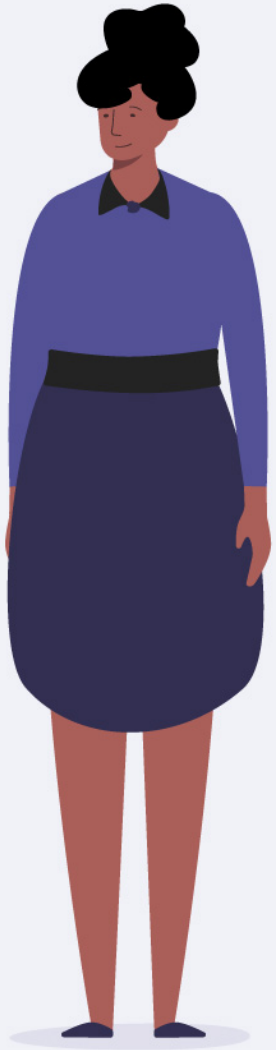
Core Python: Big Picture

WHY PYTHON?

Jason Olson
SOFTWARE ENGINEER

@jolson88 www.jolson88.com


Why Python?
What makes Python unique?
Should I learn more?



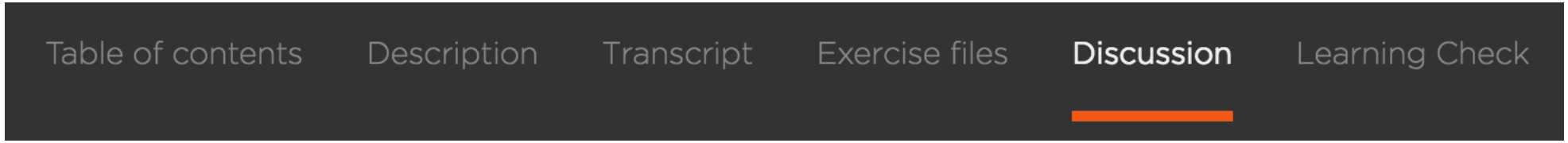

python™

Big Picture Course

No software to install

No code to write

Thoughts? Comments? Questions?



