

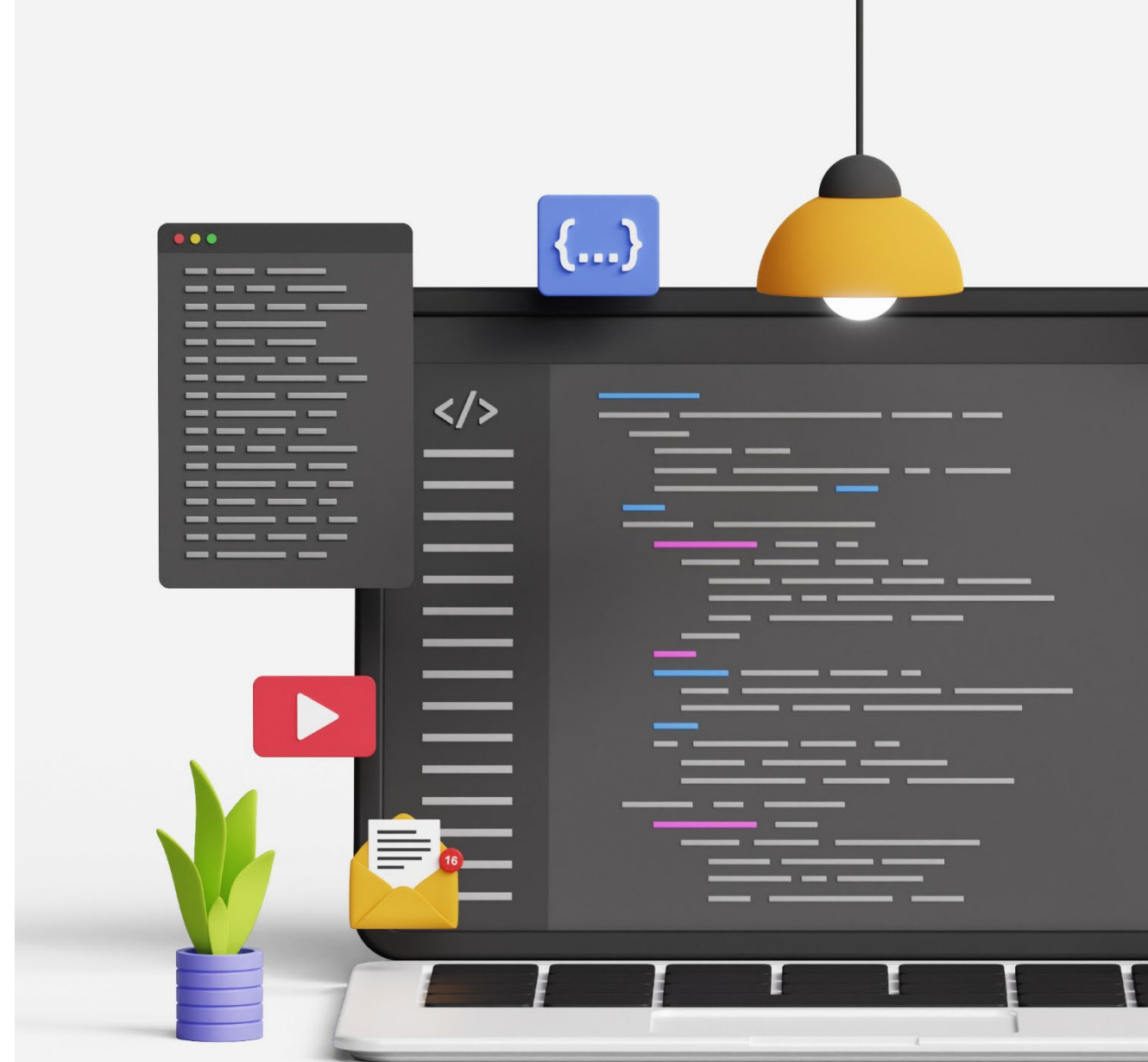
# Information, Computation, Communication

