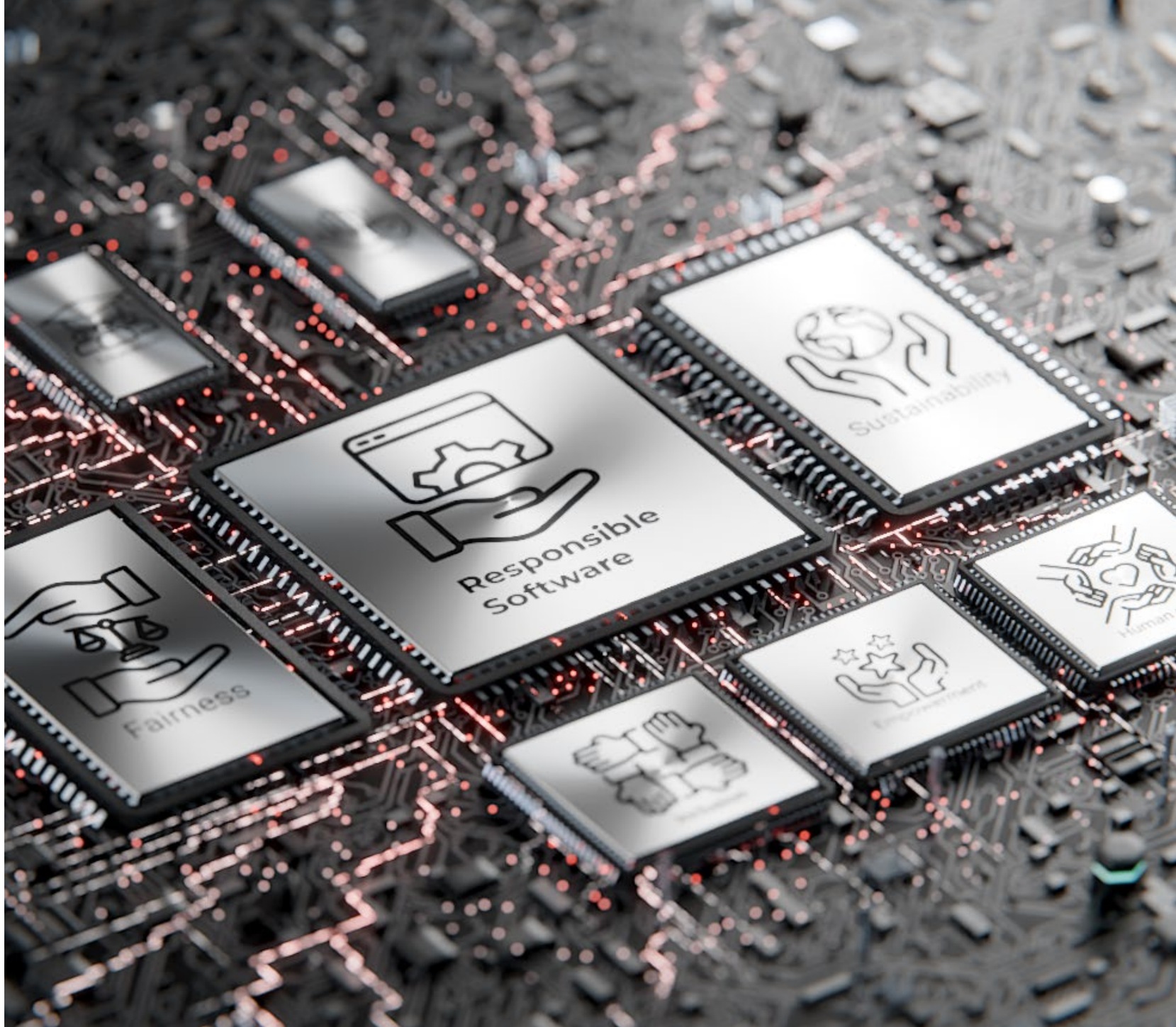
Getting Started

8 sept.

Cécile Hardebolle

Responsible Software



Agenda for today

1. Course format and logistics: important information!
2. Learning with videos
3. Working with Jupyter Notebooks
4. Getting started with case studies

Your instructor

Education:

- Engineer spe. Electrical Engineering and Computer Science
- PhD in Computer Science

Experience:

- Assistant Professor in Computer Science (6 years, Supélec, FR)
  + Teaching at Polytechnique Paris and Centrale Paris
- Pedagogical Advisor and Learning Scientist (11 years, EPFL)

Passionate about **computer science**, **ethics** and **learning**!

The Responsible Software Team

Have prepared all the material
+ will assist for the course:

- Noa Trojman
- Eugène Bergeron

- *Mattéo Berthet*
- *Florian Dufour*
- *Rose Ndanga Nya*
- *Athina Papageorgiou Koufidou*
- *Maxime Lelièvre*

Doctoral assistants:

- Yingxuan You
- Ayush Kumar Tarun

Student assistants:

- Camille Lannoye
- Mamoun Imghi
- Florian Kolly
- Elyes Trabelsi
- Elise Hueber
- Othmane Housni

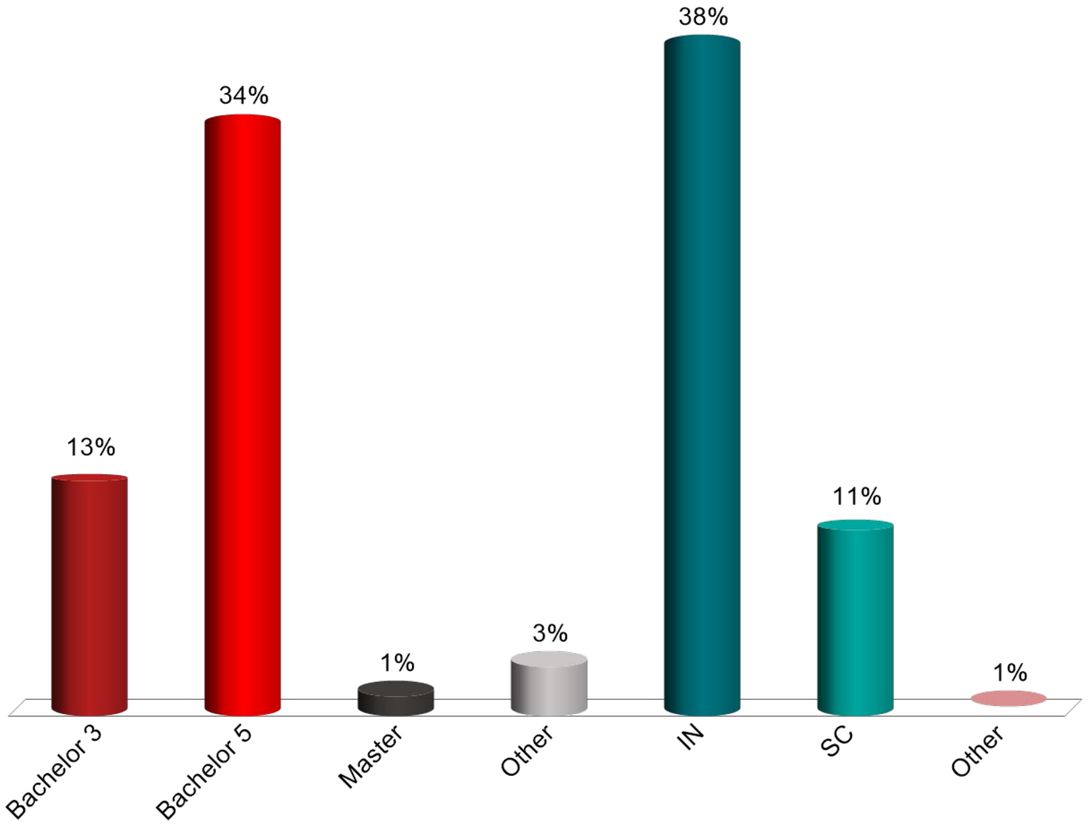
You are in:

URL: ttpoll.eu
Session ID: cs290

Select your **level** and your **section** (click on 2 options)

a. Bachelor 3
b. Bachelor 5
c. Master
d. Other

e. IN
f. SC
g. Other



Course format & logistics

Your prior experience with flipped classes:

21% a. I have attended several flipped classes

24% b. I have attended one flipped class

48% c. I have heard about it but never attended one

7% d. Never heard about it

URL: ttpoll.eu
Session ID: cs290

A specific pedagogical approach

- You study the **theory** at **home**
- The **practice** takes place **in class**

- 👉 Each week:
  - Starts with *practice* = programming exercises (with TAs)
  - Ends with *practice* = case studies (with me)

A typical “week”

Tuesday 10h15-12h: programming exercise

- Solution provided in the evening

By the next Monday:

- **Watch videos of theory & strategies + quizzes**
- Finish case studies from the previous week
- Finish programming exercises

Monday 15h15-17h: case studies

- Interactive polling session
- Group activities & questions
- Solution provided in the evening

Average of **5 videos / week**

Experience

Knowledge

Habits

A typical “week”

Date	Week	Lecture (Monday 15h15-17h) in STCC Cloud C	Exercise session (Tuesday 10h15-12h)	Independent study (due before the following Monday)
08/09	1	Getting started	Introduction notebook	Introduction videos and quizzes
15/09	2	Introduction cases (**in CO3**)	Safety 1 notebook	Safety 1 videos and quizzes
22/09	3	public holiday	Safety 2 notebook	Safety 2 videos and quizzes
29/09	4	Safety 2 cases	Fairness 1 notebook	Fairness 1 videos and quizzes
06/10	5	Fairness 1 cases (**in CO3**)	Fairness 2 notebook	Fairness 2 videos and quizzes
13/10	6	Fairness 2 cases	Graded notebook 1	-
20/10			Autumn break	
27/10	7	Graded 1 debriefing	Mock test	-
03/11	8	Mock test debriefing (**in CO3**)	Sustainability 1 notebook	Sustainability 1 videos and quizzes
10/11	9	Sustainability 1 cases	Sustainability 2 notebook	Sustainability 2 videos and quizzes
17/11	10	Sustainability 2 cases	Empowerment 1 notebook	Empowerment 1 videos and quizzes
24/11	11	Empowerment 1 cases	Graded notebook 2	-
01/12	12	Graded 2 debriefing	Empowerment 2 notebook	Empowerment 2 videos and quizzes
08/12	13	Empowerment 2 cases	Graded case	Conclusion videos and quizzes
15/12	14	Conclusion cases	Conclusion review	-
Revisions				
TBD	Exams	Written exam		

Overall schedule

Date	Week	Lecture (Monday 15h15-17h) in STCC Cloud C	Exercise session (Tuesday 10h15-12h)	Independent study (due before the following Monday)
08/09	1	Getting started	Introducti	nd quizzes
15/09	2	Introduction cases (**in CO3**)	Safety 1 n	uizzes
22/09	3	public holiday	Safety 2 n	uizzes
29/09	4	Safety 2 cases	Fairness 1	quizzes
06/10	5	Fairness 1 cases (**in CO3**)	Fairness 2 notebo	Fairness 2 videos and quizzes
13/10	6	Fairness 2 cases	Graded notebook 1	-
20/10			Autumn break	
27/10	7	Graded 1 debriefing	Mock test	-
03/11	8	Mock test debriefing (**in CO3**)	Sustainability 1 notebook	Sustainability 1 videos and quizzes
10/11	9	Sustainability 1 cases	Sustainability 2 notebook	Sustainability 2 videos and quizzes
17/11	10	Sustainability 2 cases	Empowerment 1 notebook	Empowerment 1 videos and quizzes
24/11	11	Empowerment 1 cases	Graded notebook 2	
01/12	12	Graded 2 debriefing	Empowerment 2 notebook	
08/12	13	Empowerment 2 cases	Graded case	
15/12	14	Conclusion cases	Conclusion review	
Revisions				
TBD	Exams	Written exam		

Graded assignments during the semester

Final assessment in exam session

Evaluation: during the semester

2 Graded notebooks: 8% each (16% total)

- At “home”
- Programming + open questions
- Individual – no group work allowed!
- Open book – no GenAI tool allowed!

Submission dates

- 14 October
- 25 November

1 Graded case study: 4%

- At “home”
- Open questions
- In small groups
- Open book – no GenAI tool allowed!

Submission date

- 9 December

Evaluation: final exam

Final exam: 80%

- In the **Winter exam session** (date TBD)
- Supervised in lecture hall, individual
- Pen and paper (QCM + case studies)
- Closed book, one A4 paper sheet allowed

Mock test
during the
exercise session
of **October 28**

⚠️ Changes compared to last year ⚠️

- 5 ECTS credits (was 4 previously)
  [without any increase of the content or workload!]
- Exam 80% + assignments 20% (was 60% + 40%)
- Assignments at “home” (were done in class)
- Exam in the Winter exam session (was end of the semester)

Double Deck - Difficulties with rooms

As you know, there is intense work on campus generating a lot of noise 👉 huge reduction in the number of usable rooms!

