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**Batch code:** MDTE007\_B

**Course Name:** Data Science

**Project Title:** YouTube Data Harvesting and Warehousing using SQL and Streamlit

**GitHub Link:** <https://github.com/SETHU0010>

**Skills take away From This Project:**

- Python scripting,
- Data Collection,
- Streamlit, API
- integration,
- Data Management using SQL

**Domain:**

Social Media

**Description:**

This project aims to create a Streamlit application that allows users to access and analyse data from multiple YouTube channels. The application facilitates the retrieval of various data points such as channel details, video information, playlists, and comments using the YouTube API. It also provides functionality to store this data in a SQL database MySQL and query it for analysis.

## **Problem Statement:**

The problem statement is to create a Streamlit application that allows users to access and analyze data from multiple YouTube channels. The application should have the following features:

1. Ability to input a YouTube channel ID and retrieve all the relevant data (Channel name, subscribers, total video count, playlist ID, video ID, likes, dislikes, comments of each video) using Google API.
2. Ability to collect data for up to 10 different YouTube channels and store them in the data lake by clicking a button.
3. Option to store the data in a MySQL .
4. Ability to search and retrieve data from the SQL database using different search options, including joining tables to get channel details.

## **Approach:**

1. Set up a Streamlit app
2. Connect to the YouTube API
3. Store and Clean data
4. Migrate data to a SQL data warehouse
5. Query the SQL data warehouse
6. Display data in the Streamlit app

## **Workflow:**

1. Data Retrieval
2. Data Storage
3. SQL Data Warehouse
4. Data Analysis
5. Streamlit UI

## **Prerequisites:**

Before using the application, ensure you have the following prerequisites set up:

- 1. Python Environment:** Install Python on your system.
- 2. Google API Key:** Obtain a Google API key from the Google Cloud Console for accessing the YouTube API.
- 3. Dependencies:** Install required Python libraries using requirements.txt.
- 4. SQL Database:** Set up MySQL or PostgreSQL database and configure connection details in the code.
- 5. Streamlit:** Install Streamlit library for running the application.

## **Required Python Libraries:**

The following Python libraries are required for the project:

- 1. google-api-python-client:** For interacting with the YouTube API.
- 2. pandas:** For data manipulation and analysis.
- 3. mysql-connector-python:** For connecting to MySQL database.
- 4. Streamlit:** For building the user interface and web application.
- 5. datetime:** For handling date and time operations.

**You can install these libraries using pip:**

--> pip install google-api-python-client pandas streamlit mysql-connector-python

## Set up a Streamlit app:

```
[Anaconda Prompt - streamlit] + ▾  
  
(base) C:\Users\SETHU>conda activate Youtube_data  
  
(Youtube_data) C:\Users\SETHU>cd "C:\Users\SETHU\Music\Guvi"  
  
(Youtube_data) C:\Users\SETHU\Music\Guvi>streamlit run Sethu.py  
  
You can now view your Streamlit app in your browser.  
  
Local URL: http://localhost:8501  
Network URL: http://192.168.1.4:8501
```

## **Migrate data to a SQL data warehouse:**

## Channel Details:

The screenshot shows the MySQL Workbench interface with the following details:

- File**, **Edit**, **View**, **Query**, **Database**, **Server**, **Tools**, **Scripting**, **Help** menu items.
- Navigator** pane on the left showing **SCHEMAS** (youtube selected) and **Tables** (channel\_details, comment\_details, playlist\_details, video\_details).
- channel\_details** table selected in the main pane. The table has columns: Channel\_Name, Channel\_Id, Subscribers, Total\_Videos, Channel\_Description, and Playlist\_Id.
- Result Grid** pane displaying the following data:

Channel_Name	Channel_Id	Subscribers	Total_Videos	Channel_Description	Playlist_Id
MS - CREATIVE	UC_20nbUjG33ewfpQAmnW	35900	7217340	12	UU_20nbUjG33ewfpQAmnW
Tamil Anna	UCg0jNqUwvKf5K6bvw_Q	93100	6274938	135	UU_80K6QazJWv0Wf5K6bvw_Q
Sai Bhagavan	UCdXkzrE5rVg5W1L0794A	91800	187000	7	UU_dXkzrE5rVg5W1L0794A
Mr Tamilan International Movies	UCodnH8Z2xVb1wYVRQnCnW	107000	13497064	35	Exploring the Global Tapestry: International Mo...
SMART MACHI FF	UCpgo7Wap31f_UCMt1HGd3w	6690	644308	180	FREEFIRE UPDATE ', FREEFIRE TIPS AND TRIC...
Its Ak	UCpHtMfKXRQg_UgavtVbri	2820	127967	125	UCLjg0jNwq31f_UCMt1HGd3w
ARAVIND KARNEESWARAN	UC5XdxTTAPqrqd3Kxt_WCw	111000	13440882	81	Focusing on Health, Wealth & Happiness - 0 -> ...
Data Science Tamil	UCU15XcJyymh8sk_lqDzAgnQ	1020	152703	71	Welcome to the Data Science Tamil Channel! C...

- Administration** and **Schemas** tabs at the bottom.
- Information** tab on the right.
- Result Grid**, **Form Editor**, **Field Types**, **Query Stats**, and **Execution Plan** buttons on the right.
- Object Info**, **Session**, **Action Output** tabs at the bottom.
- System tray icons for Search, Mail, Google Chrome, Microsoft Edge, File Explorer, Task View, and others.
- Bottom status bar showing ENG IN, 23:50, 19-05-2024, and a notification icon.

