Python Developers Survey 2021

language

Logic: Show/hide trigger exists.

ID: 7

Is Python the main language you use for your current projects?*

( ) Yes

( ) No, I use Python as a secondary language

( ) No, I don't use Python for my current projects

ID: 103

What other language(s) do you use?*

[ ] None

[ ] Java

[ ] JavaScript

[ ] C/C++

[ ] PHP

[ ] C#

[ ] Ruby

[ ] Bash / Shell

[ ] Objective-C

[ ] Go

[ ] Visual Basic

[ ] Scala

[ ] SQL

[ ] Kotlin

[ ] R

[ ] Swift

[ ] Clojure

[ ] Perl

[ ] Rust

[ ] Groovy

[ ] TypeScript

[ ] CoffeeScript

[ ] HTML/CSS

[ ] Other - Write In:: _____*

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purpose

How long have you been programming in Python?*

( ) Less than 1 year

( ) 1–2 years

( ) 3–5 years

( ) 6–10 years

( ) 11+ years

How many years of professional coding experience do you have?*

( ) Less than 1 year

( ) 1–2 years

( ) 3–5 years

( ) 6–10 years

( ) 11+ years

For what purposes do you mainly use Python?*

( ) For work

( ) For personal, educational or side projects

( ) Both for work and personal

Logic: Show/hide trigger exists.

What do you use Python for?*

[ ] Educational purposes

[ ] Data analysis

[ ] DevOps / System administration / Writing automation scripts

[ ] Software testing / Writing automated tests

[ ] Software prototyping

[ ] Web development

[ ] Machine learning

[ ] Mobile development

[ ] Desktop development

[ ] Computer graphics

[ ] Network programming

[ ] Game development

[ ] Multimedia applications development

[ ] Embedded development

[ ] Programming of web parsers / scrapers / crawlers

[ ] Other - Write In:: _____ *

(untitled)

What do you use Python for the most?*

To what extent are you involved in the following activities?*

	primary activity	secondary activity	hobby

Do you consider yourself as a Data-Scientist?*

( ) Yes

( ) No

( ) Other – Write In:: _____ *

Python version

Which version of Python do you use the most?*

( ) Python 2

( ) Python 3

Which version of Python 2 do you use the most?*

( ) Python 2.0

( ) Python 2.1

( ) Python 2.2

( ) Python 2.3

( ) Python 2.4

( ) Python 2.5

( ) Python 2.6

( ) Python 2.7

Which version of Python 3 do you use the most?*

( ) Python 3.5 or lower

( ) Python 3.6

( ) Python 3.7

( ) Python 3.8

( ) Python 3.9

( ) Python 3.10

ID: 254

What do you typically use to upgrade your Python version?*

[ ] I don't update

[ ] Somebody else manages Python updates for me

[ ] Python.org

[ ] Build from source

[ ] Automatic upgrade via cloud provider

[ ] Anaconda

[ ] ActivePython

[ ] Intel Distribution for Python

[ ] OS-provided Python (via apt-get, yum, homebrew, etc.)

