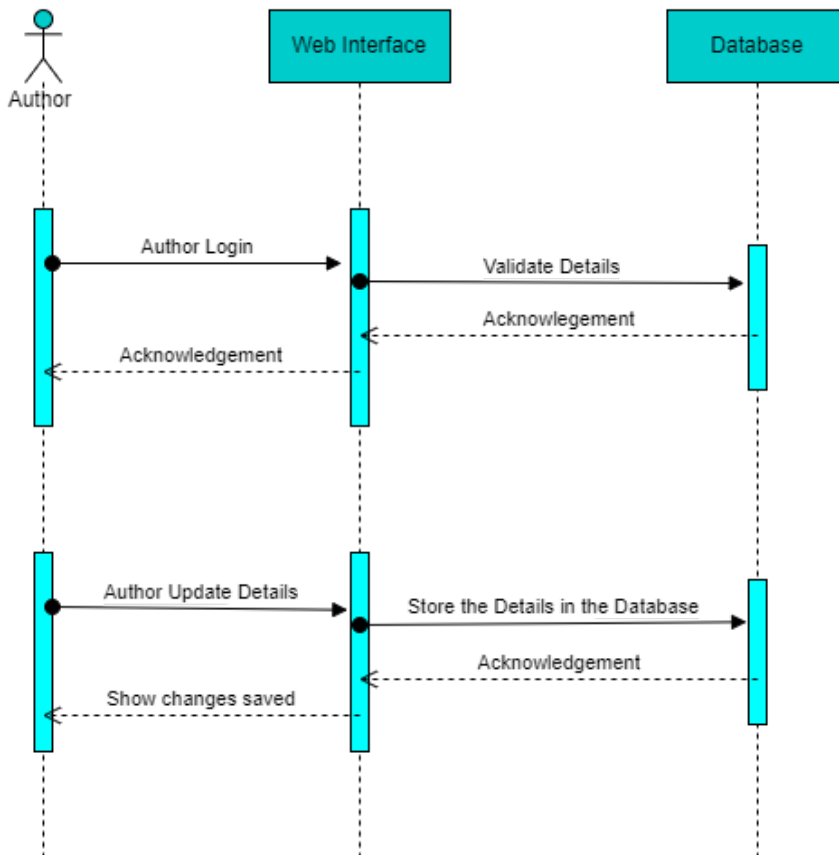
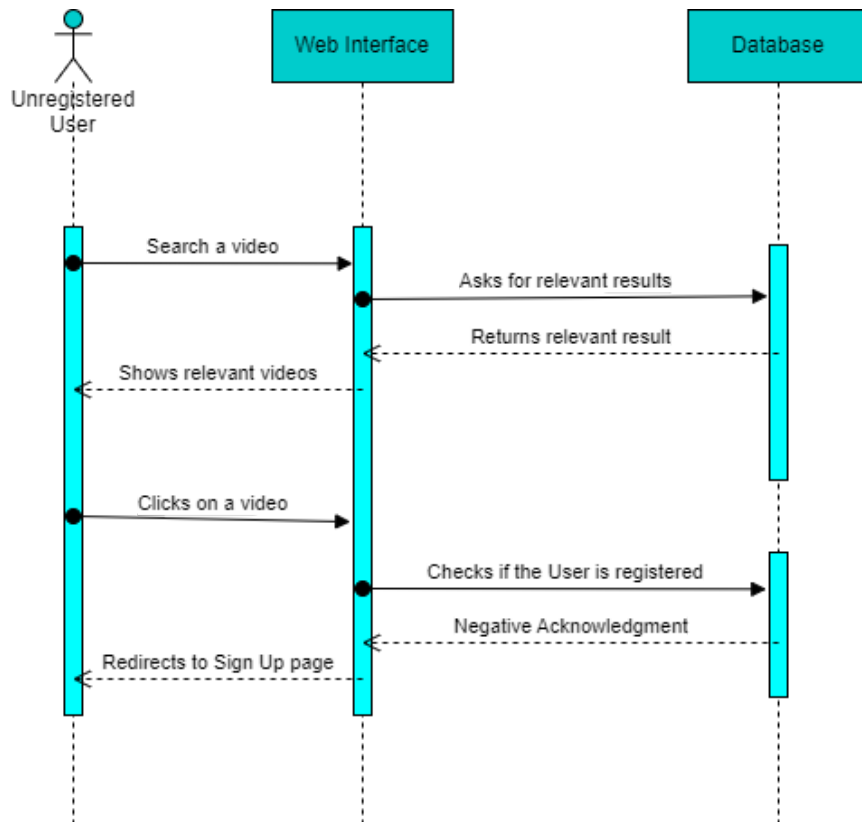
REQ- Requirement