## Playlist Details:

MySQL Workbench - GUVI

File Edit View Query Database Server Tools Scripting Help

Navigator: project

SCHEMAS

Tables

comment\_details

channel\_details

playlist\_details

video\_details

Views

Stored Procedures

Functions

youtube

playlist\_details

1 • SELECT \* FROM project.playlist\_details;

Playlist_Id	Title	Channel_Id	Channel_Name	PublishedAt	Video_Count
PBL0fpgJQzJ42-06DR9NM1UJLJh_rQ5On	logic	UCSx1bTAPr0qJGtx_WCw	ARAVIND KARNEESWARAN	2020-06-24 04:41:59	7
PBL0fpgJQzJ7gGOvea926aaFu2Cm8	Covers	UCSx1bTAPr0qJGtx_WCw	ARAVIND KARNEESWARAN	2020-03-09 07:41:31	9
PLJtYf3fGCU3J5ueuetYmW-3nRjCvP_	Love what's status	UC_20hbu1G33mfwpxAnnNw	MS - CREATIVE	2020-12-13 06:41:10	6
PLJtYf3fGCU3J5ueuetYmW-3nRjCvP_	GYM.....	UC_20hbu1G33mfwpxAnnNw	MS - CREATIVE	2021-06-06:41:09	20
Ploop6CfDrHv-12CPxm0_3AW3XgYTr	sethu	UCJWsy4ePdKg+G6VJKUZP9A	Sethumadhavan	2020-09-19 14:40:47	14
PLSFNF_31VVW9tacG31XW_B_dhvr	Quick Share (Shorts)	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2023-10-20 04:30:18	4
PLSFNF_31VVW9tacG31XW_B_dhvr	XEDTVtoGoy	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2023-09-15 05:10:14	8
PLSFNF_31VVW9tacG31XW_B_dhvr	To Grow	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2023-08-28 12:01:10	18
PLSFNF_31VVW9tacG31XW_B_dhvr	Learn For Free	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2024-04-27 03:44:49	3
PLSFNF_31VVW9tacG31XW_B_dhvr	Productivity	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2023-12-20 05:15:40	11
PLSFNF_31VVW9tacG31XW_B_dhvr	Some for Life	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2023-08-20 06:24:05	20
PLSFNF_31VVW9tacG31XW_B_dhvr	Money ☰	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2023-08-11 02:56:40	6
PLSFNF_31VVW9tacG31XW_B_dhvr	Unscripted Hour	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2024-03-27 06:55	1
PLSFNF_31VVW9tacG31XW_B_dhvr	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2023-08-19 09:23	30	
PLSFNF_31VVW9tacG31XW_B_dhvr	Career	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2023-10-15 01:55:45	6
PLSFNF_31VVW9tacG31XW_B_dhvr	Business	UCPh1M1HURcQg-Ujklqvdb/w	Its Ak	2023-11-09 03:59:43	4
PL23910hAeMFeJch-EvhqZDy1sA	Person Movies in Tamil	UCodn8Z2XzbvJwV2C6ipw	Mr Tamilan International M...	2023-12-20 02:20:53	1
PL23910hAeMFeJch-EvhqZDy1sA	Italian Movies in Tamil	UCodn8Z2XzbvJwVCRkrYw	Mr Tamilan International M...	2023-12-30 08:16:40	2
PL23910hAeAK_piyElmbP10gCm52F	Korean Movies in Tamil	UCodn8Z2XzbvJwVCRkrYw	Mr Tamilan International M...	2023-12-29 20:02:05	35
PL23910hAeAK_piyElmbP10gCm52F	Mexican movies in Tamil	UCodn8Z2XzbvJwVCRkrYw	Mr Tamilan International M...	2024-02-09 04:07:25	1

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: |

Object Info Session

Output Action Output

aylist\_details 1 x

23:52 19-05-2024 ENG IN

## Video Details:

MySQL Workbench - GUVI

File Edit View Query Database Server Tools Scripting Help

Navigator: project

SCHEMAS

Tables

comment\_details

channel\_details

playlist\_details

video\_details

Views

Stored Procedures

Functions

youtube

video\_details

1 • SELECT \* FROM project.video\_details;

