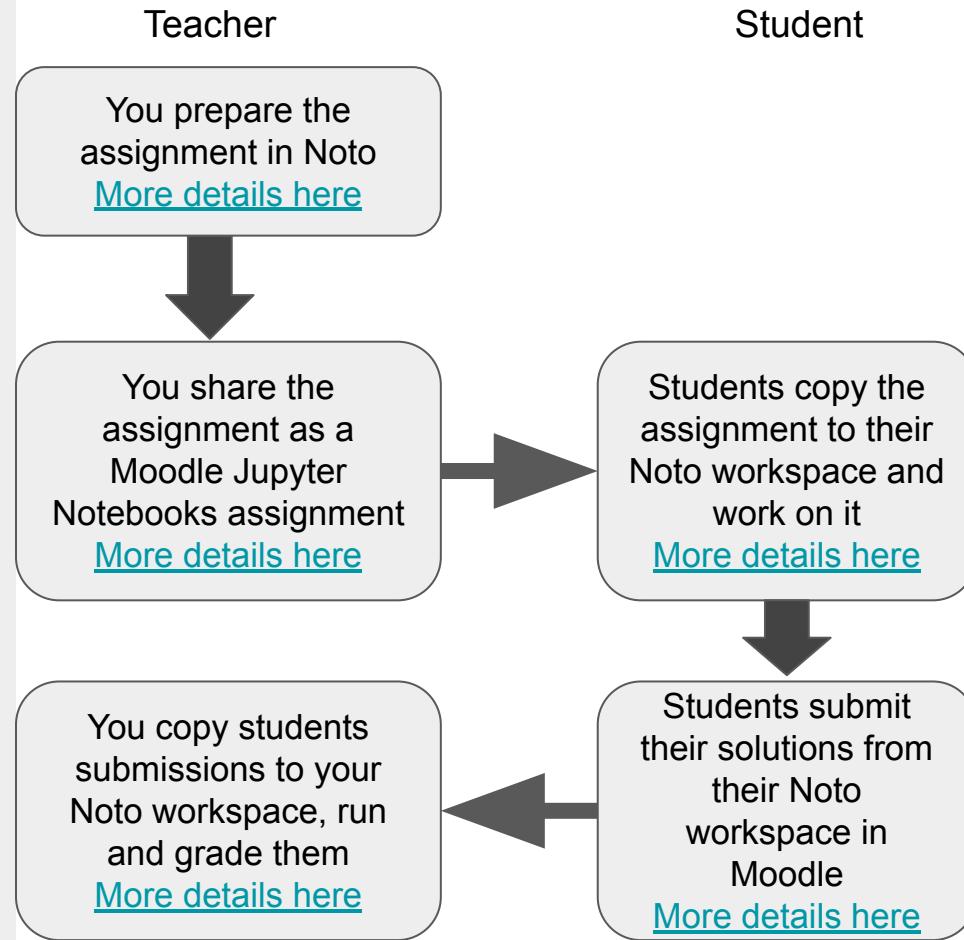


Sharing Notebook Assignments through Moodle

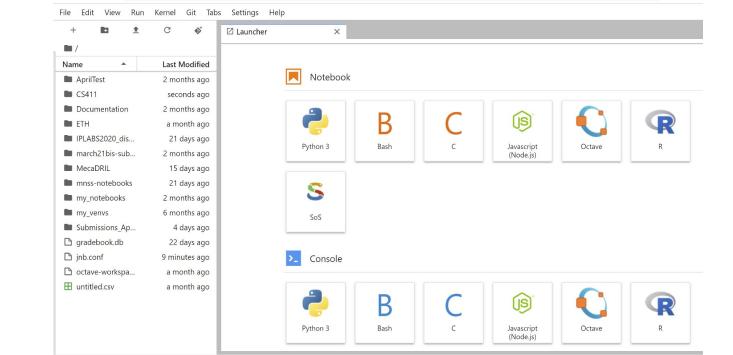
If you would like your students to do assignments in **Python, R, C or Octave**, you can assign them the files from your Noto workspace through Moodle, which they can copy to their Noto workspace, write and execute their code online and submit it via Moodle.