- Interactive lecture:
  - Mainly **STCC Cloud C**
  - ⚠️ In **CO3** on 15/09, 06/10 and 03/11

Rules for the STCC Cloud C auditorium

- Exhibitions happen in the same building (which is privately owned)
  👉Only use **entrances** and **facilities indicated “Cours EPFL”**

- Do **NOT eat or drink** in the auditorium
  and do **NOT leave any waste**

- In case you forget some belongings:
  “lost & found” located at the entrance
  of the auditorium

SwissTech
CONVENTION CENTER

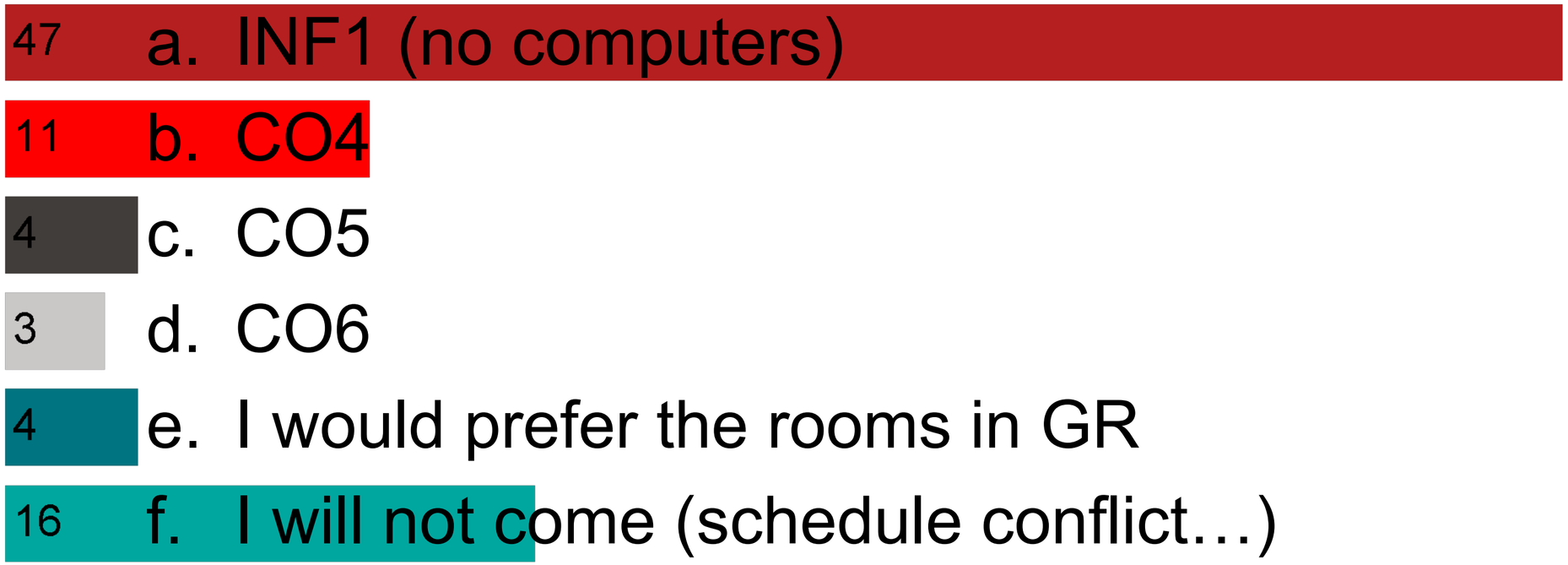
Double Deck - Difficulties with rooms

As you know, there is intense work on campus generating a lot of noise 👉 huge reduction in the number of usable rooms!

- Interactive lecture:
  - Mainly **STCC Cloud C**
  - ⚠️ In **CO3** on 15/09, 06/10 and 03/11
- Exercise sessions:
  - Rooms without computers: INF 1 (≈ 100 seats)
  - Rooms with computers (but risk of noise): CO4, CO5, CO6 (≈ 110 seats)
  - Rooms with computers (but hard to find): GRB001, GRC002 (≈ 75 seats)

For the exercise sessions (Tue. 10h15-12h)

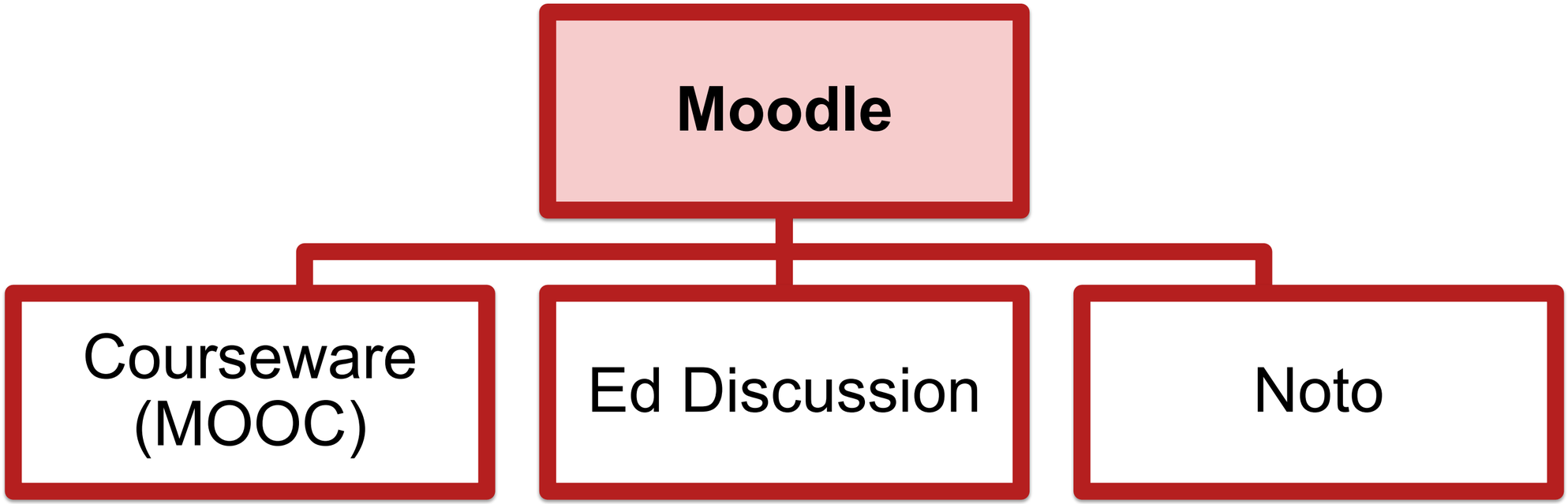
I intend to join the following room (select one option):



URL: ttpoll.eu
Session ID: cs290

The tools we use

https://go.epfl.ch/**CS-290**



Course Content (video, quizzes, notebooks, cases)

Communication & Questions

Jupyter Notebook environment

Learning with videos

Role of videos in the course

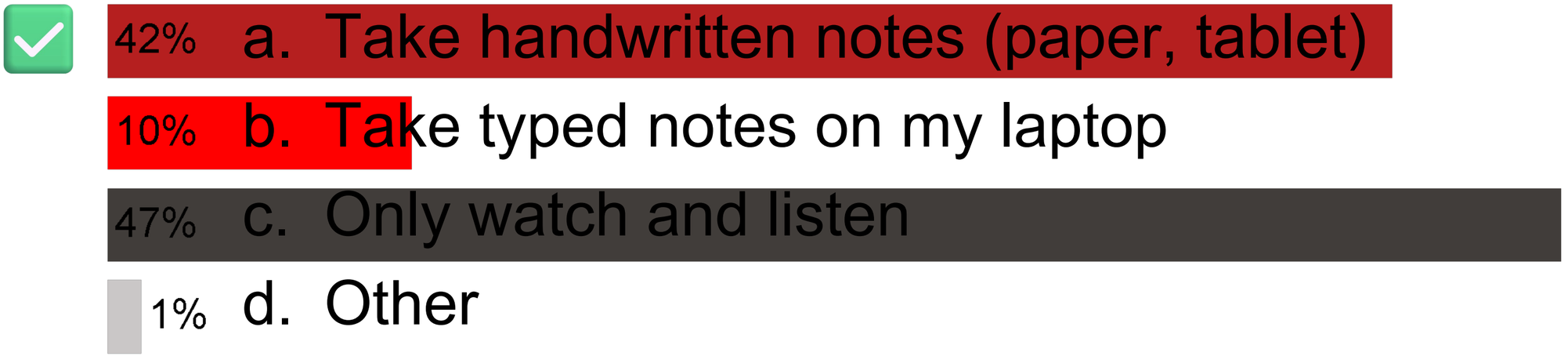
- Introduce the **theory**
  = technical and ethical *knowledge*

  👉 practice = **quizzes**

- Introduce **“strategies”**
  = *methodologies* for responsible software design

  👉 practice = **case studies**

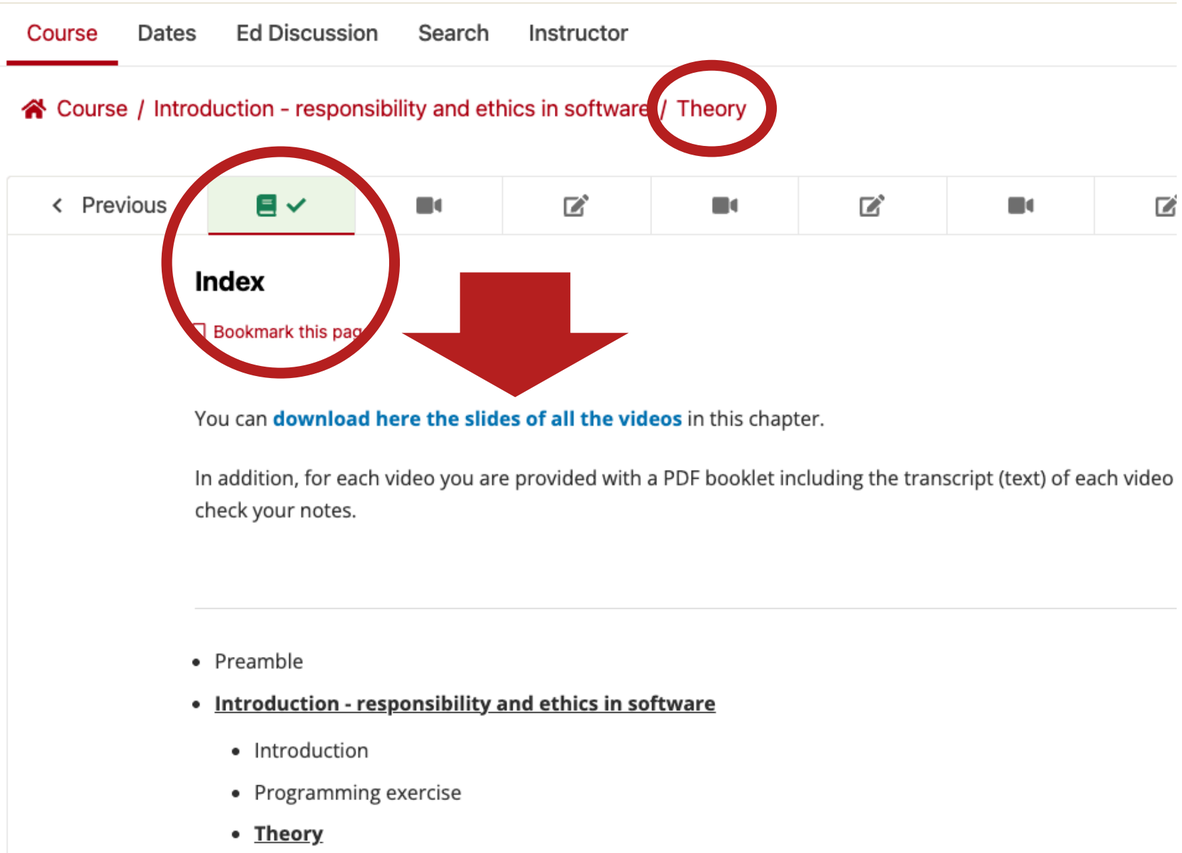
When watching the videos I will:



URL: ttpoll.eu
Session ID: cs290

Taking notes with videos

- Note **taking support**:
  - Blank page
  - Slides from the video



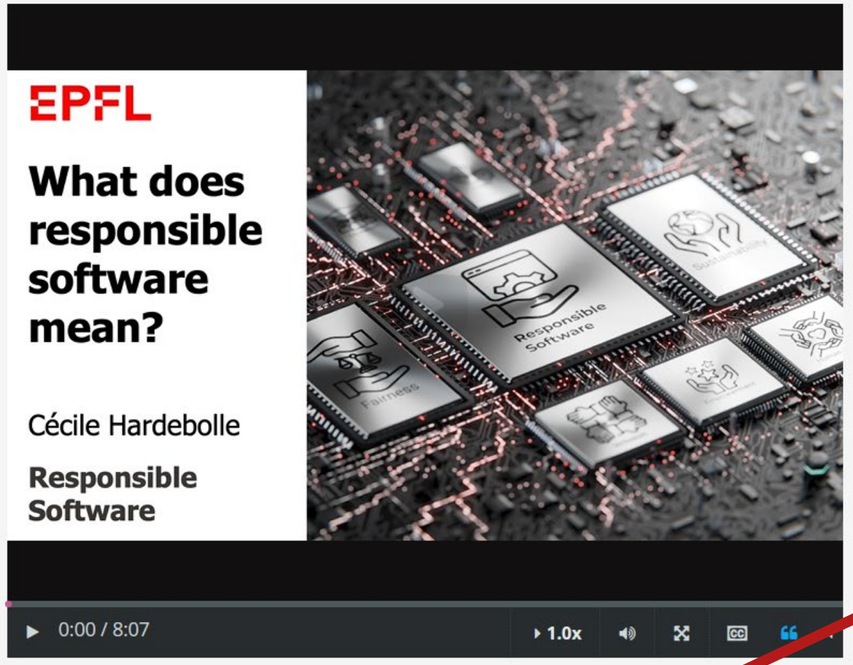
- Playing **speed**:
  - Adjust the speed to be able to take notes without pausing the video (as in a lecture)
  - Or regularly pause the video to note down important elements

Checking your notes

0.1 What does responsible software mean?

Bookmark this page

Watch:



Start of transcript. Skip to the end.