@jolson88

Agenda

Simple to learn

Simple to use

Great community

Widely used

High Demand

Simple to Learn

Minimal Computer Knowledge Required

~~Memory vs. Hard Drive~~

~~Operating Systems~~

~~Compilers~~

Easy to Read and Understand

Shakespeare's
Hamlet

Homer's
Odyssey

Melville's
Moby Dick

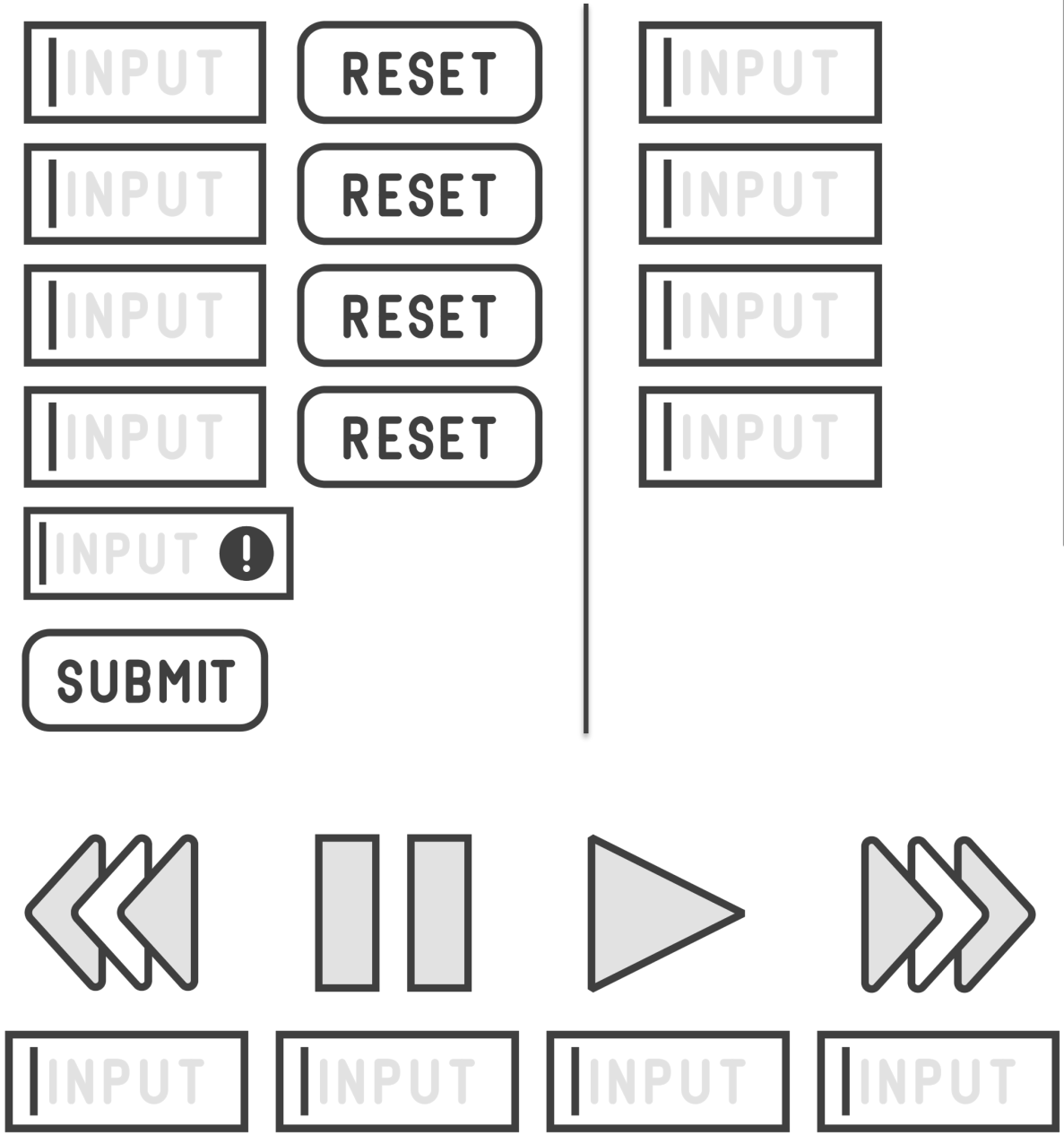
Simple to Use

One Way to Do Things

1


2 3
4 5
6 7

Focus on Simplicity


INPUT
RESET
INPUT
RESET
INPUT
RESET
INPUT
RESET
INPUT
INPUT
INPUT
INPUT
INPUT
INPUT
INPUT
INPUT
SUBMIT
INPUT
INPUT
INPUT
INPUT


EASY

Focus on Beauty

Great Community

Python | PSF | Docs | PyPI | Jobs | Community

www.python.org/community

python™

Donate | Search | GO | Socialize

About | Downloads | Documentation | Community | Success Stories | News | Events

Python's community is vast; diverse & aims to grow; Python is Open.

Great software is supported by great people, and Python is no exception. Our user base is enthusiastic and dedicated to spreading use of the language far and wide. Our community can help support the beginner, the expert, and adds to the ever-increasing open-source knowledgebase.

Countless Python packages

- Python FAQs

Great tools

We want to be open about how we can improve transparency, provide

Much more...

Software Foundation Community Survey here.

Success Stories

My experience with the Python community has been awesome. I have met some fantastic people through local meetups and gotten great support. @alex_gaynor

Python Weekly

Python Weekly is a free weekly email newsletter featuring curated news, articles, new releases, jobs, and more. Curated by Rahul Chaudhary every Thursday.

Go to pythonweekly.com to sign up.

PySlackers

PySlackers is a community of Python enthusiasts centered around an open Slack team.

Go to pyslackers.com for more information and to join.

Python Discord

Python Discord is a large community

Internet Relay Chat

Freenode IRC hosts several channels. Select an IRC client, register your nickname with Freenode, and you can be off and running!