Channel_Name	Channel_Id	Video_Id	Title	Tags	Thumbnail	Description
Mr Tamilan International Movies	UCodn8Z2XzbvJwVCRkrYw	_2JUVzbMNA	டமிழன் இதை உவக்கத்துடு எடு ஏ... -2-05f5SCA	life, succes, goal, habit	https://i.ytimg.com/vi/_2JUVzbMNA/hofefault...	Our Mr Tamilan
Its Ak	UCPh1M1HURcQg-Ujklqvdb/w	-2-05f5SCA	Be Successful in Your Life ✨	freefire All New Bundle OB35 Update. @Neon ...	https://i.ytimg.com/vi/-2-05f5SCA/hofefault...	How to become
SMART MACHIE FF	UCogp7Wap1fJUCM1Hgdbw	-31PhpURvk	Freefire All New Bundle OB35 Update. @Neon ...	new update bundle, freefire new update, freefi...	https://i.ytimg.com/vi/-31PhpURvk/hofefault...	#Freefire35
Its Ak	UCPh1M1HURcQg-Ujklqvdb/w	-5y0LNQzI	My Simple, Crazy, weird & Powerful Morning Ro...	https://i.ytimg.com/vi/-5y0LNQzI/hofefault...	Hello everyone	
SMART MACHIE FF	UCogp7Wap1fJUCM1Hgdbw	-eBp38H_Y	New Airship After update. @ Freefire OB36 Upd...	https://i.ytimg.com/vi/-eBp38H_Y/hofefault...		
Tamil Anna	UCogp7Wap1fJUCM1Hgdbw_Q	-f4qHmWm4	Po salla koodaadi song with Tamil Lyrics in Run	https://i.ytimg.com/vi/-f4qHmWm4/hofefault...		
Its Ak	UCPh1M1HURcQg-Ujklqvdb/w	-fLkHsD8Bw	Uttarayanam song with Tamil lyrics	https://i.ytimg.com/vi/-fLkHsD8Bw/hofefault...		
MS - CREATIVE	UC_20hbu1G33mfwpxAnnNw	-HBRjuzd8Bw	New varai mani   [Dhanush]   [Madhoo]   [...	https://i.ytimg.com/vi/-HBRjuzd8Bw/hofefault...		
Its Ak	UCodn8Z2XzbvJwVCRkrYw	-TLzOzDfCk	சிட்டி செய்தப் பாடு வீட்டை வீடு...	https://i.ytimg.com/vi/-TLzOzDfCk/hofefault...		
Mr Tamilan International Movies	UCodn8Z2XzbvJwVCRkrYw	-tVQz4Z_HHk	Ovendrasai Thirudupai song with Tamil lyrics	https://i.ytimg.com/vi/-tVQz4Z_HHk/hofefault...		
Tamil Anna	UC80K0a17VoWRFJ0K8zbw_Q	-v-f037h4Q	Katchi Sera song with Tamil lyrics from Thinni In...	https://i.ytimg.com/vi/-v-f037h4Q/hofefault...		
Tamil Anna	UC80K0a17VoWRFJ0K8zbw_Q	-v-f037h4Q	Katchi Sera song with Tamil lyrics from Thinni In...	https://i.ytimg.com/vi/-v-f037h4Q/hofefault...		
Mr Tamilan International Movies	UCodn8Z2XzbvJwVCRkrYw	-0CA4EWPHd	தோலினர் ஒளிட எடுத்து கூடுதல்...	https://i.ytimg.com/vi/-0CA4EWPHd/hofefault...		
Its Ak	UCPh1M1HURcQg-Ujklqvdb/w	-0FlHzp27o	How I Become a Full-Stack Web Developer, Co...	https://i.ytimg.com/vi/-0FlHzp27o/hofefault...		
Mr Tamilan International Movies	UCodn8Z2XzbvJwVCRkrYw	-03kwv1650U	இதை விடவிடும் மற்றுமுடிவு கால்தடி...	https://i.ytimg.com/vi/-03kwv1650U/hofefault...		
Tamil Anna	UC80K0a17VoWRFJ0K8zbw_Q	-0LRO77wU	Pogire song with Tamil Lyrics	https://i.ytimg.com/vi/-0LRO77wU/hofefault...	#INshot	
SMART MACHIE FF	UCogp7Wap1fJUCM1Hgdbw	-0MbPwHfJU	HOW TO ADD YOUTUBE VIDEO THUMBNAIL 202... how to add youtube thumbnail, youtube thumb...	https://i.ytimg.com/vi/-0MbPwHfJU/hofefault...		
Its Ak	UCPh1M1HURcQg-Ujklqvdb/w	-0p3LYE09M	2x Enhance Your Photo for FREE!!	https://i.ytimg.com/vi/-0p3LYE09M/hofefault...		
SMART MACHIE FF	UCogp7Wap1fJUCM1Hgdbw	-0v3wfUrHOM	Element Of M1887 Events #sorts #firefly #tamil ...	https://i.ytimg.com/vi/-0v3wfUrHOM/hofefault...	#M1887 #sorts	
Tamil Anna	UC80K0a17VoWRFJ0K8zbw_Q	-02hxWfkyF8	Thseen thanen thanen cover song with Tamil Lyrics...	https://i.ytimg.com/vi/-02hxWfkyF8/hofefault...	Disclaimer: This	

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: |

Object Info Session

Output Action Output

video\_details 1 x

23:53 19-05-2024 ENG IN

## Comment Details:

The screenshot shows the MySQL Workbench interface. The left sidebar displays the 'comment\_details' table under the 'project' schema. The main area shows a result grid with columns: Comment\_Id, Video\_Id, Comment\_Text, Comment\_Author, and Comment\_Published. The results list various comments from different users (e.g., @mathedv8694, @anandhan94830, @vignesharavaren5301) and their timestamps. The bottom status bar shows the date as 19-05-2024 and the time as 23:54.

Comment_Id	Video_Id	Comment_Text	Comment_Author	Comment_Published
UpvnYWBjGQhZB3qN4AaABAg	ipghbABSDM	Hi bro ☺	@mathedv8694	2022-07-18 04:40:44
UpvNvbySQWjCONM94AaABAg	ClnJx6n6PK	Nice	@anandhan94830	2024-04-20 16:33:41
UpvNYEhkzys-kMvI24AaABAg	Tufo2Z2Hqo	Anbukaga engura rendu pearu (mentally), no b...	@vignesharavaren5301	2024-05-02 17:23:40
UpvnYTzS0BRGrXy14AaABAg	ERey-H3J0M	♥ Good ♥ night ♥ napala ♥	@MADARA-63	2023-01-31 16:27:43
UpvnyrXTh0q36fPUf24AaABAg	S0P2km-ivsU	♥	@soundaryah_v1607	2024-03-17 18:11:15
UpvnyrYthaX0YIUBm94AaABAg	749vSngfdsk	Bro	@chethanling9027	2022-01-30 16:12:51
UpvNyLzLsM6jQAaAd4AaABAg	FN13DWWVsU	aravind enakkal arpe ri en pillai doing pa...	@soundher7075	2023-07-13 18:05:50
UpvNyZcZe3TPjD0JuJ4AaABAg	13JmJmpLbo	LinkedIn vaga bro	@e..._dinesh	2023-10-18 15:46:32
UpvNyZAVd-eWh4l94AaABAg	Va0kQWMSB0	Adappava nee engineering padichearu sonnaya...	@udevraJ	2024-04-07 14:38:21
UpvO_7rb6qH5-Bsp4AaABAg	Z_UVJzbhNA	Enaku pdi nadandha na thengadha a varu val...	@umpnprivate8073	2024-04-24 10:50:51
UpvO_XqmcfcGwNQLp4AaABAg	ZLUR9RMsPa0	Hi Bro.. I need a help to connect MySQL server i...	@user-jv-trv7b2	2023-12-09 14:23:53
UpvO-S4DVfWmtUf488AaABAg	NLCRUtQ8fHA	My favorite song ❤️❤️❤️	@rakithamaha148	2023-01-14 08:30:09
UpvO05f4Rfxpcrc0ju4AaABAg	jYnYR4-RMU	Queerpins review please	@namatharajalingam...	2023-12-17 00:14:14
UpvOgjL2Cqf0u4AaABAg	v-XhKJfJf	Most fav song 🎵	@geethadhanee8881	2023-03-11 14:46:55
UpvOj6ic1Bvms5t4AaABAg	poJGThhAe	Ok I am a singer..... I am a future singer 🎤	@kiranreddyz353	2023-11-24 04:00:01
UpvOj9n12CULSm94AaABAg	hQANo3s08t	Some bra koren confused aren but unga ex...	@user-m3fe3h3f	2023-03-11 14:46:46
UpvOj9p12Bvms5t4AaABAg	Bst LOVER KANA GM:02 In the movie pathu LC...	Goldenhand44	2024-04-24 17:40:22	
UpvOj9p12Bvms5t4AaABAg	JAQSRuUjYQ	Support me guyika 39's	@karalangaming7953	2022-03-03 09:57:06
UpvOj9p12Bvms5t4AaABAg	FN13DWWVsU	Thambi nee enga pa tuka.. ena ora voice.. apa...	@suderp560	2022-11-27 16:59:22
UpvOjAcz8Q3ws7t_3Rx4AaABAg	Wb8sCAdRU	Hi brother ☺	@elavantami5241	2024-03-06 15:59:15

