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INTRODUCTION

The Project is designed to access data of almost all channels live on YouTube in real time, which are presented to you in an interactive way. Some features of this project are:

1. Credentials of YouTube channels are automatically saved, this will lead you in saving time when you use it next time.
2. It helps us to calculate and display likes, views, and video count data in an interactive way of presentation and export all the data to CSV files easily.
3. Compare any 5 YouTube channels of your choice in terms of likes, views, and video count, which can be exported to csv easily.
4. Download any Audio or Video from YouTube easily.

MODULES USED IN THE PROJECT

1. **CSV –** To export all the data extracted from YouTube to CSV.
2. **Pafy –** To Download Videos and Audios from YouTube.
3. **Pickle –** To read Binary file to access data like graph ratios and Country codes stored in binary files.
4. **Shutil –** To move extracted CSV files or downloaded audio/video to any desired location.
5. **Tkinter –** To create a Graphical User Interface and Present the project more interactively.
6. **Datetime –** To access real-time date for some calculations in the project.
7. **File Dialog –** To ask the user for the directory of the desired location of CSV files or downloaded audio/video.
8. **Numerize –** To very large values of numbers to a more readable form.
9. **Mysql.connector –** To connect the project to MySQL and add, remove, or modify records.
10. **PIL –** To display images in the GUI and make is look premium branded.
11. **Messagebox –** To pop up messages in front of user.
12. **Matplotlib –** To display graphs based on the criteria chosen by user.
13. **Urllib -**To download temporary data like logo of YouTube channels from the internet.
14. **Google API Client –** To fetch data from YouTube.

FLOW OF CONTROL

We have used Python as an interpreter to code the project. Some Reasons for Choosing Python are:

1) Easy to Learn and Use

Python is easy to learn as compared to other programming languages. Its syntax is straightforward and much the same as the English language. There is no use of the semicolon or curly bracket, the indentation defines the code block. It is the recommended programming language for beginners.

2) Expressive Language

Python can perform complex tasks using a few lines of code. A simple example, the hello world program you simply type **print("Hello World")**. It will take only one line to execute, while Java or C takes multiple lines.

3) Interpreted Language

Python is an interpreted language; it means the Python program is executed one line at a time. The advantage of being interpreted language, it makes debugging easy and portable.

4) Cross-platform Language

Python can run equally on different platforms such as Windows, Linux, UNIX, and Macintosh, etc. So, we can say that Python is a portable language. It enables programmers to develop the software for several competing platforms by writing a program only once.

5) Free and Open Source

Python is freely available for everyone. It is freely available on its official website www.python.org. It has a large community across the world that is dedicatedly working towards make new python modules and functions. Anyone can contribute to the Python community. The open-source means, "Anyone can download its source code without paying any penny."

6) Object-Oriented Language

Python supports object-oriented language and concepts of classes and objects come into existence. It supports inheritance, polymorphism, and encapsulation, etc. The object-oriented procedure helps to programmer to write reusable code and develop applications in less code.

7) Extensible

It implies that other languages such as C/C++ can be used to compile the code and thus it can be used further in our Python code. It converts the program into byte code, and any platform can use that byte code.

8) Large Standard Library

It provides a vast range of libraries for the various fields such as machine learning, web developer, and for the scripting. There are various machine learning libraries, such as Tensor flow, Pandas, Numpy, Keras, and Pytorch, etc. Django, flask, pyramids are the popular framework for Python web development.

9) GUI Programming Support

Graphical User Interface is used for the developing Desktop application. PyQT5, Tkinter, Kivy are the libraries which are used for developing the web application.

10) Integrated

It can be easily integrated with languages like C, C++, and JAVA, etc. Python runs code line by line like C, C++ Java. It makes easy to debug the code.

11. Embeddable

The code of the other programming language can use in the Python source code. We can use Python source code in another programming language as well. It can embed other language into our code.

12. Dynamic Memory Allocation

In Python, we don't need to specify the datatype of the variable. When we assign some value to the variable, it automatically allocates the memory to the variable at run time. Suppose we are assigned integer value 15 to **x,** then we don't need to write **int x = 15.** Just write x = 15.

We have used MySQL as the Database Management System of the Project as it is:

1) Relational Database Management System (RDBMS)

MySQL is a relational database management system. This database language is based on the SQL queries to access and manage the records of the table.

2) Easy to use

MySQL is easy to use. We must get only the basic knowledge of SQL. We can build and interact with MySQL by using only a few simple SQL statements.

3) It is secure

MySQL consists of a solid data security layer that protects sensitive data from intruders. Also, passwords are encrypted in MySQL.

4) Client/ Server Architecture

MySQL follows the working of a client/server architecture. There is a database server (MySQL) and arbitrarily many clients (application programs), which communicate with the server; that is, they can query data, save changes, etc.

5) Free to download

MySQL is free to use so that we can download it from MySQL official website without any cost.

6) It is scalable

MySQL supports multi-threading that makes it easily scalable. It can handle almost any amount of data, up to as much as 50 million rows or more. The default file size limit is about 4 GB. However, we can increase this number to a theoretical limit of 8 TB of data.

7) Speed

MySQL is considered one of the very fast database languages, backed by many the benchmark test.

8) High Flexibility

MySQL supports many embedded applications, which makes MySQL very flexible.

9) Compatible on many operating systems

MySQL is compatible to run on many operating systems, like Novell NetWare, Windows* Linux*, many varieties of UNIX* (such as Sun* Solaris*, AIX, and DEC* UNIX), OS/2, FreeBSD*, and others. MySQL also provides a facility that the clients can run on the same computer as the server or on another computer (communication via a local network or the Internet).

10) Allows roll-back

MySQL allows transactions to be rolled back, commit, and crash recovery.

11) Memory efficiency

Its efficiency is high because it has a very low memory leakage problem.

12) High Performance

MySQL is faster, more reliable, and cheaper because of its unique storage engine architecture. It provides very high-performance results in comparison to other databases without losing an essential functionality of the software. It has fast loading utilities because of the different cache memory.

13) High Productivity

MySQL uses Triggers, Stored procedures, and views that allow the developer to give higher productivity.

14) Platform Independent

It can download, install, and execute on most of the available operating systems.

15) Partitioning

This feature improves the performance and provides fast management of the large database.

16) GUI Support

MySQL provides a unified visual database graphical user interface tool named "**MySQL Workbench**" to work with database architects, developers, and Database Administrators. MySQL Workbench provides SQL development, data modelling, data migration, and comprehensive administration tools for server configuration, user administration, backup, and many more. MySQL has a fully GUI supports from MySQL Server version 5.6 and higher.

MySQL

MySQL is an open-source relational database management system (RDBMS). A relational database organizes data into one or more data tables in which data may be related to each other; these relations help structure the data. SQL is a language programmers use to create, modify, and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.

MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL was owned and sponsored by the Swedish company MySQL , which was bought by Sun Microsystems (now Oracle Corporation).

MySQL has stand-alone clients that allow users to interact directly with a MySQL database using SQL, but more often, MySQL is used with other programs to implement applications that need relational database capability. MySQL is a component of the LAMP web application software stack (and others), which is an acronym for Linux, Apache, MySQL, Perl/PHP/Python. MySQL is used by many database-driven web applications, including Drupal, Joomla, phpBB, and WordPress. MySQL is also used by many popular websites, including Facebook, Flickr, MediaWiki, Twitter, and YouTube.

PYTHON – MYSQL CONNECTION

MySQL is one of the most popular database management systems (DBMSs) on the market today. It ranked second only to the Oracle DBMS in this year's DB-Engines Ranking. As most software applications need to interact with data in some form, programming languages like Python provide tools for storing and accessing these data sources.

Using the techniques discussed in this tutorial, you'll be able to efficiently integrate a MySQL database with a Python application. You'll develop a small MySQL database for a movie rating system and learn how to query it directly from your Python code.

WORKING OF THE PROJECT

I have made this project which analyse the data of your favourite YouTube content creators and present it in an interactive way, also you can compare the data of multiple creators and helps you to begin your YouTube content creation journey more efficiently. Lastly, we can also download any video or audio from youtube by using this app. This project uses MySQL as its Database Management System. And all its data is stored in a data base named 'yda'. The database 'yda' initially have only one table named 'accounts' which is used to store account information of registered users and the program further creates a separate table for every user to give him/her a personalised experience. However the program has ability to create the database and all the tables on its own.

I have also used the concepts of Reading of Binary Files and Writing to CSV Files in the program.

Binary Files:

1) The program reads a binary file named 'countrycodes.dat'. This file contains a dictionary containing country names as keys and country codes as values. As the output of the Country of Origin data from YouTube is in the form of country codes. So, the program gets the country code of the country of origin of the channel and then finds its country name in the binary file.

2) The program reads another binary file named 'graphratio.dat'. This contains a dictionary which contains a scale for the bar graphs.

CSV Files:

The program has the ability to write all the statistics it receives about the channel(s) from YouTube to a CSV file. So, we can easily analyse all the statistics and data ton Microsoft Excel.

When we run the project:

1) It searches MySQL for the database 'yda'. If found, it proceeds. If not found it creates one.
2) Secondly, It Searches for a table named 'accounts' in the database 'yda'. If found, it proceeds. If not found, it creates one.
3) Now a GUI intro Window comes in front saying 'Welcome to YouTube Data Analyser' and a button 'Get Started =>' .
4) When you press the button it requires registration and login (only for the first time or if you haven't checked the 'remember me' check box)
5) Now the main window opens having 4 Options:
    - Single Channel States: to analyse a single channel
    - Compare channels: to compare upto 5 channels
    - Download Video/Audio: to download an Audio/ Video from YouTube.
    - Sign Out: to sign out of the account.