Freenode IRC General Channels

#python for general questions
#python-dev for CPython developers
#distutils for Python packaging discussion


Python
PSF
Docs
PyPI
Jobs
Community
www.python.org/dev/peps
python
Donate
Search
GO
Socialize
About
Downloads
Documentation
Community
Success Stories
News
Events
Tweets by @ThePSF
Python Software Foundation
Proposing new features
Welcome to Python.org
Collecting input
Python Software Foundation
@ThePSF
Documenting design decisions
The Python Logo
The official home of th...
python.org
Embed
View on Twitter
The PSF
The Python Software Foundation is the organization behind Python. Become a member of the PSF and help advance the software and
Python »» Python Developer's Guide »» PEP Index »» PEP 0 -- Index of Python Enhancement Proposals (PEPs)
PEP 0 -- Index of Python Enhancement Proposals (PEPs)
PEP: 0
Title: Index of Python Enhancement Proposals (PEPs)
Last-Modified: 2020-11-22
Author: python-dev <python-dev at python.org>
Status: Active
Type: Informational
Created: 13-Jul-2000
Contents
Introduction
Index by Category
Meta-PEPs (PEPs about PEPs or Processes)
Other Informational PEPs
Provisional PEPs (provisionally accepted; interface may still change)
Accepted PEPs (accepted; may not be implemented yet)
Open PEPs (under consideration)
Finished PEPs (done, with a stable interface)
Historical Meta-PEPs and Informational PEPs
Deferred PEPs (postponed pending further research or updates)
Abandoned, Withdrawn, and Rejected PEPs

