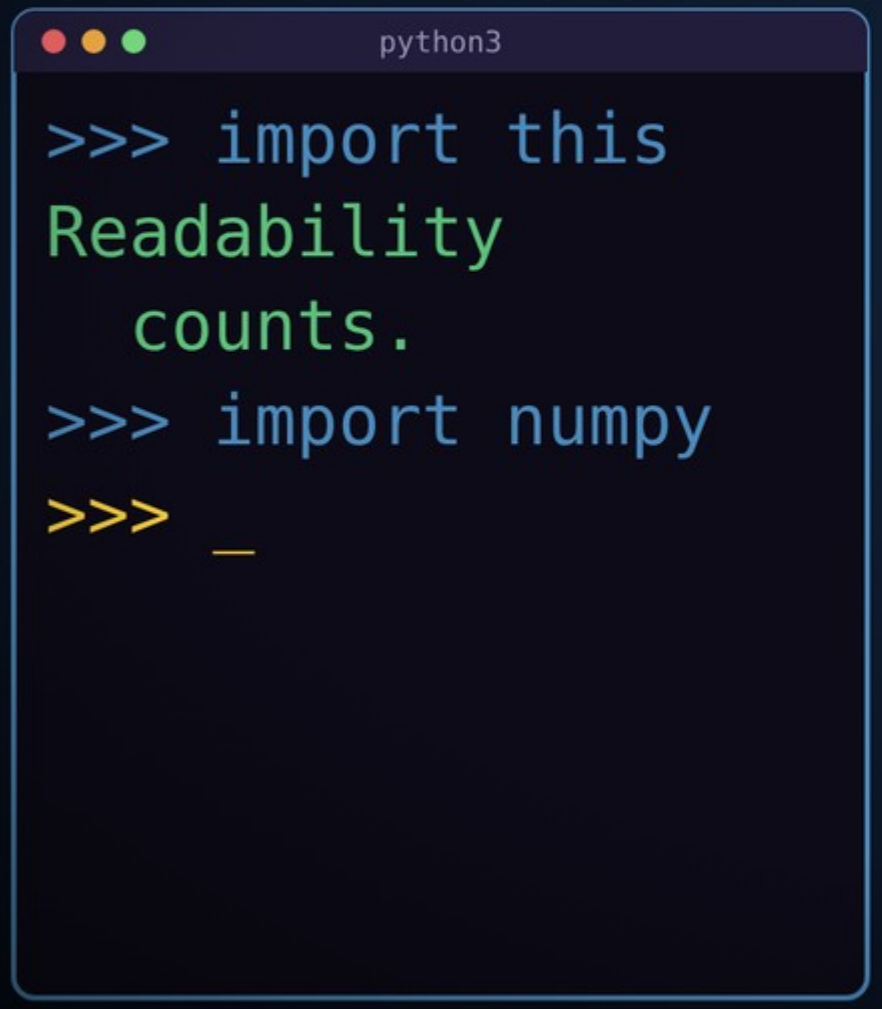
@MyWebUniversity

Python

Clear Code,
C Speed Inside



why NumPy is fast · when to use C

GUIDO VAN ROSSUM · 1991

hello.py

```
# readable by design
names = ["Kabul", "Herat", "Paris"]
for city in names:
    print(f"Hello, {city}!")

>>> import this
Beautiful is better than ugly.
```