# Learning Python

About the Course

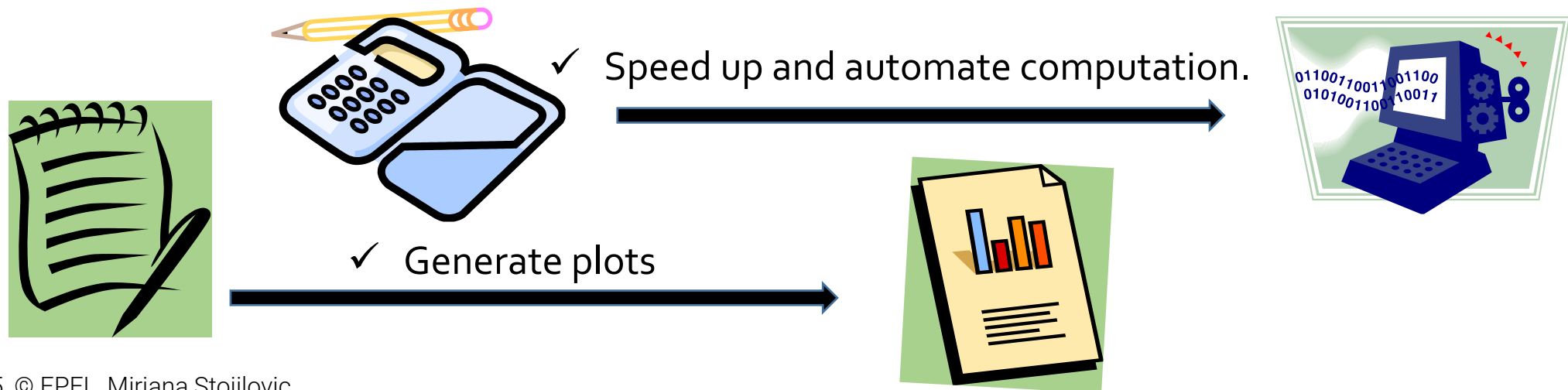
# Agenda

- [Objectives](#)
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- [Planning](#)
- [Schedule](#)
- [ChatGPT](#) (and similar)
- [Few Facts](#)



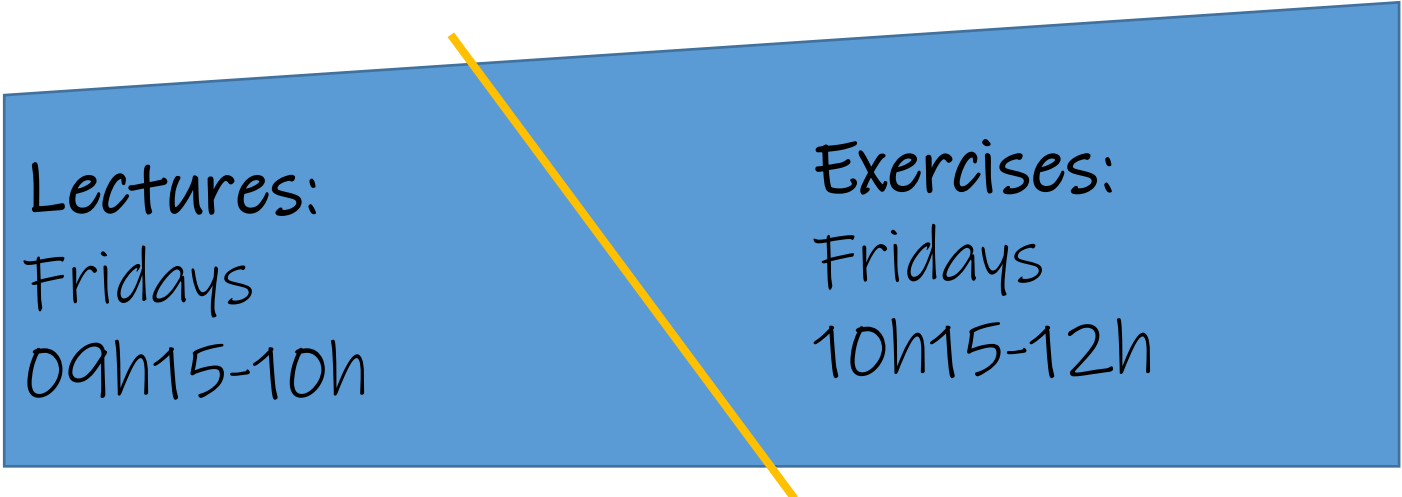
# Objectives

- Get familiar with the basics of programming in Python
- Translate an algorithm into a Python program
- Solve a computational problem by writing a program
- Understand and modify a given program to fit new requirements
- Use programming as a tool



