Hands-on Lab: Getting Started with GitHub

Effort: 20 min

In this lab, you will get started with GitHub by creating a GitHub account and project and adding a file to it using its Web interface.

Objectives

After completing this lab, you will be able to:

1. Describe GitHub
2. Create a GitHub account
3. Add a Project / Repo
4. Edit / Create a file
5. Upload a file & Commit

GitHub Overview

First, let us introduce to GitHub. GitHub in simple words is a collection of folders and files. It is a Git repository hosting service, but it adds many of its own features. While Git is a command-line tool and a server needs to be hosted and maintained via command line as well, GitHub provides this Git server for you and a Web-based graphical interface. It also provides access control and several collaboration features, such as wikis and basic task management tools for every project. GitHub provides cloud storage for source code, supports all popular programming languages, and streamlines the iteration process. GitHub includes a free plan for individual developers and for hosting open source projects.

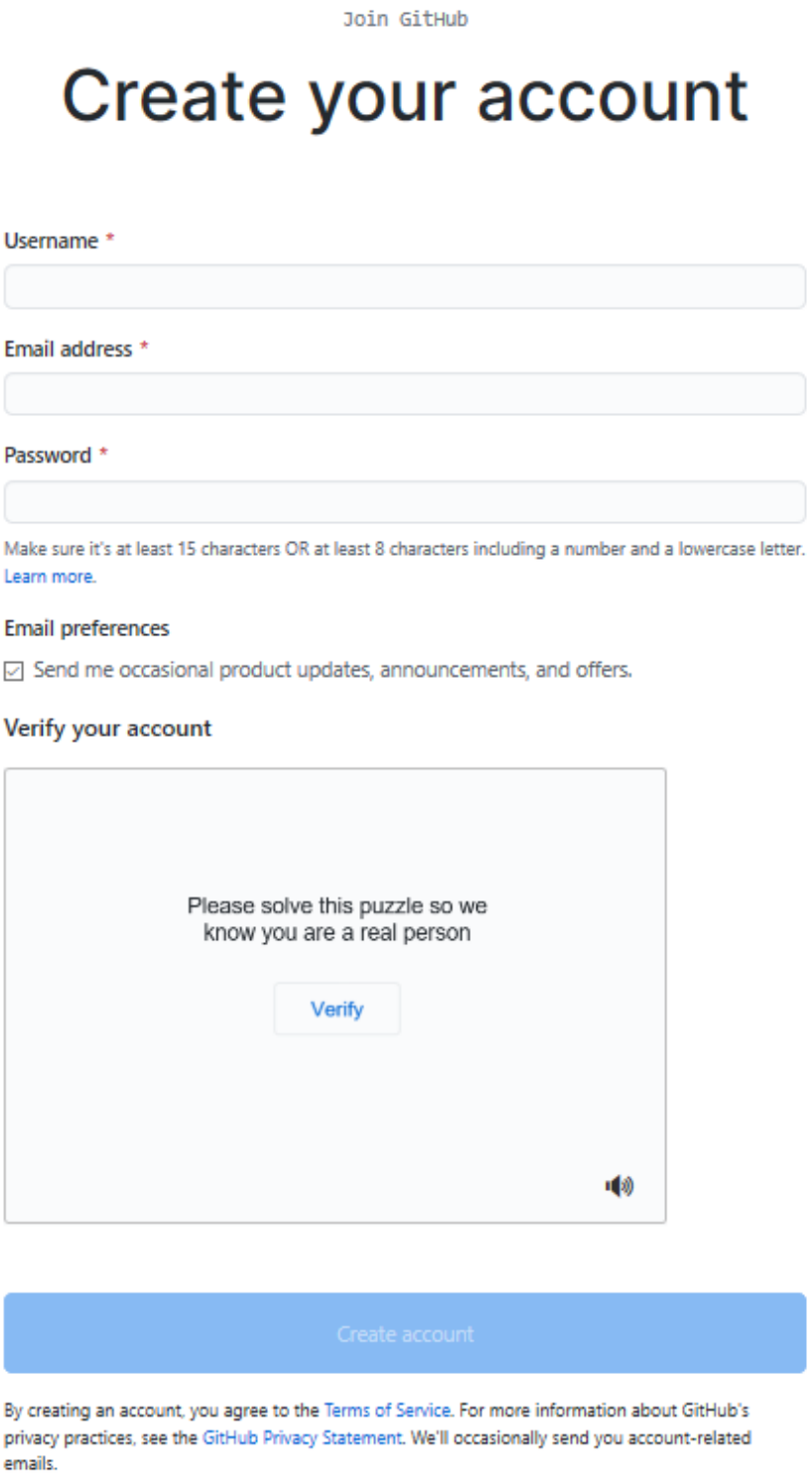
Exercise 1: Creating a GitHub Account

Please follow the steps given below to create an account in GitHub:

Step 1: Create an account: https://github.com/join

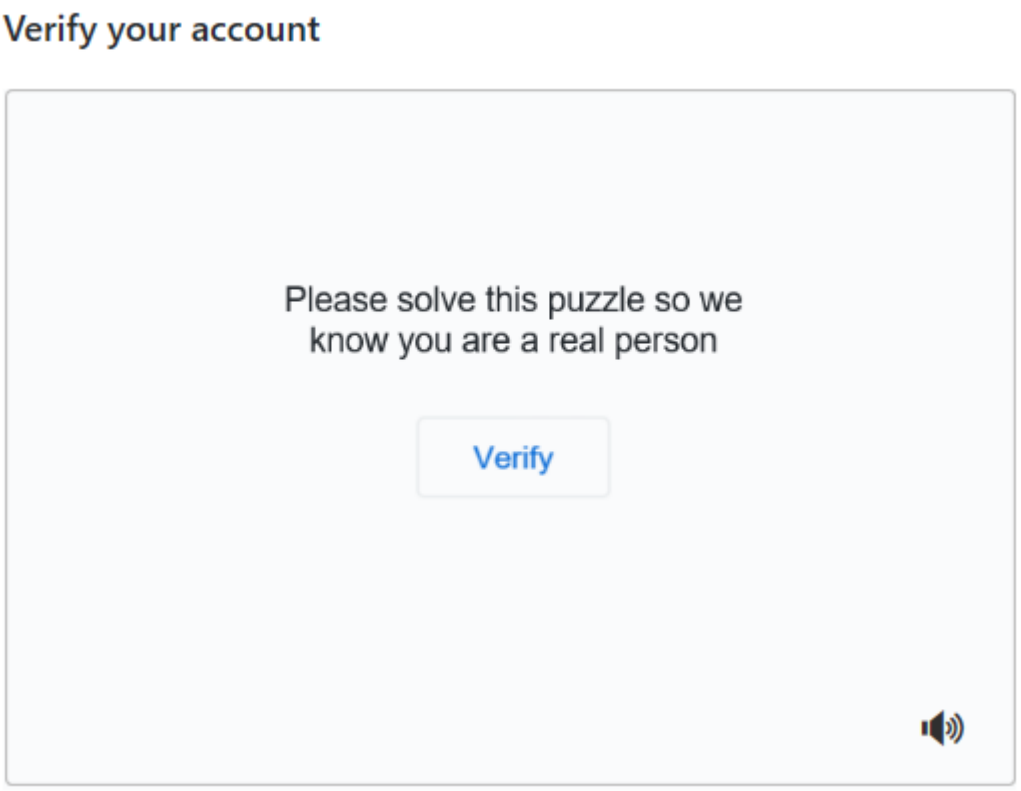
NOTE: If you already have a GitHub account, you can skip this step and simply login to your account.

Step 2: Provide the necessary details to create an account as shown below:

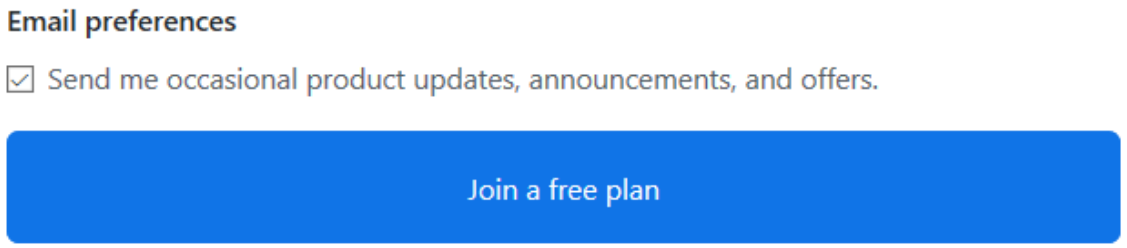


and click `Create account`.

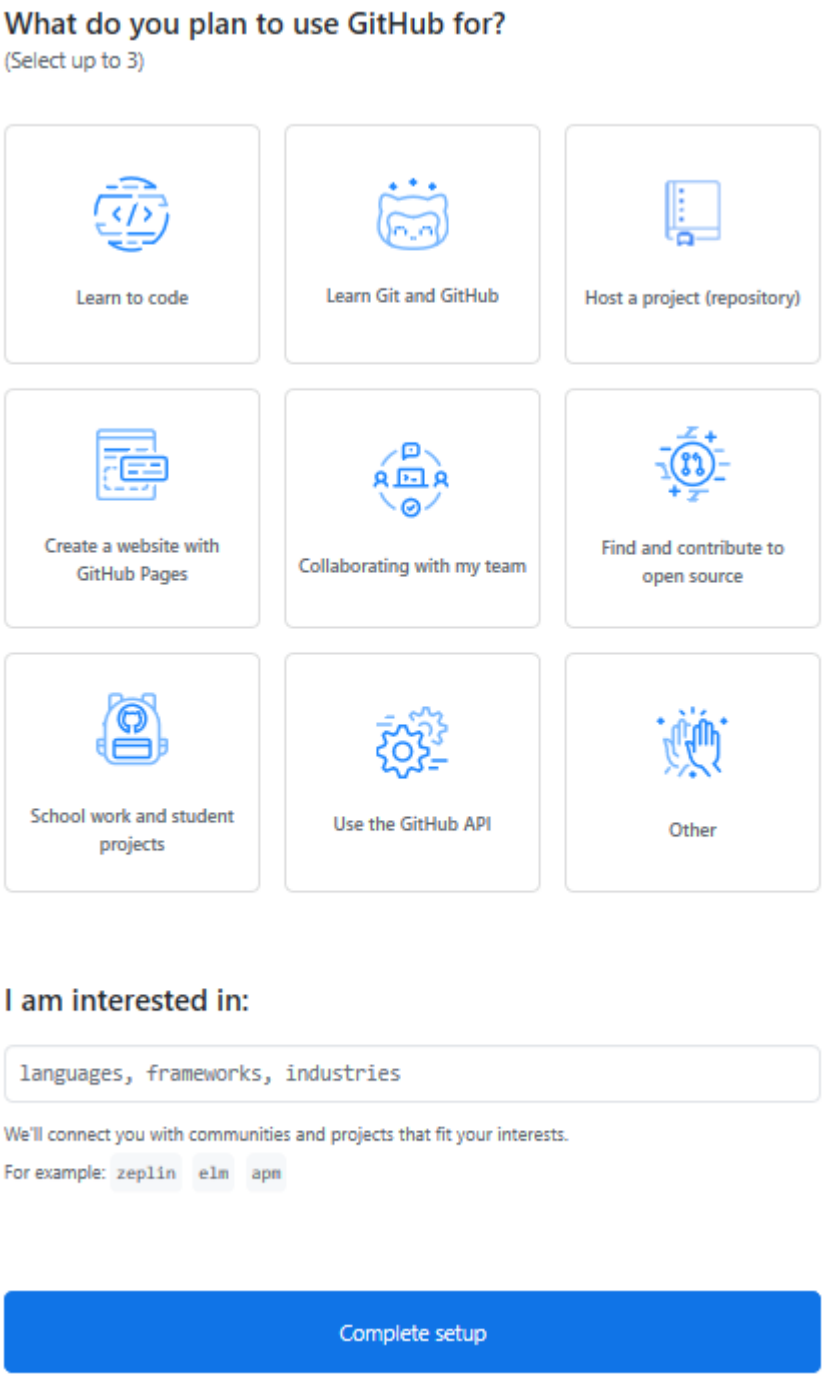
Step 3: Click `Verify` to verify the account and click `Done`



Step 4: After verification, click `Join a Free Plan`

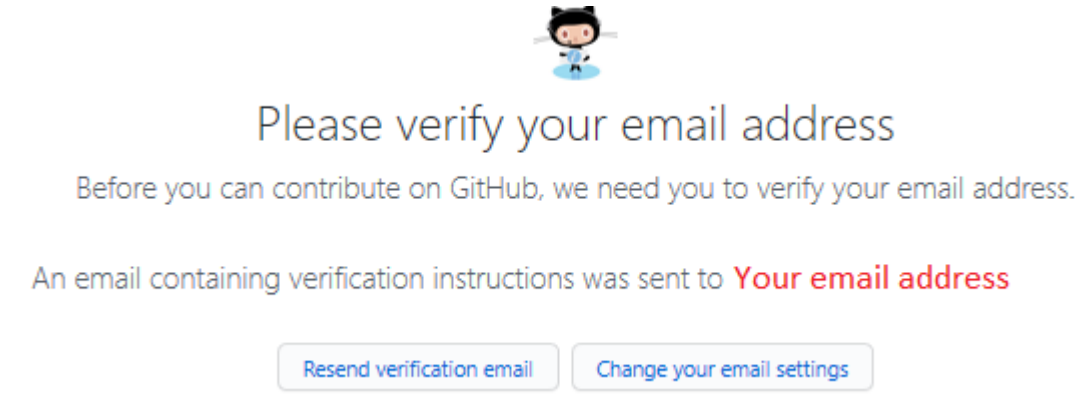


Step 5: Select the details as shown below and click `Complete Setup`

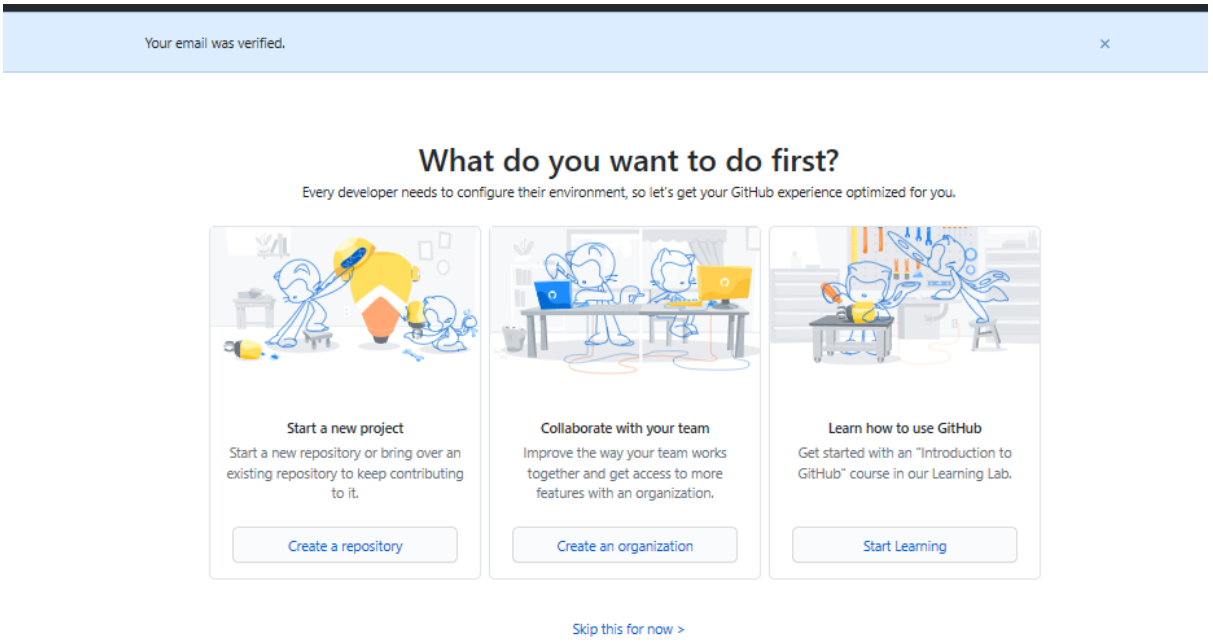


Step 6: Go to your email, find the verification email from GitHub, and click on the link/button in that email to verify your email.

NOTE: If you do not receive verification email, click `Resend verification email`.

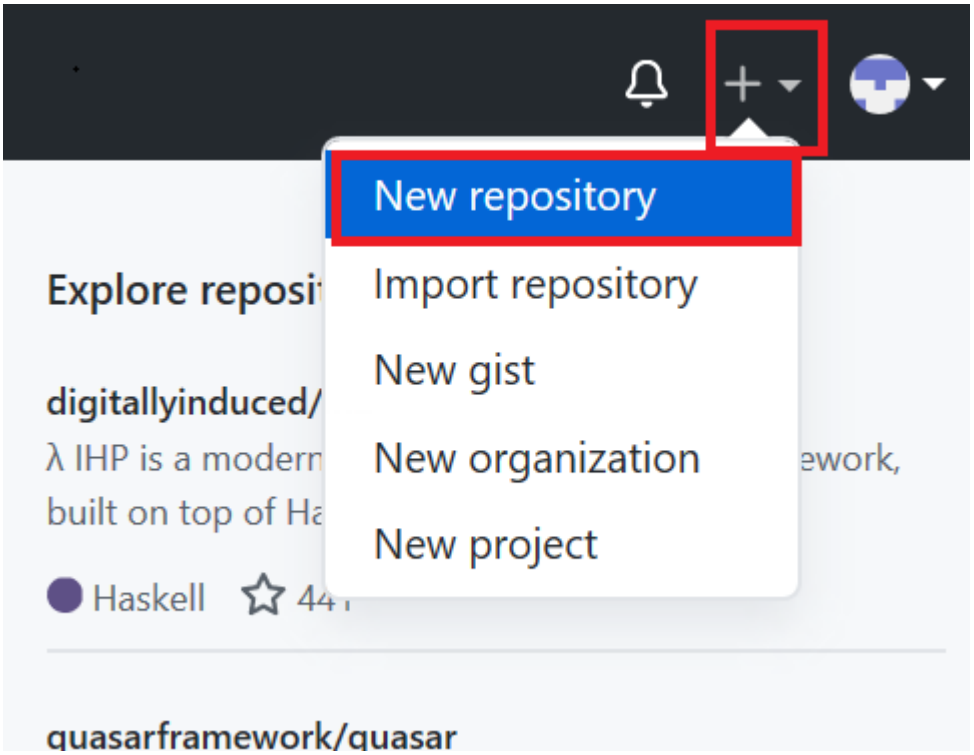


Email is verified

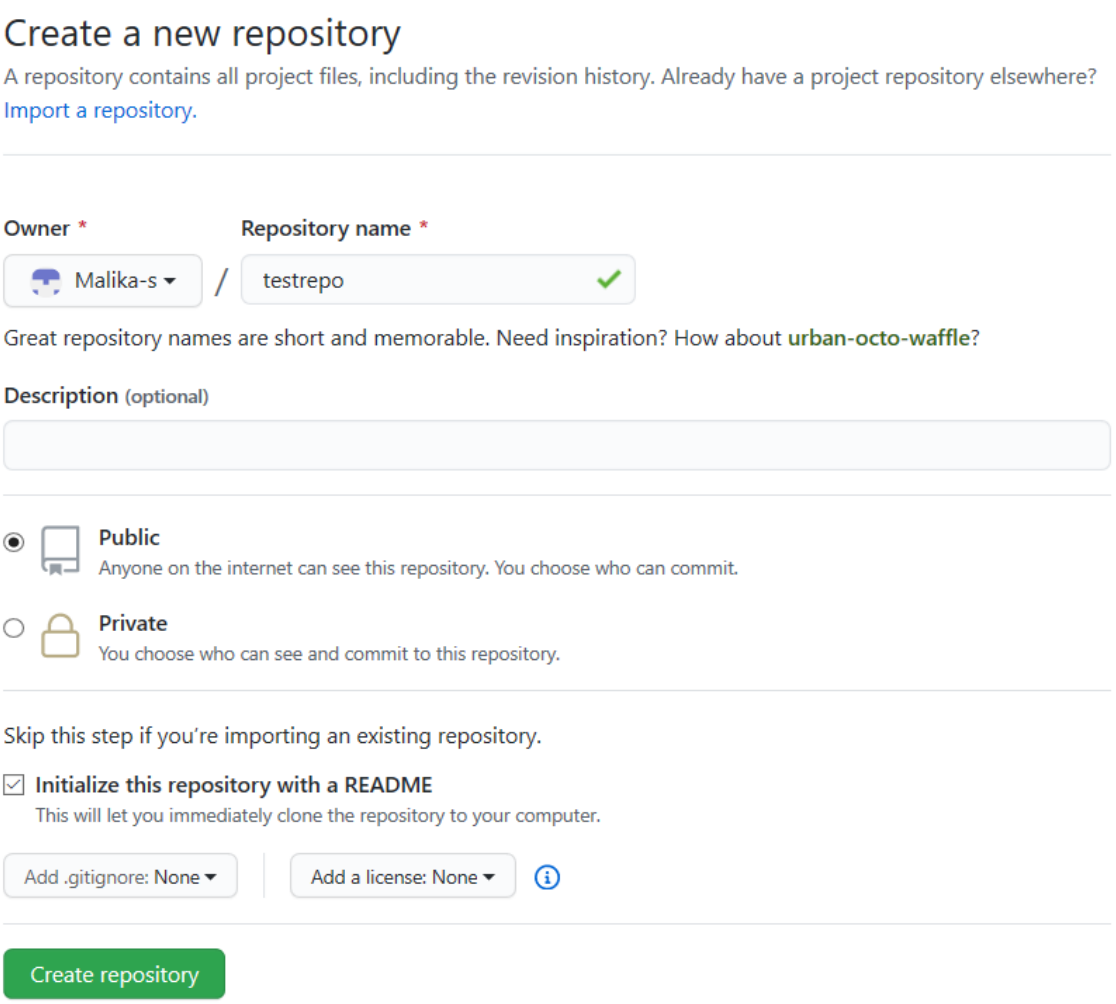


Exercise 2: Adding a Project / Repo

Step 1: Click on the `+` symbol and click `New repository`.



Step 2: Provide a repository a name and initialize with the empty `README.md` file.



and click `Create repository`.

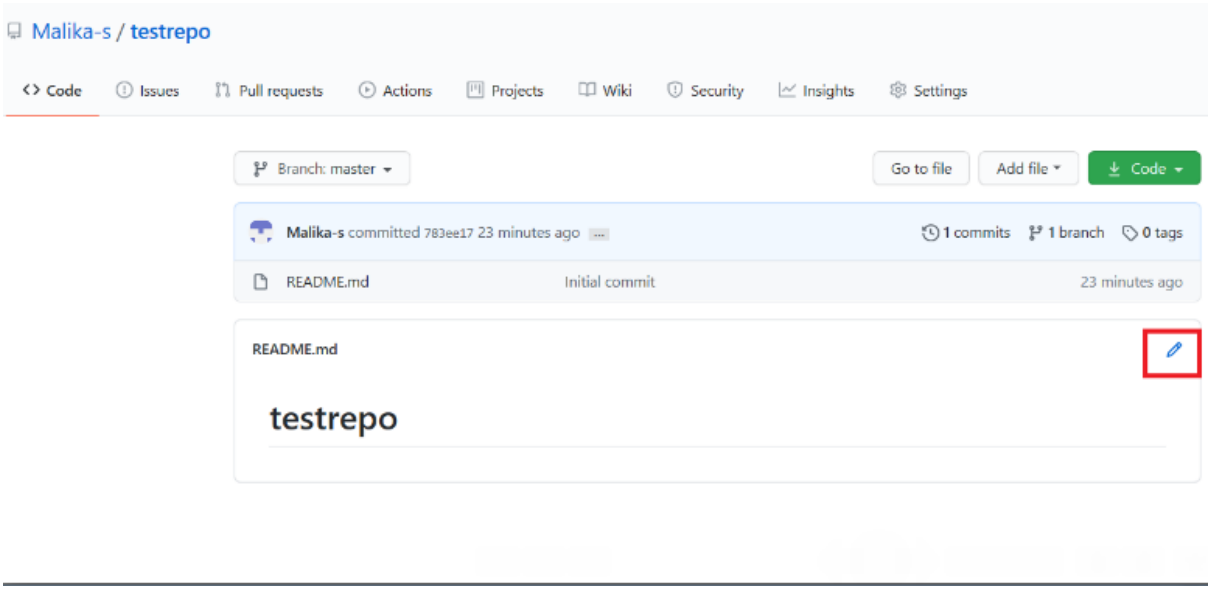
Now, you will be redirected to the repository you have created.

Let's start editing the repository.