A MYWEBUNIVERSITY STORY

Python

The Clear Language That Took Over the World

AI · data · web · automation

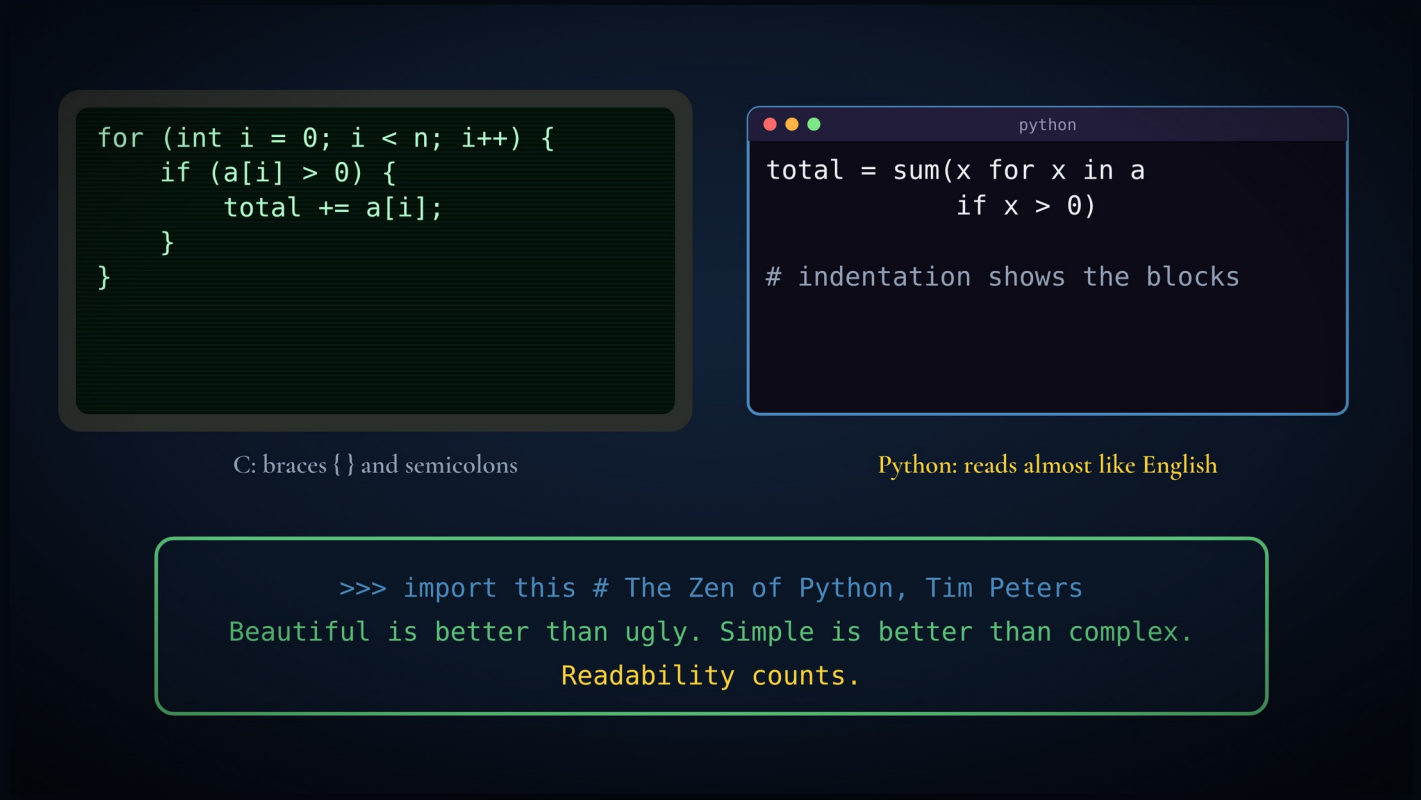
A Christmas Hobby, 1989



- Dec 1989: Guido van Rossum, CWI Amsterdam
- Named after Monty Python's Flying Circus
- Feb 1991: Python 0.9.0

01

Code Is Read More Than Written



- Indentation instead of braces
- The Zen of Python (Tim Peters): readability counts
- A favorite first language in schools

02

Batteries Included

types.py

```
x = 42          # int
x = "salaam"    # now a str
cities = ["Kabul", "Herat"]       # list
ages = {"Ali": 30, "Sara": 25}    # dict
langs = {"C", "Python"}           # set
```

