PRESENTATION

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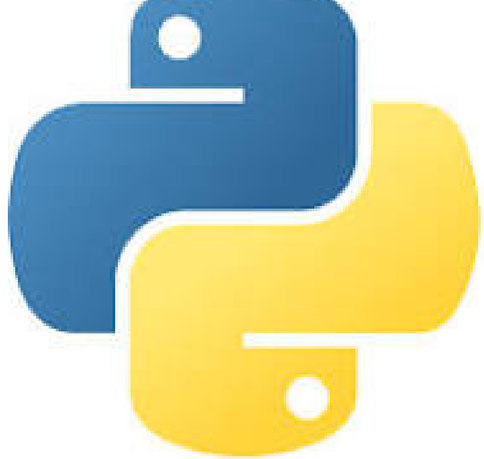
WHAT IS PYTHON?



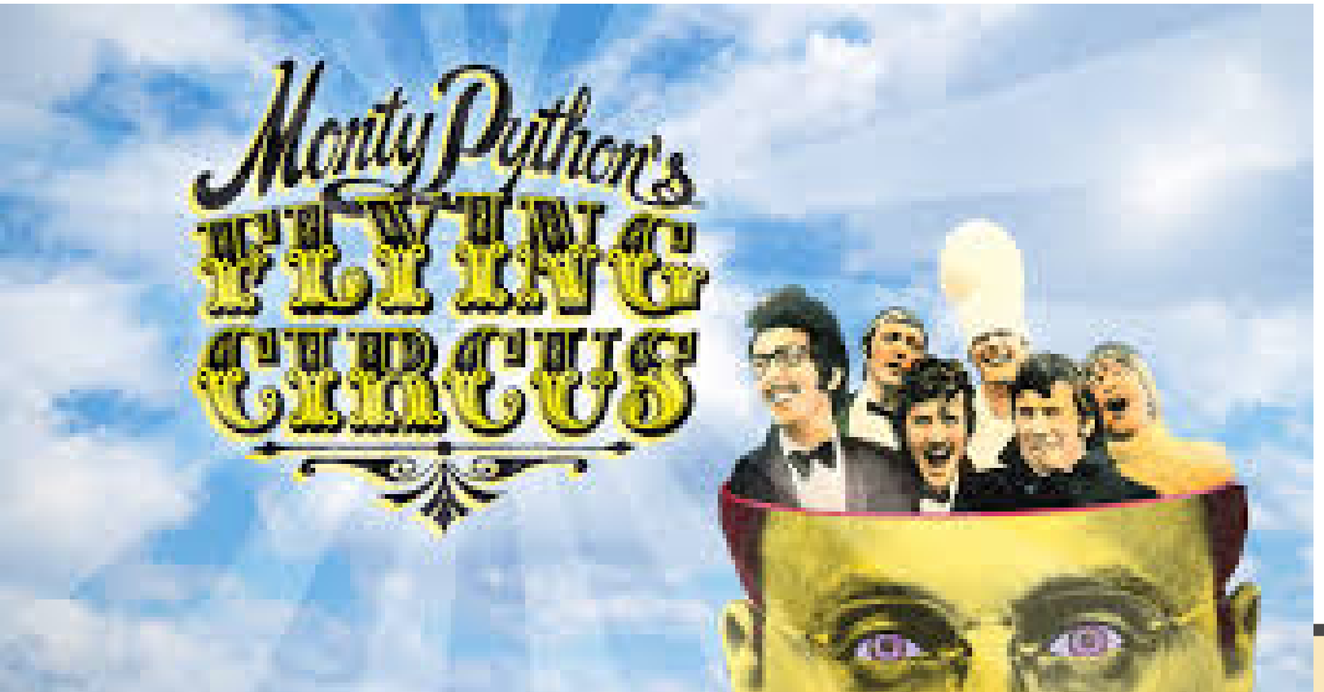
Python is a high-level, interpreted programming language known for simplicity

- Readable, uses English keywords.
- Fewer syntax rules than other languages.

HISTORY

- Python was developed by Guido van Rossum in the late eighties and early nineties at the National Research Institute for Mathematics and Computer Science in the Netherlands.

- Python is derived from many other languages, including ABC, Modula-3, C, C++, Algol-68, SmallTalk, and Unix shell and other scripting languages.



