Netzwerk Academy



Become a Python Developer.

You can become a Python Developer in 45 Days!





What's Inside the Book?

- 1. Introduction to Programming
- 2. Introduction to Python programming
- 3. Installation
- 4. Writing 1st program with Python
- 5. Introduction to Data types
- 6. A simple calculator using Python

INTRODUCTION TO PROGRAMMING

This book is intended for beginners who have no or almost no computer programming experience. It assumes the reader is following the instructions and reading the text carefully.

Computer programming requires a fair amount of time to master. However, the time invested will be more than worth it. Besides learning a useful, entertaining, and very creative activity, you will also learn a lot about computers and the way they work.

The basic components of a computer are:

- 1. Input unit
- 2. Central Processing Unit(CPU)
- 3. Output unit

Most Popular Programming Languages

- (
- Python
- (++
- Java
- SCALA
- (#
- R
- Ruby
- Go
- Swift.
- JavaScript

<u>Characteristics of a programming</u> <u>language:-</u>

- A programming language must be simple, easy to learn and use, have good readability, and be humanly recognizable.
- Abstraction is a must-have
 Characteristic for a programming language in which the ability to define the complex structure and then its degree of usability comes.

- A portable programming language is always preferred.
- Programming language's efficiency must be high so that it can be easily converted into a machine code and executed consumes little space in memory.
- A programming language should be well structured and documented so that it is suitable for application development.
- Necessary tools for the development, debugging, testing, maintenance of a program must be provided by a programming language.
- A programming language should provide a single environment known as Integrated Development Environment(IDE).
- A programming language must be consistent in terms of syntax and semantics.

INTRODUCTION TO PYTHON PROGRAMMING

What is Python?

Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.

What can Python do?

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows.
- Python can connect to database systems. It can also read and modify files.

- Python can be used to handle big data and perform complex mathematics.
- Python can be used for rapid prototyping, or for production-ready software development.

Why Python?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- Python has a simple syntax similar to the English language.
- Python has a syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-oriented way or a functional way.

<u>Python Syntax compared to other</u> <u>programming languages</u>

- Python was designed for readability and has some similarities to the English language with influence from mathematics.
- Python uses new lines to complete a command, as opposed to other programming languages which often use semicolons or parentheses.
- Python relies on indentation, using whitespace, to define scope; such as the scope of loops, functions and classes. Other programming languages often use curly brackets for this purpose.

Python Pros and Cons:

Pros of Using Python:

Easy to Use Programming Language Easy to learn Great for Visualizing Data Easy to Read Language Unmatched Flexibility

Cons of Using Python:

Python being an interpreted programming language is slower than other programming languages. The Global Interpreter Lock (GIL) of Python doesn't allow executing more than one thread at a given time. This creates significant limitations for the language.

Advantages of Python:

1) Compiler and the Interpreter are the 2 types of Coding Software, python is an Interpreter.

- 2) No Data Type Declaration Needed (Pre Memory Allocation is not applicable)
- 3) Scripting Language (No Compiler)
- 4) No License
- 5) Unstructured
- 6) Very Simple & less syntax complexity
- 7) More Packages (Library) support.
- 8) Dynamic Memory (Run time memory allocation)
- 9) Automated Garbage collection.
- 10) Private Heap

INSTALLATION OF PYTHON

Installation of Python:

Step 1: First go to Google search engine and then type in the search bar

<u>www.python.org/downloads/</u>



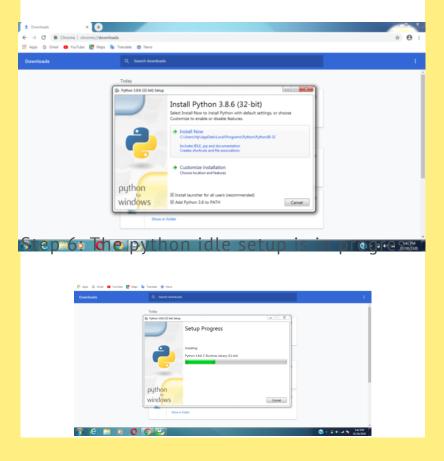
Step 2: This page will open then press the enter button and the python official website will be loaded on the web browser. Click on the Downloads python menu bar.



