Introduction to Python

The following article provides an outline for Introduction to Python. Python is known as an interpreted scripting language. Gudo van Rossum designed it. It was released in the year 1991. The different versions were released for Python like python 1, python 2, and python 3. It is one of the most used scripting languages for automating the modules and tools, development of web applications, handling big data, complex calculations, workflow creation, rapid prototyping, and other software development purposes.

Main Components/Highlights of Python

Given below are the main components/highlights of Python:

- Functions: In Python, there are inbuilt functions that help in retrieving or returning the actual value. For example, Mathematical functions. It is the collection of blocks that can be run at any time where the programmers want or required the functionality.
- Classes: In Python, it defines the structure of variable and statement that needs to execute and in classes functions are also defined to execute.

- Modules: In Python, it groups the functions and classes. It is used for string manipulation, character manipulation, web programming, and graphics programming.
- Packages: In Python, packages are used to run the set of instructions, importing of libraries, etc.

Characteristics of Python

Given below are the characteristics mentioned:

- Platform independent: Python is platform-independent. The python code can be used for any operating system like Windows, Unix, Linux, and Mac. There is no need to write different codes for different OS.
- Interpreted: The python code does not need to compile as required for other languages. Python code automatically converts the source code into byte code internally, and the code is executed line by line, not at once, so it takes more time to execute the code for the application.
- Simple: The Python language is simple that can be easily coded and read. The syntax of python is really simple and can be learned easily.
- Robust: Python is robust.

- High-level language: It is a high-level language used for scripting. It means one does not need to remember the system architecture and no need to manage the memory.
- Rich library support: Python can be integrated with other libraries that help in making the functionality work for you. You do not need to write the extra code for that.
- Embeddable: Python source code can be put into a different language to use. This helps in integrating the functionality of the python program with other languages.
- Open-source: Python is open source and readily available over the internet anywhere. One does not need to take the license of it. It can be easily downloaded and use.
- Free of cost: It is free of cost. Programmers or Organization does not need to put the extra cost to use this and reduce the cost to the user.
- Concise and compact: Python code is mainly concise and compact, which helps the programmers to understand it clearly.
- Dynamically typed: It is dynamically typed, which means that the type of value will be decided at run time. This is the reason why the programmers don't declare the type of variable earlier.

Applications Based on Python

Given below are the applications mentioned:

- Web applications
- Web frameworks
- Software development
- Graphic user interface applications
- Prototyping
- Operating Systems
- Applications (Business and Enterprise)

There are some organizations that are using python at a higher level:

- Microsoft
- Google
- Yahoo
- YouTube
- Mozilla
- DropBox
- Cisco
- Spotify
- Facebook
- OpenStack

Advantages and Disadvantages of Python

Given below are the advantages and disadvantages mentioned:

Advantages:

- It is open-source and readily available to use.
- It is easy to learn and explore.
- Third-party modules can be easily integrated.
- It is high level and object-oriented programming language.
- It is interactive and portable.
- Applications can be run on any platform.
- It is a dynamically typed language.
- It has great online support and community forums.
- It has a user-friendly data structure.
- It has extensive support libraries.
- It is interpreted language.
- Python provides database connectivity.
- It improves programmer productivity.

Disadvantages:

- It cannot be used for mobile application development.
- It has limitations with database access.
- It throws run time issues that cause the issue for the programmers.

- It consumes more memory because of dynamically typed language.
- Its speed is slow.
- Need more maintenance of application and code.

Conclusion – Introduction to Python

Python is a widely used language for automation scripts as the scripting language. Each language has its own advantages and disadvantages. Python is now the most popular language to use across the organization and programmers as well. It supports cross-platform, and applications based on python language can be run on any platform without any issues. For Python, Python 2 and Python 3 versions are more popular in the market to use. Python 3 has shown a great change in the field of programming language for python. In this version, the functions become more simple, and new add-on things got added that makes it compatible with lower versions and application for python.

Introduction to Python

The following article provides an outline for What is Python? It is a programming language developed by Guido van Rossum, which is

interpreted, offers high-level features, and incorporates characteristics of a general-purpose programming language. Its structure is based on garbage-collection and dynamic typing, supporting multiple programming paradigms such as object-oriented, functional, and procedural programming. These technical aspects render it a dynamic character and allow programmers to leverage it for small as well as large-scale real projects.

Understanding

As per the above answer, we can see that we have used two keywords while defining it.

1. High-Level Language

This is called a High –level language because it is very farther away from Machine level language (which consists of 0's and 1), and it's difficult to code. So, it becomes difficult to code, whereas this is easily readable, so it is very farther away from Machine level language. So it becomes a high-level language. The high-Level language syntax is more readable as compared to low-level language. One more thing that we would like is when we write this, it is not a compiled language but an interpreted one, which means it has to be run by another program, in this case, an interpreter, not by the processor, unlike C language which is run directly by the processor.

2. Object-Oriented Programming Language

It is an object-oriented programming language which means it works on objects. So what is an object? For example, Tiger is an object whose color and age are its attributes, and hunting and reproducing its behavior. So, as shown in the above example, an object has two characteristics: attributes and behavior.

So, there are some basic principles of OOPs as given below:

- Inheritance: In this case, a child class can use the parent class's behavior and attributes.
- Encapsulation: Hiding the private details of a class from other objects.
- Polymorphism: Using a common behavior/operation in different forms for different inputs.

As you can see, we have used the keyword class above, so what does class mean?