MySQL TABLES

1) Accounts

This table is used to store the account information (Full Name, Date of Birth, Username, Password and Remember Me) of the registered users.

```
mysql> desc accounts;
+------------+--------------+------+-----+---------+-------+
| Field      | Type         | Null | Key | Default | Extra |
+------------+--------------+------+-----+---------+-------+
| username   | varchar(100) | NO   | PRI | NULL    |       |
| password   | varchar(200) | YES  |     | NULL    |       |
| fullname   | varchar(50)  | YES  |     | NULL    |       |
| dob        | date         | YES  |     | NULL    |       |
| rememberme | tinyint      | YES  |     | 0       |       |
+------------+--------------+------+-----+---------+-------+
5 rows in set (0.02 sec)

mysql> select * from accounts;
+-----------------+----------+--------------+------------+------------+
| username        | password | fullname     | dob        | rememberme |
+-----------------+----------+--------------+------------+------------+
| MayankBajaj2006 | 30032006 | Mayank Bajaj | 2006-03-30 |          1 |
+-----------------+----------+--------------+------------+------------+
1 row in set (0.02 sec)
```

2) Personalised Tables

Every registered user has its own table containing its saved channels (Channel ID's and Channel Names). The table name goes like the username of the user and '_yda' at the end.

```
mysql> desc mayankbajaj2006_yda;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| channelname | varchar(500) | YES  |     | NULL    |       |
| channelid   | varchar(500) | NO   | PRI | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
2 rows in set (0.00 sec)

mysql> select * from mayankbajaj2006_yda;
+----------------------+--------------------------+
| channelname          | channelid                |
+----------------------+--------------------------+
| Dhruv Rathee         | UC-CSyyi47VX1lD9zyeABW3w |
| CodeWithHarry        | UCeVMnSShP_Iviwkknt83cww |
| techTFQ              | UCnz-ZXXER4jOvuED5trXfEA |
| Technical Guruji     | UCOhHO2ICt0ti9KAh-QHvttQ |
| Soch by Mohak Mangal | UCz4a7agVFr1TxU-mpAP8hkw |
+----------------------+--------------------------+
5 rows in set (0.01 sec)
```

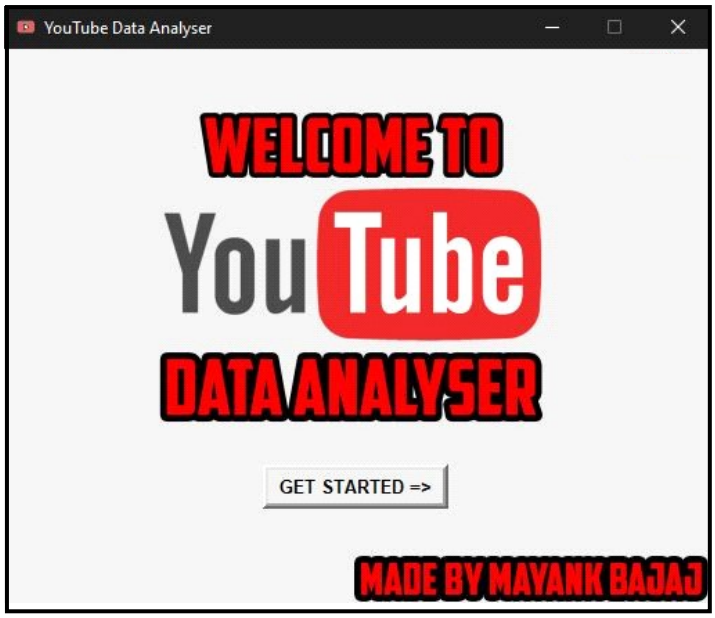
OUTPUT

GUI OUTPUTS:

- **Single Channel Stats**

STEPS:

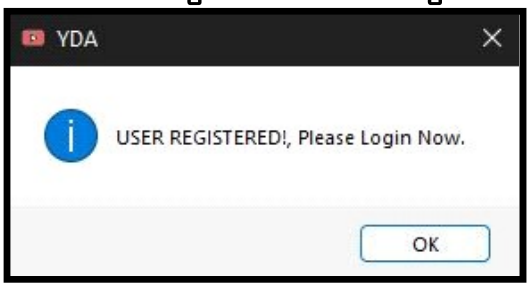
1. Run the Code



2. Click on 'GET STARTED'

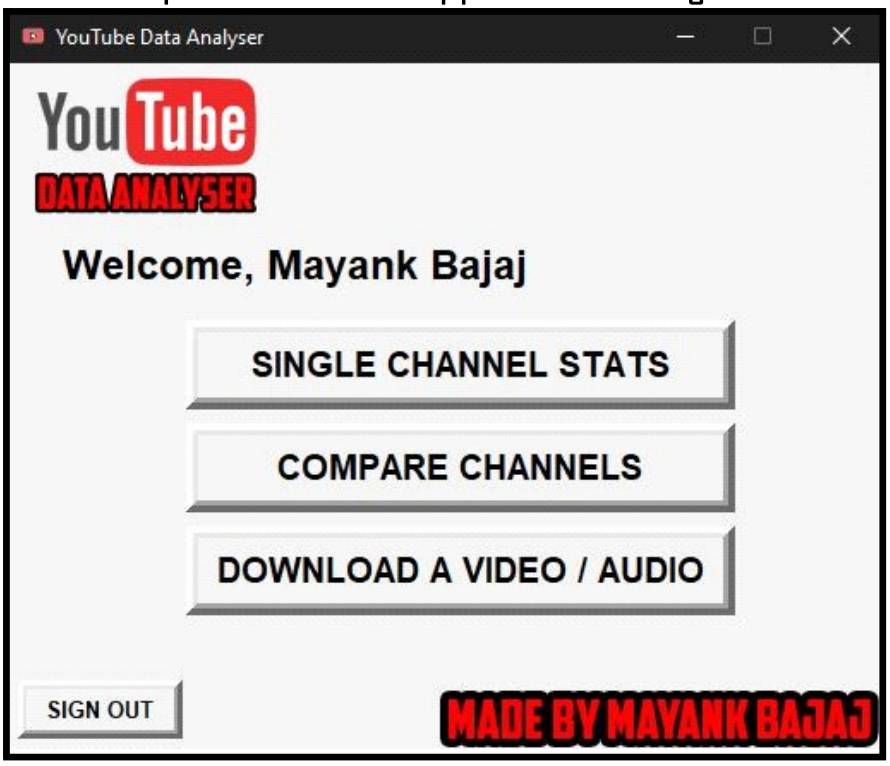
3. Click on Register and Enter the Details.

4. Click on Login and a dialogue box will appear. Click OK



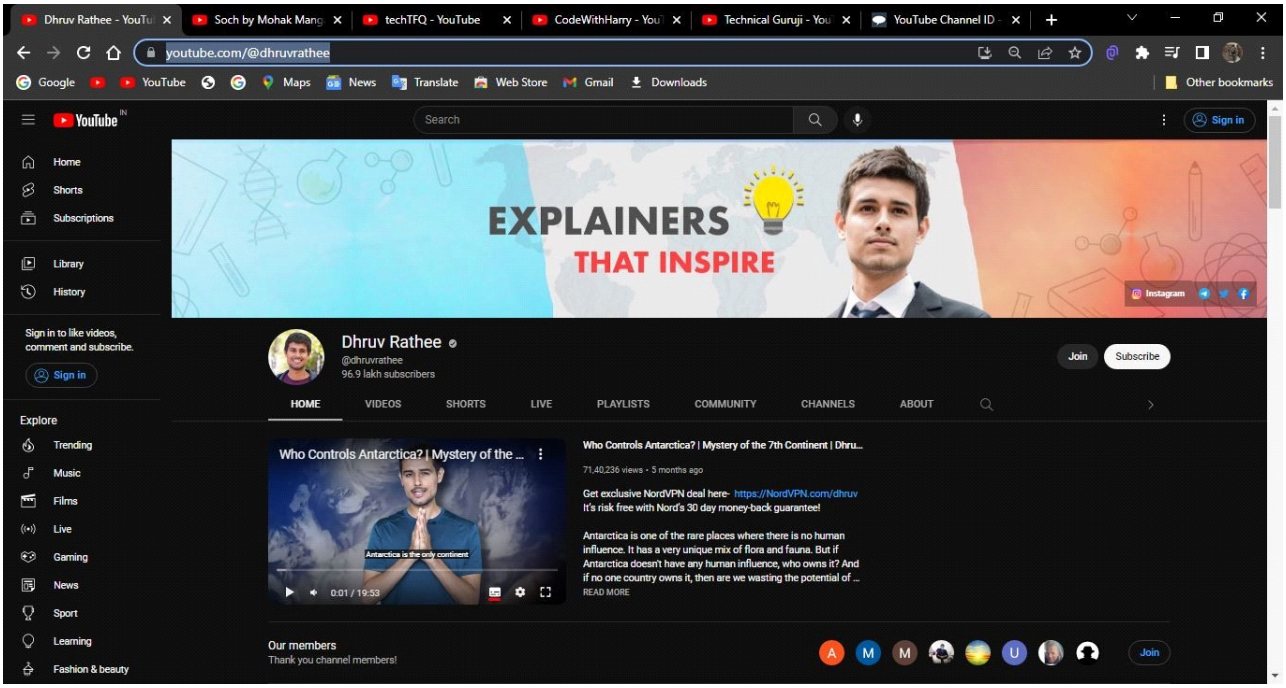
5. Now, Automatically a Login window would appear. Enter your credentials and click on login. (Don't forget to check the Remember Me Button)

