

Automatic Sampling and Analysis of YouTube Data

Setting Up Access to the YouTube API

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2022-02-21

Setting up API access to the *YouTube* API

To effectively work with *YouTube* data, we need access to its Application Programming Interface (API). As this process, unfortunately, can be a bit tedious, we prepared this preliminary tutorial so you don't have to spend time setting up your API access during the workshop. Please follow this tutorial and check if the setup works before the workshop. If your setup does not work, feel free to contact us before the workshop (the sooner the better) and we'll try to assist you in setting up access to the *YouTube* API. If, for some reason, setting up access to the API does not work for you and we don't find a solution or if you cannot access the API during the workshop, we will have some data prepared that you can then work with in the workshop.

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HINT: Pink texts in the slides are hyperlinks that you can simply click on

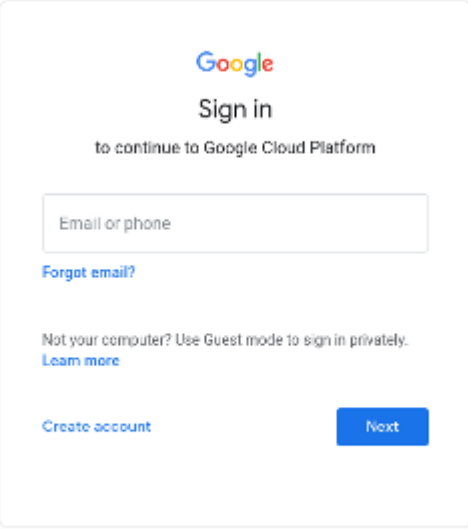
Setting up API Access

- For starters, you need a *Gmail* account
- We suggest that you create a new account specifically for this workshop
- You can create a new account [here](#)
- Next, you need to:
 - Sign up for the *Google Developer Console*
 - Create a new project
 - Activate the Youtube Data API v3
 - Create authentication credentials
 - Test the credentials from R

We will explain these steps in detail on the following slides.

Google Developer Console

Go to the **Developer Console** and log in with your (new) *Google* account. You need to accept the *Google* Developer Terms of Service (ToS). You can deselect the email updates, and click "Agree and continue".



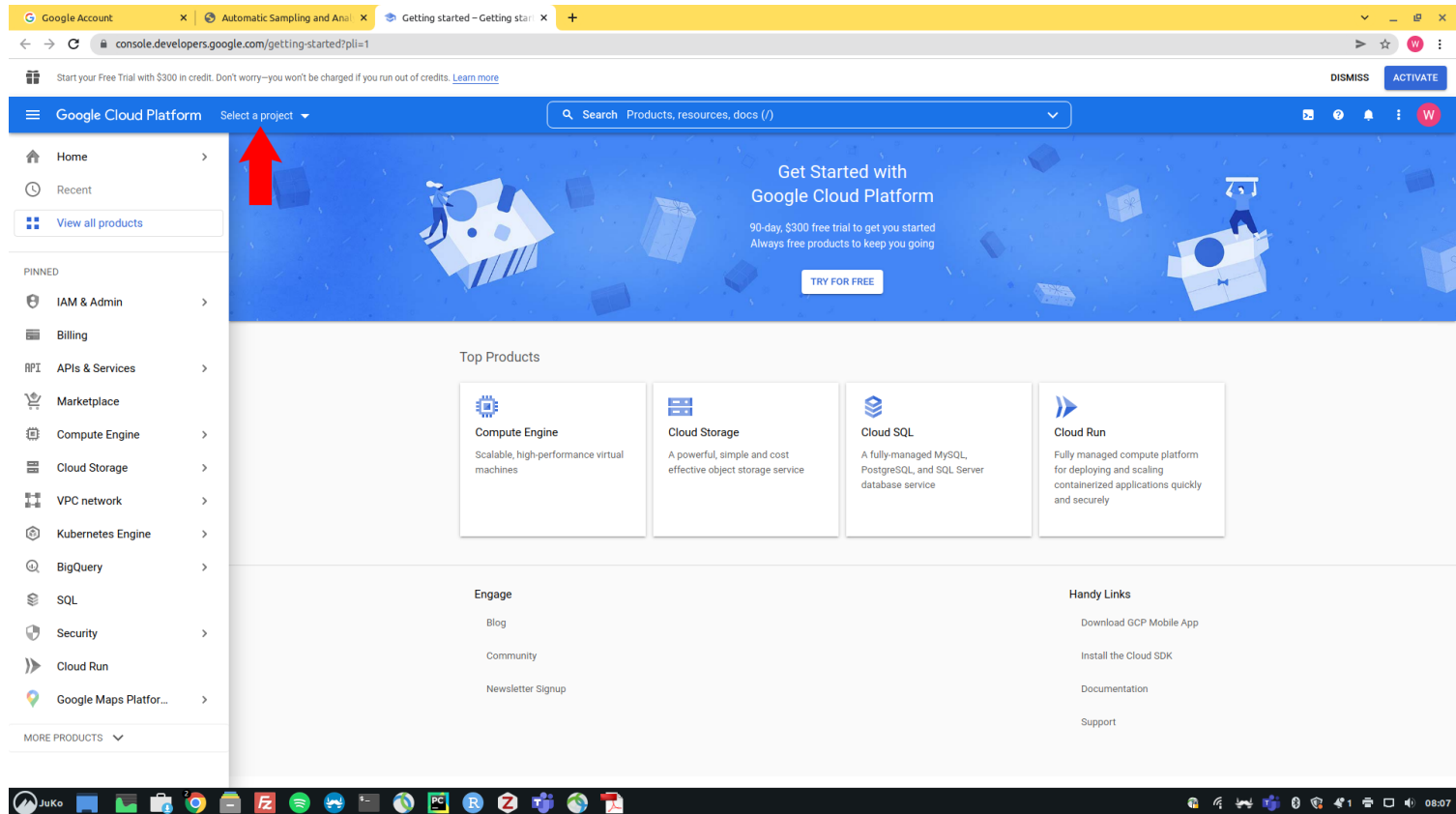
The image shows a Google sign-in interface. At the top is the Google logo. Below it, the text "Sign in" is centered, followed by "to continue to Google Cloud Platform". There is a text input field labeled "Email or phone". Below the field is a link "Forgot email?". Further down, there is a line of text: "Not your computer? Use Guest mode to sign in privately." followed by a link "Learn more". At the bottom left is a link "Create account", and at the bottom right is a blue button labeled "Next".

English (United States) ▾

[Help](#) [Privacy](#) [Terms](#)