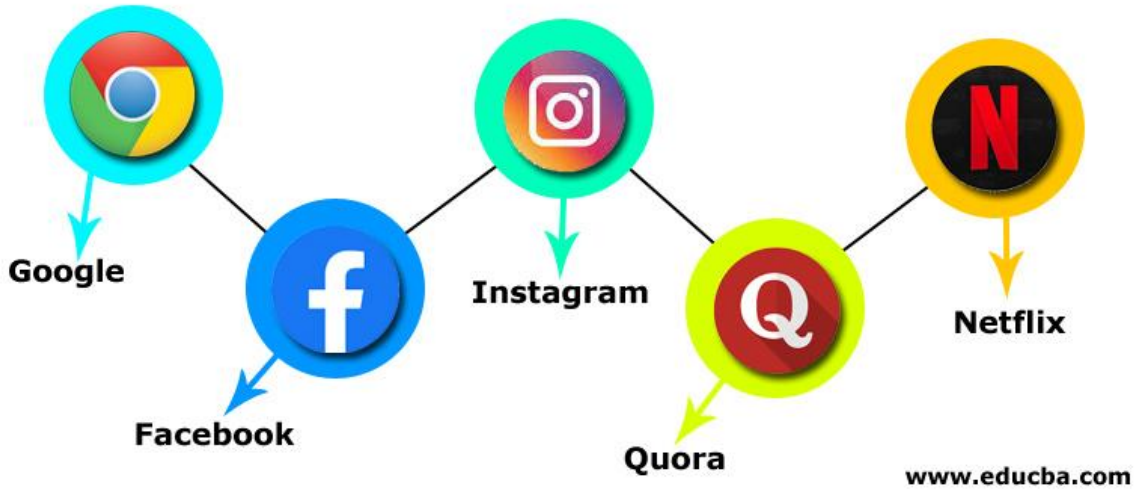
A class is a blueprint of an object. It contains all the details of an object, and the object is an instance of a class. When a class has been defined, the description of the object is defined, which means no memory or storage is allocated.

How does Python make Working so easy? / Why do we need it?

The reason why it makes working so easy is because of its simple syntax and readability of code. Unlike other programming languages like C, it has much readable and concise syntax, making it easy for beginners to master the concepts and reach an advanced level. For example, even if you want to print your name, you have to write around 7 lines of code in C#, but with python, that can be done in one line only, making a huge difference and giving an advantage over other languages.

Top Python Companies

Given below are the top python companies:



Lets see few companies which are actually using this:

- Google: Google has been a supporter of python for a long time. Even if scripts were written for Google in Perl or bash, they were re-written in Python because it is easy to write, deploy and maintain. It is now officially Google's server-side language, the other being C++ and Java.
- Facebook: Facebook also uses Python to a great extent making it the third most popular language at the social media giant, just behind C++ and PHP. Facebook has published numerous open-source projects written for Python 3.
- Instagram: In 2016, the Instagram Engineering team announced that they were running the world's largest Django Framework, which is written in Python. Instagram's team has invested time and resources

in keeping their python development viable (approx 800 million monthly active users).

- Quora: The huge crowdsource questions and answer platform use Python because of its ease of writing and readability.
- Netflix: It uses mainly for data analysis for recommending and suggesting users with shows and movies. The main reason for using it is an extremely active development community.

The above companies are some of the big companies using Python.

What can you do with Python? / Where should we use it?

So, now the bigger question is what we can do with it or rather where can we use it?

The answer to this question is that it can be used almost everywhere.

Here are few areas where you can use it:

1. Python for Web Development

Since it is an Object-Oriented Programming Language So, like other Object-Oriented Language, It can be used for Web Development, and also,

it's easy to syntax and has better readability. Django and Flask are the two most popular Python Web Frameworks.

2. Python for Scientific Development

We can use this for scientific development as it has a SciPy library, a numerical computation library NumPy, and it also has Matplotlib, which has a 2D plotting library for visualization. It can install the MATLAB Engine API so that it can interact with MATLAB as a computational engine. It is also a highly extensible language. It can use a web front end which means it is a web framework like Django, and flask can use Python as an API with a web front end.

3. Data Science and Analysis

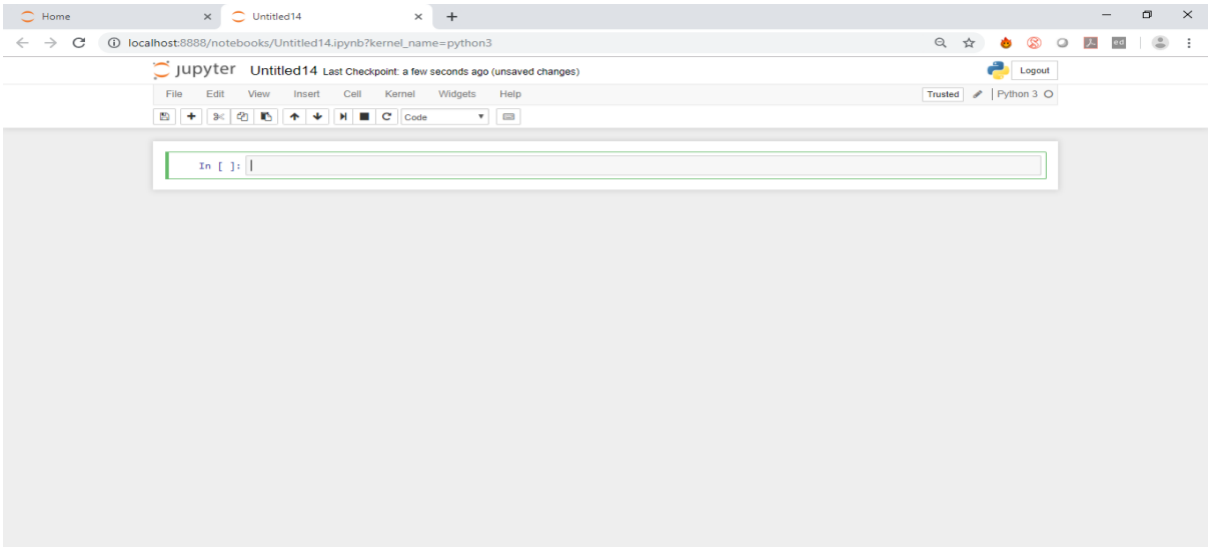
It is one of the most important features or area which swings the meter in favor of Python. It can be used to create machine learning algorithms as it can use a sci-kit library. We can build all types of models, such as Linear Regression, Random Forest, and many more even libraries like tensor flow, making it easy to create deep learning models. The popularity of this has risen multifold due to its use in Machine Learning and AI.