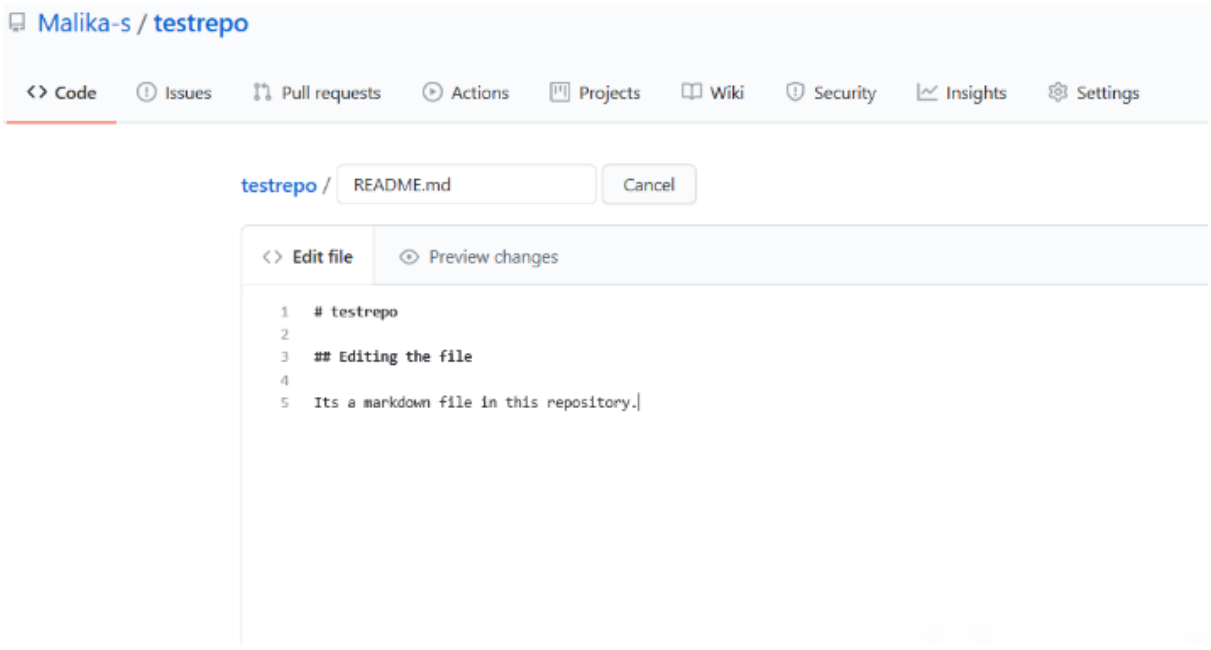
Exercise 3: Create / edit a file

Exercise 3a: Edit a file

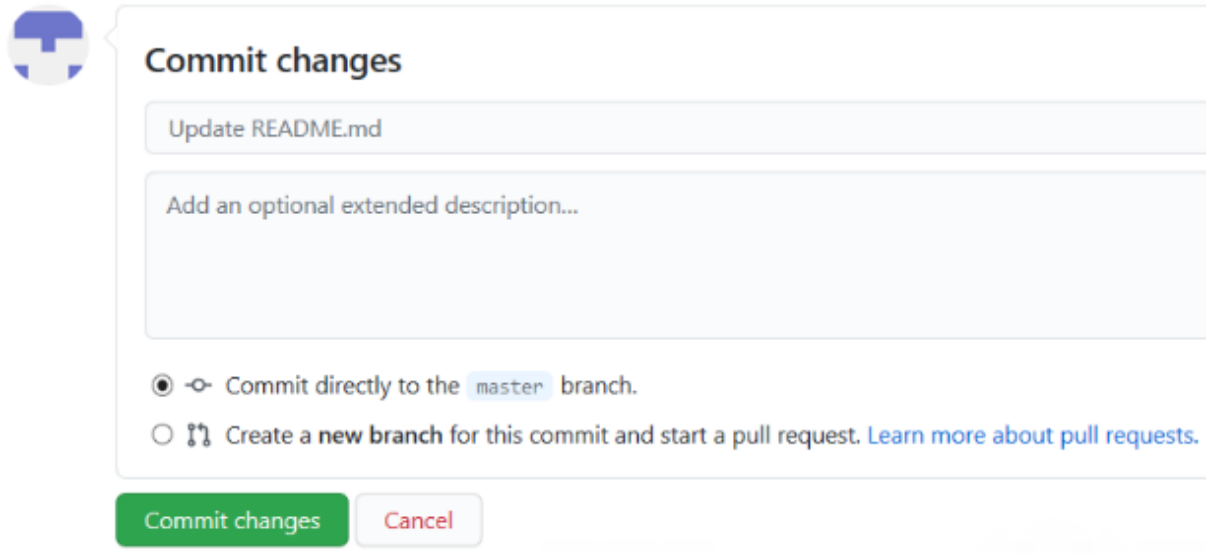
Step 1: Once the repository is created, the root folder of your repository is listed by default and it has just one file `ReadMe.md`. Click on the pencil icon to edit the file.



Step 2: Add text to file.



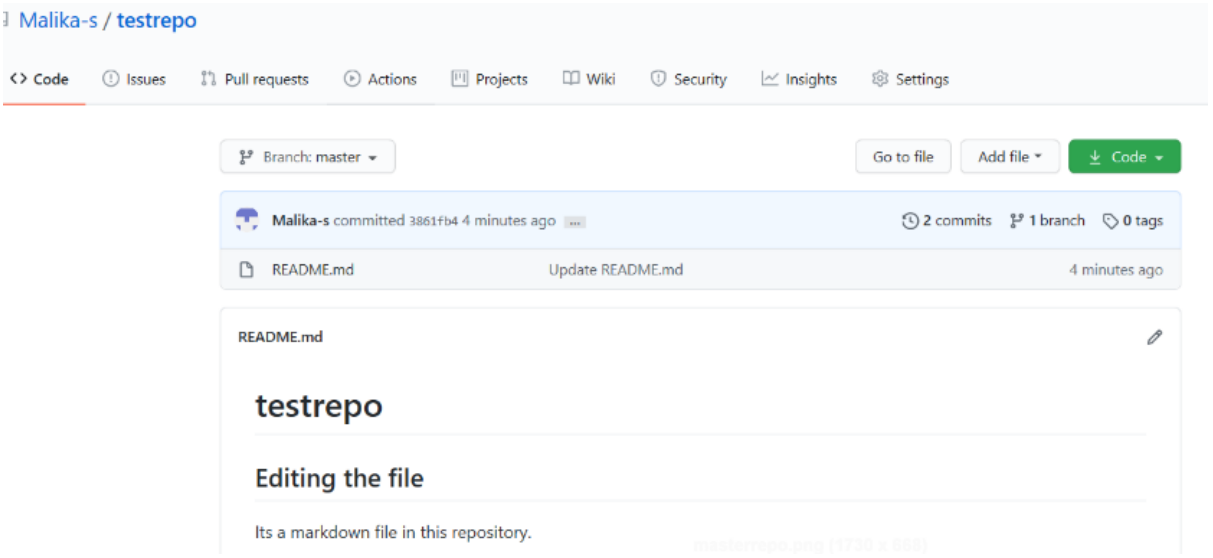
Step 3: Scroll down the page after adding the text and click `Commit Changes`.



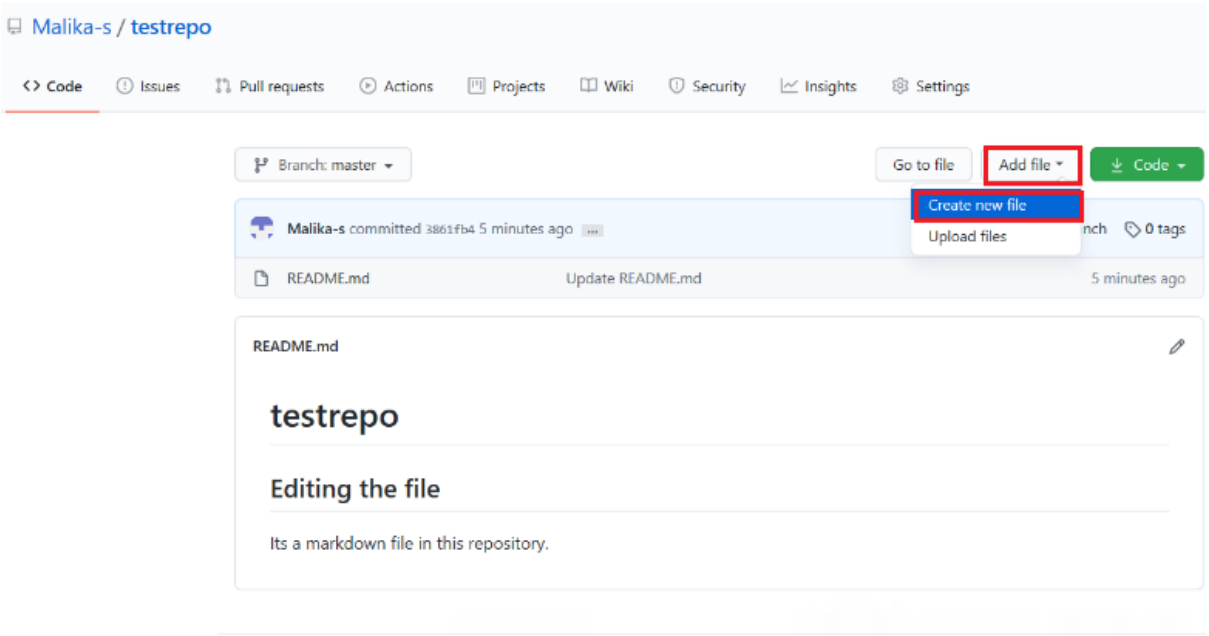
Now, check your file is edited with the new text.

Exercise 3b: Create a new file

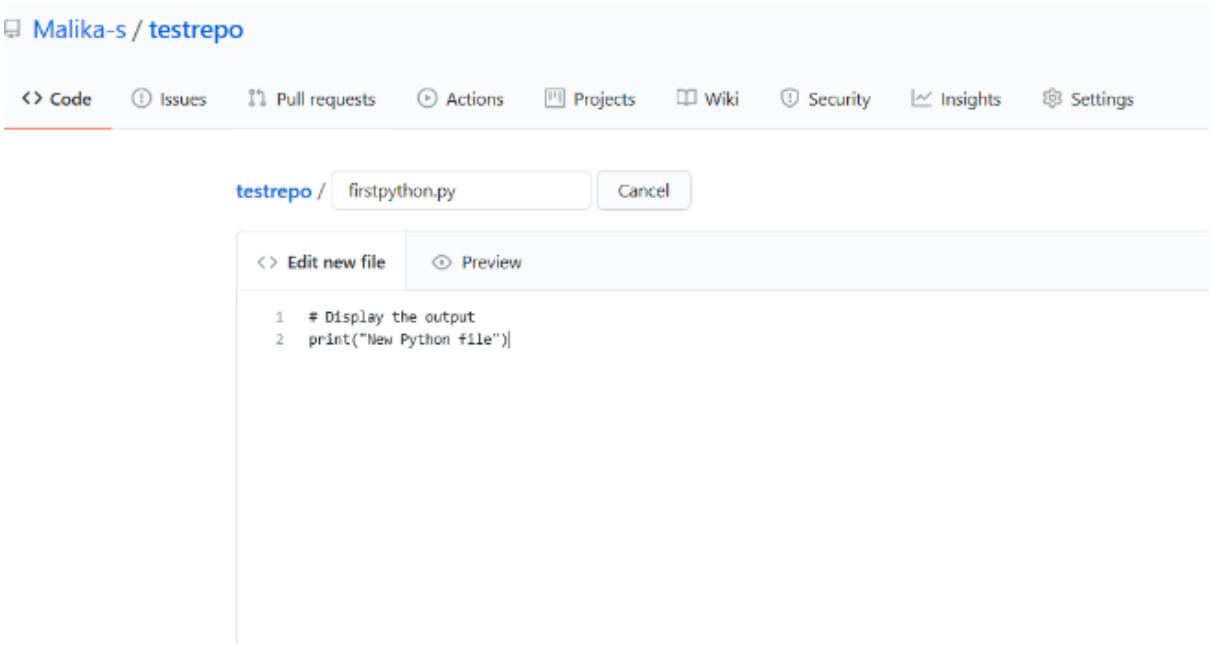
Step 1: Click on the repository name to go back to the master branch like in this testrepo.



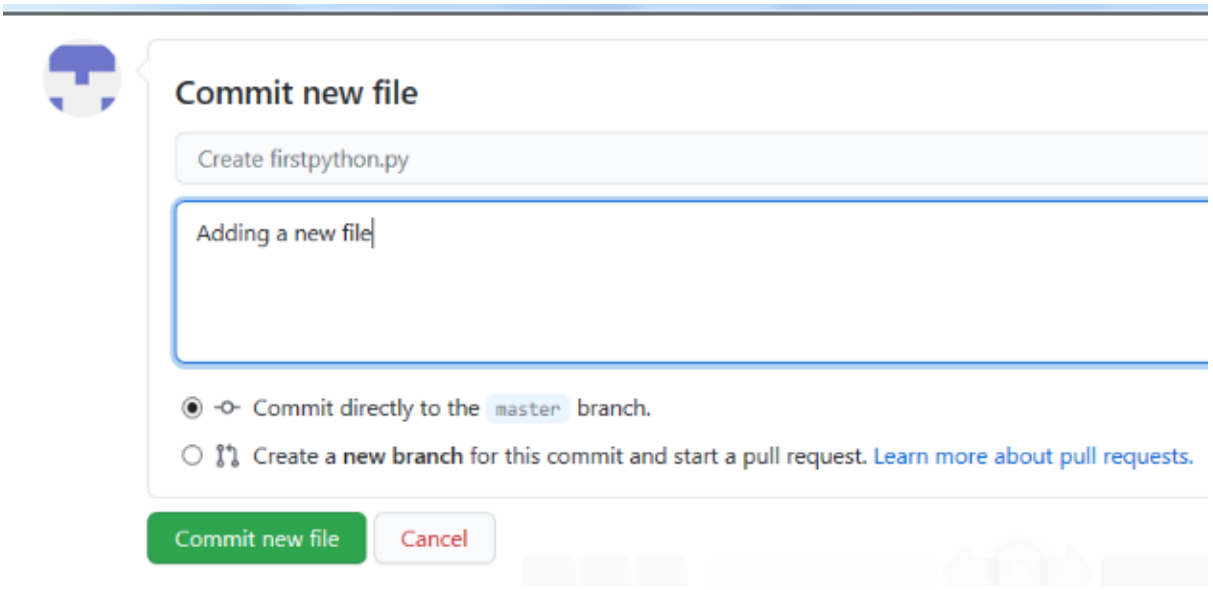
Step 2: Click `Add file` and select `Create New file` to create a file in the repository.



Step 3: Provide the file name and the extension of the file. For example, firstpython.py and add the lines.



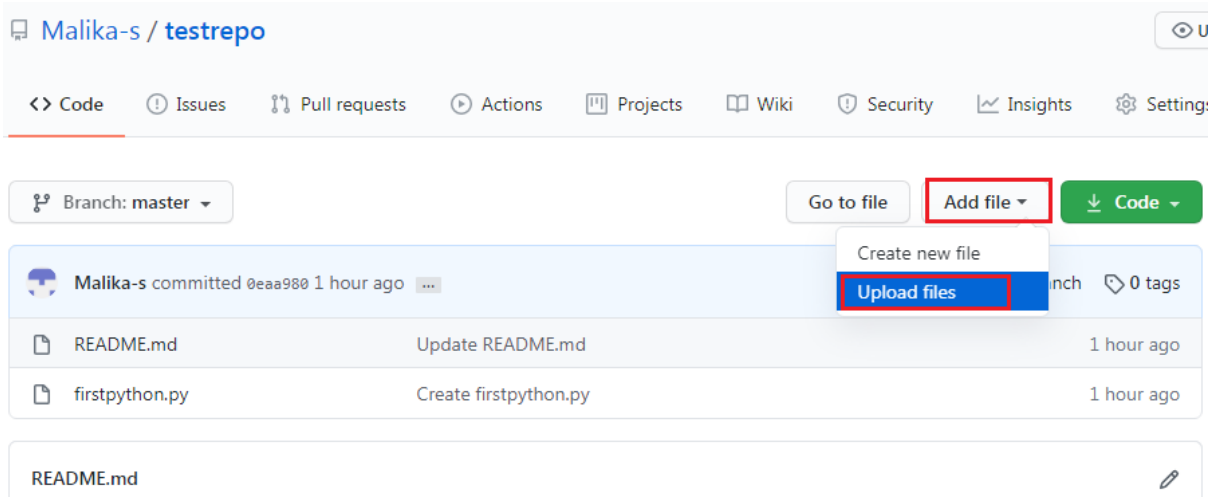
Step 4: Scroll down the page after adding the text. `Add description` of the file (optional) and click `Commit` new file.



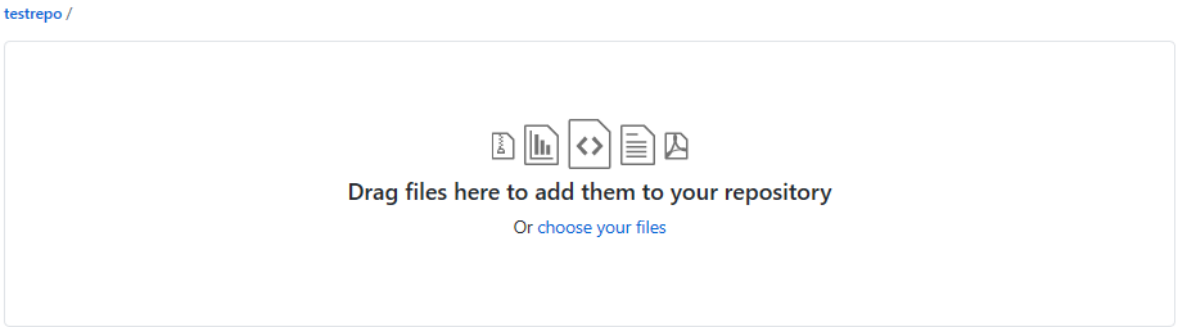
Step 5: Your file is now added to your repository and the repository listing shows when the file was added/changed.

Exercise 4: Upload a file & Commit

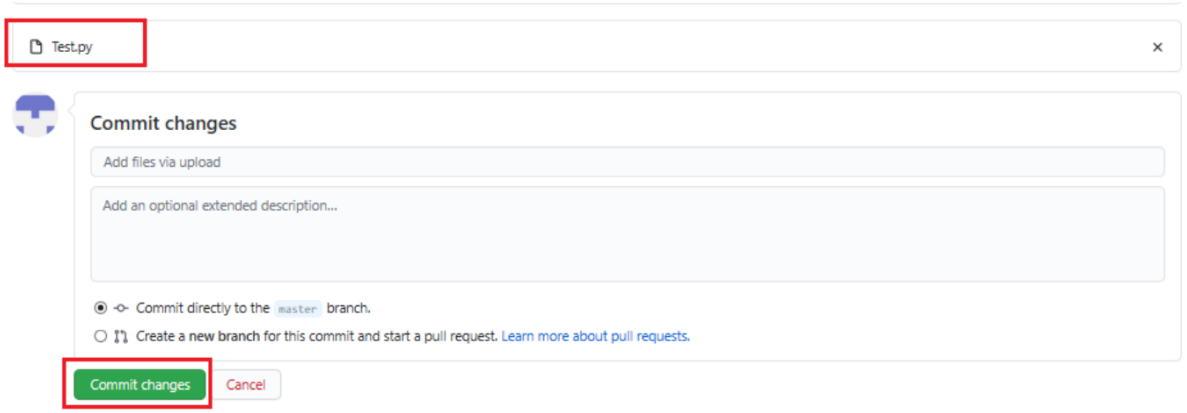
Step 1: Click `Add file` and select `Upload files` to upload a file (Upload any .txt,.ipynb, .png file) in the repository from the local computer.



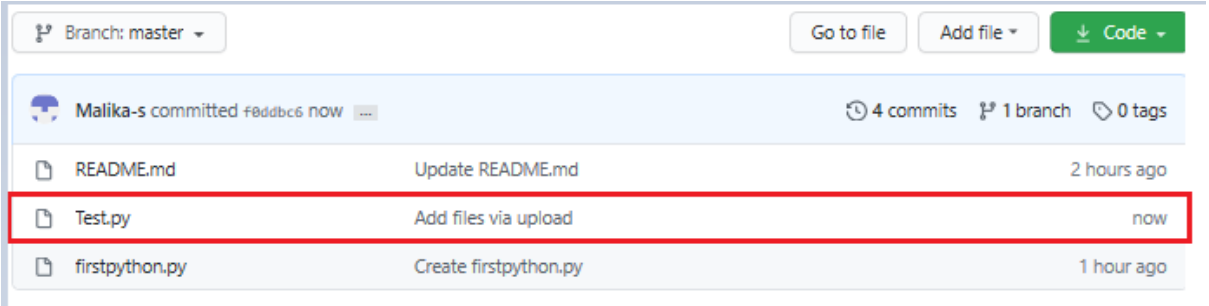
Step 2: Click on choose your files and choose any files from your computer.



Step 3: Once the file finishes uploading, click on `Commit` Changes



Step 4: Now, your file is uploaded in the repository.



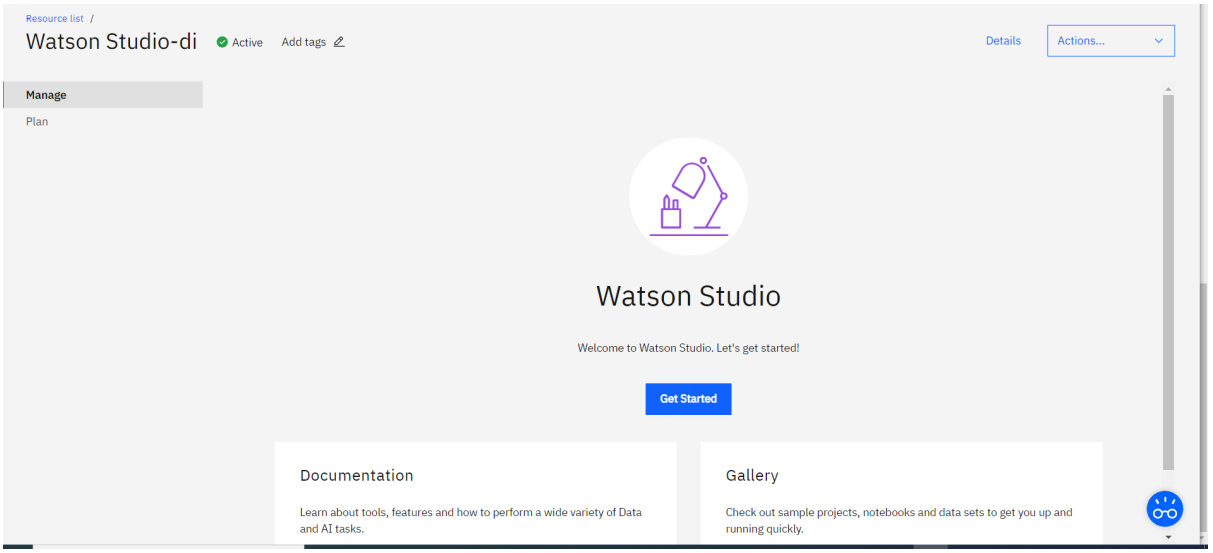
Summary

In this document, you have learned how to create a new repository, adding a new file, editing a file, and uploading a file in a repository and commit the changes.

Hands-on Lab: Publishing notebooks from Watson to Github

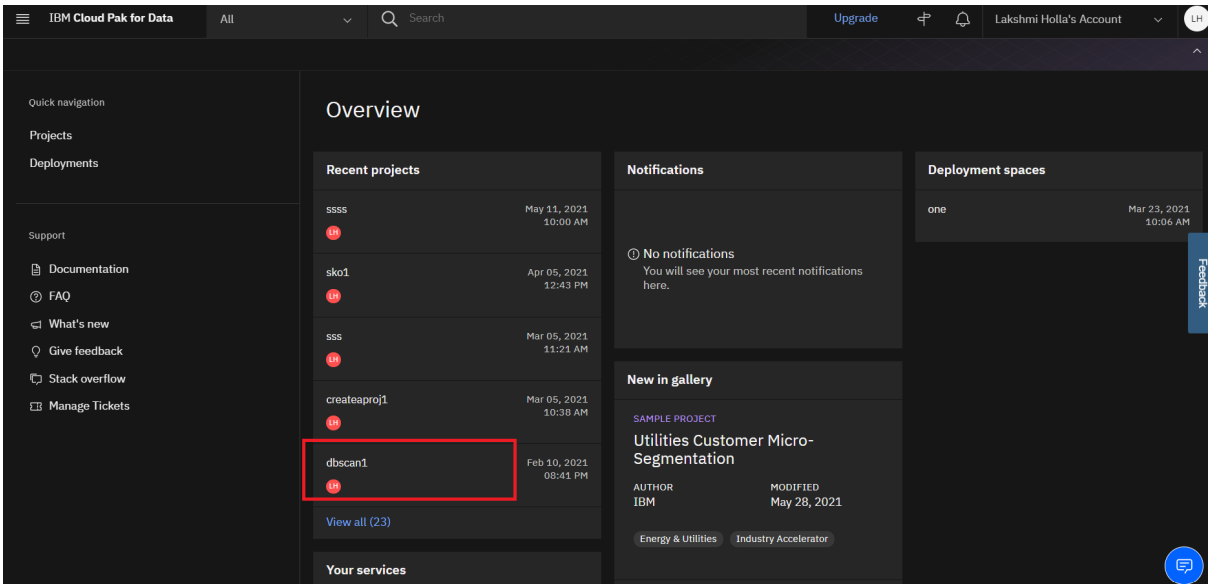
Effort: 20 mins

Step 1: Click on the Get Started Link of Watson Studio to navigate to the page where projects are listed.

