LIDo x L2D Handbook

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1. Course Registration & GitHub:

We would firstly likely to extend our warmest welcome to you. The L2D course aims to empower you with valuable skills in Python programming, data science and machine learning: developed by life scientists, for life scientists.

In order to get started, you will need to register yourself for a GitHub account. Our administrators will then issue you with a registration form that we use to collect your GitHub handles, and we will follow shortly with an invitation requesting that you join a GitHub Organisation for the current cohort of learners.

Once this has been set up, please keep a note of your GitHub login details, as these will be used throughout your L2D course to access materials, submit assignments and interact with academics and fellow learners.

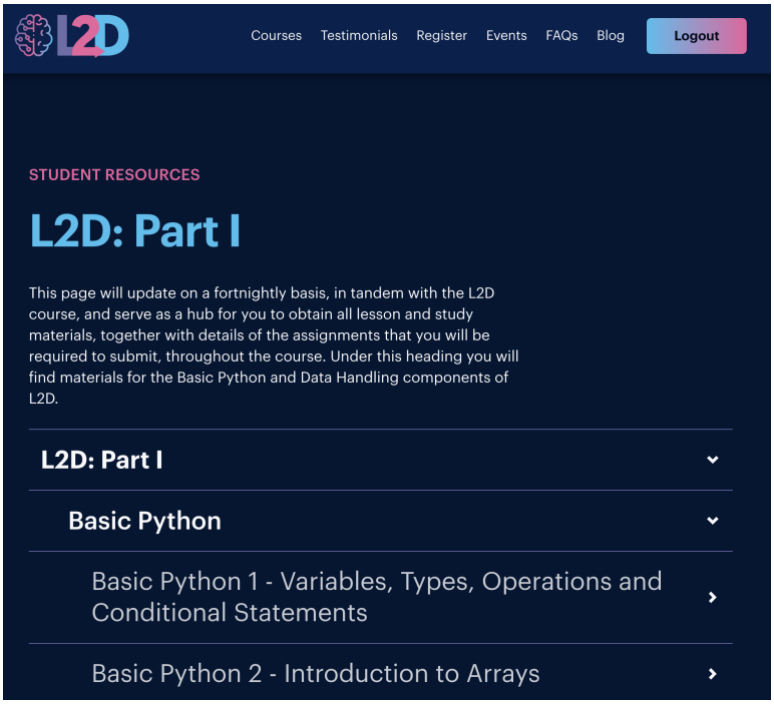
Owned by Microsoft, GitHub is an international community-based organisation that provides a suite of facilities to create, edit, share and publish code. At L2D, we have made a conscious decision to employ GitHub's infrastructure within our course, in order to initiate new users into the world of GitHub so that – should you continue to explore coding further after the course – you will already be familiar with one of the leading, internationally-recognised platforms and standards for programmers and coders, across the world. This also facilitates enjoining in our community of L2D learners and tutors *via* GitHub Discussions: a forum for posting questions, sharing ideas and new findings. We also make use of GitHub Classroom: an arm of GitHub Education that allows us to manage your learning journey on L2D.

2. Lesson Release:

The L2D course is run on a largely fortnightly schedule, with new lesson topics being made available to you on Mondays, excluding public holidays and closure periods. The dates of these lesson releases are provided in the LIDo L2D calendar and it is recommended that you transfer important dates into your own personal calendar, so that you don't miss any key aspects of your learning with L2D.

Each lesson release is marked by the receipt of a lesson release email (routinely issued on Mondays) that will contain all information required to access L2D materials and available resources. Please keep an eye open for these, and check that they do not get caught in your junk mail.