What does the term "responsible software" mean to you?

Pause this video for a second,

write down your answer on a piece of paper,

and then start again.

At the end of this video,

you should be able to explain what we mean by "responsible software" in this course.

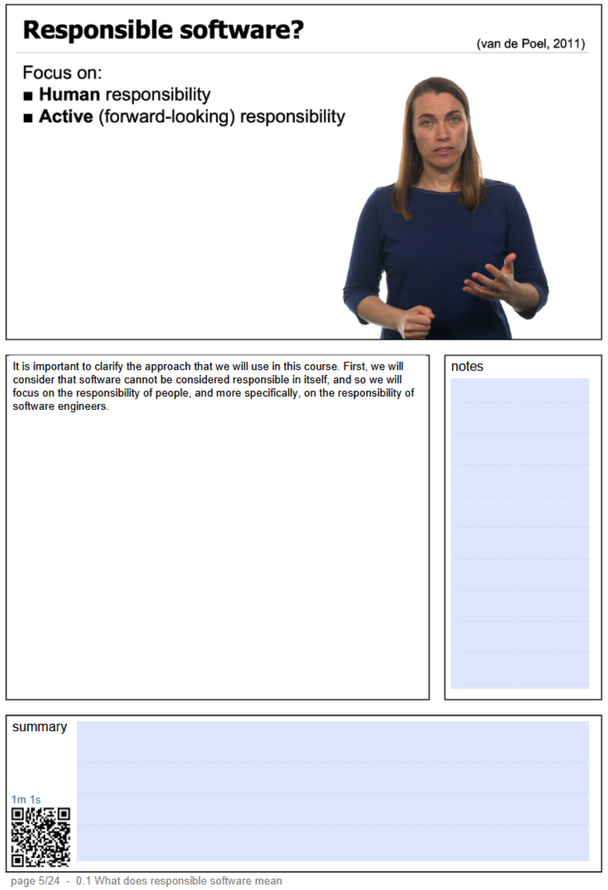
You should also be able to describe the core approach of the course

Video
Download video file

Transcripts
Download SubRip (.srt) file
Download Text (.txt) file

Download here the **PDF document** corresponding to the above video.

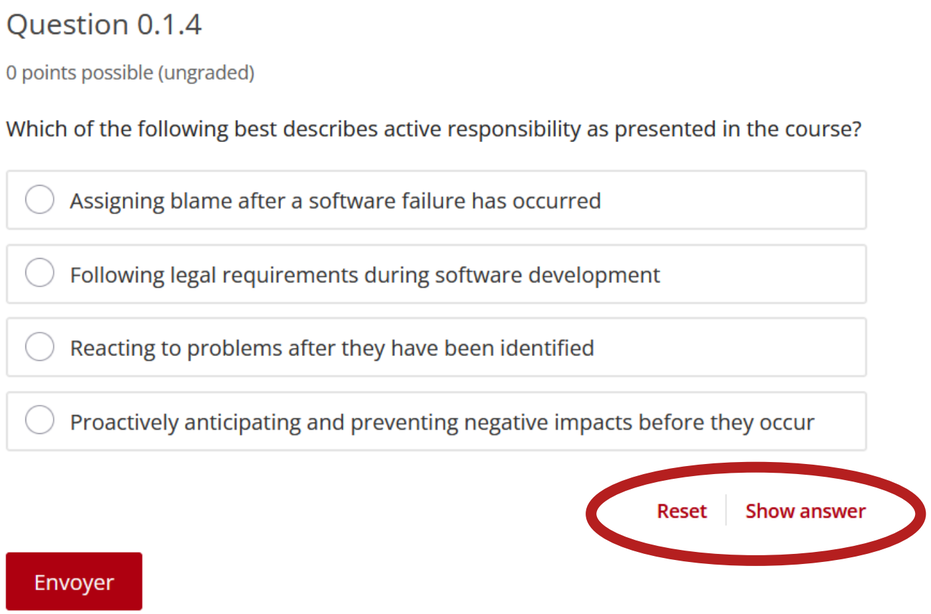
- BOOC = slides + transcript



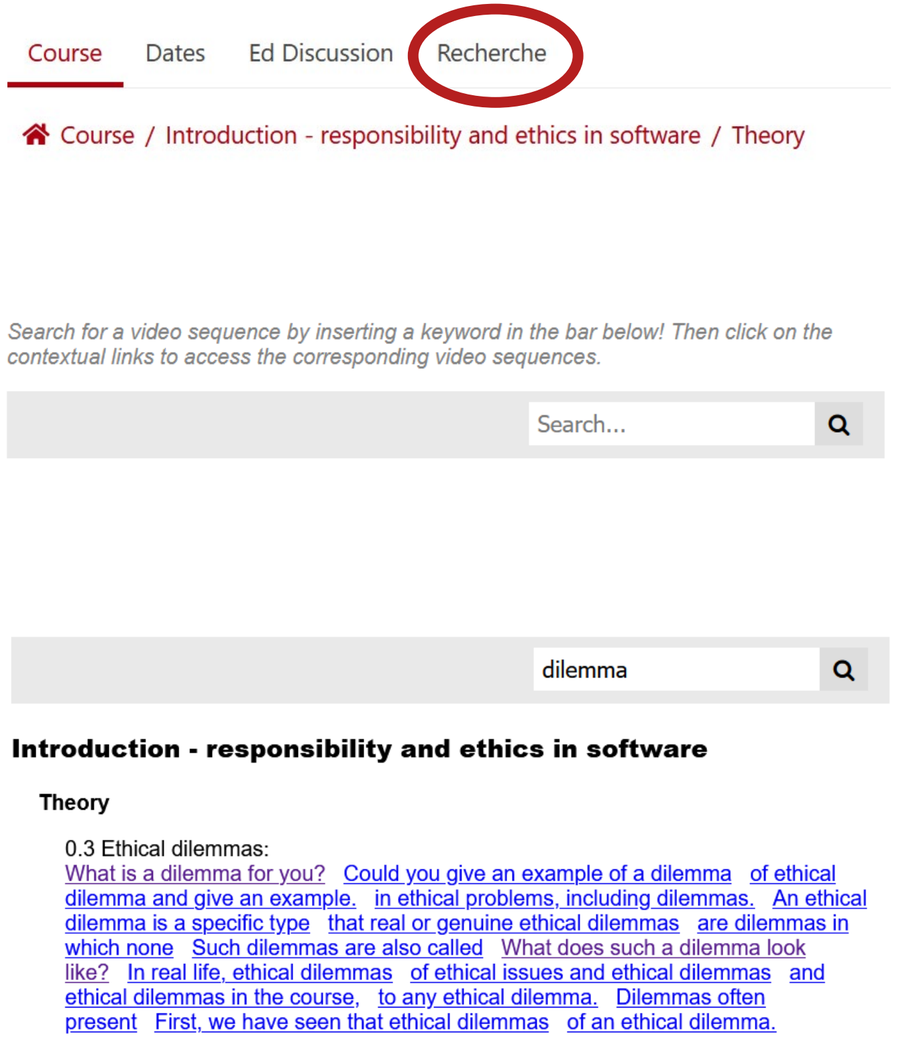
- Transcript

Reviewing content

- Interactive quizzes
  - With feedback
  - Once attempted: possibility to reset + show the answer



- Search tool for video content



Regarding the moment I will watch the videos:

✅

26% a. I will schedule a fixed weekly time slot

58% b. I will adapt each week depending on my workload

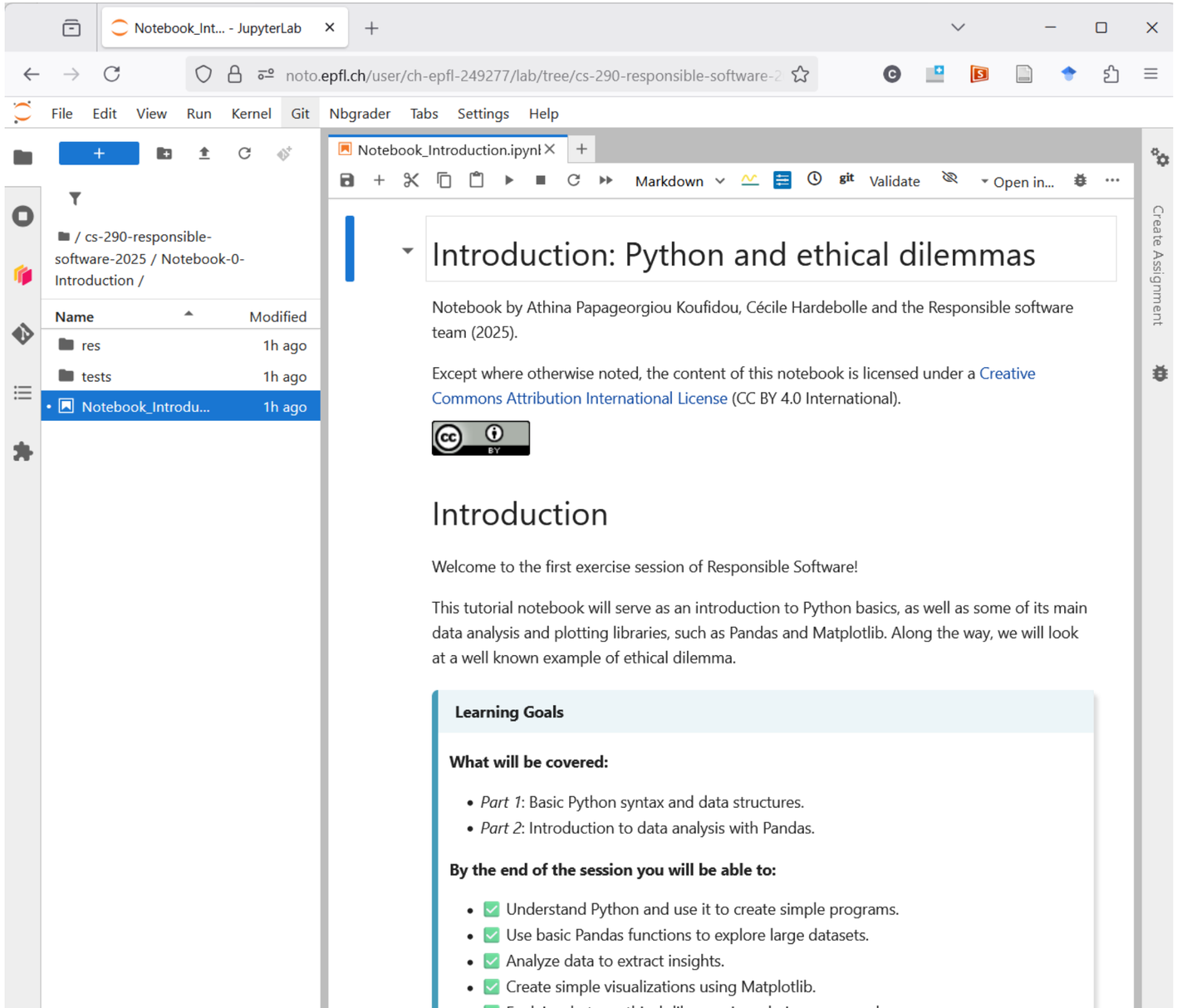
15% c. I don't know yet

0% d. Other

URL: ttpoll.eu
Session ID: cs290

Working with Jupyter Notebooks

Jupyter notebooks

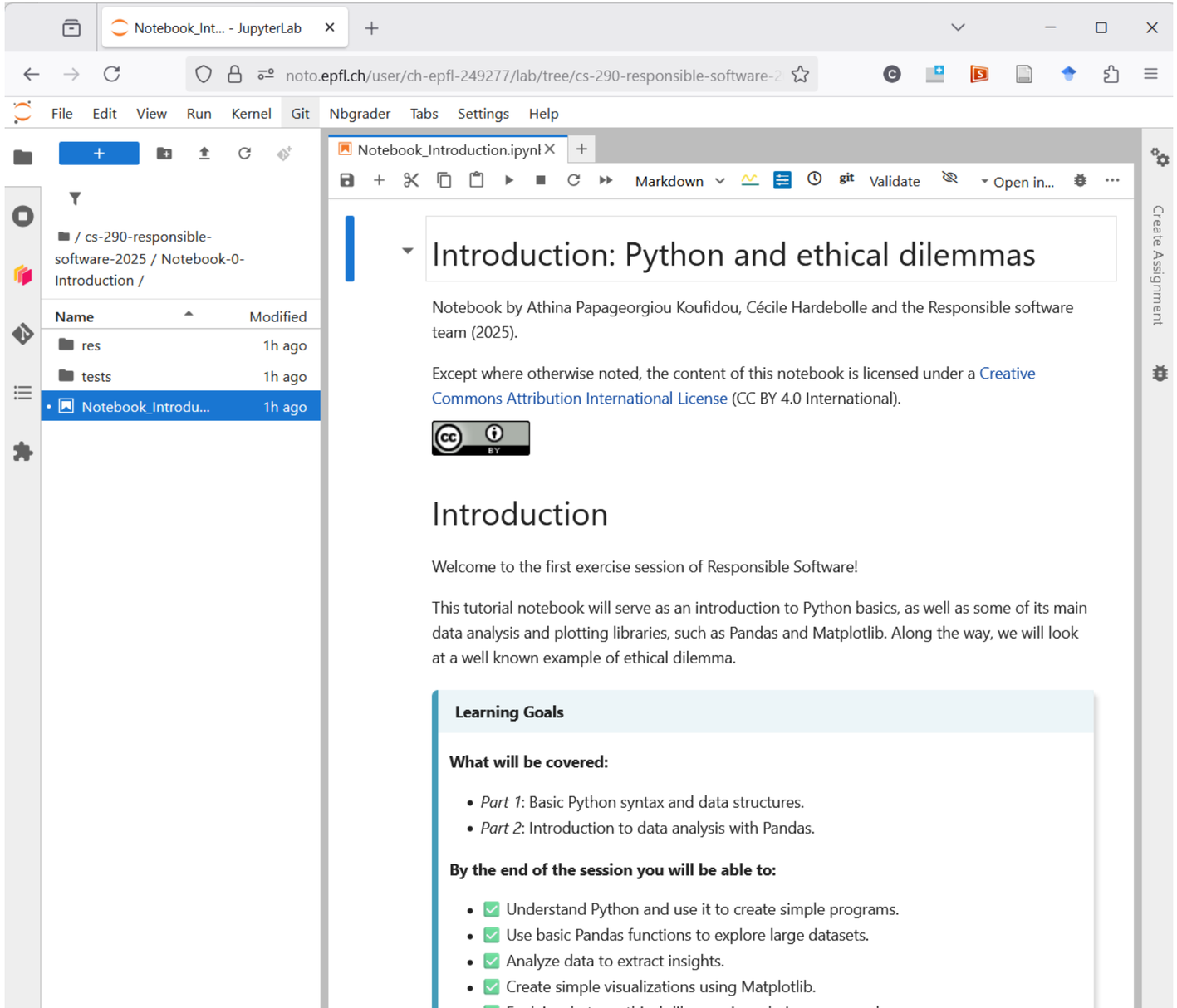


- **Interactive documents** with explanations and executable code

- Execute in a **browser** with http://**noto**.epfl.ch

  (you can use VS Code, but we don't provide support for it)

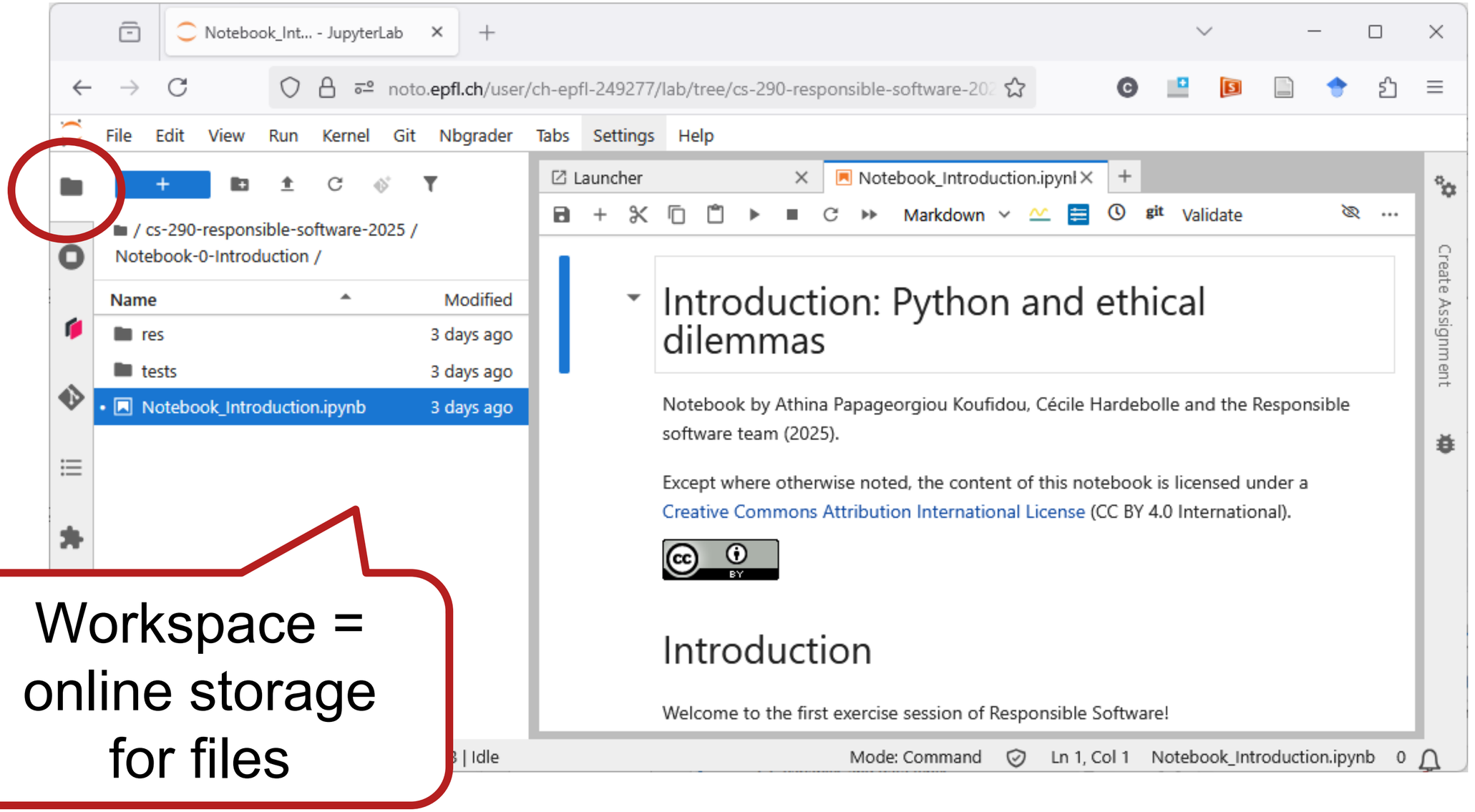
Weekly exercises with notebooks



- Best feature of the course according to last year's students!

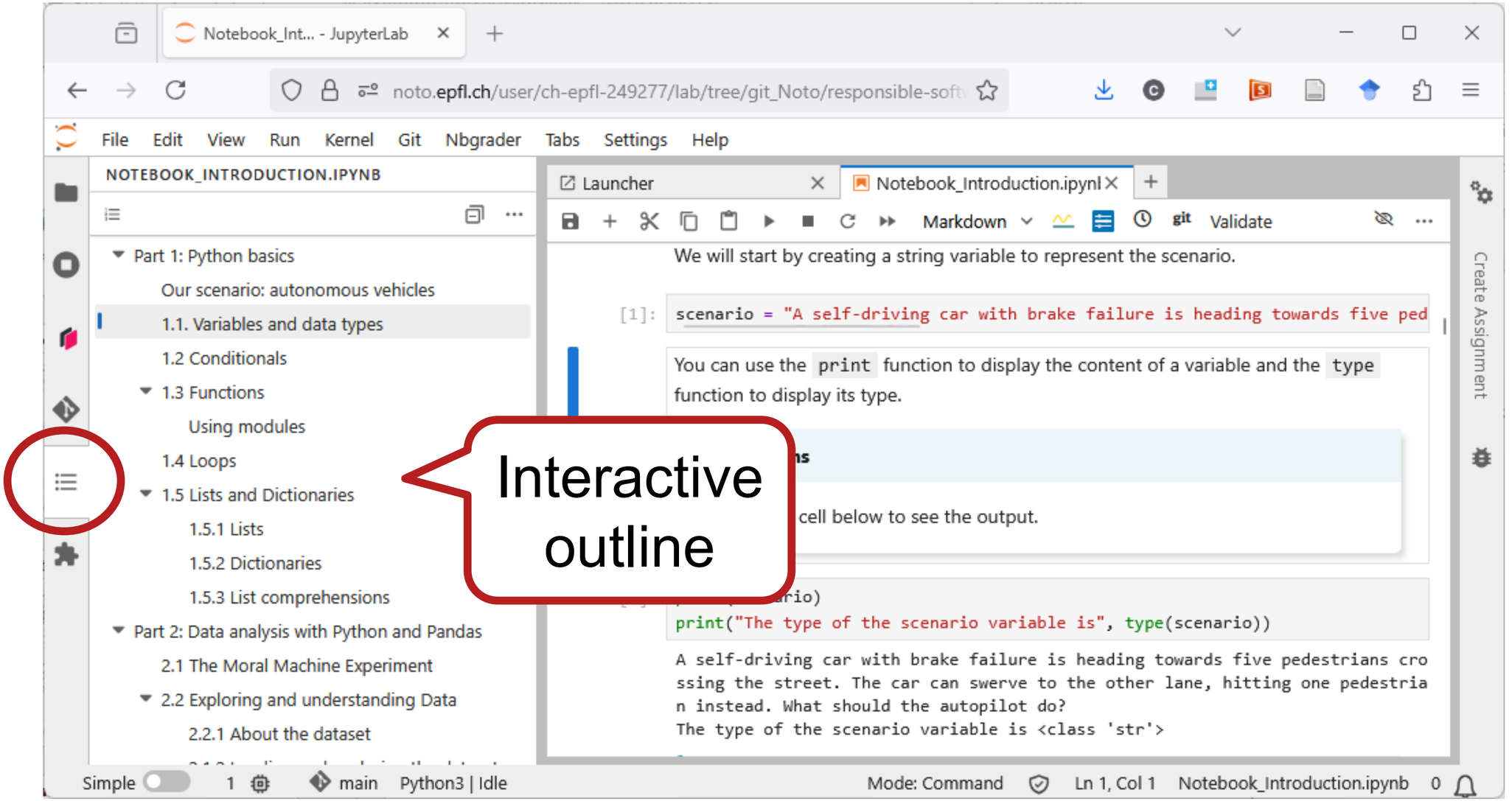
- <u>But:</u>
  - Python programming
  - Good amount of reading
  - Can be long
    (that's one of the reasons why we have added 1 ECTS to the course)