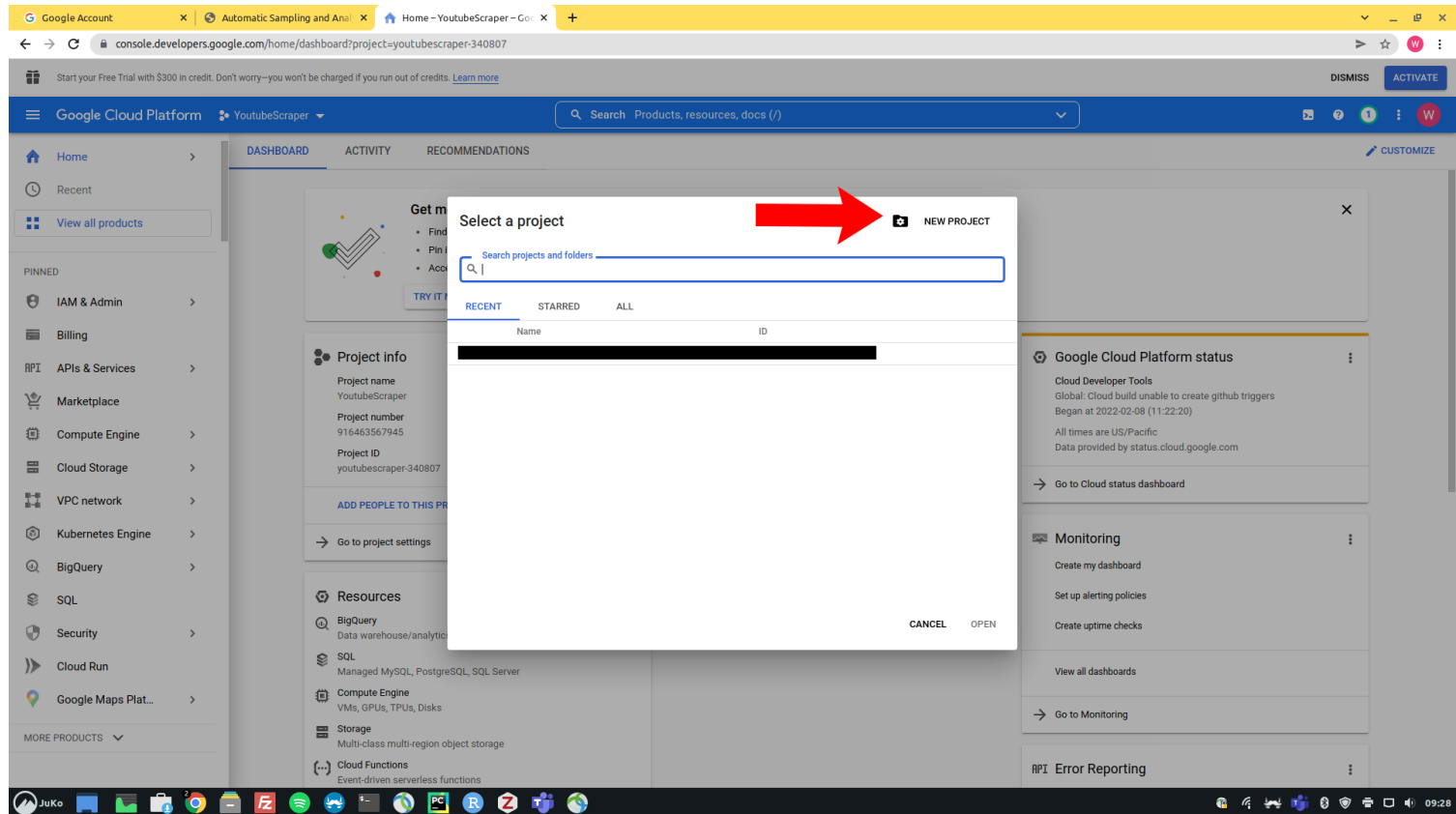
Creating a Project

After that, you need to click on "Select a project" on the top left of the screen.



Creating a Project

In the pop-up window, click on "New project" to create a new project



Creating a Project

Enter a project name and click on "create". You don't need to specify an organization.

Google Account Automatic Sampling and Analysis New Project - Google Cloud

console.developers.google.com/projectcreate?previousPage=%2Fgetting-started%3Fp%3D1&organizationId=0

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Google Cloud Platform Search Products, resources, docs (/)

New Project

You have 12 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)
[MANAGE QUOTAS](#)

Project name * YoutubeScrape ⓘ

Project ID: youtubescraper-340807. It cannot be changed later. [EDIT](#)