# General Information

- Programming level required: **none**
- Course language: **French**
- Language for programming lectures only: **English**
- Lectures cover Python **language concepts**
- Hands-on exercises (coding) to **practice and learn**
- Forum – **Ed Discussion**: Join and participate



Lectures:  
Fridays  
09h15-10h

Exercises:  
Fridays  
10h15-12h

# Exercise Sessions



- In person
- Bring your laptop and/or use virtual machines
- Recommended VMs:
  - **IC-CO-IN-SC-MA-2025-Fall**
  - **IC-CO-IN-SC-INJ-2025-Fall**

[Instructions for connecting to VMs](https://vdi.epfl.ch/) (log in to access)  
<https://vdi.epfl.ch/>

# Exercise Sessions



- Teaching assistants are there for you. Ask for help
- Discuss with students around you
  - Asking a question and explaining a problem is already a step towards solving it
- Ask AI?
  - Risk of obtaining a wrong or misleading answer, but it is worth a try while waiting for assistance
- If you do not manage to finish all exercises during exercise sessions, that is fine, but do try to finish them later

# Exercise Sessions: Team and Rooms

Room	Equipped with PCs?	Max capacity	Staff
BC 07	YES	35	Ayman Bakiri (master DS) Malak Boulahfa (bachelor IN)
BC 08	YES	39	Elie Bruno (master IN), Manon Cesbron Darnaud (master DS)
INF 2	NO	98	Adam Chahed Ouazzani (master DS) Iskandar Ghobril (master IN) Victor Monfredo (bachelor GC) Cleopatra Moroianu (bachelor GC) Lina Sadgal (master SC)

*\* Adjustments possible during the semester*

# What to do @ home

- **Connect remotely** to the working stations
- **Write code**
- Read
  - *Learning Python* by Mark Lutz
  - *Python crash course: a hands-on, project-based introduction to programming* by Eric Matthes (in EPFL library; [link](#))



# Semester Planning

- Weeks 1-7: Lectures and exercises
- Week 8: Friday morning, 7-Nov-2025 (or Sat 8-Nov-2025)
  - Midterm exam
  - 40% of the final grade
  - Theory-related part of the course takes place as usual in the afternoon
- Weeks 9-13: Lectures and exercises
  - Weeks 11-12: Mini programming project, individual or in pairs<sub>(recommended)</sub>
  - 15% of the final grade
- Week 14: Friday morning, 19-Dec-2025
  - Final exam
  - 40% of the final grade
- Quiz on cybersecurity
  - 5% of the final grade

# Schedule

CS-119(h) ICC-P Fall 2025-26 Schedule		
		Friday
Week		<div>Lecture (1 x 45')</div> <div>Exercise/TP (2 x 45')</div>
1	12-Sep-2025	<div>Intro to the course; Interactive interpreter</div> <div>Exercises</div>
2	19-Sep-2025	<div>Variables, Numbers, Booleans, Operators</div> <div>Exercises</div>
3	26-Sep-2025	<div>If-else, scripting</div> <div>Exercises</div>
4	3-Oct-2025	<div>Loops (intro, with if-elif-else)</div> <div>Exercises</div>
5	10-Oct-2025	<div>Lists (intro, with loops, list slicing, list comprehension)</div> <div>Exercises</div>
6	17-Oct-2025	<div>[Mirjana absent] Nested loops, early exit, iteration skip, nested lists</div> <div>Exercises</div>
		Fall Break
7	31-Oct-2025	<div>Functions (intro)</div> <div>Exercises</div>
8	7-Nov-2025	<div>Midterm exam (no ICC-P, yes ICC-T in the afternoon)</div> <div>Midterm exam</div>
9	14-Nov-2025	<div>Recursive functions</div> <div>Exercises</div>
10	21-Nov-2025	<div>Tuples and sets</div> <div>Exercises</div>
11	28-Nov-2025	<div>Dictionaries</div> <div>Mini-project</div>
12	5-Dec-2025	<div>Code examples; exam-like questions</div> <div>Mini-project (contd.), Exercises</div>
13	12-Dec-2025	<div>Numpy and Matplotlib (with Jupyter Notebook)</div> <div>Exercises</div>
14	19-Dec-2025	<div>Final exam (no ICC-P, no ICC-T)</div> <div>Final exam</div>