Working

We will be using Jupyter Notebook. So first, we shall install Jupyter itself. For that, first, we should install Anaconda. My recommendation would be to

download Anaconda's latest version with Python 3. Once you install Anaconda, you could easily open Jupyter Notebook from there.

The below screenshot shows how a Jupyter Notebook looks.



So the highlighted box that you see is called a cell. Here we write the code or instructions that we want the kernel to execute.

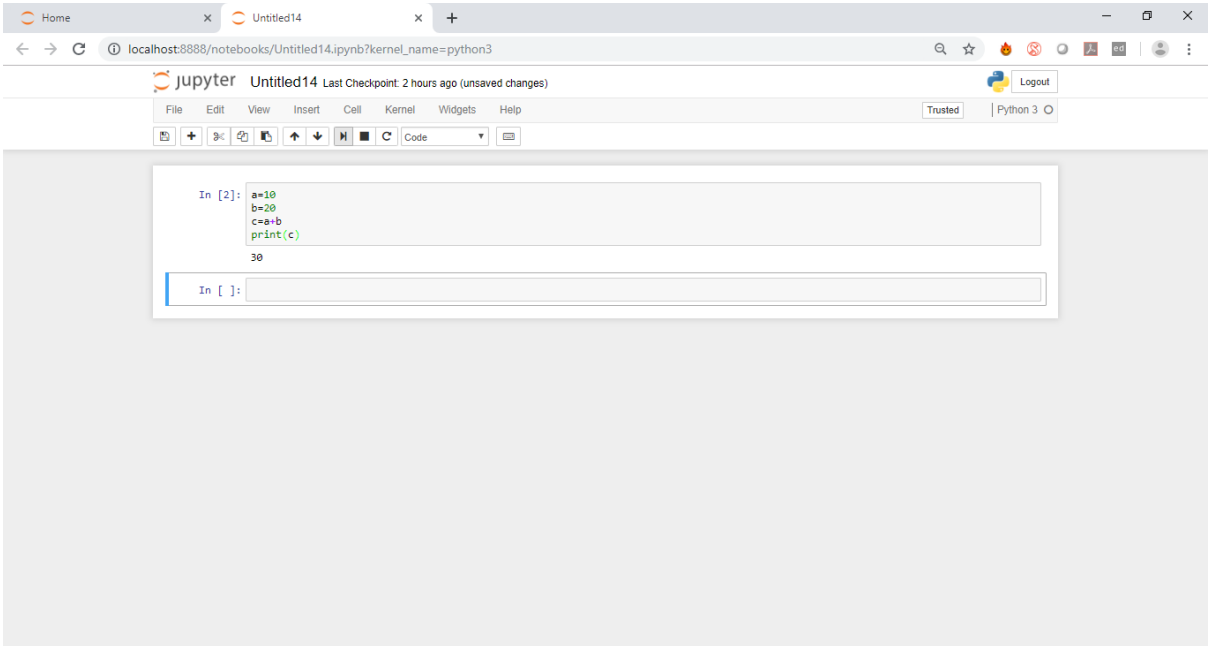
After writing the code, you can press the play button on the toolbar to run the specific cell. It is very simple.

1. Example, if we have to add two numbers, a and b, its syntax is as follows:

```
a=10
b=20
c= a+b

print(c)
```

The screenshot below shows the same in Jupyter:



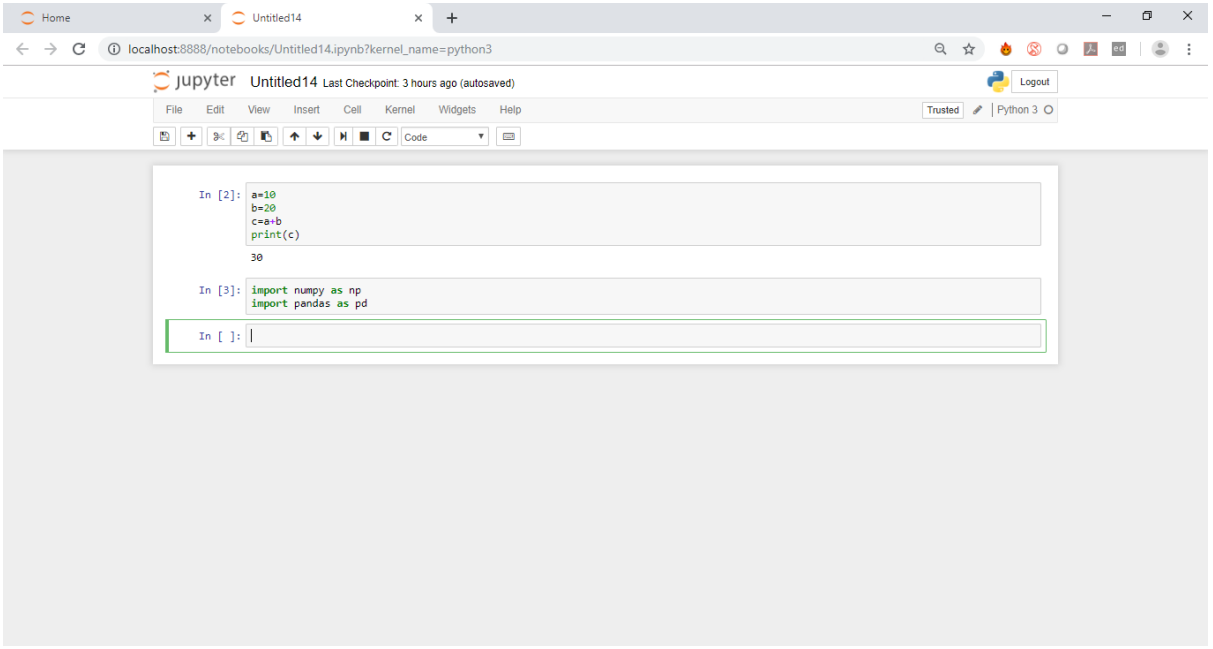
2. For mathematical and numerical computations, we can import libraries like numpy and pandas libraries for working on datasets.

