

# DS 420

# Intro. To CoLab Notebook

Fall 2022

Instructor: Dr. Suhang Wang

TA: Shijie Zhou

# Roadmap

1. Activate your PSU account on Google G suite
2. Access Google CoLab with your PSU G suite account
3. Upload a Jupyter notebook to CoLab
4. Create a folder in the google drive (of you PSU account) to store data and results

# 1. Activate your PSU account on Google G suite

Go to <https://gsuite.psu.edu>

Click on the Launch button



Launch



Penn State has partnered with Google to bring G Suite for Education, a cloud-based collection of applications, to the University that will help enhance teaching, learning, and research.

Available at no cost to Penn State students, faculty, and staff members, G Suite's applications create opportunities for learning, challenge users to think critically, and help streamline administrative tasks anywhere on the go.

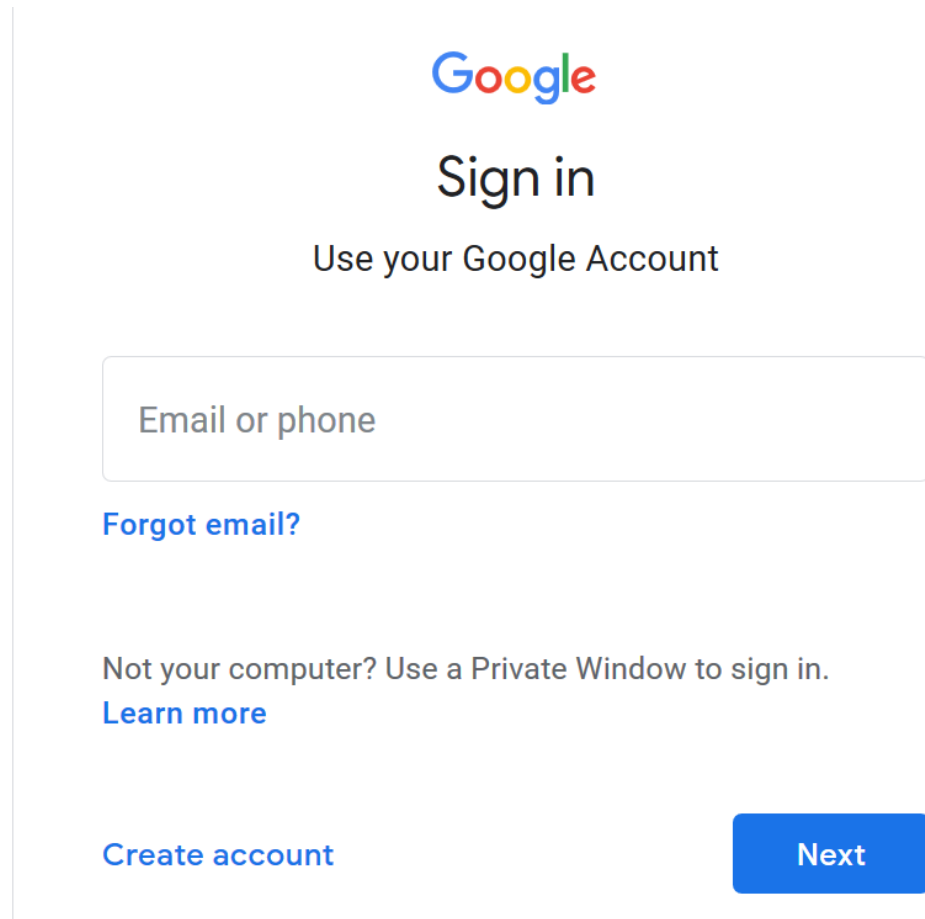
Penn State G Suite accounts include the following [core set of apps](#): Google Drive, Docs, Sheets, Slides, Forms, Hangouts Meet and Chats, Sites and Jamboard. Click on the "Launch" button to get started.

Launch

 Activate Windows

# Sign in G Suite using your PSU Email (NOT your gmail)

- You need to first create a **PSU Google account** with you PSU email by clicking the Create account if you have not done so.
- After you create the PSU account, you can sign in using your PSU email from this page.

A screenshot of the Google Sign in interface. At the top is the Google logo. Below it, the text "Sign in" is displayed, followed by "Use your Google Account". There is a text input field with the placeholder "Email or phone". Below the input field is a link "Forgot email?". Further down, there is a link "Not your computer? Use a Private Window to sign in." and another link "Learn more". At the bottom left is a link "Create account", and at the bottom right is a blue button labeled "Next". A blue arrow points from the right edge of the slide towards the "Email or phone" input field.

Google

Sign in

Use your Google Account

Email or phone

[Forgot email?](#)

[Not your computer? Use a Private Window to sign in.](#)

[Learn more](#)


[Create account](#)


Next

# If you see this page, choose “Organizational G Suite Account”



There are two existing Google Accounts for [redacted]@psu.edu.  
Which account do you want to use?

**Organizational G Suite Account** >  
Business account owned by psu.edu

**Individual Google Account** >  
An account that you created through the normal sign-up process

[Learn more](#)

Penn State login window should appear.  
Log in as usual.

The image shows the Penn State WebAccess login interface. At the top left is the Penn State lion logo, and to its right is the text "PennState". Below this, the word "WebAccess" is prominently displayed in a large white font. Underneath "WebAccess" is the instruction "Log in to your Penn State Account" in a smaller white font. The background of the login area is a dark blue overlay with a faint image of a building. There are two input fields: the first is labeled "User ID (e.g. xyz5000)" with a person icon on the left; the second is labeled "Password" with a lock icon on the left and a toggle eye icon on the right. At the bottom of the form is a large yellow button with the text "LOG IN" in black capital letters.

