Chapter 7

Introduction to Google Colab

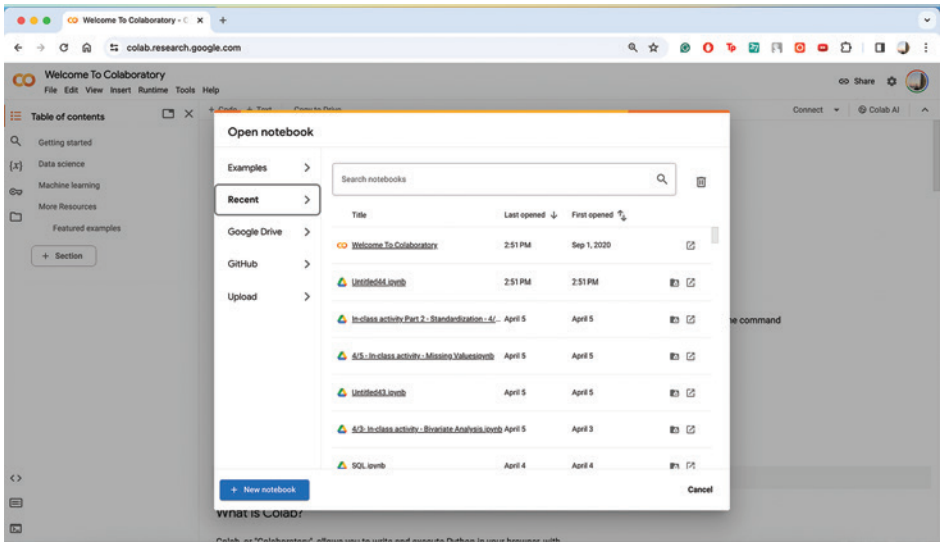
This textbook introduces Google Colab, short for Google Colaboratory, a web-based tool by Google that hosts Python environments. Python serves as the primary programming language throughout this textbook, given its widespread use in various industries, especially in machine learning. Google Colab provides an accessible platform for Python development.

7.1 Setting Up Google Colab

To begin using Google Colab, a Google account is necessary. Navigate to collab.research.google.com and sign in with your Google account. Once signed in, open a new notebook. Note that Google Colab saves files directly to your Google Drive, so ensure proper organization by creating a designated folder for the notebooks.

For each new topic, a new Colab notebook will be opened to contain the relevant analysis.

At the end of each chapter, a link to the associated notebook will be provided for easy access.



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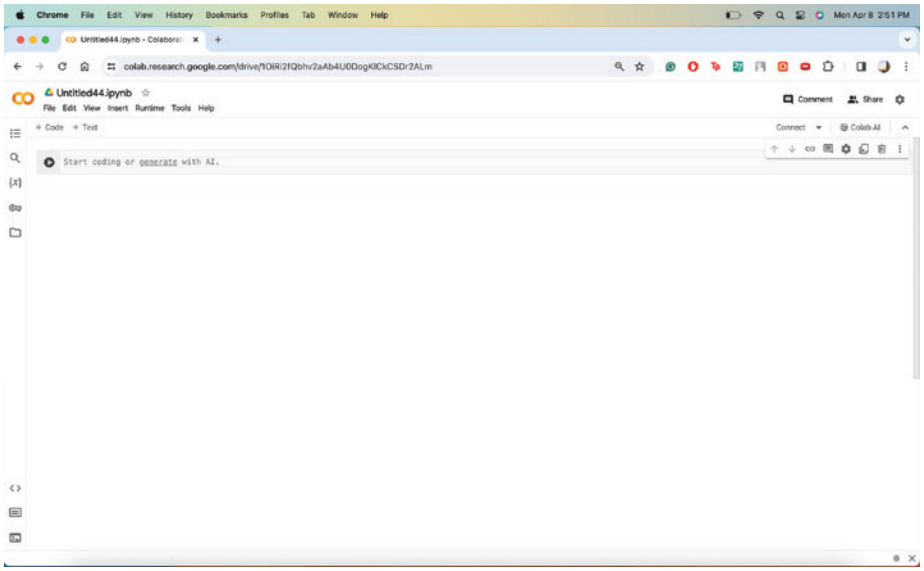
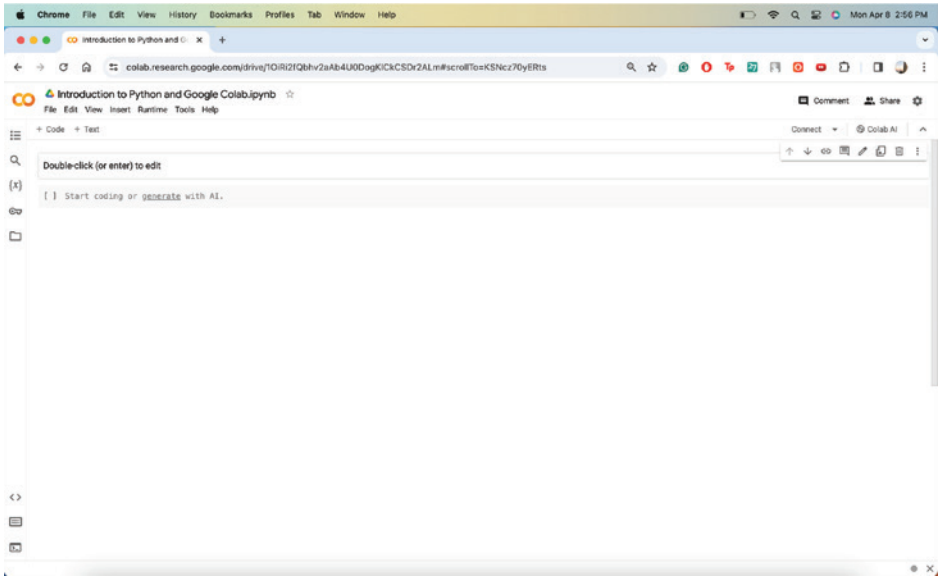