## Display data in the Streamlit app:

### Home Page:

The screenshot shows the Streamlit application running at <http://localhost:8501>. The page has a dark theme. On the left, there are sections for 'About the Developer' (image of Sethumadhan V) and 'Contact Details' (Email: [sethumadhanvelu2002@example.com](mailto:sethumadhanvelu2002@example.com), Phone: 9159299878, LinkedIn ID). Below that is a section for 'Skills take away From This Project' (Python Scripting, Data Collection, Streamlit, API Integration, Data Management using MySQL). A 'Domain' section lists 'Social Media'. The main content area is titled 'YouTube Data Harvesting and Warehousing using SQL and Streamlit'. It includes a form to 'Enter the channel ID' and a dropdown menu to 'Select the Channel' (MS -CREATIVE). A section titled 'SELECT THE TABLE FOR VIEW' offers options for CHANNELS, PLAYLISTS, VIDEOS, and COMMENTS. A table displays data for CHANNELS, PLAYLISTS, VIDEOS, and COMMENTS. At the bottom, there is a section titled 'Comprehensive Analysis of YouTube Videos and Channels Using SQL Queries' with a text input field for 'Select the SQL query' and a dropdown menu for '1. What are the names of all the videos and their corresponding channels?'.

## Enter the channel ID

The screenshot shows a Streamlit application running locally at <http://localhost:8501>. The title of the browser tab is "Sethu - Streamlit". The main content area has a dark background with green text. On the left, there's a sidebar titled "About the Developer" featuring a profile picture of a man and the name "Sethumadhavan V". Below it are sections for "Contact Details" (Email: [sethumadhavanelu2002@example.com](mailto:sethumadhavanelu2002@example.com), Phone: 9159299878), "LinkedIn ID" (link), and "Skills take away From This Project" (Python Scripting, Data Collection). The main right area is titled "YouTube Data Harvesting and Warehousing using SQL and Streamlit". It contains a text input field with the placeholder "Enter the channel ID" and a value "UCStXlbTIApqrqJGktX\_WCw". Below it is a button labeled "Collect and store data". A dropdown menu titled "Select the Channel" shows "MS -CREATIVE" selected. Under "SELECT THE TABLE FOR VIEW", the "CHANNELS" option is checked. A table below lists two YouTube channels:

Channel_Name	Channel_Id	Subscribers	Total_VIEWS	Total_Videos	Chai
MS -CREATIVE	UC_2Ohbu1G33swfqx0AnmNw	35,900	7,217,340	12	
Tamil Annai	UC80KOaz1JWoRWFJ0K8zbw_Q	23,100	6,274,438	135	

## Channel Details Upload Successfully:

This screenshot shows the same Streamlit application after the channel details have been uploaded successfully. The browser tab remains "Sethu - Streamlit" and the URL is still <http://localhost:8501>. The main content area now displays a green success message "Upload completed successfully" above the "Collect and store data" button. The rest of the interface, including the sidebar, channel selection dropdown, and table, appears identical to the previous screenshot.

## Channel Details:

Channel_Name	Channel_Id	Subscribers	Total_VIEWS	Total_Videos	Channel_Description	Playlist_Id
MS -CREATIVE	UC_2Ohbu1iG33swfqxOAnmNw	35,900	7,217,340	12		UU_2Ohbu1iG33swfqxOAnmNw
Tamil Annai	UC80KOaz1JWoRWFJ0K8zbw_Q	23,100	6,274,438	135		UU80KOaz1JWoRWFJ0K8zbw_Q
Sethumadhavan	UCJVksy4gEpK4yG6WKUZPj4A	9	1,250	7	God is Love.	UUJVksy4gEpK4yG6WKUZPj4A
Mr Tamilan International Movies	UCodhN8ZX2xyb1wYVCRKprYw	107,000	12,497,064	35	Exploring the Global Tapestry: International Movies Beyond Hollywood and Indian Cinema	UUodhN8ZX2xyb1wYVCRKprYw
SMART MACHI FF	UCpg07Wap31f_UCzM1HGDJbw	6,690	644,308	180	FREEFIRE UPDATE , FREEFIRE TIPS AND TRICKS, FREEFIRE EVENTS FREEFIRE MAX FR	UUpg07Wap31f_UCzM1HGDJbw
Its Ak	UCPpH1MhLKRcQg-UgkaVdVtw	2,820	127,967	125	Focusing on Health, Wealth & Happiness. 0 -> 1 -> 2.... I'm trying to improve my life a lot	UUppH1MhLKRcQg-UgkaVdVtw
ARAVIND KARNEESWARAN	UCStXlbTIApPrqdJGktX_WCw	111,000	13,440,882	8		UUSTXlbTIApPrqdJGktX_WCw
Data Science Tamil	UCui5XcJyynHa5k_lqDzAgwQ	1,020	152,703	71	Welcome to the Data Science Tamil Channel! Here, we delve into the captivating realm of Data Science and Machine Learning.	UUi5XcJyynHa5k_lqDzAgwQ