 **PennState**

**WebAccess**

Log in to your Penn State Account

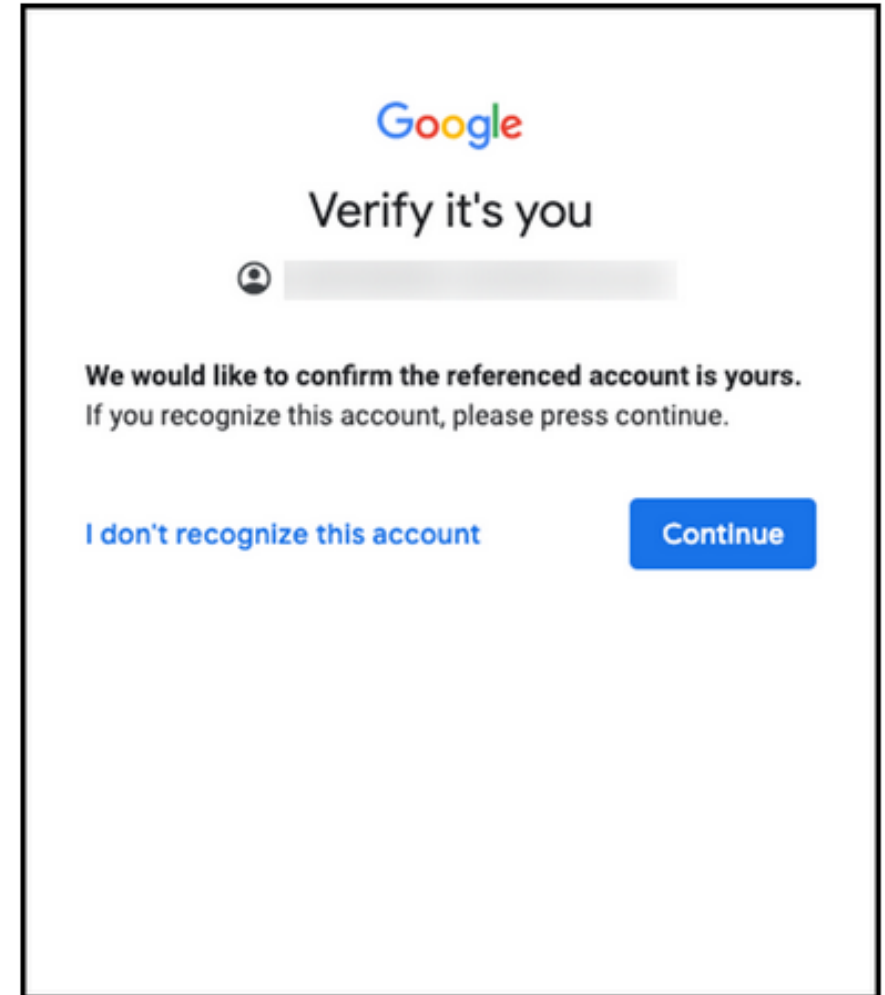
 User ID (e.g. xyz5000)

 Password 

**LOG IN**

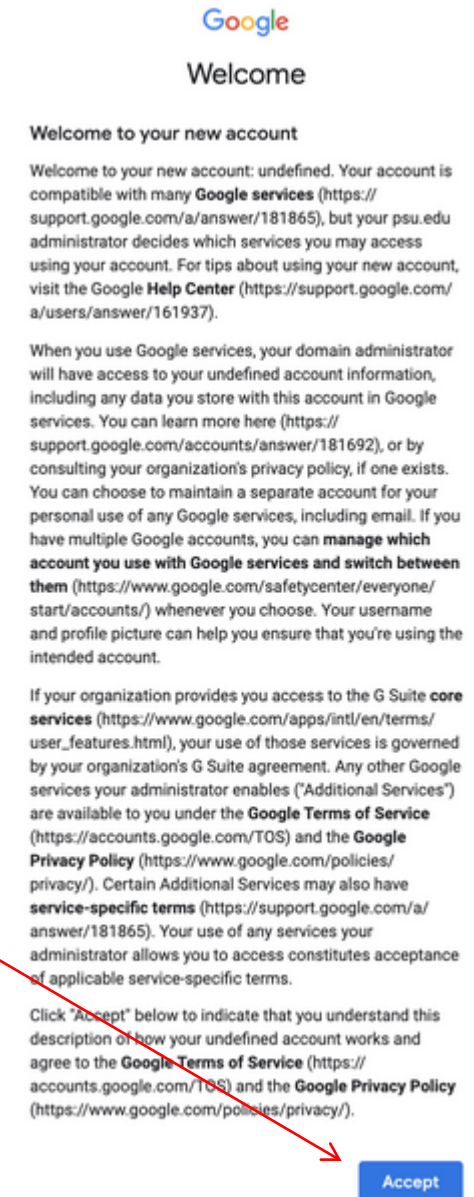
# Verifying your PSU account for G suite

- You may be asked to verify yourself during the process to create your PSU account for accessing G suite.
- You verify the PSU e-mail address by clicking the “Continue” button.



# Accept Google Terms of Service

- Click the **Accept** button.
- You only need to do this once when you create the account.



