INMAS

Google Colab

- *Google Colab*
  - *Run Code or Selection*
  - *Autocomplete and Function Help*
  - *Sidebars: Table of Contents (TOC) and Files*
  - *Keyboard Shortcuts / Command Palette*
  - *Enable GPU/TPUs*

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Inmas Fall 2021 Statistical Methods Workshop

Lecture Objectives

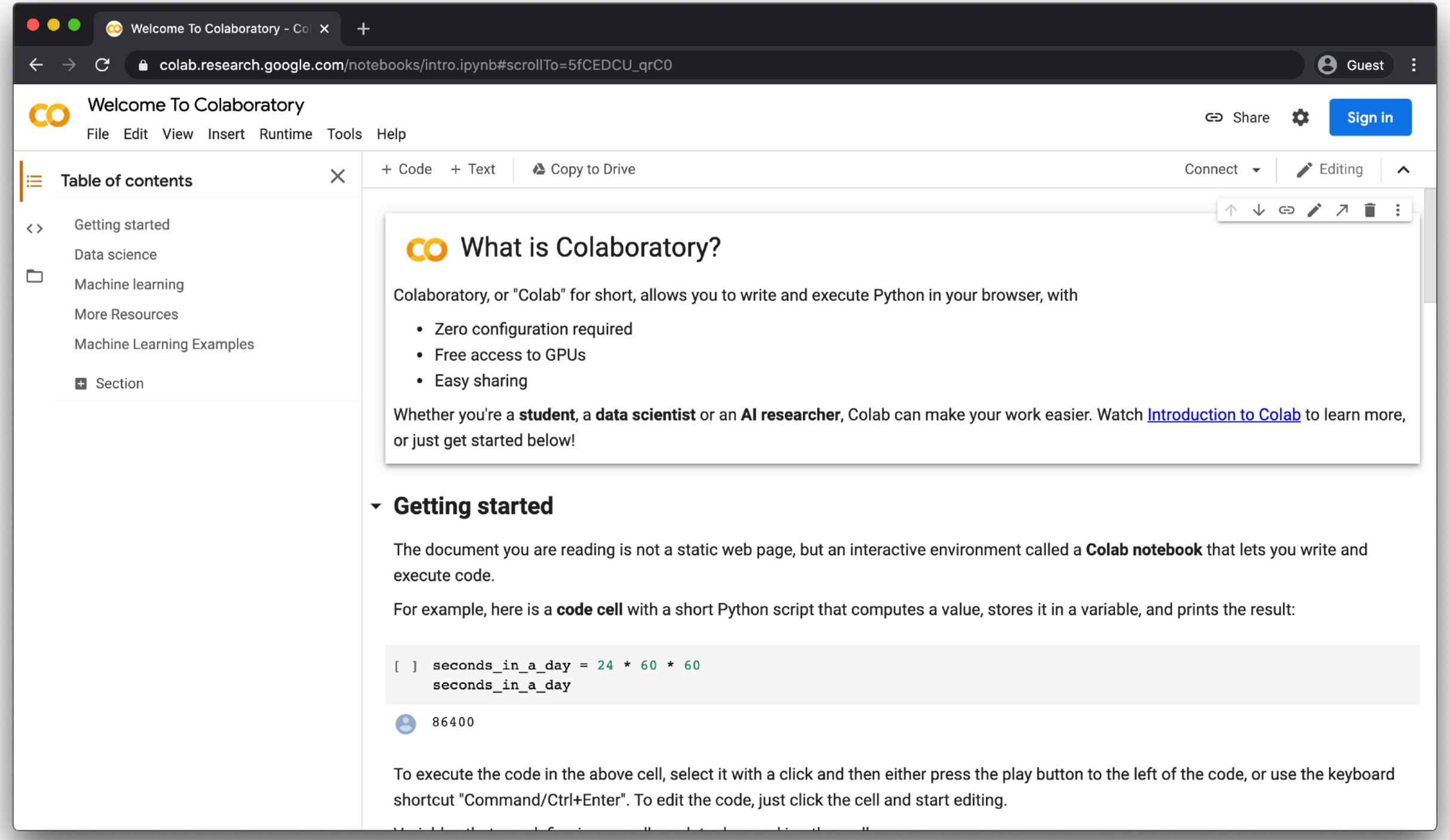
- **Understand** the trade-offs between Google Colab and a local computer.
- **Explain** course workflow on Google Colab

colab

Two common questions…

1. Do we have to use our own computer to do data science?
No, use…

2. Is it possible to do data science on old computers?
Yes, but consider using….



https://colab.research.google.com/

colab

vs.

Local ()

- Online
- Use on any computer
- Free GPU
- Environment already setup
- Files stored in Cloud