[ ] pyenv

[ ] pythonz

[ ] I use Docker containers

[ ] Other – Write In:: _____*

Do you use any of the following tools to isolate Python environments, if any?*

[ ] None

[ ] Virtualenv

[ ] Pipenv

[ ] Poetry

[ ] Conda

[ ] Docker

[ ] Vagrant / virtual machines

[ ] Other – Write In:: _____*

Frameworks

What web frameworks / libraries do you use in addition to Python?*

[ ] None

[ ] Django

[ ] web2py

[ ] Bottle

[ ] CherryPy

[ ] Flask

[ ] Hug

[ ] Pyramid

[ ] Tornado

[ ] Falcon

[ ] FastAPI

[ ] Other – Write In:: _____*

What data science framework(s) do you use in addition to Python?*

[ ] None

[ ] PyTorch

[ ] NumPy

[ ] SciPy

[ ] Pandas

[ ] Matplotlib

[ ] Seaborn

[ ] SciKit-Learn

[ ] Keras

[ ] TensorFlow

[ ] Theano

[ ] NLTK

[ ] MXNet

[ ] Gensim

[ ] Other - Write In:: _____*

Which of the following frameworks / libraries do you use in addition to Python?*

[ ] None

[ ] Requests

[ ] aiohttp

[ ] httpx

[ ] PyQT

[ ] PyGTK

[ ] wxPython

[ ] Pillow

[ ] Tkinter

[ ] Pygame

[ ] Twisted

[ ] Asyncio

[ ] Kivy

[ ] Six

[ ] Scrapy

[ ] Other – Write In:: _____*

Cloud

Which of the following cloud platforms do you use?*

[ ] None

[ ] Google Cloud Platform

[ ] AWS

[ ] Microsoft Azure

[ ] Rackspace

[ ] Heroku

[ ] DigitalOcean

[ ] Linode

[ ] PythonAnywhere

[ ] OpenShift

[ ] OpenStack

[ ] Other – Write In:: _____*

How do you run code in the cloud (in the production environment)?*

[ ] None of the following

[ ] In virtual machines

[ ] Within containers

[ ] On a Platform-as-a-Service (such as Heroku or Google App Engine)

[ ] Serverless (such as AWS Lambda or Cloud Functions)

[ ] Other – Write In:: _____*

How do you develop for the cloud?*

[ ] None of the following

[ ] With local system interpreter

[ ] Locally with virtualenv (or similar)

[ ] In Docker containers

[ ] In virtual machines

[ ] In remote development environments

[ ] Directly in the production environment

[ ] Other – Write In:: _____*

What operating system(s) are your development environment?*

[ ] Windows

[ ] Linux

[ ] macOS

[ ] BSD

[ ] Other – Write In:: _____*

Which Python unit-testing framework(s) do you use, if any?*

[ ] None

[ ] pytest

[ ] nose

[ ] unittest

[ ] doctest

[ ] tox

[ ] Hypothesis

[ ] mock

[ ] Other – Write In:: _____*

Tools (DB, orm, big data)

What ORM(s) do you use together with Python, if any?*

[ ] No database development

[ ] Raw SQL

[ ] Django ORM

[ ] SQLAlchemy

[ ] Peewee

[ ] Dejavu

[ ] PonyORM

[ ] SQLObject

[ ] Tortoise ORM

[ ] Other – Write In:: _____*

Which database(s) do you regularly use, if any?*

[ ] None

[ ] DB2

[ ] MS SQL Server

[ ] MySQL

[ ] Oracle Database

[ ] PostgreSQL

[ ] SQLite

[ ] Cassandra

[ ] Couchbase

[ ] HBase

[ ] MongoDB

[ ] Neo4j

[ ] Redis

[ ] Amazon Redshift

[ ] h2

[ ] Other – Write In:: _____*

ID: 278

Which of the following Big Data tool(s) do you use, if any? *

[ ] None

[ ] Apache Beam

[ ] Apache Flink

[ ] Apache Hadoop/MapReduce

[ ] Apache Hive

[ ] Apache Samza

[ ] Apache Kafka

[ ] Apache Spark

[ ] Apache Tez

[ ] Dask

[ ] ClickHouse

[ ] Other – Write In:: _____*

ID: 279

Which Continuous Integration (CI) system(s) do you regularly use?*

[ ] None

[ ] GitHub Actions

[ ] Gitlab CI

[ ] Jenkins / Hudson

[ ] TeamCity

[ ] Bamboo

[ ] Travis CI

[ ] CircleCI

[ ] CruiseControl

[ ] Bitbucket Pipelines

[ ] AppVeyor

[ ] Other – Write In:: _____*

ID: 280

Which configuration management tools do you use, if any?*

[ ] None

[ ] Salt

[ ] Puppet

[ ] Chef

[ ] Ansible

[ ] Custom solution

[ ] Other – Write In:: _____*

ID: 337

What documentation tool do you use? *

[ ] I don't use any documentation tools

[ ] Sphinx

[ ] MKDocs

[ ] Doxygen

[ ] Other – Write In:: _____

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main IDE

What is the main editor you use for your current Python development?*

( ) None

( ) PyCharm Professional Edition

( ) PyCharm Community Edition

( ) Sublime Text

( ) Vim

( ) Atom

( ) VS Code

( ) Eclipse + Pydev

( ) JupyterLab

( ) Jupyter Notebook

( ) IntelliJ IDEA

( ) NotePad++

( ) IDLE

( ) Emacs

( ) Python Tools for Visual Studio (PTVS)

