

Number Theory

Computational Thinking

Discrete Mathematics

Topic 00 — Module Introduction

Logic

Lecture 31 — Guide to the Python Colab Practicals

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Graphs and
Networks

Collections

Autumn Semester, 2023

Outline

- Locating and open python notebooks on colab
- Completing your work
- Downloading your work from colab and uploading to Moodle

Course Locations

The image displays four screenshots of online platforms used for course management and communication:

- Moodle:** Shows the course structure for "Discrete Mathematics-37115-[2023-2024]". It includes sections for General, Assessments, Python Practicals, and Collections. A red circle highlights the "POO - Introduction to Python and Colab" link under the Python Practicals section.
- GitHub:** Shows the "Module Introduction" and "Computational.Thinking" pages for the same course. A red circle highlights the "POO - Introduction to Python and Colab" link under the Computational.Thinking section.
- Slack:** Shows a conversation between Denis Flynn and kmurphy. Denis has posted a welcome message and a picture of himself. kmurphy has responded with a message. A red arrow points from the Slack interface to the "Sign In" button on the Google Colab page.
- Colab:** Shows a Google Colab notebook titled "Practical 00 - Introduction to Python and Colab". It includes sections for Setup, Introduction, Mathematics Concepts, Python Concepts, Using Python as a Calculator, Etc - A Python Playground, Review/Feedback, and Slides. A red arrow points from the Slack interface to the "Sign In" button on the Colab page.

• Main entry point.

• Uploading of assignments.

• Online quizzes.

• All static content

• Links to python notebooks

• External resources

• Instant messaging (timetable changes etc)

• Public and one-to-one questions

• View, edit and run python notebooks.

Outline

1. Locating and Opening Notebooks

3

- Notebooks are listed on the Moodle main page and within topics on the Github website.
- Clicking on Colab opens notebook in Colab.
- **Need a separate Google account to use Colab.**
- Need to login and click on authorship warning before editing.

2. Edit and Working with Notebooks

7

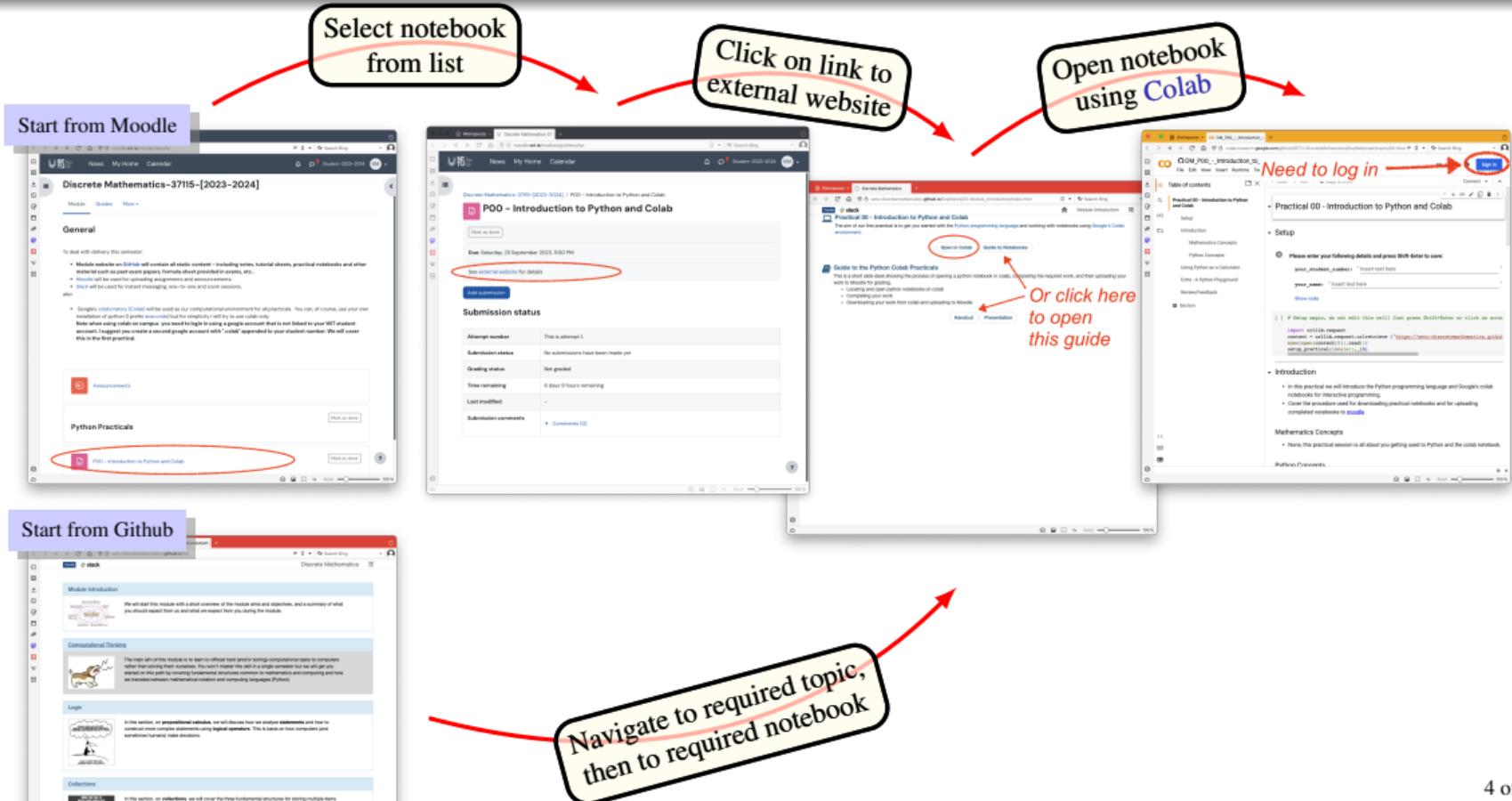
- A notebook is a list of cells which are either:
 - `text` — contain markdown text, where markdown is a simple but effective technique to typeset content
 - `code` — which contain python code to run.
- The Colab interface has many features to help with editing notebooks, so it is worth spending some time just playing with it.