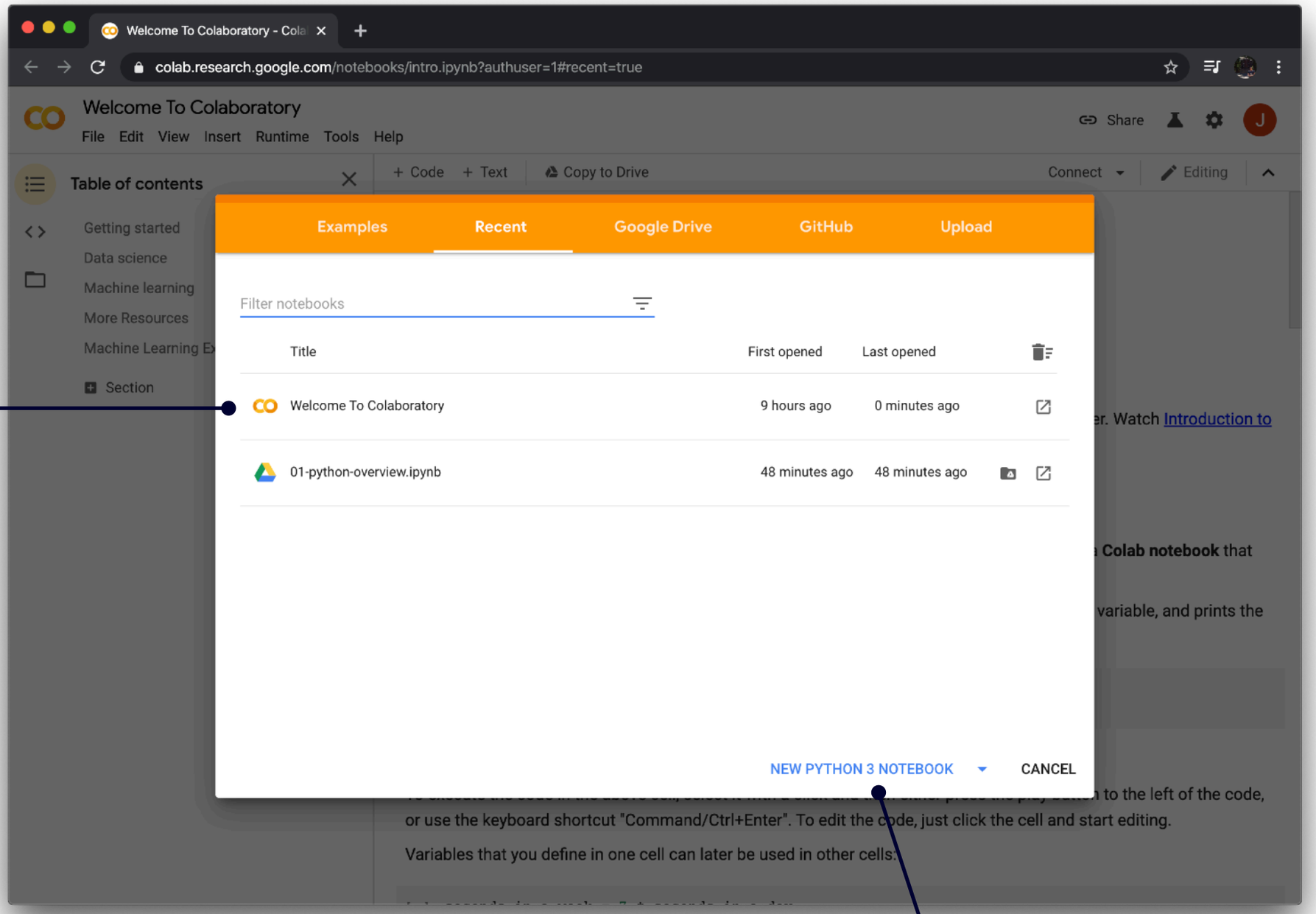
- Offline
- Your computer
- Need to buy a GPU
- Need to setup environment
- Files stored on HD

Overview

Make sure you're using

https://colab.research.google.com/

File Explorer



Open Notebook

Create Notebook

Run Code

For example, here is a **code cell** with a short Python script that computes a value, stores it in a variable, and prints the result:

Click Play [⌘/CNTRL + ENTER]

```
1  seconds_in_a_day = 24 * 60 * 60
2  seconds_in_a_day
```

Executed Code

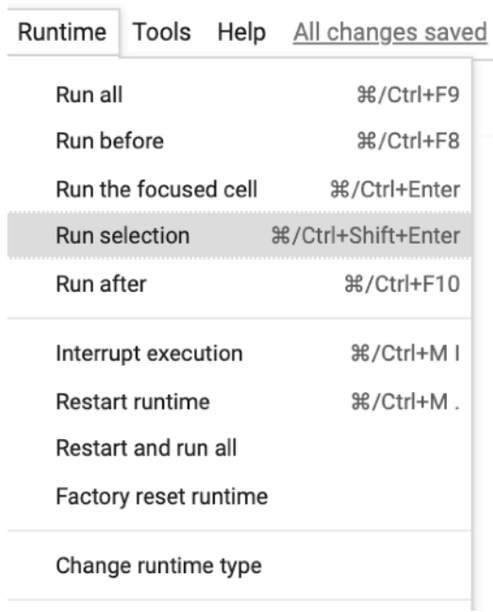
```
[1]  1  seconds_in_a_day = 24 * 60 * 60
     2  seconds_in_a_day
```

Result

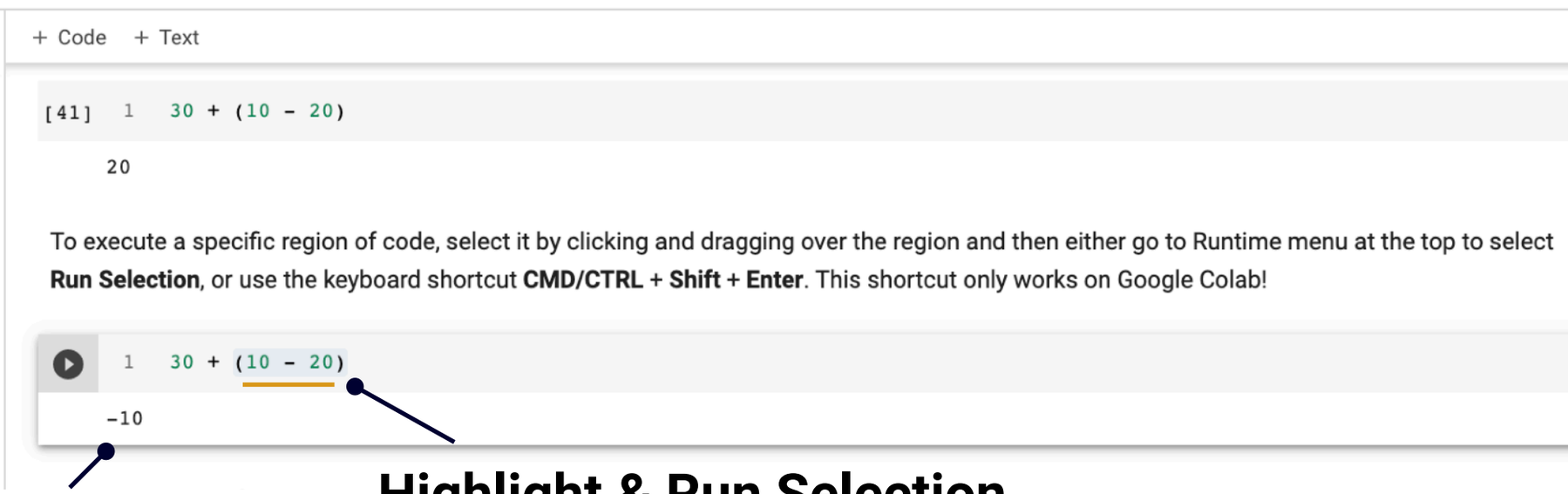
```
86400
```

Run Code Region

Open Runtime Menu



Run selection



Result from Selection

Highlight & Run Selection [⌘/CNTRL + Shift + Enter]

Autocomplete

Just Hit **[Tab]**!