The syntax for that is:

```
import numpy as np
```

```
import pandas as pd
```

Below is the screenshot for the same:

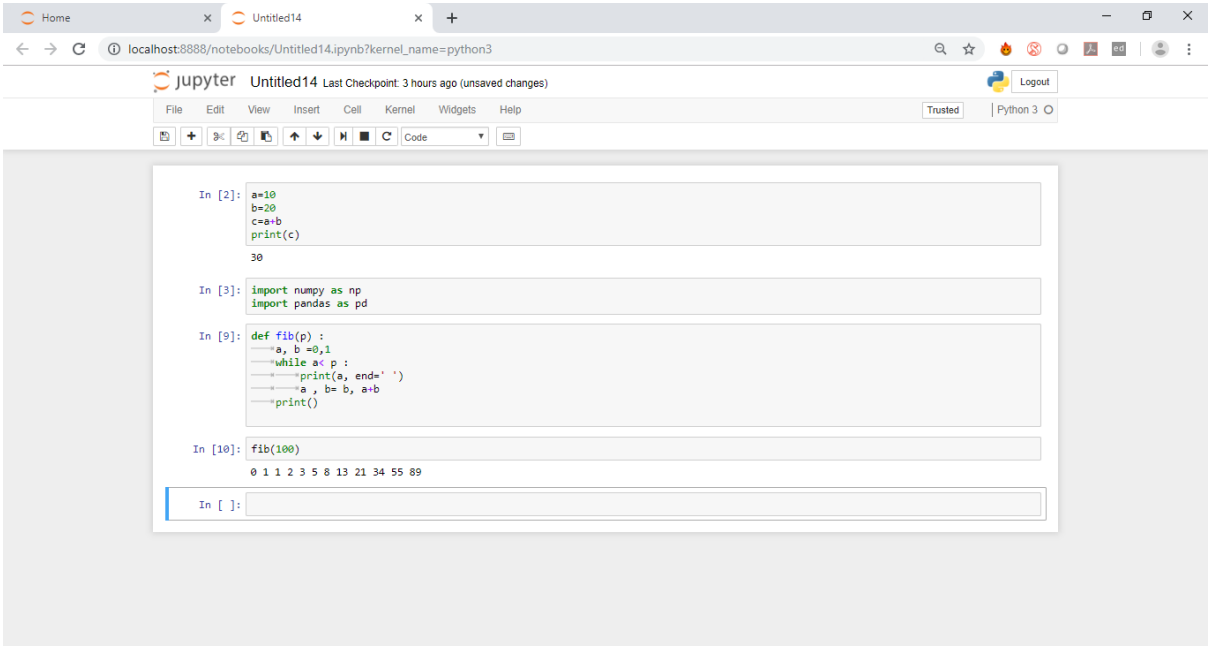


3. Next, we can see how to build functions. Just like other languages, we can also build methods then call them later on in the program. The following example is to show how to create a Fibonacci series function for the first 100 numbers

```
def fib(p) :
a, b =0,1
while a<p :
print(a,end=' ')
a,b= b, a+b
print()
```

We can call the function by using fib(100)

Here is the screenshot of the above code:



4. Next, we will see how to create conditional flows like if and if-else as there are very important for any programming language.

Here is the sample code to create a conditional flow, and we are going to take input from a user using the input statement:

```
age = int(input("Enter your name: "))
if age <12:
print("You are a kid")
elif age in range(13, 20):
print(" You are a teenager")
else:
print("You are a adult)
```

5. Next, we will see how to create a for loop in this with an example. For loop is basically used when we know the number of iterations. The below

code is to perform the addition of the first ten numbers using for loop. Here the number of iterations is 10.

```
sum =0
for i in range(10):
print(i)
sum=sum +i

print(sum)
```

In the above code, a sum is used to store the sum of all the numbers after each iteration, and the range(10) means it will start from 0 till 9, not include 10. The answer should come to 45.

6. We also have a while loop. In the below example, we are going to print I as long as it is less than 10, so here, if we see it, we do not know exactly the number of iterations. So, we also called the while loop has an entry controlled loop.

```
i =1
while i<10:
print(i)

i= i+1
```

Required Skills

- The skills required for a good developer is the same as any other developer. The person should have a good knowledge of

OOPs(Object Oriented Programming) concepts so that he can play with an object in python, and then only he can use the full potential of Python. He should have good knowledge of those frameworks like Django and Flask, depending on your technology stack.

- The person should also have a basic understanding of front-end technologies like HTML, CSS, and JavaScript. There should be familiarity with event-driven programming in Python. A basic understanding of the database is required as database knowledge helps in writing proper queries.
- The unique feature that makes it stand ahead of other languages is its use in analytics, data science, and AI. To be good in those fields using python, one must have good mathematical knowledge, especially in statistics a; good domain knowledge also helps in choosing the right model for fitting it into the right kind of data.

Advantages

There are numerous advantages.

- Extensive Support Libraries: It provides large libraries which range from numerical computations to deep learning, Machine Learning, and Visualizations. Most of the programming task is already done in the libraries, Users just has to import the libraries and pass

parameters based on the requirements, and it really reduces time and length of the syntax also reduces.