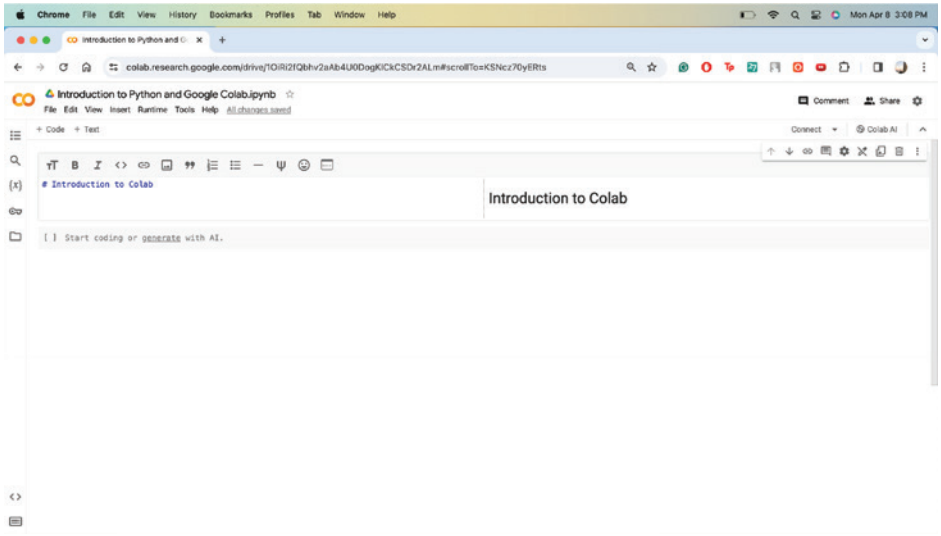
7.2 Navigating Google Colab

Google Colab integrates text and code seamlessly, allowing users to combine notes with code analysis effectively. The interface includes options for text (marked with a "+ text" symbol) and code (marked with a "+ code" symbol). Additionally, comments can be added to code blocks for further clarification.

Step 1: Name the notebook "Introduction to Python and Google Colab."



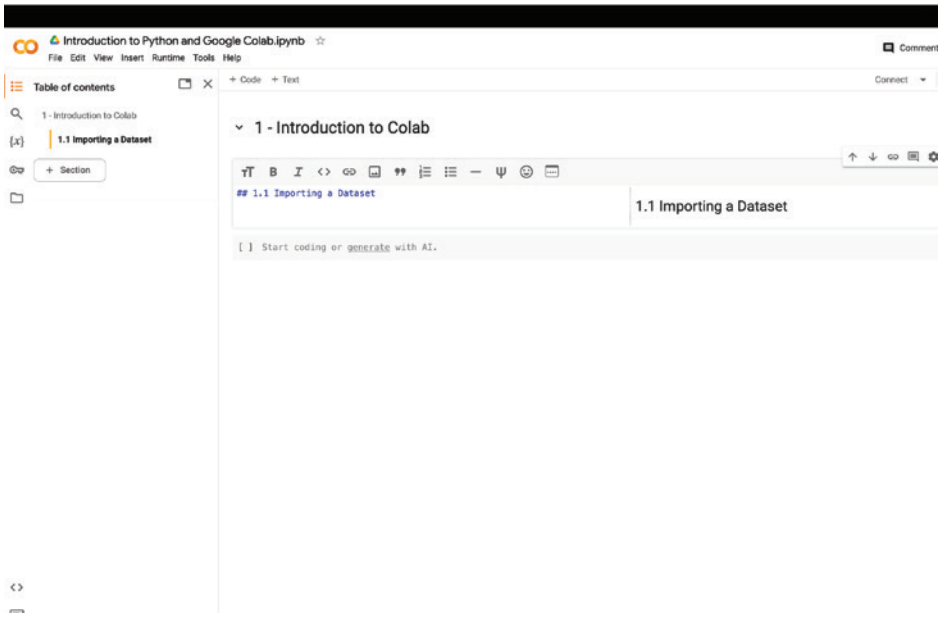
Step 2: Add a text block titled "Introduction to Colab" to establish sections within the notebook.