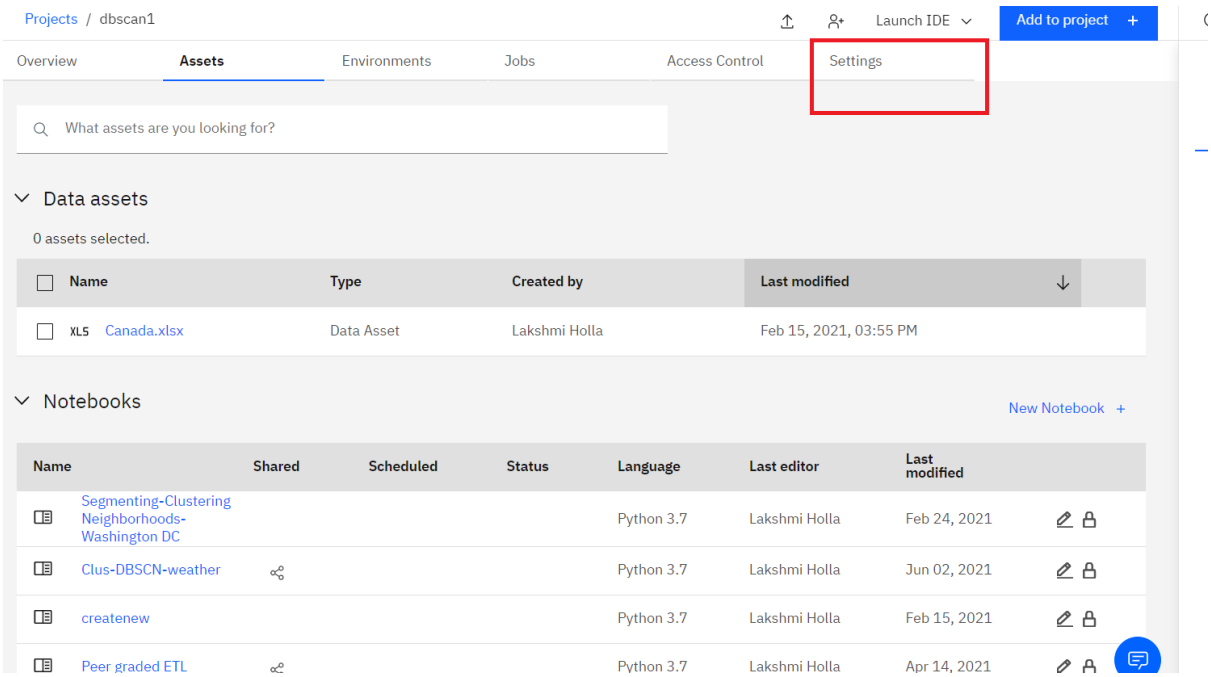


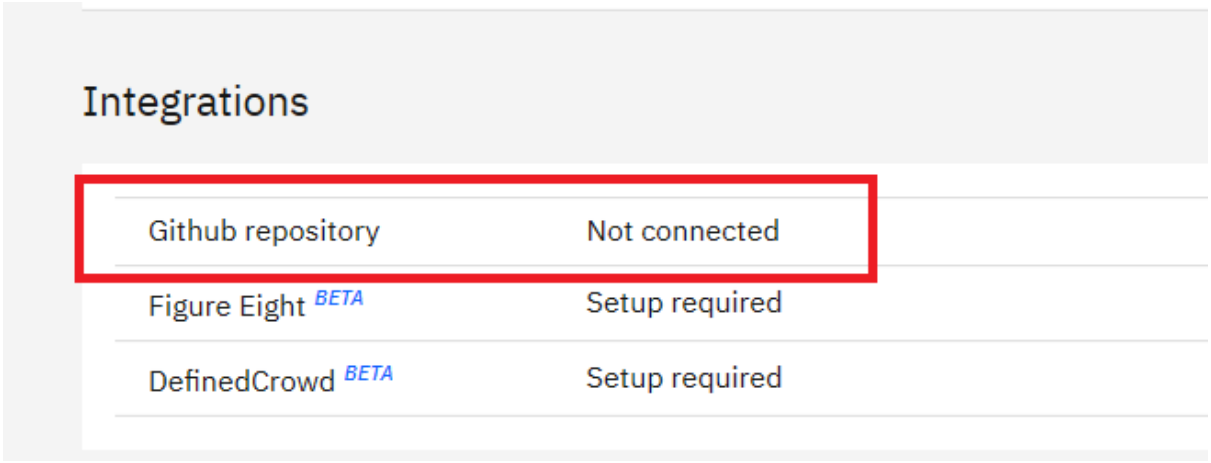
Step 2: Next click on the project which you want to integrate with github. This is the project containing your notebooks to be published on Github.

Note:This is just an example of a project . The project names will differ according what you have created.

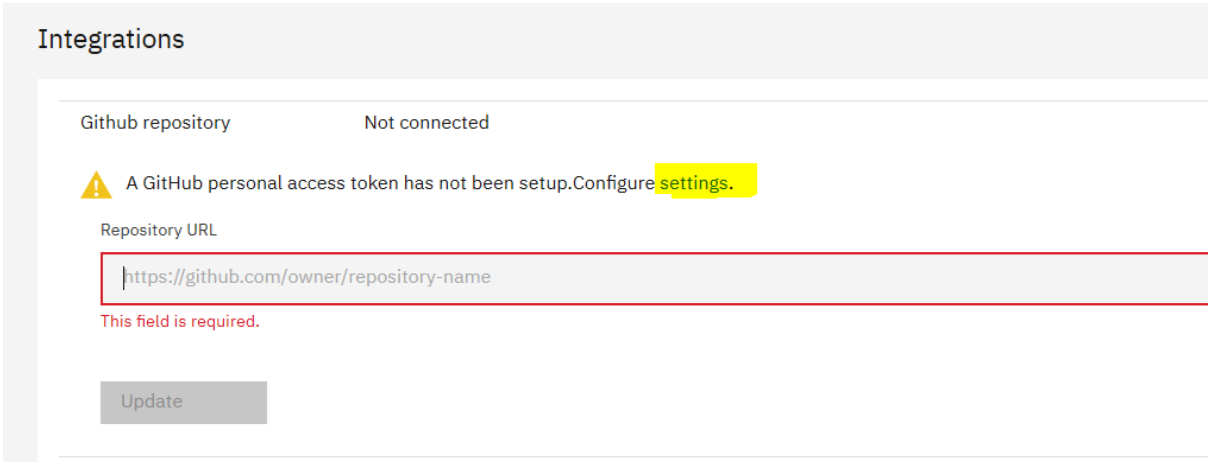


Step 3: Next click on the Settings Tab and scroll down to check the Integrations section.



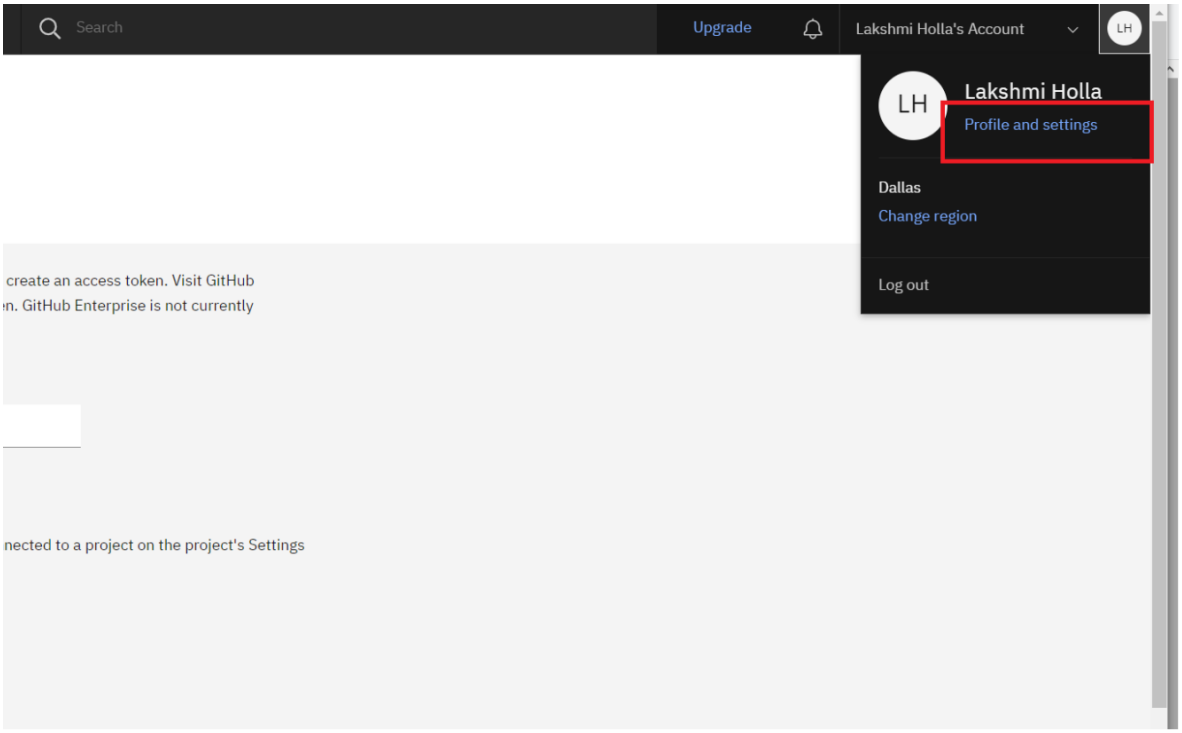


Step 4:Click on the GitHub repository on the integrations section .When you click on the textbox under the Repository url you will get the error as shown below:

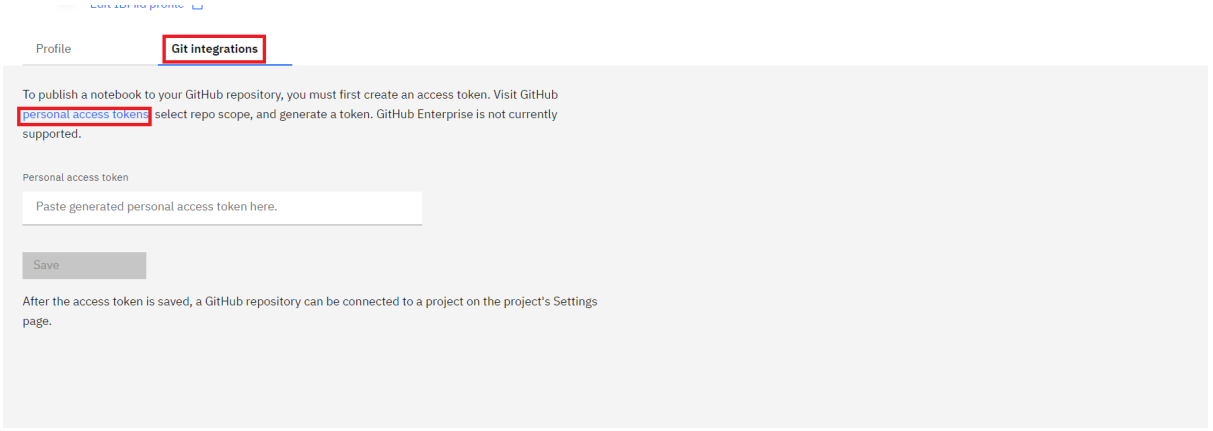


To create and configure the personal access token follow the subsequent steps.

Step 5:Next click on Profiles and Settings right below your initials on the top right screen.

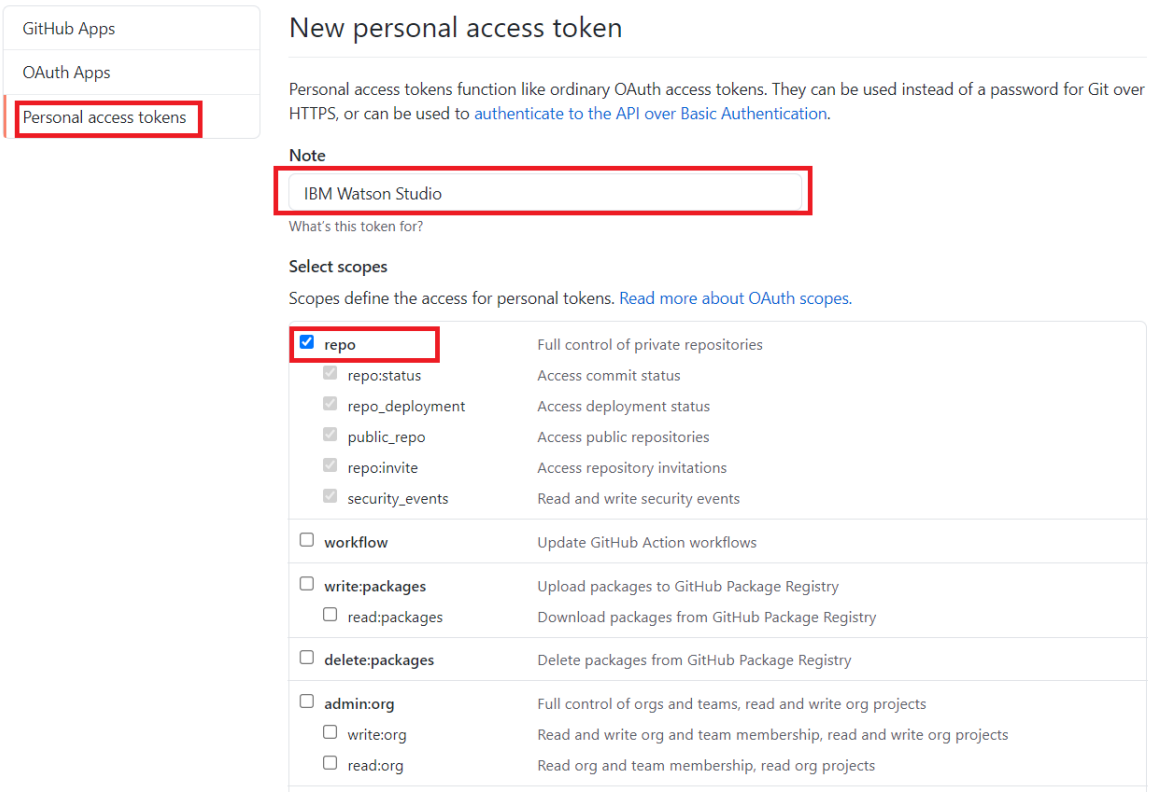


Step 6:Click on the gitIntegrations tab.



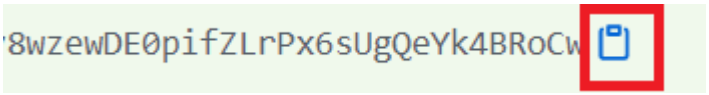
Step 7:Click on personal access token. This will prompt you to enter your github password and login to github.

Later create a token by specifying the name in the Note and choose repo scope.

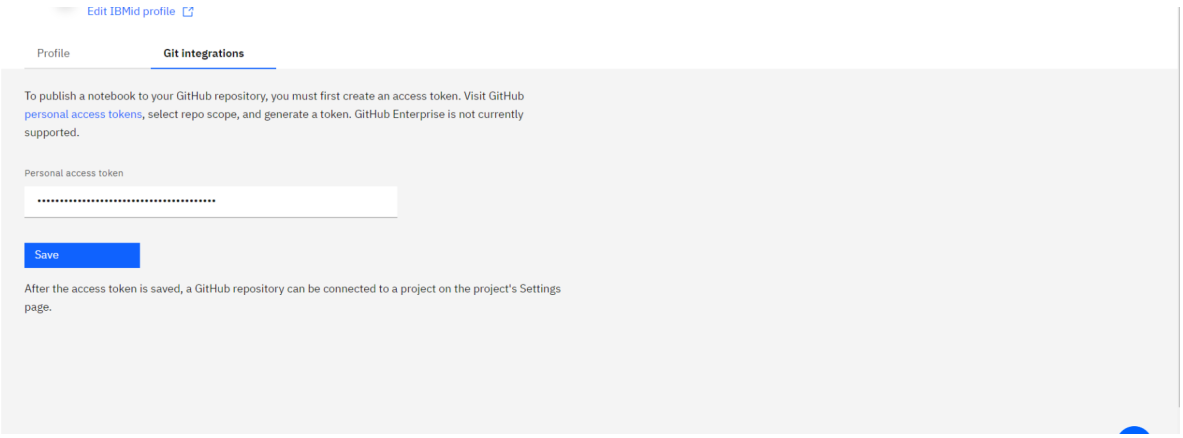


Scroll down and click ‘Generate Token’.

Step 8: Copy the token generated.



Step 9: Paste it under the Personal Access token in the Git Integrations tab of Watson and click on save.

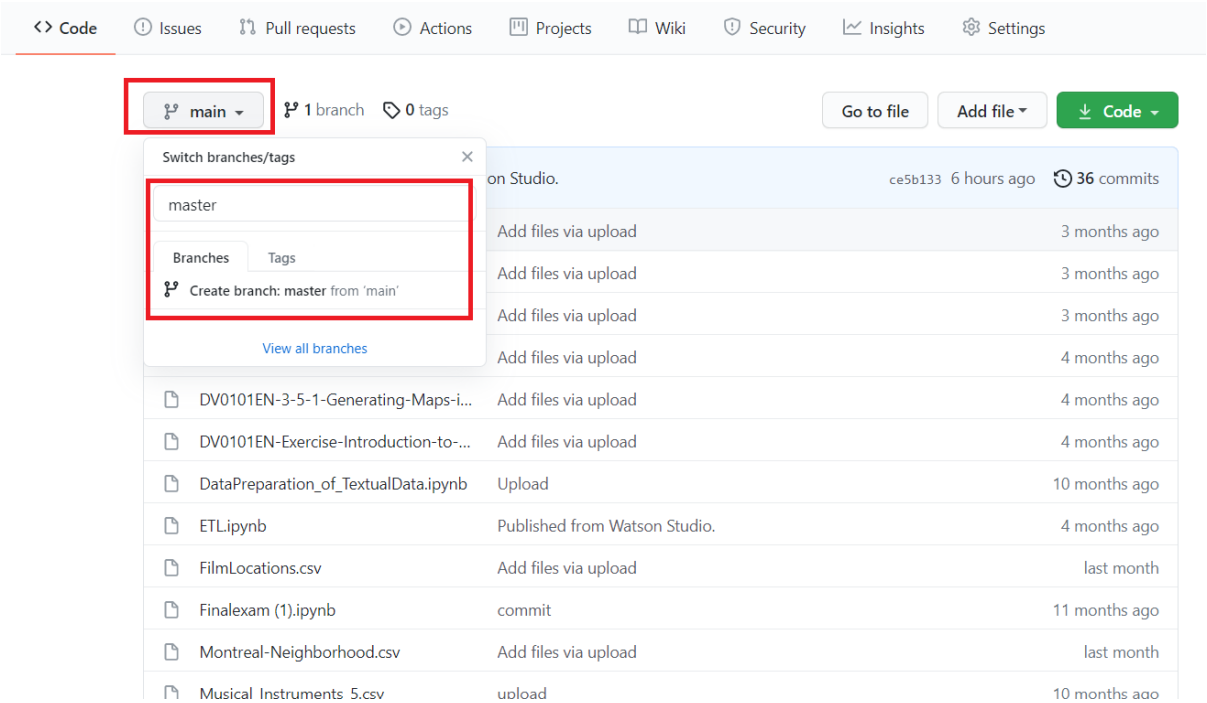


Step 10: Go back to your github repository by clicking this link.
Select your repository on the left pane.

Create a branch called master under your repository.

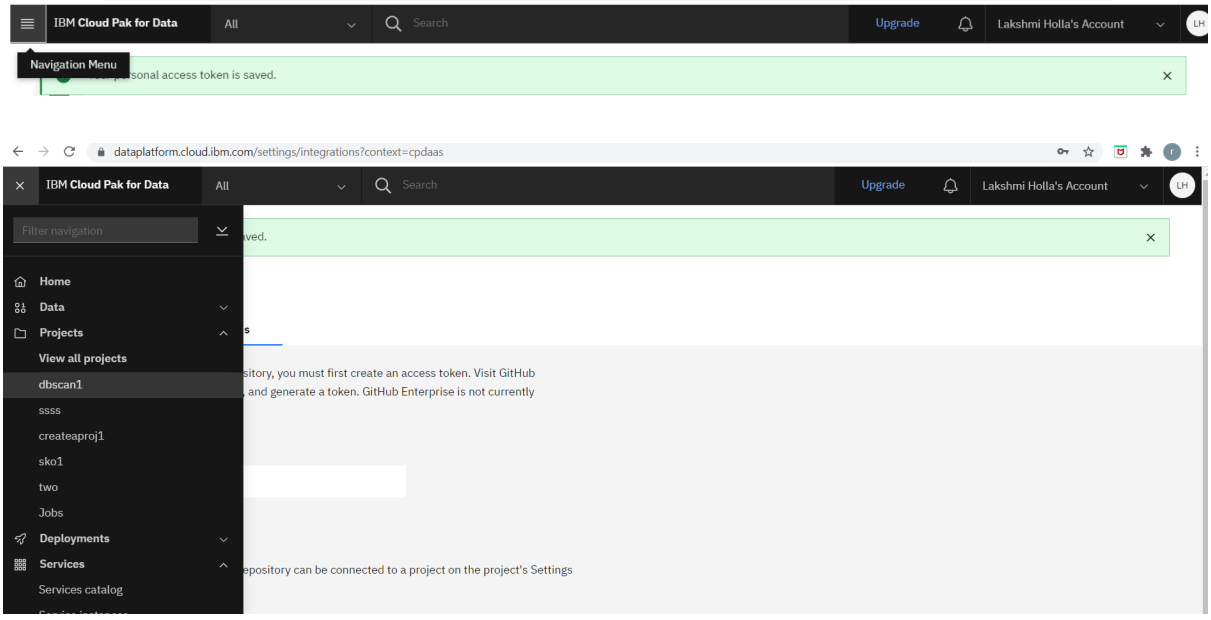
Step 11: Click the button on the left side of your screen that shows the current branch as "main" and has a dropdown arrow.

Step 12: Create a new branch called "master"



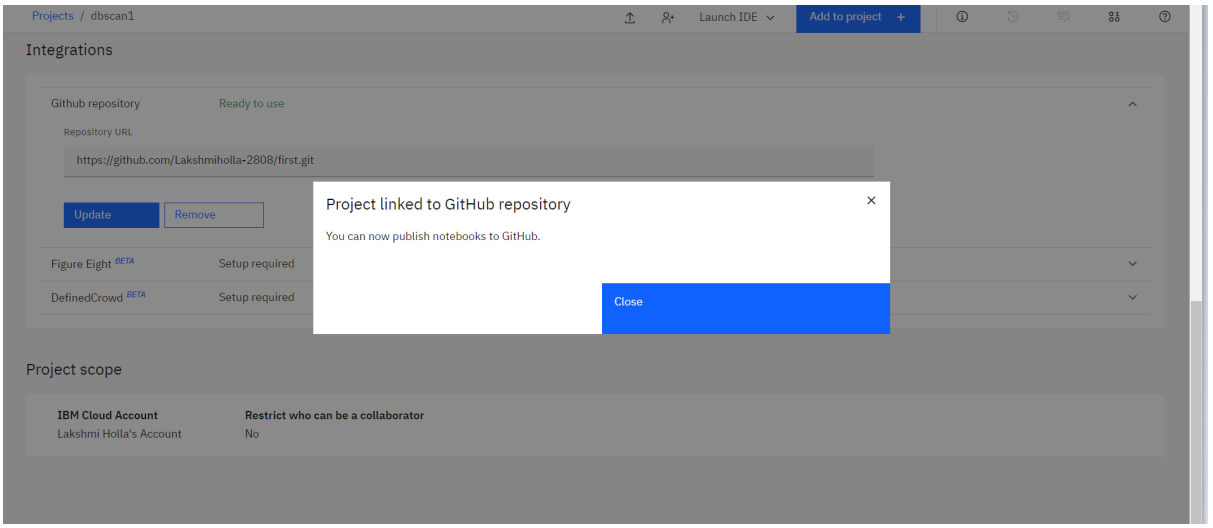
This is necessary because when you connect a repository to a project in Watson Studio and try to publish a notebook to GitHub, it automatically pushes your notebook to the master branch. If you only have a main branch in your repository and not one titled "master," Watson will not have anywhere to push your notebook.

Step 13: Once done with this step navigate to your project on watson by clicking the Navigation menu.



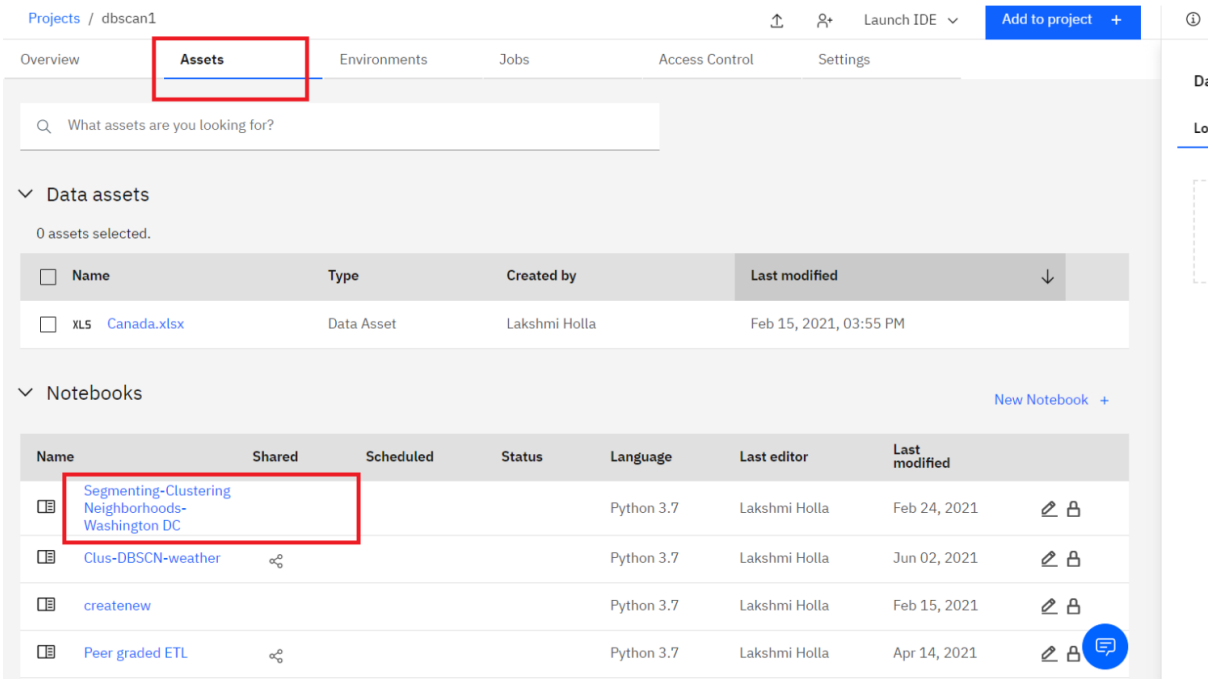
Step 14: Go to the settings tab and provide the github link of your repository.

If you have not yet created the repository follow the steps given in the link Github Repository Creation for creating a repository.