3. Downloading and Submitting Notebooks to Moodle

10

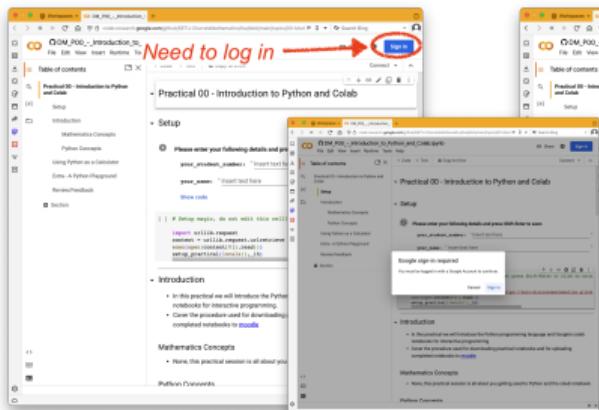
- Colab automatically saves your notebook as you work, but you need to submit it to Moodle for grading.
- Download python ipynb using the Colab menu option
- Notebook should be saved to your Download folder.
- Open Moodle and upload file.

Step 1 — Locating and Opening Notebooks

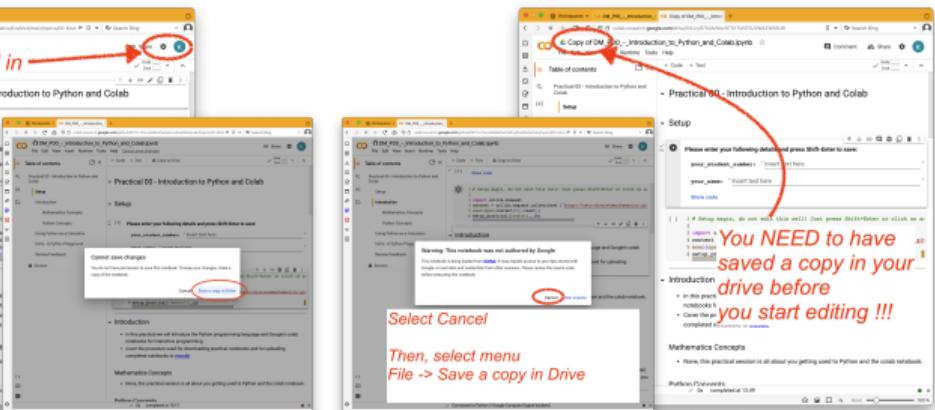


Step 2 — Login and “Save a copy in Drive” Before You Start Editing ...

- Login before editing.
- Use a **different Google account** from your WIT linked student account.
- Use only one Google account[†] with Colab.