Autocomplete

When using built-in functions, there is autocomplete available for typing long function names.

Begin by typing the function name into the code cell and, then, press **[Tab]** to autocomplete it.

```
1  import math
2
3  math.fa
```

```
fabs
factorial
```

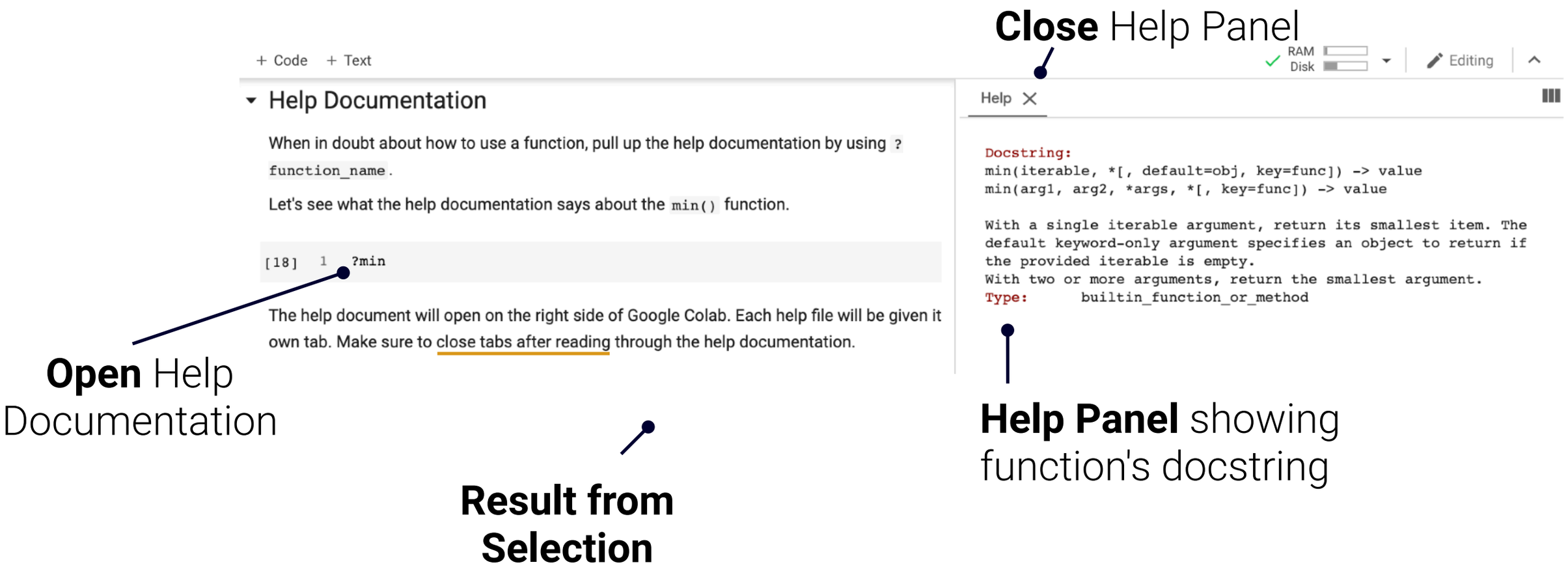
Type
function name

Navigate
by using up and down arrows

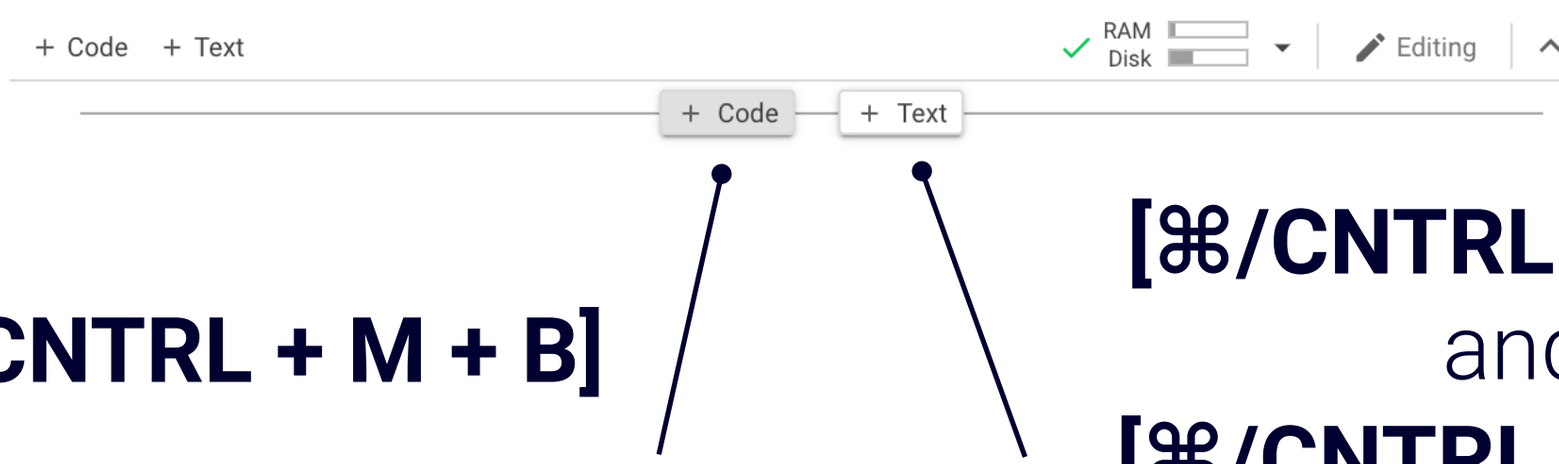
```
1  import math
2
3  math.factorial
```