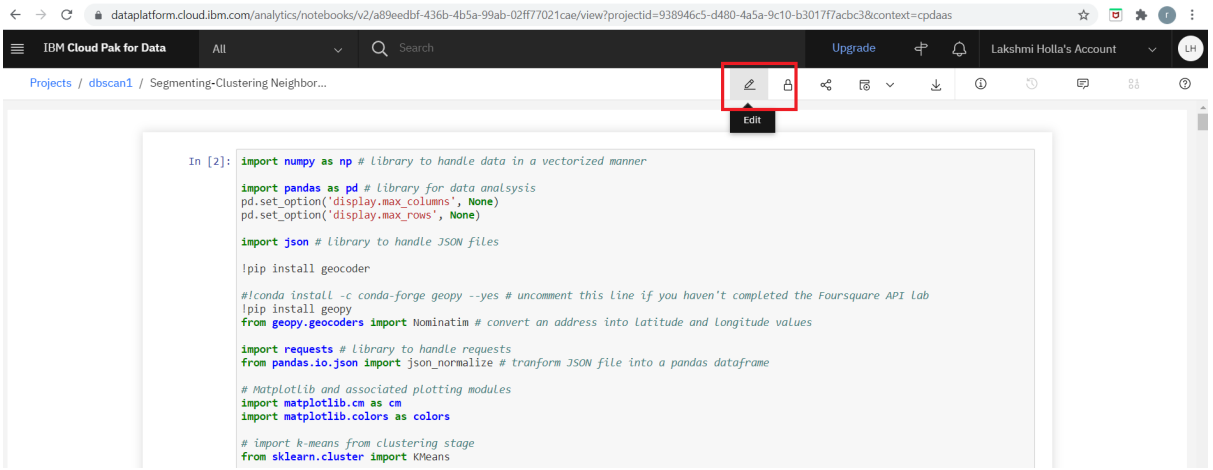
If update is not enabled, click outside text box which will enable it and then click ‘Update’.

Step 15: Navigate to the Assets tab of your project and then click on the notebook which you want to publish.

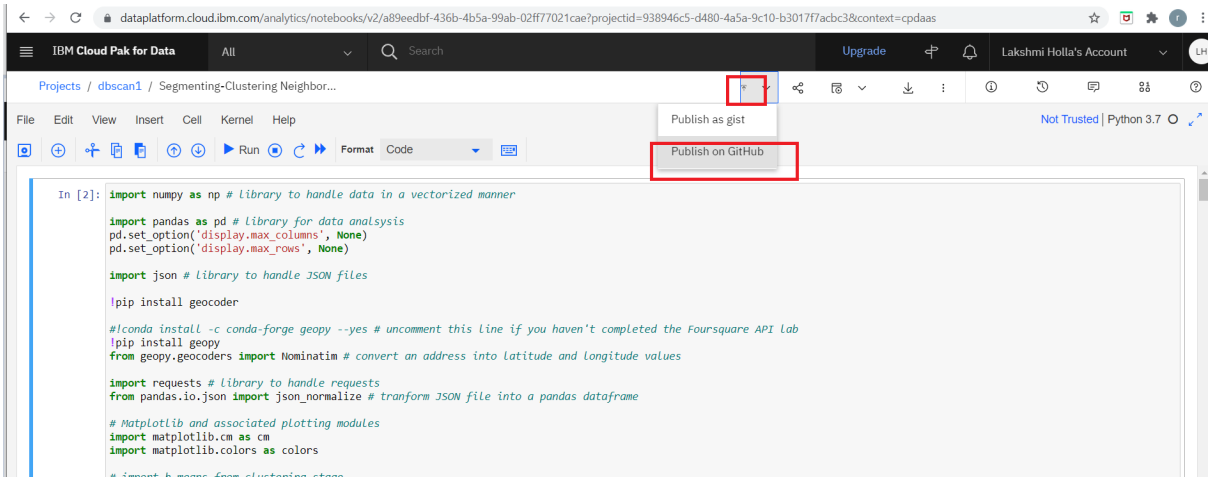


This will open your notebook.

Step 16: Click on the edit option to edit your notebook.



Step 17: Select Publish on github.



Step 18: Next click on Publish to publish your notebook.

Hands-on Lab: Create Db2 service instance and Get started with the Db2 console

Estimated time needed: 15 minutes

From now on, the hands-on labs for this course require an environment for working with a relational database. To get you up and running quickly we will do so on the Cloud, so you don't have to worry about downloading or installing anything, rather, simply access your database from your web browser. IBM Cloud provides a large number of Data and Analytics services, including IBM Db2, a next generation SQL database.

Objectives

After completing this lab, you will be able to:

- Use IBM cloud account to create and use resources
- Create an instance of a Db2 service
- Locate and explore the Db2 console

Pre-requisites

You will need an IBM Cloud account to do this lab. If you have not created one already, click on this link and follow the instructions to create an IBM Cloud account.

Task 1: Create an instance of IBM Db2 Lite plan

Now let us introduce you to Db2 on IBM Cloud. IBM Db2 is a next generation SQL database provisioned for you in the cloud. You can use Db2 on IBM Cloud just as you would use any database software (RDBMS), but without the overhead and expense of hardware setup or software installation and maintenance. Among the service

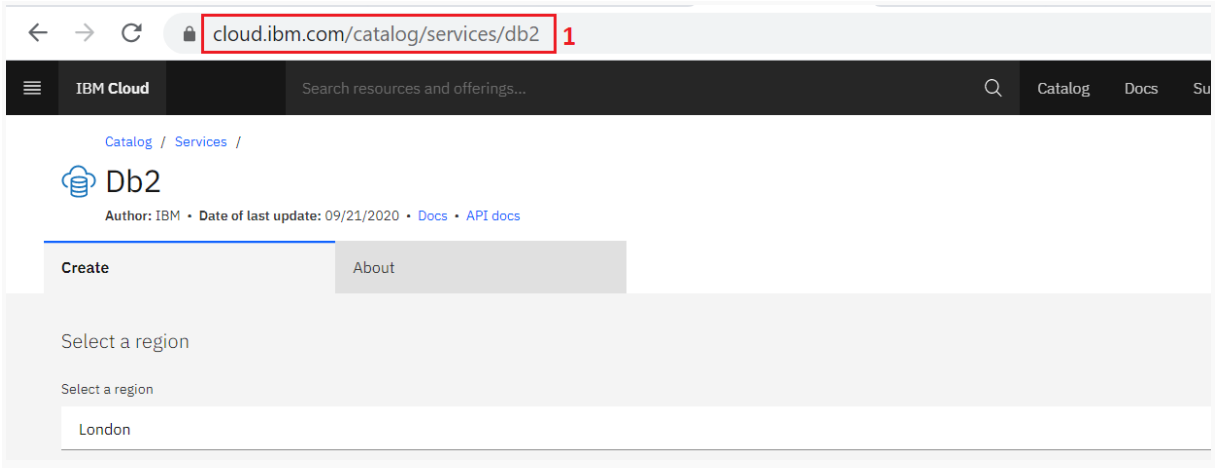
plans offered for Db2 on IBM Cloud is the Lite plan, which is free to use. You can use your database instance to store relational data, analyze data using a built-in SQL editor, or by connecting your own apps.

Note that IBM Cloud also provides other variants of Db2 such as Db2 Hosted and Db2 Warehouse on Cloud, which is also referred to in this course. However, for the labs in this course, we will utilize the Db2 service since it comes with a Lite plan which is free to use.

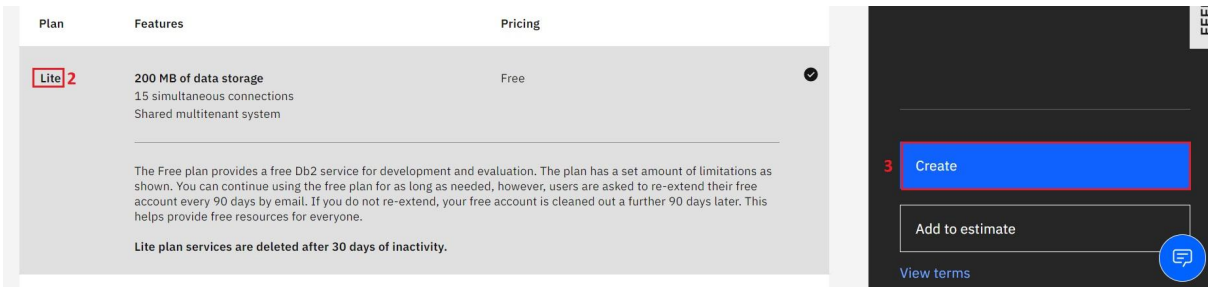
Please follow the steps given below to provision an instance of Db2 on IBM Cloud.

1. Login to IBM Cloud
2. Go to the DB2 Services page on IBM Catalog.
3. Select a location where you want the service to be hosted.

Note: Depending on the Country of your IBM Cloud account a location to deploy will be pre-selected. For example, if you are in the US, the default region will be Dallas. Users from the UK will see London and so on. It is best to go with the default location that is closest to you. Make sure a Region is selected as location, not a Data center.



4. Scroll down to the Pricing Plans section and select the Lite plan (it's a free plan, and available only in DALLAS at this point of time) or any other plans as required.
5. Then click on the Create button towards the lower-right of the page. It will spin for a few seconds (typically less than 30s) and then you should see a Service Created message indicating that your instance of Db2 was created successfully.

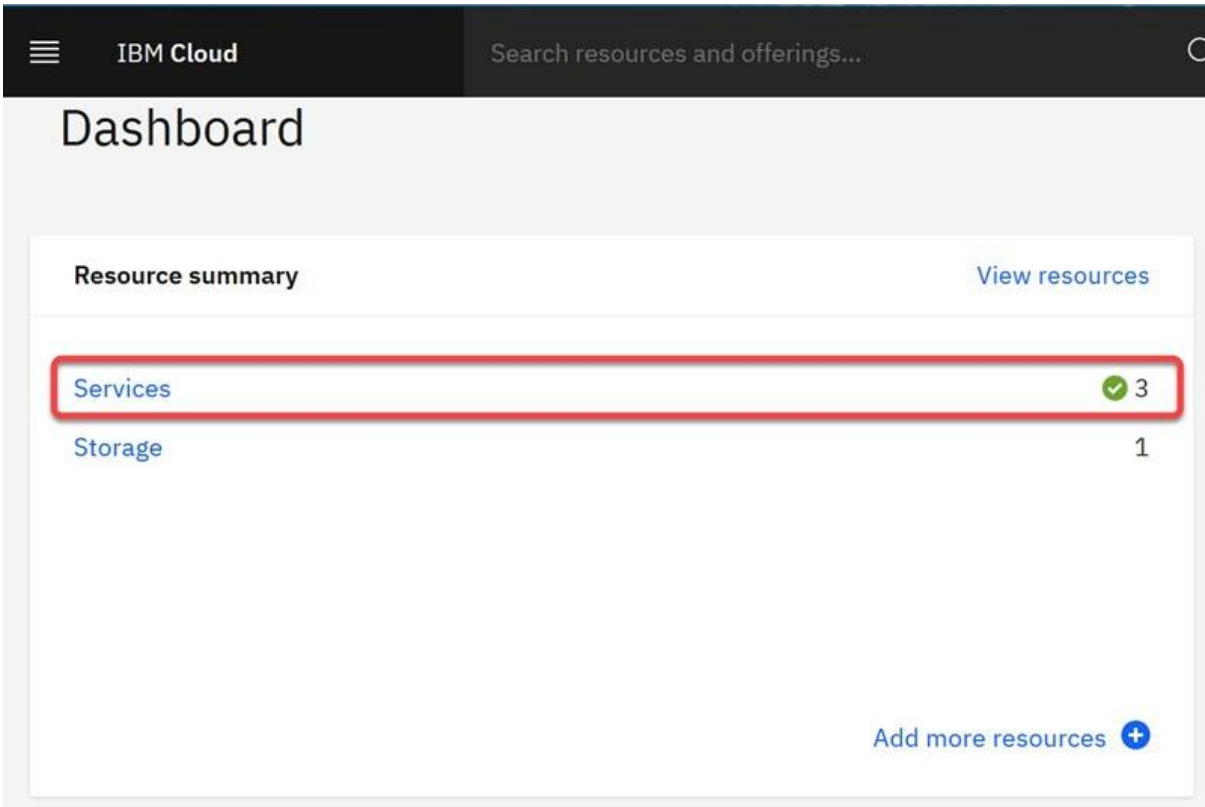


Task 2: Locate and Explore the Db2 console

Now that you have created your database instance, you need to know how to get to it, explore the console and start working with it.

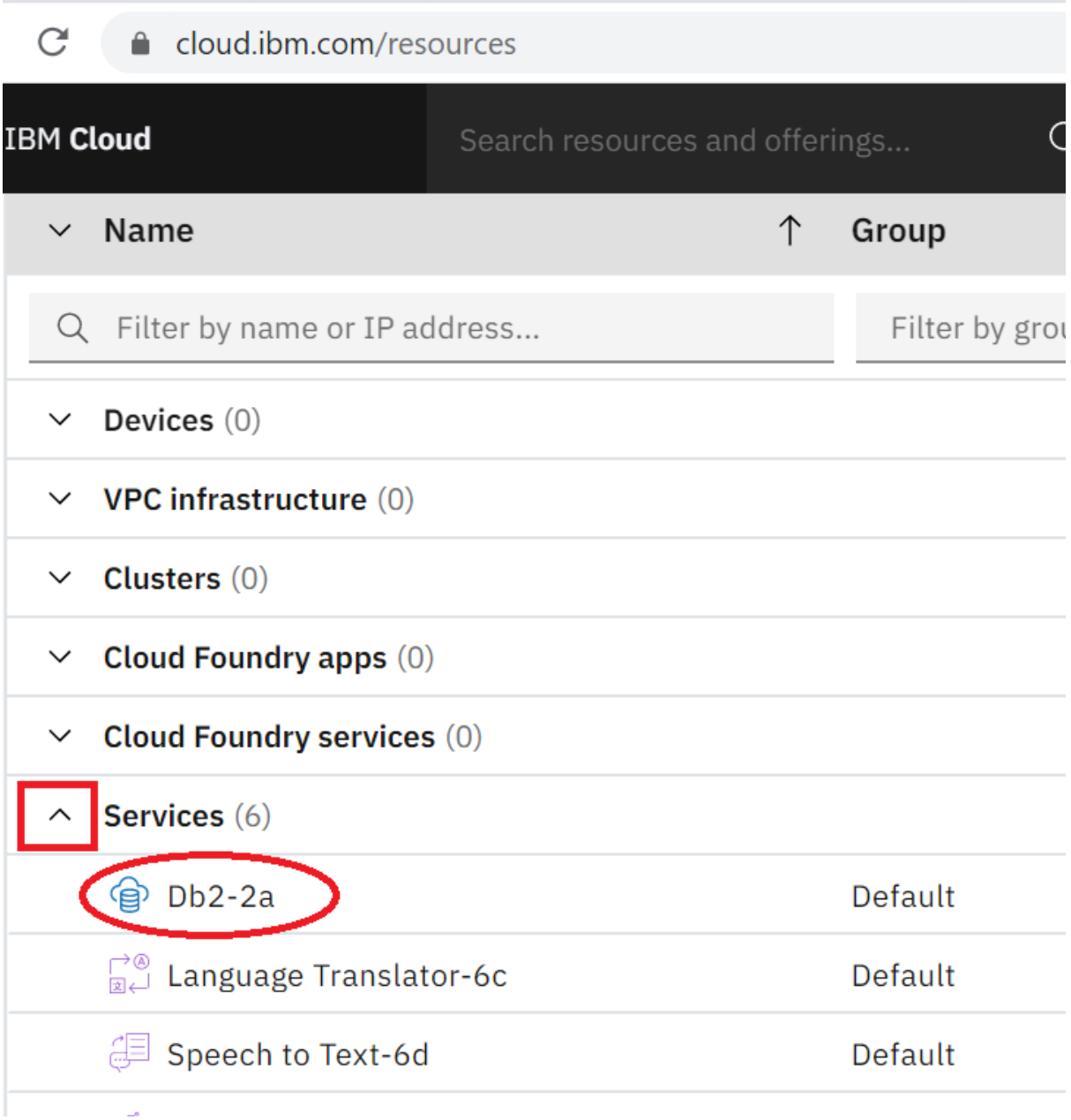
- NOTE: You are not required to compose and run any SQL query on this exercise.

1. To access your database instance, go to your IBM Cloud Resource List (you may need to log into IBM Cloud in the process) directly at: cloud.ibm.com/resources
    - Alternative: Go to your IBM Cloud dashboard (you may need to login to IBM Cloud in the process) at: cloud.ibm.com and click Services.

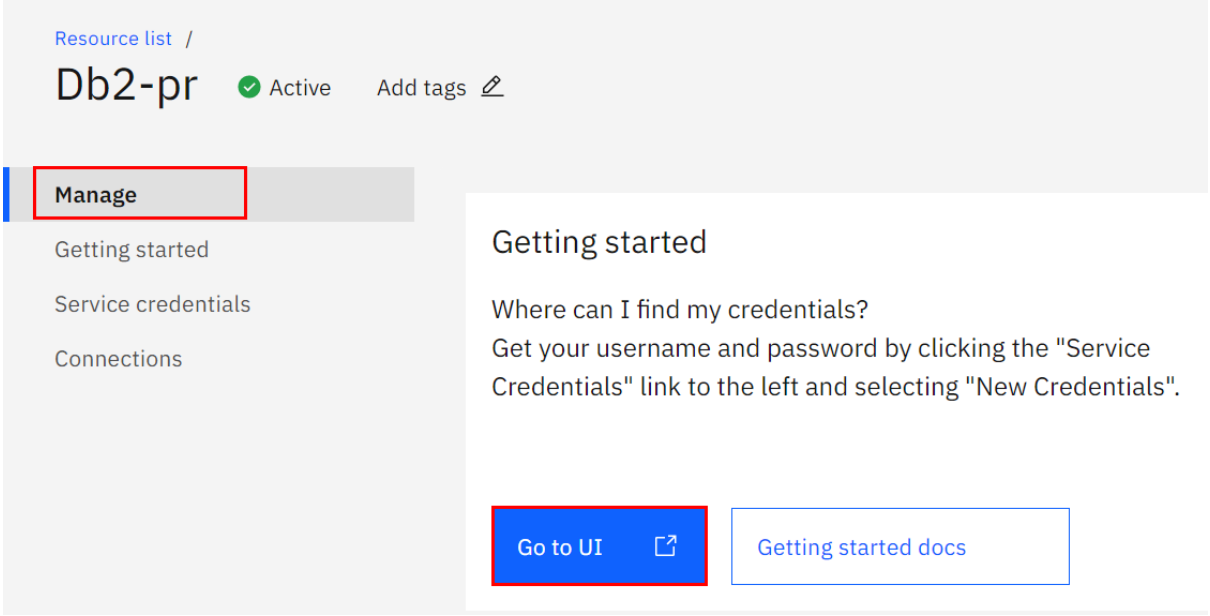


2. In the Resource list, expand the Services and locate and click on your instance of Db2 you provisioned in exercise 2 (the name typically starts with Db2-xx for

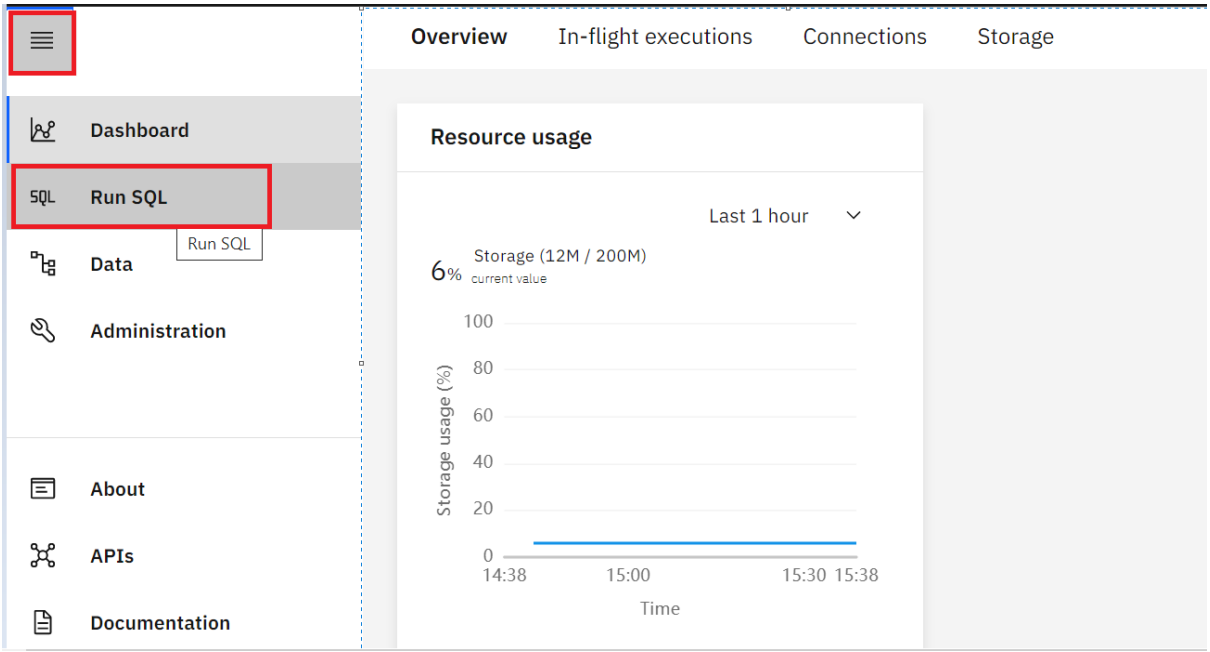
example Db2-fk, Db2-50, etc.)



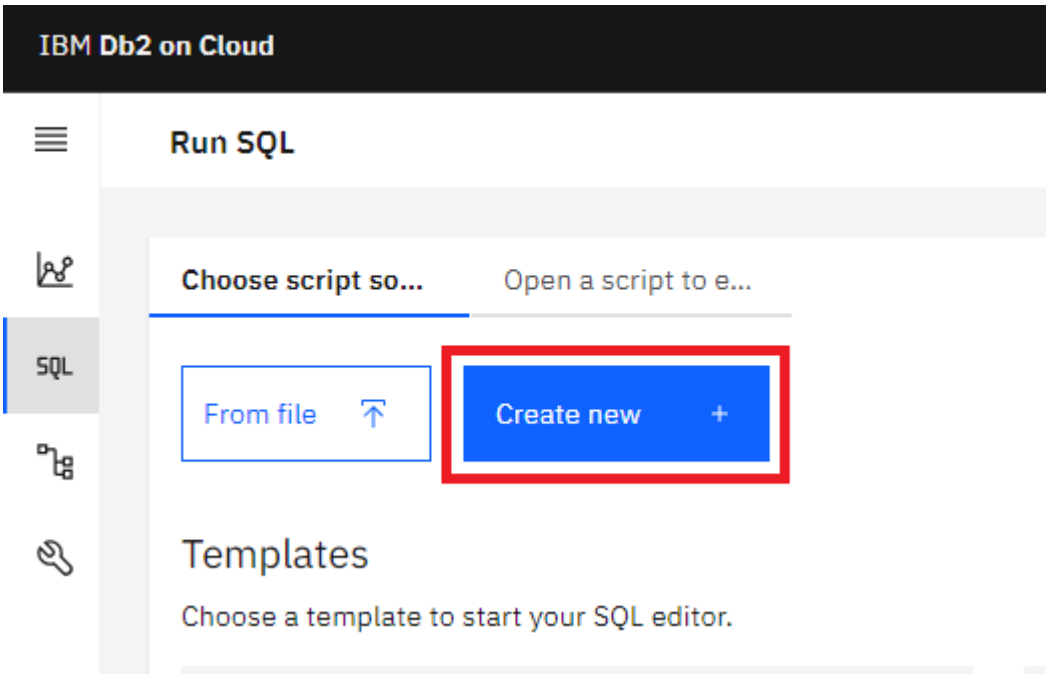
3. Click on the Go to UI button.