6. Now an Option Menu will appear click Single Channel Stats.

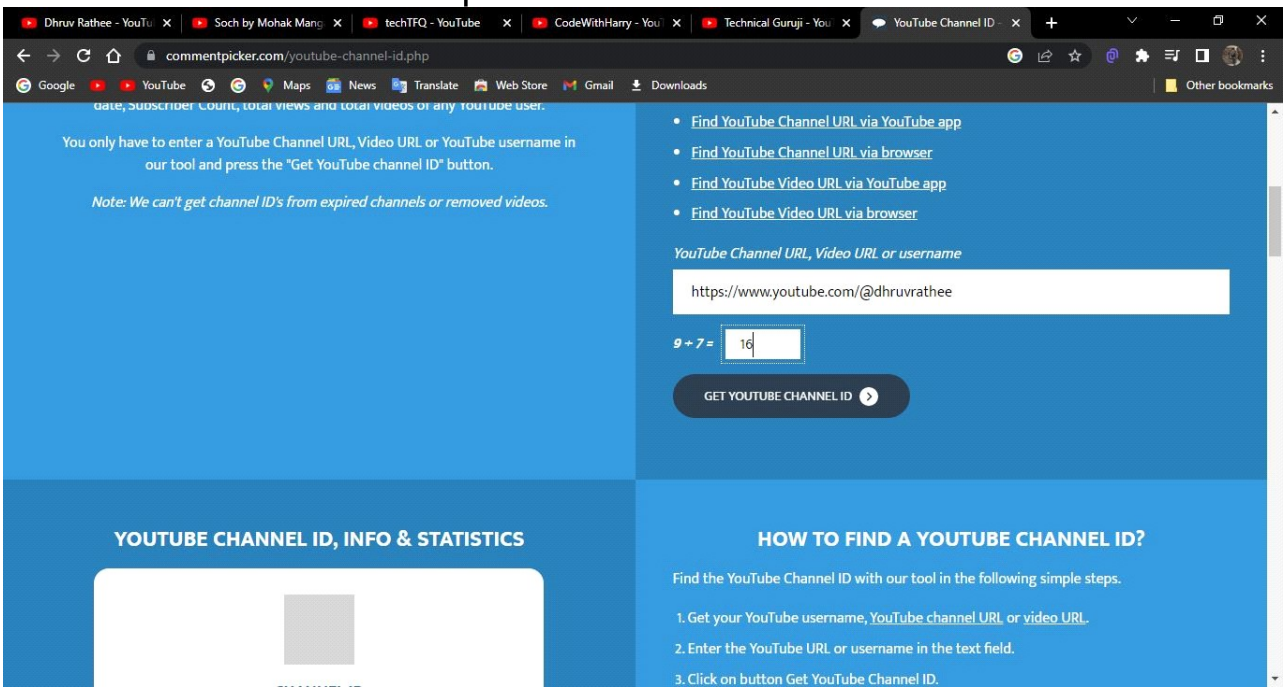


7. Now a window will open, asking you the channel ID for the channel you want stats of.

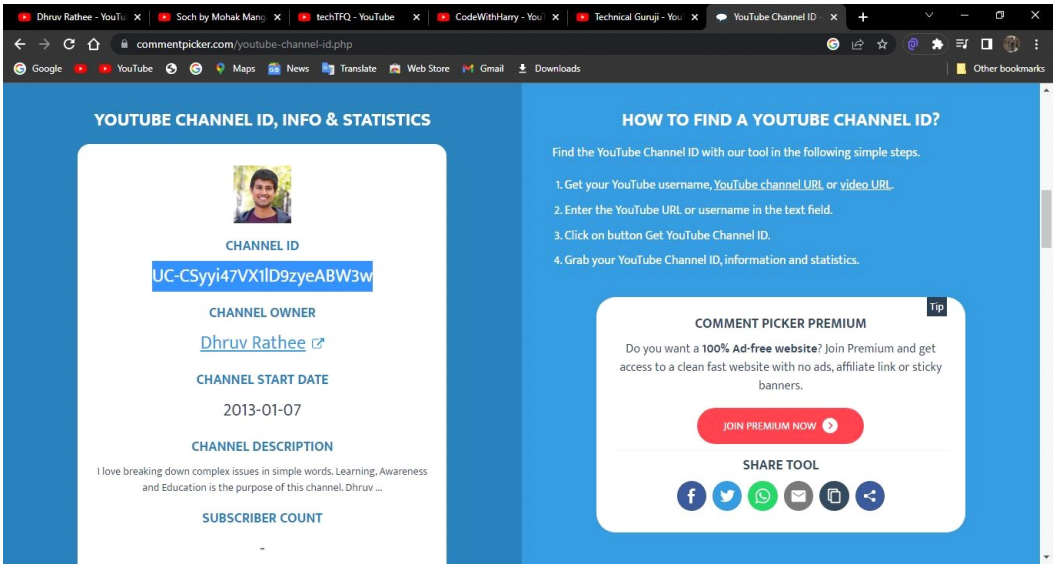
8. To get the channel ID First Open the Channel Page of your Favourite YouTube Channel and copy it's URL.



9. Now open this link (https://commentpicker.com/youtube-channel-id.php). Paste the URL, enter the captcha and click on Get Channel ID.