Getting started with noto

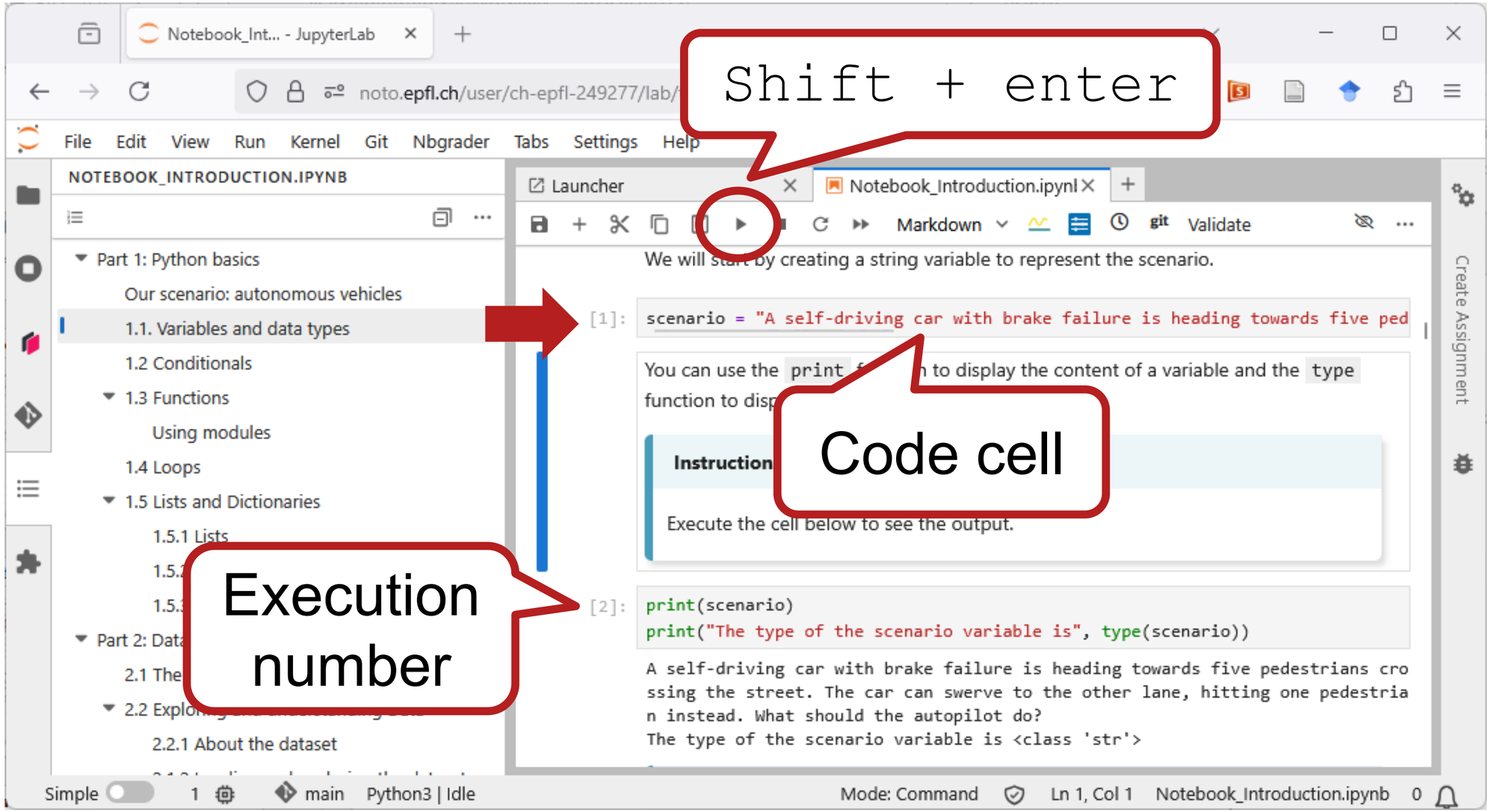


Workspace = online storage for files

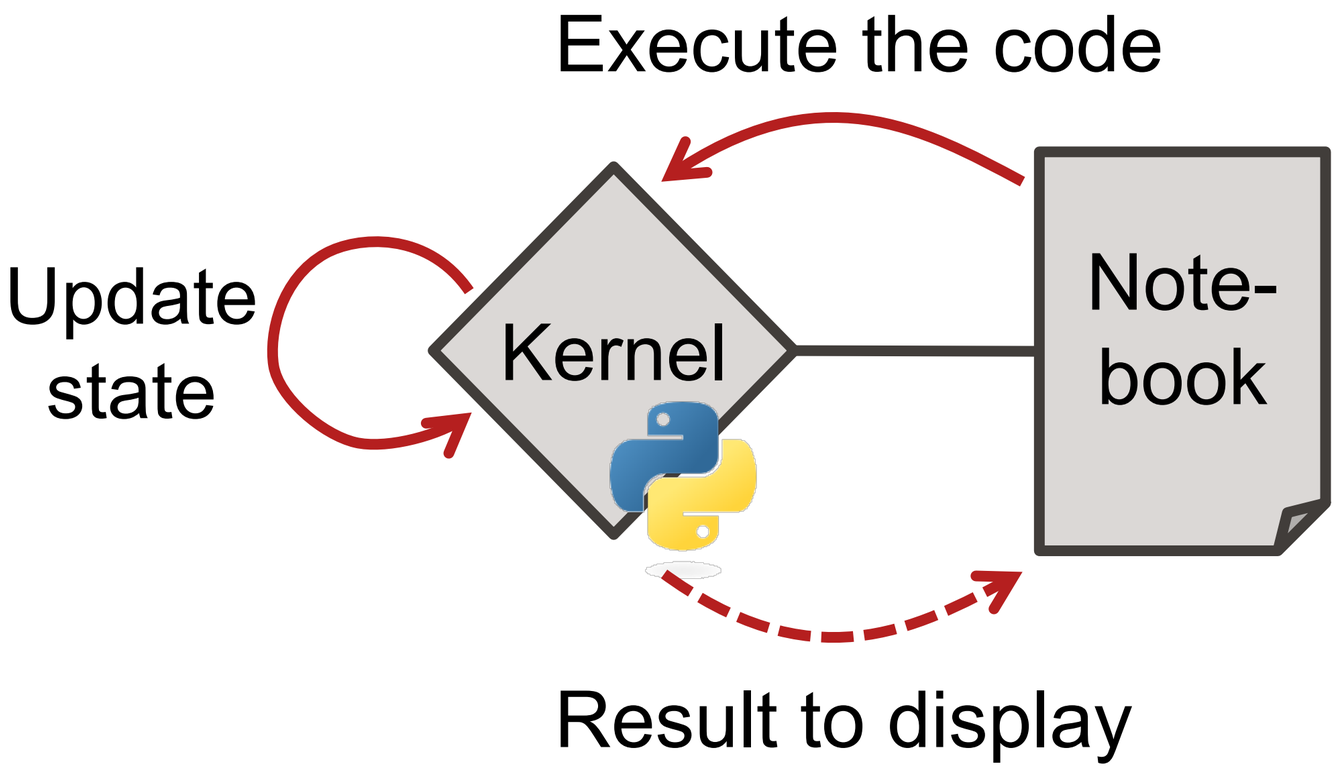
Navigating notebooks



Executing code



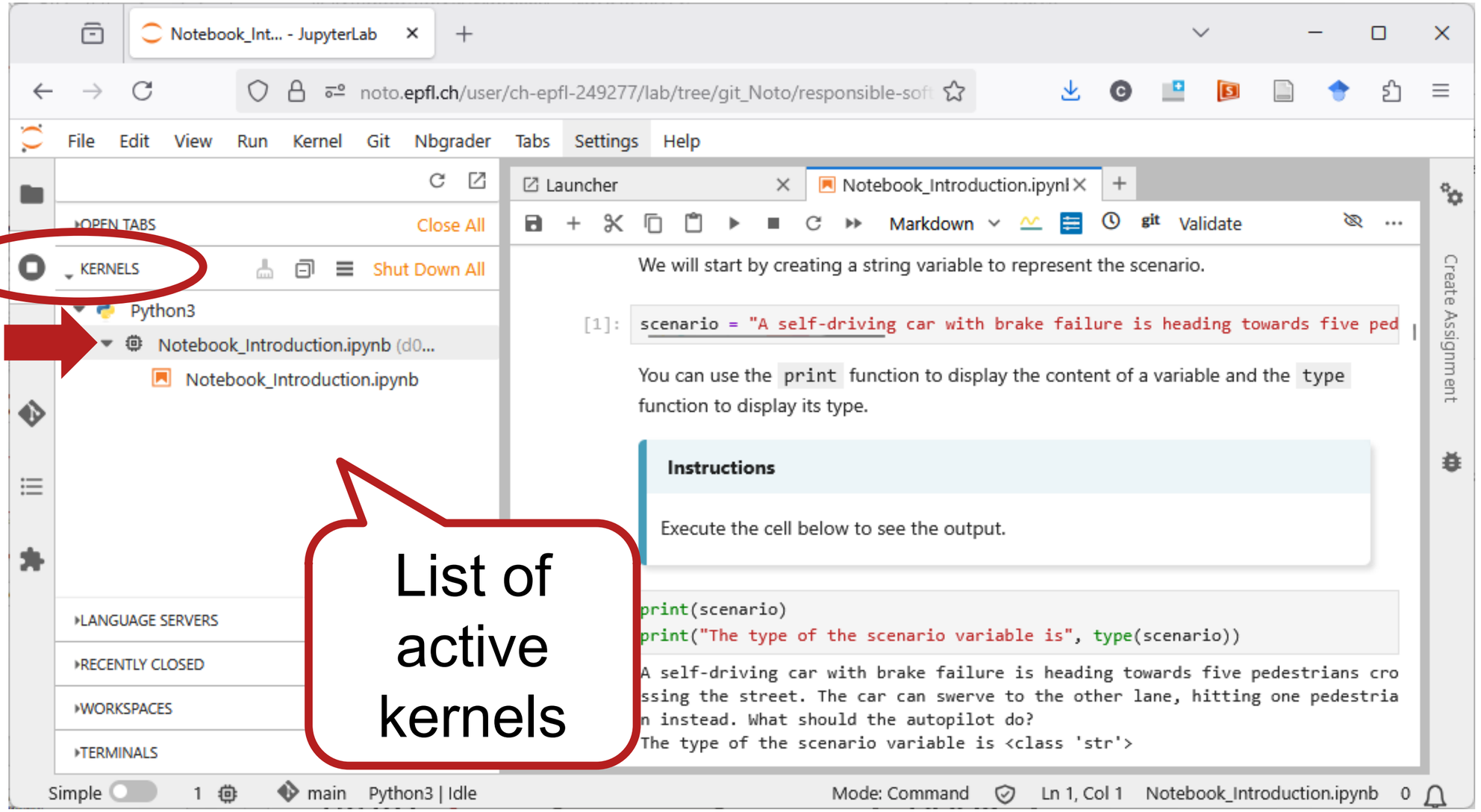
How do notebooks work?



The kernel:

- Maintains the **execution state** behind the notebook = all the variables with their values
- Is **separate from the notebook**

Where is the kernel?



Can I see the execution state?

Displaying variables in the notebook:

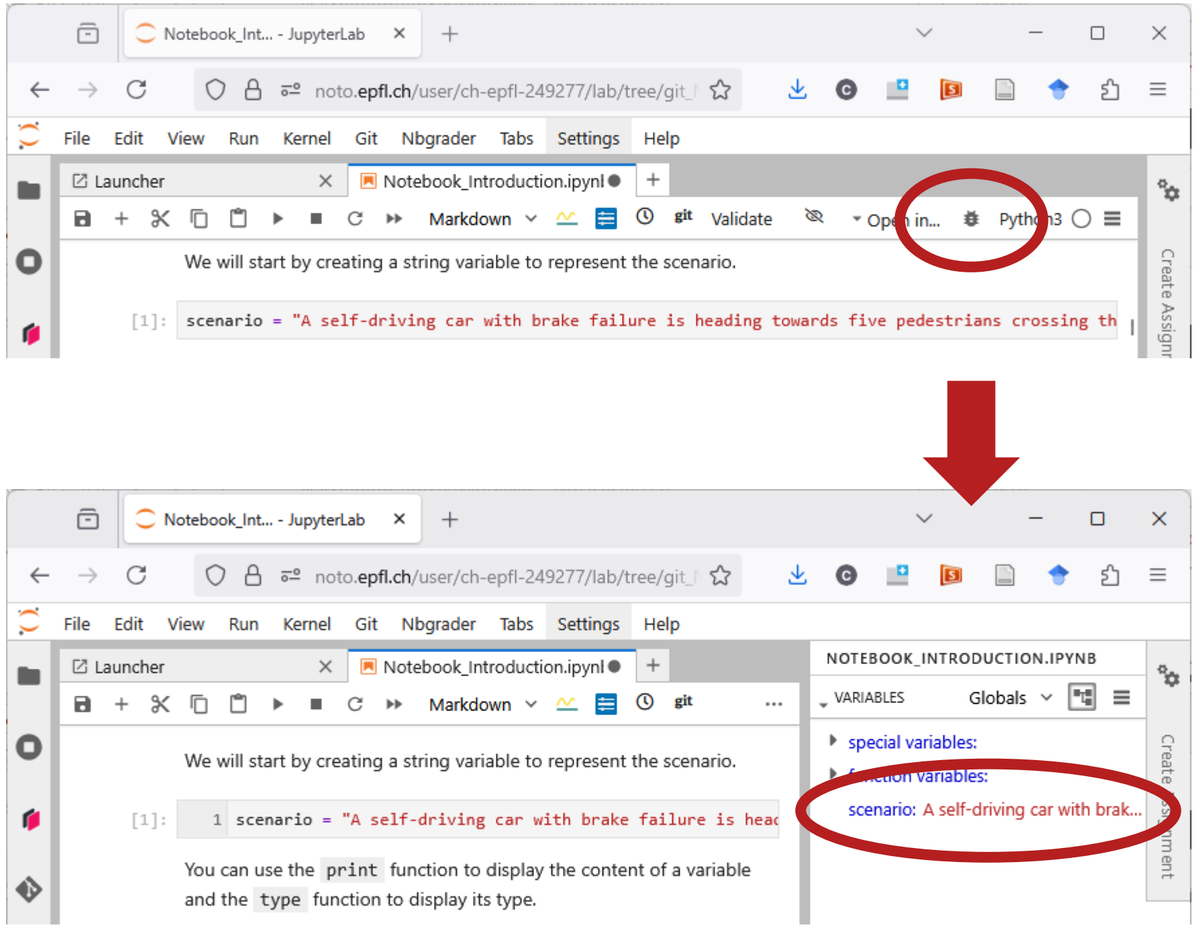
- `print(...)`

```
[5]: scenario = "A self-driving car with brake failure is heading towards five pedest
     print(scenario)

     A self-driving car with brake failure is heading towards five pedestrians crossi
     ng the street. The car can swerve to the other lane, hitting one pedestrian inst
     ead. What should the autopilot do?
```