The screenshot shows the Google account welcome page. At the top is the Google logo and the word 'Welcome'. Below that is the heading 'Welcome to your new account'. The main text explains that the account is compatible with many Google services and provides links to support pages. It also mentions that the domain administrator will have access to account information and provides links to learn more. The text continues to explain that users can choose to maintain a separate account for personal use and can manage multiple accounts. It also mentions that if the organization provides access to G Suite core services, the use of those services is governed by the organization's G Suite agreement. The text concludes by stating that the user's use of any services constitutes acceptance of applicable service-specific terms. At the bottom, there is a blue button labeled 'Accept' which is highlighted by a red arrow pointing from the second bullet point of the list on the left.

Google  
Welcome

**Welcome to your new account**

Welcome to your new account: undefined. Your account is compatible with many **Google services** (<https://support.google.com/a/answer/181865>), but your psu.edu administrator decides which services you may access using your account. For tips about using your new account, visit the **Google Help Center** (<https://support.google.com/a/users/answer/161937>).

When you use Google services, your domain administrator will have access to your undefined account information, including any data you store with this account in Google services. You can learn more here (<https://support.google.com/accounts/answer/181692>), or by consulting your organization's privacy policy, if one exists. You can choose to maintain a separate account for your personal use of any Google services, including email. If you have multiple Google accounts, you can **manage which account you use with Google services and switch between them** (<https://www.google.com/safetycenter/everyone/start/accounts/>) whenever you choose. Your username and profile picture can help you ensure that you're using the intended account.

If your organization provides you access to the G Suite **core services** ([https://www.google.com/apps/intl/en/terms/user\\_features.html](https://www.google.com/apps/intl/en/terms/user_features.html)), your use of those services is governed by your organization's G Suite agreement. Any other Google services your administrator enables ("Additional Services") are available to you under the **Google Terms of Service** (<https://accounts.google.com/TOS>) and the **Google Privacy Policy** (<https://www.google.com/policies/privacy/>). Certain Additional Services may also have **service-specific terms** (<https://support.google.com/a/answer/181865>). Your use of any services your administrator allows you to access constitutes acceptance of applicable service-specific terms.

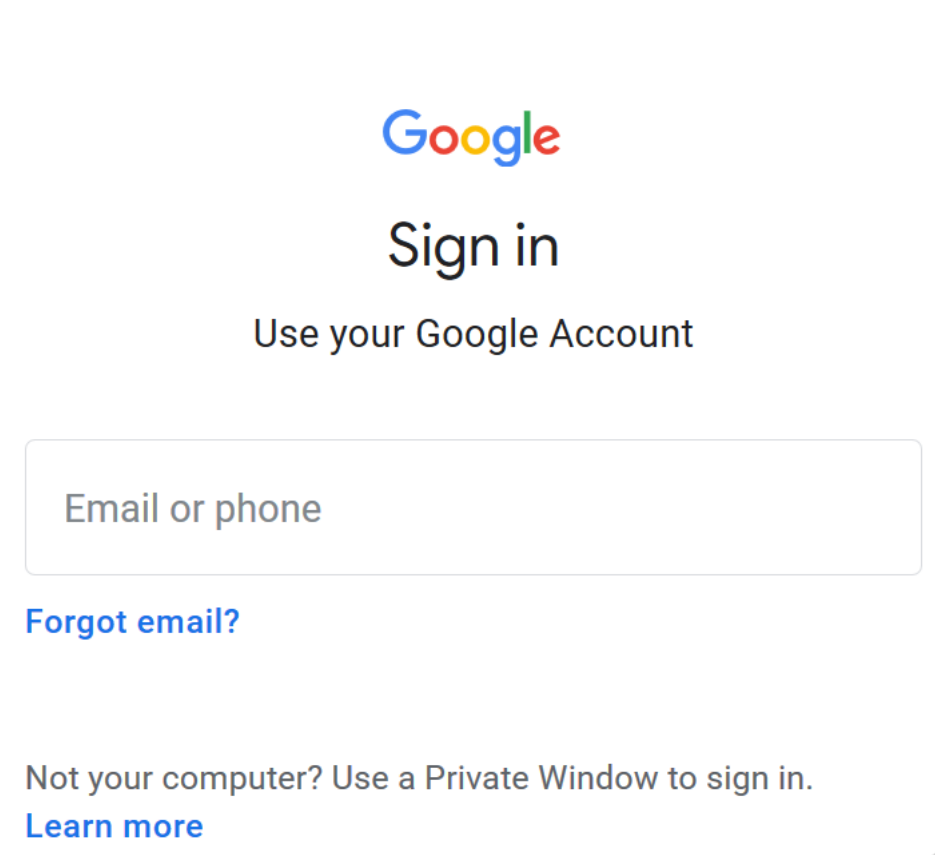
Click "Accept" below to indicate that you understand this description of how your undefined account works and agree to the **Google Terms of Service** (<https://accounts.google.com/TOS>) and the **Google Privacy Policy** (<https://www.google.com/policies/privacy/>).

**Accept**



## 2. Access Google Colab with G Suite account

- After you create the account, you can sign in Google G suite with your PSU email through the page presented in the right side.

A screenshot of the Google sign-in page. At the top is the Google logo. Below it is the text "Sign in" and "Use your Google Account". There is a large text input field with the placeholder text "Email or phone". Below the input field is a link that says "Forgot email?". At the bottom, there is a line of text that says "Not your computer? Use a Private Window to sign in." followed by a link that says "Learn more".