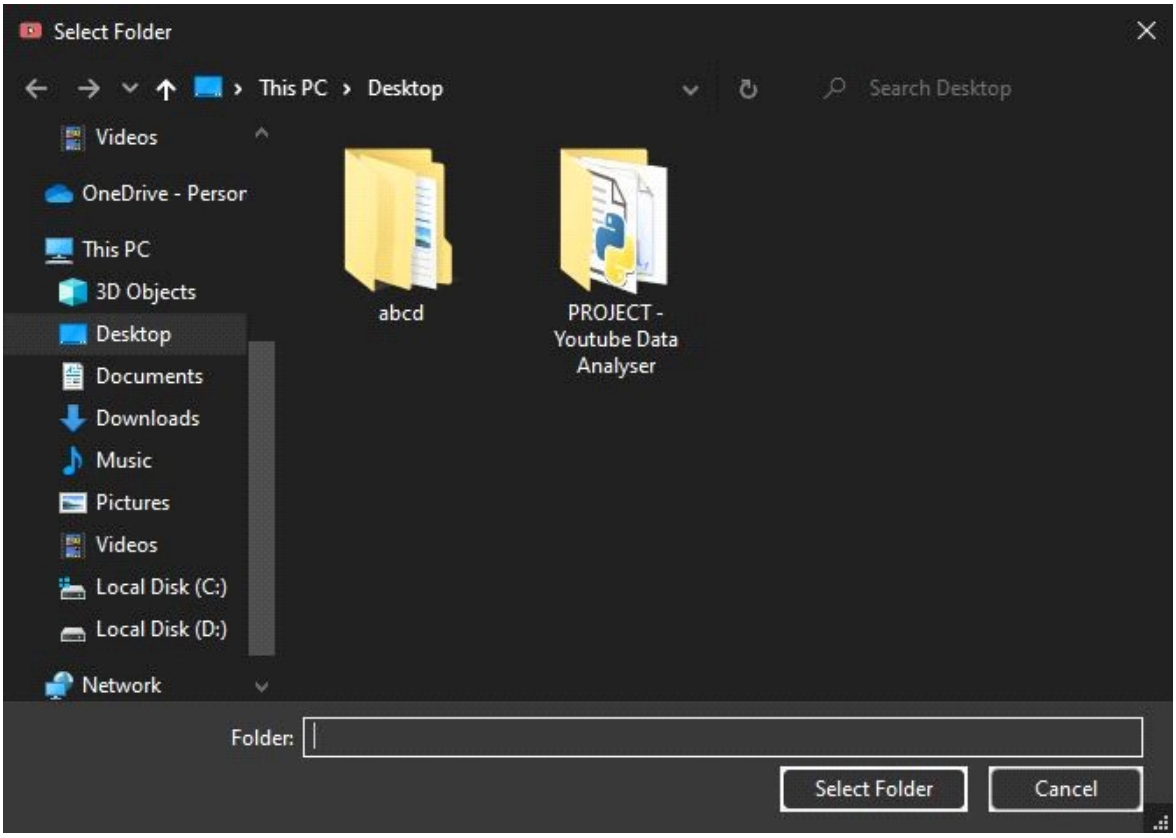


10. Wait for Few seconds and you will get the channel ID Copy that and paste it in the Window.

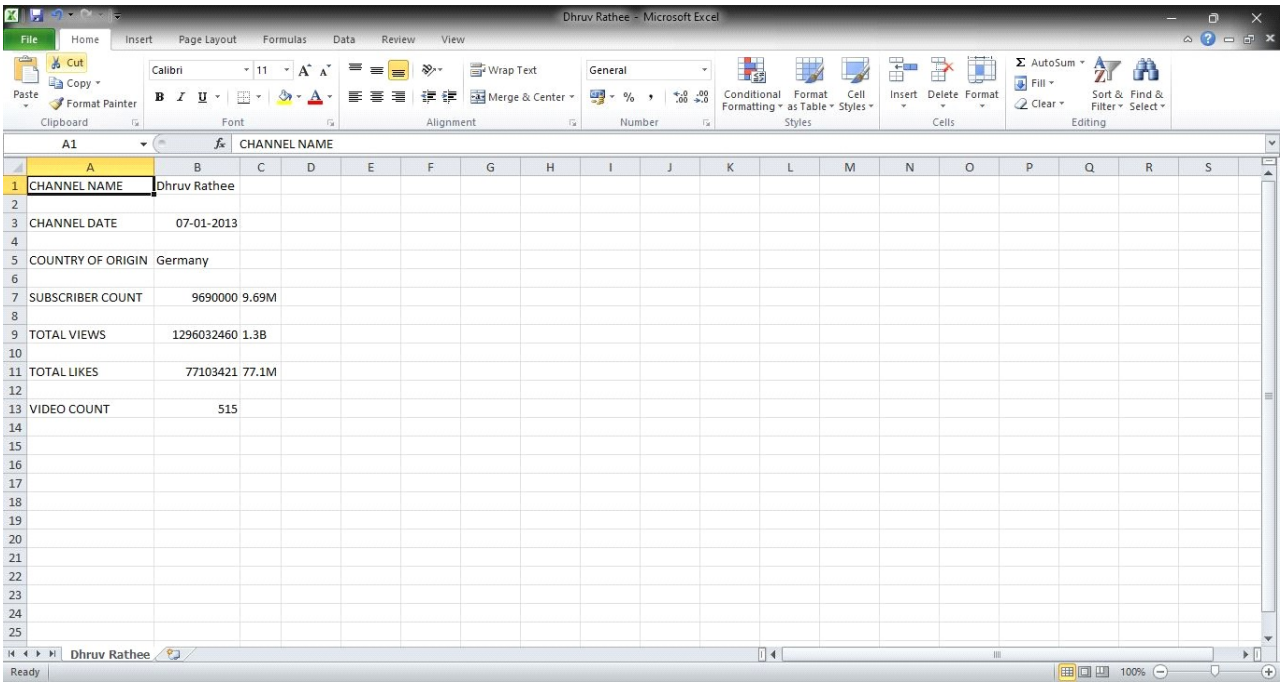


11. Click on Next and wait for some seconds.

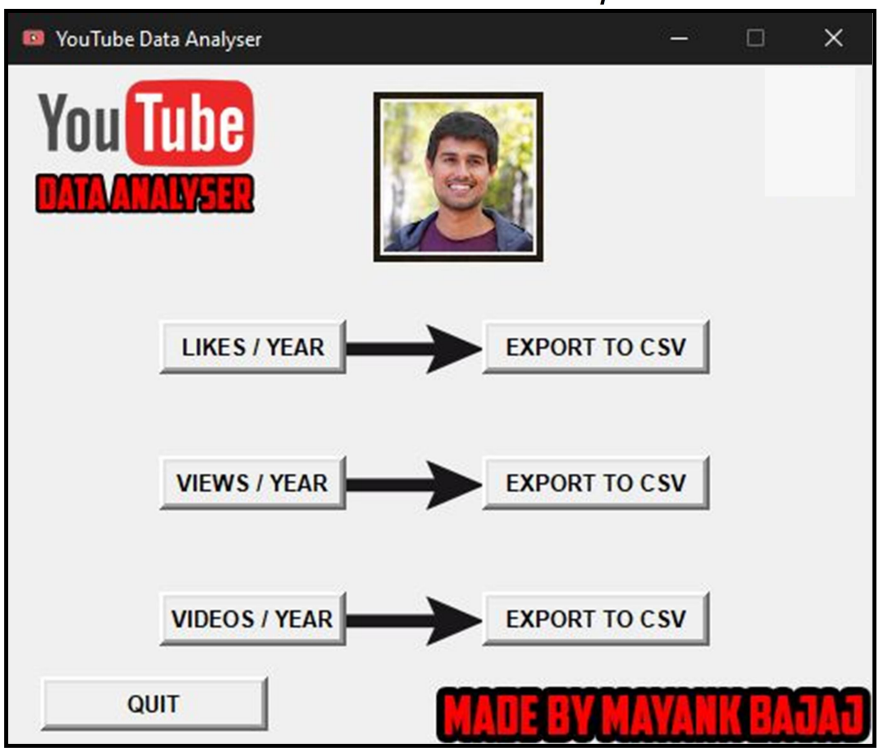
12. To Export all this data to a CSV File Click on 'EVPORT THIS DATA TO CSV' and Set The directory where you want to save the file.



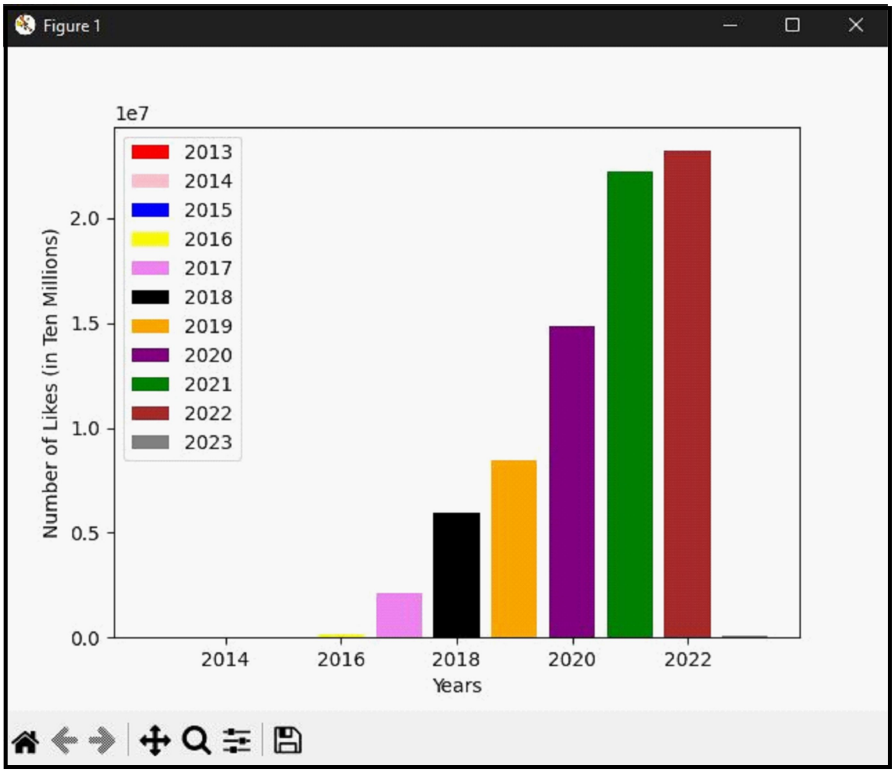
13. After selecting the directory click on select folder and the CSV file will be there instantly. Open it using MS Excel.



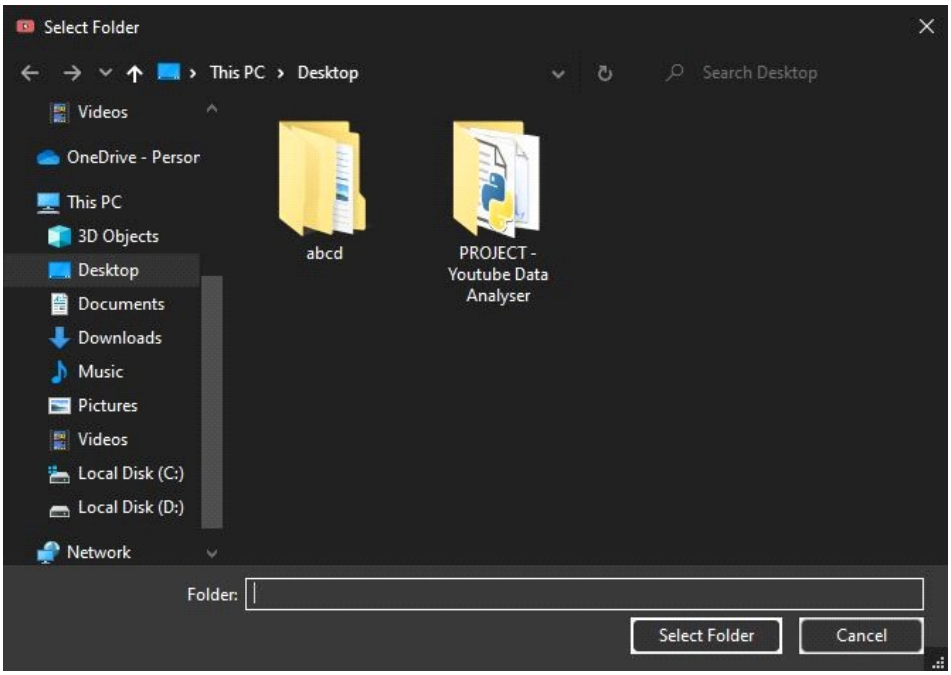
14. Now, to see data more interactively click on 'SEE GRAPHICALLY'.

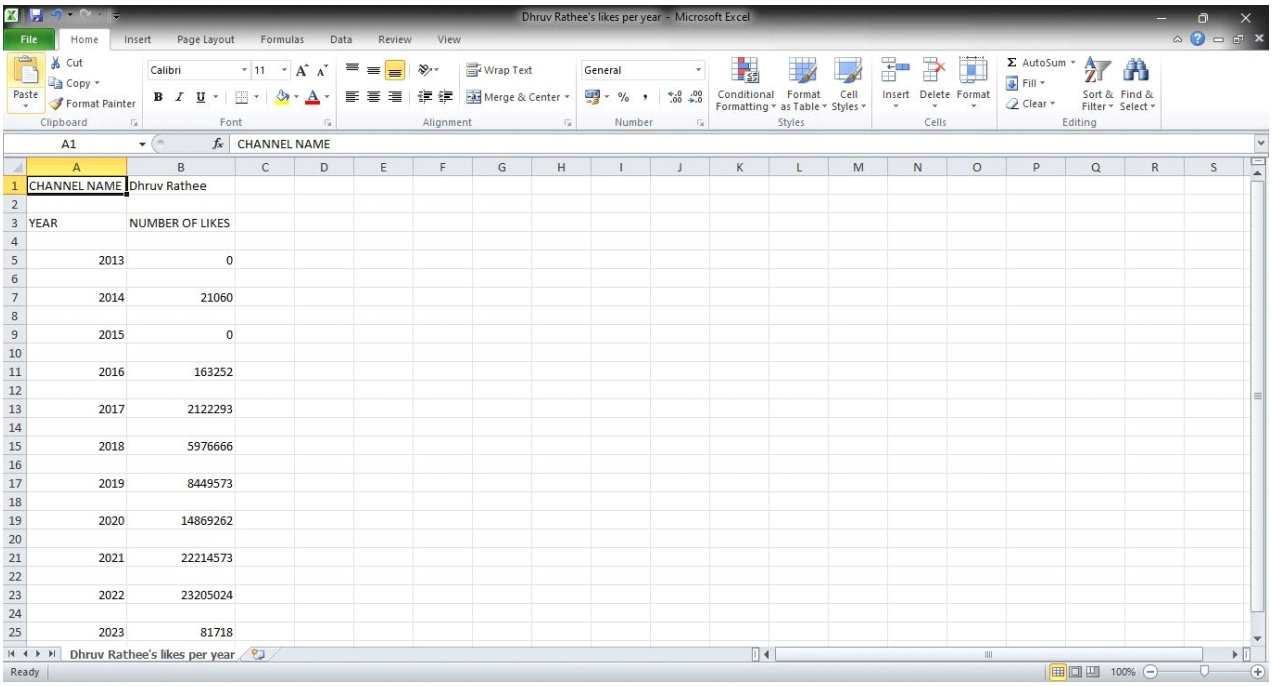


15. Choose the option for the graph you want to see. For eg if we click on LIKES/YEAR, a graph between likes and years opens. This graph can be scaled and saved in the form of png by the control panel at the bottom of the window.