( ) Spyder

( ) Other – Write In:: _____*

IDE satisfaction

What editors/IDEs do you use for Python development in addition to [question('value'), id='298']?*

[ ] None

[ ] Other – Write In:: _____*

ID: 150

Do you regularly work on multiple projects at the same time?*

( ) No, I only work on one project

( ) Yes, I work on one main and several side projects

( ) Yes, I work on many different projects

IDE questions

ID: 135

How did you first learn about [question('value'), id='298']?

( ) Social network

( ) Friend / Colleague

( ) School / University

( ) Advertising

( ) Search engines

( ) Online learning platform / Online course

( ) Technical review / Forum / Blog

( ) Conference / User Group

( ) Other – Write In:: _____*

( ) I don't remember

How often do you use [question('value'), id='298']?

( ) Daily

( ) Weekly

( ) Monthly

( ) Less frequently

Are you missing any features in [question('value'), id='298']?

( ) No, it has all the features I need

( ) Yes – Please list:: _____ *

Logic: Show/hide trigger exists.

How likely is it that you would recommend [question('value'), id='298'] to a friend or colleague?

Not at all likely

( ) 0   ( ) 1   ( ) 2   ( ) 3   ( ) 4   ( ) 5   ( ) 6   ( ) 7   ( ) 8   ( ) 9   ( ) 10

Extremely likely

Python Core Development

Logic: Show/hide trigger exists.

Have you tried reporting your issues?*

[ ] Yes, I've submitted a pull request on GitHub

[ ] Yes, I've reported an issue on bugs.python.org

[ ] Yes, I've asked on mailing lists

[ ] Yes, I've asked on Discourse

[ ] Yes, I've asked elsewhere

[ ] No

ID: 314

Was your issue solved?*

( ) Yes, quickly

( ) Yes, eventually

( ) No, although there was discussion

( ) No, I never heard back from anybody

( ) Other – Write In:: _____

ID: 315

Which channels do you prefer for communicating with the core developers? *

[ ] Mailing lists

[ ] Discourse

[ ] GitHub

[ ] Twitter

[ ] IRC

[ ] bugs.python.org

[ ] I've never contacted the core developers

ID: 316

What do you think about the new Developer-in-Residence role? *

( ) I have never heard of it

( ) It seems good, but I haven't seen any impact yet

( ) It seems good, and I am already seeing an impact

( ) I don't like it

Python Packaging

Which of the following tools do you use to isolate Python environments between projects?*

[ ] virtualenv

[ ] venv

[ ] virtualenvwrapper

[ ] hatch

[ ] Poetry

[ ] pipenv

[ ] Conda

[ ] I do not use any tools to isolate Python environments

[ ] Other - Write In: _____

Do you use a virtual environment (e.g. virtualenv) in containers (e.g. Docker)? *

( ) Yes, I use a virtual environment in containers

( ) No, I do not use a virtual environment in containers

( ) No, I do not use containers

Do you use the standard library (Python 3.3+) module venv?*

[ ] I use venv directly

[ ] I use it via Poetry

[ ] I use it via Pipenv

[ ] I use it via virtualenv

[ ] I use it via tox

[ ] I don't know

[ ] No, I do not use venv

[ ] Other – Write In:: _____

Which tools related to Python packaging do you use directly? *

[ ] None / I'm not sure

[ ] pip

[ ] Conda

[ ] pipenv

[ ] Poetry

[ ] venv (standard library)

[ ] virtualenv

[ ] flit

[ ] tox

[ ] PDM

[ ] twine

[ ] Containers (eg: via Docker)

[ ] Virtual machines

[ ] Workplace specific proprietary solution

[ ] Other – Write In:: _____

Logic: Show/hide trigger exists.