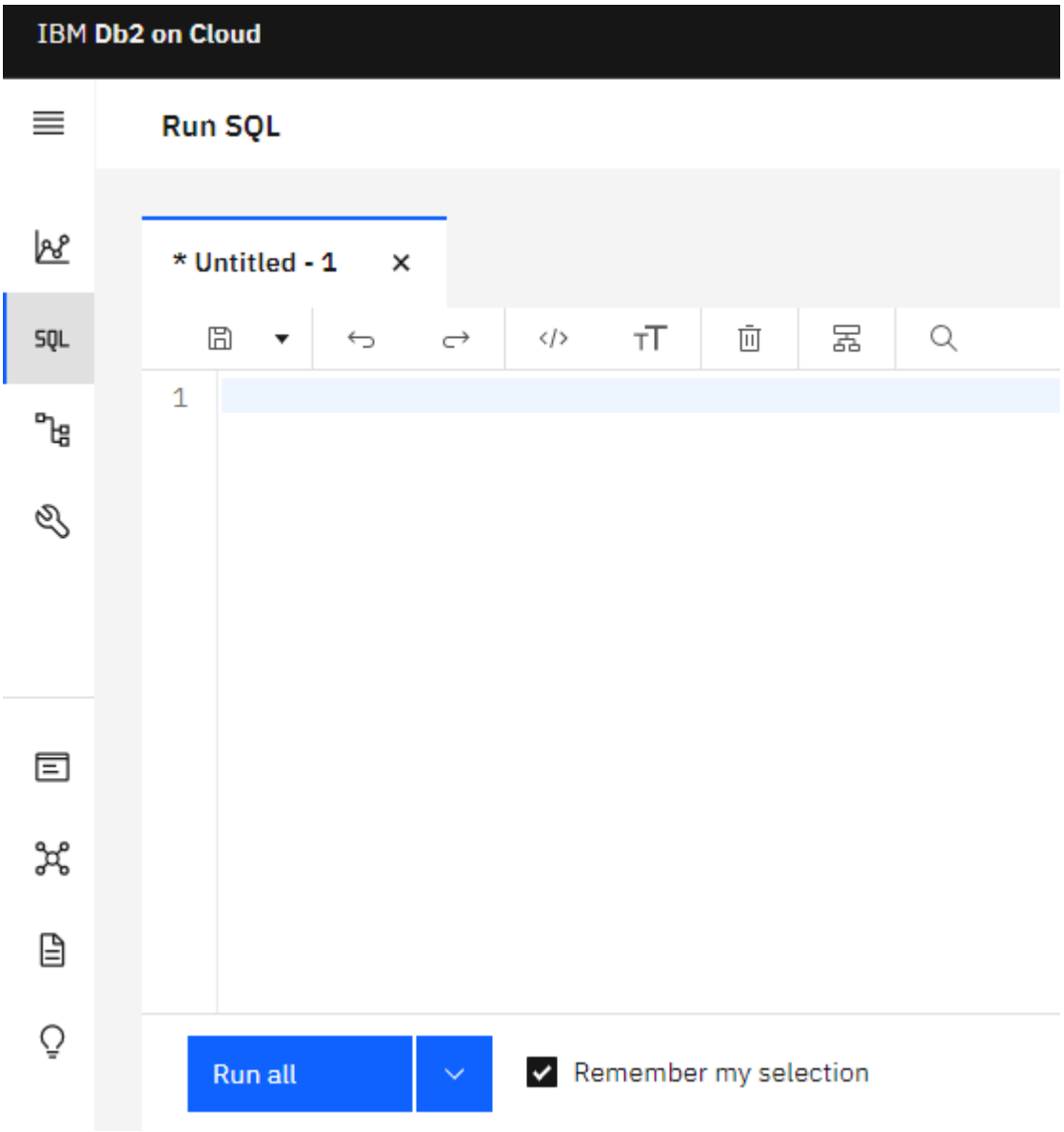
4. The Db2 console will open in a new tab in your web browser. Click on the 3-bar menu icon in the top left corner and then click on RUN SQL.



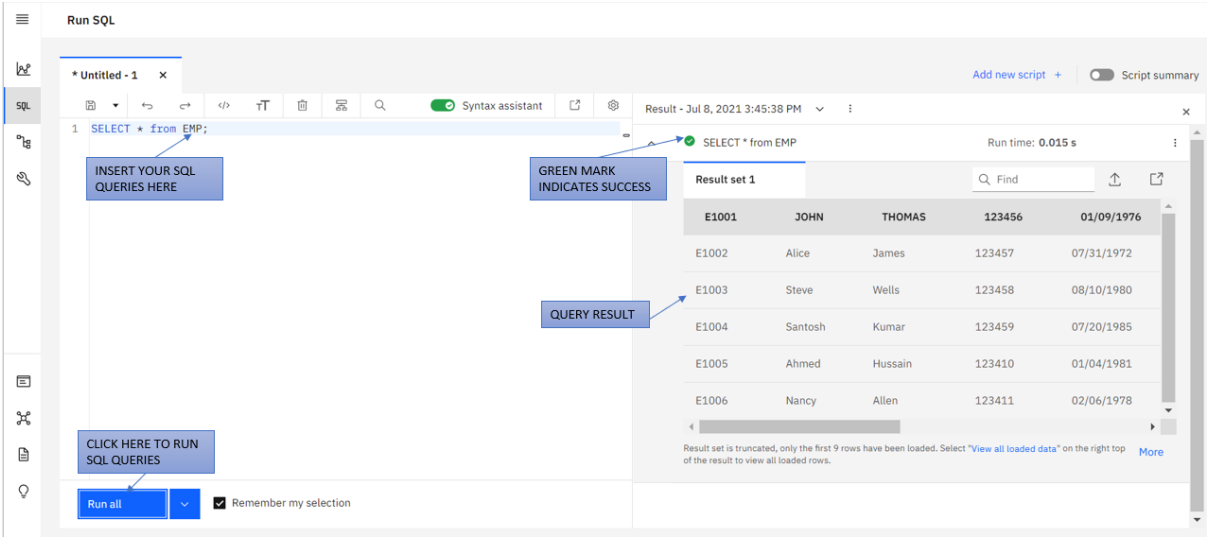
5. On the next screen click on Create new.



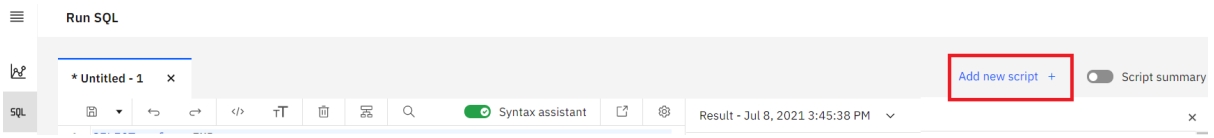
6. The SQL editor will open where you can start typing and running queries.



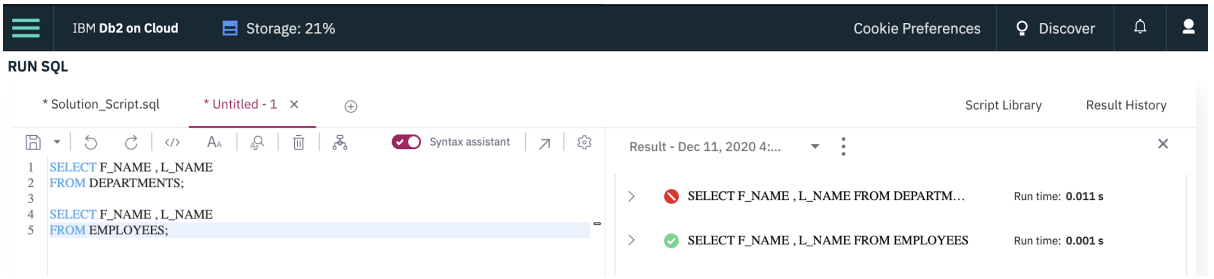
7. The SQL editor has several areas for performing different tasks.



8. Click on the Add New Script + icon if you want to add a new script for composing queries and then select Create new.

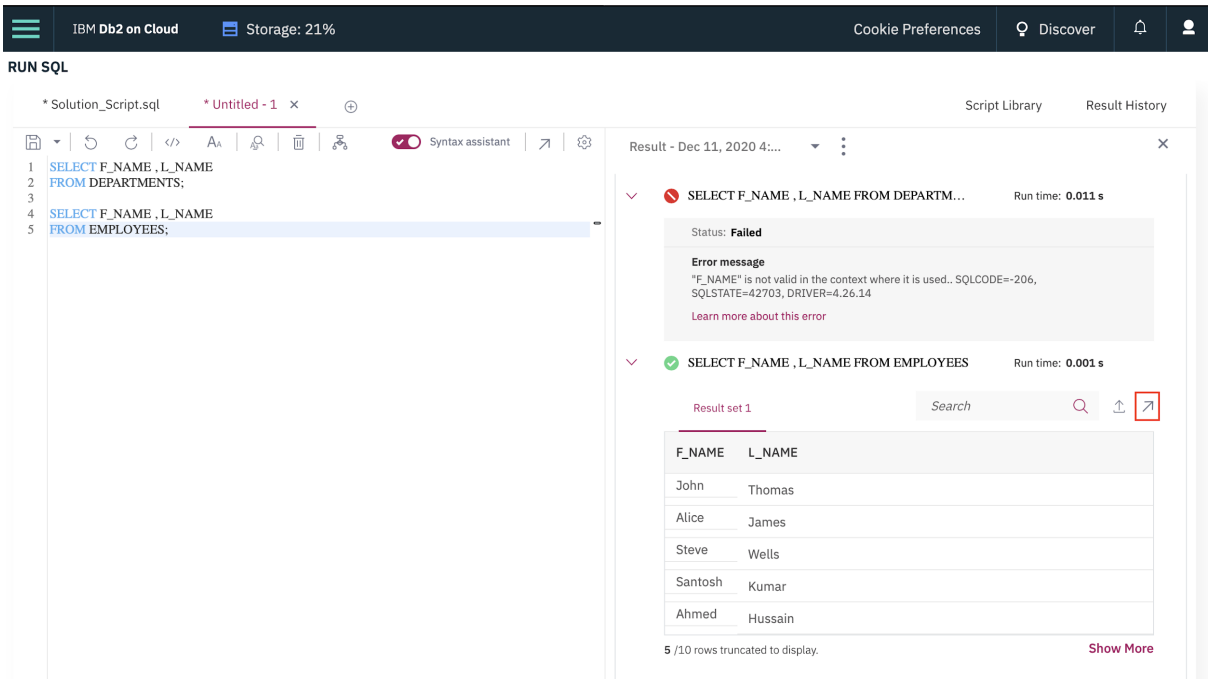


9. When you are asked in the upcoming labs, compose the appropriate SQL query for each problem and run by clicking Run all .
10. When you will run the script, looking at the Result section of the executed queries you will know whether the SQL statements ran successfully or not.



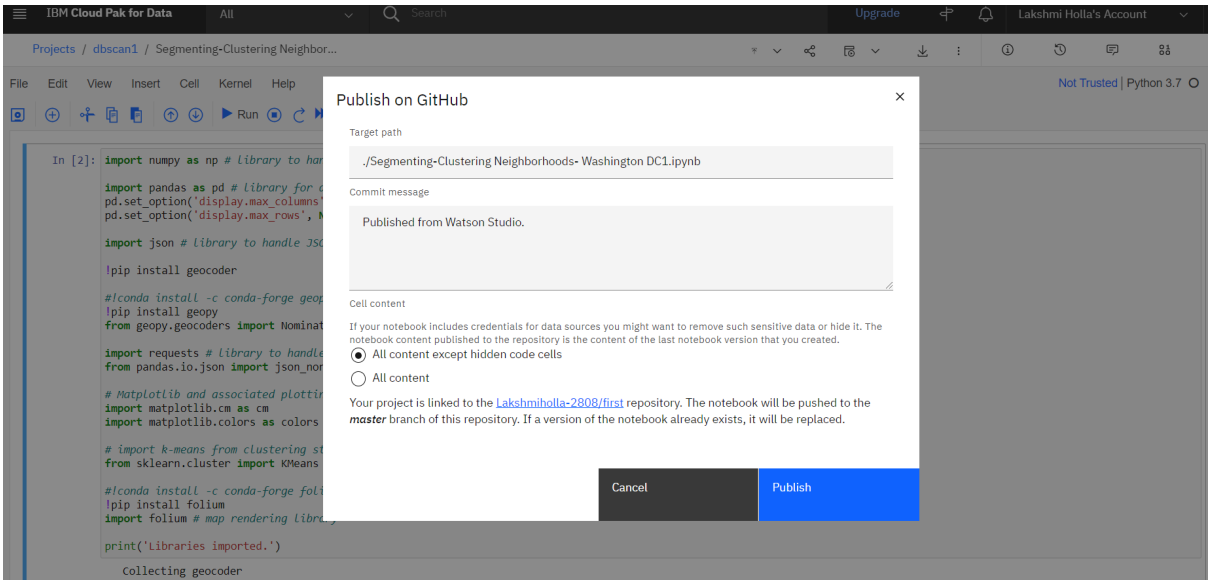
11. By clicking the Result section of the executed queries, you can see the query error details or result set to check and ensure the output is what you expected.
    - NOTE: You may find that some results don't appear in the result set pane; in this case, click the highlighted diagonal arrow (View More) and it will open the full Result Set window containing the results.

12.

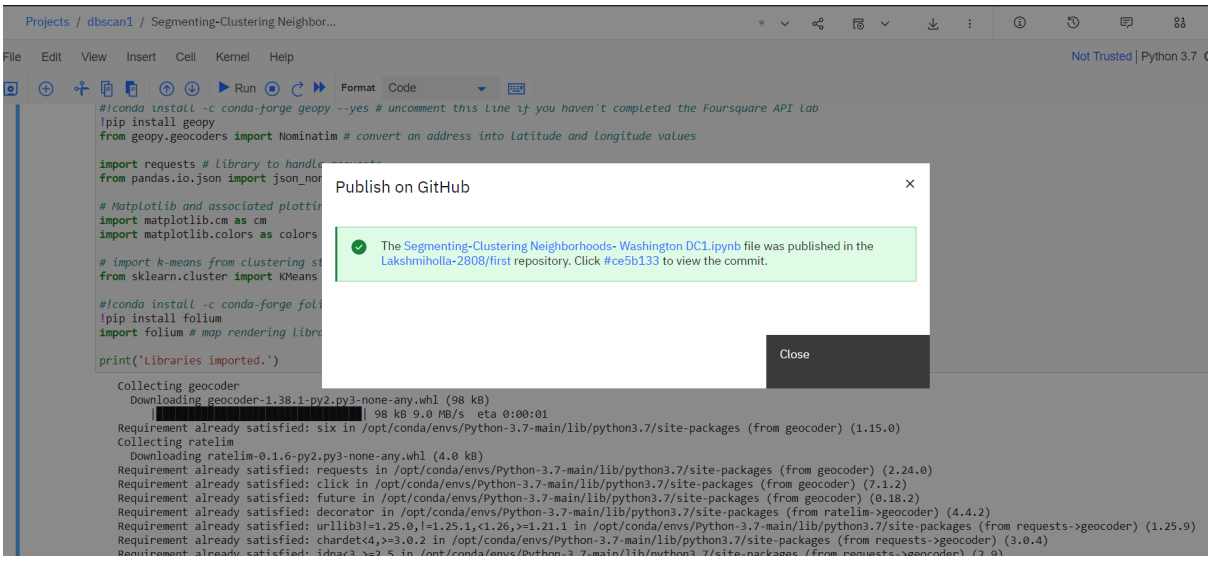


Summary

You can now find your way into and around the database instance, and you will use these skills in later labs.

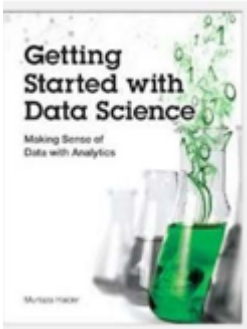


Step 19: This will publish your notebook to github.



Course Text Book: 'Getting Started with Data Science' Publisher: IBM Press; 1 edition (Dec 13 2015) Print.

Author: Murtaza Haider



Prescribed Reading: Chapter 3 Pg. 60-62

The Report Structure

Before starting the analysis, think about the structure of the report. Will it be a brief report of five or fewer pages, or will it be a longer document running more than 100 pages in length? The structure of the report depends on the length of the document. A brief report is more to the point and presents a summary of key findings. A detailed report incrementally builds the argument and contains details about other relevant works, research methodology, data sources, and intermediate findings along with the main results.

I have reviewed reports by leading consultants including Deloitte and McKinsey. I found that the length of the reports varied depending largely on the purpose of the report. Brief reports were drafted as commentaries on current trends and developments that attracted public or media attention. Detailed and comprehensive reports offered a critical review of the subject matter with extensive data analysis and commentary. Often, detailed reports collected new data or interviewed industry experts to answer the research questions.

Even if you expect the report to be brief, sporting five or fewer pages, I recommend that the deliverable follow a prescribed format including the cover page, table of contents, executive summary, detailed contents, acknowledgments, references, and appendices (if needed).

I often find the cover page to be missing in documents. It is not the inexperience of undergraduate students that is reflected in submissions that usually miss the cover page. In fact, doctoral candidates also require an explicit reminder to include an informative cover page. I hasten to mention that the business world sleuths are hardly any better. Just search the Internet for reports and you will find plenty of reports from reputed firms that are missing the cover page.

At a minimum, the cover page should include the title of the report, names of authors, their affiliations, and contacts, the name of the institutional publisher (if

any), and the date of publication. I have seen numerous reports missing the date of publication, making it impossible to cite them without the year and month of publication. Also, from a business point of view, authors should make it easier for the reader to reach out to them. Having contact details at the front makes the task easier.

"A table of contents (ToC)" is like a map needed for a trip never taken before. You need to have a sense of the journey before embarking on it. A map provides a visual proxy for the actual travel with details about the landmarks that you will pass by in your trip. The ToC with main headings and lists of tables and figures offers a glimpse of what lies ahead in the document. Never shy away from including a ToC, especially if your document, excluding cover page, table of contents, and references, is five or more pages in length.

Even for a short document, I recommend an "abstract" or an "executive summary". Nothing is more powerful than explaining the crux of your arguments in three paragraphs or less. Of course, for larger documents running a few hundred pages, the executive summary could be longer. An "introductory section" is always helpful in setting up the problem for the reader who might be new to the topic and who might need to be gently introduced to the subject matter before being immersed in intricate details. A good follow-up to the introductory section is a review of available relevant research on the subject matter. The length of the literature review section depends upon how contested the subject matter is. In instances where the vast majority of researchers have concluded in one direction, the literature review could be brief with citations for only the most influential authors on the subject. On the other hand, if the arguments are more nuanced with caveats aplenty, then you must cite the relevant research to offer adequate context before you embark on your analysis. You might use the literature review to highlight gaps in the existing knowledge, which your analysis will try to fill. This is where you formally introduce your research questions and hypothesis.

In the "methodology" section, you introduce the research methods and data sources you used for the analysis. If you have collected new data, explain the data collection exercise in some detail. You will refer to the literature review to bolster your choice for variables, data, and methods and how they will help you answer your research questions.

The results section is where you present your empirical findings. Starting with descriptive statistics (see Chapter 4, "Serving Tables") and illustrative graphics (see Chapter S, "Graphic Details" for plots and Chapter 10, "Spatial Data Analytics" for

maps), you will move toward formally testing your hypothesis (see Chapter 6, "Hypothetically Speaking").

In case you need to run statistical models, you might turn to regression models (see Chapter 7, "Why Tall Parents Don't Have Even Taller Children") or categorical analysis (see Chapters 8, "To Be or Not to Be" and 2., "Categorically Speaking About Categorical Data"). If you are working with time-series data, you can turn to Chapter 11, Doing Serious Time with Time Series. You can also report results from other empirical techniques that fall under the general rubric of data mining (see Chapter 12, "Data Mining for Gold"). Note that many reports in the business sector present results in a more palatable fashion by holding back the statistical details and relying on illustrative graphics to summarize the results.

The results section is followed by the discussion section, where you craft your main arguments by building on the results you have presented earlier.

The "discussion section" is where you rely on the power of narrative to enable numbers to communicate your thesis to your readers. You refer the reader to the research question and the knowledge gaps you identified earlier. You highlight how your findings provide the ultimate missing piece to the puzzle.

Of course, not all analytics return a smoking gun. At times, more frequently than I would like to acknowledge, the results provide only a partial answer to the question and that, too, with a long list of caveats.

In the "conclusion" section, you generalize your specific findings and take on a rather marketing approach to promote your findings so that the reader does not remain stuck in the caveats that you have voluntarily outlined earlier. You might also identify future possible developments in research and applications that could result from your research. What remains is housekeeping, including a list of references, the acknowledgment section (acknowledging the support of those who have enabled your work is always good), and "appendices", if needed.

Have You Done Your Job as a Writer?

As a data scientist, you are expected to do thorough analysis with the appropriate data, deploying the appropriate tools. As a writer, you are responsible for communicating your findings to the readers. Transport Policy, a leading research publication in transportation planning, offers a checklist for authors interested in publishing with the journal. The checklist is a series of questions authors are expected to consider before submitting their manuscripts to the journal. I believe the

checklist is useful for budding data scientists and, therefore, I have reproduced it verbatim for their benefit.

- Have you told readers, at the outset, what they might gain by reading your paper?
- Have you made the aim of your work clear?
- Have you explained the significance of your contribution?
- Have you set your work in the appropriate context by giving sufficient background (including a complete set of relevant references) to your work?
- Have you addressed the question of practicality and usefulness?
- Have you identified future developments that might result from your work?
- Have you structured your paper in a clear and logical fashion?

Hands-on Lab : Getting Started with PowerPoint for the Web

Estimated time needed: 20 minutes

Microsoft PowerPoint is the most widely used presentation software even three decades after its initial release. For all these years it has been available as a standard application that needed to be installed on your desktop; but it is not just a desktop app anymore. Now, you can even use PowerPoint when you're online by using 'PowerPoint for the web' - and run it right in your web browser without installing anything on your desktop!

'PowerPoint for the Web' (sometimes referred to as PowerPoint Online) can be used at no charge as part of a free Microsoft account. Although it does not have all of the capabilities of the desktop and paid online versions, the free web version provides many of the key features.

Software Used in this Lab

For the story telling/project report of this module, you will be using the free 'PowerPoint for the web' version as this is available to everyone.

Although you can use the PowerPoint Desktop software if you have access to this version, it is recommended that you use PowerPoint for the web for your project

report as it is available for free, and there are some small differences in the interface and available features.

Objectives

After completing this lab, you will be able to:

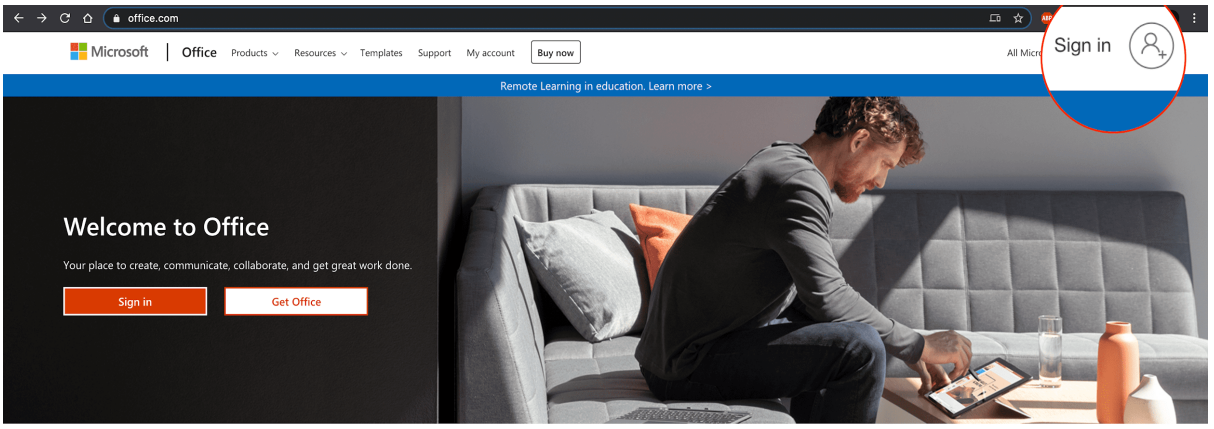
- Sign up for a Microsoft Account to use PowerPoint for the web
- Sign in and open a new blank presentation in PowerPoint for the web

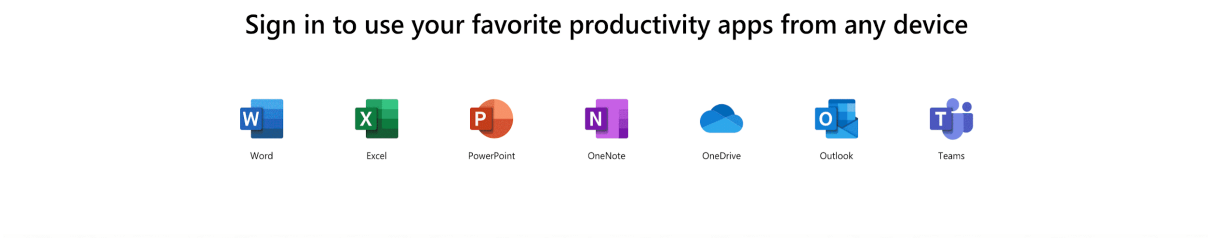
Exercise 1: Sign-up for a Microsoft Account to use PowerPoint for the Web

In this exercise, you will sign up for a Microsoft Account to use PowerPoint for the web.

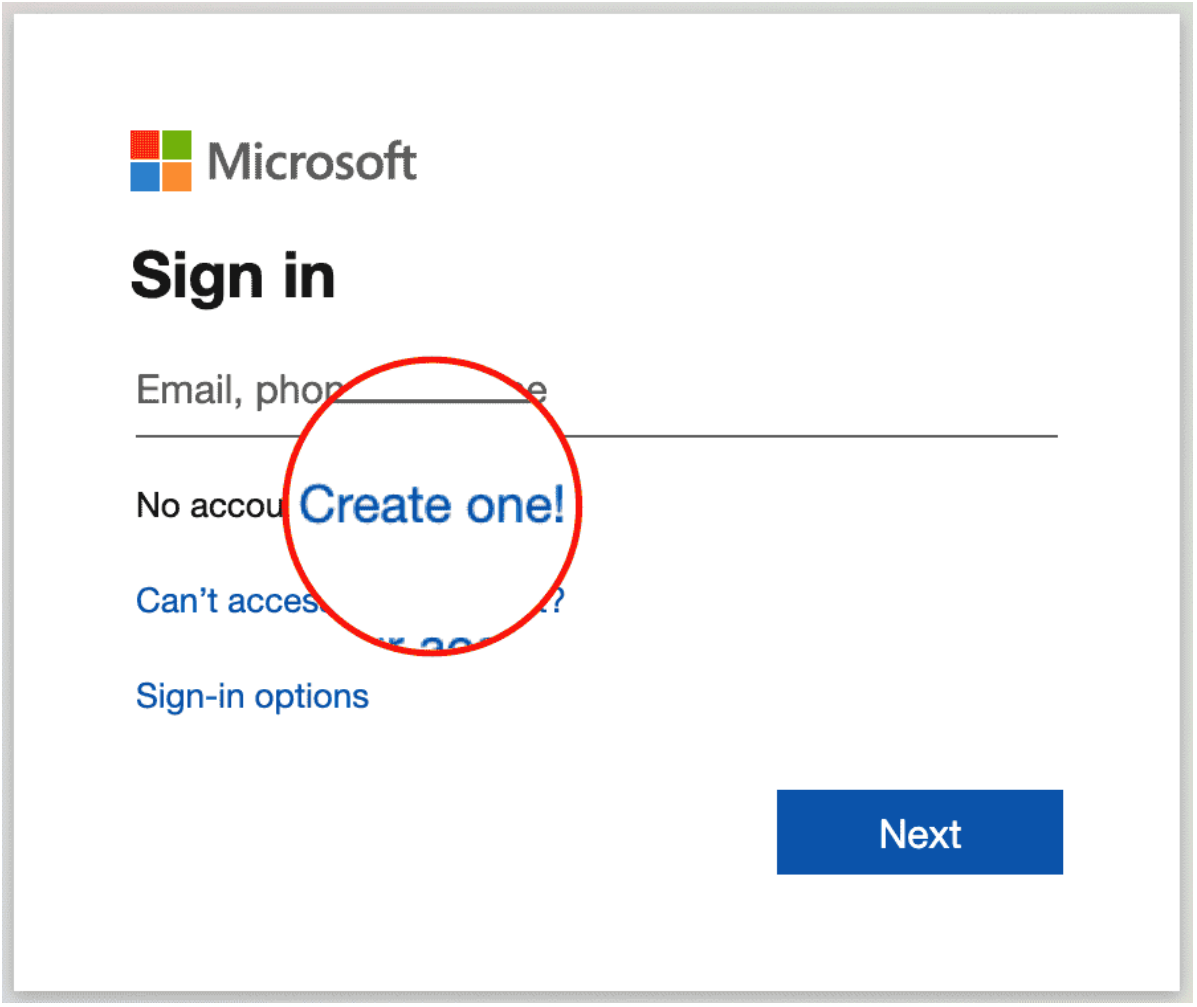
If you already have a Microsoft account, you can skip Exercise 1 and proceed to Exercise 2 directly.