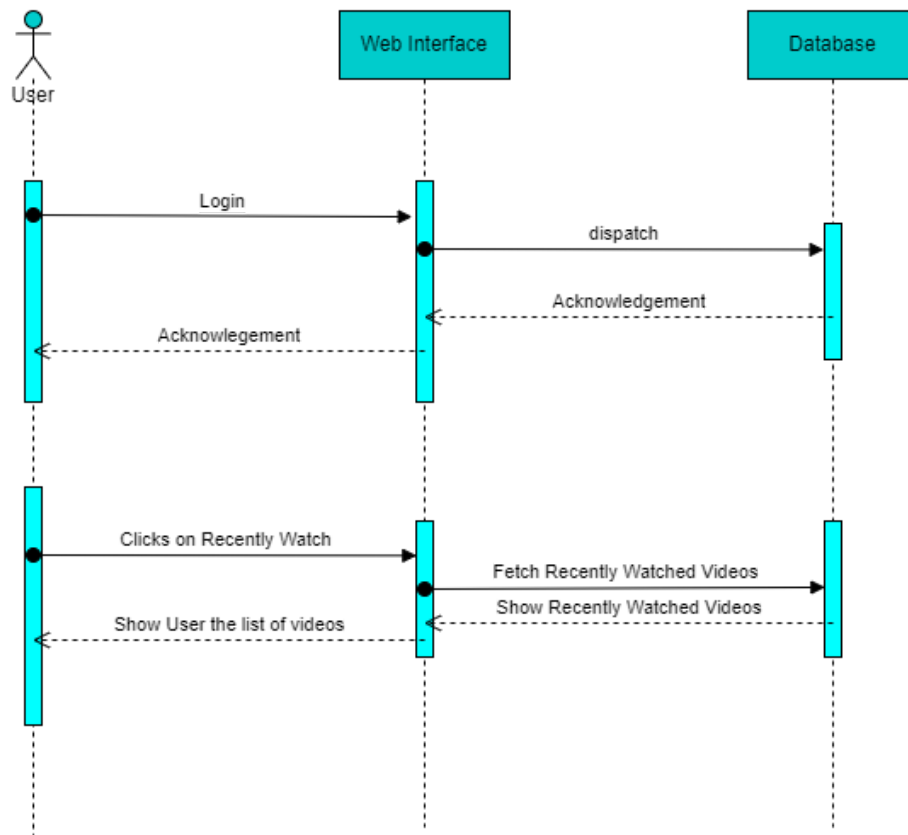
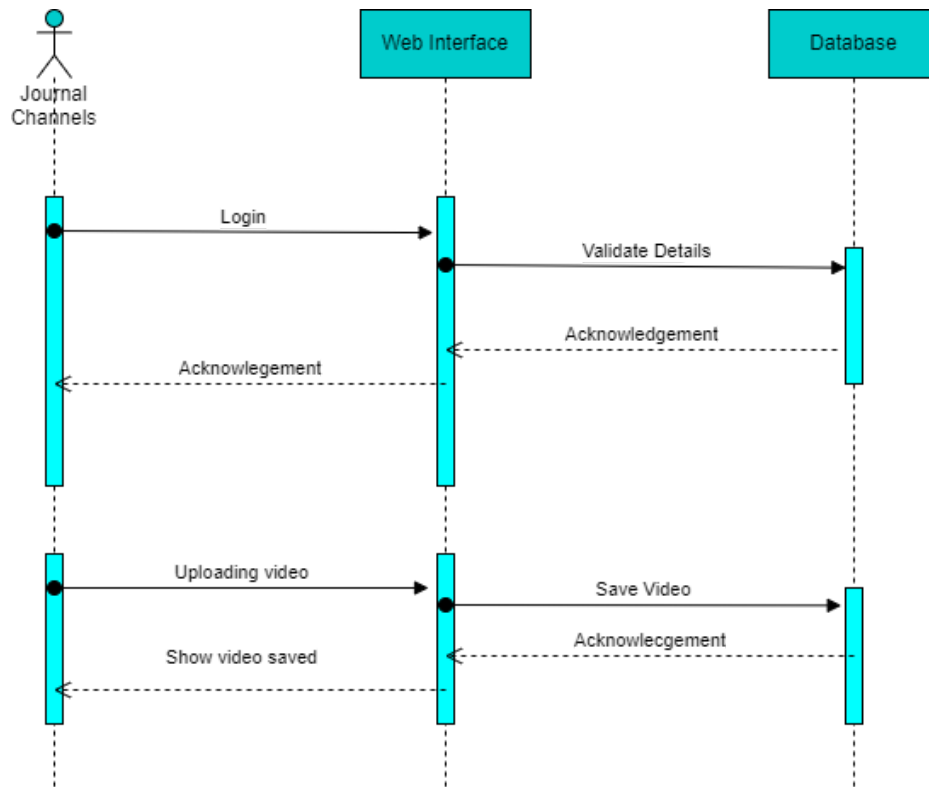
USE CASE DIAGRAM