Python is Widely Used

Many Different Uses

Web Development

Data Science

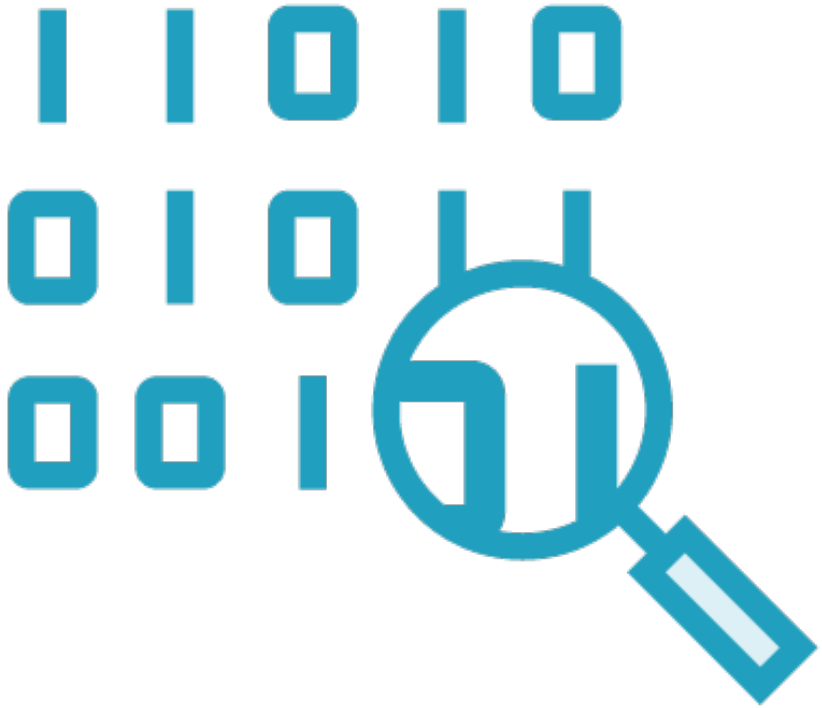
Education and Learning

Scripting

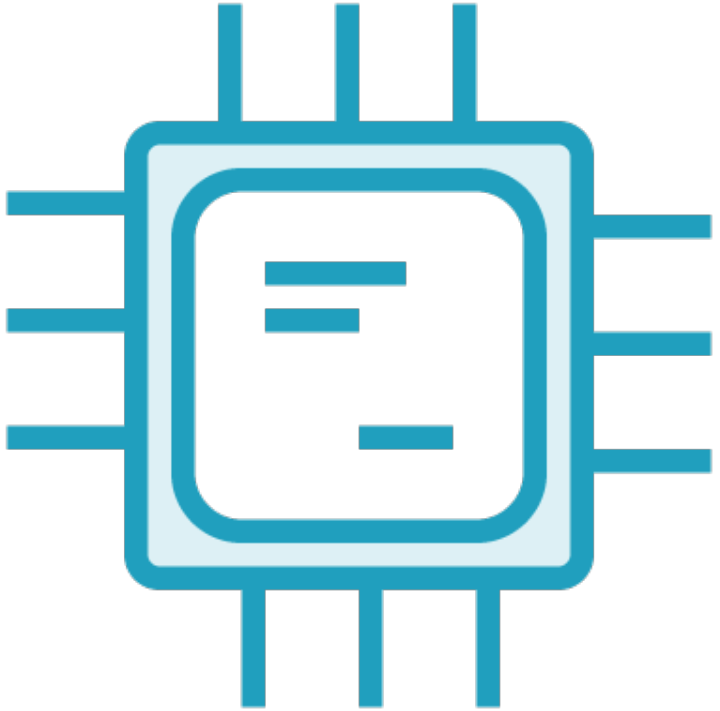
Web Development

API	Website	App (CMS, ERP)
Flask	Django	Plone
Bottle	TurboGears	django-cms
Pyramid	web2py	Mezzanine

Data Science



Big Data



Machine Learning

Big Data

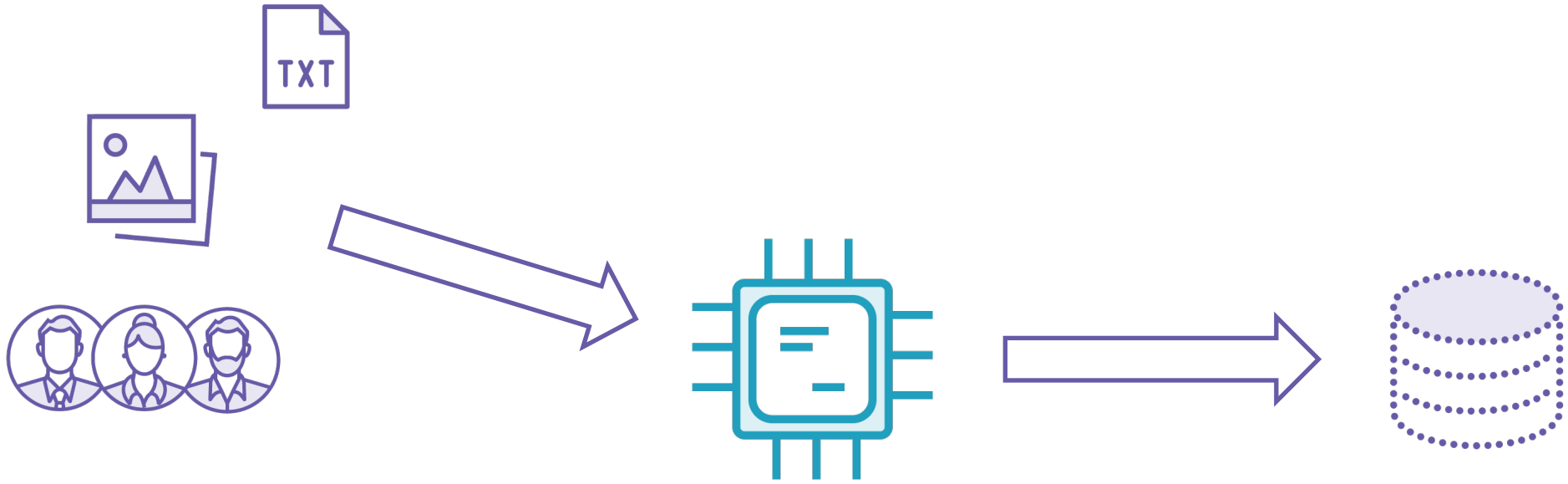
Kilobytes Megabytes Gigabytes

Terabytes Petabytes Exabytes

2500000000000000000 bytes/day

New Systems Are Needed!

Machine Learning



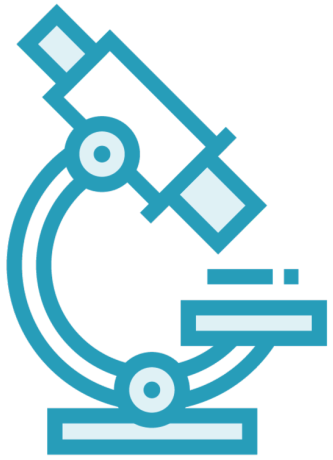
Spam

Network Intrusion Detection

Optical Character Recognition

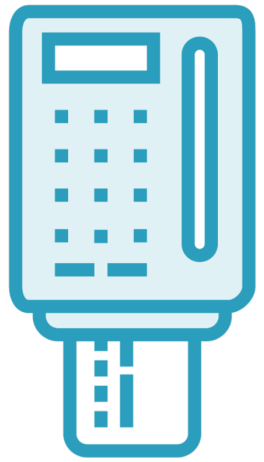
Computer Vision

Education and Learning



STEM

Programming



Hardware

Education and Learning

Jupyter Notebooks

jupyter Rich Output (unsaved changes)