16. Similarly, we can also export this data to CSV. Just click on EXPORT TO CSV button corresponding to the option you choose. For eg if you chose LIKES/YEAR, a window will open, asking the directory. Enter the Directory there and file will be there instantly.

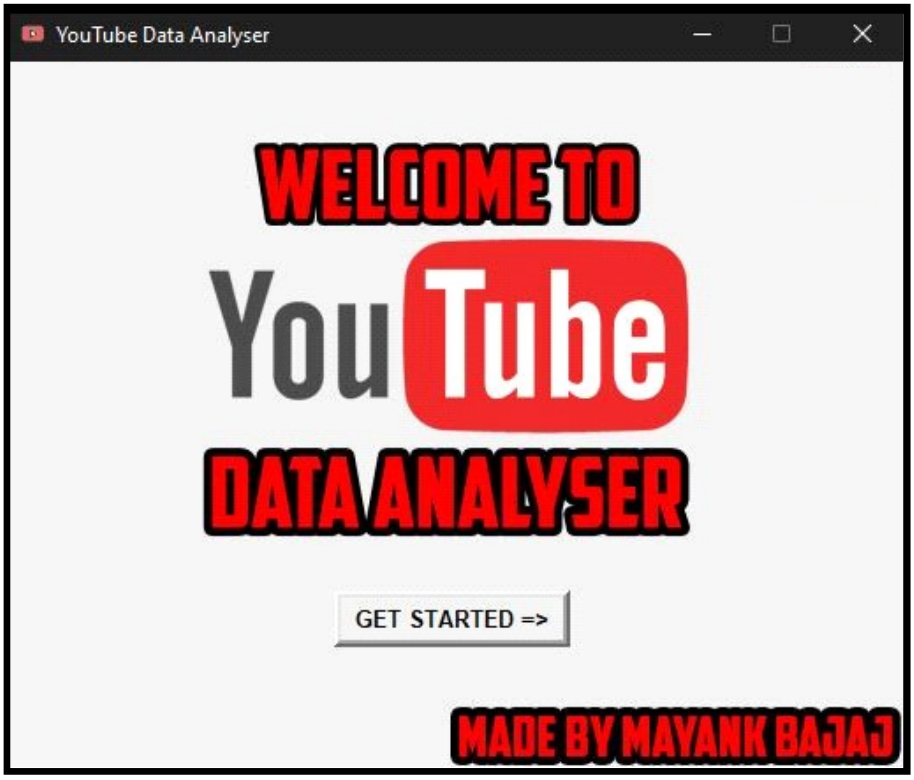




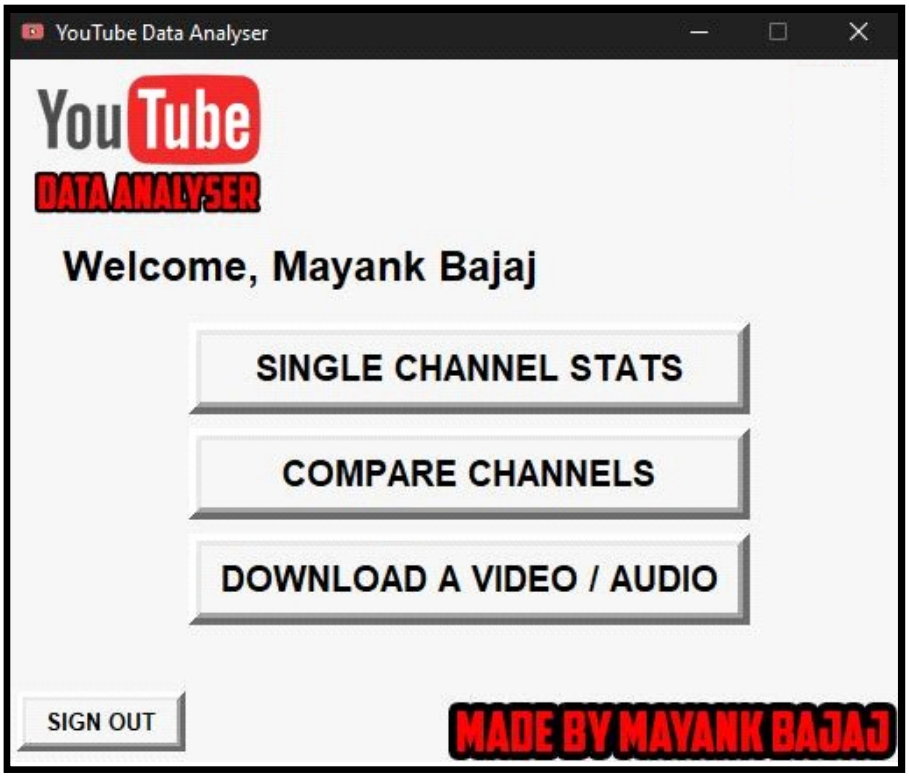
- **Compare Channels**

STEPS

1. Run the Code and click on 'GET STARTED'.

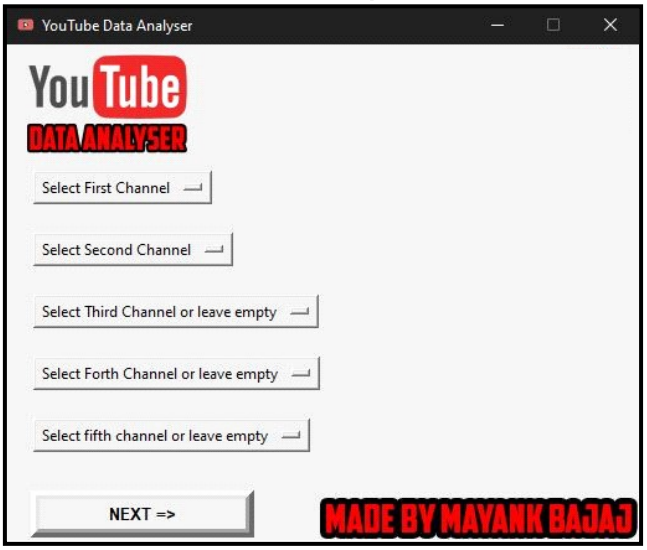


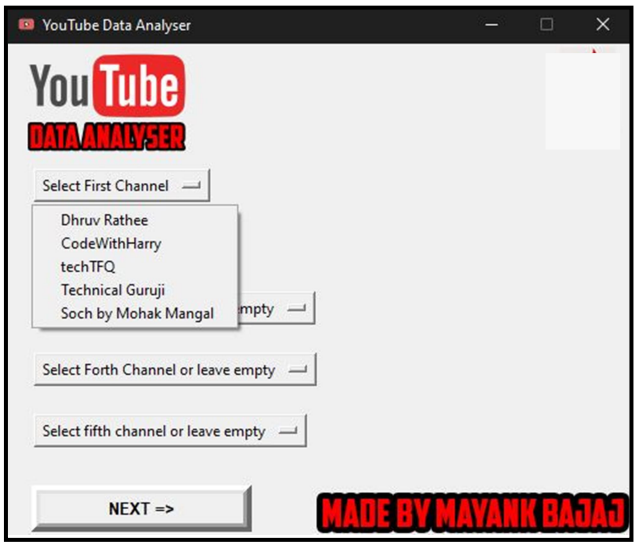
2. The menu will open directly now (No need to login as we checked the Remember Me box last time). Click on Compare Channels.



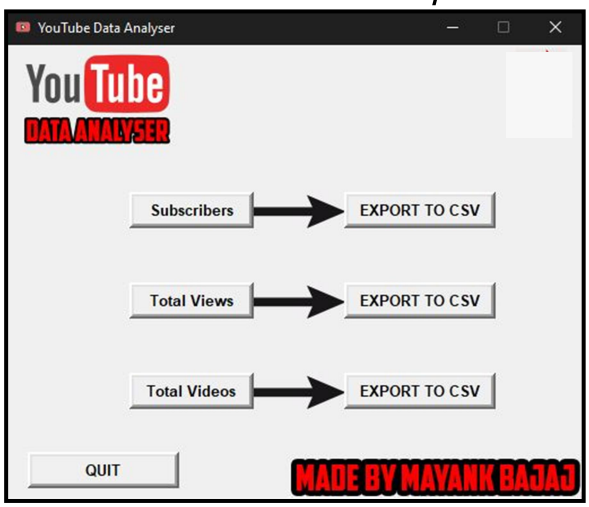
3. Now a window will open asking you to register the channel ID(s) of the channels you want to compare.(Follow the same steps to get the channel ID as we did in Single channel Stats [STEP 7 to STEP 10]). After Registering all the ID(s) Click on NEXT (No need to register ID's if they are saved).