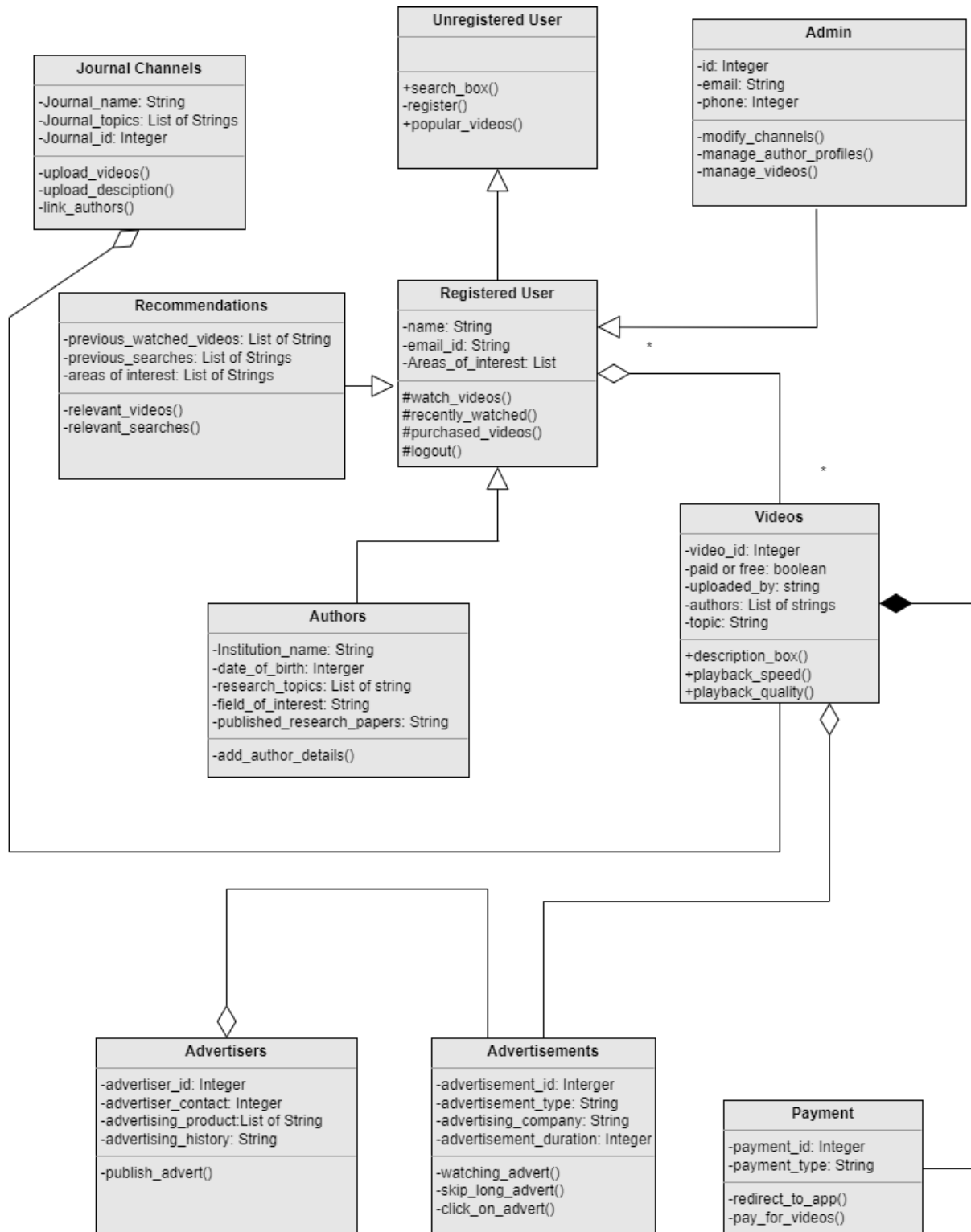
Sequential Diagram







