

Data Science with Python Programming

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Introduction to Python Programming

Learning outcomes:

- **What is Python Programming?**
- **History of Python Programming**
- **Features of Python**
- **Application of Python**
- **Setup of Python Programming**
- **Getting started with the first Python program**

What is Python Programming?

- Python is a high level, interpreted, intelligent, and object-oriented scripting language.
- Python is handled at runtime by the interpreter. You don't need to compile your code before executing it.
- Python is very interesting and easy to learn language. Learning of Python Programming is as easier as C language.
- Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance.

What is Python Programming?

- Python supports modules and packages, which encourages program modularity and code reuse.
- The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed.

History of Python Programming

- Python was created by **Guido van Rossum**.
- The design began in the late 1980.
- Soon after that, **Guido Van Rossum** began doing its application based work in December of 1989 by at Centrum Wiskunde & Informatica (CWI) which is situated in Netherland.
- The first release was on February 1991.

History of Python Programming

“Python is an experiment in how much freedom programmers need. Too much freedom and nobody can read another's code. Too little and expressiveness is endangered.”

- Guido van Rossum

History of Python Programming

Why Python was created?

- In late 1980s, Guido Van Rossum was working on the **Amoeba distributed operating system group**.
- He wanted to use an interpreted language like ABC (ABC has simple **easy-to-understand syntax**) that could access the Amoeba system calls.
- So, he decided to create a language that was extensible. This led to design of a new language which was later named Python.

History of Python Programming

Why the name Python?

- It wasn't named after a dangerous snake.
- **Rossum** was fan of a comedy series from late seventies.
- The name "Python" was adopted from the same series "**Monty Python's Flying Circus**".

Features of Python Programming

Python is Interpreted: Python is processed at runtime by the interpreter. You do not need to compile your program before executing it. This is similar to PERL and PHP.

Python is Interactive: You can actually sit at a Python prompt and interact with the interpreter directly to write your programs.

Python is Object-Oriented: Python supports Object-Oriented style or technique of programming that encapsulates code within objects.

Python is a Beginner's Language: Python is a great language for the beginner-level programmers and supports the development of a wide range of applications from simple text processing to WWW browsers to games.

Features of Python Programming

- A simple language which is easier to learn
- Free and open-source
- Portability
- Extensible and Embeddable
- A high-level, interpreted language
- Large standard libraries to solve common tasks
- Free and open source
- GUI Programming

Application of Python Programming

- **Web Development.**
- **Game Development.**
- **Scientific and Numeric Applications.**
- **Artificial Intelligence and Machine Learning.**
- **Software Development.**
- **Enterprise-level/Business Applications.**
Education programs and training courses.
- **Language Development.**
- **Desktop GUI**
- **Web Scraping Applications**
- **Business Applications**

Setup of Python Programming

Getting Python:

The most up-to-date and current source code, binaries, documentation, news, etc., is available on the official website of Python:

<http://www.python.org/>.

You can download Python documentation from www.python.org/doc/. The documentation is available in HTML, PDF, and PostScript formats.

Setup of Python Programming

Installation of Python:

- Python distribution is available for a wide variety of platforms.
- Python can be obtained from the **Python Software Foundation** website at python.org. Typically, that involves downloading the appropriate **installer** for your operating system and running it on your machine.

Setup of Python Programming

Installation of Python:

Here are the steps to install Python on **Windows operating system**.

1. Open a Web browser and go to <http://www.python.org/download/>
2. click on “**Download Python 3.9.0**” (You may see different version name). You can download some other version as per your choice.
3. When the download is completed, double-click the file and follow the instructions to install it.
4. Just accept the default settings, wait until the install is finished, and you are done.

Setup of Python Programming

When Python is installed, a program called **IDLE** is also installed along with it. It provides graphical user interface to work with Python.

Getting started with the first Python program

- Open IDLE
- To create a file in IDLE, go to File > New File (Shortcut: Ctrl+N).
- Write Python code (you can copy the code below for now) and save (Shortcut: Ctrl+S) with **.py** file extension like: **hello.py** or your-firstprogram.py

```
print ("Hello, World!")
```

Getting started with the first Python program

Running the first Python Program:

- Before running the python program, you can save it using Ctrl + S, OR go to File > Save.
- Now you can run the program. Go to Run > Run module (Shortcut: F5) and you can see the output.
- Congratulations, you've successfully run your first Python program.

Output:
Hello, World!



Thank you