Note: it is best if you use a computer or a laptop (**not** a tablet or a smartphone).



You prepare the assignment in Noto

1. Go to <https://noto.epfl.ch> on your web browser
2. Connect with your GASPAR login and arrive on your personal online workspace (image top right).
3. Create the assignment notebook with the instructions and the code snippets. For instance, provide learning objectives (image middle right) and points for each question (image bottom right). For further guidelines on how to create good exercise and lab assignment notebooks along with examples, see here.



A screenshot of a Jupyter Notebook cell. It contains a box titled "Learning Objectives" with the following text: "After solving this notebook you will be able to use R to - • Determine the descriptive statistics of the variables in a data set. • Transform quantitative variables into categorical variables. • Compare the performance of two groups using the appropriate statistical test to check for difference". Below this is a section titled "The MOOC dataset" with the text: "The data we use in this document to demonstrate the use of basic statistics is about students' performance in academic exams (e.g. the algebra course taken at the university) and their activity online in a related Massive Open Online Course (e.g. the algebra MOOC). The general question we try to answer is: what is the relation between the use of the MOOC by students and their academic achievement." A question is also listed: "Question: Does the use of MOOCs help succeed in courses ? Do only good students use the MOOCs ? Are MOOCs more helpful for better students ? (15 points)".

A screenshot of a Jupyter Notebook showing two cells. The first cell has a pink header bar with the text "Task 5 : Plot the means for the EPFL_CourseGrade given the prior grade level. (2 points)". The code in the cell starts with "# Begin Solution". The second cell has a pink header bar with the text "Task 6 : Compare the means of EPFL_CourseGrade. (5 points)". The code in this cell also starts with "# Begin Solution". Both cells end with "# end Solution".

Organising notebooks

1. Notebooks can be **renamed** and **organized** into folders just as you would do on a computer.
2. The left pane of the window lets you create new folders and move files by drag and drop, by using the toolbar or by right-clicking on elements.
3. You can create a folder for your course (eg. called “CS411”), a notebook associated with a lab or assignment (“CS411-stats-exercices.ipynb” in the image shown on the right) and share this with the students through Moodle. You can also include associated files, such as data, in the same folder.



Share the notebook as an assignment in Moodle

1. Add an assignment in Moodle by clicking on “**Add an activity or resource**”
2. Select the *submission type* as “**Jupyter Notebooks**”.
3. Provide a meaningful name to the assignment.
4. The directory tree of your Noto workspace will become visible. Select the folder you want to share with your students (“Anova” in this example)
5. In the *Feedback Types*, select “**Jupyter Notebooks**” and “**Offline grading worksheet**”.
6. Upon saving the assignment it appears in the relevant section on the course Moodle page.

The screenshot shows the Moodle 'Edit' screen with the 'Add an activity or resource' button highlighted (step 1). The 'Submission types' section (step 2) has 'Jupyter notebooks' checked. The 'Assignment name' field (step 3) contains 'Anova'. The 'Source folder' section (step 4) shows a directory tree with 'Anova' selected under 'Assignments'. The 'Feedback types' section (step 5) has 'Offline grading worksheet' and 'Jupyter notebooks' checked. The final step (step 6) shows the assignment listed in the 'Statistical Analysis' section of the course page.

1 → + Add an activity or resource

Statistical Analysis

Submission types

Assignment name

Source folder

This is your Jupyter workspace. Please select the folder containing your assignment.

Feedback types

Comment inline

Statistical Analysis

Anova

Online text

File submissions

/Assignments/Anova

jnb.conf

Documentation

my_venvs

my_notebooks

Assignments

Anova

Feedback comments

Annotate PDF

Jupyter notebooks

Offline grading worksheet

No

Analysis of variance

Edit

Create a Noto assignment without a starting notebook

1. Add an assignment in Moodle using “**Add an activity or resource**”
2. Choose the *submission type* as “Jupyter Notebooks”
3. Do not select any folder from the Noto directory tree so that the “Source Folder” text box is empty.
4. Provide instructions as you normally do for any Moodle assignment (either in the “Description” textbox or as an attached file).
5. In the *Feedback Types*, select “**Jupyter Notebooks**” and “**Offline grading worksheet**”.
6. Upon saving the assignment it appears in the relevant section on the course Moodle page. This will allow students to directly submit notebooks from their workspace.