3. L2D Lesson Portal and GitHub:



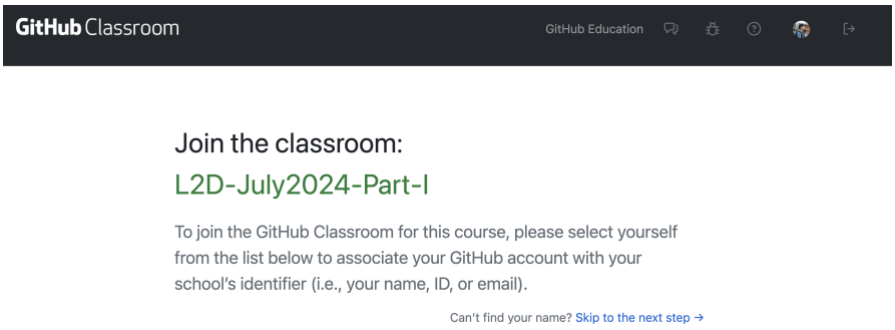
The L2D course is centred around two pages:

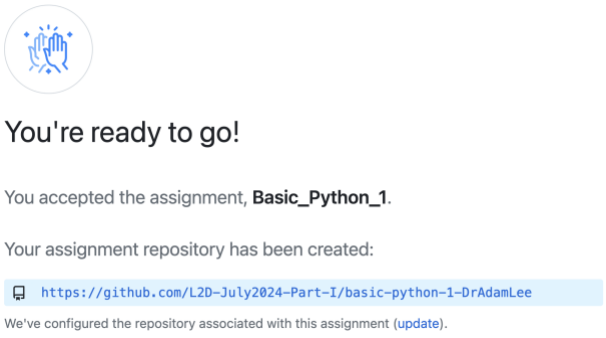
- Lesson Portal
- GitHub Repository

In your L2D lesson release email, you will find a link to the **L2D Lesson Portal**. This contains a hierarchical menu of all lesson topics available on the course package you have purchased. As you progress through the course, each fortnightly lesson release will appear on the Portal, added into the lesson and topic hierarchy.

Accepting an assignment and creating your GitHub lesson repository:

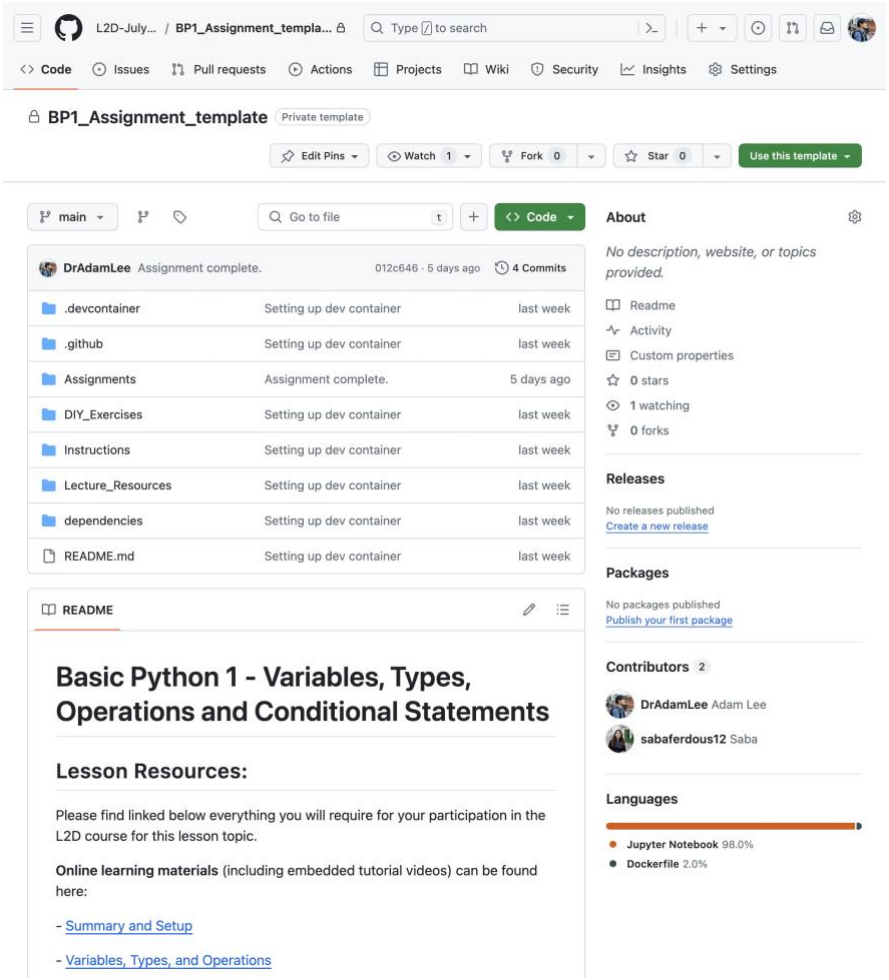
1. When you click on a lesson for the first time, you will be asked to accept your lesson assignment *via* GitHub Classroom: you must be logged into your L2D-invited GitHub account in order for this to work. Click the blue **Skip to the next step** hyperlink.