Google

Sign in

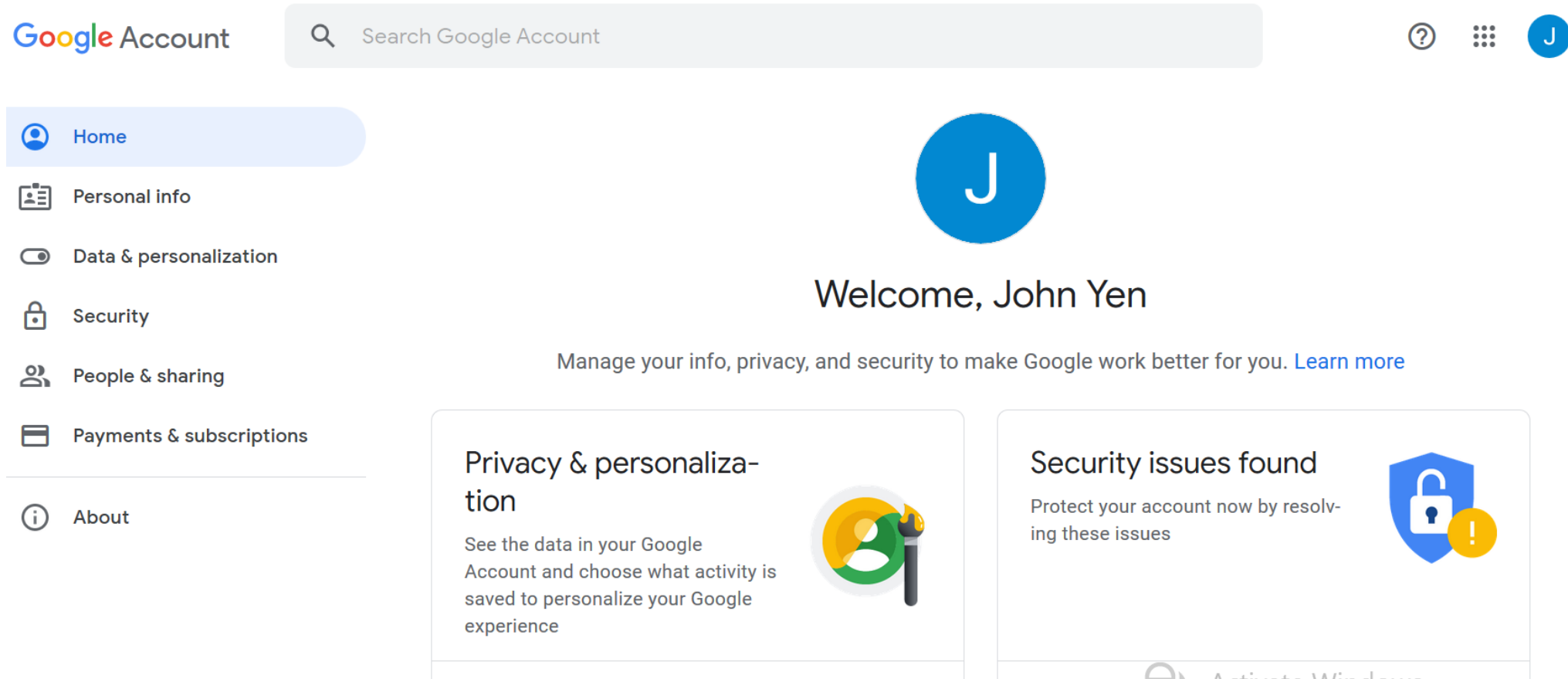
Use your Google Account

Email or phone

[Forgot email?](#)

Not your computer? Use a Private Window to sign in.  
[Learn more](#)





# After signing in, the home Page of G suite could be viewed



# Accessing Google Colaboratory (Colab)

Visit <https://colab.research.google.com>

- You will see the following pop-up window, with a Colab Notebook named “Welcome To Colaboratory”, click on it.
- In the future, after you create or upload Jupyter Notebooks into Colab, you will see them here so that you can choose the Notebook you want to work on.

ExamplesRecentGoogle DriveGitHubUpload				
Filter notebooks				
Title		First opened	Last opened	
	Welcome To Colaboratory	Jul 21, 2020	0 minutes ago	
	Lab 1 Intro to Jupyter Table.ipynb	Aug 5, 2020	2 days ago	

# The “Welcome To Colab” Notebook

- In all Colab Notebooks, you should see an icon indicating your name on the upper right corner.
- On upper left, you will also see the top-level menus such as “File”, “Edit”, “Runtime”, etc.
- On the left panel, you see “Table of contents” of the notebook, indicating major sections of the notebook.