- Integration Feature: It has powerful integration capabilities with front-end as well as other server-end technologies. It can directly call C and C++ or Java through Jython.
- Productivity: Due to its strong integration features, unit testing framework, it increases the productivity of the applications. It is a good option for building scalable multi-protocol applications.

Scope

- Its scope for now and the future is enormous. Almost every company is using it in some way or other in their business.
- It has a scope in Web Development, Data Science, Data Analysis, AI, Machine Learning.
- The scope of Python in Data Science/Analysis is much more as compared to other programming languages.

Who is the Right Audience for Learning Python Technologies?

- The right audience for this is anybody with an appetite to learn and having a basic knowledge of OOPS.

- Freshers, especially from streams other than computer science, will find the much easy to understand that, for example, C++.

How will this Technology help you in Career Growth?

- Learning this language gives you an extra advantage in your carrier.
- It is a versatile language, and its preferred use in scientific and numerical computations and data analysis and machine learning gives it an edge over others.

Introduction to Careers in Python

Python is simple to learn, an intense programming dialect. It has proficient abnormal state information structures and a basic yet viable way to deal with protest situated programming. Python's rich grammar and dynamic writing, together with its translated nature, make it a perfect dialect for scripting and fast application improvement in numerous territories on general stages.

The Python interpreter and the broad standard library are uninhibitedly accessible in source or twofold shape for every significant stage from the Python Web webpage; https://www.python.org/ might be openly disseminated. Likewise, a similar site contains appropriations of and pointers to numerous free outsider Python modules, projects and instruments, and extra documentation.

The Python translator is effectively reached out with new capacities and information composes actualized in C or C++ (or different dialects callable from C). Python is likewise appropriate as an expansion dialect for adjustable applications.

Education

Python Educational skills for the students who want to make a career in Data Science with Python

Strings in Python

- String data structure
- Unicode Basic string processing
- String IO in Python
- Regular expressions

Python Data Formats

- File Reading and Writing
- GZip with Python

Files

- Pickle Files
- JSON Files
- CSV Files
- XML Files

Python Built-in Data Structures

- Python “list.”
- Python “dict.”
- Python “set.”
- Python “tuple.”

Numpy

- Numpy Indexing

- Saving Numpy
- Data Files
- Relationship with Pandas
- Matplotlib
- Matplotlib and Pyplot
- Matplotlib plots from Pandas

Career Path in Python

Careers in Python in 2018

Python is a standout amongst the most well-known programming dialects utilized today as a result of its straightforward linguistic structure and on the grounds that it is a universally useful programming dialect. You see Python utilized as a part of numerous territories.

New software engineers have numerous options regarding Careers in Python programming vocations. Be that as it may, Python alone isn't sufficient for the vast majority of these professional choices; they all require supporting abilities. For instance, in the event that you needed to get into web advancement with Python, other than learning a Python web system like Django or Flask, you should learn HTML, CSS, and JavaScript.

The good thing is that taking in the web dialects (HTML CSS, JavaScript) will be really simple for legitimately prepared Python software engineers.

Every one of the previously mentioned Python specializations (Ai, web advancement, information sciences and so forth) all require distinctive aptitudes. Python Engineer clients get information assets to perform work obligations in particular application spaces. Seat-based analysts, both in the scholarly world and in industry, give the great case of a Python Engineer client; however, this gathering is widening in scope. For instance, therapeutic experts (e.g., doctors and hereditary instructors) use Python Engineer assets in medicinal settings for the motivations behind the analysis, treatment, and advising of patients.

Python Engineer researchers utilise computational techniques to keep in mind the end goal to propel the logical comprehension of living frameworks. Python Engineer engineers make the novel computational strategies required by Python Engineer clients and researchers. In this way, a Python Engineer design must-have qualities in computational and factual sciences and must have a general competency in biomedical sciences. Singular patron many logical labs, both in the scholastic and business division, are contracting individuals prepared in Python to help the

examination of the lab. Positions are accessible for different levels and kinds of preparation. Individuals in these positions, for the most part, chip away at a particular territory of research. Center offices many organizations make a focal asset for labs in a foundation. These assets are call center offices. Individuals from such gatherings frequently have a blend of aptitudes and work on various research ventures with scientists in a wide range of labs.

Instructors: There is an interest in showing Python engineers at a wide range of levels. Some PhD level Python engineers will seek after a scholarly profession, construct their own particular research plan and instruct at the college level. What's more, there are various foundations that have a devoted office to instruct Python engineers to individuals inside the organization. Bio-Python designers – Another professional way that backings Python engineers are the improvement of new calculations and new devices. There are organizations committed to building and conveying computational apparatuses. Different Python Engineer programming engineers are enlisted inside center offices and inside individual research labs.

Enterprises for this talented Professional

IT organization, Biotechnology, Pharmaceutical, Hospitals, Academic, and Research Establishments.

Recommended courses

- JSON Certification Training
- Axure Training Courses
- Online Certification Training in OmniGraffle Pro
- Agility.JS Course

Job Positions

- Software Engineer.
- Research Analyst.
- Data Analyst.
- Data Scientist.
- Python Engineer
- Neurionformatician
- Bioinformatician
- Image Recognition
- Software Developer.