2. Once your repository has been created, click the blue shaded hyperlink that contains a unique URL to your own GitHub repository of resources for an entire lesson topic's worth of learning will be created, automatically.

The image to the right shows a sample of what your repository home page looks like.



The hierarchy of its contents is shown in the middle of the screen, with a column showing the most recent commit message, and a column showing the date of that commit. A commit, in GitHub terminology, is a logged change made to a file or folder. These commit messages will be encountered again, when you work on your first assignment, instructions for which will be given later in this handbook.
On a per-lesson basis, you will find the following resources within each GitHub repository.

- **Assignments**: This folder contains blank assignment templates for you to fill out and submit before your submission deadline. Assignments are typically graded within 14 days of timely submission, and these are made available, here.
- **DIY_Exercises**: This folder contains DIY exercises found in the written materials, are made available in this folder as interactive Jupyter Notebook files. (Note: This folder is *not* available in all lesson topics).
- **Instructions**: This folder contains the Student Handbook.
- **Lecture_Resources**: This folder contains any data or Jupyter Notebooks that are demonstrated during the live lecture for the associated lesson. These can be useful if you wish to code in tandem with your L2D Instructor during a lecture.
- **ReadMe**: This is a document that will display on the home page of your GitHub repository, beneath the repository contents, and contains all the useful links and information relating to the selected fortnight's learning. This includes links to written materials, times and links to live lectures and drop-in sessions, as well as contact details for reaching us.

Note: there are other folders in your repository whose title begins with a full stop. These are developer folders that we use to support the online environments that you will use for working on your assignments. Please do not touch or modify these.

4. Lectures:

Each Friday on the week of a lesson release, as per the information given in your LIDo Calendar, we hold a live lecture for the L2D course. These lectures commence at 14:00 GMT/BST, or as indicated in your lesson release email. The details of venue and timing will be stated in your GitHub repository ReadMe, and will be communicated to you by your LIDo point of contact.

5. Tutor Sessions:

Your learning is supported by LIDo tutors, who give dedicated support sessions. Details of these will be communicated to you by your LIDo point of contact, and will also be listed in your GitHub repository ReadMe for the current lesson topic.

6. Submitting Course Feedback:

After each live lecture, we ask that students complete a feedback form which helps us to gauge your level of satisfaction with each fortnight of learning offered on L2D. The form takes a few short minutes to complete, and gives us a valuable opportunity to learn what you like about the course, as well as any suggestions for improvements that you might have for us.

We pride ourselves on our agility to act on your suggestions as fast as possible here at L2D, and highly value the relationships that we develop with our learners.

7. Assignment Submission & Feedback:

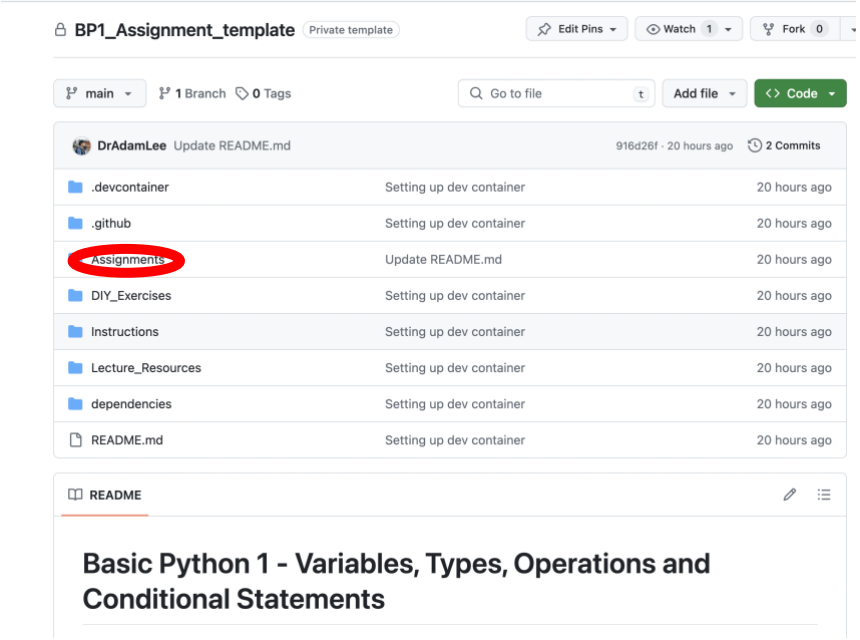
As you progress through the L2D course, you are expected to complete one assignment per fortnightly lesson release. Assignments are template Jupyter Notebook (.ipynb) files found in your **Assignments** folder, and consist of a set of questions related to the fortnight's lesson topic. You should complete these with the knowledge you have gained from consuming L2D's written materials, tutorial videos, live lectures and drop-in sessions.