Press Tab
to autocomplete

Function Help Documentation

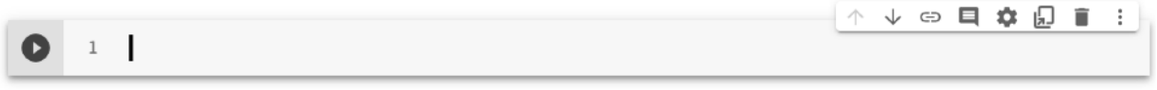


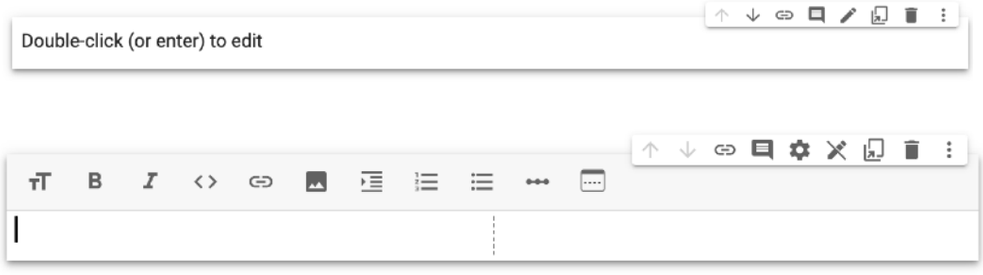
Add Code or Text Cells



[⌘/CNTRL + M + B]

[⌘/CNTRL + M + B]
and
[⌘/CNTRL + M + M]



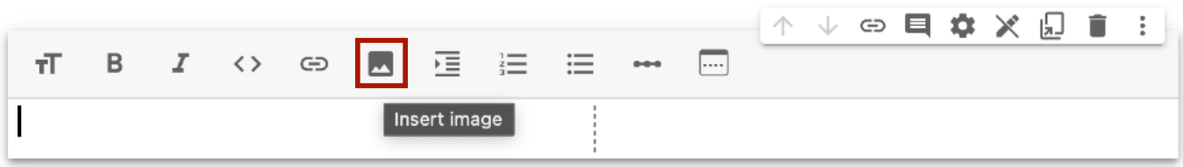


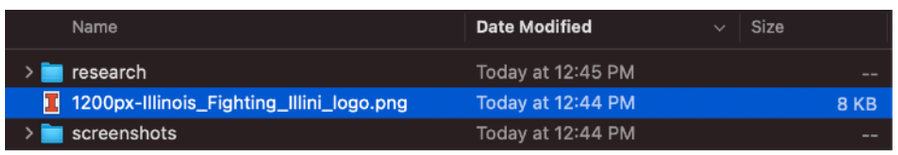
Add External Picture

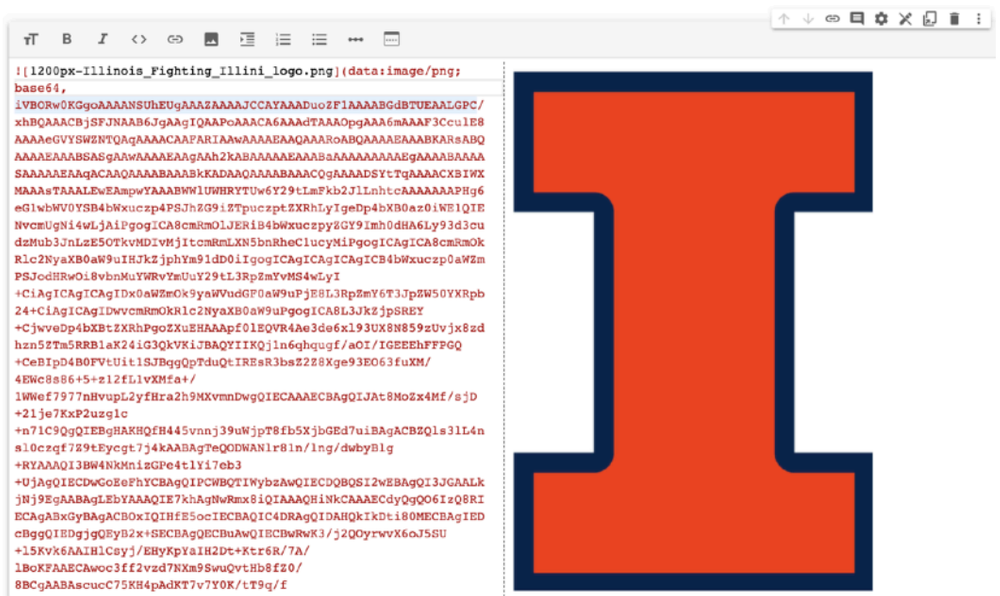
[⌘/CNTRL + M + B]

and

[⌘/CNTRL + M + M]