## Playlists Details:

Playlist_Id	Title	Channel_Id	Channel_Name	PublishedAt	Video_Count
PLBolfguKjuD4Z-06IKRNM1UJUh_rrQ5On	logic	UCStXlbTIApPrqdJGktX_WCw	ARAVIND KARNEESWARAN	2020-06-24 04:41:59	7
PLBolfguKjuD7gOVea9n26oaAfiuZrCMm8	Covers	UCStXlbTIApPrqdJGktX_WCw	ARAVIND KARNEESWARAN	2020-03-09 07:41:31	9
PLIuYf31fGXl5UteuetYcmW-3n8lJcVP_-	Love whatsapp status	UC_2Ohbu1iG33swfqxOAnmNw	MS -CREATIVE	2020-12-13 08:41:10	6
PLIuYf31fGXlmcyhwrHmuDqJafbrm9qkw	GYM.....	UC_2Ohbu1iG33swfqxOAnmNw	MS -CREATIVE	2021-06-04 06:41:09	20
PLopjt6CFdRyHVe-12QPXmxb_3AW3xYGTr	sethu	UCJVksy4gEpK4yG6WKUZPj4A	Sethumadhavan	2020-09-19 14:40:47	14
PLSdiFN_31vVw9ItscAiSi31XK4B_1khvc	Quick Share (Shorts)	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2023-10-02 04:30:18	4
PLSdiFN_31vVwAUJtB_8CIX2_XE0TVoGoy	Personal	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2023-09-15 03:10:14	8
PLSdiFN_31vVwOjWdeN6tE6d2F_Cy-ZRs	To Grow	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2023-08-28 12:01:10	18
PLSdiFN_31vVx Cul6rqYwTvdC2zAzkHRzF	Learn For Free	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2024-04-27 03:44:49	3
PLSdiFN_31vVxgpSxZ_G1npXUckJoav_tf	Productivity	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2023-12-20 05:15:40	11
PLSdiFN_31vVxL3nXmQ8xHZeEThuoQUAMYH	Some for Life	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2023-08-20 08:24:05	20
PLSdiFN_31vVyFwizleR-R2sEC86FzBsLu	Money 💰	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2023-08-11 02:56:40	6
PLSdiFN_31vVyFzlZtC3tGSx3nPeyK3oli	Unscripted Hour	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2024-03-21 02:06:55	1
PLSdiFN_31vVySRMaOarh_Qxm_gJE3T-Uf	Career	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2023-08-12 05:32:23	30
PLSdiFN_31vVzCNapHfRc6xG_a7XQ--vW2	Health ❤️	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2023-10-31 01:55:31	6
PLSdiFN_31vVzw7AX_eeUR2ovrZiJX5msh	Business	UCPpH1MhLKRcQg-UgkaVdVtw	Its Ak	2023-11-09 03:58:43	4
PLu2IJ910NLeAcWVGj7GWiMeZk09Jht9t	Persian Movies in Tamil	UCodhN8ZX2xyb1wYVCRKprYw	Mr Tamilan International Movie	2023-12-30 12:30:53	1
PLu2IJ910NLeAFe04ech-Evh8gZZDyj1sA	Italian Movies in Tamil	UCodhN8ZX2xyb1wYVCRKprYw	Mr Tamilan International Movie	2023-12-30 08:16:40	2