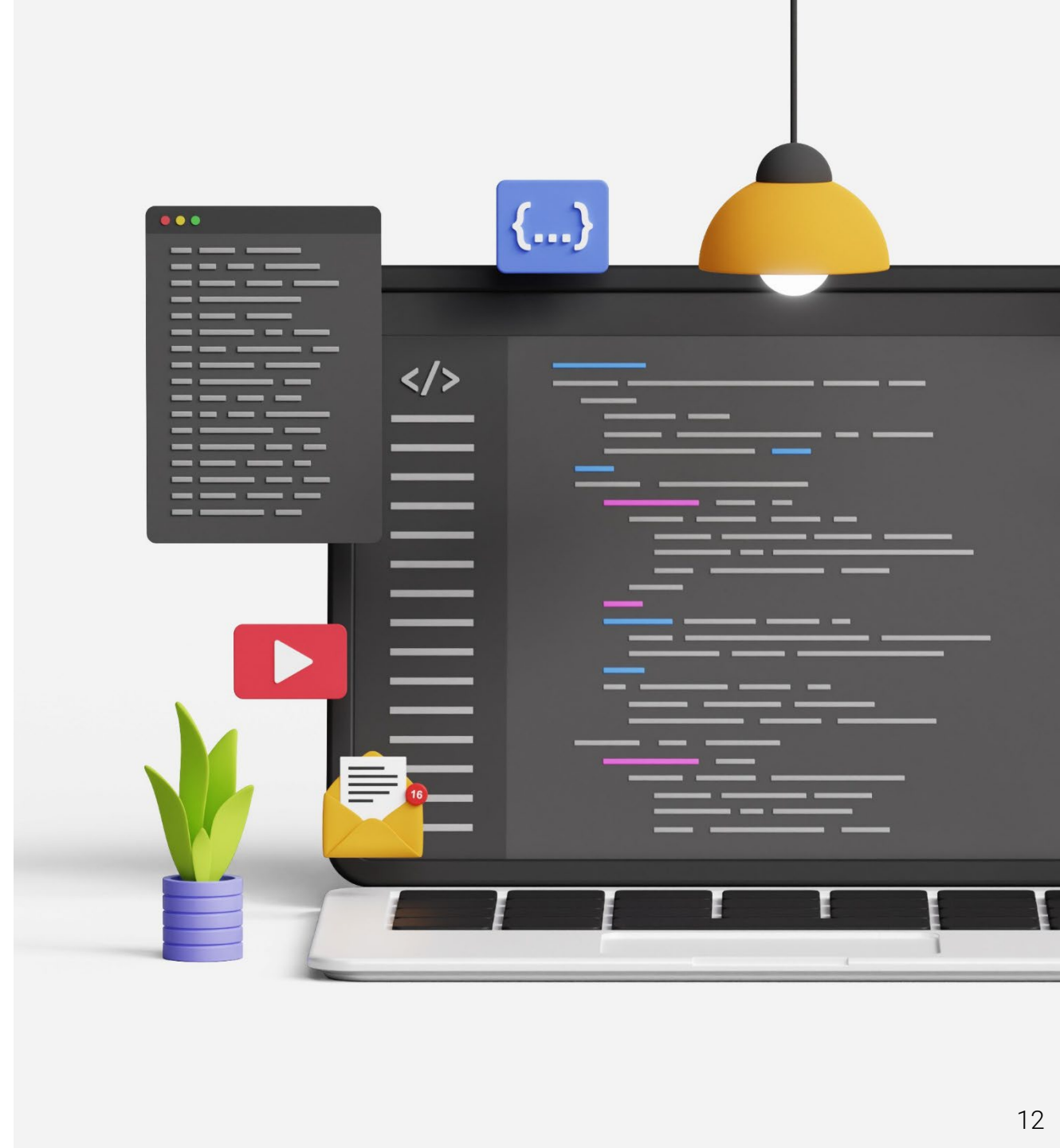
# (Not) Using ChatGPT?