Batteries included

os · pathlib · datetime

math · statistics · random

re · json · csv · sqlite3

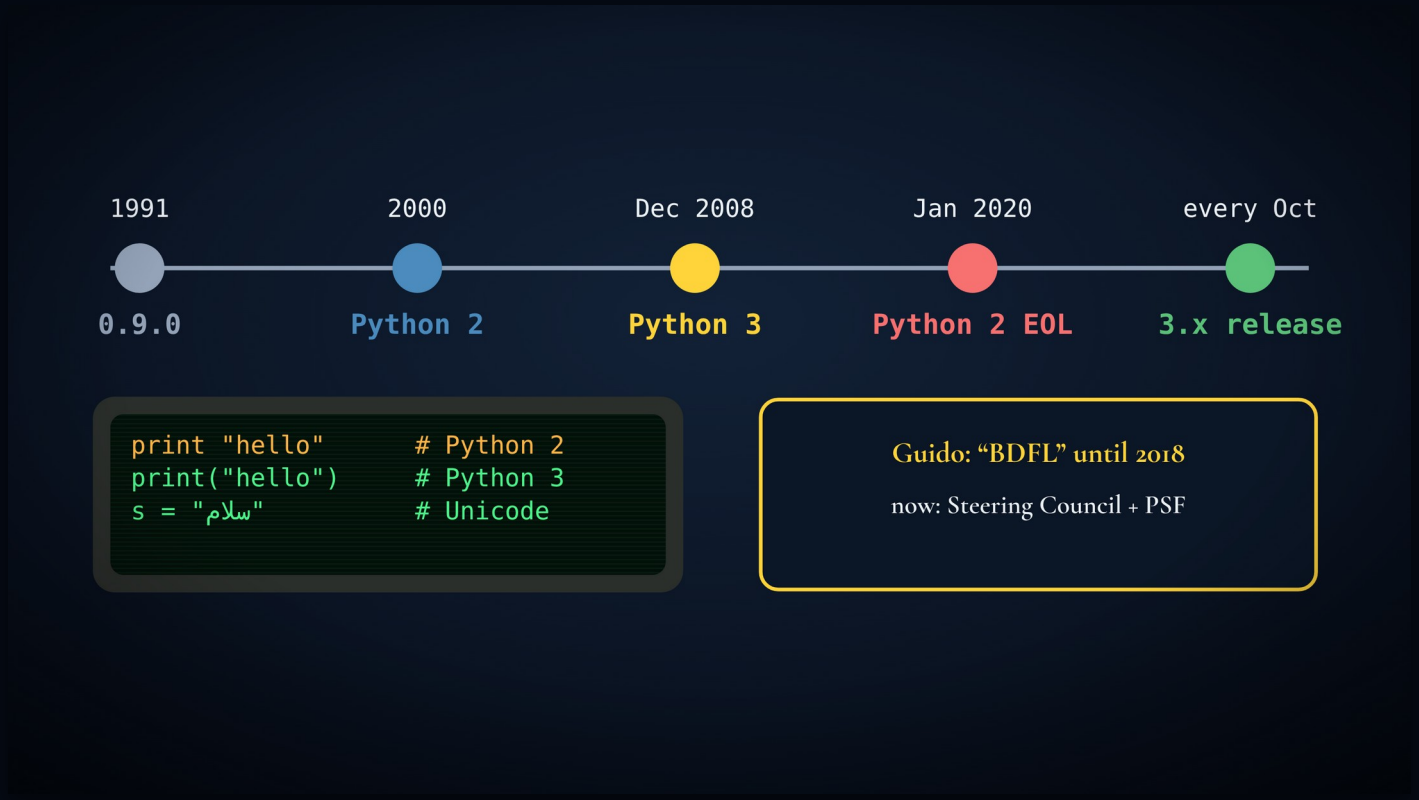
socket · http · email

```
$ pip install requests pandas numpy
Successfully installed …   # from PyPI: hundreds of thousands of packages
```

- Dynamic typing · lists, dicts, sets
- Procedural, OOP and functional styles
- Batteries included + pip and PyPI