1. Go to www.office.com. Click Sign in

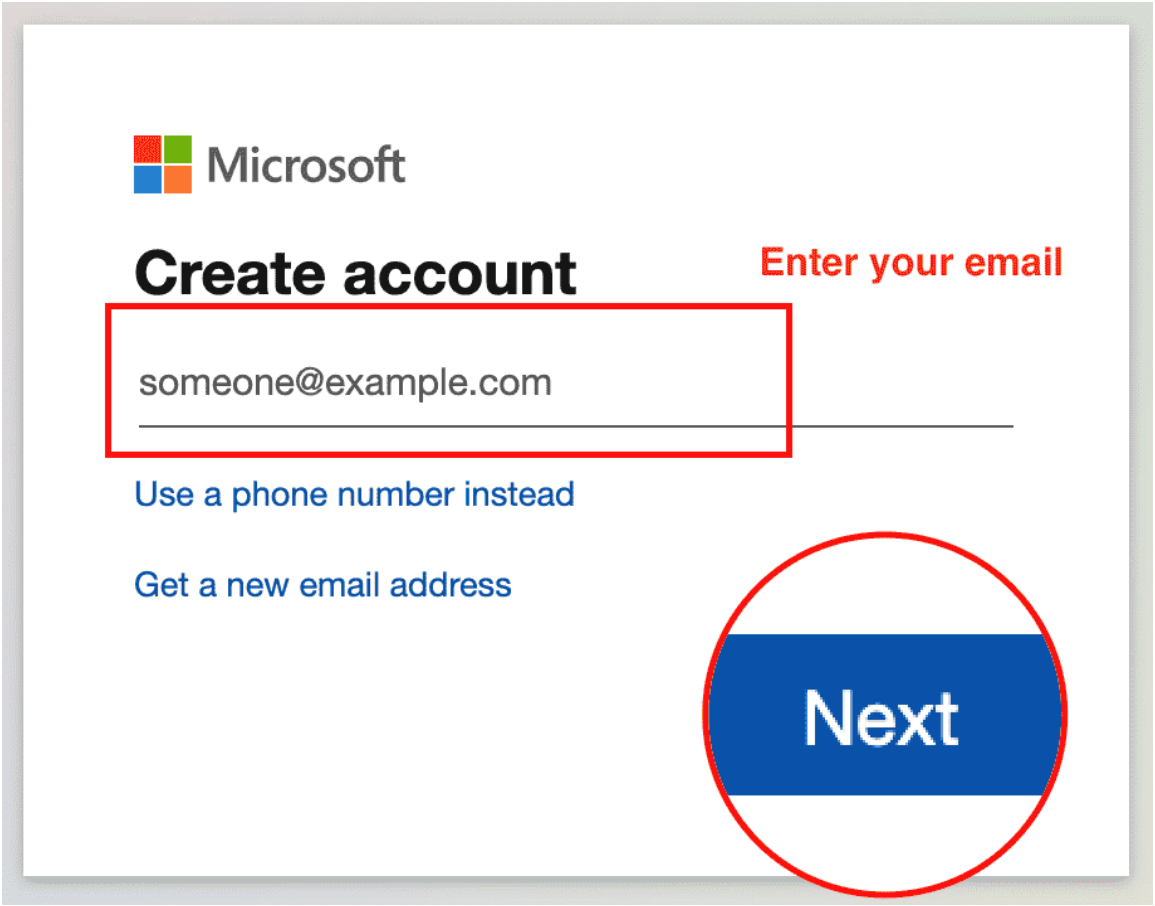




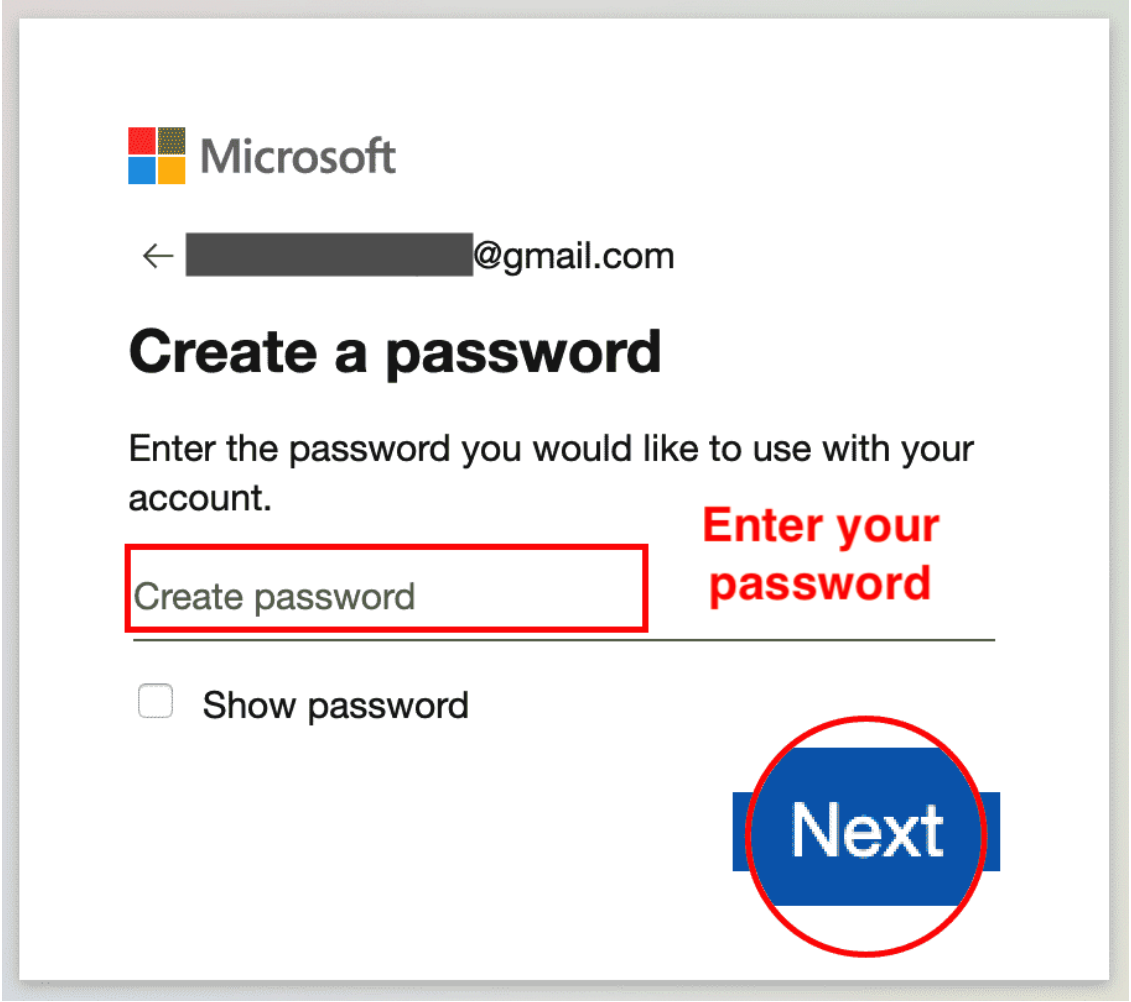
2. Click Create one!



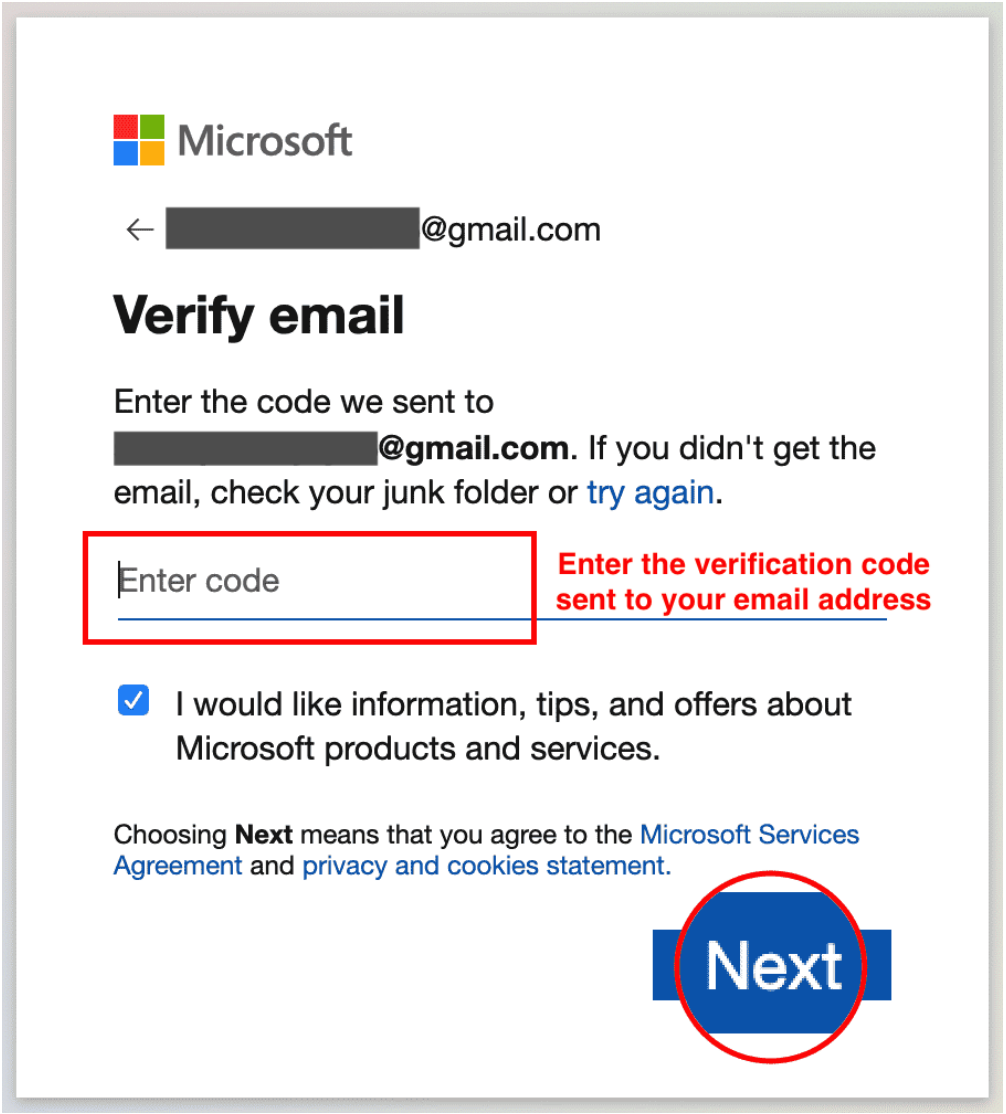
3. Enter your existing email id with which you want to create a Microsoft account. Click Next.



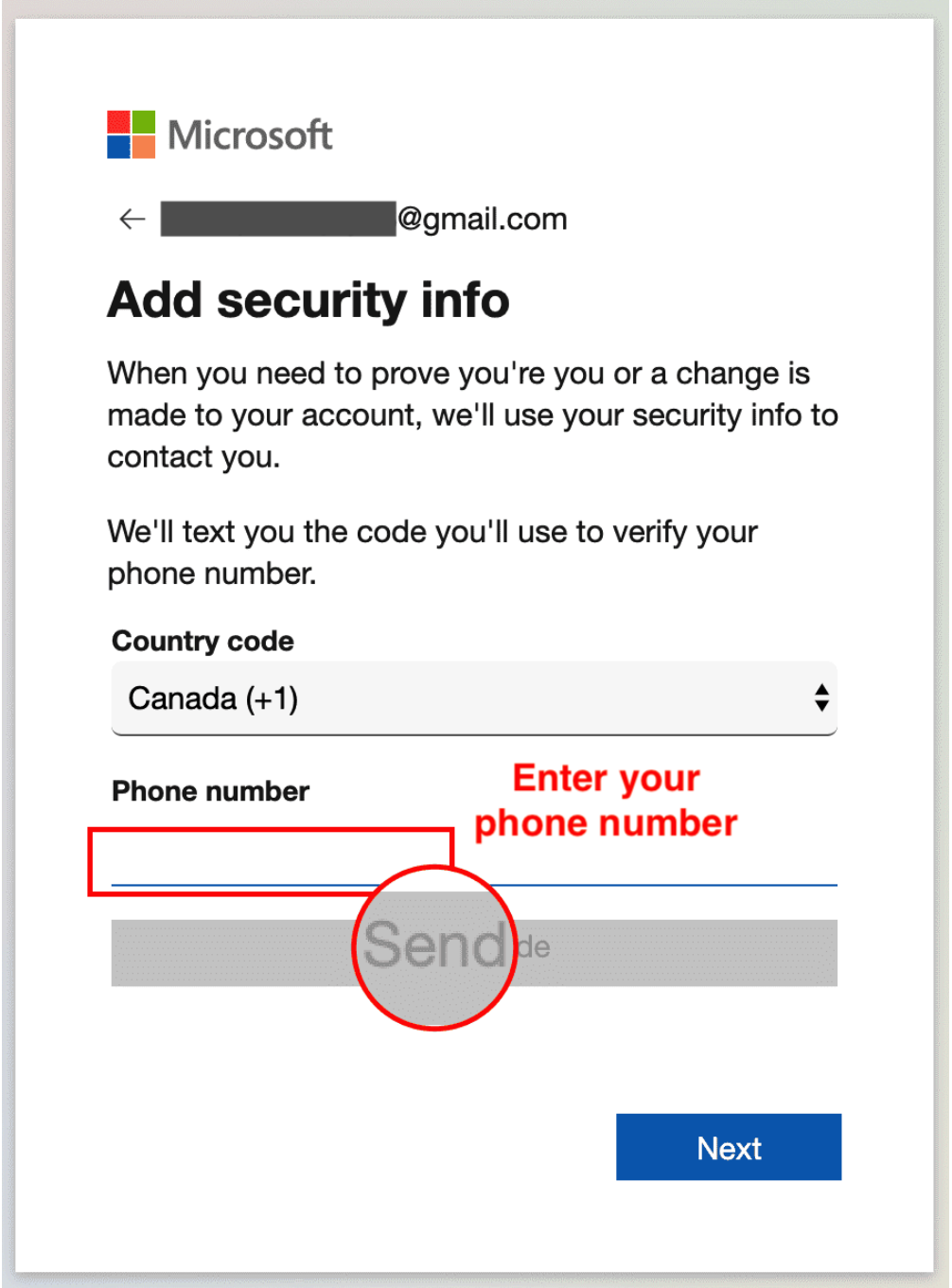
4. Enter your password and click Next.



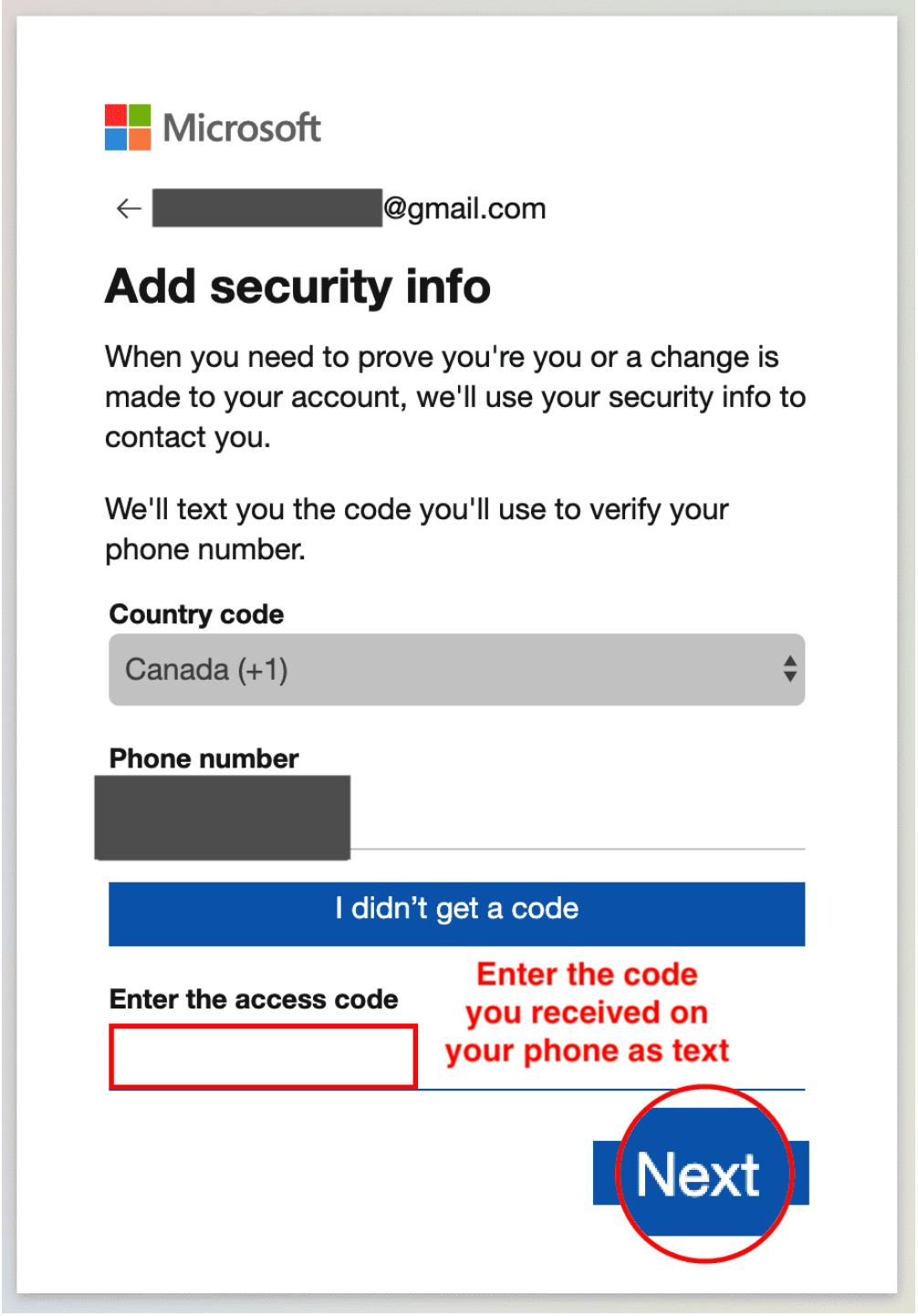
5. Enter the code you received by email. Click Next.



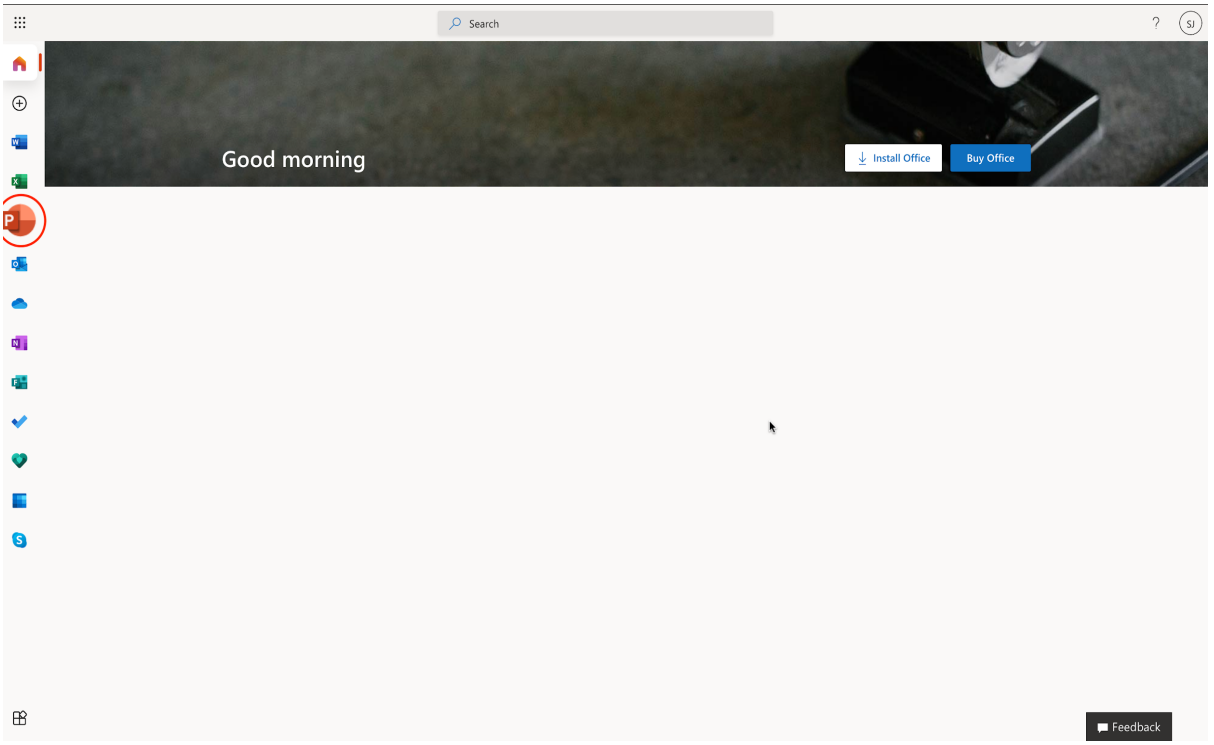
6. Enter your phone number and click Send Code.



7. Enter the access code you received as a text on your phone, then click Next.



8. You are now done with the sign up procedure. Now since you are signed in after sign up at this stage, you can proceed directly to Task B of Exercise 2.

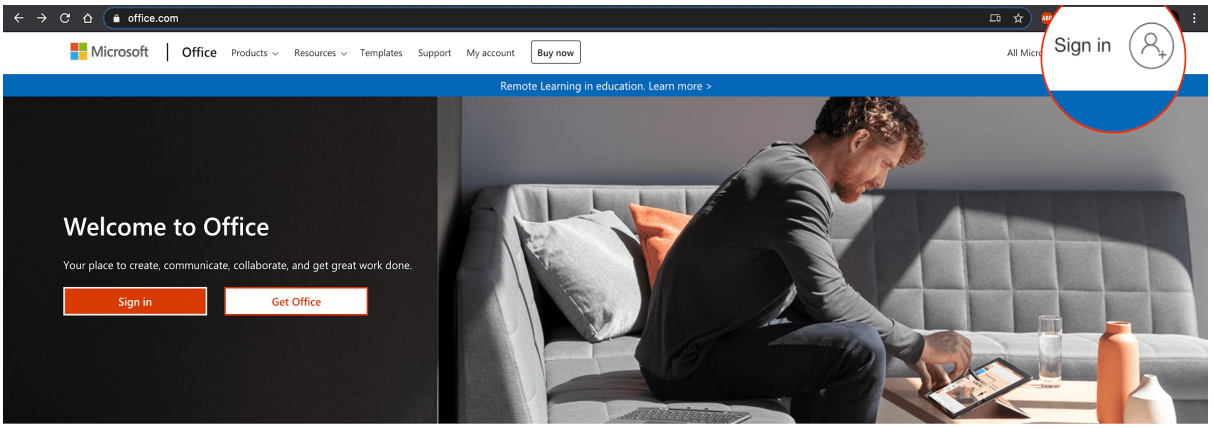


Exercise 2: Sign-in, Upload and Open presentation in PowerPoint for the Web

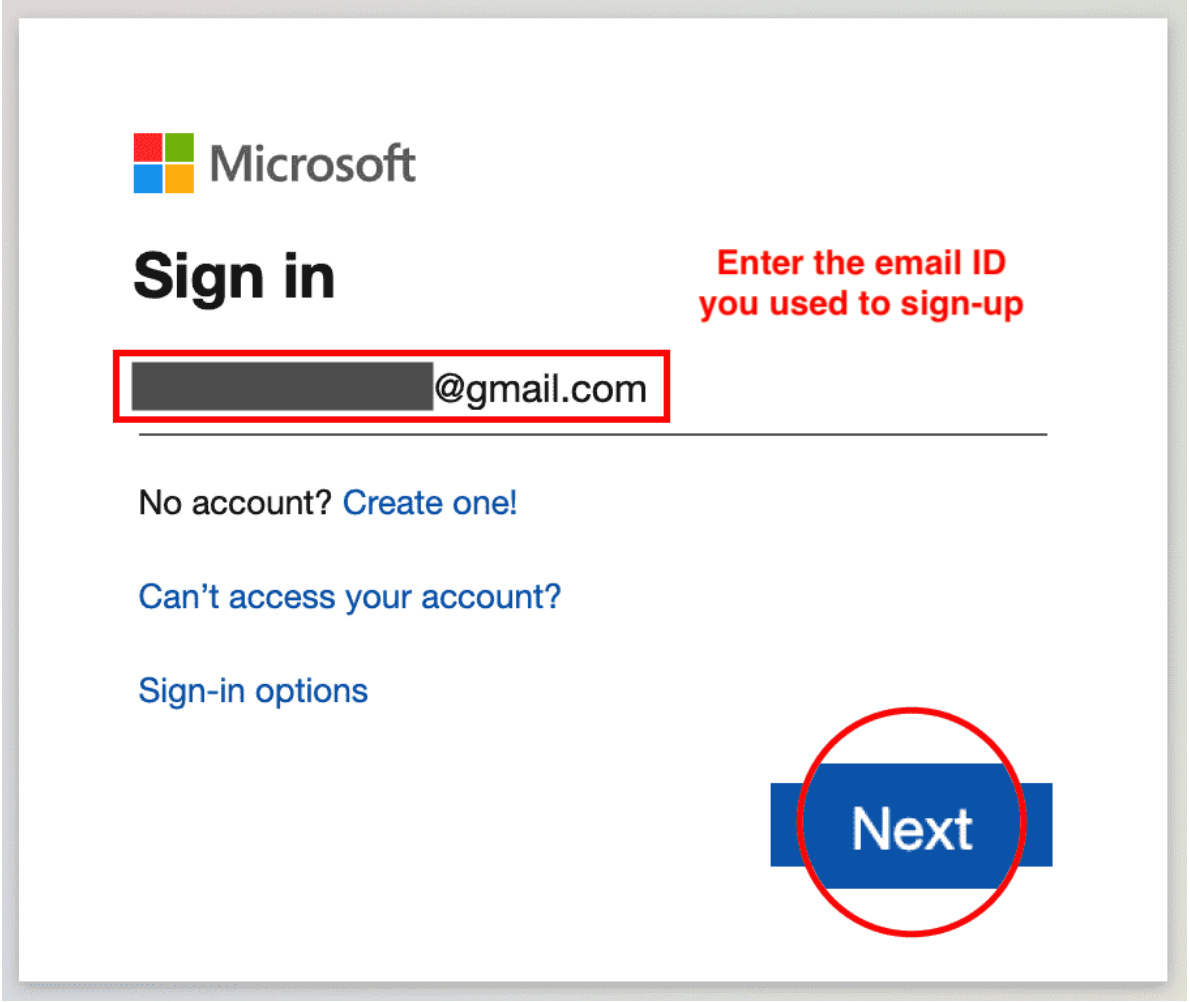
In this exercise, you will sign in to PowerPoint for the web. Then open a new blank presentation. Lastly upload, open and edit a presentation.