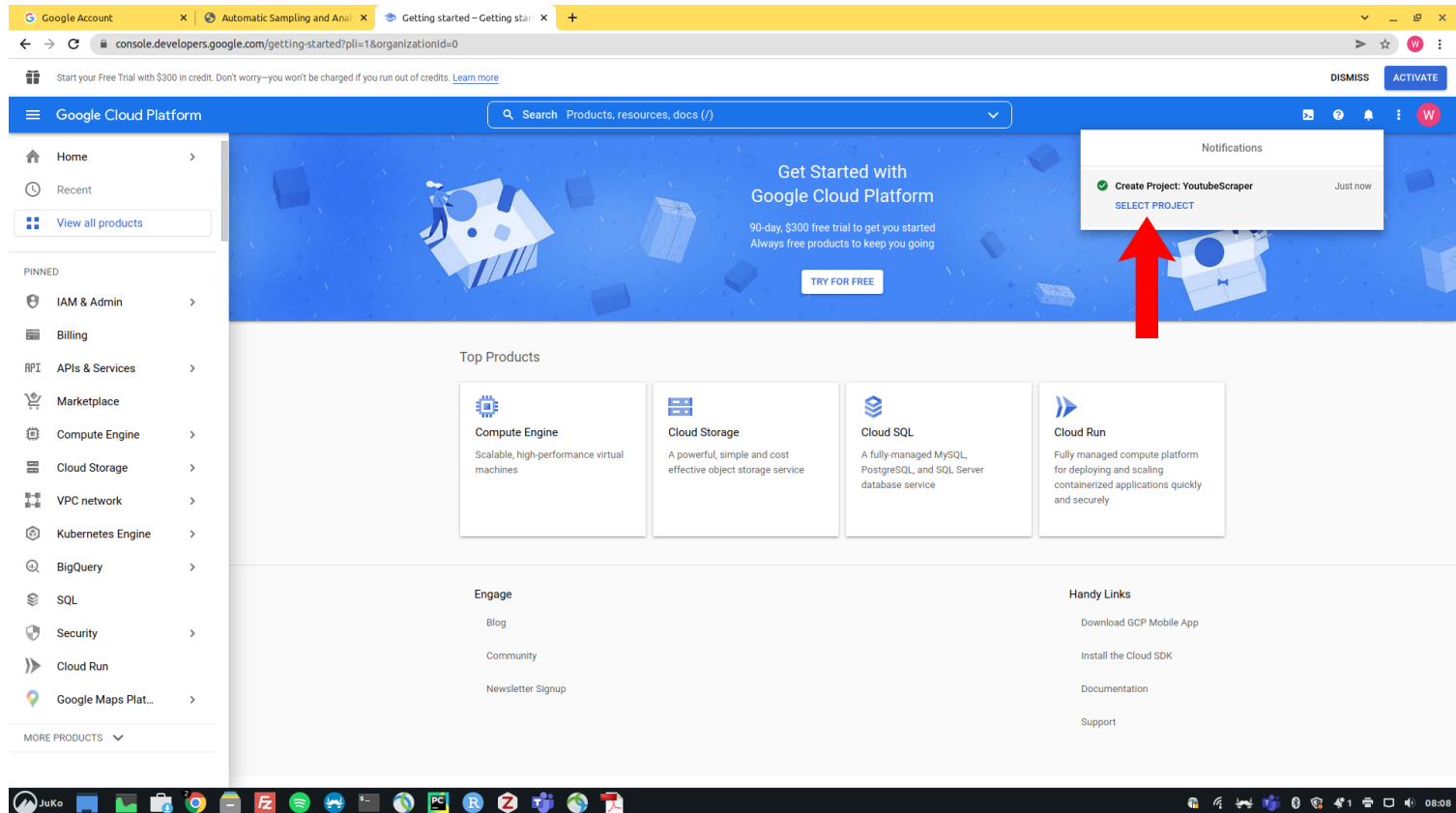
Location * No organization BROWSE

Parent organization or folder

CREATE CANCEL

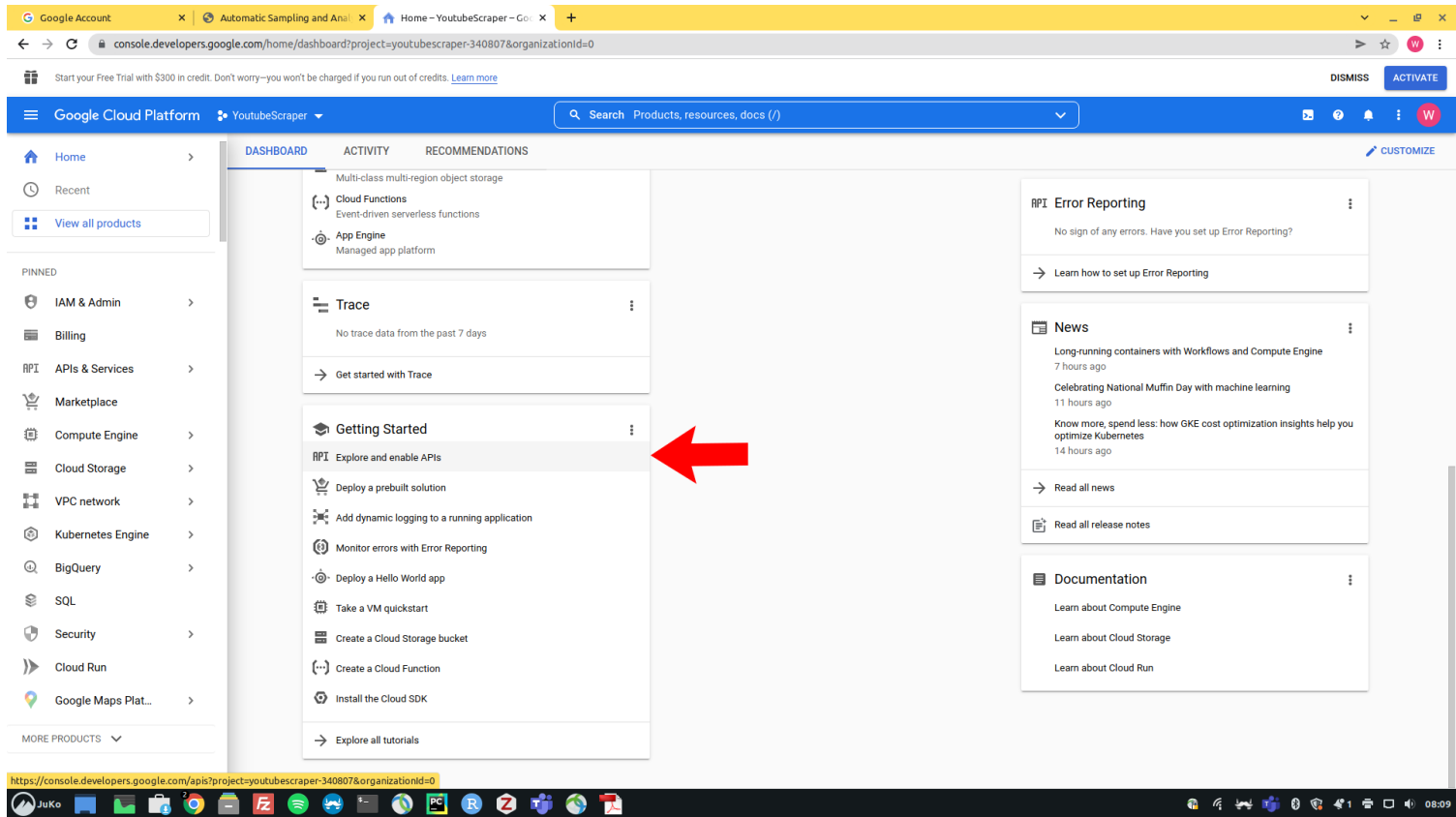
Activating the YouTube Data API v3

On the next screen, go to your project by clicking on "Select Project" in the pop-up window on the top right.



Activating the YouTube Data API v3

On your project site, scroll down and click on "Explore and enable APIs".



Activating the YouTube Data API v3

Next, click on the blue "Enable APIs and services" button on the top left side.

The screenshot shows the Google Cloud Platform 'APIs & Services' dashboard. A red arrow points to the '+ ENABLE APIS AND SERVICES' button in the top navigation bar. The dashboard displays three charts: Traffic, Errors, and Median latency, all showing 'No data is available for the selected time frame.' Below the charts is a table of enabled APIs.

Name	Requests	Errors (%)	Latency, median (ms)	Latency, 95% (ms)
BigQuery API				
BigQuery Storage API				
Cloud Datastore API				
Cloud Debugger API				
Cloud Logging API				
Cloud Monitoring API				
Cloud SQL				
Cloud Storage				
Cloud Storage API				
Cloud Trace API				
Google Cloud APIs				
Google Cloud Storage JSON API				

Activating the YouTube Data API v3

On the next page, search for "youtube data api v3".

The screenshot shows the Google Cloud Platform API Library interface. At the top, a yellow browser bar displays the URL `console.developers.google.com/apis/library?organizationId=0&project=youtubescraper-340807`. Below the browser bar, a blue header bar contains the text "Google Cloud Platform" and "YoutubeScraper". The main content area has a light gray background with a stylized map of the world. A red arrow points to a search bar that contains the text "Youtube data api v3". Below the search bar, a dropdown menu shows the search results "youtube data api v3".

Below the search bar, the page is divided into two sections: "Maps" and "Machine learning".

Maps

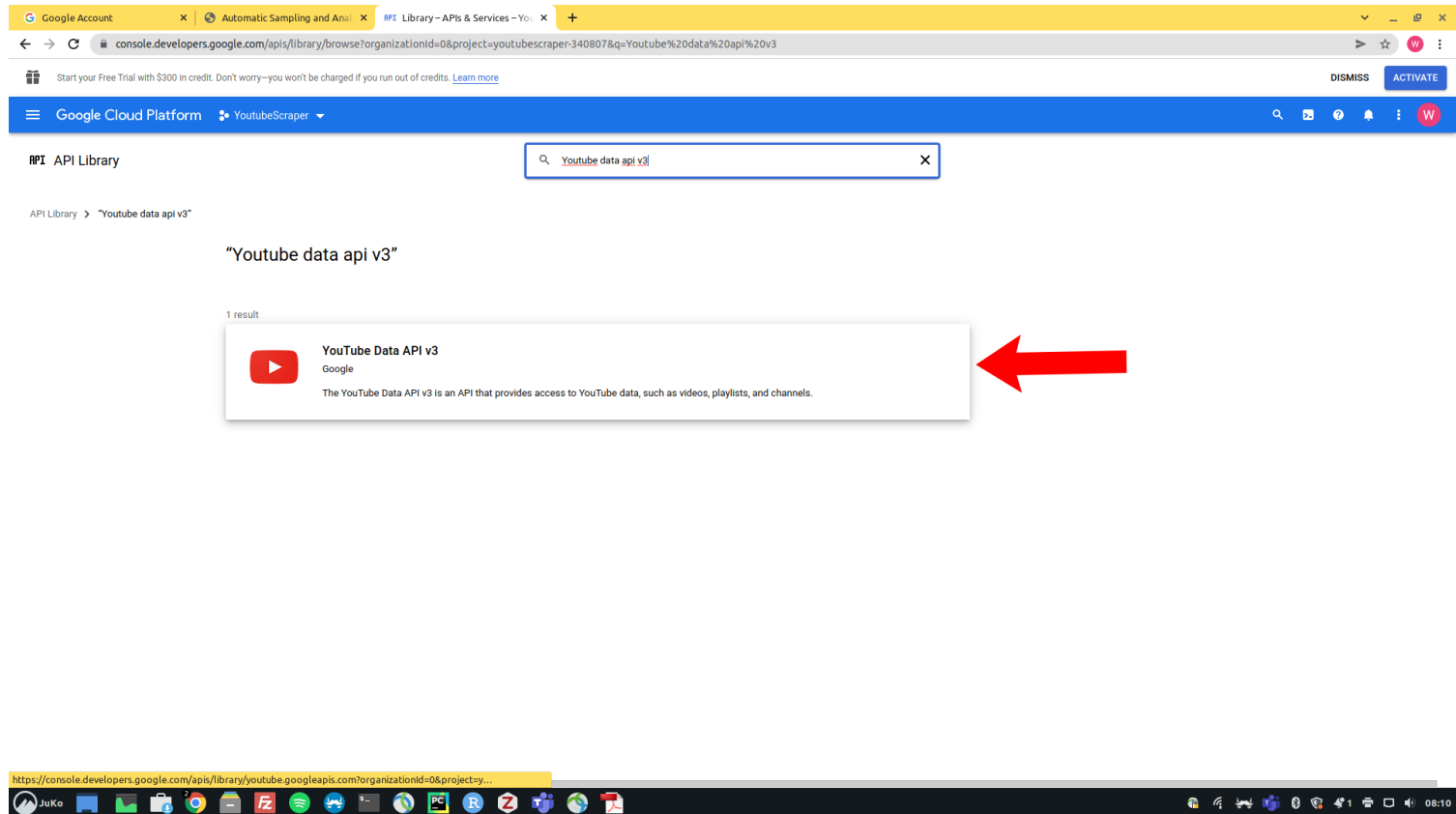
- Maps SDK for Android** (Google): Maps for your native Android app.
- Maps SDK for iOS** (Google): Maps for your native iOS app.
- Maps JavaScript API** (Google): Maps for your website.
- Places API** (Google Enterprise API): Get detailed information about 100 million places.
- Roads API** (Google Enterprise API): Snap-to-road functionality to accurately trace GPS breadcrumbs.
- Directions API** (Google Enterprise API): Directions between multiple locations.