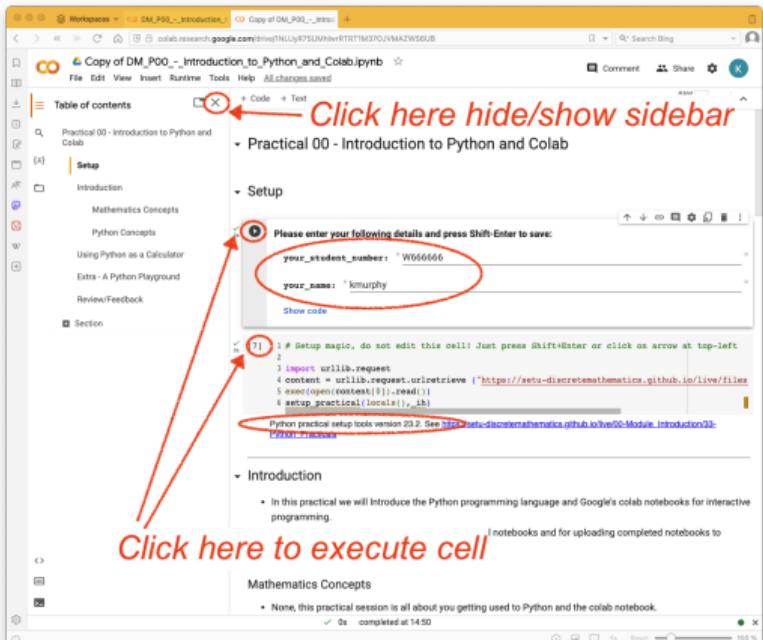
- Before editing (the just opened) notebook click on menu **File → Save a copy in Drive**.
- If you get a ‘This notebook was not authored by Google.’, select **Cancel** and click on menu **File → Save a copy in Drive**



- To continue editing your notebook from a previous session, click **Cancel**, then select menu **File → Open notebook**, then select your notebook from your **Recent** list.

[†]Switching between Google accounts is a pain. To avoid this I use a separate browser for Colab work. The **Opera** browser is a good option.

Step 3 — Enter Details and Run `setup_practical ...`



- In the first cell, enter your student number and name and execute the cell.

To execute a cell press “Shift+Enter” or click on arrow at top left of cell.

- Execute the second cell to complete the setup. You should see message: “Python practical setup tools ...”, The version number is currently 2023.2, but this may change.

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Edit and Working with Notebooks

Toolbar to show/hide table of contents, find/replace, code snippets, and files.

The screenshot shows a Jupyter Notebook interface with several features highlighted:

- Left sidebar:** A toolbar with icons for file operations (New, Open, Save, etc.), search, and code/text conversion. A red box highlights the arrow icon used for collapsing sections.
- Top right:** A toolbar with Share, Settings (highlighted with a red box), and Help.
- Cell controls:** A toolbar at the top of each cell with buttons for running, executing cell up/down, and deleting.
- Code cell content:** A cell containing Python code for arithmetic operations and notes about standard operations and BOMDAS rules.
- Text cell content:** A cell containing text about powers and the expression 2^{1000} .
- Bottom left:** A cell with a code snippet starting with `[]` and a run button.

Click on the [] or ⏪ to run the current cell.

Click to access setting including hide/show line numbers

Click to hide/show menu & ribbon

This toolbar appears when editing a cell. Buttons move cell up / down, delete etc.

When editing a text cell, the cells splits into two — the left is the source (in markdown) and the right is the generated output.

Move mouse pointer to centre of top or bottom edge of cell to insert a code (or text) cell in that location.

Review / Feedback

One of disadvantage of going online is that students can lose out on opportunities to provide feedback on how they think the semester is progressing and in particular for **Discrete Mathematics**, how they easy/difficult, interesting/boring, useful/confusing they find the material. By completing the following you will help us improve our delivery.

Please enter your feedback and click on arrow at top-left to save.

This practical

How difficult did you find this practical?

`practical_difficulty:` Some bits were hard but overall it was doable

Including online session time, how long (in minutes) did it take for you to finish this practical?

`practical_duration:` 30

This week's material

How difficult did you find each of the following this week (0=too easy 3=easy, 5=just right, 7=a bit difficult, 10=impossible)?

`lecture_difficulty:` 0

`tutorial_questions_difficulty:` 0

Use the line below to enter any comments – what you liked, what you did not like. Again all feedback is welcome.

At the end of each notebook, we have a short questionnaire which we would like you to complete so that we can have a better idea as to how you are fairing. Everything entered here will be taken in the strictest confidence and we will do our best to address any issues.

We are interested in:

- Difficulty of material — are we assuming too much prior knowledge? do we need to give me examples? etc.
- The length of time you spend on the Discrete Mathematics activities — both spending too little and spending too much time on an activity is common.
- Is there anything that we should start/stop doing?