Do you use any tools for managing precise/exact versions (version pinning) of application dependencies?*

( ) Yes

( ) No

Logic: Hidden unless: #48 Question "Do you use any tools for managing precise/exact versions (version pinning) of application dependencies?" is one of the following answers ("Yes")

What format(s) is your application dependency information stored in?*

[ ] None

[ ] requirements.txt

[ ] pyproject.toml

[ ] pipfile.lock

[ ] poetry.lock

[ ] Conda environment.yml

[ ] pip constraints.txt

[ ] Other – Write In:: _____

Logic: Hidden unless: #48 Question "Do you use any tools for managing precise/exact versions (version pinning) of application dependencies?" is one of the following answers ("Yes")

Which of the following tools do you use for application dependency management?*

[ ] None

[ ] pipenv

[ ] poetry

[ ] pip-tools

[ ] Other – Write In:: _____

Do you use any of the following automated services to update the versions of application dependencies?*

[ ] None

[ ] Dependabot

[ ] PyUp

[ ] Custom tools, e.g. a cron job or scheduled CI task

[ ] No, my application dependencies are updated manually

[ ] Other – Write In:: _____

Which of the following tools do you use for installing packages?*

[ ] None

[ ] pip

[ ] easy_install

[ ] Conda

[ ] Poetry

[ ] pip-sync

[ ] pipx

[ ] Other – Write In:: _____

Where do you install packages from? *

[ ] I'm not sure

[ ] PyPI

[ ] Local source

[ ] Internal mirror of PyPI

[ ] Private Python Package Index

[ ] Anaconda

[ ] Default Conda channel

[ ] conda-forge Conda channel

[ ] Other Conda channel

[ ] GitHub

[ ] Artifactory

[ ] GitLab

[ ] From Linux distribution

[ ] Other – Write In:: _____

Python Packaging 2

Do you develop applications?*

( ) Yes

( ) No

Which tool(s) do you use to develop Python applications?*

[ ] None / I'm not sure

[ ] Setuptools

[ ] build

[ ] Wheel

[ ] Enscons

[ ] pex

[ ] Flit

[ ] Poetry

[ ] conda-build

[ ] maturin

[ ] PDM-PEP517

[ ] Other – Write In:: _____

Have you packaged and published a Python application that you developed to a package repository?*

( ) Yes

( ) No

Where did you publish your Python application packages?*

[ ] PyPI

[ ] Private Python Package Index

[ ] Internal mirror of PyPI

[ ] conda-forge

[ ] Other – Write In:: _____

Do you develop and package Python libraries?*

( ) Yes

( ) No

Which tools do you use to create packages of your Python libraries? *

[ ] Setuptools

[ ] build

[ ] Wheel

[ ] Enscons

[ ] pex

[ ] Flit

[ ] Poetry

[ ] conda-build

[ ] maturin

[ ] PDM-PEP517

[ ] Other – Write In:: _____

Have you packaged and published a Python library to a package repository? *

( ) Yes

( ) No

Where have you published your packaged Python libraries?*

[ ] PyPI

[ ] Private Python Package Index

[ ] Internal mirror of PyPI

[ ] conda-forge

[ ] Other – Write In:: _____

DEMOGRAPHICS

Most of the time, do you ...? *

( ) Work in a team

( ) Work on your own project(s) independently

( ) Work as an external consultant or trainer

How many people are in your project team?*

( ) 2-7 people

( ) 8-12 people

( ) 13-20 people

( ) 21-40 people

( ) More than 40 people

What is your employment status?*

( ) Fully employed by a company / organization

( ) Partially employed by a company / organization

( ) Self-employed *(a person earning income directly from one's own business, trade, or profession)*

( ) Freelancer *(a person pursuing a profession without a long-term commitment to any one employer)*

( ) Working student

( ) Student

( ) Retired

( ) Other – Write In:: _____*

How many people work for your company / organization?*

( ) Just me

( ) 2–10

( ) 11–50

( ) 51–500

( ) 501–1,000

( ) 1,001–5,000

( ) More than 5,000

( ) Not sure

Which of the following industries best describes your company's business?