03

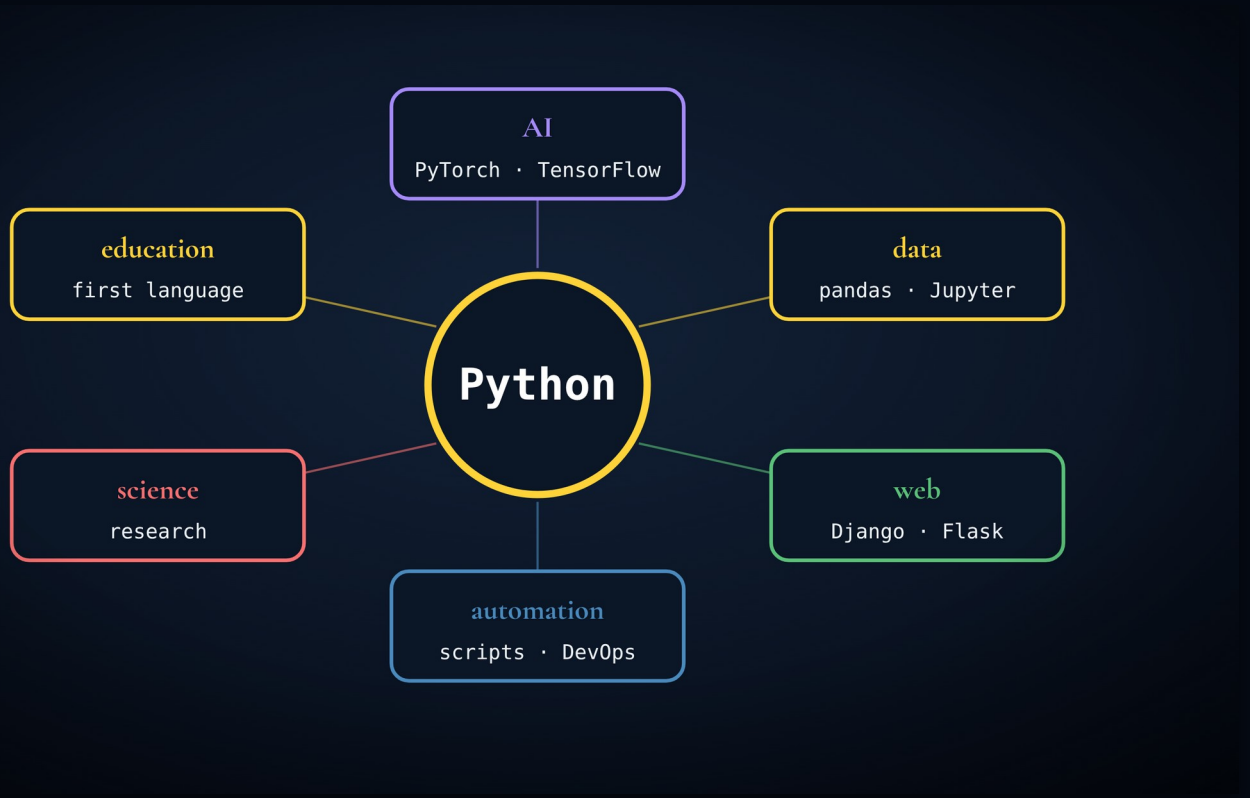
From Python 2 to Python 3



- 2000: Python 2 · Dec 2008: Python 3 (Unicode, print())
- Jan 1, 2020: Python 2 end of life
- 2018: Guido steps down · Steering Council + PSF · yearly releases