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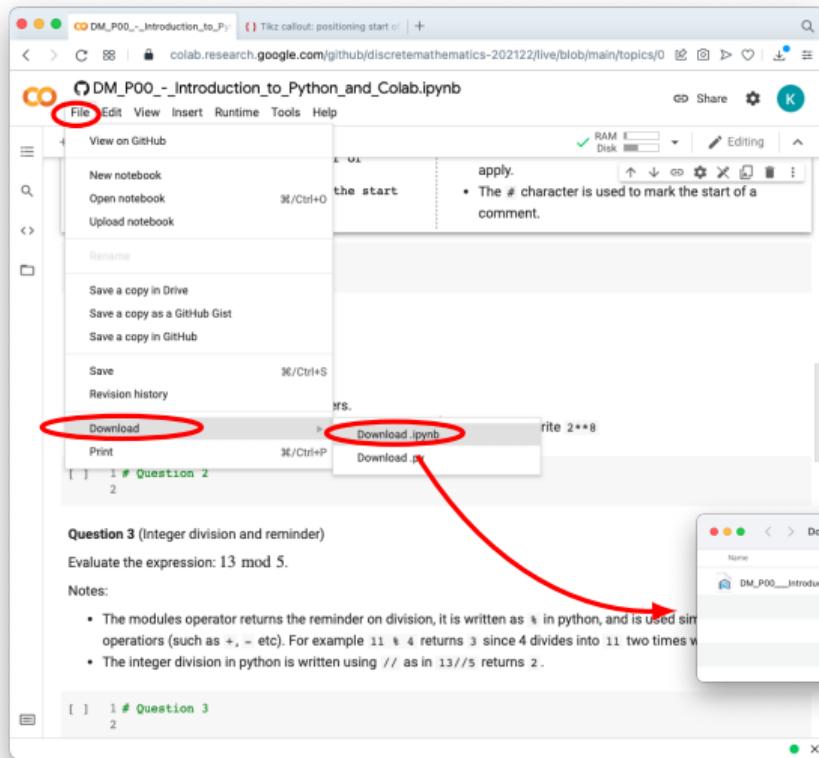
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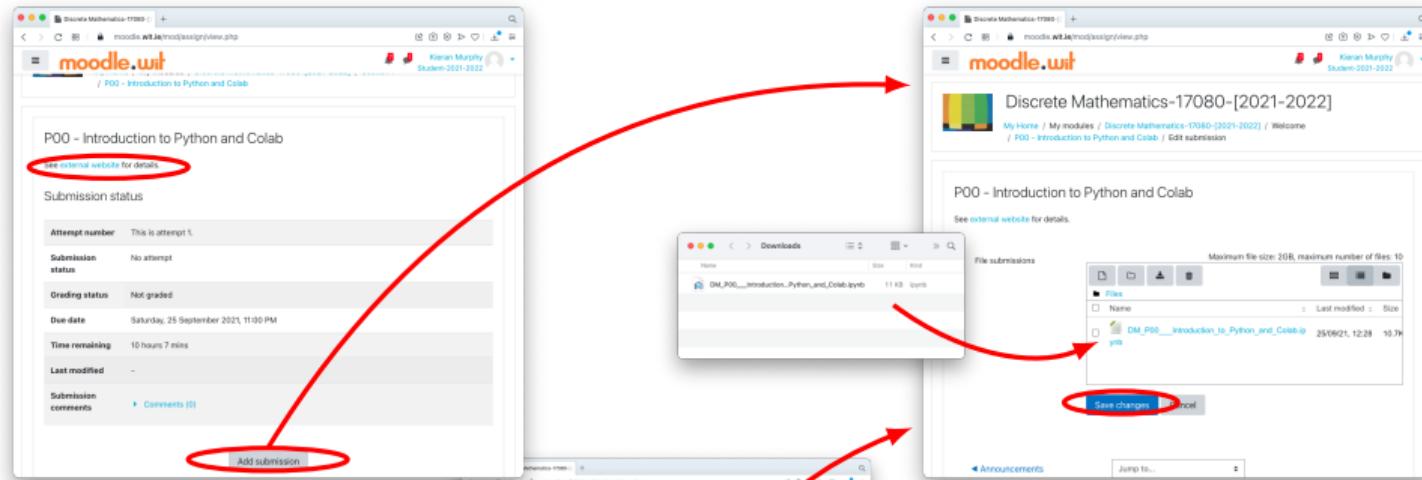
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Download Notebook as a ipynb

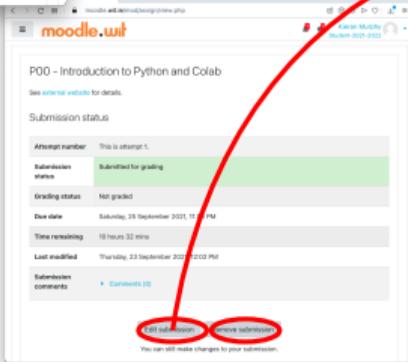


- From the Colab menu select File → Download → Download ipynb.
- This should store a copy of your notebook in your Downloads folder.
- This file is a text encoded file with extension ipynb
- You need to upload this file to Moodle for grading.

Uploading and Submission to Moodle



Or, if you have submitted a notebook already ...
Remove first submission, and then upload a new notebook using Edit



Make sure you have a single notebook in submission box before selecting Save