Career Opportunity

Student Research Assistant: Python/pandas & Data Science

https://refline.ch/en//

Salary

Published Article

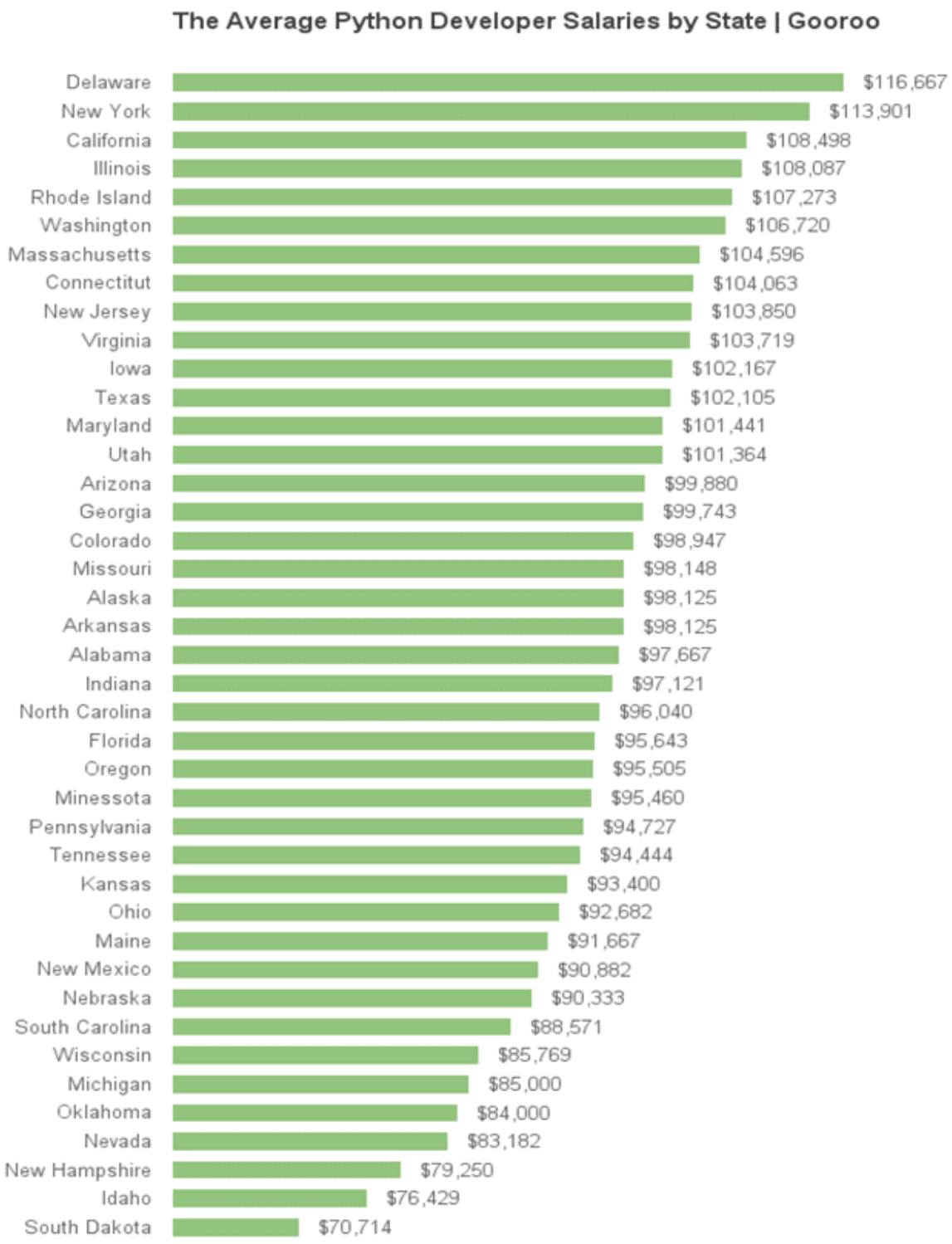
What's the Average Python Developer Salary in the US, and Why Is Careers in Python So Popular, Anyway?

Nov 10, 2016

Our research showed that the average Python developer salary in the US is $109,810. But there's more. We also found out which states are the highest-paying for Python software developers, estimated the real number of Python developers in the world, and explored the reasons behind Python's popularity.

Article data collected from

–https://www.daxx.com/article/python-developer-salary-usa



Career Outlook

Python is an abnormal state and multi worldview programming developer having every one of the highlights as ordinary programming developer, for

example, C, C++, and Java have. It is one of the quickest developing and has experienced an effective traverse of over 25 years to the extent its appropriation is concerned. This achievement additionally uncovers a promising future extent of python programming dialect.

Indeed, it has been ceaselessly filling in as the best programming dialect for application advancement, web improvement, amusement advancement, framework organization, logical and numeric figuring, GIS and Mapping and so forth. Python software engineers are looked for after by significant organizations since this programming dialect is more flexible than coding conditions, for example, C++ or Java. You ought to likewise realize that, as a future Python developer, you will be required, now and again, to work additional time or amid a lawful occasion to finish high-need ventures. Much more, the workplace can turn out to be greatly aggressive and quick-paced. The Python software engineer pay is presumably the most noteworthy of its kind. Discover more about their pay in seven nations, rewards, and vocation viewpoint.

Introduction on Advantages of Python

It is a General-purpose dynamic programming language that provides high-level readability, and it is interpreted. As Python is a dynamic programming language, it has some helpful advantages, so now we are going to learn about the Advantages of Python.

Advantages of Python

Following are the advantages of python:

Simple and Easy to learn

Python is extremely easy and simple to learn, so python is easy to read or easy to learn. It closely resembles the English language; therefore, it comes in one of the greatest advantages of python. It is a very powerful language, and it takes no skills to learn python, so python is free and open source. It is a high-level language, and we can simply write code in English, and python converts it to the low-level language. It also interprets the language in which the machine reads and interprets the code that carries all the errors. If the user has any doubt, they easily solve it, and the python community progressively works together to improve its core functionalities. In addition, the python community continuously provides enhancement and updates as time progresses.

Portable and Extensible

Since python is portable, it is supported by all the platforms of the industries like Windows, Linux, Macintosh, and play stations support python. And with the extensibility of python, we can completely integrate java as well as dot net components even we can invoke C and C++ libraries as well, and these are all the advantages of python. Moreover, we can also perform cross-language operations with python, so python is extremely extensible with most programming languages.