Welcome To Colaboratory

File Edit View Insert Runtime Tools Help

Share Settings J

Table of contents

- Getting started
- Data science
- Machine learning
- More Resources
- Machine Learning Examples
- + Section

## What is Colaboratory?

Colaboratory, or "Colab" for short, allows you to write and execute Python in your browser, with

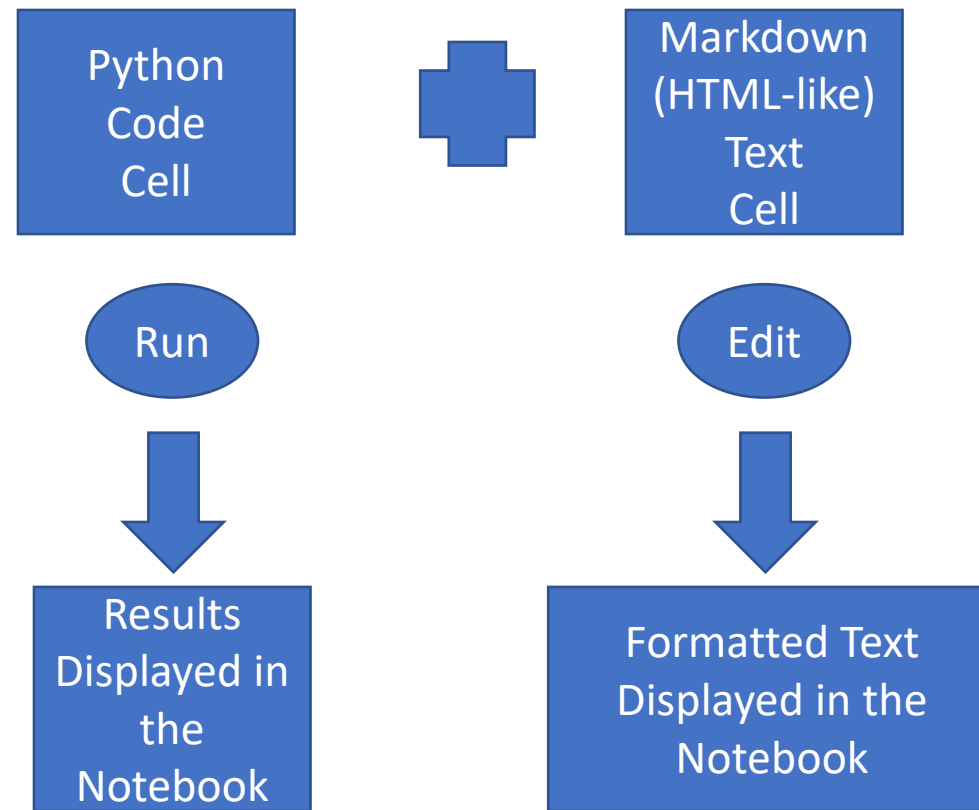
- Zero configuration required
- Free access to GPUs
- Easy sharing

Whether you're a **student**, a **data scientist** or an **AI researcher**, Colab can make your work easier. Watch [Introduction to Colab](#) to learn more, or just get started below!

### Getting started

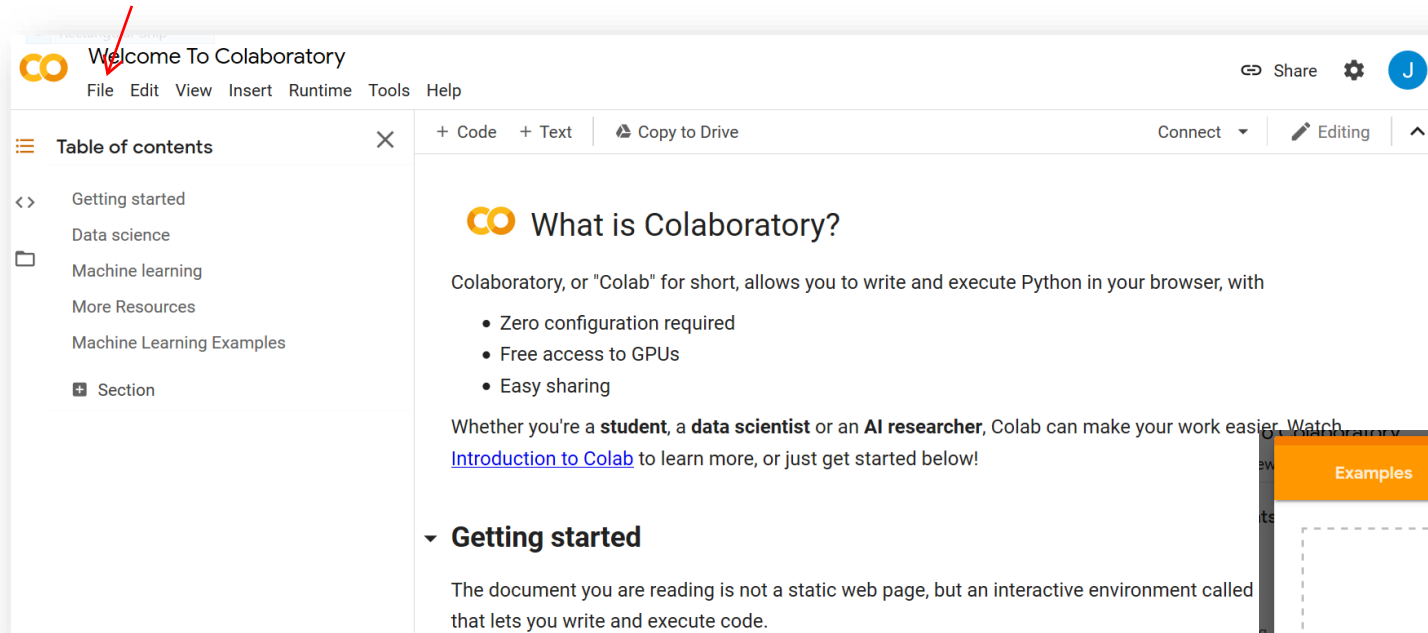
The document you are reading is not a static web page, but an interactive environment called a **Colab notebook** that lets you write and execute code.