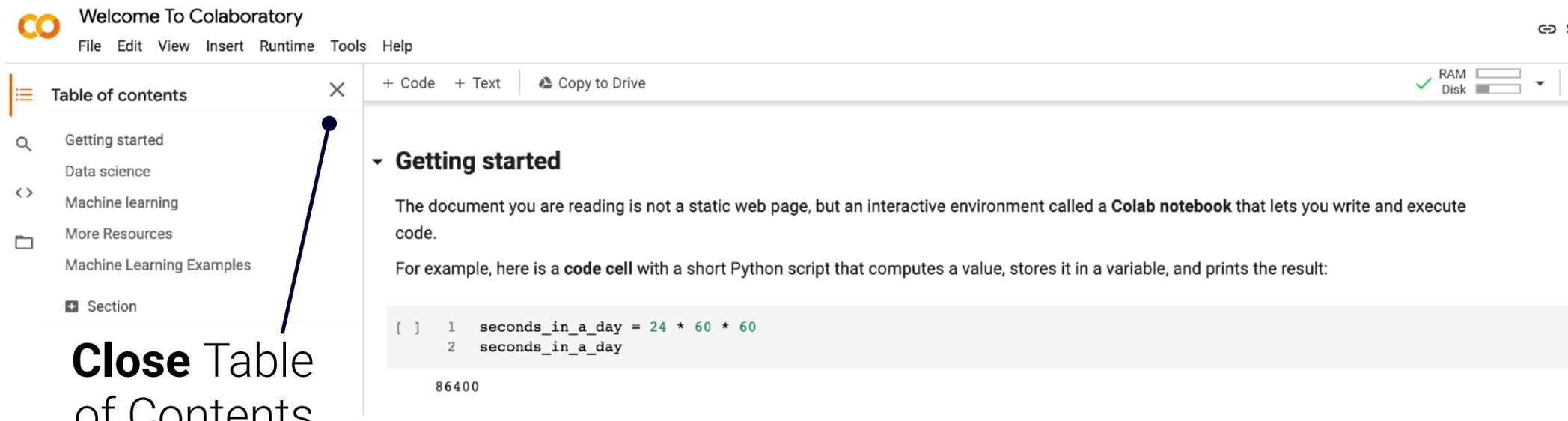




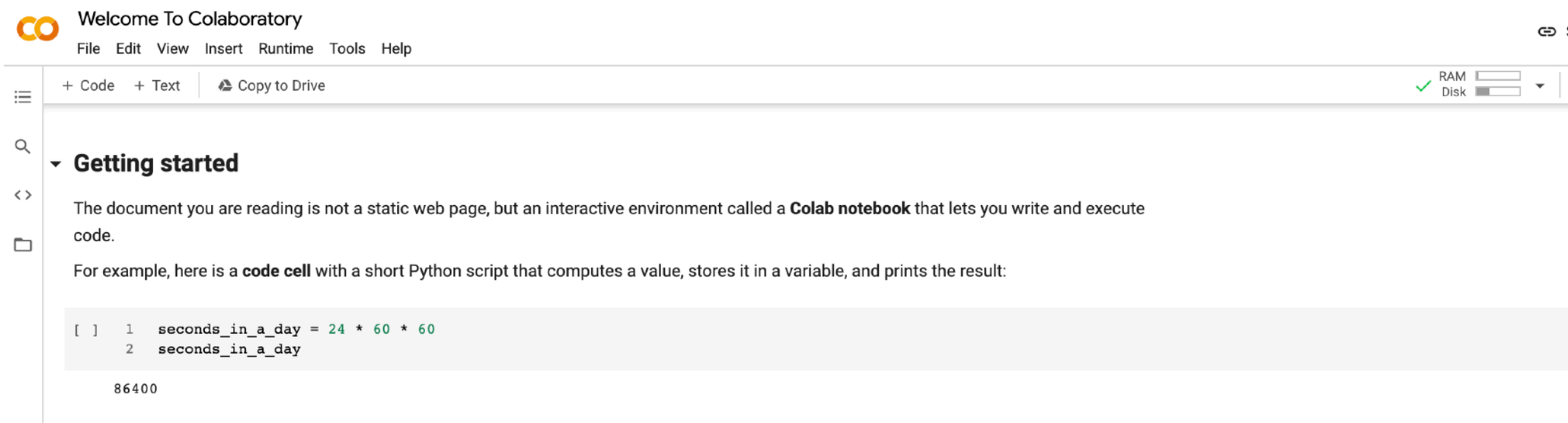
View Table of Contents

Open Table of Contents

Close Table of Contents

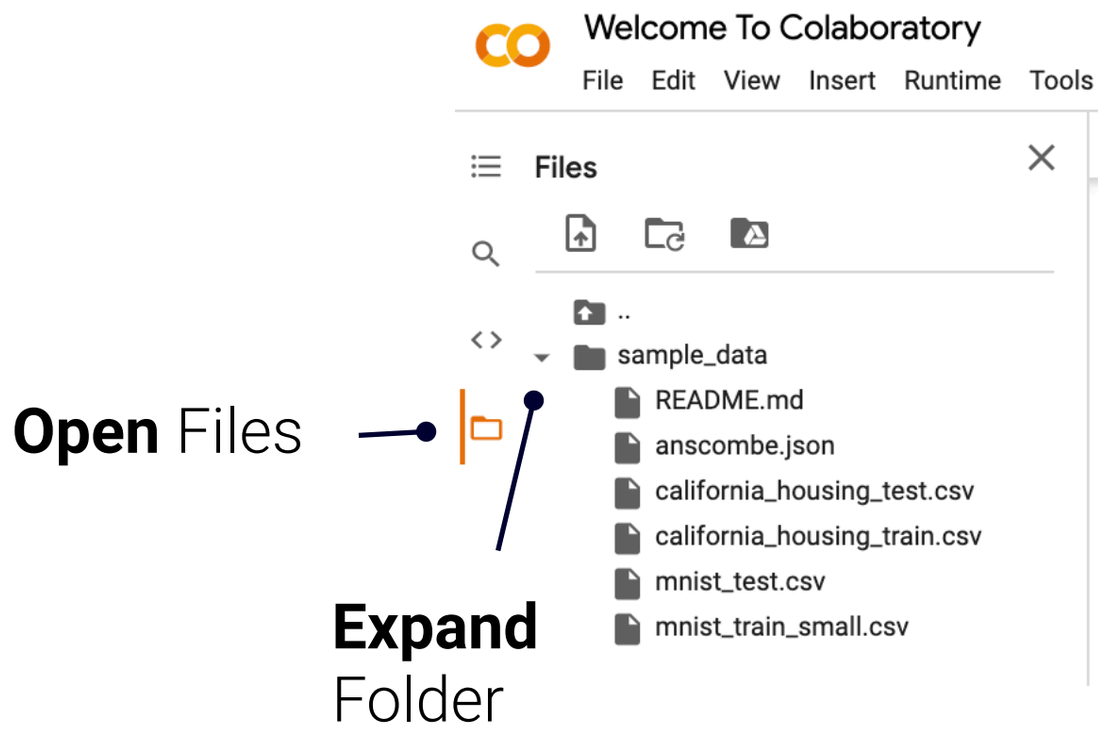


Closed sidebar gives more space!