The screenshot shows the Moodle assignment creation interface with various configuration steps highlighted by numbered teal circles:

1. A large teal arrow points to the “Add an activity or resource” button in the top right corner.
2. A teal circle highlights the “Jupyter notebooks” checkbox under “Submission types”.
3. A teal circle highlights the “Source folder” dropdown menu, which is currently empty.
4. A teal circle highlights the “Feedback types” section, showing “Jupyter notebooks” and “Offline grading worksheet” selected.
5. A teal circle highlights the “Statistical Analysis” section, showing “Analyse MOOC data” selected.

Students copy the assignment to their Noto Workspace

1. When students click on the name of the assignment in Moodle they will see an option “Get a copy of the assignment”.
2. When they click on this link they will be shown the directory tree of their Noto workspace. They click on the folder where they want to save the assignment and click on “Copy assignment”. The assignment will appear in their Noto workspace.

The screenshot shows the Noto workspace interface. At the top, there is a "Submission status" card with the following information:

Submission status	No attempt
Grading status	Not graded
Due date	Tuesday, 8 June 2021, 12:00 AM
Time remaining	6 days 8 hours
Last modified	-

Below this is a "Jupyter notebooks" section with a link "Get a copy of the assignment" and a teal arrow labeled "1" pointing to it. Further down is a "Submission comments" section with a link "Comments (0)".

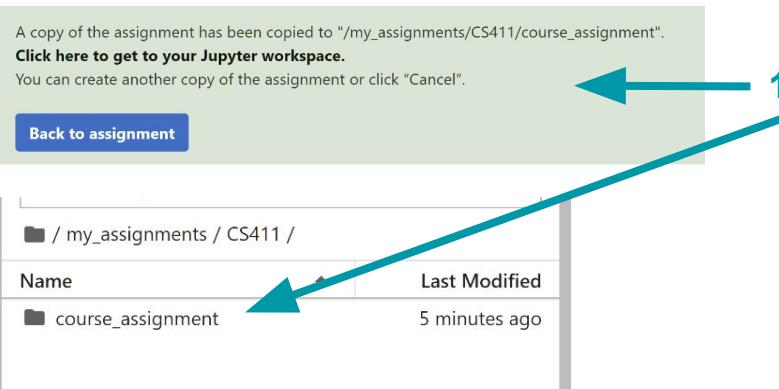
At the bottom, a modal dialog is open, titled "Destination folder". It shows a file tree structure:

- /my_assignments/CS411
 - jnb.conf
 - Documentation
 - my_venvs
 - my_notebooks
 - my_assignments
 - my_submission2
 - course_assignment
 - CS411

A teal arrow labeled "2" points to the "CS411" folder in the tree. A large teal oval encloses the entire tree structure. At the bottom of the dialog are three buttons: "Refresh tree", "Copy assignment", and "Cancel".

Students work on the assignment in their Noto workspace

1. The assignment will be copied to their Noto workspace and appear there.
2. The students work on the notebook in Noto as per the instructions provided within the notebook and add/modify code as required.



A screenshot of a Jupyter Notebook interface. The title bar says "CS411-stats-exercises.ipynb". The notebook content includes a section titled "How to use this notebook?" with two bullet points:

- This notebook is made of text cells and code cells. The code cells have to be **executed** to see the result of the program. To execute a cell, simply select it and click on the "play" button (▶) in the tool bar just above the notebook, or type `shift + enter`. It is important to execute the code cells in their order of appearance in the notebook.
- To improve readability, it can be useful to **hide** cells from the notebook (e.g. long code cells). To hide a cell, select it and click on the blue bar which appears on its left. To make the cell visible again, just click again on the blue bar, or on the three "dots" which represent the collapsed cell.