Machine learning

- Dialogflow API** (Google Enterprise API): Build conversational interfaces.
- Cloud Vision API** (Google Enterprise API): Image Content Analysis.
- Cloud Natural Language API** (Google Enterprise API): Provides natural language processing.
- Cloud Speech-to-Text API** (Google Enterprise API): Speech recognition.
- Cloud Translation API** (Google Enterprise API): Instantaneous text translation into your language.
- AI Platform Training & Prediction API** (Google Enterprise API): Machine learning.

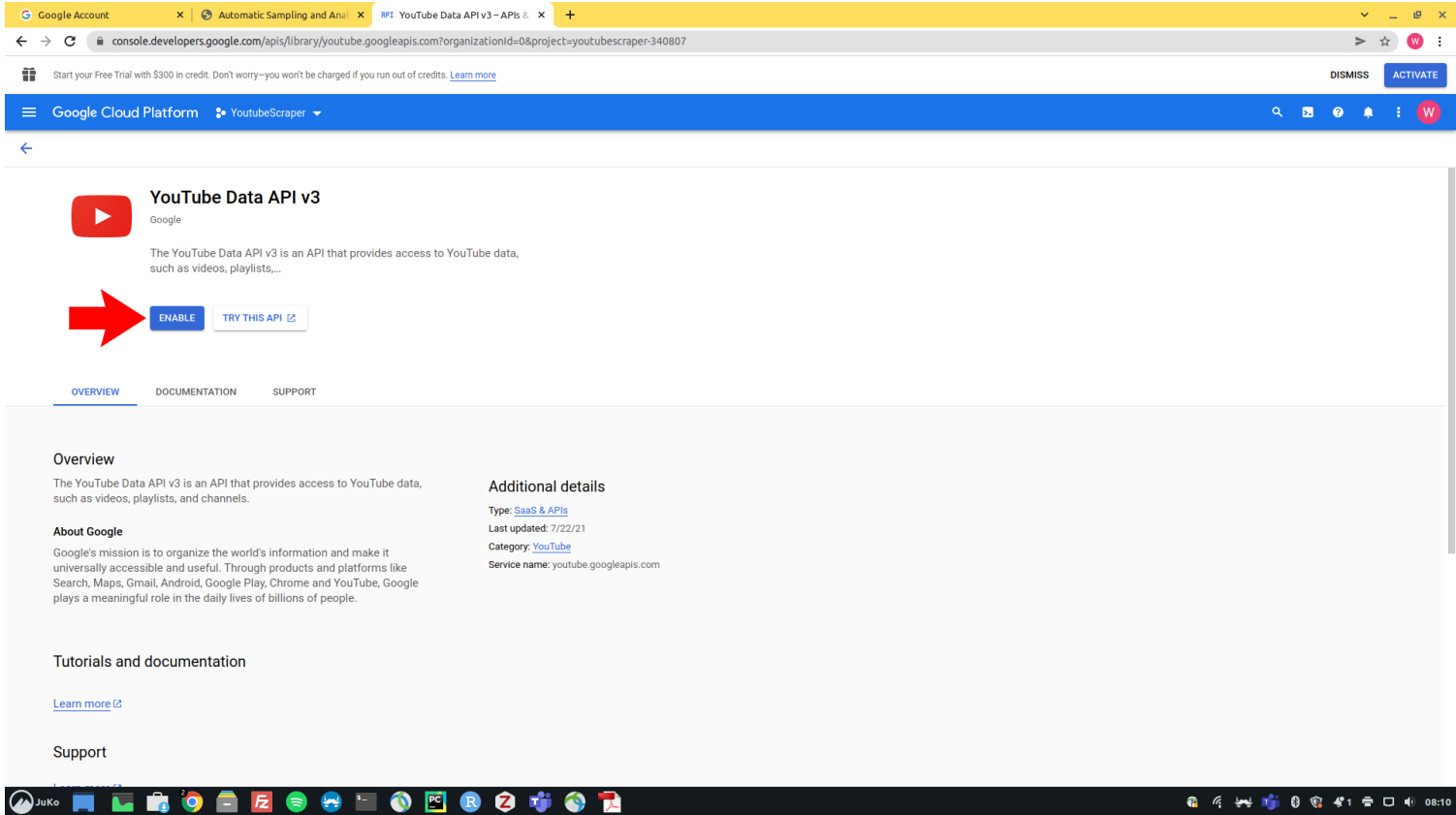
Activating the YouTube Data API v3

Select "YouTube Data API v3"



Activating the YouTube Data API v3

On the next screen, click "enable" to activate the YouTube data API v3.



The screenshot shows the Google Cloud Platform console interface. At the top, the browser address bar displays the URL: `console.developers.google.com/apis/library/youtube.googleapis.com?organizationId=0&project=youtubescraper-340807`. The page header includes the Google Cloud Platform logo and the project name "YoutubeScraper".

The main content area features the "YouTube Data API v3" card. It includes the YouTube logo, the text "YouTube Data API v3" by Google, and a description: "The YouTube Data API v3 is an API that provides access to YouTube data, such as videos, playlists,...". Below this, there is a large red arrow pointing to the "ENABLE" button. To the right of the "ENABLE" button is a "TRY THIS API" link.

Below the card, there are tabs for "OVERVIEW", "DOCUMENTATION", and "SUPPORT". The "OVERVIEW" tab is selected, showing the following content:

- Overview**: The YouTube Data API v3 is an API that provides access to YouTube data, such as videos, playlists, and channels.
- About Google**: Google's mission is to organize the world's information and make it universally accessible and useful. Through products and platforms like Search, Maps, Gmail, Android, Google Play, Chrome and YouTube, Google plays a meaningful role in the daily lives of billions of people.
- Tutorials and documentation**: [Learn more](#)
- Support**

On the right side of the "OVERVIEW" tab, there is an "Additional details" section:

- Type: [SaaS & APIs](#)
- Last updated: 7/22/21
- Category: [YouTube](#)
- Service name: youtube.googleapis.com

The bottom of the screenshot shows the Windows taskbar with various application icons and the system clock displaying 08:10.

Creating Credentials

In the next step, click on "Create Credentials" on the top right.

The screenshot shows the Google Cloud Platform console interface. At the top, there's a navigation bar with the Google Cloud Platform logo and a search bar. Below this, the left sidebar shows the 'APIs & Services' section with 'YouTube Data API v3' selected. The main content area displays the 'Overview' page for the YouTube Data API v3. A red arrow points to the 'CREATE CREDENTIALS' button in the top right corner of the main content area. The page also includes a 'Details' section on the left, a 'Traffic by response code' chart on the right, and a 'Tutorials and documentation' section at the bottom left.