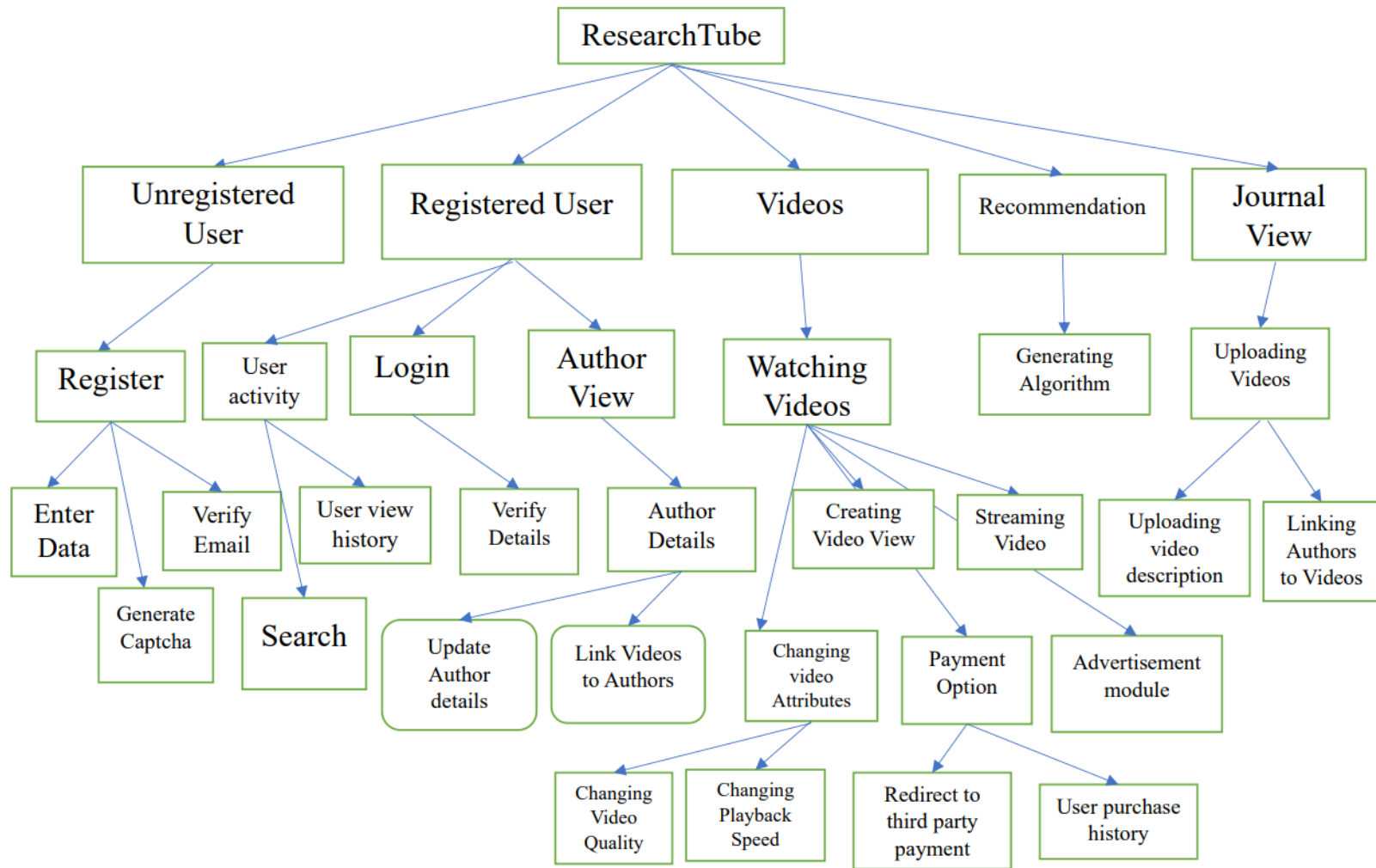
Class Diagram:



Testing

Test Cases for: <i>ResearchTube</i>					
Author	Swarnadeep Saha				
Date Created	17.01.2023				
Last Updated	27.02.2023				
Prerequisites:	User should be Registered and have an active internet connection				
System Module:	Login and Search				
Test Case #	Test Case Description	Test Procedure	Input Data	Expected Result	Comments
LOGIN	User enters Email and Password to Log in	The email and the Password is verified by the database	Email ID and Password	Correct Email ID and Correct Password	Successfully Logged In
				Incorrect Email ID and Correct Password	Shows a message, "Wrong Credentials Entered"
				Correct Email ID and Incorrect Password	Shows a message, "Wrong Password Entered." The user can click on Forgot Password, which would ask for Email Id and if a valid email Id is entered, an email to change the password will be sent to the user.
				Incorrect Email Id and Incorrect Password	Shows a message, "Wrong Credentials Entered"

Test Cases for:		ResearchTube			
Author		Swarnadeep Saha			
Date Created		17.01.2023			
Last Updated		27.02.2023			
Prerequisites: User should have an active internet connection					
System Module: Login and Search					
Test Case #	Test Case Description	Test Procedure	Input Data	Expected Result	Comments
SEARCH	The user should search for name of a video, or a topic, or name of a journal, or name of an author	The search results would be shown and by default sorted by relevance	No entry of data	On clicking enter, the homepage reloads	Since no data has been entered, it is assumed that the user wants to stay in the home page itself.
			Slightly misspelled data	Autocorrects the entry and shows desired results	If the misspelling is minute, then the system would be able to recognise the real data and show it to the user
			Correctly entered data	Shows relevant result	Successfully shows the result
			Ineligible Input	Displays: Your search item did not match any of our results. Please try the following: 1. Rephrasing the words. 2. Check for any spelling errors. 3. Maybe you can research on the topic and let us know ☺	Cannot show any proper data



List of function:

Register

1. enterData() : Inputs the data
2. storeDatainDatabase(): Stores the Data
3. generateCaptcha(): Generates Captcha
4. verifyCaptcha(): Verify if the captcha Entered is correct
5. enterEmail(): Enters email ID
6. enterPhoneNo(): Enter Phone Number
7. sendEmail(): Send a verification Email for security of Email
8. generateEmailLink(): Generates an email link to be clicked for verification
9. verifyEmailLink(): Verifies if the link entered matches with the generated Link
10. enterPassword(): Check the validity of password
11. reenterPassword(): Double check the password
12. redirectToHomePage(): Redirects the user to the Home Page
13. sendMessage(): Sends SMS instead of an email
14. generateOTP(): Generates OTP for the user
15. verifyOTP(): Verifies the sent OTP
16. optionSMSorEmail(): User can enter either phone number to log in or their email address

Login

1. redirectToLogin(): Redirects the User to Login Page
2. verifyEmail(): Verifies if the Email Entered is correct
3. verifyPhone(): Verifies Phone Number is correct
4. verifyPassword(): Verifies if the password is correct
5. forgotPassword(): Redirects to page if user forgot the password

6. generatefpEmail(): Generates a link to change password
7. sendfpEmail(): Sends email to change the password
8. changePassword(): User can change password if the email is verified
9. savePassword(): Saves the current password of the user
10. loginAsAuthor(): Separate login for authors

Login For Authors():