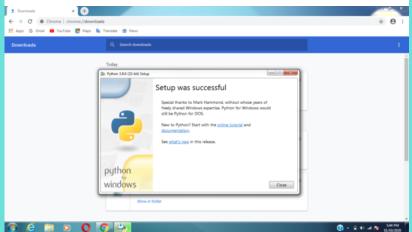
Step 3: The list of different OS(Operating System) is opened according to your pc's operating system. Choose the windows or mac operating system etc.



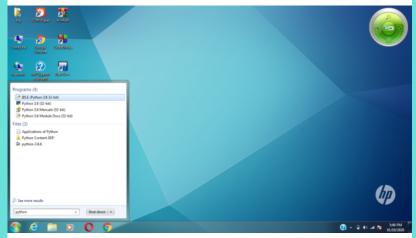
Step 4: After step 3, click on the windows and you can see the different versions of the python installer. According to your pc configuration [OS(windows 7,8,10), Bit (32 bit or 64bit)] choose the python idle installer. We install the executable installer. Step 5: Before clicking on the installation link, select the checkboxes that are given on the bottom side.



Step 7: Now the python idle installation has been successfully completed and then click on the close button.



Step 8: Go to the windows button and type in the search bar "python idle" and press the enter button.



Step 9: The python idle is opened successfully

WRITING 1ST PROGRAM WITH PYTHON

<u>Code for printing statements in different</u> <u>languages:</u>

C Programming:

```
#include <stdio.h>
int main() {
    // printf() displays the string inside 
quotation
    printf("Hello, World!");
    return 0;
}
```

JAVA:

```
class HelloWorld
{
public static void main(String[] args)
{
System.out.println("Hello, World!");
}
}
```

Python:

Print("Hello, world")

<u>That's how simple Python programming</u> is.

INTRODUCTION TO DATA TYPES IN PYTHON

Name	Туре	Description
Integers	int	Whole numbers, such as: 3 300 200
Floating point	float	Numbers with a decimal point: 2.3 4.6 100.0
Strings	str	Ordered sequence of characters: "hello" 'Sammy' "2000" "楽しい"
Lists	list	Ordered sequence of objects: [10,"hello",200.3]
Dictionaries	dict	Unordered Key:Value pairs: {"mykey":"value", "name":"Frankie"}
Tuples	tup	Ordered immutable sequence of objects: (10,"hello",200.3)
Sets	set	Unordered collection of unique objects: {"a","b"}
Booleans	bool	Logical value indicating True or False

<u>Data types are Mutable and Immutable</u> <u>Categories:</u>

Different Datatypes String, List, Tuples, Dictionary, Numerical, Set and Frozen set

What is Mutable?

Mutable sequences can be changed after creation. Some of Python's mutable data types are lists, byte arrays, sets, and dictionaries.

What is Immutable?

Immutable data types differ from their mutable counterparts in that they cannot be changed after creation. Some immutable types include numeric data types, strings, bytes, frozen sets, and tuples.

Data Type Representation:

String

Strings in python are surrounded by either single quotation marks, or double quotation marks. 'hello' is the same as "hello". Assign String to a Variable Assigning a string to a variable is done with the variable name followed by an equal sign and the string:

a = "Hello"
print(a)

A SIMPLE CALCULATOR USING PYTHON

Input:

```
# Python program for simple calculator
# Function to add two numbers
def add(num1, num2):
    return num1 + num2

# Function to subtract two numbers
def subtract(num1, num2):
    return num1 - num2

# Function to multiply two numbers
def multiply(num1, num2):
    return num1 * num2

# Function to divide two numbers
def divide(num1, num2):
    return num1 / num2
```

Input:

```
# Python program for simple calculator

# Function to add two numbers
def add(num1, num2):
    return num1 + num2

# Function to subtract two numbers
def subtract(num1, num2):
    return num1 - num2

# Function to multiply two numbers
def multiply(num1, num2):
    return num1 * num2

# Function to divide two numbers
def divide(num1, num2):
    return num1 / num2
```

Output:

```
Please select operation -

1. Add

2. Subtract

3. Multiply

4. Divide

Select operations form 1, 2, 3, 4 : 1

Enter first number : 15

Enter second number : 14

15 + 14 = 29
```





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