Assignments are due to be submitted before the next lesson topic release date. For instance, as lessons are released on Mondays, you must submit them before 00:00, 14 days after. Timely submissions result in graded assignments and feedback being returned to you within a further 14 days. If you submit an assignment late, it will not be

prioritised by our tutors, and in certain cases, this may affect or delay the issue of any L2D certificates. If you are facing extenuating circumstances and require an extension, please let us know by contacting admin@learntodiscover.ai.

Below are a set of **step-by-step instructions** showing you how to submit an assignment. At L2D, we make use of GitHub Codespaces, which allows you to set up an online instance of Microsoft Visual Studio Code, and code directly from within your web browser. We recommend the use of **Google Chrome**, for stability and ease.

Firstly, let's familiarise ourselves with the **Assignments** folder, which can be found inside your lesson repository. The example below shows the Basic Python 1 (BP1) lesson repository.



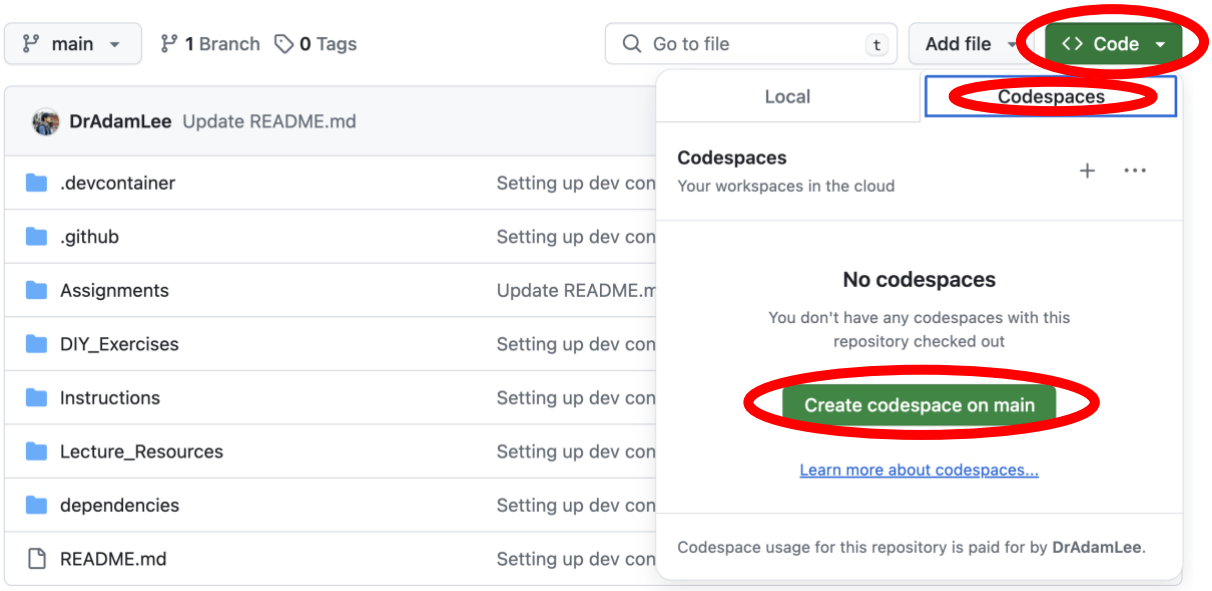
Inside your **Assignments** folder, you will find:

- A **ReadMe** file that (as with your main repository page) is displayed beneath the folder's contents.
- A **Data** folder that contains any data that may or may not be required to complete the assignment.
- A **Feedback** folder, that will contain your marked assignment, once it has been graded and returned to you.