1. redirectToAuthorLogin(): Redirects the User to Login Page
2. verifyAuthorEmail(): Verifies if the Email Entered is correct
3. verifyInstitutionID(): Verifies the Institution ID of the author
4. verifyAuthorPhone(): Verifies Phone Number is correct
5. verifyPassword(): Verifies if the password is correct
6. forgotPassword(): Redirects to page if user forgot the password
7. generatefpEmail(): Generates a link to change password
8. sendfpEmail(): Sends email to change the password
9. changePassword(): User can change password if the email is verified
10. savePassword(): Saves the current password of the user

HomePage

1. videoLists(): Show List of all video
2. videoThumbnails(): Show the thumbnail of all videos
3. paidOrUnpaid(): Show if the video is a paid video or an unpaid video
4. searchOption(): Shows the search Option

5. RegisterOrLogin(): Registering or Login for new users
6. AccountDetails(): Shows Options to view Account Details
7. sideBar(): shows sidebar with useractivity, previously watched videos, paid videos, and settings
8. redirectToWatchVideo(): Redirects to watch video on clicking on a video
9. fetchVideos(): fetch relevant videos for the user
10. categoriseVideos(): categorise all the shown videos

Search

1. showVideos(): Shows videos in response to Search
2. showAuthors(): Shows authors in response to Search
3. showDefault(): Show if nothing is available
4. showTopics(): Show different topics in response to Search
5. fetchVideos(): fetch the relevant videos

Settings

1. changeDefaultMode(): change mode of the appa
2. changeDefaultMenu(): change menu options
3. changeDefaultSpeed(): changes the default speed of videos
4. changeDefaultquality(): change default quality of videos
5. changeDetails(): change account details
6. feedback(): Give admin any feedback about the application

User Activity

1. storeUserLikedVideos(): Stores all the videos the user liked
2. storeUserWatchedVideos(): Stores all the videos the user has already watched
3. storeUserPaidVideos(): Stores all the videos the user already paid for

4. openHistoryPage(): shows the videos the user watched already
5. openPaidPage(): shows the videos the user paid for already
6. search(): User can search for videos
7. showSearchResult(): The search results are shown
8. checkDatabase(): Checks for searched word
9. processingSearch(): Processing the Search term and calling

Author View

1. ShowAuthorsDetails(): Shows details of the author
2. linkAuthor(): Links the author with relevant videos
3. checkVideos(): Checks which videos the authors are interested in
4. updateAuthorDetails(): Updates the author details if they want to
5. removeFakeAuthors(): Admin can remove all the fake author profiles
6. authorComments(): The author can comment on their video
7. authorWorks(): Shows relevant work of the author

Watching Video

1. watchingView(): Creates a view for the users to watch video
2. findVideo(): locates video in the database
3. fetchVideo(): fetches video from the database
4. streamVideo(): streams video to the user
5. videoSettings(): opens the settings to the User
6. changePlaybackSpeed(): changes the playback speed of the video
7. fasterVideo(): increases playback speed
8. slowerVideo(): slows the playback speed
9. fetchPlayback(): increases the fetch rate for faster playback

10. `changeQuality()`: changes the quality of video
11. `betterQuality()`: fetches video with better quality
12. `worseQuality()`: fetches video with bad quality
13. `batterySavingMode()`: Manage quality using the battery saving mode
14. `videoViewforMobile()`: Create a different view for the watching through mobile application or browser

Payment and Advertisement

1. `advertisementModule()`: creates module for advertisements
2. `selectAd()`: selects which add to play
3. `touchandRedirect()`: if user clicks on the add, it redirects to advertisement website
4. `payment()`: creates a module for Payment
5. `paymentRedirect()`: redirects to third party payment app
6. `receivePayConfirmation()`: receives if payment is complete
7. `checkVideo()`: Check if video is available for payment
8. `checkAdvertisements()`: Check if video is available for payment
9. `streamAdvertisement()`: Streams the advertisement to the user

Journal View

1. `createJournalView()`: Creates a view for journals
2. `createJournalModule()`: Different modules for journals.
3. `uploadVideos()`: Journals can upload videos
4. `uploadView()`: Create a view for uploading
5. `saveVideo()`: Save video in the database
6. `addDetails()`: Journals can add details of the video

7. modifyDetails(): Details can be modified
8. linkAuthors(): Authors can be linked