Google Account | Automatic Sampling and Analysis | API Overview - APIs & Services - YouTubeScraper

console.developers.google.com/apis/api/youtube.googleapis.com/overview?project=youtubescraper-340807

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Google Cloud Platform | YouTubeScraper | Search Products, resources, docs (/)

APIs & Services | YouTube Data API v3 | Overview | DISABLE API

Overview

Metrics

Quotas

Credentials

To use this API, you may need credentials. Click 'Create credentials' to get started.

CREATE CREDENTIALS

Details

Name
YouTube Data API v3

By
Google

Service name
youtube.googleapis.com

Overview
The YouTube Data API v3 is an API that provides access to YouTube data, such as videos, playlists, and channels.

Activation status
Enabled

Tutorials and documentation

[Learn more](#)

[Try in API Explorer](#)

Traffic by response code

Request/sec (2 hr average)

1.0%
0.8%
0.6%
0.4%
0.2%
0

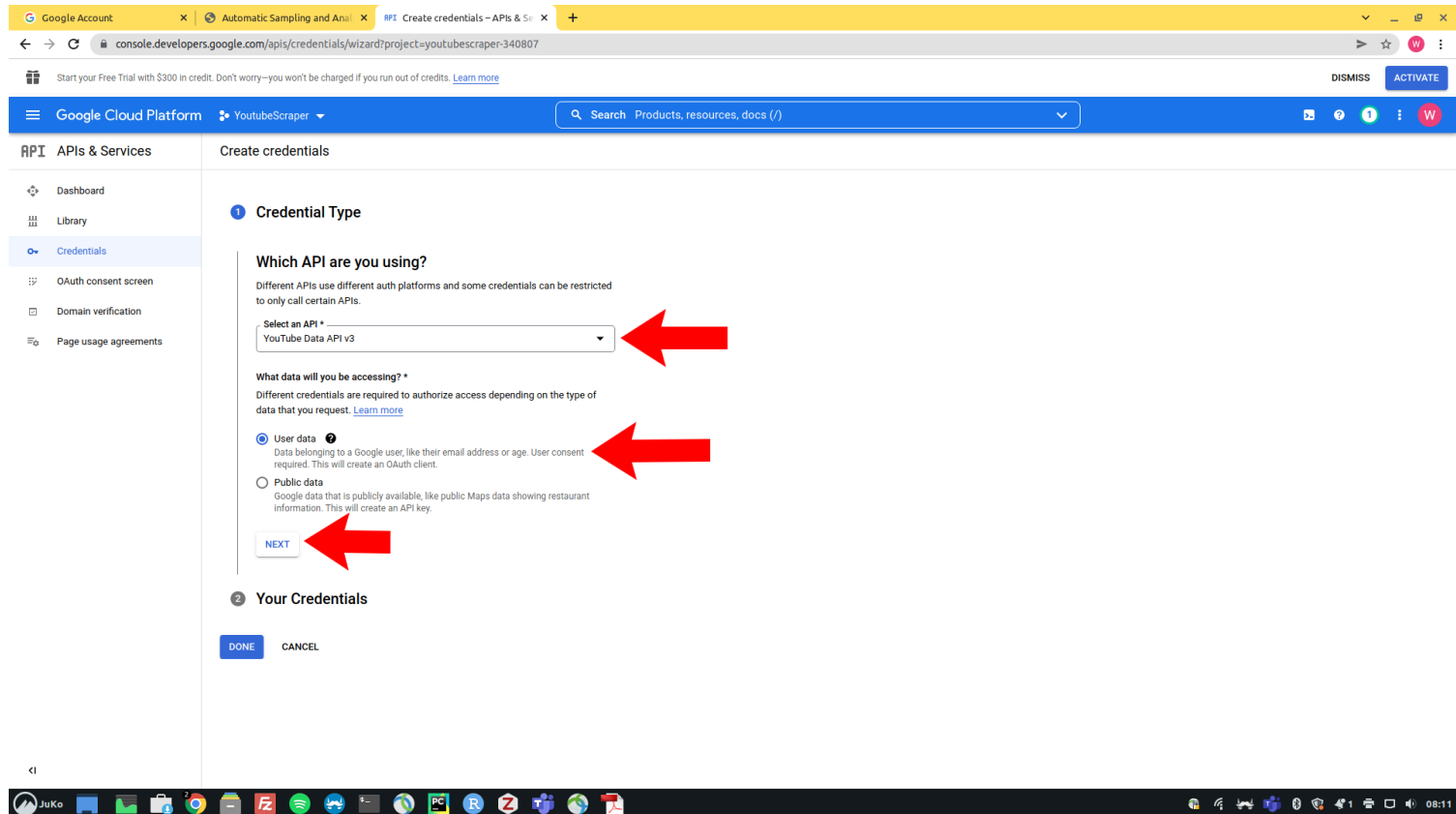
Tue 11 Thu 13 Sat 15 Mon 17 Wed 19 Fri 21 Sun 23 Tue 25 Thu 27 Sat 29 Feb 01 Thu 03 Sat 05 Mon 07 Wed 09

No data is available for the selected time frame.

[View metrics](#)

Creating Credentials

On the next screen, select "YouTube Data API v3" and click on the "User Data" radio button, then click "next".



Creating Credentials

Next, specify an arbitrary app name and enter your (new) *Gmail* address as the user support email and developer contact email. Click "Save and continue" afterwards.

The screenshot shows the Google Cloud Platform console with the 'Create credentials' wizard open. The left sidebar shows the 'APIs & Services' menu with 'Credentials' selected. The main content area is titled 'Create credentials' and shows the '2 OAuth Consent Screen' step. The 'App information' section contains the following fields:

- App name ***: A text input field containing 'TuberScraper'. A red arrow points to this field.
- User support email ***: A dropdown menu showing 'workshoptester2022@gmail.com'. A red arrow points to this field.
- App logo**: A button labeled 'BROWSE' next to a text input field. Below it, a note states: 'Upload an image, not larger than 1MB on the consent screen that will help users recognize your app. Allowed image formats are JPG, PNG, and BMP. Logos should be square and 120px by 120px for the best results.'

The 'Developer contact information' section contains the following field:

- Email addresses ***: A text input field containing 'workshoptester2022@gmail.com'. A red arrow points to this field.

Below these fields is a button labeled 'SAVE AND CONTINUE' with a red arrow pointing to it. At the bottom of the page, there are two optional sections: '3 Scopes (optional)' and '4 OAuth Client ID'.

Creating Credentials

Click on "Add or removes scopes" next

The screenshot shows the Google Cloud Platform console with the 'Create credentials' wizard open. The 'OAuth Consent Screen' is selected, and the 'Scopes (optional)' step is active. A red arrow points to the 'ADD OR REMOVE SCOPES' button. The left sidebar shows the 'APIs & Services' menu with 'Credentials' selected. The bottom of the screen shows a Windows taskbar with various application icons.

Google Account Automatic Sampling and Analysis API Create credentials - APIs & Services

console.developers.google.com/apis/credentials/wizard/project=youtubescraper-340807

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APIs & Services

- Dashboard
- Library
- Credentials
- OAuth consent screen
- Domain verification
- Page usage agreements

Create credentials

OAuth Consent Screen

Scopes (optional)

You can also choose scopes when you register your app.

Scopes express the permissions you request users to authorize for your app and allow your project to access specific types of private user data from their Google Account. [Learn more](#)

ADD OR REMOVE SCOPES

Your non-sensitive scopes

API ↑	Scope	User-facing description
No rows to display		

Your sensitive scopes

Sensitive scopes are scopes that request access to private user data.