A large teal arrow labeled "2" points from the bottom left towards this section.

The MOOC dataset

The data we use in this document to demonstrate the use of basic statistics is about students' performance in academic exams (e.g. the algebra course taken at the university) and their activity online in a related Massive Open Online Course (e.g. the algebra MOOC). The general question we try to answer is: what is the relation between the use of the MOOC by students and their academic achievement.

Question: Does the use of MOOCs help succeed in courses ? Do only good students use the MOOCs ? Are MOOCs more helpful for better students ?

As a general remark, we should note that because we did not conduct a controlled experiment with random assignment of subjects to experimental groups, we cannot establish any causal relationships between MOOC use and academic performance. Rather, we use statistical tools to "explore" data.

Students submit the solutions from their Noto workspace in Moodle

1. Students click on the name of the assignment in Moodle to add their modified or created files as submission.
2. They are shown the directory tree of their Noto workspace and they select the folder they want to submit.

Submission status	
Submission status	No attempt
Grading status	Not graded
Due date	Tuesday, 8 June 2021, 12:00 AM
Time remaining	6 days 7 hours
Last modified	-
Jupyter notebooks	Get a copy of the assignment
Submission comments	Comments (0)

The screenshot shows the Moodle submission interface for a Jupyter workspace. At the top, there is a large 'Add submission' button with a circled number '1' above it. Below this, a message reads: 'This is your Jupyter workspace. Please select the folder you want to submit.' A circled number '2' is next to a dropdown menu showing the directory tree: /my_assignments/CS411/course_assignment. The tree includes 'jnb.conf', 'Documentation', 'my_venvs', 'my_notebooks', 'my_assignments' (which contains 'my_submission2' and 'course_assignment'), and 'CS411' (which contains 'course_assignment'). A 'Refresh tree' button is at the bottom.

Students submit the solutions from their Noto workspace in Moodle

1. Students click on “Save Changes” and their assignment status changes to “Submitted for grading”.
2. They can view or download a copy of their submission if they wish.

Submission status

Submission status	Submitted for grading	1
Grading status	Not graded	
Due date	Tuesday, 8 June 2021, 12:00 AM	
Time remaining	6 days 7 hours	
Last modified	Tuesday, 1 June 2021, 4:40 PM	
Jupyter notebooks	Get a copy of the assignment View your submission	2
Submission comments	Comments (0)	

You copy the assignments from Moodle to your Noto workspace (per student)

1. When you click on the assignment name in Moodle, you should be able to see the number of submissions made. Click on the “**View all submissions**” to view and grade the submissions.
2. A list of students in the class is displayed with the link to view the notebooks of those who submitted. Click the link “**View submission**” to download the submission of the students you wish.
3. You will see your Noto directory tree. Specify the folder to copy the submissions into and click the “**Copy submission**” button.

Analyse MOOC data

Grading summary

Hidden from students	No
Participants	2
Submitted	1
Needs grading	1
Due date	Tuesday, 8 June 2021, 12:00 AM

Time remaining: 6 days 6 hours

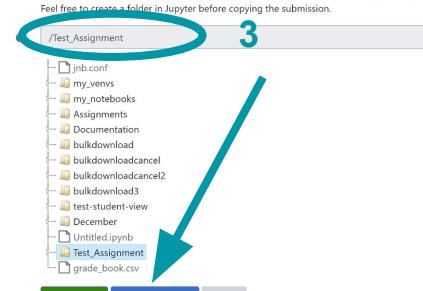
1 

Test 2 User test2@epfl.ch Submitted for grading Grade Edit Sunday, 26 September 2021, 7:39 PM Get a copy of the assignment View submission 2

Test 3 User test3@epfl.ch No submission Grade Edit

Below is a view of your Jupyter workspace. Please select the folder where to copy the submission. Feel free to create a folder in Jupyter before copying the submission.