## Videos Details:

## Comments Details:

Comment_Id	Video_Id	Comment_Text	Comment_Author	Comment_Published
Ugw_0RYXKmq5Sahyz-6X4aaBAg	KRVR9K-EVRO	Better than real voice 🎵	@vijay4057	2022-06-29 13:26:12
Ugw_1m6_O-Kbm91XhSx4aaBAg	mefrGvzXnE	bro indha video fulla patthens thanks bro idha than na theeditu irundhen but orey doul	@pranav2070	2023-01-02 03:55:19
Ugw_1SKW5edX2BUD14kaBAg	hQAXQj9oxZB	What a brain, un imaginable story. I have no words to praise this series. As well as ext	@yashusudhi3399	2023-1-29 06:44:34
Ugw_1V7irrBS4HxuK45AaBAg	1Sp9r21YHUU	post mortem Tamel dubbed la iki lha pathi sellings best ghost thriller movie	@ismailvaliogee9315	2024-04-28 17:11:28
Ugw_4evgyDwW5ipRf45AaBAg	VAGLSB2Jhlo	Oonuthikaga vazhru jath... This line impact my heart every time listen ❤️☀️	@28sethuraman55	2024-10-18 02:42:42
Ugw_4pHpsZPKhE_dGcR4aaBAg	vruUnQisTKE	Bro im getting time value error	@aravindrajanraj2583	2023-11-23 07:46:55
Ugw_5k-4cdDqlqjB1R4aaBAg	OxQdgNofF_E	1.Podcast edulha bro keping2->2.Epid windows la inruthu linux ah maathuniga	@sahana5817	2024-05-06 07:44:30
Ugw_527yg3d7QjB1R4aaBAg	QGzhQojuBA	keyerror : &quot;Comment_id&quot; ; no vardhu	@danavathdarshan1426	2024-04-07 19:51:51
Ugw_69_Jf5JpBBRjMv44aaBAg	UP-xjd0Tpss	3.02 super lyrics 😍🎶	@gnanaprasuna0359	2024-03-23 06:46:34
Ugw_73tbyQNMhAkMld4aaBAg	TlR0dAS54AW	Thanks brother ❤️	@MageshCreatorTamil	2023-06-06 09:59:09
Ugw_9Krt09mM2Lz1G614aaBAg	jcb8rnjPOaE	hi bro na KR tom bro ples bro firi kudu bro	@krkgaming8908	2022-01-30 15:37:27
Ugw_A6jm8plpwJ5uJ4aaBAg	Tu9Lo2zzMiqo	Climax வு டூல்... ஜி அதிகமின்றி 😊	@srilkumarib1508	2024-02-09 20:20:18
Ugw_ap_UK1L27TUfR4aaBAg	XIVW1T-8c	a href="https://www.apkVenue.com/watch?v=0t6QgQh_N4" href="https://youtu.be/e0t9d_gaming9261">https://www.apkVenue.com/watch?v=0t6QgQh_N4" href="https://youtu.be/e0t9d_gaming9261	rd_gaming9261	2021-12-15 17:12:48
Ugw_Bt1E26gjI09DxF4aaBAg	1-m0jJOTIE	Anna one piece anime explain pannungaa	@silvaprasath2934	2024-06-01 13:28:22
Ugw_E91r16LgjTRXbo54aaBAg	GGRG0sUI8TM	Your voice, smile and your expression 😊 amazing dude... 😊 always iam a big fan of	@sanigavid426	2023-06-10 15:44:31
Ugw_g2KBjwUBjj5ezX4aaBAg	Jdy-ek67bI	Bro start pannuga	@DataScientistH	2024-04-23 17:04:25
Ugw_Gk_muFE1CFk5D94aaBAg	3lKwqjH0DE	Iam10boxopen	@sa6547	2022-07-23 16:00:58
Ugw_hb-40fwct-kgtPh4aaBAg	4VdDAm1ff	நாரங்க ஆபிஸ்ரைஸ் மதுகந் தாக்க செய்துகேள்வு குற்றகாலமிக்	@ganesanvelaiyan273	2023-11-20 20:41:09
Ugw_HWmUejybjkTph4aaBAg	GGRG0sUI8TM	What a voice 🌟 last la ennal etho seiyuthithal vena level 😊	@joshibaJoshiba6039	2023-06-21 18:38:11
Ugw_IwORLT95wB4Ju4aaBAg	t7dBDAm1ff	Ptz dont review like this movies boring	@MonikaMonika-wg9ce	2024-01-11 17:52:06
Ugw_IJUYGO1FBNE04aaBAg	uXdi28tSwOo	Bro link illa	@xtremokerf5325	2022-07-21 04:58:35
Ugw_IJOrqorfb6Bdk4aaBAg	SYmrBe_hzQ	Am big fan of u and sweet voice	@dhanys703	2023-04-17 11:44:22

## SQL Query Output need to displayed as table in Streamlit Application:

1. What are the names of all the videos and their corresponding channels?

	Video_Name	Channel_Name
0	Idhuvum Kadandhu Pogum song with Tamil Lyrics	Tamil Annai
1	🔥 Freefire New 'MOCO STORE EVENT' #tamil #freefire #freefirenewevent #shorts	SMART MACHI FF
2	என்ன தைரியத்துல இந்த படத்த எடுத்தாங்கன்னு தெரியவியே? Mr	Mr Tamilan International Movies
3	மொபைல்-ல இனி சர்வீஸ்க்கு கொடுக்கும் போது International Movies in	Mr Tamilan International Movies
4	ஒரு ஒநாயிடன் மாட்டி கொள்ளும் குழந்தை. அடுத்த வினாடி, யாருட	Mr Tamilan International Movies
5	kanmoodi Thirakkum song with Tamil Lyrics	Tamil Annai
6	கடவுள் இந்த நவீன உலகத்துக்கு ஒரு எலெக்ட்ரிசியன்னா வந்தா? W	Mr Tamilan International Movies
7	Be Successful in Your Life 🏆	Its Ak
8	Freefire All New Bundle OB35 Update 😊 Neon criminal Bundle	SMART MACHI FF
9	My Simple, Crazy, weird & Powerful Morning Routine in Tamil	Its Ak
10	New Airship After update 😊 Freefire OB36 Update	SMART MACHI FF
11	Poi solla koodaadhu song with Tamil Lyrics in Run	Tamil Annai
12	Life lessons, I learned 😊 ↗..	Its Ak
13	Naa vera maari ⚡   Dhanush 🐱   Mashup 😊   WhatsApp Status 💃	MS -CREATIVE
14	ஒரு வடகொரிய அகதியின் கதை Watch International Movies in	Mr Tamilan International Movies
15	Ovvondraai Thirudugirai song with Tamil Lyrics	Tamil Annai
16	Katchi Sera song with Tamil Lyrics from Think Indie  Sai Abhyankkar	Tamil Annai
17	ஆடுகளை ஏலம் விடுறது போல பெண்களை ஏலம் விடும் மும்பை M	Mr Tamilan International Movies
18	How I Become a Full-Stack Web Developer, Complete Journey (Story Time)	Its Ak
19	இந்த விழயோவ பார்க்குறது நரகத்திற்கு போவதற்கு சமம் Indonesia	Mr Tamilan International Movies
20	Pogiren song with Tamil Lyrics	Tamil Annai
21	HOW TO ADD YOUTUBE VIDEO THAMBNAIL 2023   YOUTUBE THAMBNAIL SET IN TAMIL	SMART MACHI FF
22	2x Enhance Your Photo for FREE!!	Its Ak
23	Element Of M1887 Events #sorts #freefire #tamil	SMART MACHI FF
24	Thaen thaen thaen cover song with Tamil Lyrics by Sivaangi Krishnakumar & Harsha	Tamil Annai