# What is a Jupyter/Colab Notebook?

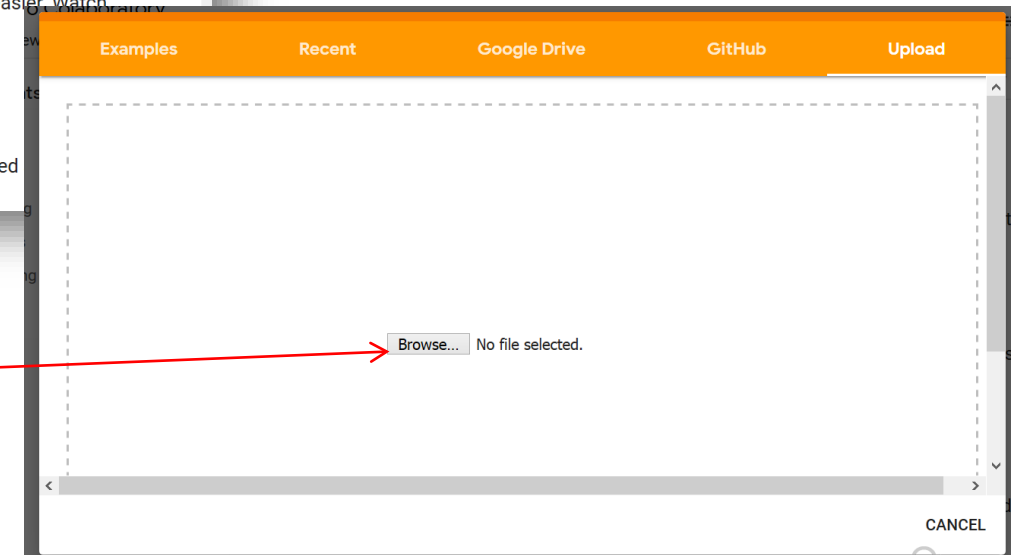


# 3. Upload a Jupyter Notebook to Colab

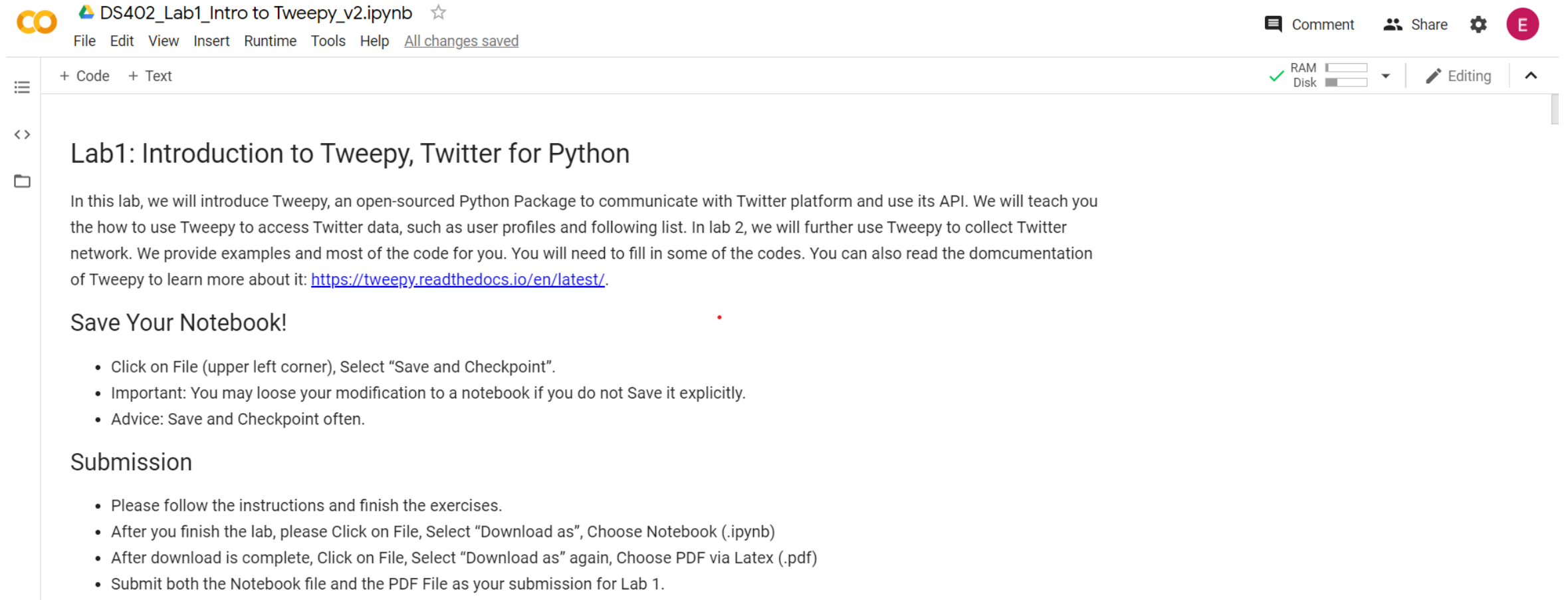
- Click on “File” on the upper-left corner of the Colab window, select “Upload Notebook”



- A pop-up window for uploading a file from your local computer/laptop will appear.
- Click “Browse” to find the file from your local computer/laptop.
- Select Lab 1 notebook you downloaded from Canvas.