Recommendations

1. UserLikes(): Base Recommendations on what user like
2. userPaid(): Base Recommendations on what the user paid
3. Reccalgo(): Create an Algorithm based on recommendations

Function Point Analysis (FPA) Worksheet									
Measurement Parameter	Count				Weightage				FP Count
	Simple	Average	Complex		Simple	Average	Complex		
# of External Inputs (EI)	103	14	4	X	3	4	6	=	389
# of External Outputs (EO)	30	35	50	X	4	5	7	=	645
# of External Inquiries (EQ)	120	50	45	X	3	4	6	=	830
# of Internal Logical Files (ILF)	105	120	55	X	7	10	15	=	2,760
# of External Interface Files (EIF)	40	10	20	X	5	7	10	=	470
Unadjusted Function Points (UFP)								UFP =	5,094
General System Characteristics (GSC): - rate each factor below on a scale of 0 to 5 for DI	0 = No Influence	1 = Incidental	2 = Moderate						
Degree of Influence (DI)	3 = Average	4 = Significant	5 = Essential					DI	
01. Does the system require reliable backup and recovery?								3	
02. Are data communications required?								4	
03. Are there distributed processing functions?								1	
04. Is performance critical?								0	
05. Will the system run in an existing, heavily utilized operational environment?								1	
06. Does the system require on-line data entry?								3	
07. Does the on-line data entry require the input transaction to be built over multiple screens or operations?								1	
08. Are the master files updated on-line?								0	
09. Are the inputs, outputs, files, or inquiries complex?								3	
10. Is the internal processing complex?								2	
11. Is the code designed to be reusable?								3	
12. Are conversion and installation included in the								0	
13. Is the system designed for multiple installations in different organizations?								4	
14. Is the application designed to facilitate change and ease of use by the user?								5	
Total DI =								30	
Value Adjustment Factor (VAF)								VAF =	0.95
Adjusted Function Points (AFP)								AFP =	4,839
Any Assumptions made should be listed below.									

Constructive Cost Model (COCOMO)

	Number of functions
1. Register	16
2. Login	10
3. Login For Authors	10
4. Homepage	10
5. Search	5
6. Settings	6
7. User Activity	9
8. Watching Video	14
9. Payment and Advertisement	9
10. Journal View	8
11. Recommendations	3

13. Interfaces(approx.)	22
Total:	122

Project Type: SemiDetached

Each function should have approx. 10 lines of code(loc)

Therefore, Total loc = $122 \times 10 = 1220$ loc

KLOC = $1220/1000 = 1.22$

Effort = $3.0 \times (\text{KLOC})^{1.12} \text{ PM} = 3.0 \times (1.22)^{1.12} = 3.0 \times 1.25 = 3.75 \sim 4 \text{ PM}$

Tdev = $2.5 \times (\text{Effort})^{0.35} \text{ M} = 2.5 \times (4)^{0.35} = 2.5 \times 1.62 = 4 \text{ M}$

Intermediate COCOMO – COCOMO ‘91

Cost Drivers	Ratings
Product Attributes:	
Required Software Reliability	Nominal(1)
Size of application database	High(1.05)

Complexity of the product	High(1.1)
Hardware Attributes:	
Run-time performance constraints	Nominal(1)
Memory Constraints	Nominal(1)
Volatility of the virtual machine environment	Nominal(1)
Required turnabout time	Nominal(1)
Personnel Attributes:	
Analyst Capability	High(1.05)
Applications experience	High(1.08)
Software engineer capability	Nominal(1)
Virtual machine experience	High(1.1)
Programming language experience	Nominal(1)
Project Attributes:	

Application of software engineering methods	Nominal (1)
Use of software tools	Nominal(1)
Required development schedule	Nominal(1)

EAF: $(1 \times 1.05 \times 1.1 \times 1 \times 1 \times 1 \times 1 \times 1.05 \times 1.08 \times 1 \times 1.1 \times 1 \times 1 \times 1 \times 1) = 1.44$

Effort: $2.4 * ((\text{KLOC}) ^ 1.05) * (\text{EAF}) \text{ PM} = 2.4 * (1.22) ^{1.05} * 1.44 \text{ PM} = 4.25 \sim 5 \text{ PM (Person Month)}$