Object-Oriented Programming

Python supports orientating programming; it permits polymorphism and inheritance. Python users get to use the shareable categories; thus, code may be reusable and additionally provide the protection mechanism by abstracting knowledge. It is additionally wide accustomed to developing prototypes that modify the computer used to straightforward scan and write.

Artificial Intelligence

Artificial Intelligence means that a machine program that acts or responds to human brain intelligence is done through lots of algorithms or programs. It is combined with scikit-learn python, which can do complex calculations with just a single statement. Furthermore, libraries such as Keras and TensorFlow ping machine learning functionality into the mix. Python also has libraries such as open CV that helps in image recognition, such as

computer vision, and another feature of python. We can detect face or speech recognition. Artificial intelligence is the broader concept of machines being able to carry out tasks in a way that we consider smart, and hence we can also boost up the overall productivity of the company, and all these are recognizable features of python.

Computer Graphics

Python is largely used in small and large online or offline projects, and it is used to build GUI, which stands for Graphical User Interface; it is also used for desktop applications then we have Game development, so Tkinter is the standard GUI library for python so python when combined with Tkinter it provides a fast and easy way to create GUI application and programs. Python also provides a dedicated framework for game development that is PYGAME.

Testing Framework

Python is nice for good ideas or products for a startup is a company currently making a code isn't a simple task because it contains several methods ranging from its style its code additionally the checked cases and code testing doubtless the foremost vital process of the code life cycle it's also the difficult task for a code tester to settle on the simplest programming language for automation testing and also the python is that the best resolution for this downside thus it's several integrate testing

frameworks that cover debugging and quickest workflows currently their area unit several tools and modules to create the items a lot of easier like chemical element that is the style in automation tool, and thus we've got a splinter, so it supports testing with cross-platform and cross-browser with frameworks like Pytest and Henry M. Robert frame book currently it's several nice code testing supports.

Big Data

Python can handle plenty of an immense amount of data. It supports parallel computing or method square measure ready to use Python for nevertheless so in python we've library spoken as PYDOOP where we will square measure going to write a MapReduce program in python and technique information that's a gift at intervals the HDFS cluster presently there are many of the libraries like time of day and PySpark for the giant process.

Scripting and Automation

It is used as a scripting language; therefore, in scripting, the code is written within the type of scripts and gets dead; therefore, machine primarily run and interprets the code, whereas all of your error checkings are finished throughput runtime, and so by automation, we can automate a certain task

in a program we can actually open a browser and post the content on Dynamic websites.

Data Science

Python is the leading language for several information scientists currently for years. Academy students and PY field researchers were exploiting the MATLAB language for a research project. Each one began to modify with the discharge of fight the numerical engines such as NumPy and Pandas python additionally deals with the tabular matrix likewise as applied mathematics information. It also visualizes it with common libraries such as matplotlib and Seabourn; therefore, if you've got a great amount of information, it might be T or a computer memory unit of information. So exploitation python, you'll be able to simply gain insights out of it.

Popularity & High Salary

Python became very popular in the last two years, and python programmers get the highest salary. Google who is actually using python for web searches, then we have YouTube, which is largely written in python, and many other companies such as Instagram, Drobox, Facebook and many more companies use Python. It allows a highly productive environment than other languages like C++ and Java, so python is the first choice for experienced programmers.

Introduction to Uses of Python

Python is one of the many open-source, object-oriented programming application software available in the market. Some of the many uses of Python are application development, implementation of automation testing process, allows multiple programming build, fully constructed programming library, can be used in all the major operating systems and platforms, database system accessibility, simple and readable code, easy to apply on complex software development processes, aids in test-driven software application development approach, machine learning/ data analytics, helps pattern recognitions, supported in multiple tools, permitted by many of the provisioned frameworks, etc.

10 Important Uses of Python

Python can be more user-friendly because of its advantages. Please find below the uses of python language for different reasons:

1. Applications

Python can be used to develop different applications like web applications, graphic user interface based applications, software development application, scientific and numeric applications, network programming,

Games and 3D applications and other business applications. It makes an interactive interface and easy development of applications.

2. Multiple Programming paradigms

It is also used because of its providing continuous support to several programming paradigms as it supports object-oriented programming and structured programming. Python has features, which also support various concepts of functional programming language. It is used for dynamic type system and automatic memory management. Python language features and programming paradigms allow you for developing small as well as large applications. It can be used for complex software applications.

3. Robust Standard Library

It has a large and robust standard library to use for developing applications. It also makes the developers use Python over other languages. The standard library helps you use the different range of modules available for Python, as this module helps you add the functionality without writing any more code. To get the information about various modules, documentation on the python standard library can be referred to. While developing any web application, implementing web services, performing string operations and other usages like interface protocol, the standard library documentation helps.

4. Compatible with Major Platforms and Systems

It is mainly compatible with major platforms and systems because of which it is used mainly for developing applications. With the help of python interpreters, python code can be run on specific platforms and tools as it supports many operating systems. As python is an interpreted high-level programming language; and it allows you to run the code on multiple platforms. The new and modified code can be executed without recompiling, and its impact can be monitored or checked. It means it's not required to recompile the code after every change. This feature helps in saving the development time of the developers.

5. Access of Database

The uses of Python also helps in accessing the database easily. Python helps in customizing the interfaces of different databases like MySQL, Oracle, Microsoft SQL Server, PostgreSQL, and other databases. It has an object database like Durus and ZODB. It is used for standard database API and freely available for download.

6. Code Readability

Python code is easy to read and maintained. It is easily reusable as well wherever it is required. Python's having simple syntax, which allows the

different concepts to develop without writing any additional code. The code should be of good quality and easy to maintain the source code and simplify the maintenance, which is required to develop the software application. It also emphasizes code readability, which is a great feature, unlike other programming languages. It helps build custom applications, and clean code helps maintain and update the software applications without putting extra effort into the same code.