2. Which channels have the most number of videos, and how many videos do they have?

Comprehensive Analysis of YouTube Videos and Channels Using SQL Queries		
Select the SQL query		
2. Which channels have the most number of videos, and how many videos do they have? <span style="float: right;">▼</span>		
<span style="border: 1px solid red; padding: 2px 10px; border-radius: 10px; display: inline-block;">Run Query</span>		
	Channel_Name	Video_Count
0	SMART MACHIFF	180
1	Tamil Annai	133
2	Its Ak	125
3	Data Science Tamil	71
4	Mr Tamilan International Movies	35

3. What are the top 10 most viewed videos and their respective channels?

	Video_Name	Channel_Name	Views
0	Meenamma Extended cover   Aasai   Aravind Karneeswaran   Deva	ARAVIND KARNEESWARAN	10,976,839
1	ALBUM SONGS TAMIL NON STOP....	MS -CREATIVE	7,140,553
2	Marudhani Marudhani song with Tamil Lyrics in Sakkarakatti	Tamil Annai	1,741,127
3	Pirai Thendum song with Tamil Lyrics   Mayakkam Enna	Tamil Annai	1,360,851
4	மூக்குத்தி அம்மனின் அவதாரமா இவன்? Mr Tamilan Movies Watch Tamil	Mr Tamilan International Movies	1,216,260
5	Oh Senyoreeta   Poovellam Kettupaar   Yuvan Shankar Raja   Aravind Karne   Cover V	ARAVIND KARNEESWARAN	925,946
6	இந்தமாதிரி ஒரு படத்தை நீங்க பார்த்திருக்க வாய்ப்பில்லை Mr Tami	Mr Tamilan International Movies	918,977
7	தலைக்கோ நின்னு தண்ணி குடிச்சாலும் யூகிக்க முடியாத கதை Mr T	Mr Tamilan International Movies	720,289
8	கவர்னர் பொன்டாட்டி கள்ளக்காதல் செய்வது சரியா? சரி தான். O	Mr Tamilan International Movies	530,615
9	சாவு ஒன்று தான், ஆனால் சடலம் 4 Mr Tamilan TV Series and Movies in 1 vid	Mr Tamilan International Movies	488,315

4. How many comments were made on each video, and what are their corresponding video names?

	Video_Name	Comment_Count
0	Idhuvum Kadandhu Pogum song with Tamil Lyrics	2
1	🔥 Freefire New 'MOCO STORE EVENT' #tamil #freefire #freefirerevent #shorts	4
2	என்ன தைரியத்துல இந்த படத்த எடுத்தாங்கன்னு தைரியலியே ? Mr	100
3	மொடைபல்-ல இனி சர்வீஸ்க்கு கொடுக்கும் போது International Movies ii	100
4	ஒரு ஒனாயிடன் மாட்டி கொள்ளும் குழந்தை. அடுத்த வினாடி, யாருட	100
5	kanmoodi Thirakkum song with Tamil Lyrics	7
6	கடவுள் இந்த நவீன உலகத்துக்கு ஒரு எலெக்ட்ரிசியன்னா வந்தா? W	100
7	Be Successful in Your Life 🏆	3
8	Freefire All New Bundle OB35 Update 😊 Neon criminal Bundle	6
9	My Simple, Crazy, weird & Powerful Morning Routine in Tamil	14
10	New Airship After update 😊 Freefire OB36 Update	1
11	Poi solla koodaadhu song with Tamil Lyrics in Run	1
12	Life lessons, I learned 🧐 ✨ ..	3
13	Naa vera maari 🌟   Dhanush 🎤   Mashup 🎶   WhatsApp Status 📲	2
14	ஒரு வடகொரிய அகதியின் கதை Watch International Movies in Mr Tamilan	100
15	Ovvondraai Thirudugirai song with Tamil Lyrics	4
16	Katchi Sera song with Tamil Lyrics from Think Indie  Sai Abhyankkar	16
17	ஆடுகளை ஏலம் விடுறது போல பெண்களை ஏலம் விடும் மும்பை M	100
18	How I Become a Full-Stack Web Developer, Complete Journey (Story Time)	100
19	இந்த விழயோவ பார்க்குறது நரகத்திற்கு போவதற்கு சமம் Indonesia	100
20	Pogiren song with Tamil Lyrics	1
21	HOW TO ADD YOUTUBE VIDEO THAMBNAIL 2023   YOUTUBE THAMBNAIL SET IN TAMIL	5
22	2x Enhance Your Photo for FREE!!	3
23	Element Of M1887 Events #sorts #freefire #tamil	4
24	Thaen thaen thaen cover song with Tamil Lyrics by Sivaangi Krishnakumar & Harsha	5

5. Which videos have the highest number of likes, and what are their corresponding channel names?

	Video_Name	Channel_Name	Likes
0	Meenamma Extended cover   Aasai   Aravind Karneeswaran   Deva	ARAVIND KARNEESWARAN	160,229
1	ALBUM SONGS TAMIL NON STOP....	MS -CREATIVE	82,409
2	ஸுக்குத்தி அம்மனின் அவதாரமா இவன்? Mr Tamilan Movies Watch Tamil   Mr Tamilan International Movies	Mr Tamilan International Movies	31,107
3	Oh Senyoreeta   Poovellam Kettupaar   Yuvan Shankar Raja   Aravind Karnee   Cover V	ARAVIND KARNEESWARAN	28,705
4	Pirai Thendum song with Tamil Lyrics   Mayakkam Enna	Tamil Annai	22,013
5	இந்தமாதிரி ஒரு படத்தை நீங்க பார்த்திருக்க வாய்ப்பில்லை Mr Tamil   Mr Tamilan International Movies	Mr Tamilan International Movies	20,307
6	தலைவழை நின்னு தண்ணி குடிச்சாலும் யூசிக்க முடியாத கதை Mr Tamil   Mr Tamilan International Movies	Mr Tamilan International Movies	18,479
7	பல ஆஸ்கார் விருதுகளை வாங்க போற படம் International Movies in Tamil   Mr Tamilan International Movies	Mr Tamilan International Movies	16,167
8	கவர்னர் பொன்டாட்டி கள்ளக்காதல் செய்வது சரியா? சரி தான். O	Mr Tamilan International Movies	16,121
9	Nee Kavithaigala   Maragatha Naanayam   Aravind Karneeswaran   Cover Version   Dhi	ARAVIND KARNEESWARAN	15,905