The left side of the interface presents the raw text formatting, while the right side displays the formatted view, facilitating content organization. Sections are delineated using hashtags, with subsections indicated by additional hashtags.

Typically, content on the left side represents the raw text format, while the right side demonstrates how it will appear once the cell is exited. For example, a hashtag indicates a new section, with each increasing hashtag denoting a deeper level of subsection. For instance, "Introduction to Colab" would be Section 1 with one hashtag, and if Subsection 1.1 is created, it would be labeled with two hashtags.

Another noteworthy feature is the table of contents icon, represented by three horizontal lines. Clicking on this icon allows users to view the sections laid out in an organized format. This feature becomes especially crucial as Colab notebooks grow in complexity with additional content, facilitating easy navigation and comprehension.

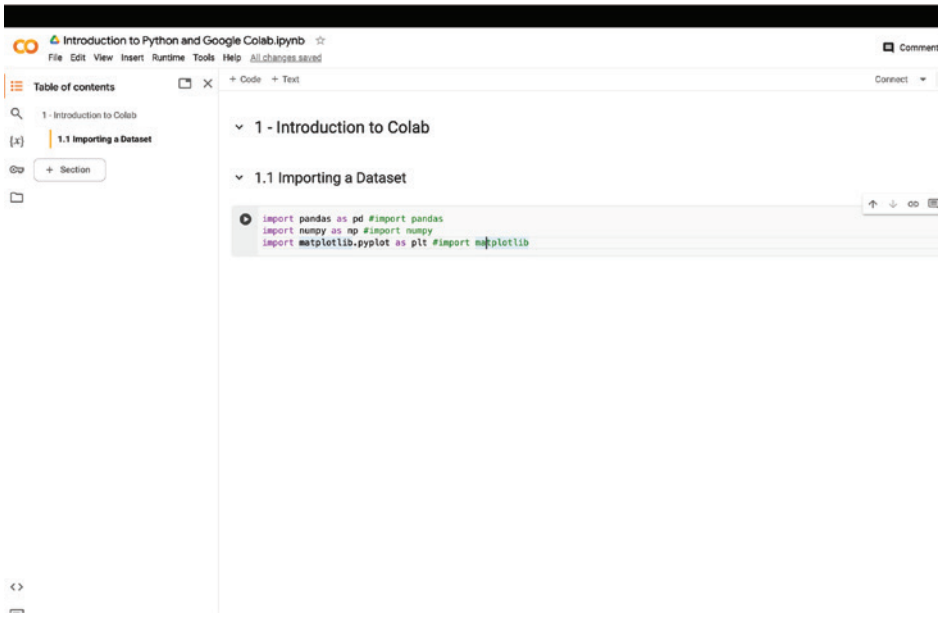


Step 3: Adding code

When adding code blocks, focus on specific tasks, such as importing datasets. Python keywords are visually highlighted in purple within the code blocks. Additionally, comments are utilized to provide insights into the functionality of the code.