Visit repo | Copy Binder link

File Edit View Insert Cell Kernel Widgets Help | Not Trusted | Python 3

Run | Markdown | Download | GitHub | Binder | **Memory:** 167 / 2048 MB

```
      .style("text-anchor", "middle")
      .text(function(d) { return d.name.substring(0, d.r / 3); });
});

d3.select(self.frameElement).style("height", diameter + "px");
```

```
<IPython.core.display.Javascript object>
```

LaTeX

The IPython display system also has builtin support for the display of mathematical expressions typeset in LaTeX, which is rendered in the browser using MathJax.

You can pass raw LaTeX test as a string to the `Math` object:

In [24]:
```
from IPython.display import Math
Math(r'F(k) = \int_{-\infty}^{\infty} f(x) e^{2\pi i k} dx')
```

Out[24]:

$$F(k) = \int_{-\infty}^{\infty} f(x) e^{2\pi i k} \, dx$$

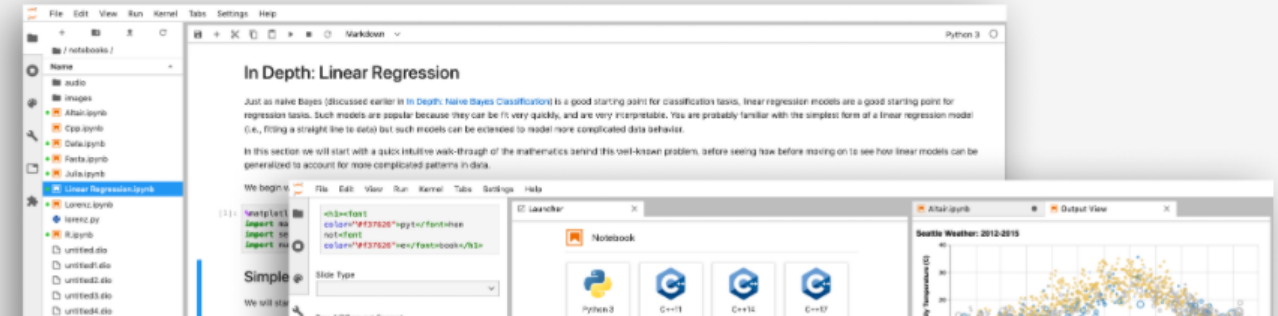
With the `Latex` class, you have to include the delimiters yourself. This allows you to use other LaTeX modes such as `eqnarray`:

In [25]:
```
from IPython.display import Latex
Latex(r"""\begin{eqnarray}
\nabla \times \vec{\mathbf{B}} -\, \frac1c\, \frac{\partial\vec{\mathbf{E}}}{\partial t} & = \frac{4\pi}{c}\vec{\mathbf{j}} \\
\nabla \cdot \vec{\mathbf{E}} & = 4 \pi \rho \\
\nabla \times \vec{\mathbf{E}}\, +\, \frac1c\, \frac{\partial\vec{\mathbf{B}}}{\partial t} & = \vec{\mathbf{0}} \\
\nabla \cdot \vec{\mathbf{B}} & = 0
\end{eqnarray}""")
```

Out[25]:

$$\begin{aligned}
\nabla \times \vec{\mathbf{B}} - \frac{1}{c}\frac{\partial \vec{\mathbf{E}}}{\partial t} &= \frac{4\pi}{c}\vec{\mathbf{j}} \\
\nabla \cdot \vec{\mathbf{E}} &= 4\pi\rho \\
\nabla \times \vec{\mathbf{E}} + \frac{1}{c}\frac{\partial \vec{\mathbf{B}}}{\partial t} &= \vec{\mathbf{0}} \\
\nabla \cdot \vec{\mathbf{B}} &= 0
\end{aligned}$$