Destination folder: moodle/jupyter

3 

EPFL

You copy the assignments from Moodle to your Noto workspace (multiple students together)

1. When you click on the assignment name in Moodle, you should be able to see the number of submissions made. Click on the “**View all submissions**” to view and grade the submissions.
2. A list of students in the class is displayed with the link to view the notebooks of those who submitted. Check the name of the students whose submission you want to download. Go to the dropdown menu titled “*With Selected...*”, select the option “**Upload submissions to Jupyter**” and Click on “**Go**”.

Analyse MOOC data

Grading summary

Hidden from students	No
Participants	2
Submitted	1
Needs grading	1
Due date	Tuesday, 8 June 2021, 12:00 AM
Time remaining	6 days 6 hours

1 **View all submissions** Grade

Select	User picture	First name / Surname	Email address	Status	Grade	Edit	Last modified (submission)	Jupyter notebooks	File submissions	Submission comments	Last mod (gr)
<input checked="" type="checkbox"/>		Test 2 User	test2@epfl.ch	Submitted for grading Graded	Grade 100.00 / 100.00	Edit	Monday, 13 December 2021, 12:29 PM	View submission		Comments (0)	Mo 13 Dec 2021, 12:29 PM
<input checked="" type="checkbox"/>		Test 3 User	test3@epfl.ch	Submitted for grading Graded	Grade 90.00 / 100.00	Edit	Monday, 13 December 2021, 12:28 PM	View submission		Comments (0)	Mo 13 Dec 2021, 12:28 PM

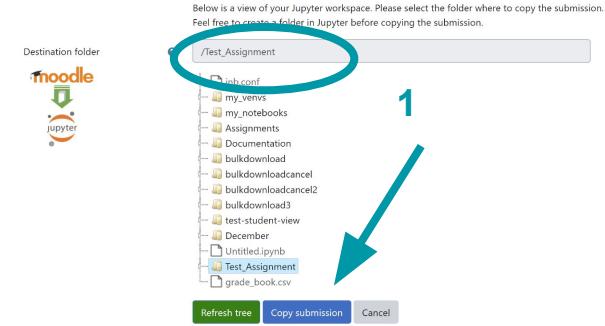
Notify students

With selected... **Upload submissions to Jupyter** Go 2

Lock submissions
Unlock submissions
Download submissions
Grant extension
Upload submissions to Jupyter
Unlink submissions

You copy the assignments from Moodle to your Noto workspace (multiple students together)

1. You will see your Noto directory tree. Specify the folder to copy the submissions into and click the “**Copy submission**” button.



You open the student's submissions in your Noto workspace and grade.

1. The submission is copied to your Noto workspace and will appear there. Since you selected the option “*Offline grading worksheet*” while creating the assignment, a gradebook folder is created along with the submission which contains a csv file.
2. Open the notebook inside the submission folder. Evaluate the students solutions for the assigned tasks by running the relevant cells.

A copy of the student submission has been copied to "/Assignments/Anova/anova_student5".
[Click here to get to your Jupyter workspace.](#)

[Back to assignment](#)

1

2

/ Test_Assignment / descriptive-statistics_student5 /

Name	Last Modified
Data	an hour ago
gradebook	an hour ago
descriptive statistics.ipynb	an hour ago

descriptive statistics.ipynb

Display the first few Lines of the dataset
sample_data.head()