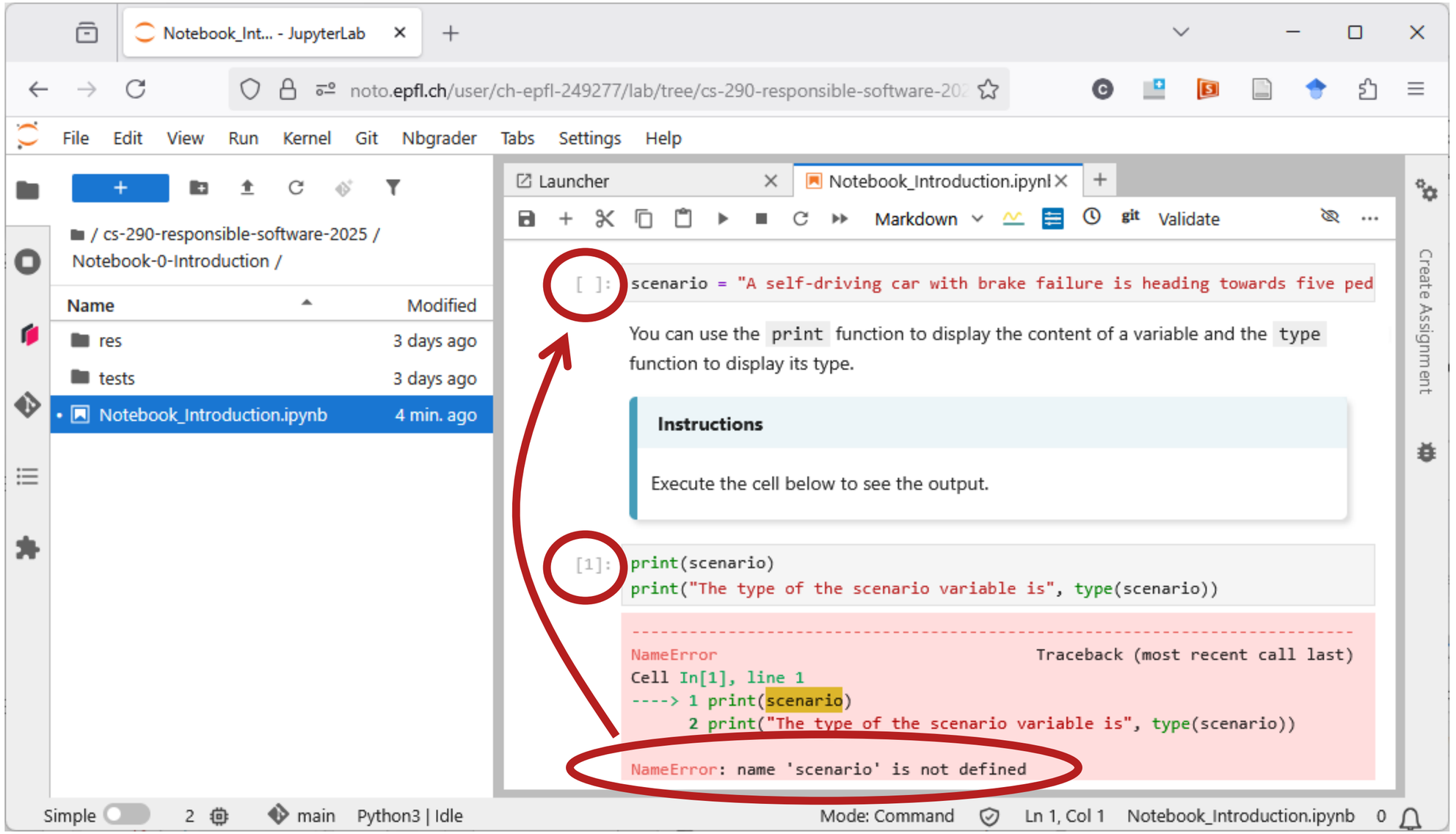
- Last line of cell

```
[4]: scenario = "A self-driving car with brake failure is heading towards five pedest
     scenario

[4]: 'A self-driving car with brake failure is heading towards five pedestrians cross
     ing the street. The car can swerve to the other lane, hitting one pedestrian ins
     tead. What should the autopilot do?'
```

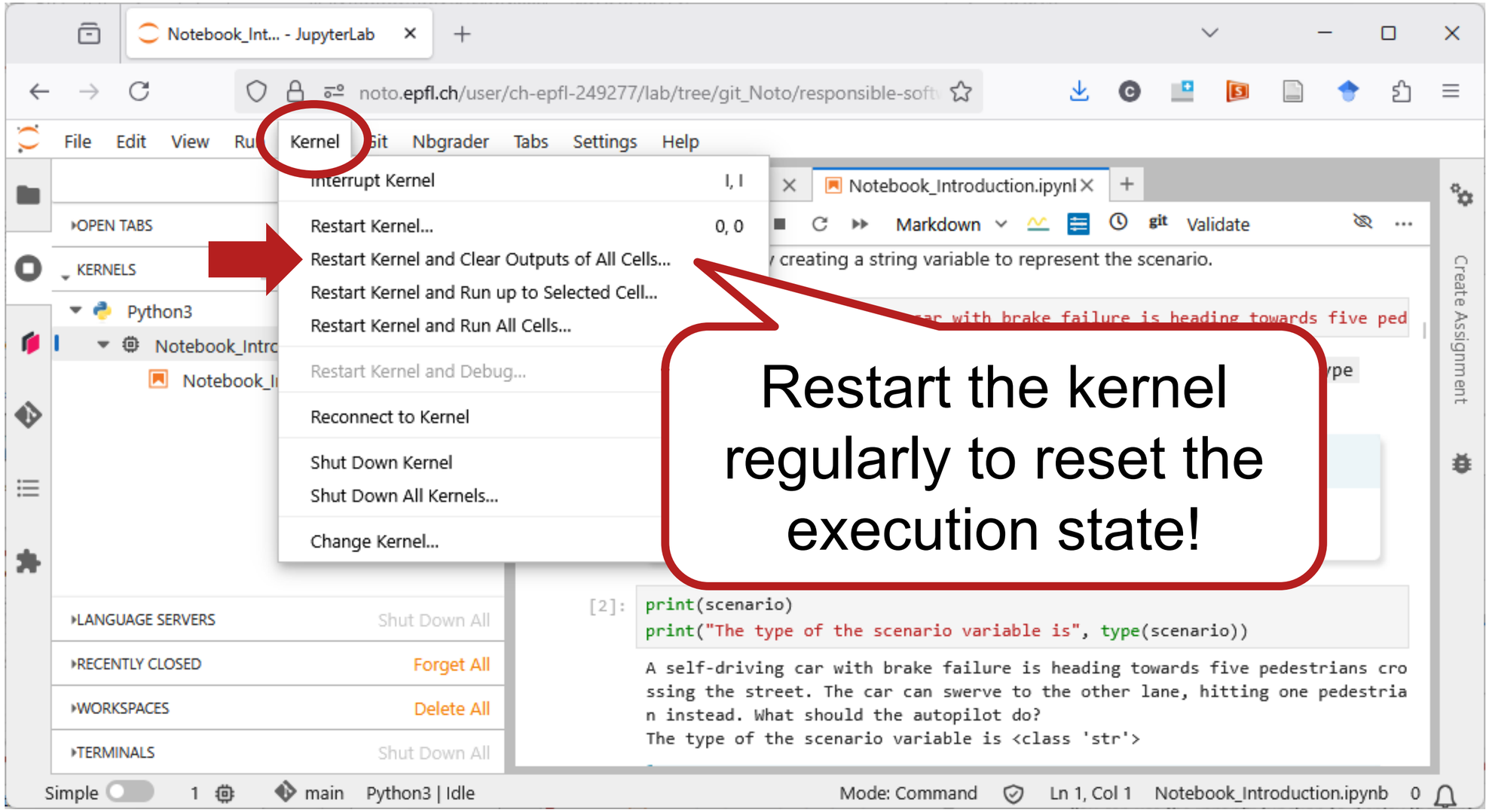
Using the Python debugger:



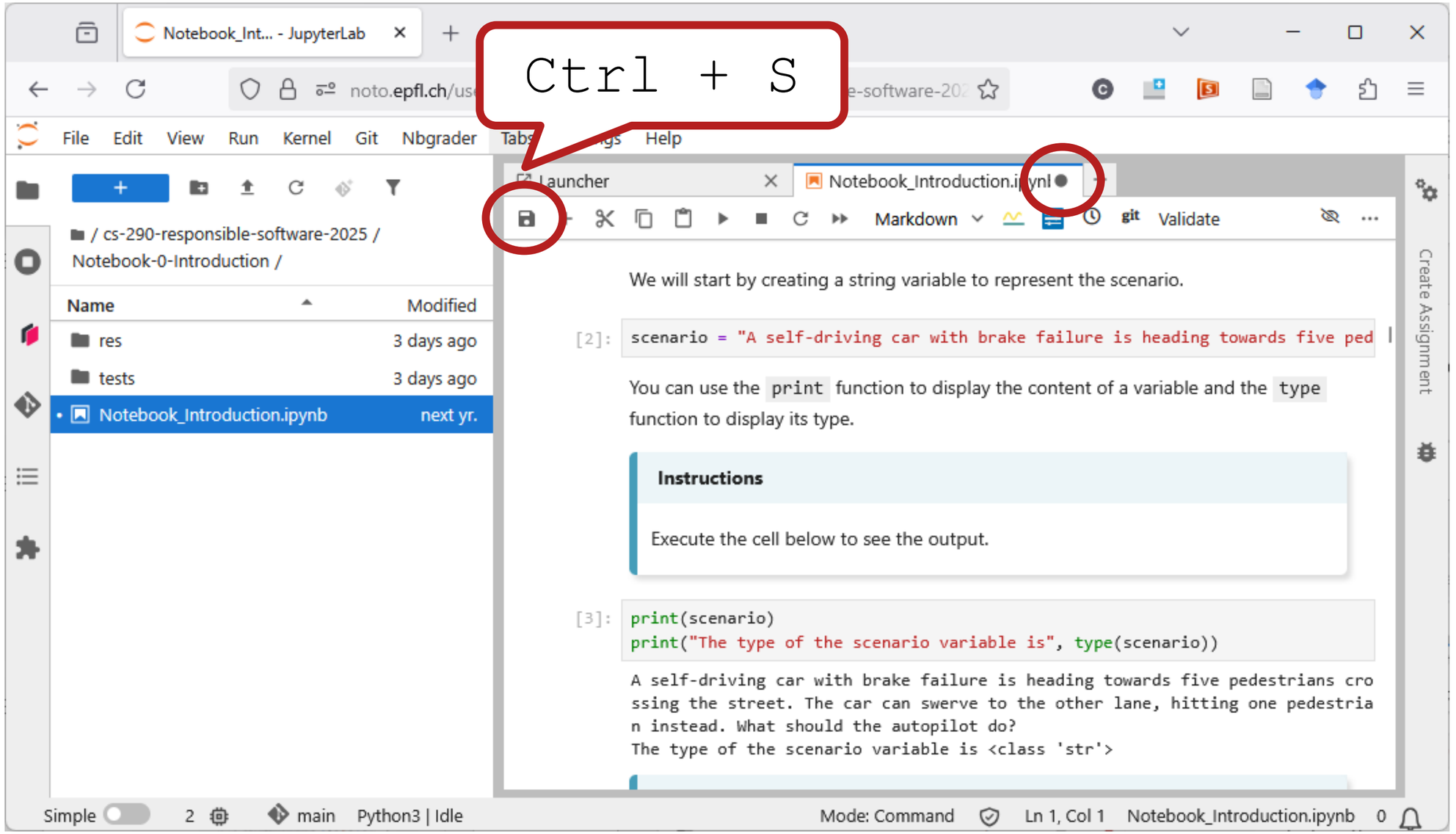
The order in which you run cells matters! ⚠️