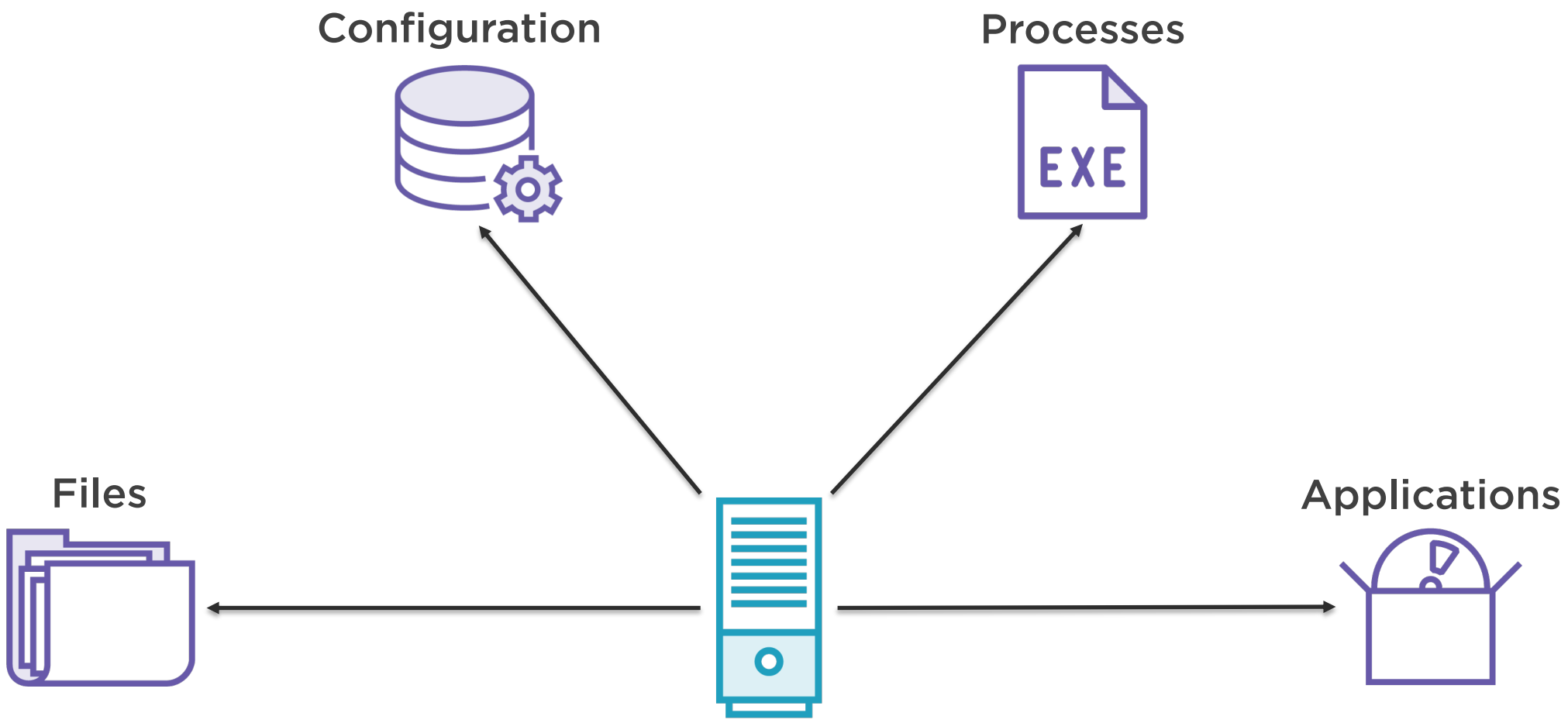
Project Jupyter exists to develop open-source software, open-standards, and services for interactive computing across dozens of programming languages.



JupyterLab: Jupyter's Next-Generation Notebook Interface

JupyterLab is a web-based interactive development environment for Jupyter notebooks, code, a
JupyterLab is flexible: configure and arrange the user interface to support a wide range of workfl
science, scientific computing, and machine learning. JupyterLab is extensible and modular: write
new components and integrate with existing ones.