Choose one from the list:*

( ) Accounting / Finance / Insurance

( ) Administration / Management

( ) Banking / Real Estate / Mortgage Financing

( ) Business / Strategic Management

( ) Construction / Architecture

( ) Customer Support

( ) Design

( ) Education / Training

( ) Human Resources

( ) Information Technology / Software Development

( ) Law

( ) Logistics/ Transportation

( ) Machinery

( ) Manufacturing

( ) Marketing

( ) Medicine / Health

( ) Non-profit

( ) Publishing

( ) Restaurants / Hospitality

( ) Sales / Distribution / Business Development

( ) Science

( ) Security

( ) Service/ Maintenance

( ) Other

Which of the following industries do you develop for?

Choose one from the list:*

( ) Accounting / Finance / Insurance

( ) Administration / Management

( ) Banking / Real Estate / Mortgage Financing

( ) Business / Strategic Management

( ) Construction / Architecture

( ) Customer Support

( ) Design

( ) Education / Training

( ) Human Resources

( ) Information Technology / Software Development

( ) Law

( ) Logistics/ Transportation

( ) Machinery

( ) Manufacturing

( ) Marketing

( ) Medicine / Health

( ) Non-profit

( ) Publishing

( ) Restaurants / Hospitality

( ) Sales / Distribution / Business Development

( ) Science

( ) Security

( ) Service/ Maintenance

( ) Other

Company 2

Which of the following best describes your job role(s)?*

[ ] DBA

[ ] Architect

[ ] QA engineer

[ ] Developer / Programmer

[ ] Technical writer

[ ] Technical support

[ ] Data analyst

[ ] Business analyst

[ ] Team lead

[ ] Product manager

[ ] CIO / CEO / CTO

[ ] Systems analyst

[ ] Other – Write In:: _____*

Demographics

ID: 173

Could you tell us your age range?*

( ) 17 or younger

( ) 18–20

( ) 21–29

( ) 30–39

( ) 40–49

( ) 50–59

( ) 60 or older

ID: 309

What country or region do you live in? *

( ) Afghanistan

( ) Andorra

( ) United Arab Emirates

( ) Algeria

( ) Antigua and Barbuda

( ) Anguilla

( ) Albania

( ) Armenia

( ) Angola

( ) Antarctica

( ) Argentina

( ) American Samoa

( ) Austria

( ) Australia

( ) Aruba

( ) Finland: Aland Islands

( ) Azerbaijan

( ) Bosnia and Herzegovina

( ) Barbados

( ) Bangladesh

( ) Belgium

( ) Burkina Faso

( ) Bulgaria

( ) Bahrain

( ) Burundi

( ) Benin

( ) Bermuda

( ) Brunei Darussalam

( ) Bolivia

( ) Brazil

( ) Bahamas

( ) Bhutan

( ) Botswana

( ) Belarus

( ) Belize

( ) Canada

( ) Cocos (Keeling) Islands

( ) Congo, Democratic Republic of the

( ) Central African Republic

( ) Congo, Republic of the

( ) Switzerland

( ) Côte d'Ivoire

( ) Cook Islands

( ) Chile

( ) Cameroon

( ) China

( ) Colombia

( ) Costa Rica

( ) Cape Verde

( ) Curaçao

( ) Christmas Island

( ) Cyprus

( ) Czech Republic

( ) Germany

( ) Djibouti

( ) Denmark

( ) Dominica

( ) Dominican Republic

( ) Algeria

( ) Ecuador

( ) Estonia

( ) Egypt

( ) Western Sahara

( ) Eritrea

( ) Spain

( ) Ethiopia

( ) Finland

( ) Fiji

( ) Falkland Islands (Malvinas)