*ChatGPT can produce erroneous code because it does not reason like a compiler or a developer, but rather like a statistical language model. It is very good at making suggestions, but it is not infallible—especially when used without critical thinking.*

- Use it with caution
- It can help you comment on the code, review (suggest improvements) for readability, organization, and correctness
- It may point to bugs, but do not trust it blindly
- Use of ChatGPT will not be allowed for the project and exam
  - Learn to code and debug yourself, without help from the AI

# Few Facts

- What is programming?
- Python language
- IDE



# Programming Tools

What does **programming** mean?

- Programming means
  - Using a programming **language**
  - **Creating a program** that solves a given problem
    - A program is a sequence of program **instructions**
    - Instructions are specific to a **programming language**
  - Instruct the computer to **run the program** to solve the given problem

# Programming Tools

Which programming **language** will we study?

- **Python 3.10**
- Why do we call it a language
  - It has a **grammar**:  
<https://docs.python.org/3.10/reference/grammar.html>
  - It has a **vocabulary**
    - Words used by the language, keywords:  
[https://docs.python.org/3.10/reference/lexical\\_analysis.html#keywords](https://docs.python.org/3.10/reference/lexical_analysis.html#keywords)

# Brief History of Python



- Invented in the Netherlands in the early 90s by Guido van Rossum  
[https://en.wikipedia.org/wiki/Guido\\_van\\_Rossum](https://en.wikipedia.org/wiki/Guido_van_Rossum)
- Guido is a fan of Monty Python's Flying Circus, a famous TV show (comedy) in 70s
- The Python language was named after Monty Python
- Open-sourced from the beginning

# Applications of Python

- Science
    - Including AI and data analysis
  - System administration
    - Unix systems
    - Web logic
  - Web application development
    - Graphical interfaces
  - Testing scripts
  - Databases
  - Gaming
- ...and many more