The grayed-out box represents a code block in Python. It's essential to note a few key aspects of the structure of these code blocks:

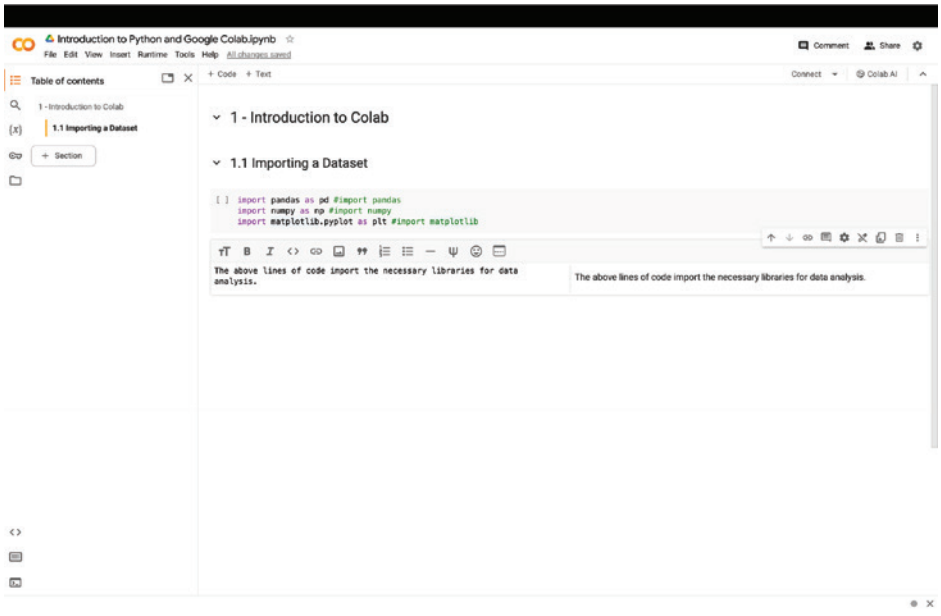
- Purple words: In Python, keywords are highlighted in purple. For instance, in the code snippet provided, "import" and "as" are keywords.
- Green lines: Good software engineering practice involves accompanying code with comments. Comments are denoted by green lines and serve the purpose of explaining the code's functionality. They are kept concise and focus solely on explaining what the code is doing. Further textual analysis is best suited for text blocks rather than comments.



Step 4: Adding text blocks

Text blocks serve to elaborate on code functionality and offer analysis, thereby facilitating a comprehensive understanding of the code's purpose and operation. These blocks are instrumental in integrating code, output, and textual explanations seamlessly.

The added text block provides a basic explanation of the code's functionality and offers a brief analysis. As we advance, we will delve deeper into combining code snippets with their corresponding outputs and more extensive textual analyses. This progressive approach ensures a thorough exploration of the code's intricacies and its implications.



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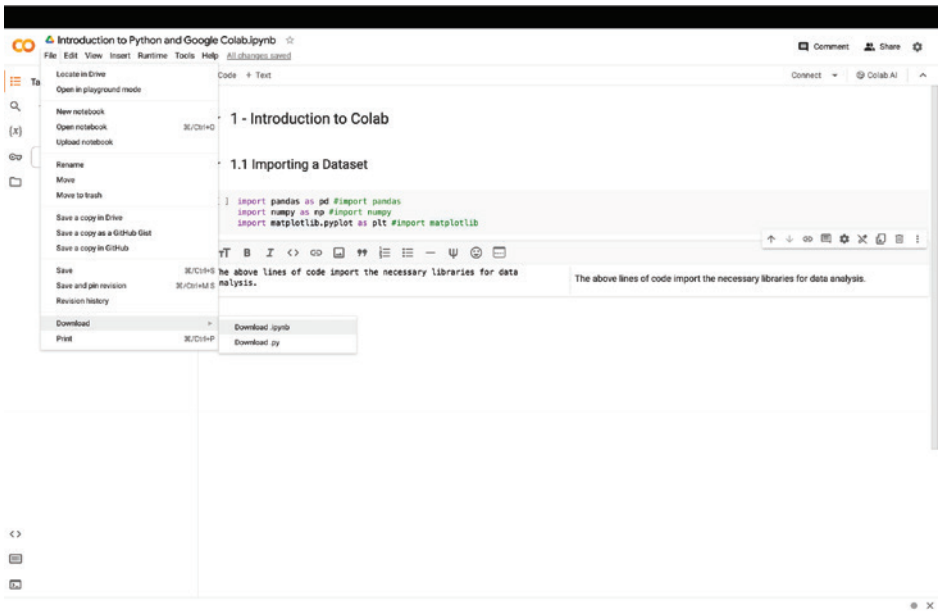
Step 5: Sharing and downloading notebooks

Google Colab facilitates collaboration by allowing users to share notebooks via public links or collaborate within shared drives. Similar to Google Docs and Google Sheets, Google Colab enables the creation of shared drives for team collaboration. Users can save different changes to the Colab notebook within the shared drive or share the link for others to make changes accordingly.

Additionally, notebooks can be downloaded as .ipynb files for offline use. To download a Colab notebook, simply click on "File" and then "Download .ipynb" to save the notebook locally. This downloaded notebook can then be uploaded back to Google Colab for further analysis. This streamlined process enhances flexibility and accessibility for collaborative projects.