04

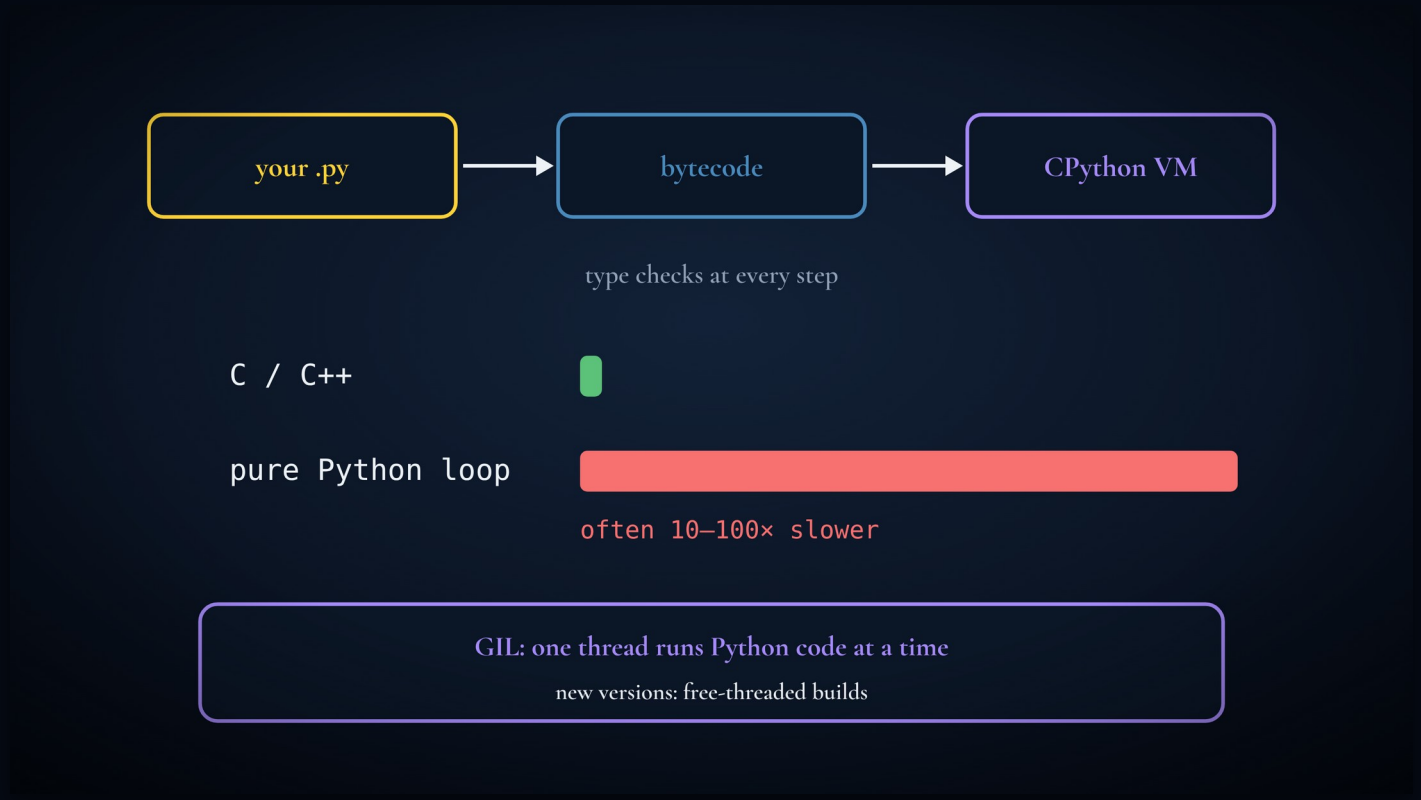
Where Python Shines



- AI: PyTorch, TensorFlow · data: pandas, Jupyter
- Web: Django, Flask · automation, DevOps, science
- Consistently among the most popular languages

05

The Truth About Speed



- CPython: bytecode on a virtual machine
- Pure-Python loops: often 10–100× slower than C
- The GIL: one thread at a time (being removed)