6. What is the total number of likes and dislikes for each video, and what are their corresponding video names?

	Video_Name	Total_Likes	Total_Dislikes
0	Idhuvum Kadandhu Pogum song with Tamil Lyrics	55	55
1	🔥 Freefire New 'MOCO STORE EVENT' #tamil #freefire #freefirenewevent #shorts	86	86
2	என்ன தைரியத்துல இந்த படத்தை எடுத்தாங்கன்னு தைரியலியே ? Mr Tamil   Mr Tamilan International Movies	12,793	12,793
3	மொடைபல்-ல இனி சர்வேஸ்க்கு கொடுக்கும் போது International Movies in Tamil   Mr Tamilan International Movies	11,904	11,904
4	ஒரு ஒனாயிடன் மாட்டி கொள்ளும் குழந்தை. அடுத்த வினாடி, யாருட	6,675	6,675
5	kanmoodi Thirakkum song with Tamil Lyrics	820	820
6	கடவுள் இந்த நவீன உலகத்துக்கு ஒரு எலெக்ட்ரிசியன்னா வந்தா? W	9,884	9,884
7	Be Successful in Your Life 🏆	53	53
8	Freefire All New Bundle OB35 Update 😍 Neon criminal Bundle	37	37
9	My Simple, Crazy, weird & Powerful Morning Routine in Tamil	28	28
10	New Airship After update 😱 Freefire OB36 Update	22	22
11	Poi solla koodaadhu song with Tamil Lyrics in Run	10	10
12	Life lessons, I learned 🎓 ✨ ..	2	2
13	Naa vera maari 💔   Dhanush 🐻   Mashup 😍   WhatsApp Status 💯	179	179
14	ஒரு வடகொரிய அகதியின் கதை Watch International Movies in Tamil   Mr Tamilan International Movies	8,063	8,063
15	Ovvondraai Thirudugirai song with Tamil Lyrics	176	176
16	Katchi Sera song with Tamil Lyrics from Think Indie  Sai Abhyankkar	1,999	1,999

7. What is the total number of views for each channel, and what are their corresponding channel names?

	Channel_Name	Total_VIEWS
0	Tamil Annai	6,263,373
1	SMART MACHI FF	645,189
2	Mr Tamilan International Movies	12,526,842
3	Its Ak	128,284
4	MS -CREATIVE	7,225,906
5	Data Science Tamil	152,745
6	ARAVIND KARNEESWARAN	13,449,073
7	Sethumadhavan	1,250

8. What are the names of all the channels that have published videos in the year 2022?

**Comprehensive Analysis of YouTube Videos and Channels Using SQL Queries**

Select the SQL query

8. What are the names of all the channels that have published videos in the year 2022? ▾

**Run Query**

	Channel_Name
0	Tamil Annai
1	SMART MACHI FF
2	MS -CREATIVE
3	ARAVIND KARNEESWARAN

9. What is the average duration of all videos in each channel, and what are their corresponding channel names?

Comprehensive Analysis of YouTube Videos and Channels Using SQL Queries		
Select the SQL query		
9. What is the average duration of all videos in each channel, and what are their corresponding channel names?		
<input type="button" value="Run Query"/>		
	Channel_Name	Average_Duration
0	Tamil Annai	None
1	SMART MACHI FF	None
2	Mr Tamilan International Movies	None
3	Its Ak	None
4	MS -CREATIVE	None
5	Data Science Tamil	None
6	ARAVIND KARNEESWARAN	None
7	Sethumadhavan	None

10. Which videos have the highest number of comments, and what are their corresponding channel names?

	Video_Name	Channel_Name	Comment_Count
0	ஒரு வடகொரிய அகதியின் கதை Watch International Movies in Mr Tamilan	Mr Tamilan International Movies	100
1	How I Become a Full-Stack Web Developer, Complete Journey (Story Time)	Its Ak	100
2	என்ன தெரியத்துல இந்த படத்தை எடுத்தாங்கன்னு தெரியவிலே ? Mr	Mr Tamilan International Movies	100
3	மொபைல்-ல் இனி சர்வீஸ்க்கு கொடுக்கும் போது International Movies in	Mr Tamilan International Movies	100
4	ஒரு ஒநாயிடன் மாட்டி கொள்ளும் குழந்தை. அடுத்த வினாடி, யாருட்	Mr Tamilan International Movies	100
5	ஜாக் ஸ்பாரோ தம்பியின் கதையா இருக்குமோ? - Korean Movies in Mr.T	Mr Tamilan International Movies	100
6	கடவுள் இந்த நவீன உலகத்துக்கு ஒரு எலெக்ட்ரிசியன்னா வந்தா? W	Mr Tamilan International Movies	100
7	இந்த விழேயாவ பார்க்குறது நரகத்திற்கு போவதற்கு சமம் Indonesia	Mr Tamilan International Movies	100
8	மனிதர்களுக்கு மட்டும் இல்லை பேம்களுக்கும் தனிமைபிடிப்பதில்	Mr Tamilan International Movies	100
9	ஆடுகளை ஏலம் விடுறது போல பெண்களை ஏலம் விடும் மும்பை M	Mr Tamilan International Movies	100