Completing an Assignment:

A video tutorial version of this workflow can be found, here.

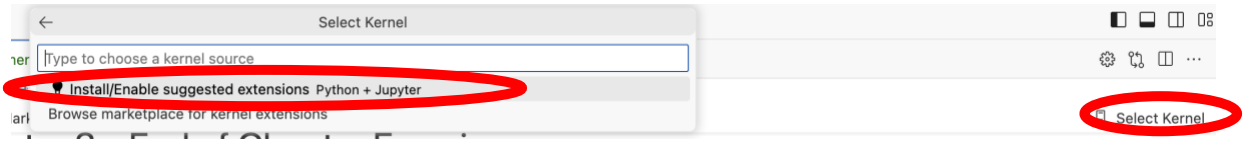
1. To begin an assignment, you must first create a new Codespace, by clicking the green **Code** button, selecting the **Codespaces** tab, and clicking the green **Create codespace on main** button:



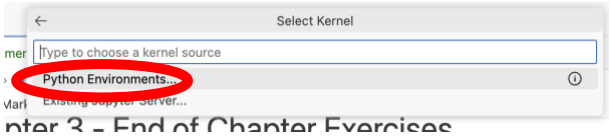
2. This will begin setting up a Codespace for you to work in. This may take several minutes to complete: please be patient. The total time it takes to set up your Codespace could also be affected by the speed of your internet connection. If you would like to monitor progress of the setup, click the blue **Building codespace** hyperlink at the bottom right of your screen to display the setup log in the terminal tab.

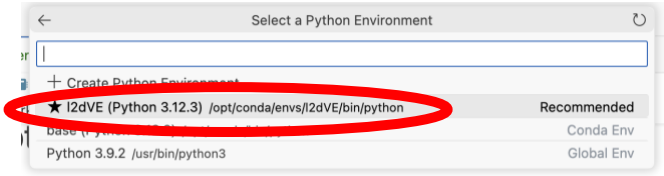
3. Once your Codespace has been set up, you will see the hierarchy of your entire lesson repository on the left in the **Explorer** tab. Uncollapse the **Assignments** folder, and there you will see your assignment template notebook. Click on this, and it will open in the main view, in the middle of the window. Note: the ReadMe file may open and come into view – close this tab, and focus on your assignment.

4. Next, you must click on **Select Kernel** on the far right of the window. A dropdown menu will appear in the middle of the window: click **Install/Enable suggested extensions**. Wait a short moment while these install (progress is indicated, bottom right).



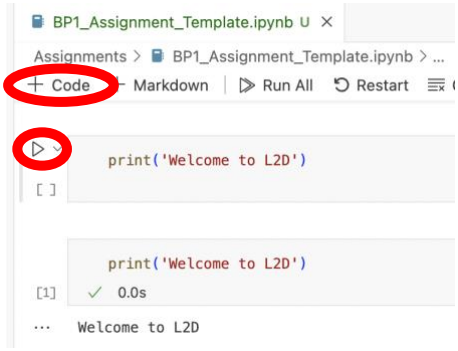
5. You must then click **Python Environments...** in the dropdown menu in the middle of the screen. (If this has disappeared, you can bring it back by clicking **Select Kernel** again).



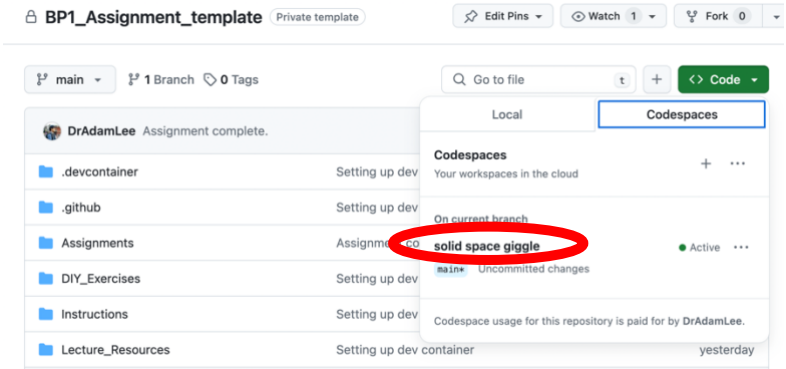


6. You will then see an option with a star by it that says **l2dVE** (L2D Virtual Environment). Click this to select a pre-prepared environment that we have set up for you, with all the required Python packages and modules you will need to work on the specific assignment in question. (Once selected, the active kernel on the right will display **l2dVE** and the current version of Python being used).