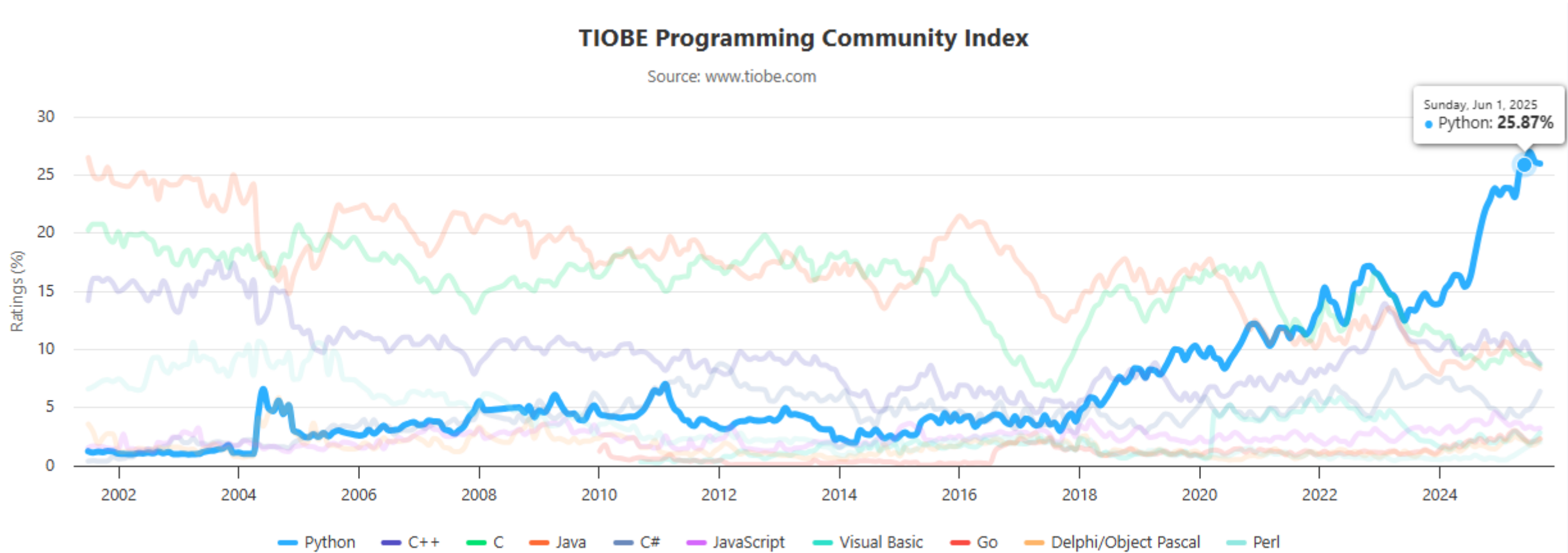


# Who Uses Python Today

- Google in its web search and YouTube
  - Uber
  - PayPal
  - Netflix
  - Facebook
  - Dropbox
  - Intel, Cisco, Hewlett-Packard, Qualcomm, IBM, etc., for hardware testing
- ... and many more



# How Popular is Python?



<https://www.tiobe.com/tiobe-index/>

# Programming IDE Tools

Which programming **environment** will we use?

- There are many integrated development environment (IDE) tools
- Our course uses Visual Studio Code <https://code.visualstudio.com/>
- Installed on **vdi.epfl.ch** virtual machines

## Code in any language

VS Code supports almost every major programming language. Several ship in the box, like JavaScript, TypeScript, CSS, and HTML, but extensions for others can be found in the VS Code Marketplace.

**JS** JavaScript

**C#** C#

**J** Java

**↓** Markdown

**TS** TypeScript

**C++** C++

**{ }** JSON

**>** Powershell

**Python** Python

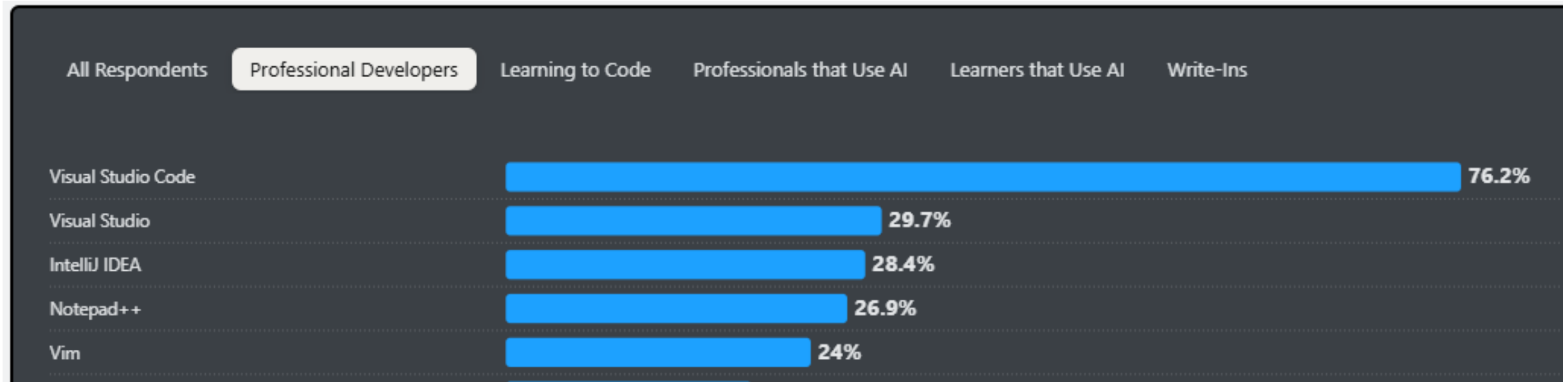
**< >** HTML

**PHP** PHP

**!** YAML

# How Popular is Visual Studio Code?

- ...most popular among developers and those learning to code, according to the 2025 Developer Survey



<https://survey.stackoverflow.co/2025/technology#most-popular-technologies-dev-envs-prof>

# Next Topic: First steps in Python

With interactive interpreter