	petal_length
0	6.0
1	5.9
2	5.5
3	5.7
4	5.4

* Write a code to plot the descriptive statistics of the data

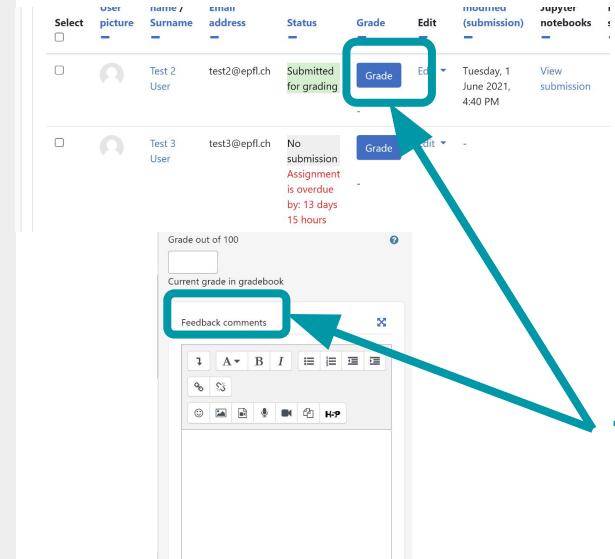
[4]: # write your code here
np.mean(sample_data[["petal_length"]])

[4]: 5.400000000000001

[]:

You open the student's submissions in your Noto workspace and grade.

1. It is good practice to provide feedback about students errors, both in their conceptual understanding and their implementation. You can do this by leaving comments in Moodle by clicking on the “Grade” button in the submissions list.
2. An easier way for you is to record your grade and comments in the “Feedback Comments” column of the gradebook. You can then directly upload this information on Moodle.



				Feedback
1	60	100	Yes	13/12/2021 12:... - Think about the implementation
+				

2

You enter the grade for students assignments in Moodle

1. Once you have edited the gradebook csv files of all the students, you can create a compound file containing the grades of all the students using the following *bash* command in Noto:

```
for csv in $(find -type f -name  
'*_grading.csv' | sort); do cat ${csv};  
done | sort -u > grade_book.csv
```

This will create a file called *grade_book.csv* within the assignment folder. Download this to your computer.

2. On Moodle, click the name of the assignment and then click on “View All submissions”. Then select all the submissions.

3. From the dropdown menu at the top select “Upload grading worksheet”.

Descriptive Statistics

Grading action Choose... Choose... Download all submissions Download grading worksheet Upload grading worksheet

Select	User picture	First name / Surname	Email address	Status	Grade	Edit	Last modified (submission)	Jupyter notebooks	File submissions	Submission comments	Last mo (gr)
<input checked="" type="checkbox"/>		Test 2 User	test2@epfl.ch	Submitted for grading Graded	<input type="text" value="100.00"/> / 100.00	<button>Grade</button>	Monday, 13 December 2021, 12:29 PM	View submission	Comments (0)	Mo 13 Dec 2021, 12:29 PM	
<input checked="" type="checkbox"/>		Test 3 User	test3@epfl.ch	Submitted for grading Graded	<input type="text" value="90.00"/> / 100.00	<button>Grade</button>	Monday, 13 December 2021, 12:28 PM	View submission	Comments (0)	Mo 13 Dec 2021, 12:28 PM	

2

You enter the grade for students assignments in Moodle

1. Upload the file.
2. Check the option to “Allow updating records that have been modified more recently in Moodle than in the spreadsheet.”
3. Click on the “Upload Grading worksheet” button and the grades and feedback comments are uploaded to each student.

The screenshot shows the 'Descriptive Statistics' page in Moodle. At the top, there is a heading 'Descriptive Statistics' and a section title 'Upload grading worksheet'. Below this, there is a file upload input field labeled 'Choose a file...' with a maximum size of 1GB. A file named 'rade_bdd.xlsx' is selected, indicated by a red box labeled '1'. Underneath the file input, there are fields for 'Encoding' (set to 'UTF-8') and 'Separator' (set to 'Comma'). A checkbox labeled 'Allow updating records that have been modified more recently in Moodle than in the spreadsheet.' is checked, indicated by a red box labeled '2'. At the bottom of the form is a blue 'Upload grading worksheet' button, which is also highlighted with a red box labeled '3'. A status message at the bottom says 'There are required fields in this form marked with *.'

Getting help on noto

If you need support on noto:
noto-support@groupe.epfl.ch

- If you need **specific libraries**, please test if they are already installed on noto.
If not, please send us an email:
noto-support@groupe.epfl.ch
- If your class has **more than 50 students, please let us know** so that we can assist and monitor the load on the server.

More information on noto:
<http://go.epfl.ch/notebooks>