06

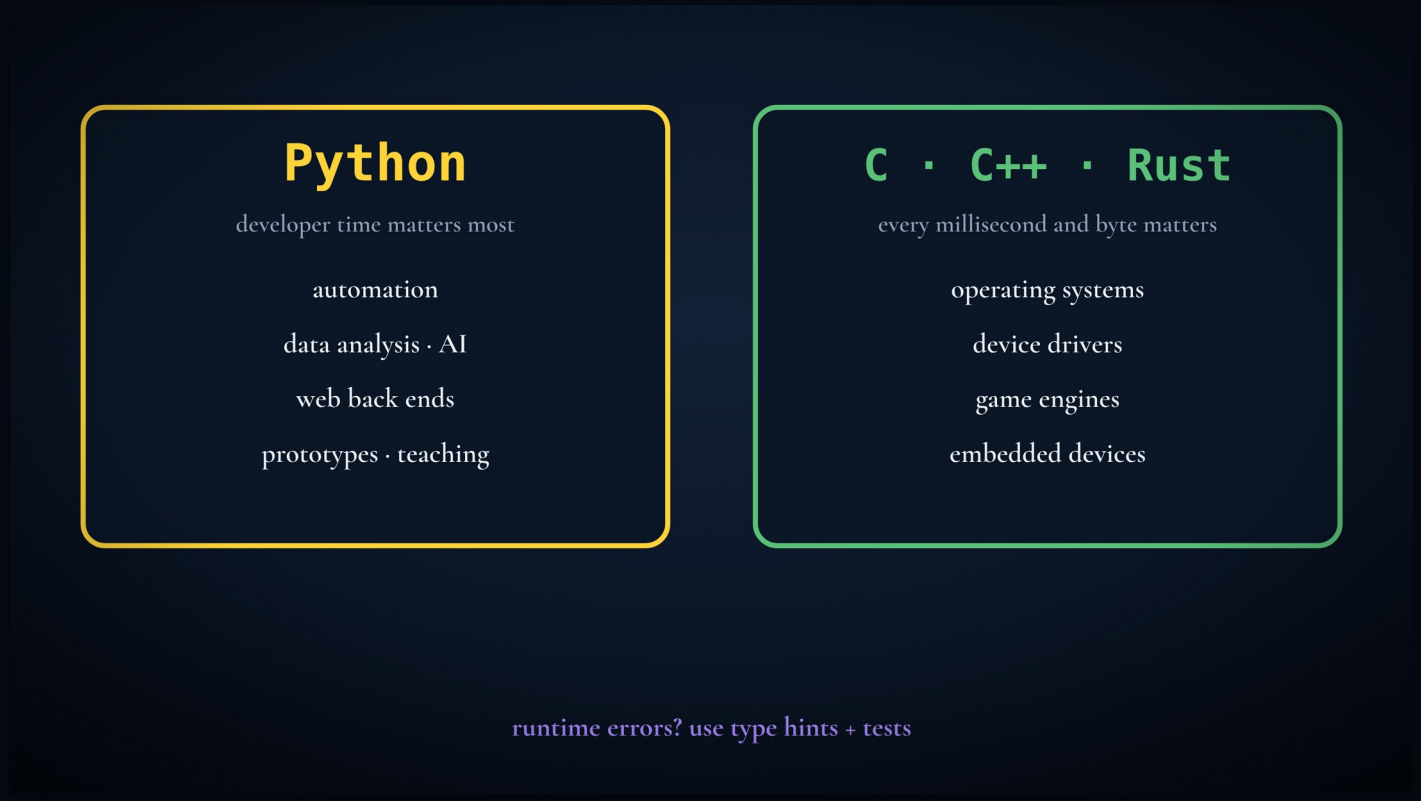
The Secret: C Inside



- NumPy: compact arrays, math in compiled C
- re module: regex engine written in C
- Vectorize: let C libraries do the loops