API ↑	Scope	User-facing description
No rows to display		

Your restricted scopes

Restricted scopes are scopes that request access to highly sensitive user

Creating Credentials

Use the uppermost checkbox to select all scopes on all pages of the table. *Note:* For this workshop it's sufficient to only select the scopes for the YouTube Data API v3 (which you could do via the filter box), but it is quicker and easier, if you simply select everything. Afterwards, click on "update".

Creating Credentials

Next, click on "Save and continue" to confirm your selection of scopes.

Google Account Automatic Sampling and Analysis API Create credentials - APIs & Services

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APIs & Services

Create credentials

Cloud Monitoring API	.../auth/monitoring.write	Publish metric data to your Google Cloud projects	
Cloud Storage API	.../auth/devstorage.readonly	Manage your data in Google Cloud Storage	
Cloud Trace API	.../auth/trace.readonly	Read Trace data for a project or application	
Cloud Trace API	.../auth/trace.append	Write Trace data for a project or application	
Service Management API	.../auth/service.management	Manage your Google API service configuration	

Rows per page: 10 11 - 20 of 29 < >

Your restricted scopes

Restricted scopes are scopes that request access to highly sensitive user data.

API ↑	Scope	User-facing description
No rows to display		

SAVE AND CONTINUE

4 OAuth Client ID

5 Your Credentials

DONE CANCEL

Creating Credentials

Select "Desktop App" as the application type and specify the name of you set of credentials (can be any name). Click on "Create" to confirm

The screenshot shows the 'Create credentials' wizard in the Google Cloud Platform console. The left sidebar lists navigation options: Dashboard, Library, Credentials (selected), OAuth consent screen, Domain verification, and Page usage agreements. The main content area shows the 'Create credentials' steps: 1. Credential Type (checked), 2. OAuth Consent Screen (checked), 3. Scopes (optional) (checked), and 4. OAuth Client ID (active). Under 'OAuth Client ID', there is a description: 'A client ID is used to identify a single app to Google's OAuth servers. If your app runs on multiple platforms, each will need its own client ID. See [Setting up OAuth 2.0](#) for more information. [Learn more](#) about OAuth client types.' Below this, there are two input fields: 'Application type *' with a dropdown menu showing 'Desktop app', and 'Name *' with a text box containing 'TuberScraping'. Two red arrows point to these fields. Below the fields is a note: 'Note: It may take 5 minutes to a few hours for settings to take effect'. At the bottom of the wizard, there are two buttons: 'CREATE' and 'CANCEL'. A red arrow points to the 'CREATE' button. Below the 'CREATE' button, there is a section titled 'Your Credentials' with a plus icon, and two buttons: 'DONE' and 'CANCEL'.

Google Account Automatic Sampling and Analysis API Create credentials - APIs & Services

console.developers.google.com/apis/credentials/wizard?project=youtubescraper-340807

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Google Cloud Platform YoutubeScrapers

APIs & Services

Dashboard

Library

Credentials

OAuth consent screen

Domain verification

Page usage agreements

Create credentials

✓ Credential Type

✓ OAuth Consent Screen

✓ Scopes (optional)

4 OAuth Client ID

A client ID is used to identify a single app to Google's OAuth servers. If your app runs on multiple platforms, each will need its own client ID. See [Setting up OAuth 2.0](#) for more information. [Learn more](#) about OAuth client types.

Application type * Desktop app

Name * TuberScraping

The name of your OAuth 2.0 client. This name is only used to identify the client in the console and will not be shown to end users.

Note: It may take 5 minutes to a few hours for settings to take effect

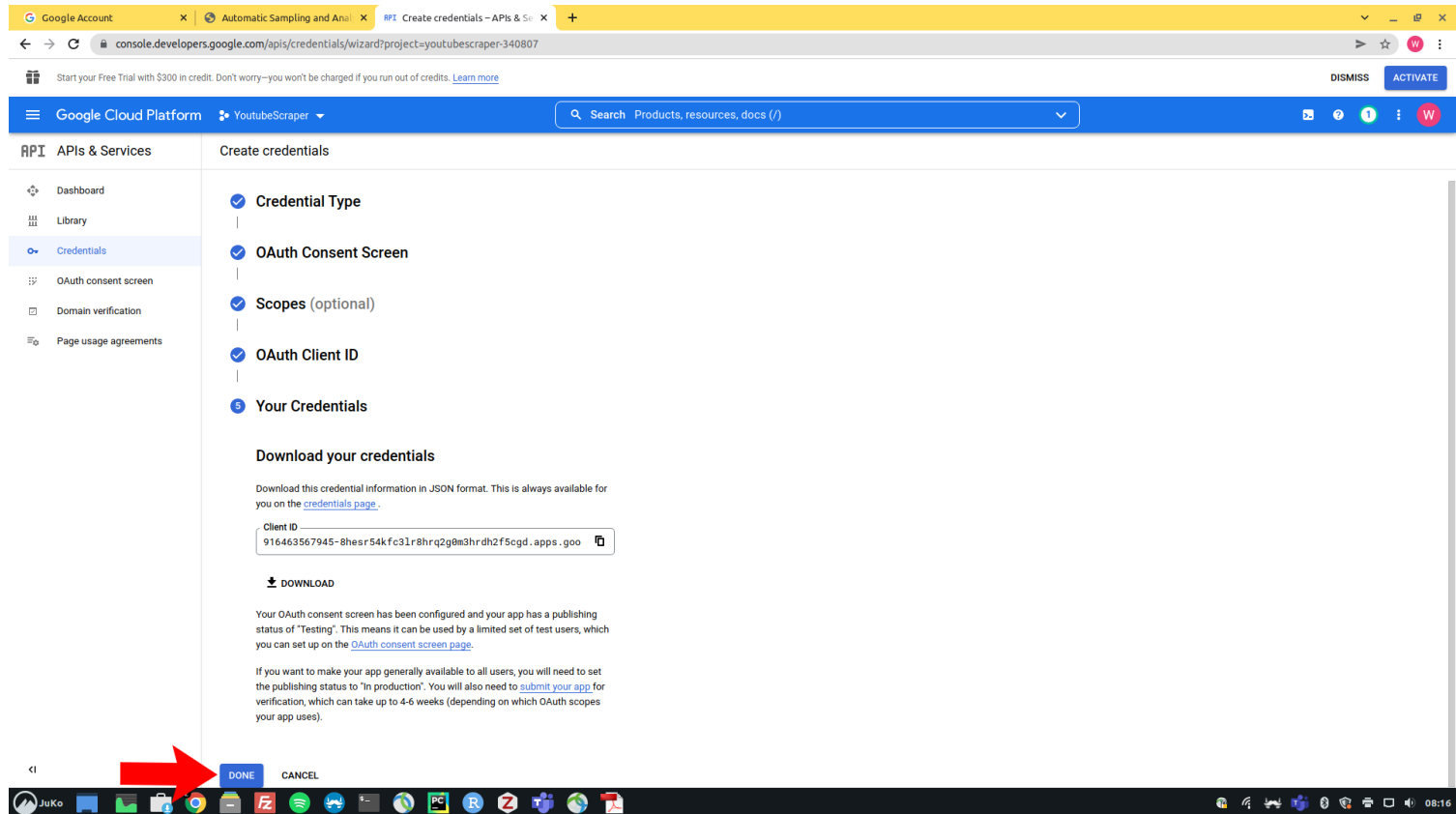
CREATE CANCEL

Your Credentials

DONE CANCEL

Creating Credentials

On the bottom of the page, click "Done" to finalize your changes.



Creating Credentials

Navigate to the "OAuth Consent Screen" tab in the menu on the left and click on "Add Test Users".