Task A: Sign in to PowerPoint for the Web

1. Go to www.office.com. Click Sign in.

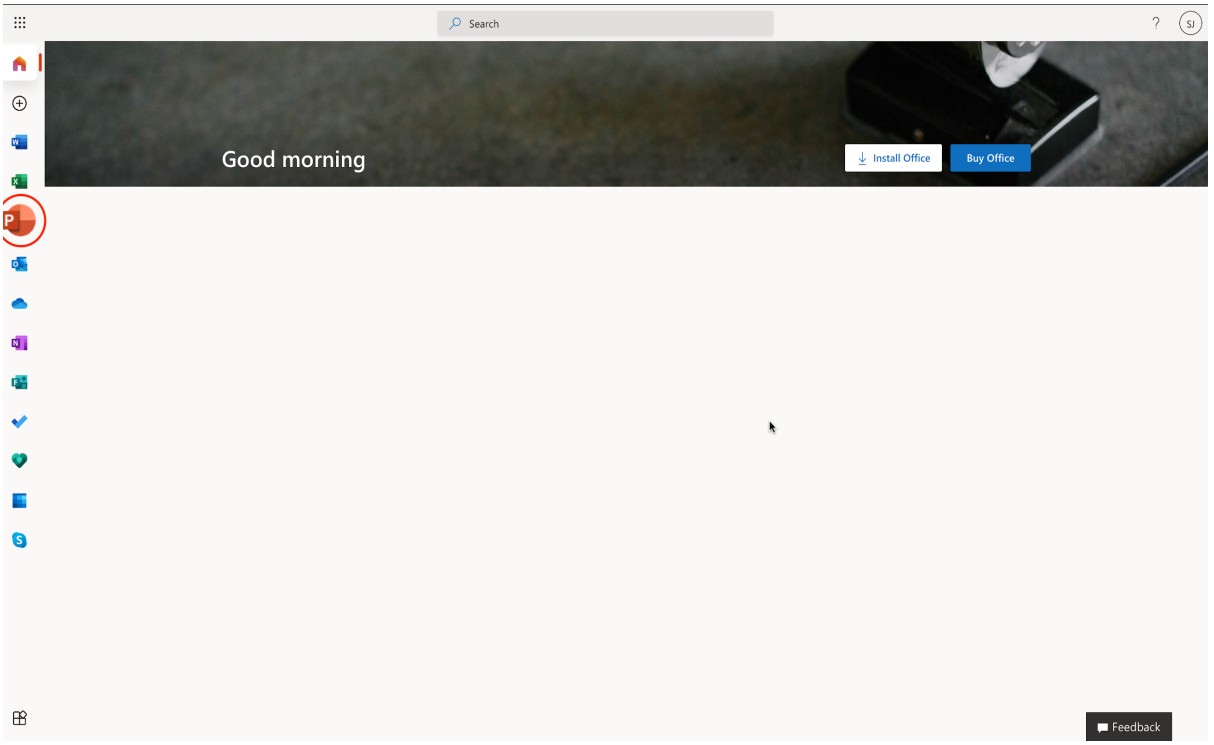


2. Enter your sign in email.



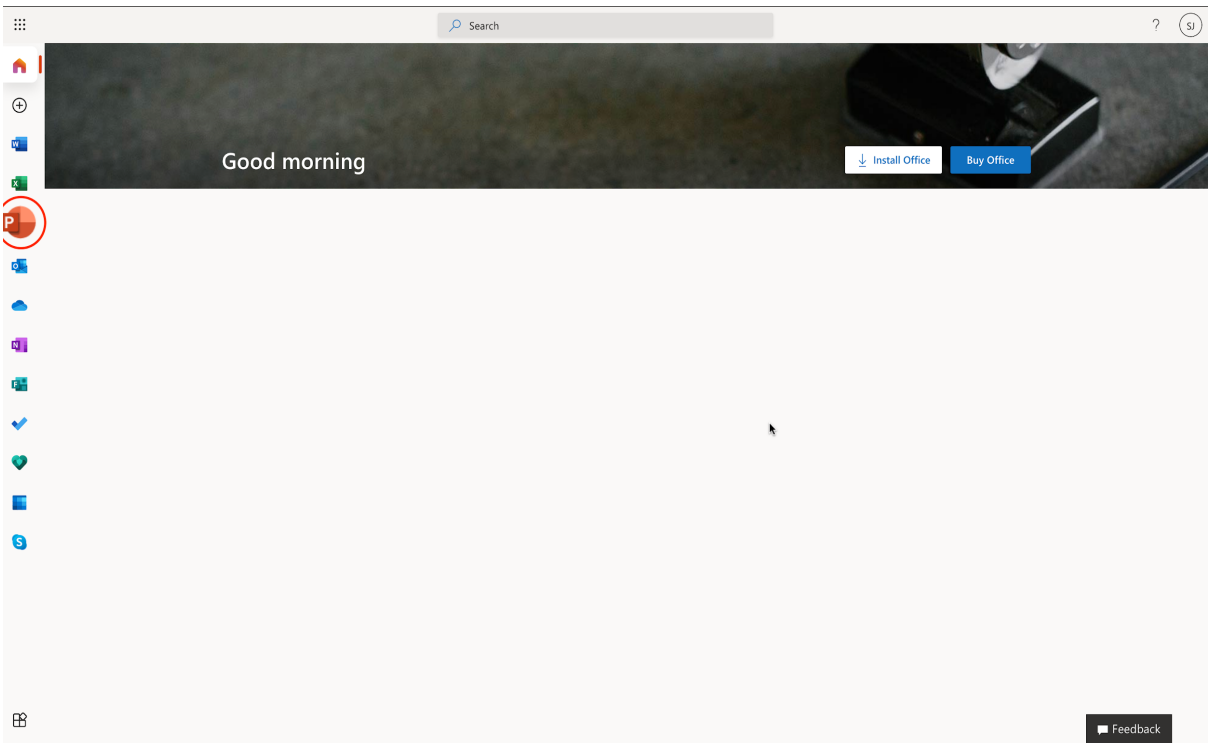
3. Enter your password.

4. You are now signed in.

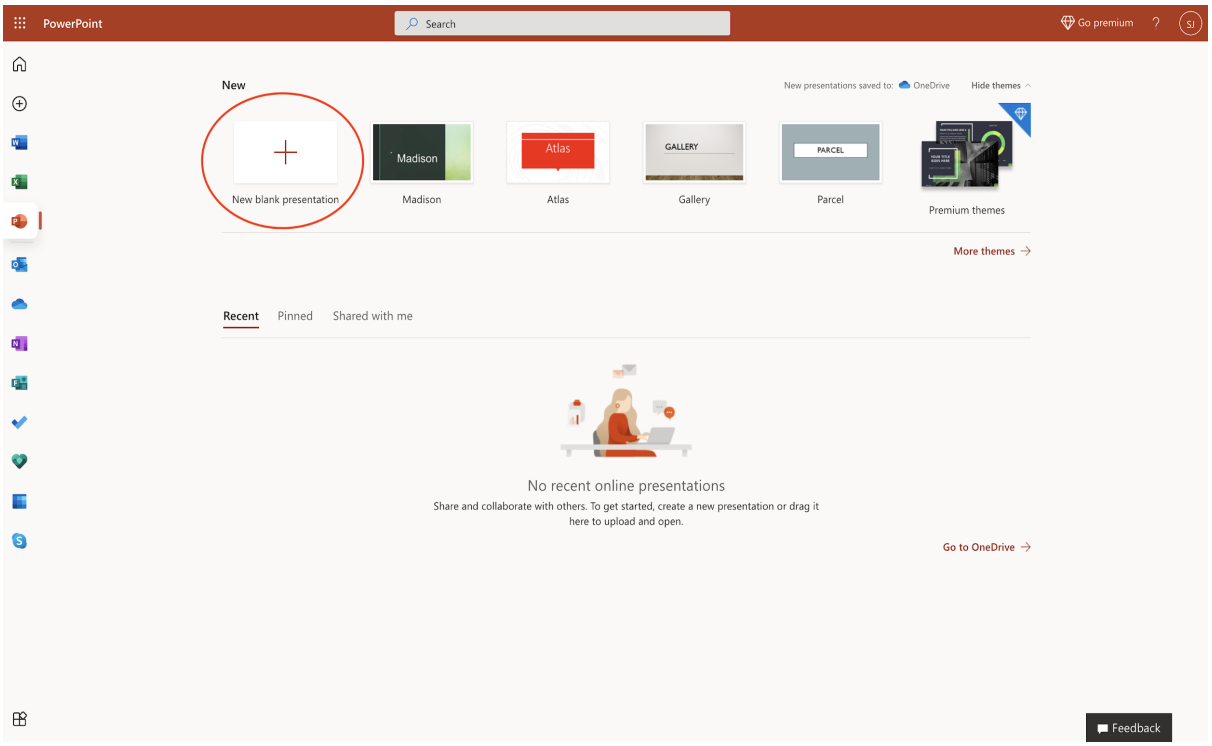


Task B: Open a new blank presentation in PowerPoint for the Web

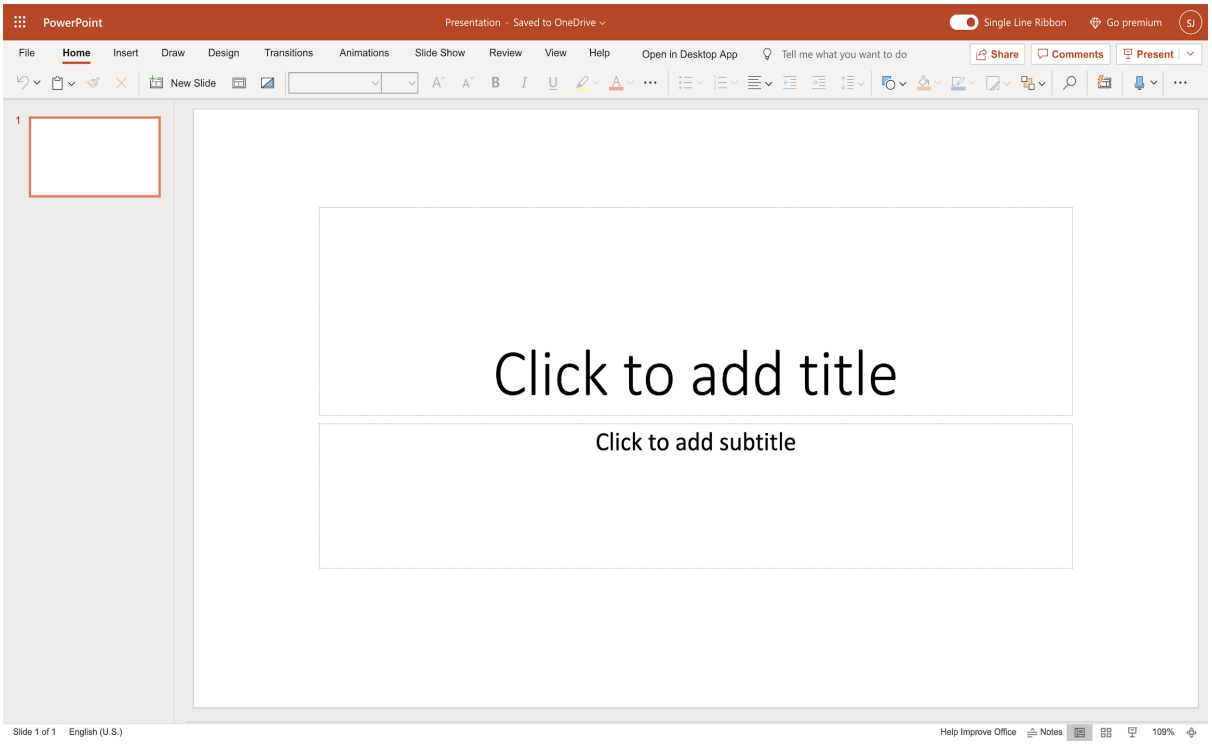
1. Click on the PowerPoint icon.



2. Click New blank presentation.

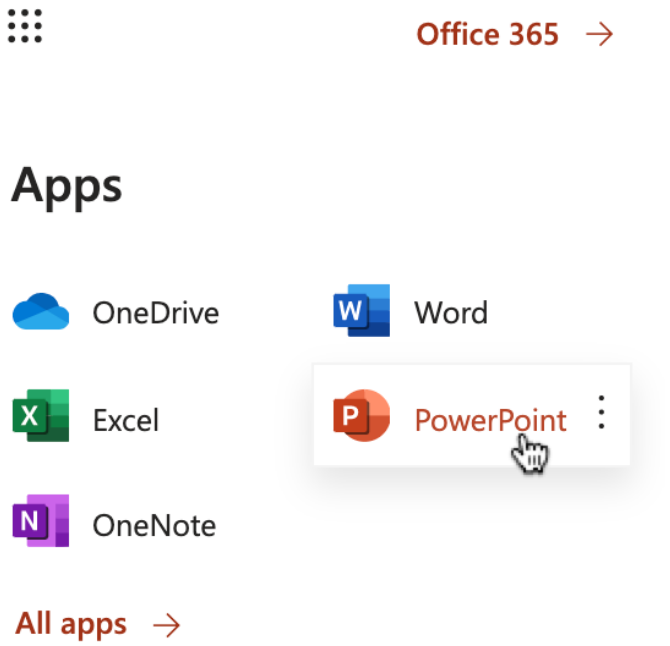


3. You have successfully opened a new blank presentation in PowerPoint for the web.

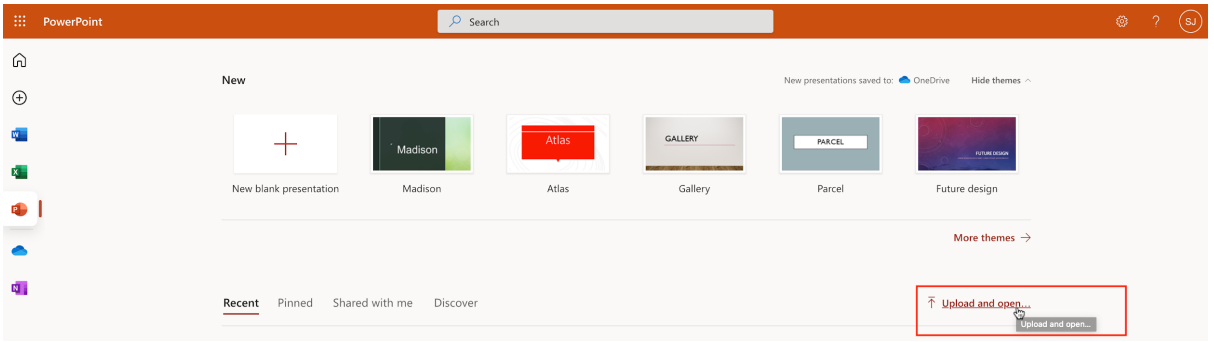


Task C: Upload, Open and Edit a Presentation

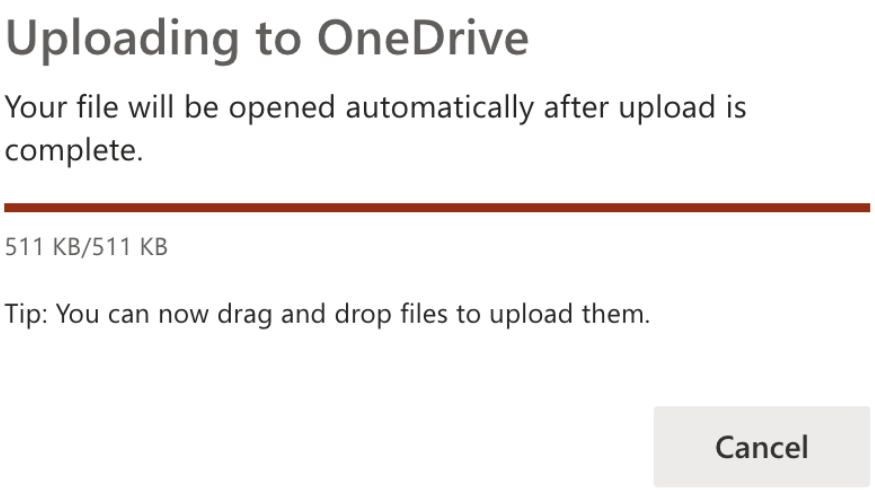
1. Download the file capstone-story-template.pptx.
2. To upload and open a presentation file in PowerPoint for the web, click the App Launcher (cube of dots) in the top left corner. Click PowerPoint icon.



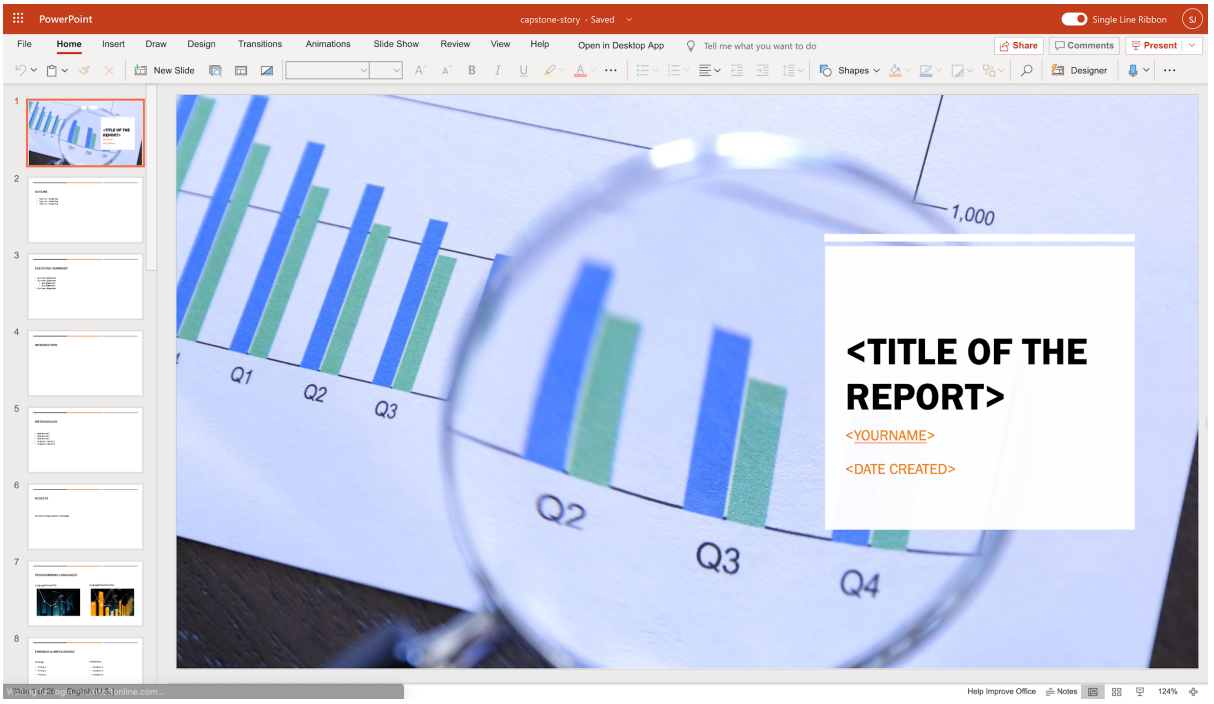
3. Click Upload and open... and select the capstone-story-template.pptx file.



4. The file will be uploaded to your OneDrive of the Microsoft Account you signed up and used to open PowerPoint for the web.



5. Now edit the presentation with your information required for this module. Your edits are saved automatically.



Congratulations! You have completed this Lab.

Hands-on Lab : Basics of PowerPoint

Estimated time needed: 15 minutes

Microsoft PowerPoint is the most widely used presentation software even three decades after its initial release. For all these years it has been available as a standard application that needed to be installed on your desktop; but it is not just a desktop app anymore. Now, you can even use PowerPoint when you're online by using 'PowerPoint for the web' - and run it right in your web browser without installing anything on your desktop!

'PowerPoint for the Web' (sometimes referred to as PowerPoint Online) can be used at no charge as part of a free Microsoft account. Although it does not have all of the capabilities of the desktop and paid online versions, the free web version provides many of the key features.

Software Used in this Lab

For the story telling/project report of this module, you will be using the free 'PowerPoint for the web' version as this is available to everyone.

Although you can use the PowerPoint Desktop software if you have access to this version, it is recommended that you use PowerPoint for the web for your project report as it is available for free, and there are some small differences in the interface and available features. If you do not yet have access to PowerPoint for the Web, you can follow the instructions in the following lab to get started with it: Hands-on Lab - Getting Started with PowerPoint for the Web

Objectives

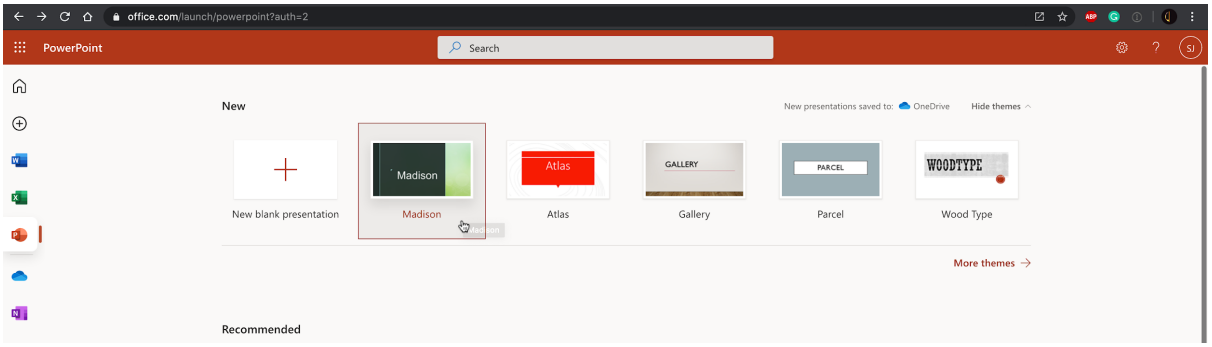
After completing this lab, you will be able to:

- Create presentations from scratch / template
- Add new slide and change slide layout and design
- Add text, images, art, and videos

Exercise 1: Create presentations from scratch / template

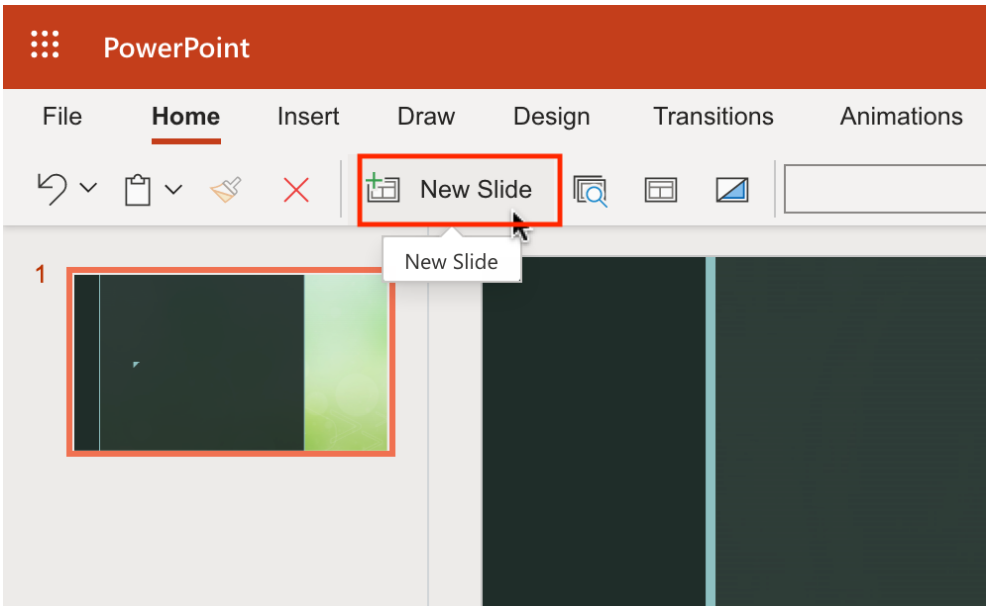
1. Go to www.office.com. Sign in and go to PowerPoint for the Web.