07

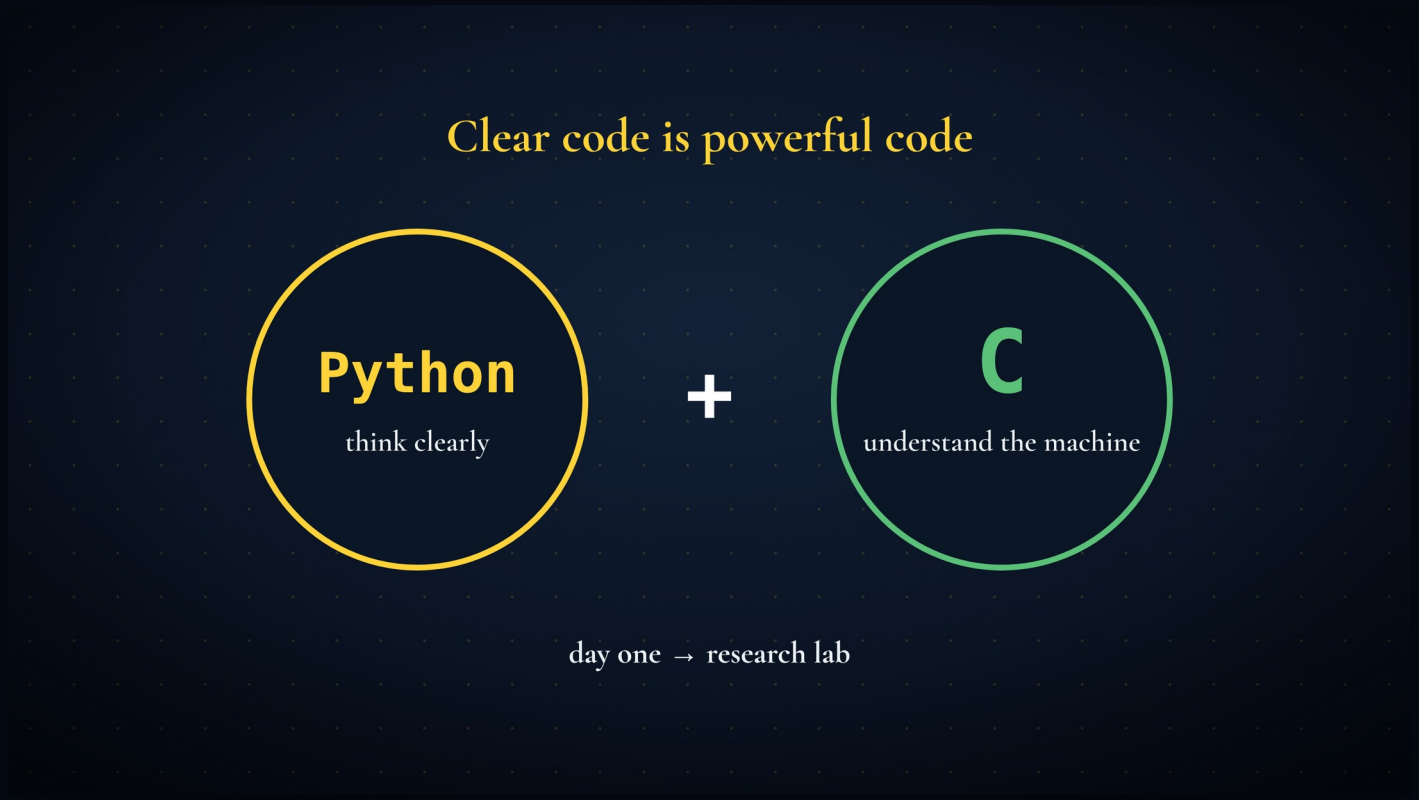
When to Choose Python



- Python: automation, data, AI, web back ends, teaching
- C / C++ / Rust: OS, drivers, game engines, embedded
- Runtime errors → type hints + tests

08

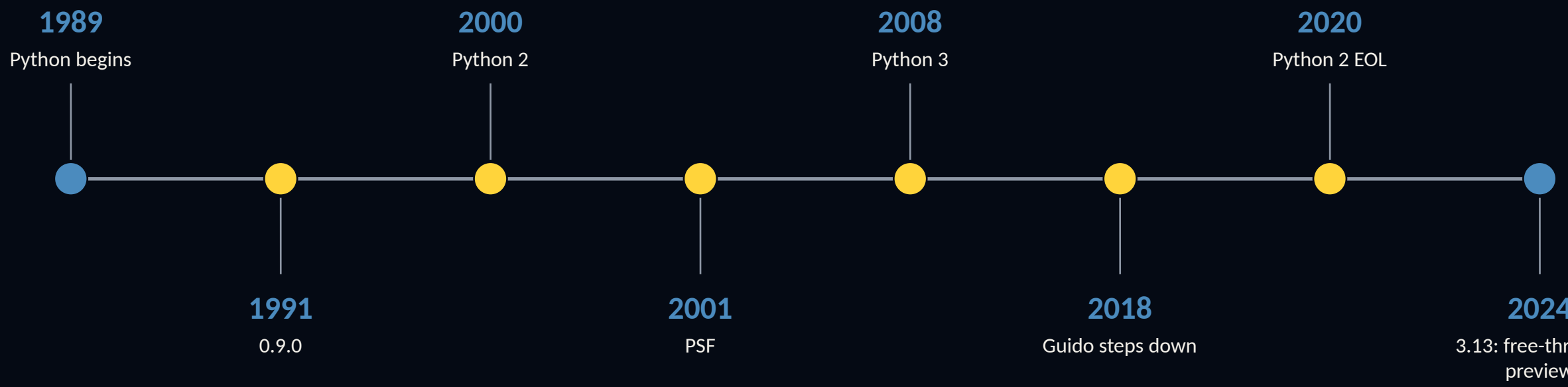
Start with Python



- Clear code is powerful code
- Useful on day one, still useful in research
- Python to think clearly · C to understand the machine

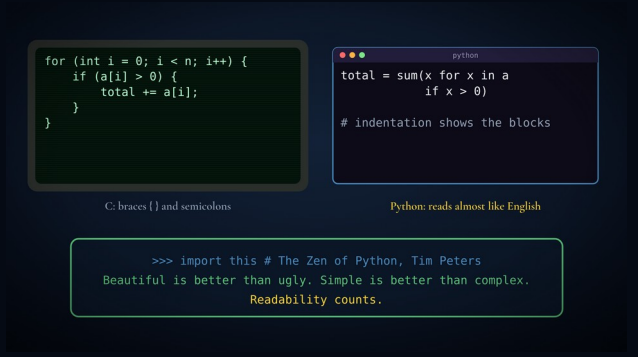
09

Timeline: 1989 to 2024



Sources and Further Reading

1. Guido van Rossum, foreword to “Programming Python” (1996) — python.org
2. The Python Tutorial and Standard Library documentation — docs.python.org
3. PEP 20 – The Zen of Python · PEP 373 (Python 2.7 end of life) · PEP 703 (making the GIL optional)
4. NumPy documentation — numpy.org · Python Package Index — pypi.org





Thank you for watching

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