The screenshot shows the Google Cloud Platform console interface. The left-hand navigation menu is visible, with the 'OAuth consent screen' option highlighted by a red circle. A red arrow points from this menu item to the '+ ADD USERS' button in the 'Test users' section of the main content area. The main content area displays the configuration for the 'TuberScraper' app, including sections for 'Publishing status' (set to 'Testing'), 'User type' (set to 'External'), and 'OAuth user cap' (set to 100). The 'Test users' section shows a list of test users with a filter bar and a 'No rows to display' message. The right-hand sidebar contains a 'Learn' section with various links related to the OAuth consent screen.

Creating Credentials

In the sidebar panel that should open on the right, enter your *Gmail* address as a test user and click "Save".

The screenshot shows the Google Cloud Platform console for the 'TuberScraper' application. The main panel displays the 'OAuth consent screen' with the following sections:

- Publishing status:** Set to 'Testing'. A 'PUBLISH APP' button is visible.
- User type:** Set to 'External'. A 'MAKE INTERNAL' button is visible.
- OAuth user cap:** A progress bar shows '0 users (0 test, 0 other) / 100 user cap'.
- Test users:** A '+ ADD USERS' button is present.

The right sidebar, titled 'Add users', contains a warning message: 'While publishing status is set to "Testing", only test users are able to access the app. Allowed user cap prior to app verification is 100, and is counted over the entire lifetime of the app.' Below the warning is an input field for the email address, which contains 'workshoptester2022@gmail.com'. A red arrow points to this input field. Below the input field is a blue 'SAVE' button, also indicated by a red arrow.

Creating Credentials

Next, go back to the credentials page using the menu on the left.

The screenshot shows the Google Cloud Platform console for the project 'YouTubeScrapper'. The left sidebar contains the 'APIs & Services' menu, with 'CREDENTIALS' highlighted. A red arrow points to this menu item. The main content area displays the 'OAuth consent screen' configuration page, which includes sections for 'Test users' (with an 'ADD USERS' button), 'Filter', 'User information' (showing 'workshoptester2022@gmail.com'), 'SHOW LESS', 'OAuth rate limits', and 'Your token grant rate' (showing a limit of 10,000 grants per day). The right sidebar contains a 'Learn' section with links to various OAuth-related topics.

Creating Credentials

While we are here, we can also generate an API key that can be used for access to publicly available YouTube data using the API. Click on the blue "Create Credentials" button on the top and select "API key".

The screenshot shows the Google Cloud Platform 'Credentials' page for the 'YoutubeScraper' project. A red arrow points to the '+ CREATE CREDENTIALS' button. A dropdown menu is open, showing options: 'API key', 'OAuth client ID', 'Service account', and 'Help me choose'. The 'API Keys' section is currently empty. The 'OAuth 2.0 Client IDs' section shows one client ID for 'TuberScraping'. The 'Service Accounts' section is also empty.

Name	Restrictions	Key	Actions
No API keys to display			

Name	Creation date	Type	Client ID	Actions
TuberScraping	Feb 9, 2022	Desktop	916463567945-8hes...	

Email	Name	Actions
No service accounts to display		

Creating Credentials

We also need an OAuth client ID + secret. Click on the "Oauth 2.0 Client ID" name that you specified before.

The screenshot shows the Google Cloud Platform console for the project 'youtubescraper-340807'. The left sidebar shows the 'APIs & Services' menu with 'Credentials' selected. The main content area displays the 'Credentials' page with three sections: 'API Keys', 'OAuth 2.0 Client IDs', and 'Service accounts'. The 'OAuth 2.0 Client IDs' section contains a table with one entry, 'TuberScraping', which is highlighted by a red arrow. The 'Service accounts' section is empty.

Name	Creation date	Type	Client ID	Actions
TuberScraping	Feb 9, 2022	Desktop	916463567945-8hes...	

Creating Credentials

Congratulations! You now have your credentials! You can see your client ID and secret on the screen that should open now.

The screenshot shows the Google Cloud Platform console interface. The browser address bar displays the URL: `console.developers.google.com/apis/credentials/oauthclient/916463567945-8hesr54kfc3lr8hrq2g0m3hrdh2f5cgd.apps.googleusercontent.com?project=youtubescraper-340807`. The page title is "Client ID for Desktop". The left sidebar shows the "Credentials" section selected under "APIs & Services". The main content area displays the configuration for the "TuberScraping" OAuth 2.0 client. The "Name" field is "TuberScraping". The "Client ID" and "Client secret" fields are redacted with black bars. The "Creation date" is "February 9, 2022 at 8:15:34 AM GMT+1". A note states: "Note: It may take 5 minutes to a few hours for settings to take effect". At the bottom of the configuration section are "SAVE" and "CANCEL" buttons. The top of the console shows the "Google Cloud Platform" header with a search bar and navigation icons. The bottom of the image shows a Windows taskbar with various application icons and the system clock at 09:02.

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APIs & Services Client ID for Desktop DOWNLOAD JSON RESET SECRET DELETE

Name *
TuberScraping

The name of your OAuth 2.0 client. This name is only used to identify the client in the console and will not be shown to end users.

Client ID [REDACTED]
Client secret [REDACTED]
Creation date February 9, 2022 at 8:15:34 AM GMT+1

Note: It may take 5 minutes to a few hours for settings to take effect

SAVE CANCEL

Testing Your API Access

You can now safely try whether your *YouTube* API access works as intended by running the following commands in R. We suggest that you *NOT* save an access token when prompted by R (see instructions in code comments)

```
# installing the tuber package if not installed already
if("tuber" %in% installed.packages() != TRUE) {
  install.packages("tuber")
}

# loading tuber package
library(tuber)

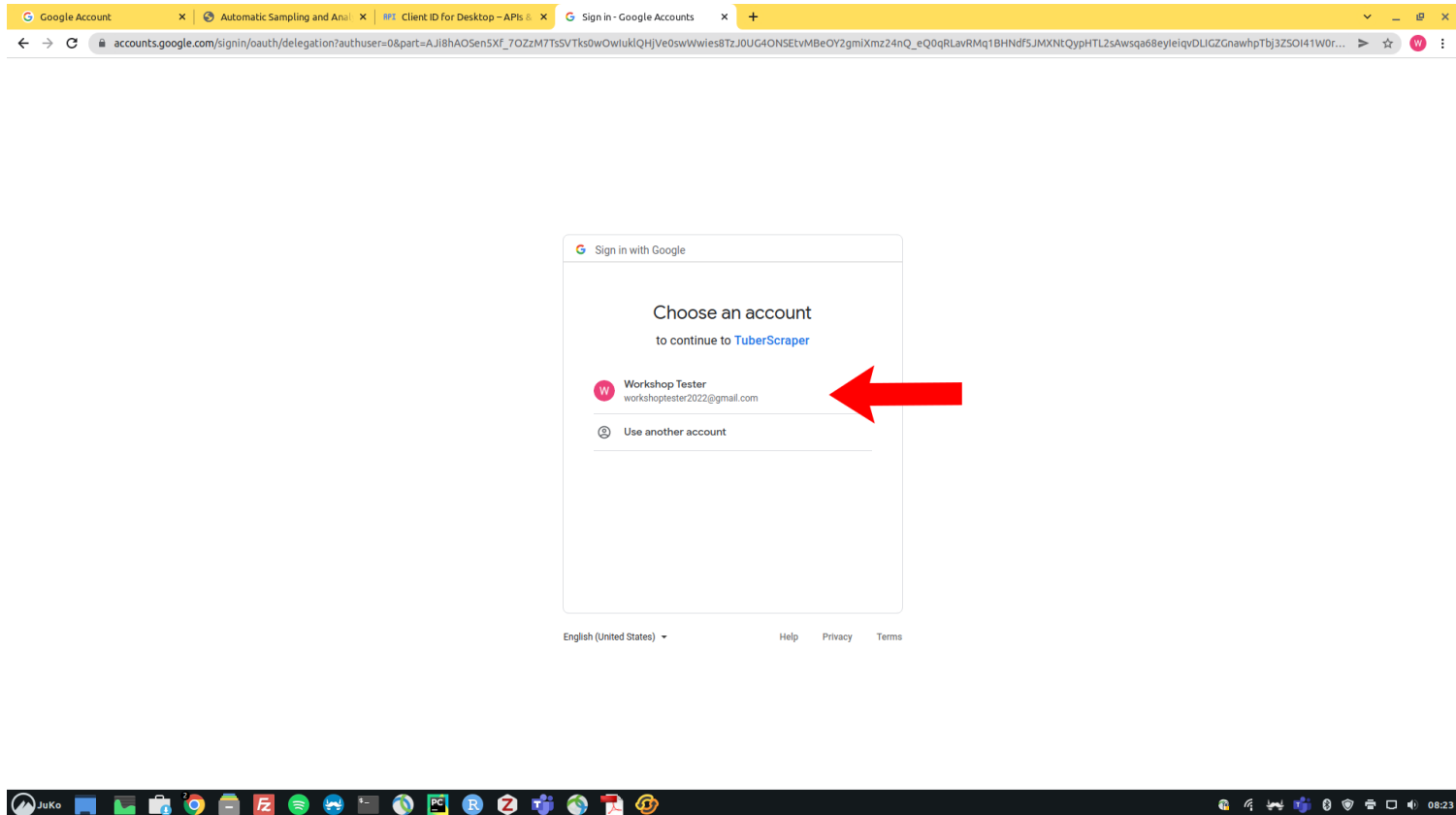
# Your Credentials (NEVER SHARE THIS INFORMATION)
ID <- "ENTER-YOUR-CLIENT-ID-HERE"
secret <- "ENTER-YOUR-CLIENT-SECRET-HERE"

# authentication
yt_oauth(ID,secret)

# You will be asked in the R-console to
# save an access token: Select "NO" by entering 2
# You will be sent to your browser to log in
```