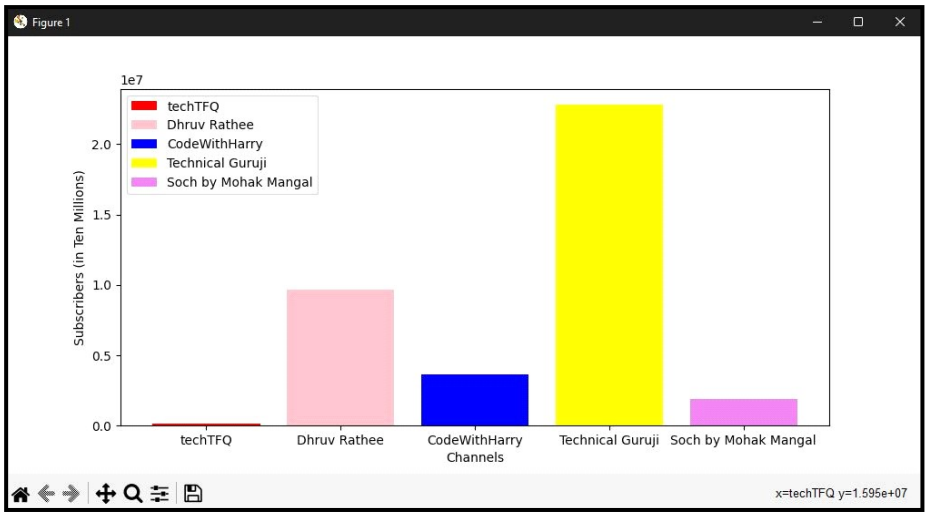
4. Now a window with 5 drop down menus will open, asking you the channels. Select the channels by their names and click next



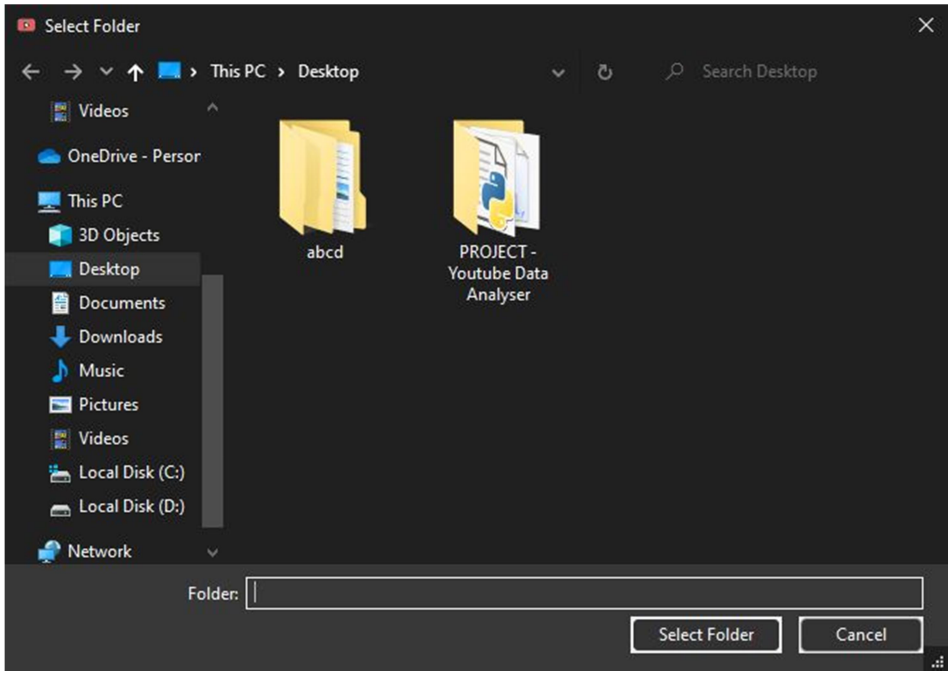


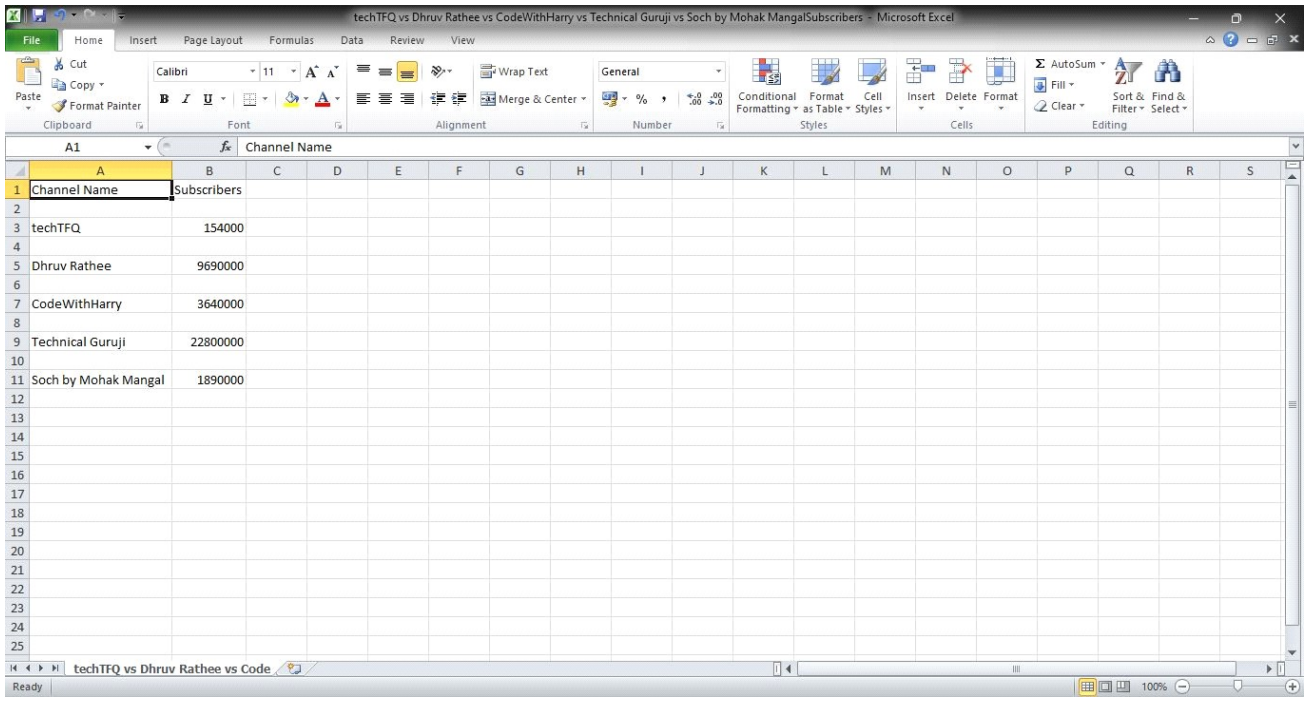
5. Now a window will open, showing you the ways you can compare the channels. For eg if is choose Subscribers, a graph will appear showing the Subscriber count of every channel.





6. This graph can be scaled and saved in the form of png by the control panel at the bottom of the window.
7. Similarly, we can also export this data to CSV. Just click on EXPORT TO CSV button corresponding to the option you choose. For eg if you chose SUBSCIBERS, a window will open, asking the directory. Enter the Directory there and file will be there instantly.