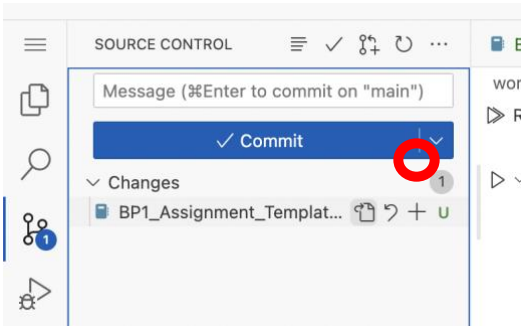
7. You are now ready to begin the assignment. You can create new cells easily by pressing the **+ Code** button. You can then fill these with code, and run the code by clicking the little triangular **play symbol** to the left of the cell (or using keyboard shortcut **ctrl + Enter**). The output of your code will then be generated and displayed beneath the cell.



Note: only complete the next steps in the workflow when you are ready to submit your assignment. If you wish to pause working, and come back at a later time – providing you have a stable and active internet connection – your Codespace will autosave your changes as you are working. If you reopen the Codespace you created from your main repository page again, you will be able to pick up where you left off. To access your Codespace at a later date, go back to your main repository page, and click the green ***Code*** *button. Under the* ***Codespaces*** *tab, you will see any active codespaces that you have in your repository. They will usually be given random, meaningless names to help GitHub uniquely identify them. Click this name, and you will be able to resume where you left off.*

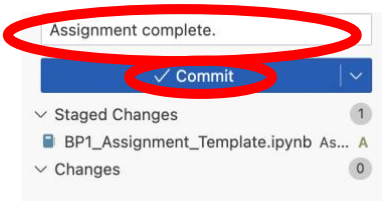


8. Once you have completed your assignment, you must then proceed to submit it. To do this click the **Source Control** button on the leftmost tab (a fork symbol), and you will see that – because you have made changes to your assignment template file – a sub-menu titled **Changes** will appear, and under it will be your assignment template file with a small green **U** to the right of it. This means that there are unstaged changes that have not yet been pushed back to your repository.

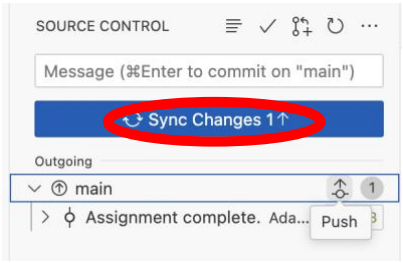


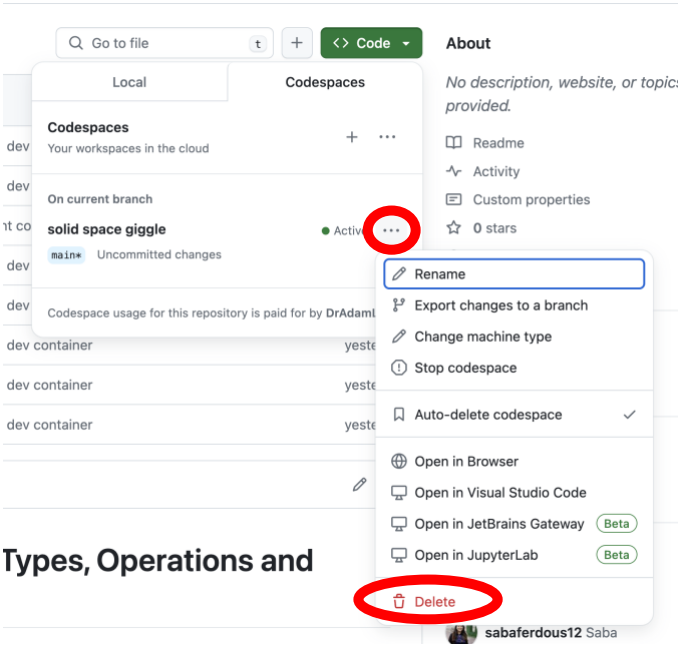
You must first stage a change, commit it and then push this change back to your repository in order to submit your assignment. If you mouse-over the title of the document, you will see a **+** symbol appear. Click this **+** symbol, and it will stage the changes made to your assignment.