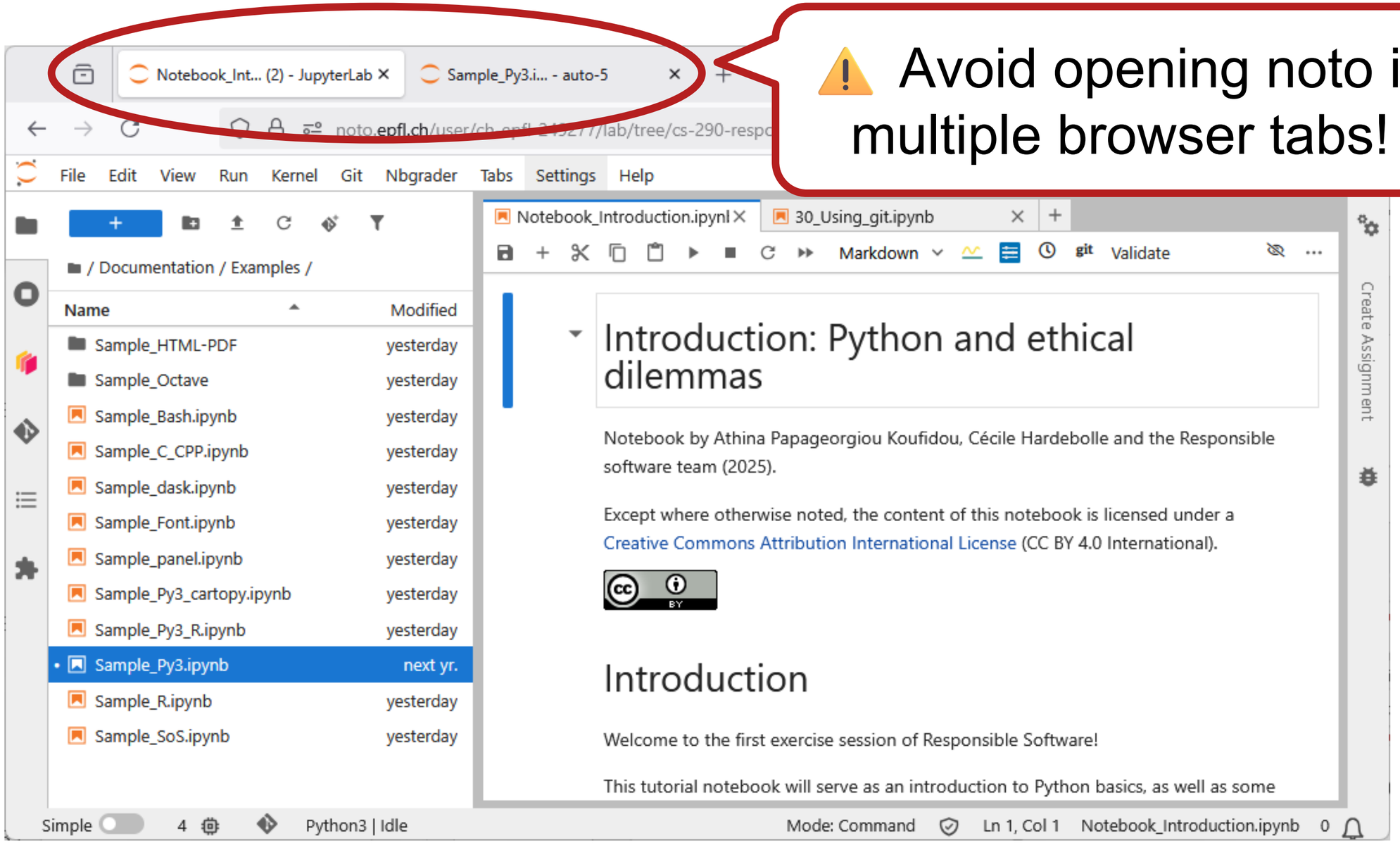
Actions on the kernel



Saving your work

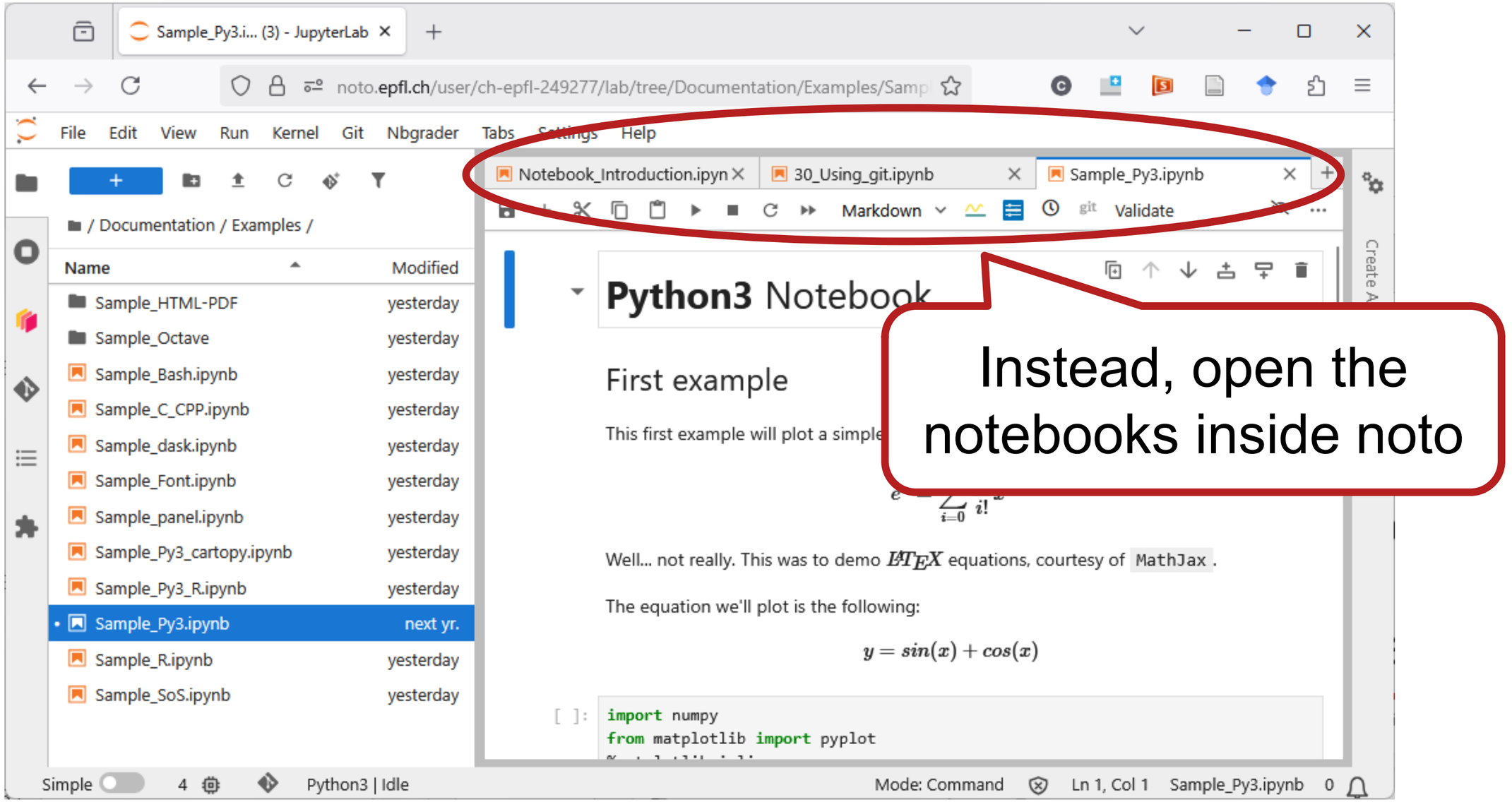


Opening multiple notebooks

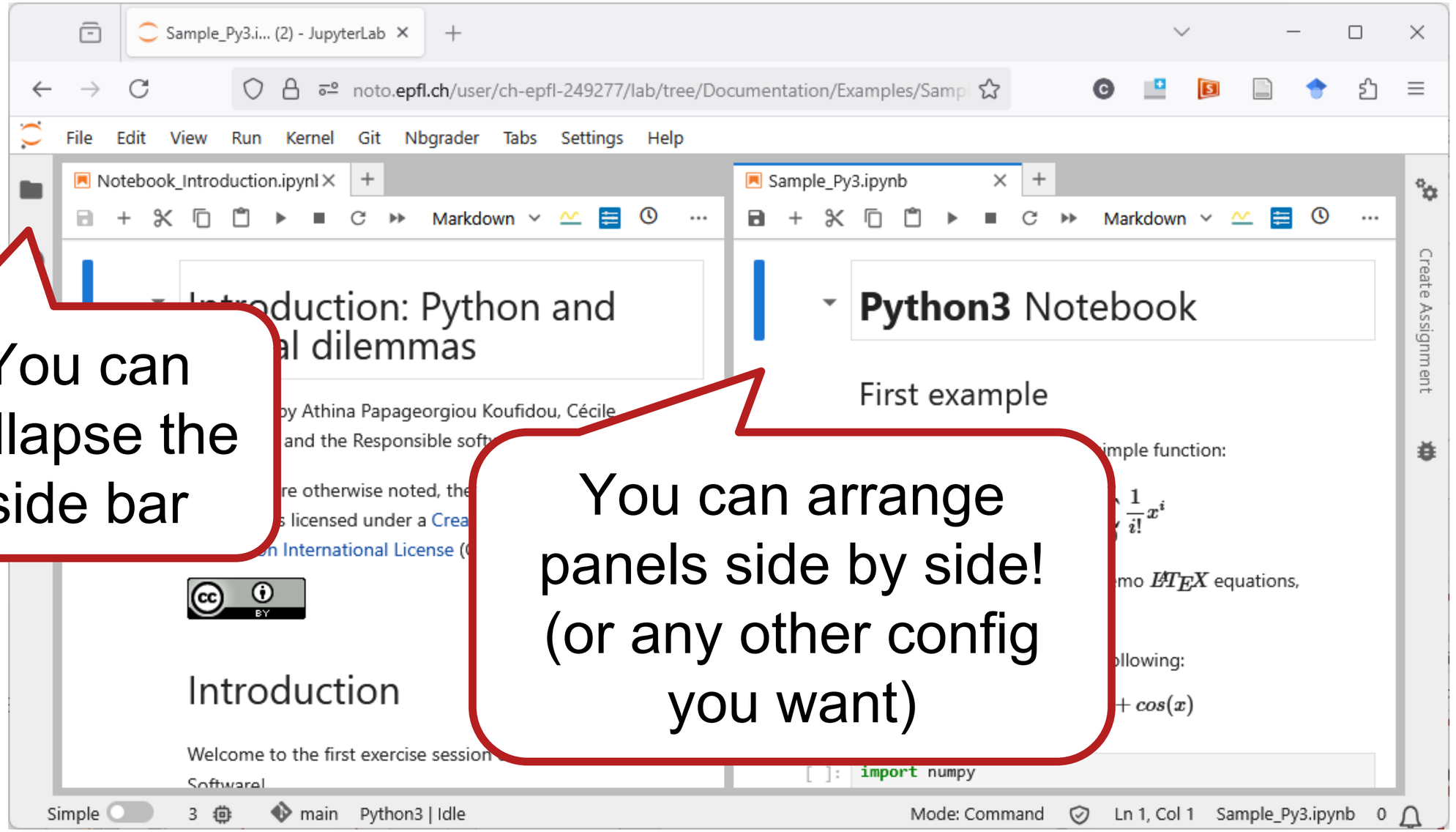


⚠ Avoid opening noto in multiple browser tabs!