See uploaded files

All files are placed at /content



Hands on Keyboard

Comparison of Mouse and Keyboard Efficiency

Richard C. Omanson
Infogix

Craig S. Miller
DePaul University

Elizabeth Young
DePaul University

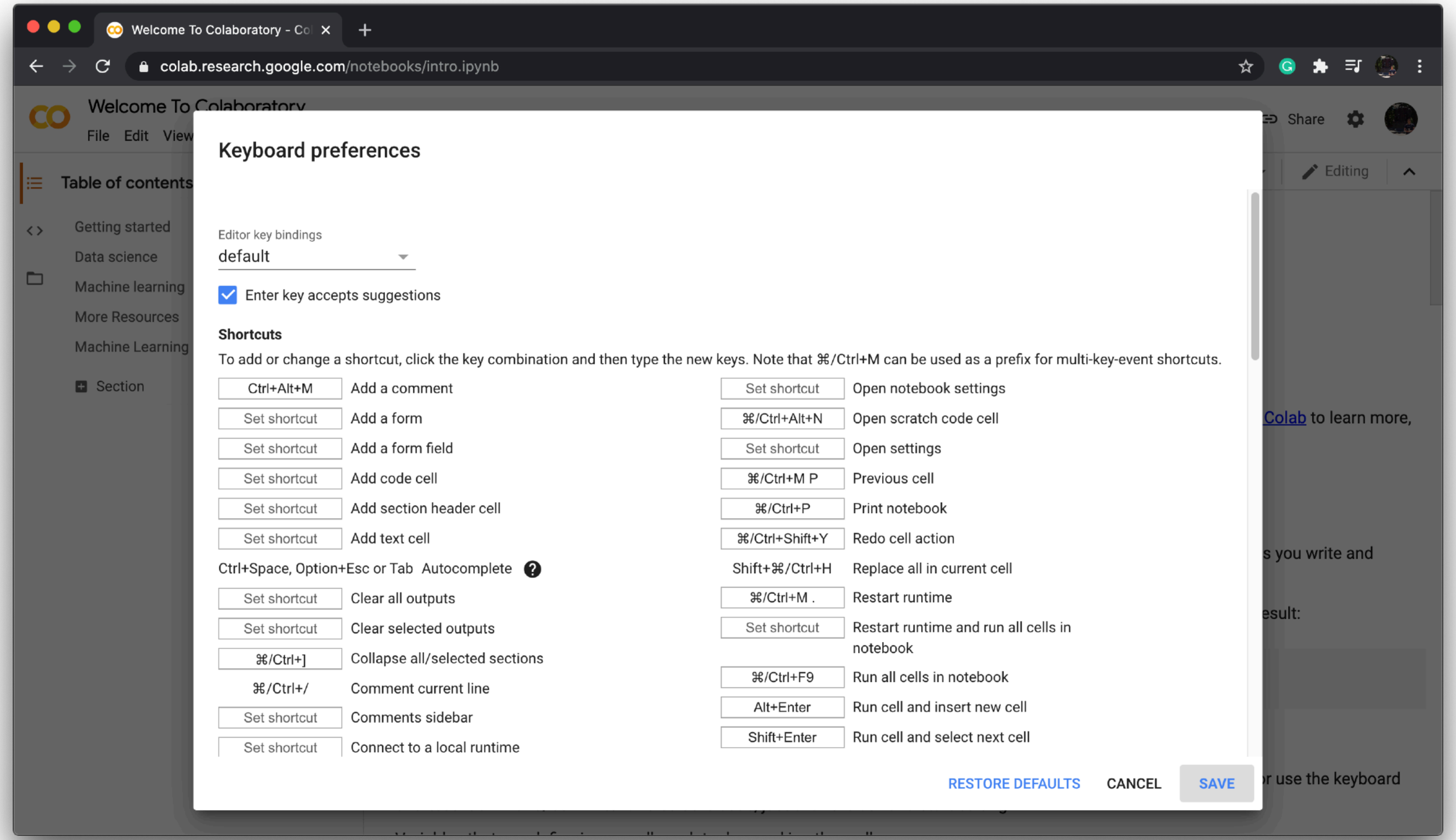
David Schwantes
DePaul University

In many corporate settings, users are required to quickly execute commands. Three methods of issuing commands were compared: 1) selecting a menu item with a mouse (Menu-Mouse condition); 2) selecting a menu item with a keyboard shortcut (Menu-Keyboard condition); and 3) selecting a toolbar item with a mouse (Toolbar-Mouse condition). Users performed one of the three methods across 90 trials and had their speed assessed in blocks of 30 trials. Overall, the Toolbar-Mouse method was the fastest, while the Menu-Keyboard condition showed the most improvement. A GOMS-based model is presented that accounts for differences among methods. This work confirms the use of toolbars for common commands, but also suggests that for heavily-used interfaces, keyboard shortcuts can be as efficient as toolbars and have the advantage of providing fast access to all commands.

https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1087.6916&rep=rep1&type=pdf