( ) Micronesia

( ) Faroe Islands

( ) France

( ) Gabon

( ) United Kingdom

( ) Grenada

( ) Georgia

( ) French Guiana

( ) Guernsey

( ) Ghana

( ) Gibraltar

( ) Greenland

( ) Gambia

( ) Guinea

( ) Guadeloupe

( ) Equatorial Guinea

( ) Greece

( ) South Georgia and the South Sandwich Islands

( ) Guatemala

( ) Guam

( ) Guinea-Bissau

( ) Guyana

( ) Honduras

( ) Croatia

( ) Hong Kong

( ) Haiti

( ) Hungary

( ) Spain: Canary Islands

( ) Indonesia

( ) Ireland

( ) Israel

( ) Isle of Man

( ) India

( ) British Indian Ocean Territory

( ) Iran

( ) Iraq

( ) Iceland

( ) Italy

( ) Jersey

( ) Jamaica

( ) Jordan

( ) Japan

( ) Kenya

( ) Kyrgyzstan

( ) Cambodia

( ) Kiribati

( ) Comoros

( ) Saint Kitts and Nevis

( ) South Korea

( ) Kuwait

( ) Cayman Islands

( ) Kazakhstan

( ) Lao People's Democratic Republic

( ) Lebanon

( ) Saint Lucia

( ) Liechtenstein

( ) Sri Lanka

( ) Liberia

( ) Lesotho

( ) Lithuania

( ) Luxembourg

( ) Latvia

( ) Libyan Arab Jamahiriya

( ) Macao

( ) Morocco

( ) Monaco

( ) Moldova

( ) Montenegro

( ) Madagascar

( ) Marshall Islands

( ) North Macedonia

( ) Mali

( ) Myanmar

( ) Mongolia

( ) Northern Mariana Islands

( ) Martinique

( ) Mauritania

( ) Montserrat

( ) Malta

( ) Mauritius

( ) Maldives

( ) Malawi

( ) Mexico

( ) Malaysia

( ) Mozambique

( ) Namibia

( ) New Caledonia

( ) Niger

( ) Norfolk Island

( ) Nigeria

( ) Nicaragua

( ) Netherlands

( ) Norway

( ) Nepal

( ) Nauru

( ) Niue

( ) New Zealand

( ) Oman

( ) Panama

( ) Peru

( ) French Polynesia

( ) Papua New Guinea

( ) Philippines

( ) Pakistan

( ) Poland

( ) Saint Pierre and Miquelon

( ) Pitcairn

( ) Puerto Rico

( ) Palestinian Territory

( ) Portugal

( ) Palau

( ) Paraguay

( ) Qatar

( ) Reunion

( ) Romania

( ) Serbia

( ) Russian Federation

( ) Rwanda

( ) Saudi Arabia

( ) Solomon Islands

( ) Seychelles

( ) Sweden

( ) Singapore

( ) Saint Helena

( ) Slovenia

( ) Svalbard and Jan Mayen

( ) Slovakia

( ) Sierra Leone

( ) San Marino

( ) Senegal

( ) Somalia

( ) Suriname

( ) Sao Tome and Principe

( ) El Salvador

( ) Swaziland

( ) Turks and Caicos Islands

( ) Chad

( ) French Southern Territories

( ) Taiwan

( ) Togo

( ) Thailand

( ) Tajikistan

( ) Tokelau

( ) Timor-Leste

( ) Turkmenistan

( ) Tunisia

( ) Tonga

( ) Turkey

( ) Trinidad and Tobago

( ) Tuvalu

( ) Tanzania

( ) Ukraine

( ) Uganda

( ) United States

( ) Uruguay

( ) Uzbekistan

( ) Holy See (Vatican City State)

( ) Saint Vincent and the Grenadines

( ) Venezuela

( ) Virgin Islands, British

( ) Virgin Islands, U.s.

( ) Viet Nam

( ) Vanuatu

( ) Wallis and Futuna

( ) Samoa

( ) Kosovo

( ) Yemen

( ) Mayotte

( ) South Africa

( ) Zambia

( ) Zimbabwe