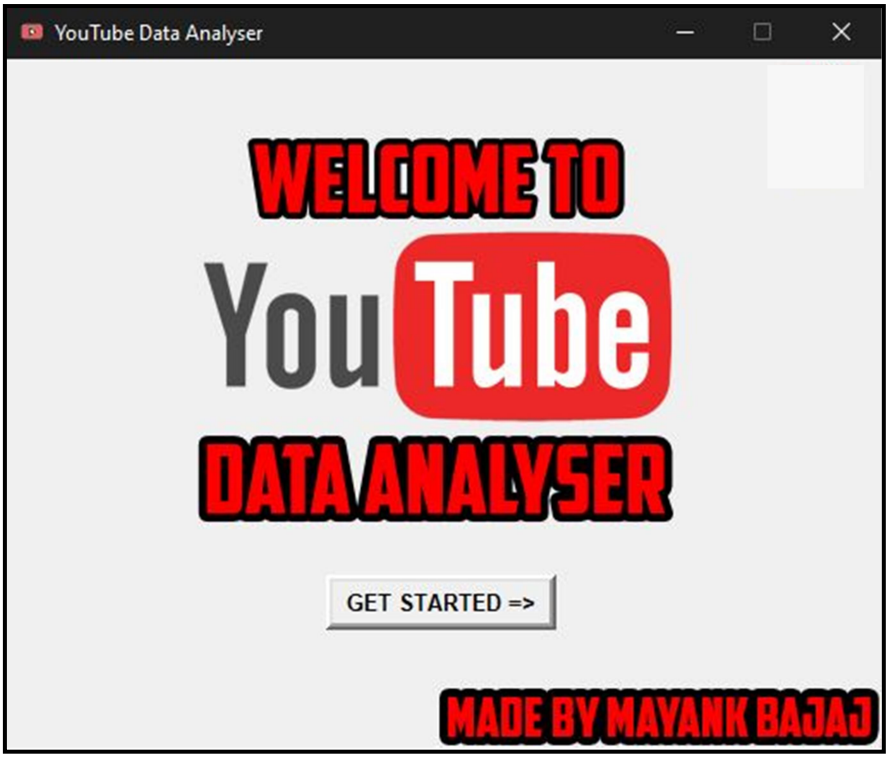




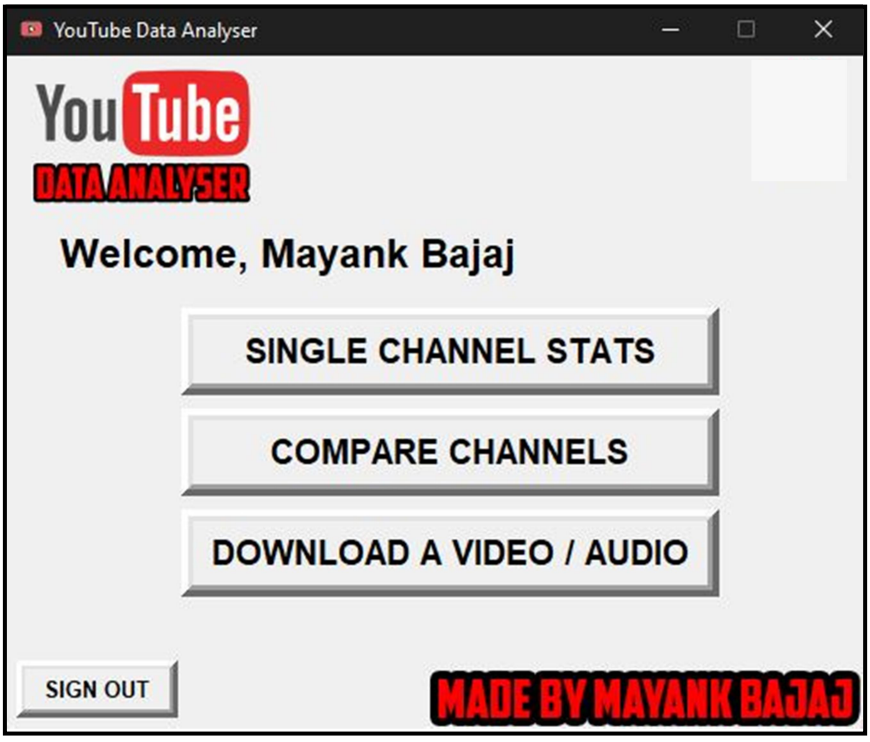
- **Download an Audio/Video**

STEPS

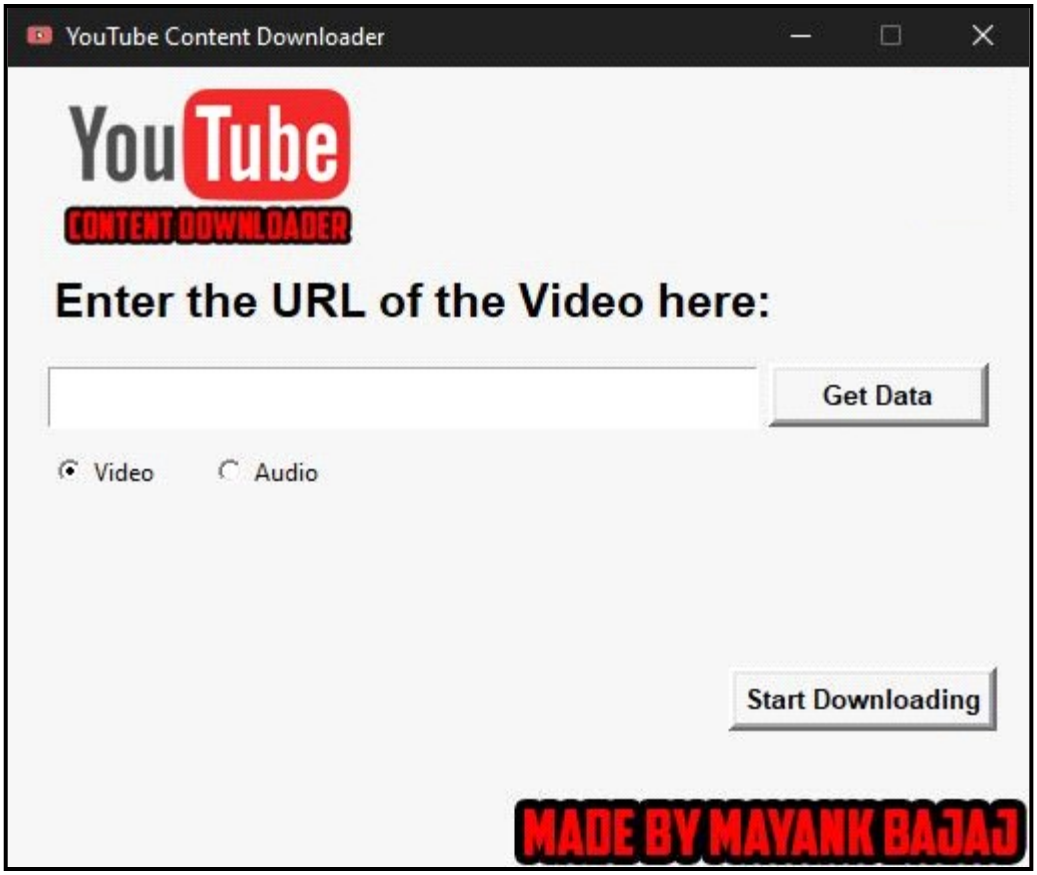
1. Run the Code and click on 'GET STARTED'.



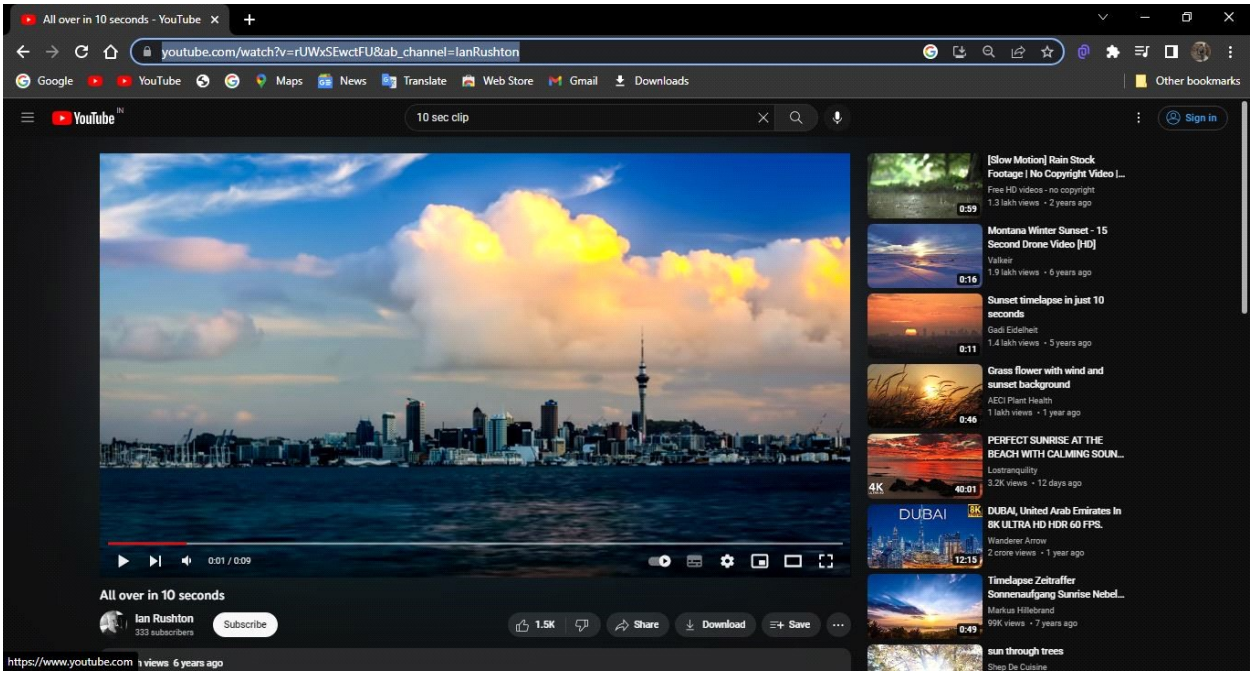
2. The menu will open directly now (No need to login as we checked the Remember Me box last time). Click on Compare Channels.



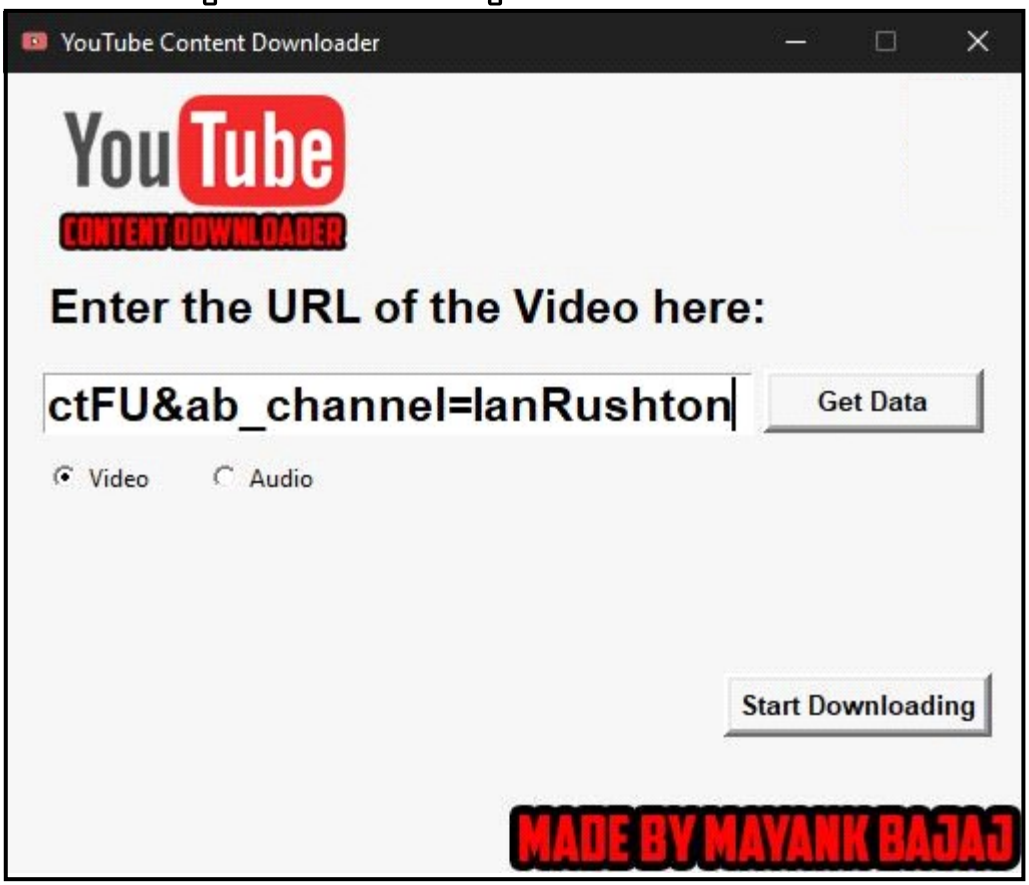
3. Click on DOWNLOAD A VIDEO/AUDIO. A window will open asking you the URL of the Video You want to Download.