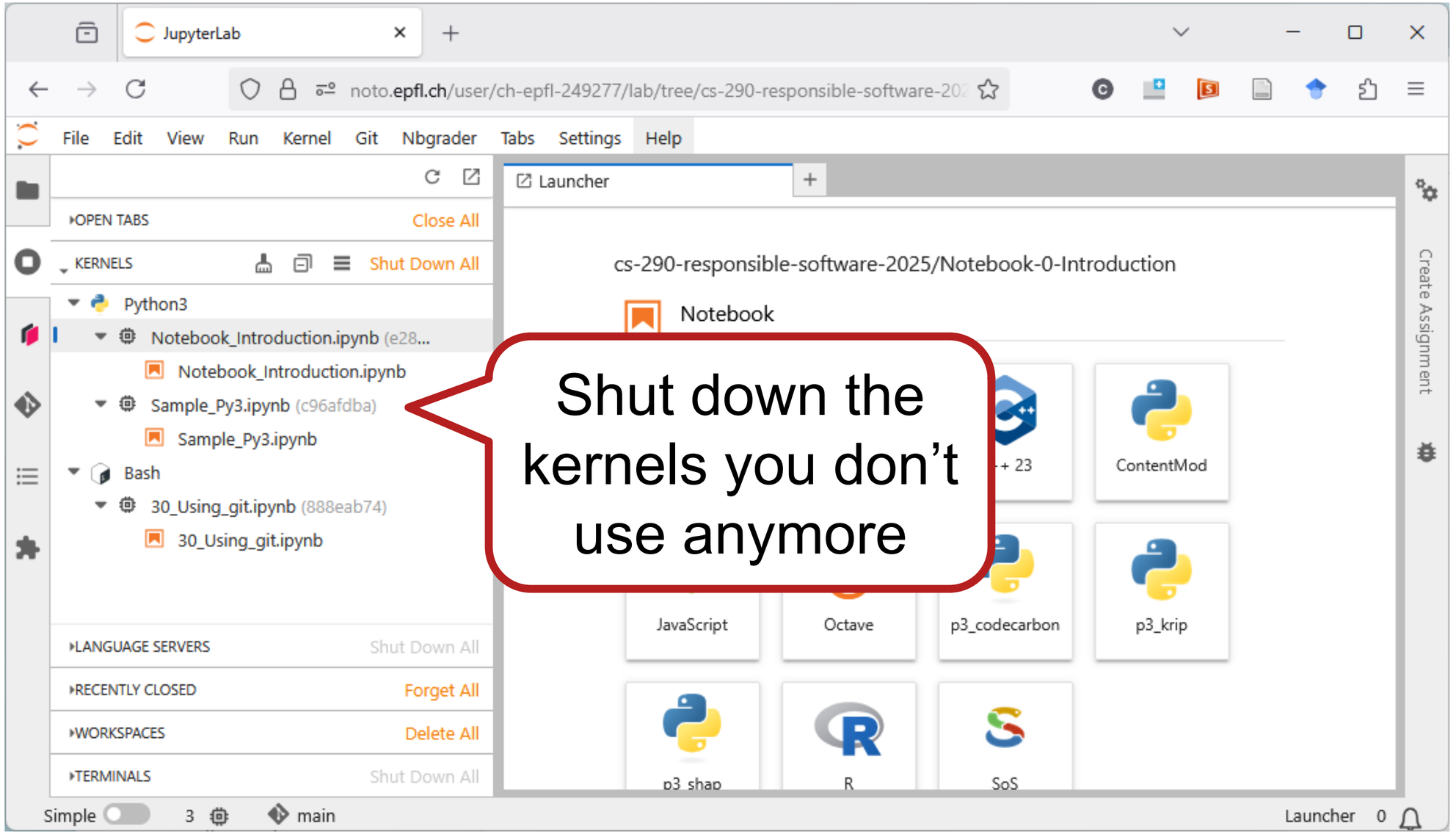
Opening multiple notebooks



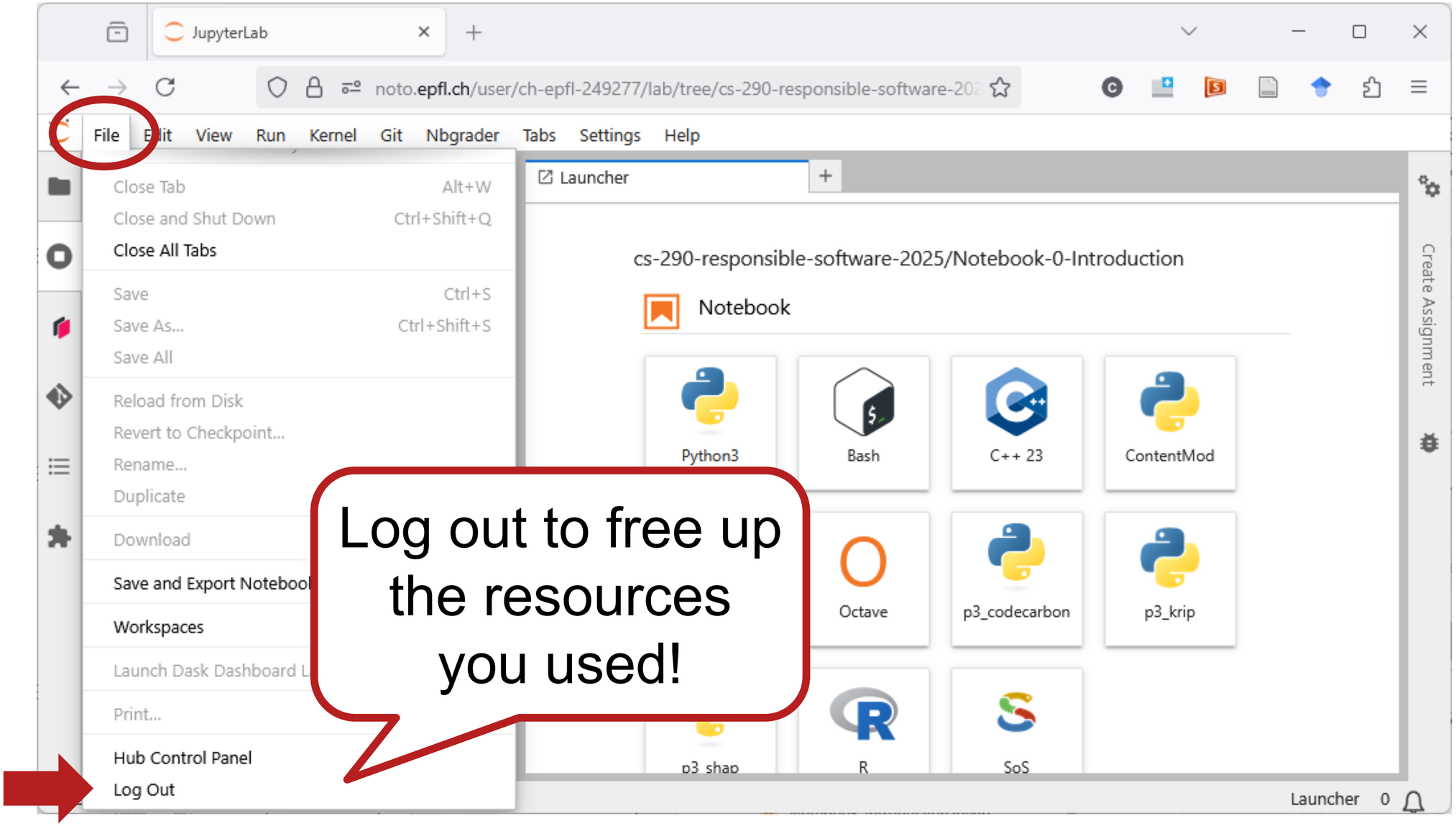
Opening multiple notebooks



Save resources!

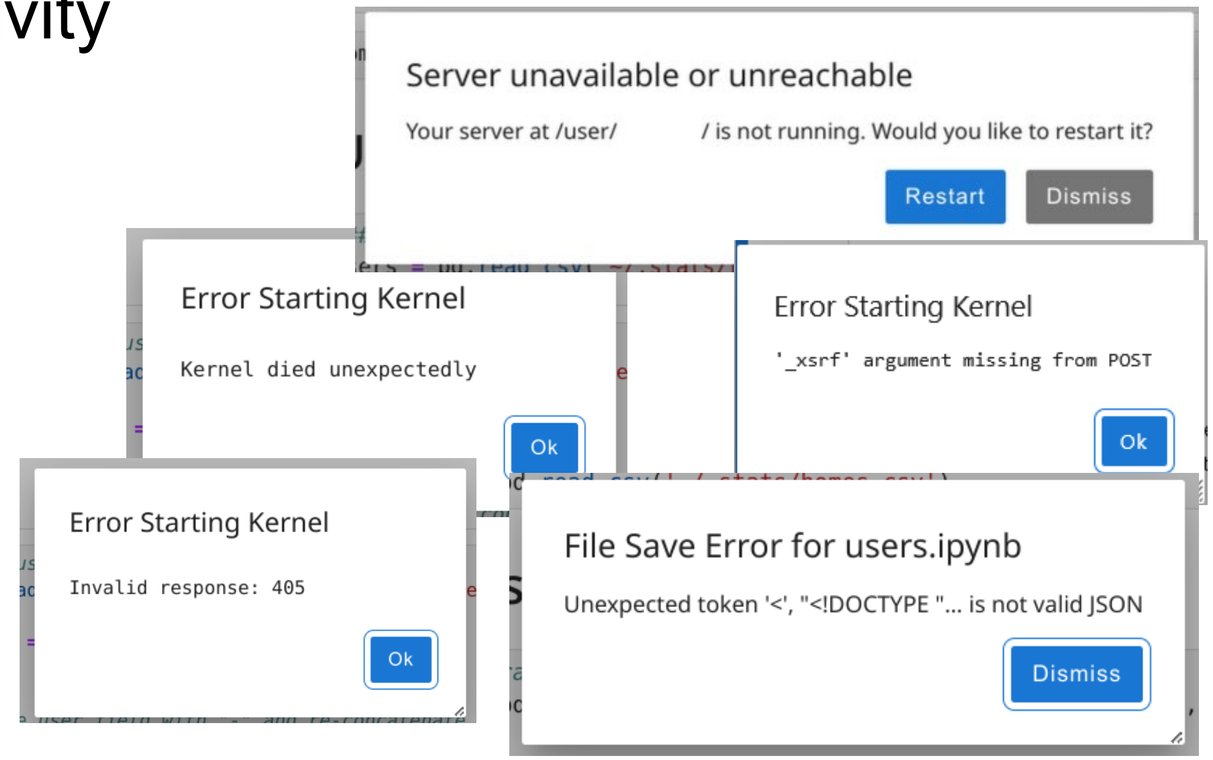


Save resources!



Error messages

- If you start getting **popups with error messages**, it means that ⚠️ your personal server is no longer available ⚠️
  - Timeout after ≈ 30 minutes of inactivity
  - Too many resources used



- Do not simply dismiss or click ok! The interface looks like it works but it does NOT!

- **Log out** and then log in again:
  - File > Logout
  - https://noto.epfl.ch/hub/logout

Equipment for the programming exercises

- Computer
  - Your own laptop
  - Machines in the computer rooms:
    - Use the default OS
    - Or start a windows virtual machine: IC-Windows-Cours2

- **Recent** web browser
  - **Firefox, Chrome / Chromium**
  - Avoid Safari or Edge!

Getting started with case studies

Case studies

- Cases = situations which are realistic (in general) but simplified
- Studying a case =
  - Putting you in the shoes of the software designer
  - Having you practice methodologies for responsible design
- Doing it in class together 👉 figure out the “gray zones”

A “getting started” case

See posts on SpeakUp

- You are designing a **form for customer contact details** on a retail website.
- You decide to apply the following rules :
  - People have one first name and one last name
  - People’s names do not contain special characters such as apostrophes
  - People’s names cannot change
- What **ethical issues** could you have with these choices?

Post your ideas:
https://speakup.epfl.ch
Room key: **77412**

When is it an “ethical” issue?

- How can we know when an issue is an **“ethical” issue**?

When is it an “ethical” issue?

- Ethical = “the right thing to do”
  (≠ from legal obligation)

👉 **How do we know what is “right”?**

- Moral frameworks:
  - Respect the rights of people
  - Treat people fairly
  - Do good and avoid harm
  - Serve the community, protect the common good
  - Be a good person
  - Care for people
  - …

- In software engineering?
  - Intersection of technical possibility, business interests, public policy, and human well-being
  - Regulatory frameworks
  - Multiple stakeholders

What’s next?

To do as soon as possible

Check that you can access the **course material** on Courseware:

- Go to moodle
- Click on the link to **Courseware**

  👉In case of issue, post on Ed Discussion in “technical issue”

Check that you can access the **notebook** for tomorrow:

- In Courseware, find the programming exercise for the Introduction chapter
- Click on the link to the notebook, which should launch **noto** and open the Introduction notebook

  👉In case of issue, post on Ed Discussion in “technical issue”

Tomorrow: exercise session

Room	Student assistants	Doctoral assistants
INF 1 (≈ 100 seats, no computers)	Eugène Bergeron Camille Lannoye Florian Kolly	Yingxuan You
CO 4 (≈ 35 seats)	Mamoun Imghi	Ayush Kumar Tarun
CO 5 (≈ 40 seats)	Othmane Housni + Elyes Trabelsi	
CO 6 (≈ 40 seats)	Noa Trojman	

By next Monday:

- Watch **videos 0.1 to 0.5** + do the **quizzes**
- Finish the programming exercise

- On Monday 15: **case studies in class**
  - We will work on interactive questions on the theory part
  - We will work on the case studies together
    i.e. the “lecture” is more like an exercise session, where I will be your TA