2. On the PowerPoint homepage, you can either select New blank presentation to start from scratch or some templates. Select Madison as a template.

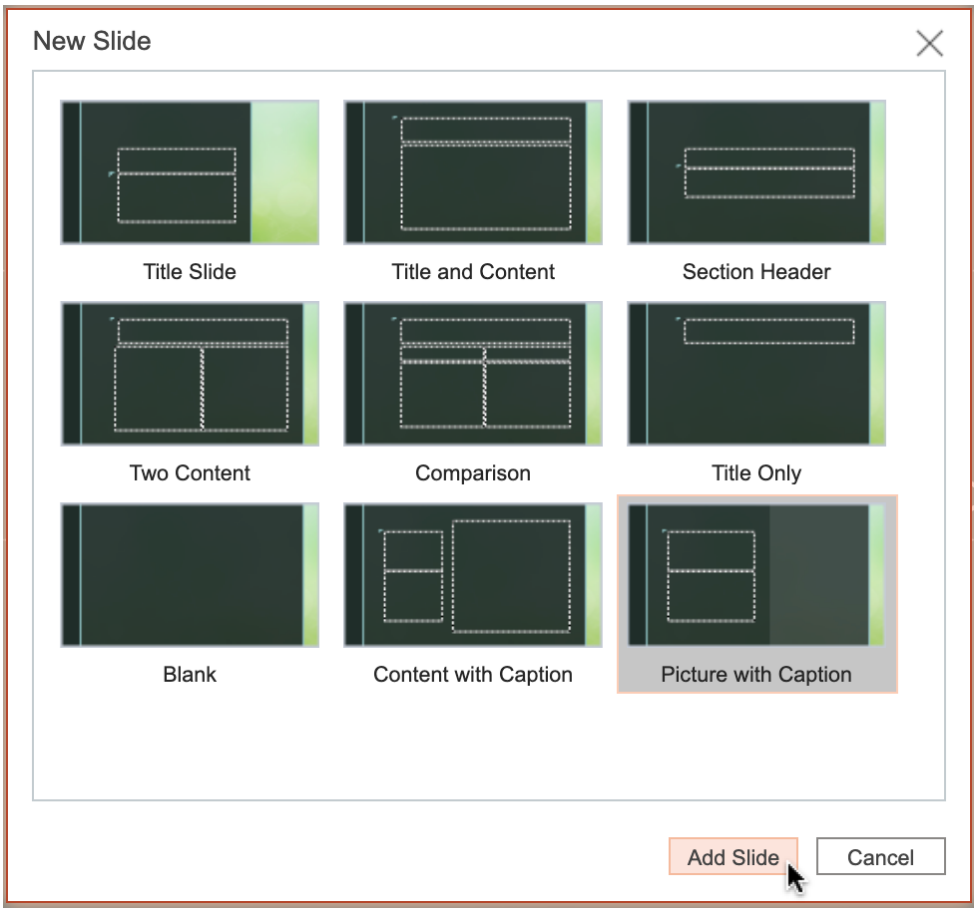


Exercise 2: Add new slide and change slide layout and design

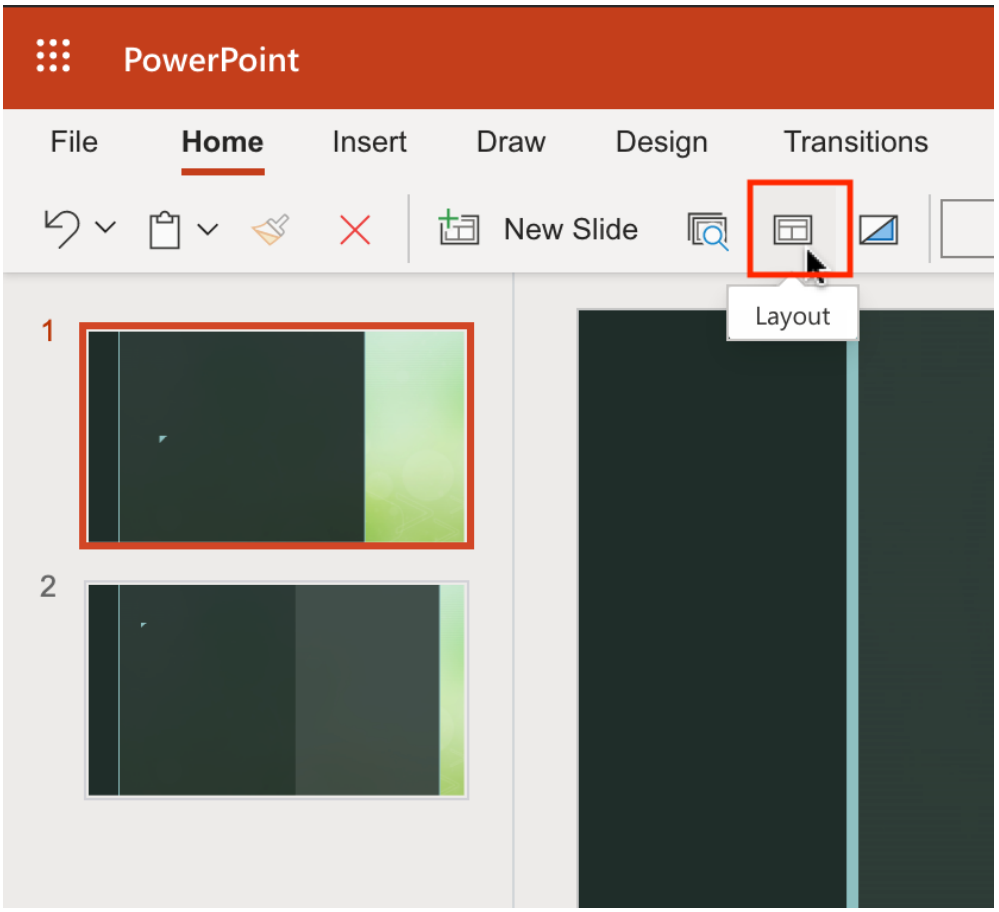
1. Click New Slide



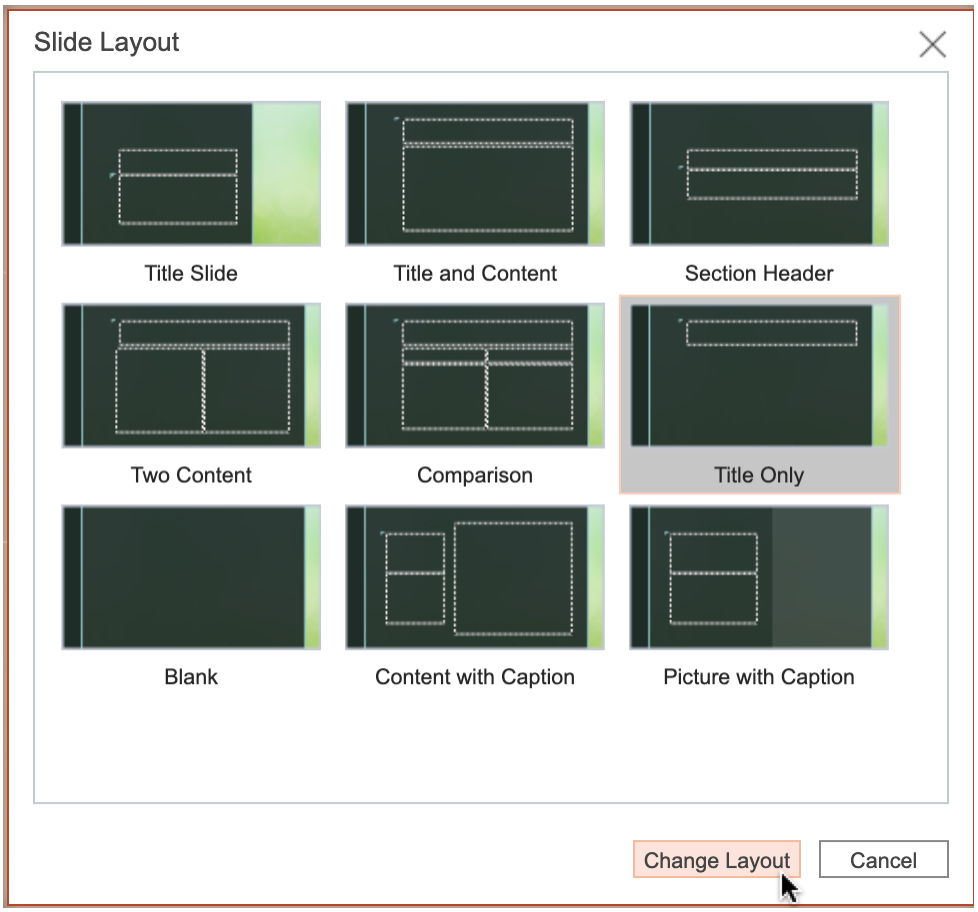
2. Select Picture with Caption type slide and click Add Slide.



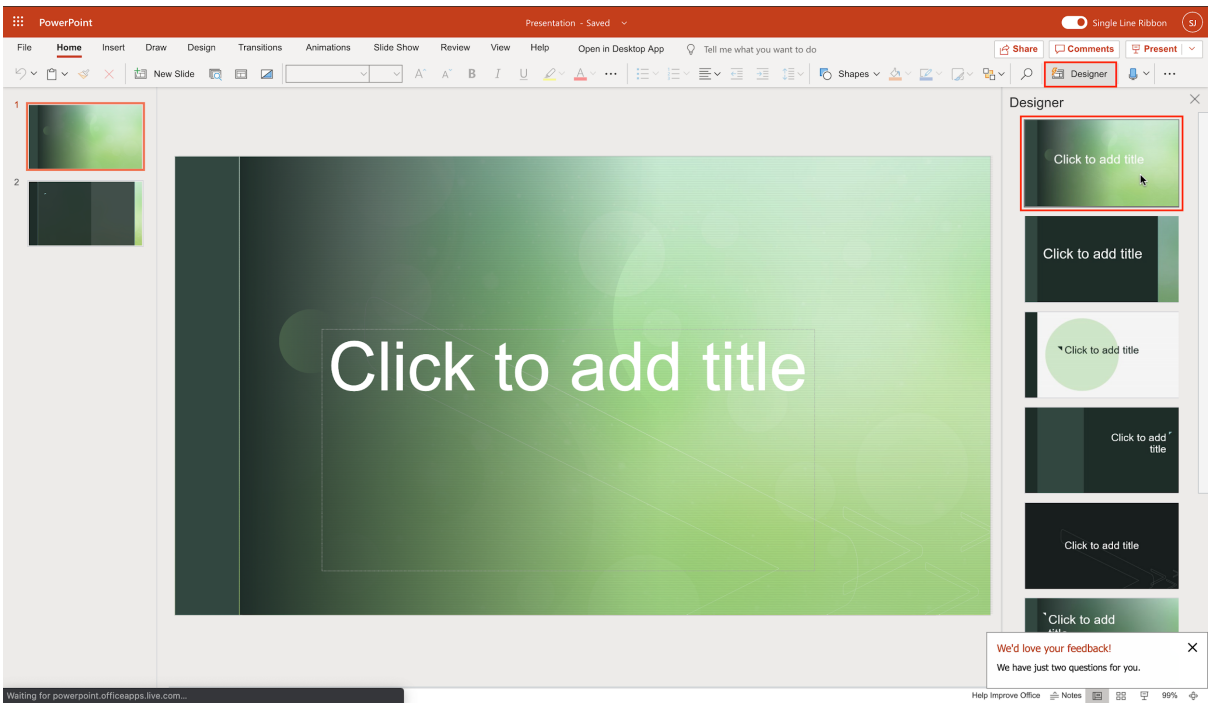
3. Go back to slide 1 and click Layout icon.



4. Select Title Only layout and click Change Layout.

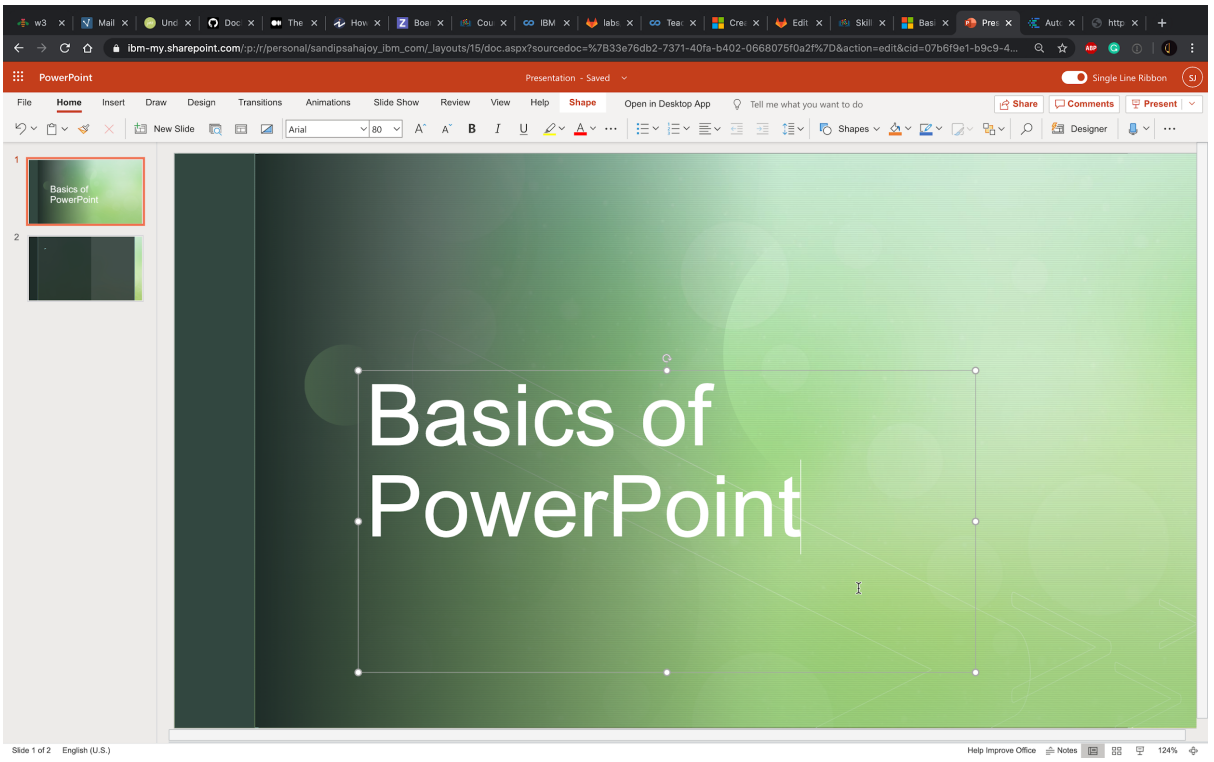


5. Select Designer. Select any design from the right Designer pane to change the design of slide 1.



Exercise 3: Add text, images, art, and videos

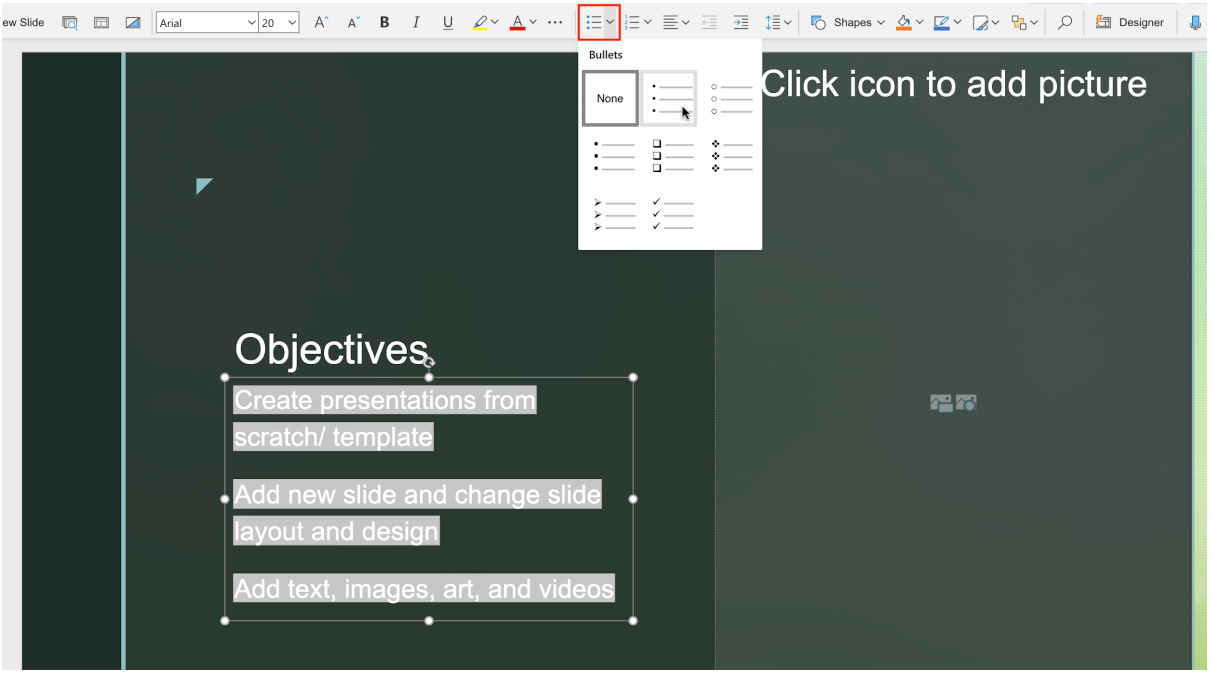
1. Switch to slide 1 if needed. Click on the textbox Click to add title and type "Basics of PowerPoint" as title.



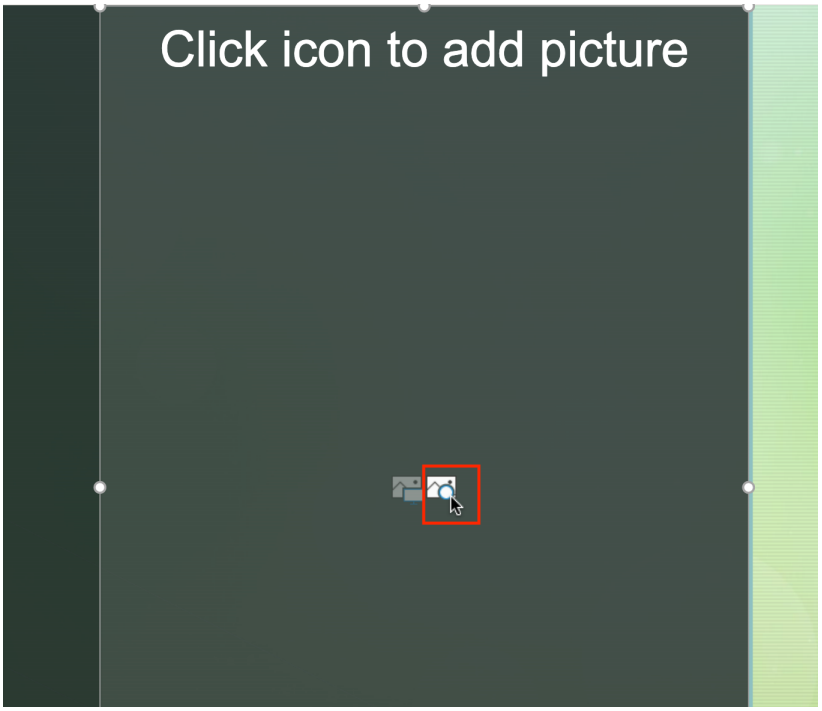
2. Switch to slide 2. Click on the textbox Click to add title and type "Objectives" as title.

3. Click on the textbox Click to add text and type:
    - Create presentations from scratch/ template
    - Add new slide and change slide layout and design
    - Add text, images, art, and videos

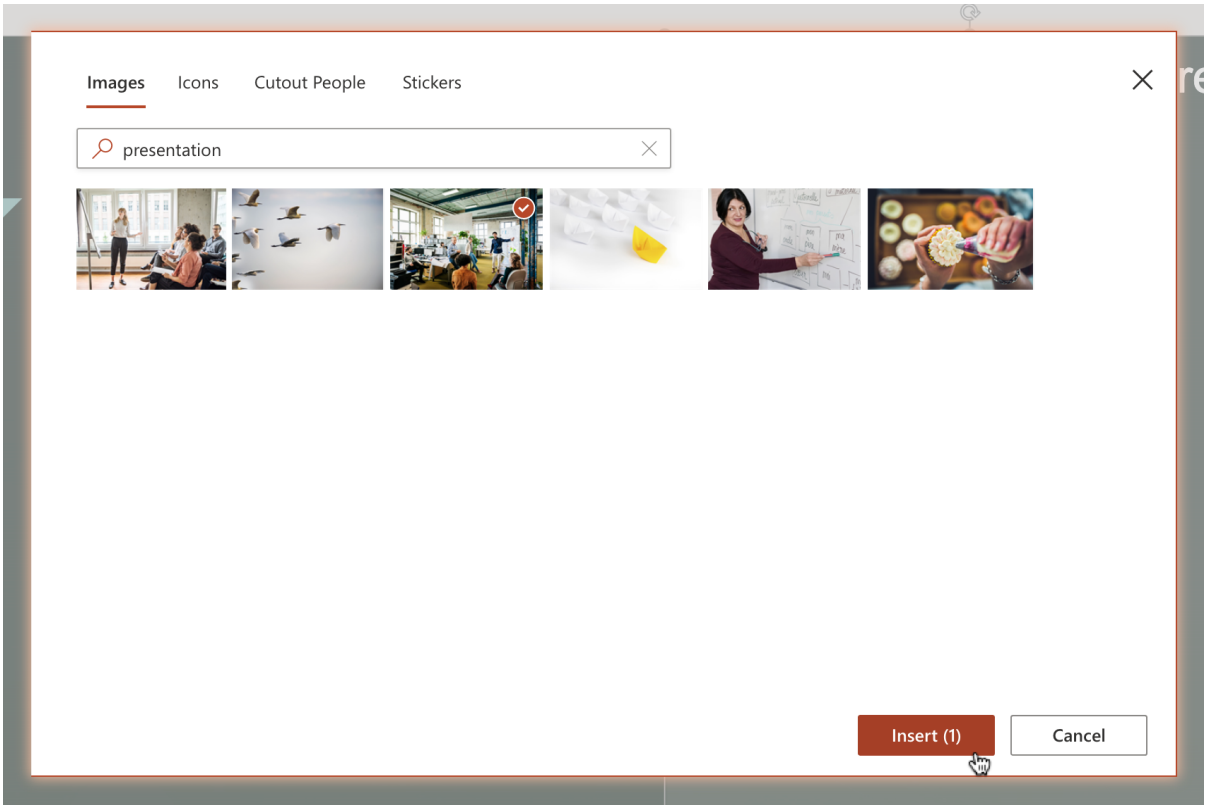
4. Select all text from second textbox and click Bulleted Library to select a bullet option.



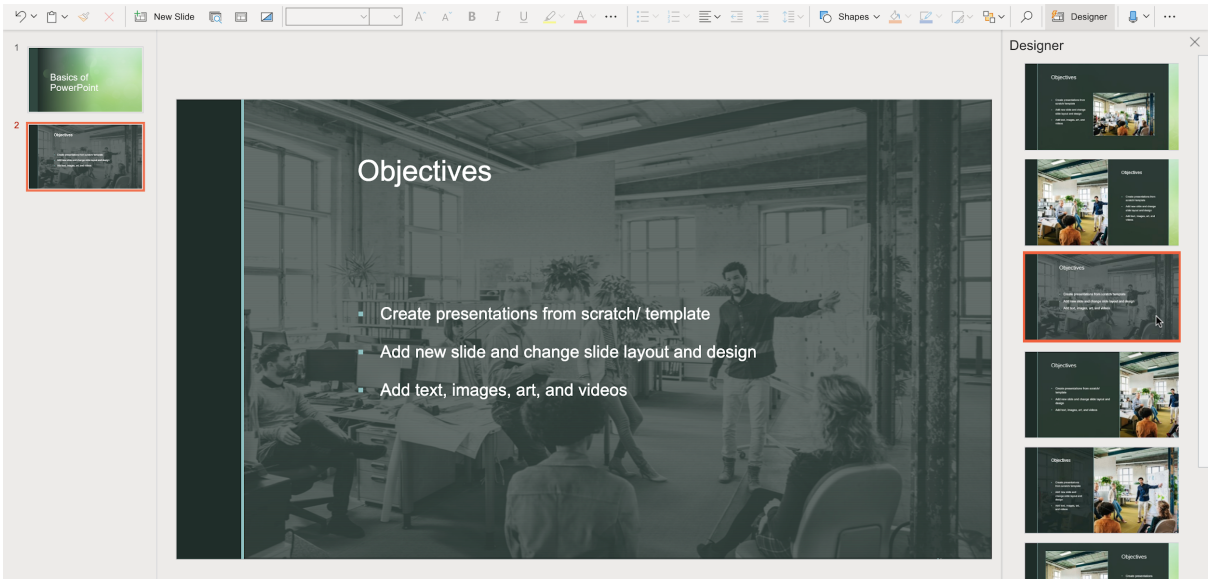
5. Now click the web search option like below from the right-hand section of the slide.



6. Type "presentation" and select an appropriate picture you like to add to your slide. Then click Insert.



7. From the right Designer pane , select a design you like to visualize the inserted picture on the slide.



Congratulations! You have completed this Lab.