9. Once staged you must commit the changes, and add a commit message. GitHub is based around an efficient version control system, which allows you to add messages to every change made to a file, and keeps a detailed history of all changes made, so that you can easily see every version of a file, at the different stages at which it was worked upon and edited. Click in the **Message** cell, write down a relevant commit message (i.e. 'Assignment completed'), and hit the blue **Commit** button.



10. In order to complete the submission process, you must push your completed assignment back to your repository, and it will register with us that you have submitted the assignment. Click the blue **Sync Changes** button, in order to push your changes back to your repository, and register a submission.





11. After you have submitted your assignment, the final step is to delete your codespace. **You must do this**, as having too many active codespaces places heavy strain on your GitHub account. To delete your codespace, go back to your main repository, click the green **Code** button, and select the **Codespaces** tab. Find your active codespace(s), click the three dots **...** beside it, and select **Delete** from the dropdown menu.

Initially, for users new to GitHub, this workflow may seem a little daunting. But we encourage you to keep this handbook to hand, so that you can get used to this system of submitting assignments. At L2D, we

Types, Operations and

have selected this protocol for assignment submission to familiarise learners with GitHub's infrastructure so that – for those who pursue coding in the future – you will be armed with the knowledge of how to use a platform and system for code sharing, collaboration and publication that is recognised and used, internationally.

8. Local Assignment Completion:

For those who wish to bypass the previously outlined Codespace method, or work on their assignments without an active internet connection, this tutorial video will outline how to use Microsoft Visual Studio Code to open a locally-cloned copy of your GitHub repository, and commit and push your assignments back to your GitHub lesson repository, in order to submit them.

Please watch the following tutorial video in order to complete your assignment submission:

https://youtu.be/A-RRXSKJSQo

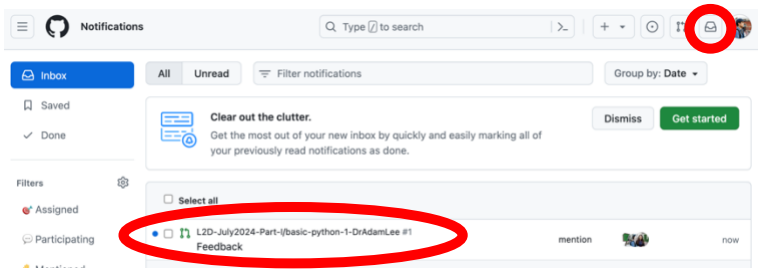
The pre-requisite installation requirements and links referenced in the video are:

1. Anaconda installation: https://docs.anaconda.com/anaconda/install/
2. Git installation (if necessary): https://github.com/git-guides/install-git
3. SSH Key generation: https://docs.github.com/en/authentication/connecting-to-github-with-ssh/generating-a-new-ssh-key-and-adding-it-to-the-ssh-agent

9. Marks & Pull Requests:

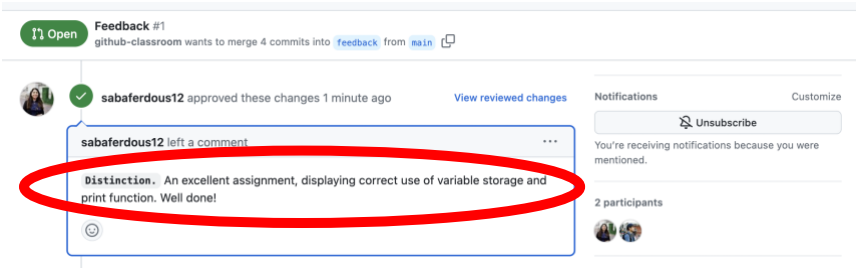
Once your assignment has been marked, it will be returned to your repository by your L2D tutor within 14 days of timely submission. The file will have **_MARKED** appended to its title, just before the file extension, and will be returned to the **Feedback** folder on your lesson repository. Inside your notebook, you will find comments initialled by your tutor in your work and code, indicating your progress. For example, a line commencing with # AL: would indicate that your tutor (initials AL) is leaving you in-line feedback.