Machine Scripting



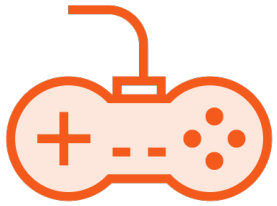
Application Scripting

SUBMIT

Responding
To
Events

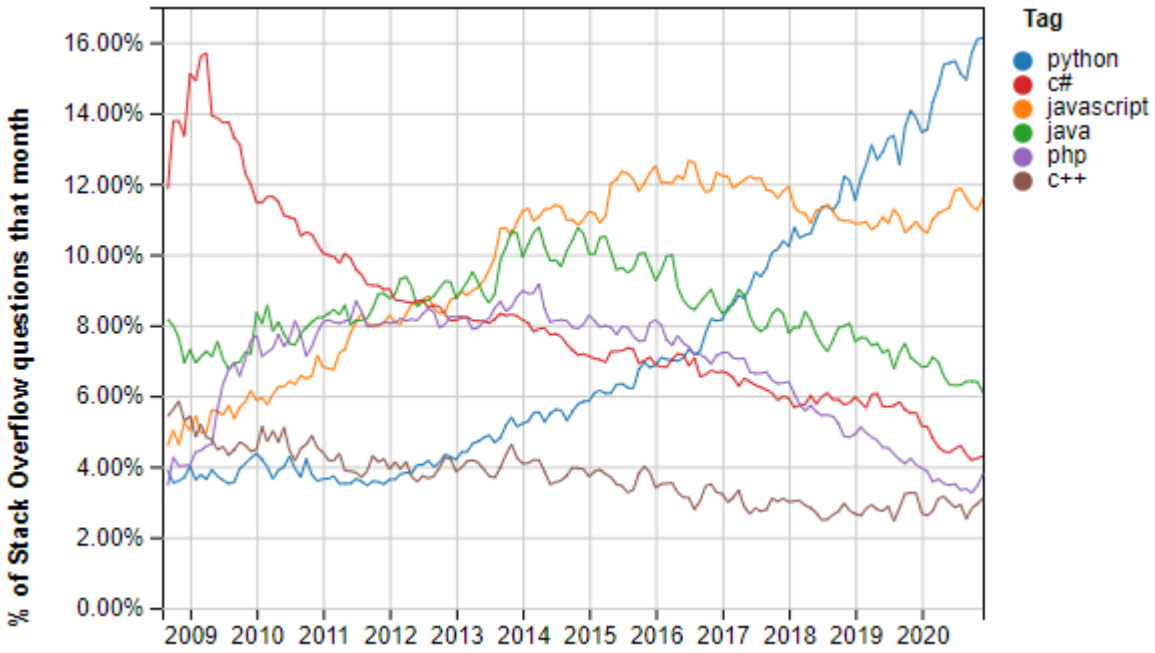
INPUT

New
Functionality



High Demand

Growing in Popularity



Stack Overflow (https://bit.ly/3rXH8UL)

Worldwide, Jan 2021 compared to a year ago:

Rank	Change	Language	Share	Trend
1		Python	30.44 %	+1.2 %
2		Java	16.76 %	-2.0 %
3		JavaScript	8.44 %	+0.3 %
4		C#	6.53 %	-0.7 %
5	↑	C/C++	6.33 %	+0.3 %
6	↓	PHP	6.05 %	-0.2 %
7		R	3.87 %	+0.1 %
8		Objective-C	3.71 %	+1.2 %
9		Swift	2.14 %	-0.3 %
10		TypeScript	1.78 %	-0.0 %

PYPL (http://bit.ly/2eJ2rnC)

Growing in Popularity

Top Programming Languages In 2020 By IEEE

1. Python
2. Java
3. C
4. C++
5. JavaScript
6. R
7. Arduino
8. Go
9. Swift
10. Matlab

IEEE (https://bit.ly/3rRikh2)

Jan 2021	Jan 2020	Change	Programming Language	Ratings
1	2	↑	C	17.38%
2	1	↓	Java	11.96%
3	3		Python	11.72%
4	4		C++	7.56%
5	5		C#	3.95%
6	6		Visual Basic	3.84%
7	7		JavaScript	2.20%
8	8		PHP	1.99%
9	18	⇈	R	1.90%
10	23	⇈	Groovy	1.84%

TIOBE (https://www.tiobe.com/tiobe-index/)