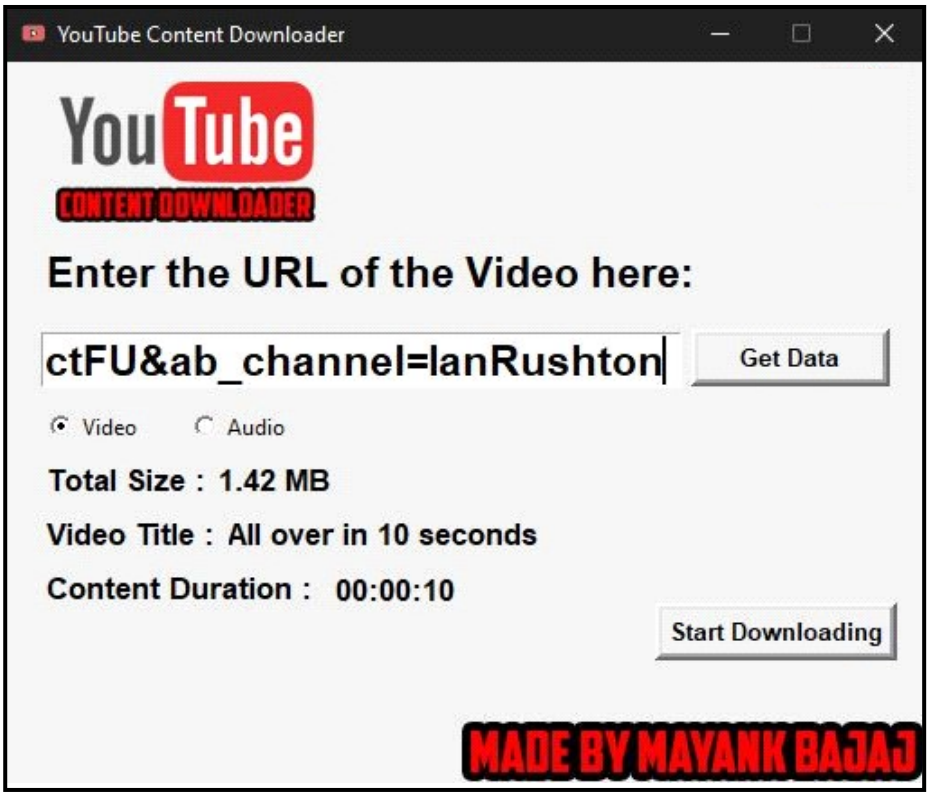
4. Open the YouTube video you want to download. Copy Its URL.



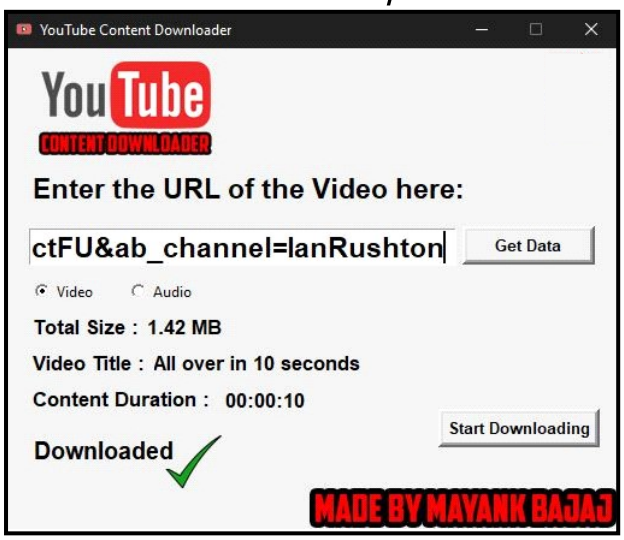
5. Paste the URL into the window. And select the option between Audio and Video. For eg we are choosing video.

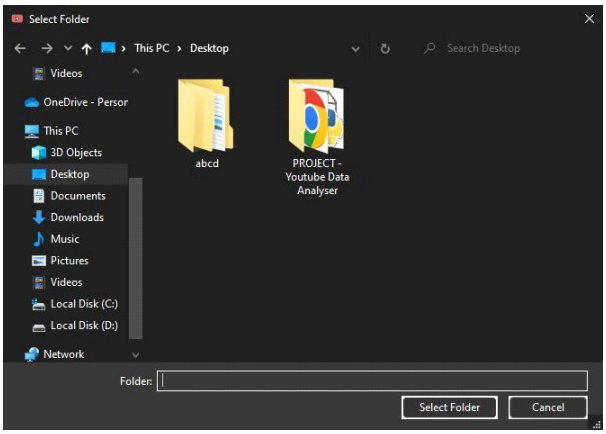


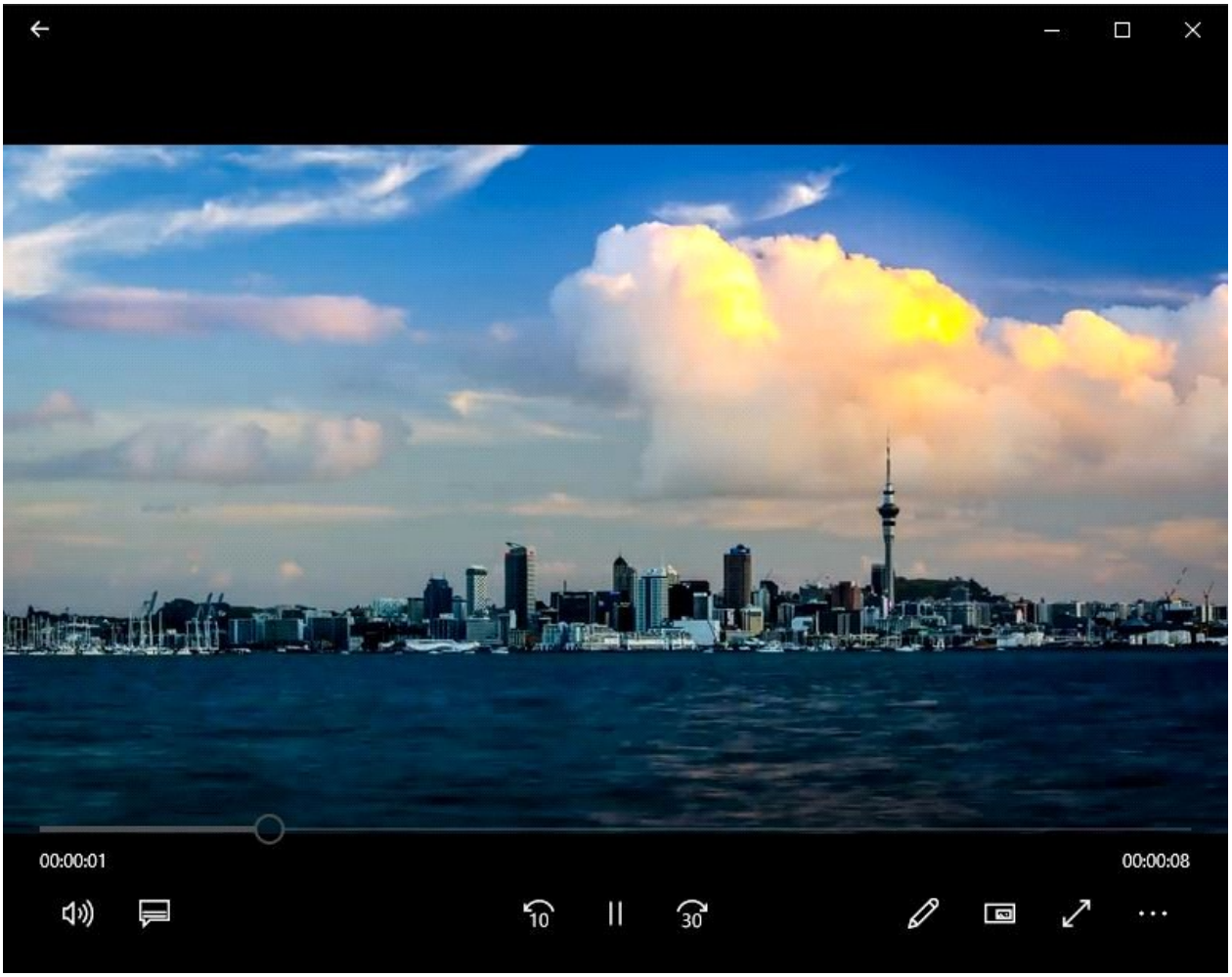
6. Click on Get Data.



7. Click on START DOWNLOADING. A window asking the directory will open. Select the directory and the video will start downloading.







MySQL OUTPUTS:

```
mysql> select * from accounts;
+-----------------+----------+--------------+------------+------------+
| username        | password | fullname     | dob        | rememberme |
+-----------------+----------+--------------+------------+------------+
| MayankBajaj2006 | 30032006 | Mayank Bajaj | 2006-03-30 |          1 |
+-----------------+----------+--------------+------------+------------+
1 row in set (0.02 sec)
```

```
mysql> select * from mayankbajaj2006_yda;
+----------------------+--------------------------+
| channelname          | channelid                |
+----------------------+--------------------------+
| Dhruv Rathee         | UC-CSyyi47VX1lD9zyeABW3w |
| CodeWithHarry        | UCeVMnSShP_Iviwkknt83cww |
| techTFQ              | UCnz-ZXXER4jOvuED5trXfEA |
| Technical Guruji     | UCOhHO2ICt0ti9KAh-QHvttQ |
| Soch by Mohak Mangal | UCz4a7agVFr1TxU-mpAP8hkw |
+----------------------+--------------------------+
5 rows in set (0.01 sec)
```

FUTURE SCOPE / ENHANCEMENTS

1. We can convert the source code to an executable package, after this it will become very easy to install on a new computer system.

2. We can also use Scripts like PyScript to host this program on a server and make a website out of this idea.