# You will see the CoLab jupyter notebook of lab 1



The screenshot shows the Google Colab interface for a Jupyter Notebook titled "DS402\_Lab1\_Intro to Tweepy\_v2.ipynb". The top bar includes the Colab logo, the notebook title, a star icon, and a menu with options: File, Edit, View, Insert, Runtime, Tools, Help, and a link to "All changes saved". On the right side of the top bar are icons for Comment, Share, Settings, and a user profile icon labeled 'E'. Below the top bar, there is a toolbar with "+ Code" and "+ Text" buttons on the left, and RAM/Disk usage indicators, an "Editing" mode indicator, and an upward arrow on the right. The main content area of the notebook displays the following text:

## Lab1: Introduction to Tweepy, Twitter for Python

In this lab, we will introduce Tweepy, an open-sourced Python Package to communicate with Twitter platform and use its API. We will teach you the how to use Tweepy to access Twitter data, such as user profiles and following list. In lab 2, we will further use Tweepy to collect Twitter network. We provide examples and most of the code for you. You will need to fill in some of the codes. You can also read the domcumentation of Tweepy to learn more about it: <https://tweepy.readthedocs.io/en/latest/>.

### Save Your Notebook!

- Click on File (upper left corner), Select "Save and Checkpoint".
- Important: You may loose your modification to a notebook if you do not Save it explicitly.
- Advice: Save and Checkpoint often.

### Submission

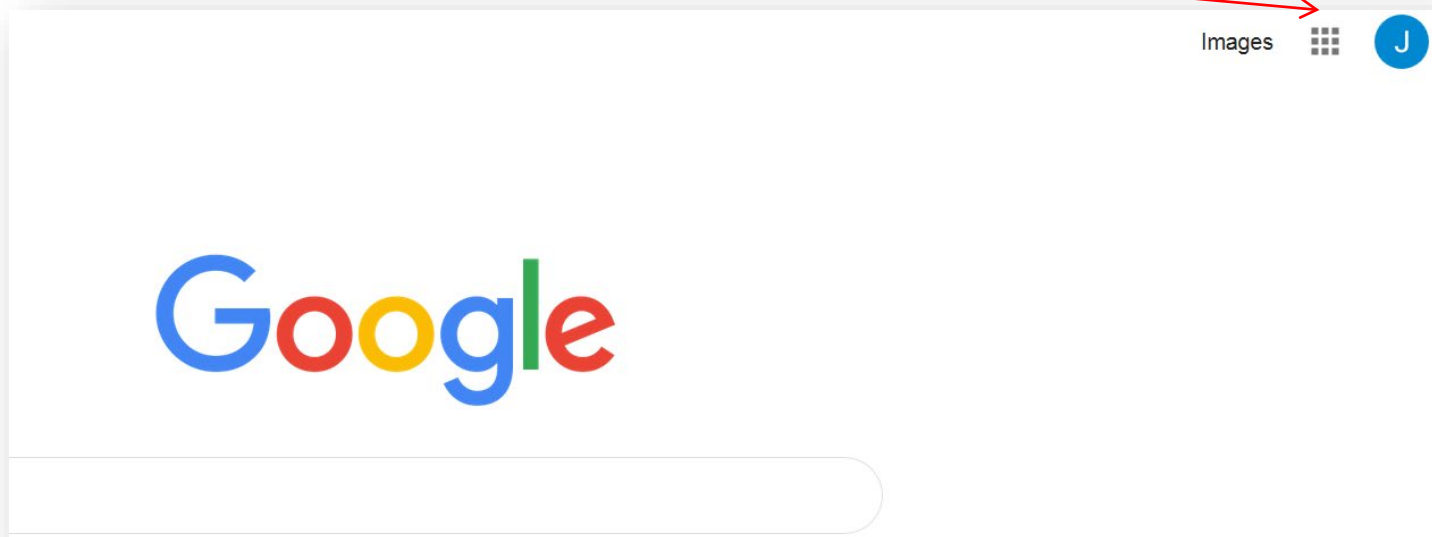
- Please follow the instructions and finish the exercises.
- After you finish the lab, please Click on File, Select "Download as", Choose Notebook (.ipynb)
- After download is complete, Click on File, Select "Download as" again, Choose PDF via Latex (.pdf)
- Submit both the Notebook file and the PDF File as your submission for Lab 1.

## 4. Create folder in Google Drive to store data and results of Colab

CoLab is used together with google drive. The cloud machine of CoLab could read and write the data in your **G Suite account's google drive**.

We first sign in the google drive with these two steps:

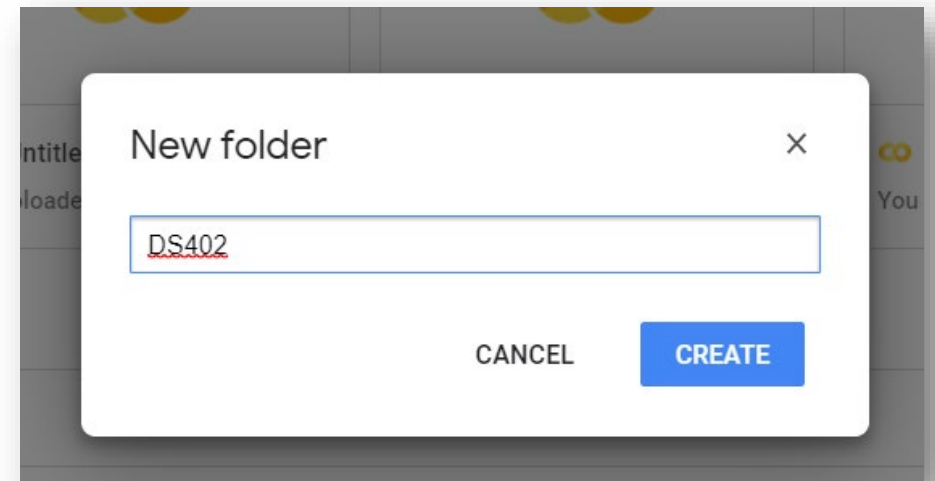
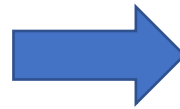
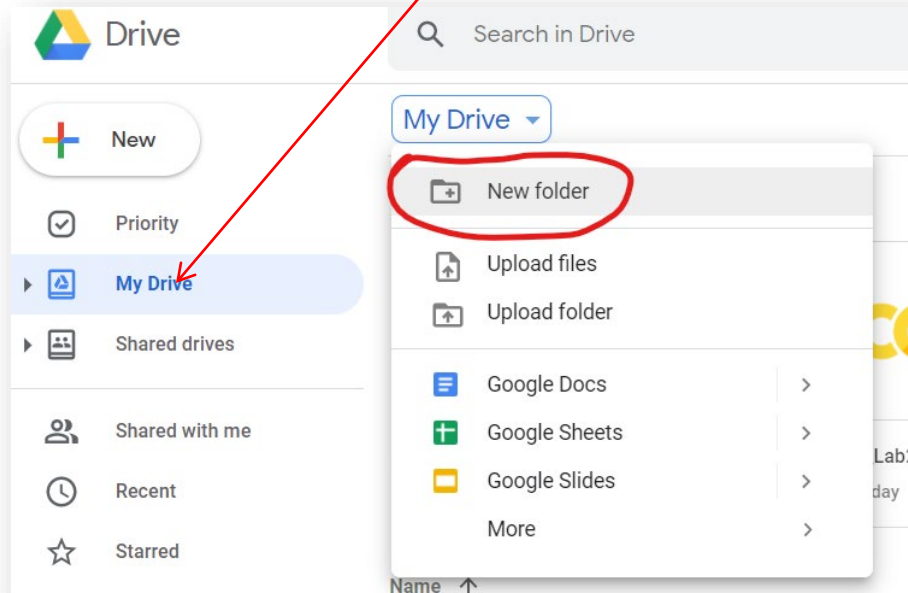
1. Visit [www.google.com](http://www.google.com)
2. Click on Google Apps and select google Drive





# Create a folder named as DS402

- Click on the “My Drive” button, select “New Folder”



# Interaction between Google Drive and CoLab

- We could mount our google drive to CoLab. In this way, the google drive could be viewed as a local drive of CoLab. And CoLab could access and write files on the google drive.
- As it will present in lab 1, the folder code is required to run first in CoLab notebook to realize the interaction

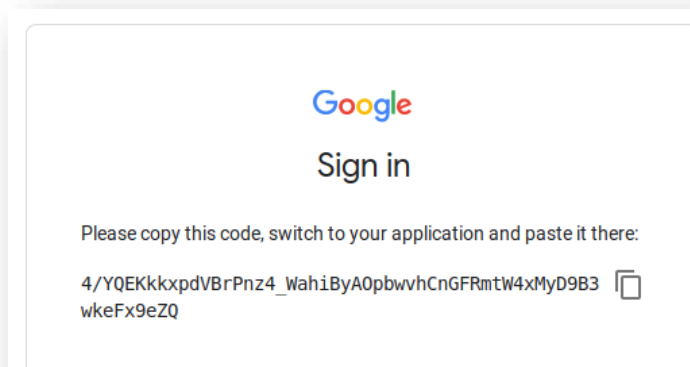
## Step 1: Run this cell

```
from google.colab import drive
drive.mount('/content/drive/')
```

... Go to this URL in a browser: [https://accounts.google.com/o/oauth2/auth?client\\_id=947318989803-6bn6qk8qdgf4n4g3pfee6491hc0brc4i.apps.googleusercontent.com](https://accounts.google.com/o/oauth2/auth?client_id=947318989803-6bn6qk8qdgf4n4g3pfee6491hc0brc4i.apps.googleusercontent.com)

Enter your authorization code:

## Step 2: Click the URL and get the code



## Step 3: paste the code to the box and press "Enter"

```
from google.colab import drive
drive.mount('/content/drive/')
```

Go to this URL in a browser: [https://accounts.google.com/o/oauth2/auth?client\\_id=947318989803-6bn6qk8qdgf4n4g3pfee6491hc0brc4i.apps.googleusercontent.com](https://accounts.google.com/o/oauth2/auth?client_id=947318989803-6bn6qk8qdgf4n4g3pfee6491hc0brc4i.apps.googleusercontent.com)

Enter your authorization code:  
.....

Mounted at /content/drive/

# You will see the google drive has been mounted on /content/drive/My drive

We could confirm it with the following commands

Set the folder `My Drive/DS402` in the google drive as the working directory

```
[2] cd /content/drive/My\ Drive
```

```
↳ /content/drive/My Drive
```

List all the files and folders in your google drive

```
!ls
```

```
↳ 'Colab Notebooks' DS402
```