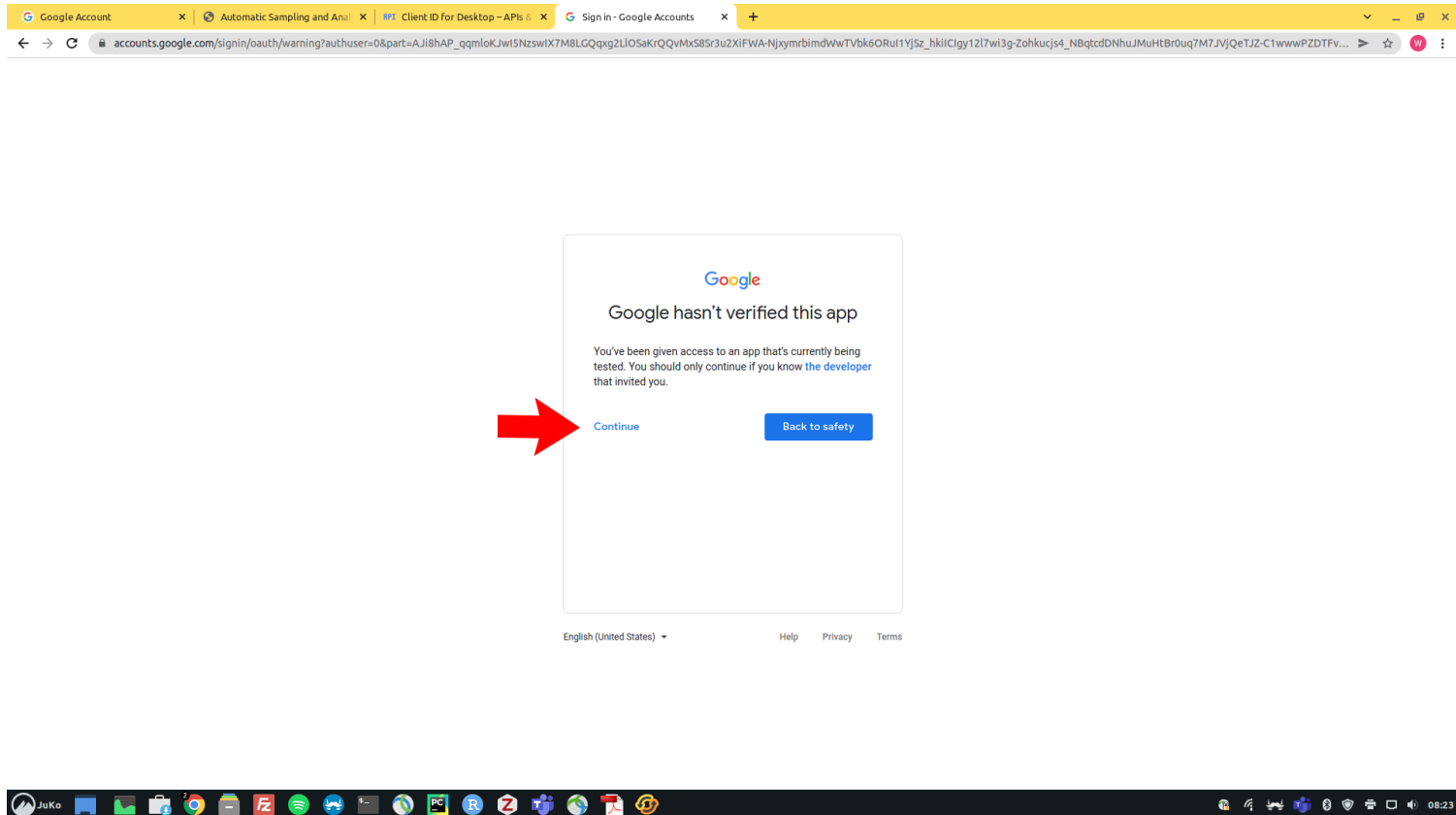
Grant Yourself Access

In the browser window that opens from your R session, select your (new) *Gmail* account.

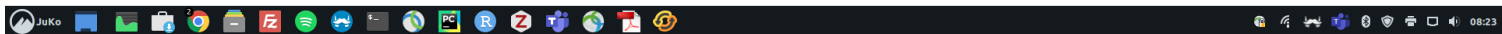


Grant Yourself Access

Google warns you that the app has not been verified, but you can trust yourself and click on "Continue".



accounts.google.com/signin/oauth/v2/consentsummary?authuser=0&part=A:Ji8hAPAYaeVayK:1EYduByLGSg4LUk0r0P5pdkRur6nC9MK5lVN98nC15MJ5e7hK0uDJ8515WJDj2Gf2pvh3KZ7V89q4dYmmBaP58j03nP9uRlQougwRVU1L_Mbkfmsq2pPuhE...



Grant Yourself Access

Confirm your choices once more by clicking "Allow". Your browser should now display the following message: Authentication complete. Please close this page and return to R.

Authentication complete. Please close this page and return to R.

API Test Call

To easily check if everything worked, let's try to collect some simple data for a video.

```
# get statistics of https://www.youtube.com/watch?v=HluANRwPyNo  
get_stats(video_id="HluANRwPyNo")
```

API Test Call Output

If everything worked correctly, the output should look like this. *Note:* The actual numbers will vary because they might have changed in the meantime.

```
$id  
[1] "HluANRwPyNo"  
  
$viewCount  
[1] "21275354"  
  
$likeCount  
[1] "1043372"  
  
$favoriteCount  
[1] "0"  
  
$commentCount  
[1] "37859"
```

A Few Words of Advice on Handling Your *YouTube API Access*

- Have one account and project ready for the workshop for which you know that it works
- Do not use your API access too excessively before the workshop to avoid any risk of it being suspended
- Never share your OAuth login credentials or API key! This can easily happen by accident when:
 - saving code in a *GitHub* Repo
 - sending scripts to colleagues
 - troubleshooting someone else's code
 - for added security you can, e.g., use the **keyring package** (we'll say a bit more about this in the workshop)

**We hope that you are now all set up and
look forward to seeing you online!**