7. Simplify Complex Software Development

Applications of Python is used to simplifying the complex software development process as it is a general-purpose programming language. It is used for developing the complex application like scientific and numeric application and for both desktop and web applications. Python has features like analyzing data and visualization, which helps in creating custom solutions without putting in extra effort and time. It helps you to visualize and present data in an effective way.

8. Many Open Source Frameworks and Tools

Python is open source and easily available. This also helps in costing software development significantly. There are many open source applications of python frameworks, libraries, and development tools for developing the application without putting extra cost. Python frameworks simplify and make the process faster for web application development, and

the frameworks are Django, Flask, pyramid etc. Python GUI frameworks are available for developing the GUI based application.

9. Adopt Test Driven Development

Python makes coding easier as well as testing with the help of adopting the Test Driven Development approach. The test cases can be easily written before any code development. Whenever the code development started, the written test cases can start testing the code simultaneously and provides the result. These can also be used for checking or testing the pre-requirements based on the source code.

10. Other applications for which python is used

There are other applications for which python is used that are Robotics, web scraping, scripting, artificial intelligence, data analysis, machine learning, face detection, color detection, 3D CAD applications, console-based applications, audio-based applications, video-based applications, enterprise applications, and applications for Images etc. These are some major applications used.

Overview of Python Features

Python is a famous programming framework known for its simple object-oriented characteristic advantage. A few of Python's other notable

features are the library functions & modules are reliable in nature and facilitate the developers with its interactive mode. It also supports other program theories, provides dynamic code check for types, easy access for database applications, user interface programming is quite uncomplicated, anyone can get their hand on python programming as it is available for free & open source. It consents to expandability & scalability, and finally, the most important feature is it is effortless to self-learn, understand & write the code.

Top 15 Features of Python

The top 15 Features of Python are as follows:

1. Easy to Write

These days with the increasing number of libraries in the languages, most of the time of developer goes in remembering them. This is one of the great features of python as python libraries use simple English phrases as it's keywords. Thus it's very easy to write code in python. For e.g.:-

Writing code for function doesn't use curly braces to delimit blocks of code. One can indent code under a function, loop, or class.

```
def fun()
```

```
print("Hi, i am inside fun");//this line    comes under
function block as it is indented.

print("Hi ,i am outside  fun");//This line will be
printed when control comes out of the function block.
```

2. Easy to Understand

This is the most powerful feature of the python language, which makes it everyone's choice. As the keyword used here are simple English phrases; thus, it is very easy to understand.

3. Object-Oriented

Python has all features of an object-oriented language such as inheritance, method overriding, objects, etc. Thus it supports all the paradigms and has corresponding functions in their libraries. It also supports the implementation of multiple inheritances, unlike java.

4. Robust Standard Libraries

The libraries of python are very vast that include various modules and functions that support various operations working in various data types such as regular expressions etc.

5. Supports Various Programming Paradigms

With support to all the features of an object-oriented language, Python also supports the procedure-oriented paradigm. It supports multiple

inheritances as well. This is all possible due to its large and robust libraries that contain functions for everything.

6. Support for Interactive Mode

Python also has support for working in interactive mode where one can easily debug the code and unit test it lines by line. This helps to reduce errors as much as possible.

7. Automatic Garbage Collection

Python also initiates automatic garbage collection for great memory and performance management. Due to this, memory can be utilized to its maximum, thus making the application more robust.

8. Dynamically Typed and Type Checking

This is one of the great feature of python that one need not declare the data type of a variable before using it. Once the value is assigned to a variable, its datatype gets defined. Thus, type checking in python is done at a run time, unlike other programming languages.

For e.g.-

```
v=7;// here type or variable v is treated as an integer
```

```
v="great";//here type of the variable v is treated as a string<
```

9. Databases

The database of an application is one of the crucial parts that also need to be supported by the corresponding programming language being used. Python supports all the major databases that can be used in an application, such as MYSQL, ORACLE, etc. Corresponding functions for their database operations have already been defined in python libraries. one needs to include those files in code to use it.

10. GUI Programming

Python being a scripting language also supports many features and libraries that allow graphical development of the applications. In the vast libraries and functions, corresponding system calls and procedures are defined to call the particular OS calls to develop an application's perfect GUI. Python also needs a framework to be used to create such a GUI. Examples of some of the frameworks are Django, Tkinter, etc.

11. Extensible

This feature makes use of other languages in python code possible. This means python code can be extended to other languages as well; thus, it can easily be embedded in existing code to make it more robust and enhance its features. Other languages can be used to compile our python code.

12. Portable

A programming language is portable if it allows us to code once and runs anywhere. This means the platform where it has been coded and where it is going to run need not be the same. This feature allows one of the most valuable features of object-oriented languages-reusability. As a developer, one needs to code the solution and generated its byte code and need not worry about the environment where it will run. EO-one can run a code developed on the Windows operating system on any other operating system Linux, Unix, etc.

13. Scalable

This Language helps develop various systems or applications capable of handling a dynamically increasing amount of work. These types of applications help a lot in the organisation's growth as they are strong enough to handle the changes upto some extent.

14. Free and Open Source

Yes, u read it correctly u need not pay a single penny to use this language in your application. One needs just to download it from its official website, and it's all done to start. And as it is open-source, its source code has also been made public. One can easily download it and use it as required as well as share it with others. Thus it gets improved every day.

15. Integrated

Python can be easily integrated with other available programming languages such as C, C++, Java, etc. This allows everyone to use it to enhance the functionality of existing applications and make them more robust.

Conclusion

Python is an advanced, high-level, robust, open-source, but easy to understand and code language that allows the developer to concentrate on the solution rather than remembering a large number of keywords, as it uses simple and easy to remember English phrases as its keywords.

Its robust library, support for different paradigms, and GUI programming feature and integrated feature make it the most suitable language among others.