Keyboard Shortcuts

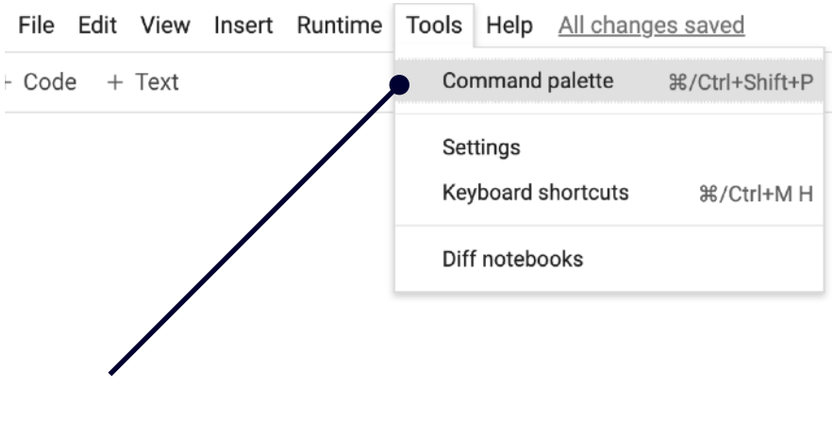
Open with ⌘/CNTRL + M + H



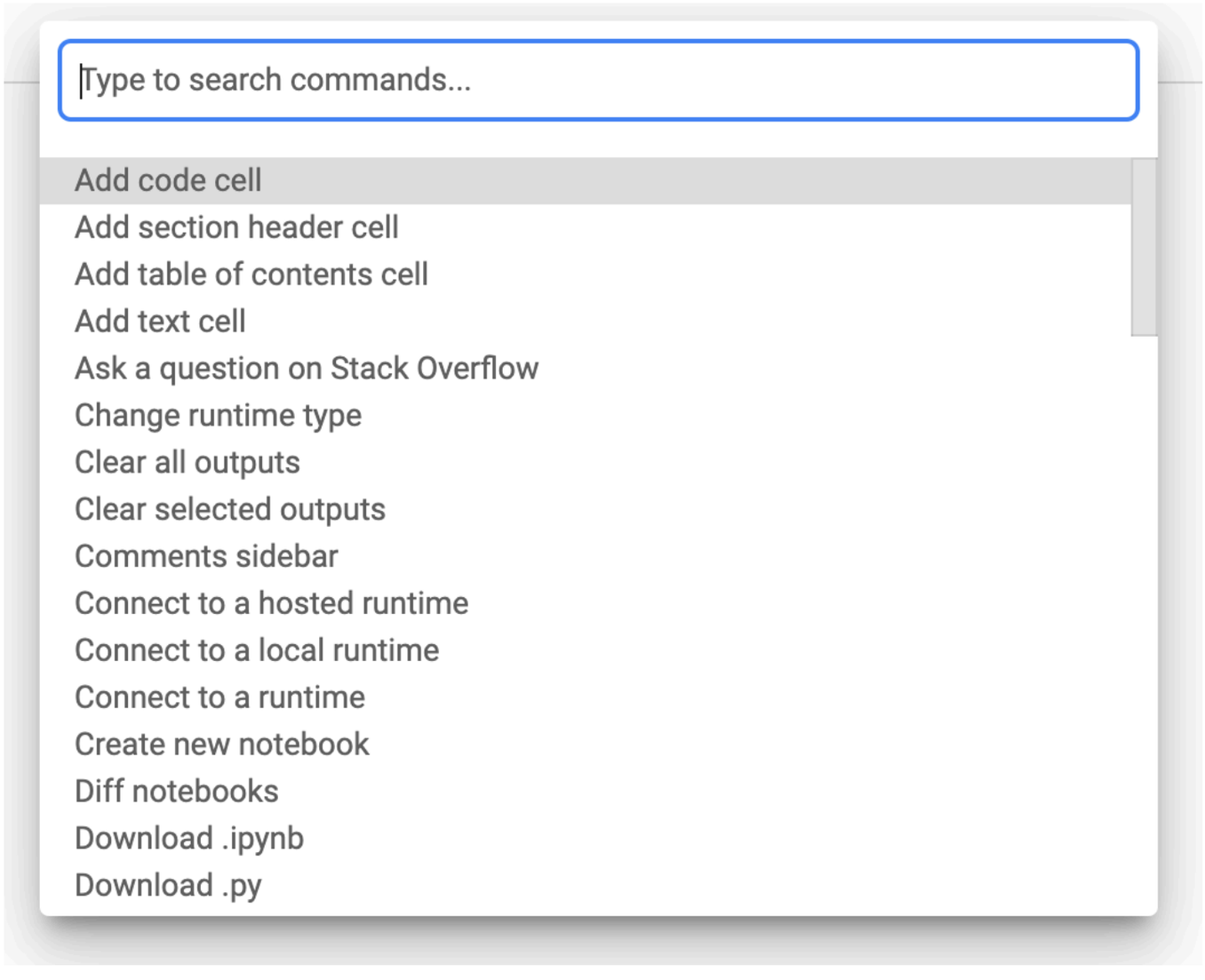
* Colab shortcuts prefixes all Jupyter shortcuts with ⌘/CNTRL + M