Also inside your Feedback folder, you will see a ReadMe file, which explains each grade boundary, and how these grades reflect the application and understanding demonstrated in your work. Your L2D assignments are



assigned one of three grades: **Distinction**, **Pass** or **Revise**.

Your L2D tutor will also leave a summary comment on your work, and grade as a GitHub Pull Request. Once this has been submitted, you will receive a notification in your GitHub inbox (top right of any GitHub window), and you will also receive an email to your GitHub-registered email address, indicating that a Pull Request has been submitted by your tutor. If you received a Distinction or Pass, no further action is required, on your behalf. However, should you receive a Revise for your work, you are expected to re-attempt your assignment, as per your tutor's guidance, and re-submit this within 14 days of receiving your marked assignment.

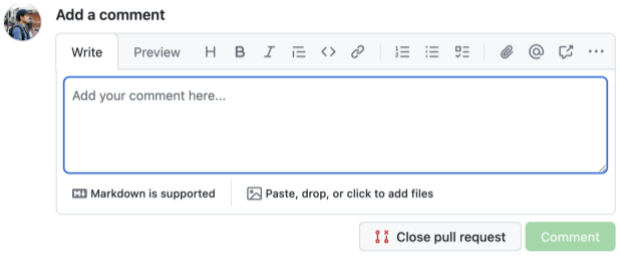


Model Solutions: Should you receive a Pass or Distinction, you will receive a solutions document, pushed back to your **Feedback** folder, that will contain model solutions for the assignment in question. If your assignment was graded Revise, you will not receive this solutions document, until you have revised your assignment sufficiently to either a Pass or Distinction.

Revising an Assignment: Just as previously described for submitting an assignment, you are required to use your Codespace to open the marked assignment that was returned to you by your L2D Tutor.

1. Make a copy of this by right-clicking the file name in the browser tab on the left of your Codespace window, and click **Copy**. Right-click again, and click **Paste**. Right-click the copy of your assignment, and click **Rename** and replace **_MARKED** with **_REVISED**.

2. Revise your assignment, as advised by your Tutor, and when you have completed your revisions, submit your revised assignment in the same way as you have done before, by staging the stages, committing and pushing your _REVISED notebook with a sensible commit message (such as 'Assignment revised.').



3. Once you have pushed and submitted your assignment, go back to the Pull Requests tab, find the Feedback left by your tutor, scroll down and you will see a blank **Add a comment** field. In this, reply to your tutor, saying you have revised your assignment, and your tutor will automatically be notified of your revisions. *Please note, this step is critical. Without it, your tutor won't be notified that you have submitted a revised assignment, and will not know to re-mark this*.

Once your assignment has been revised, it will be returned to you in the same way, with your tutor adding a comment to the same Pull Request, culminating in you receiving a

notification and email. Once your assignment has achieved either a Distinction or a Pass, you will not be required to submit any further revisions.

Please note: as previously advised, please be sure to submit your revised assignment within 14 days of receiving your mark from your tutor. Delayed assignment and/or revision submissions will not be prioritised by our tutors, and if the workload for them is high, this may (without reported extenuating circumstances) result in delayed issuing of certificates for your completion of the L2D course.

10. Contact us:

There are a multitude of ways that you can reach the staff at L2D.

1. If your query is academic, we recommend posting it (with as much information as possible) on the **GitHub Discussions** forum.
2. You can reach tutors for direct 1-to-1 support, by booking a support session, as outlined in section 8 of this handbook.
3. If your query relates directly to a marked assignment, you can submit a pull request, in direct response to the feedback comment left for you by your tutor under the **Pull Requests** menu, at the top of your GitHub repository page.
4. If you have more general course queries please contact admin@learntodiscover.ai *via* email, and if queries are academic in nature, they will be forwarded to the relevant course academic.