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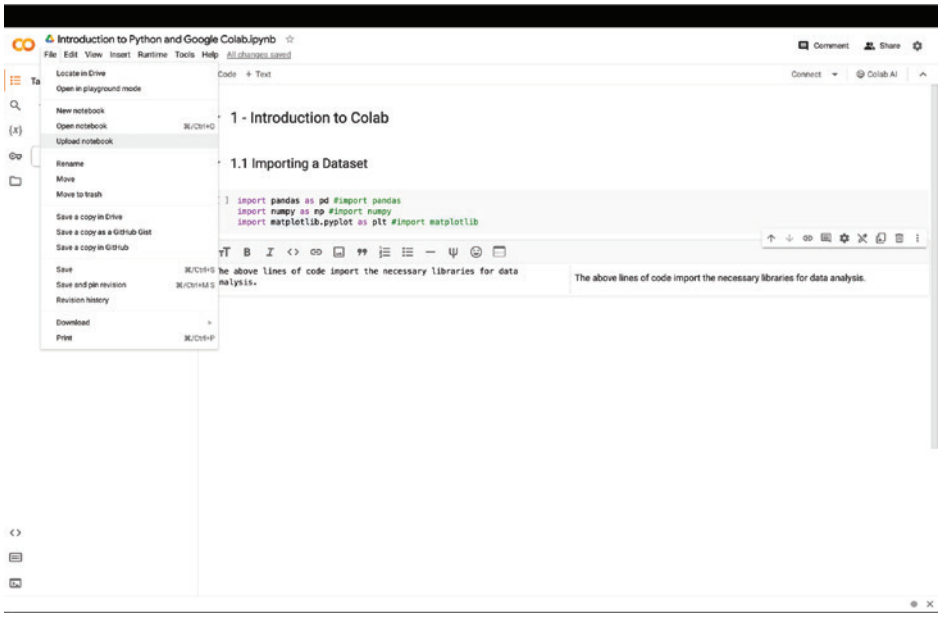
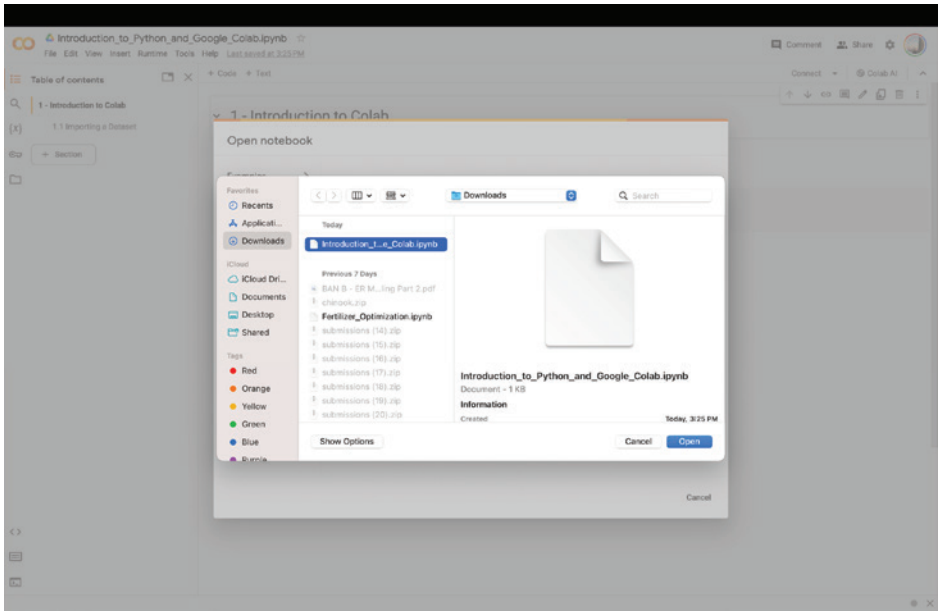
Step 6: Uploading an .ipynb file to Google Colab

To upload an .ipynb file to Google Colab, go to "File," then "Upload," and drag the downloaded .ipynb file. The uploaded file will appear as text and code blocks within the Colab interface.

This streamlined process facilitates efficient collaboration and sharing of code and analyses.





Once the file is uploaded, it is going to show up in the same format as text blocks and code blocks. This is a very simple navigation into how Google Colab will work.

https://colab.research.google.com/drive/1GtHemU6DE9_HO8wyXq0n2MQx8WJ_rhGd?usp=sharing