Command Palette

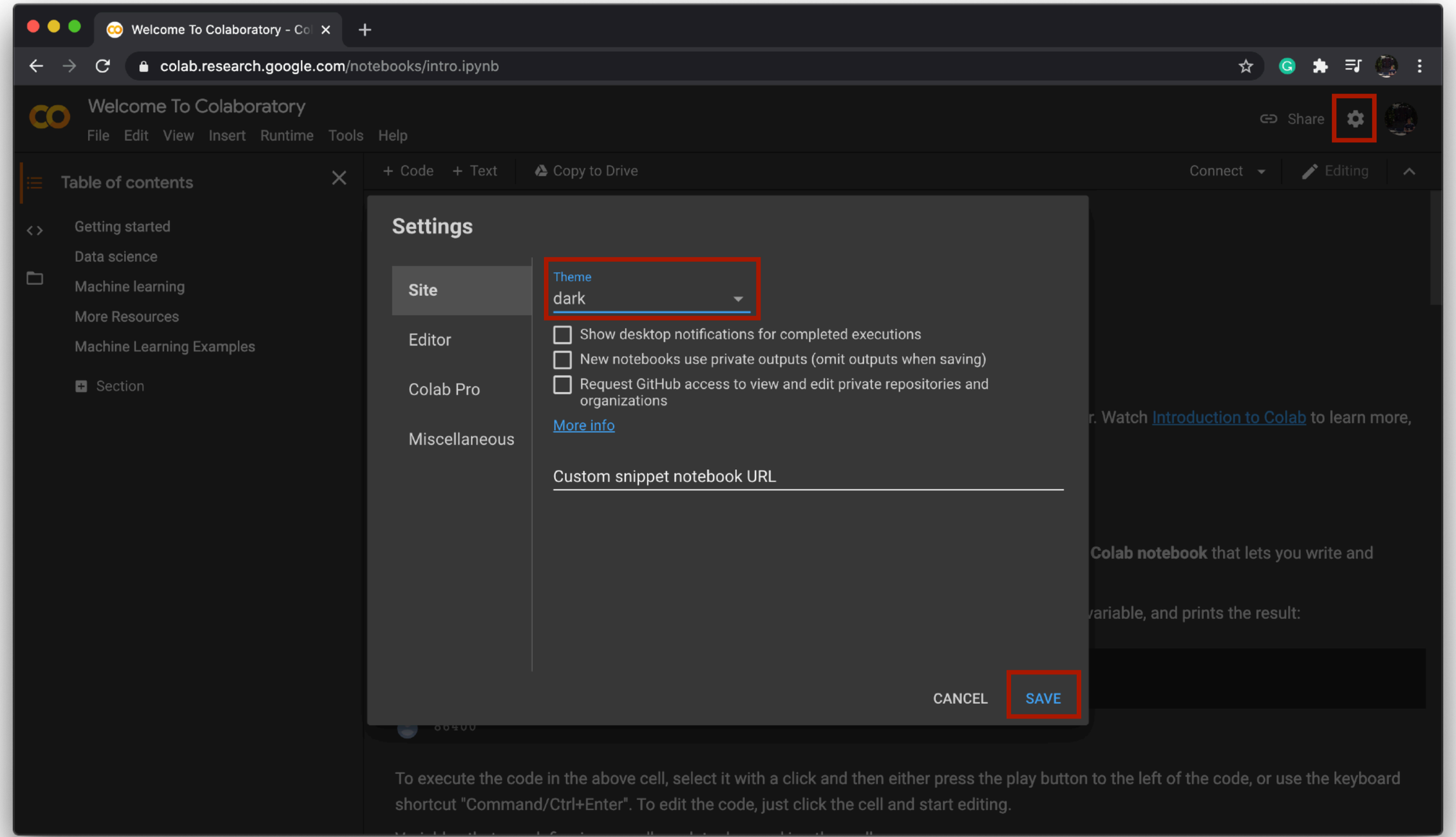
English-version of Keyboard Shortcuts



[⌘/CNTRL + SHIFT + P]

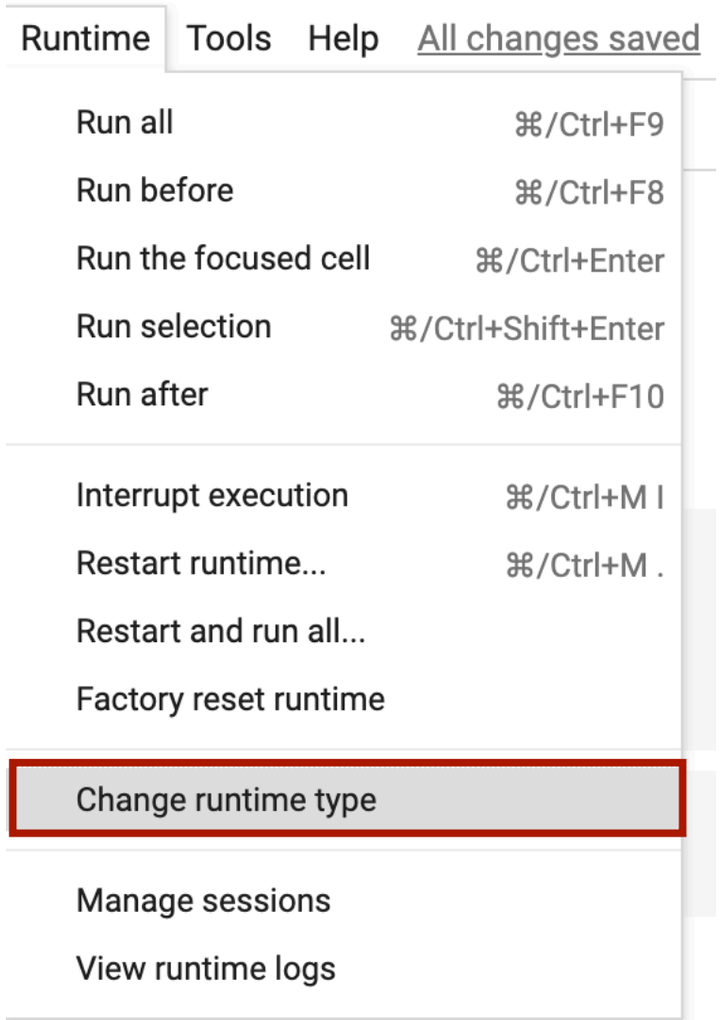


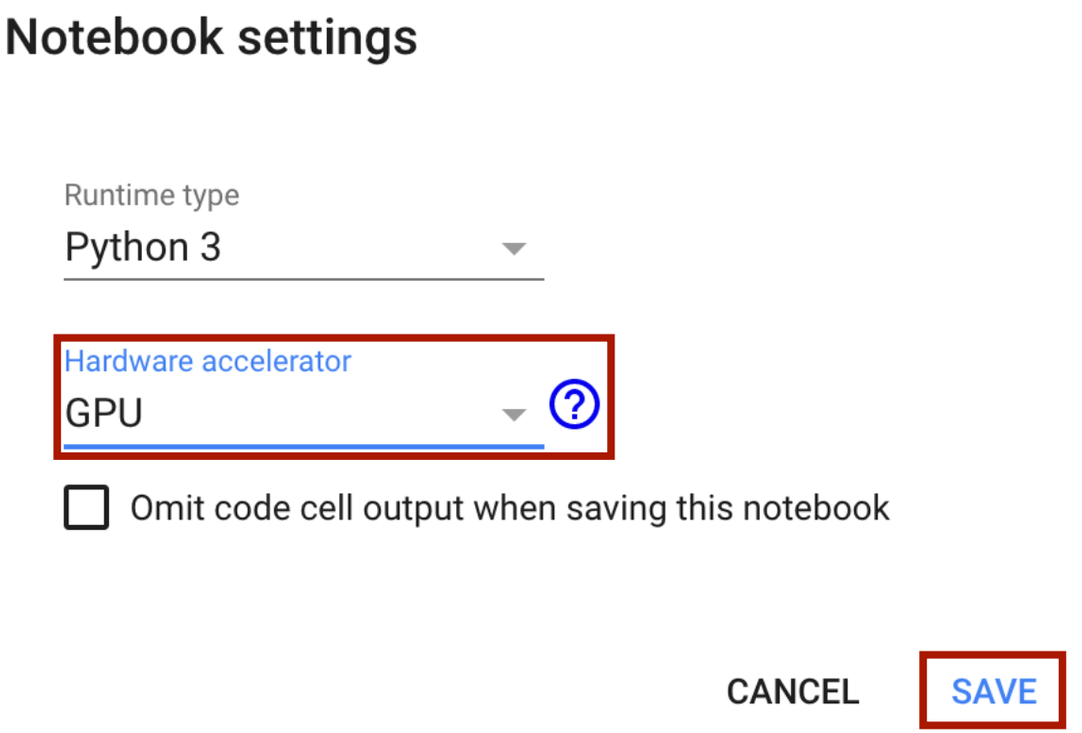
Night/Day Themes



Enable GPU/TPU

Increase model training speed with large data





Summary

- Provided an overview of Google Colab Features
- Emphasized how to add code cells and execute them.