PYTHON IS A HIGH-LEVEL LANGUAGE

1. Machine-Level Language (Low-Level)

- Directly understood by the CPU (Binary: 0s & 1s).
- Fastest execution, but difficult to write.
- Example: Machine Code (11001001...)

2. High-Level Language

- Closer to human language, easy to write & understand.
- Needs a compiler/interpreter to run.
- Example: Python

Feature	Machine-Level	High-Level
Readability	Hard (Binary)	Easy (English like)
Execution	Fast (Direct CPU)	Slower (Needs Translation)
Examples	Machine Code	Python, C, Java

WHY PYTHON?

One Language, Infinite Possibilities!

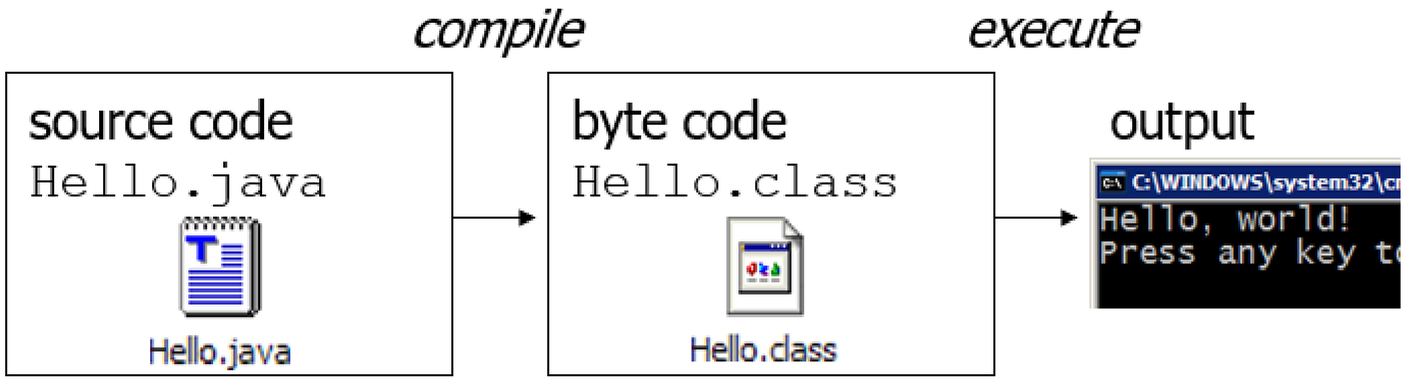
INTERPRETATION VS COMPILATION

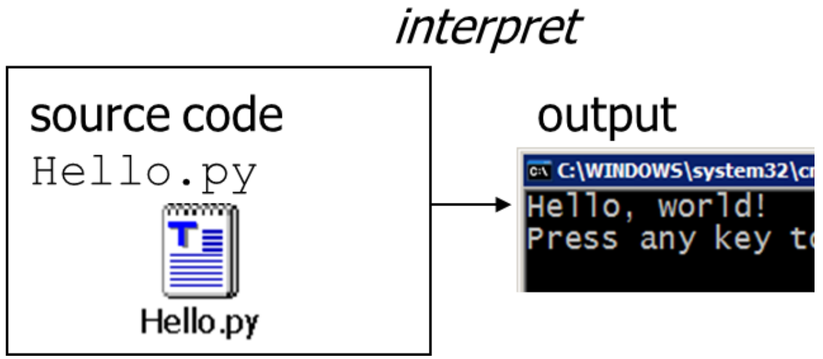
Definition

Interpretation: Executes code **line by line** (e.g., Python, JavaScript).

Compilation: Translates the whole code into machine language before execution (e.g., C, C++).

Feature	Interpretation	Compilation
Execution	Line by line	Whole code at once
Speed	Slower	Faster
Debugging	Easier	Harder
Example Languages	Python, JS	C, C++





PYTHON IS SIMPLE & LOOKS LIKE ENGLISH!

```
#include <iostream>
int main() {
std::cout << "Hello World!";
return 0;
}
```

```
print('hello world')
```

C++ devs when their thousand line code is .4 seconds faster than a 10 line python code

PYTHON VS. JAVA CODE SNIPPET

Java

```
public class Main
{
public static void main(String[] args) {
int a= 10, b=20;
int result = a+b;
System.out.println("The  result a+b = " + result);    }
}
```

Python

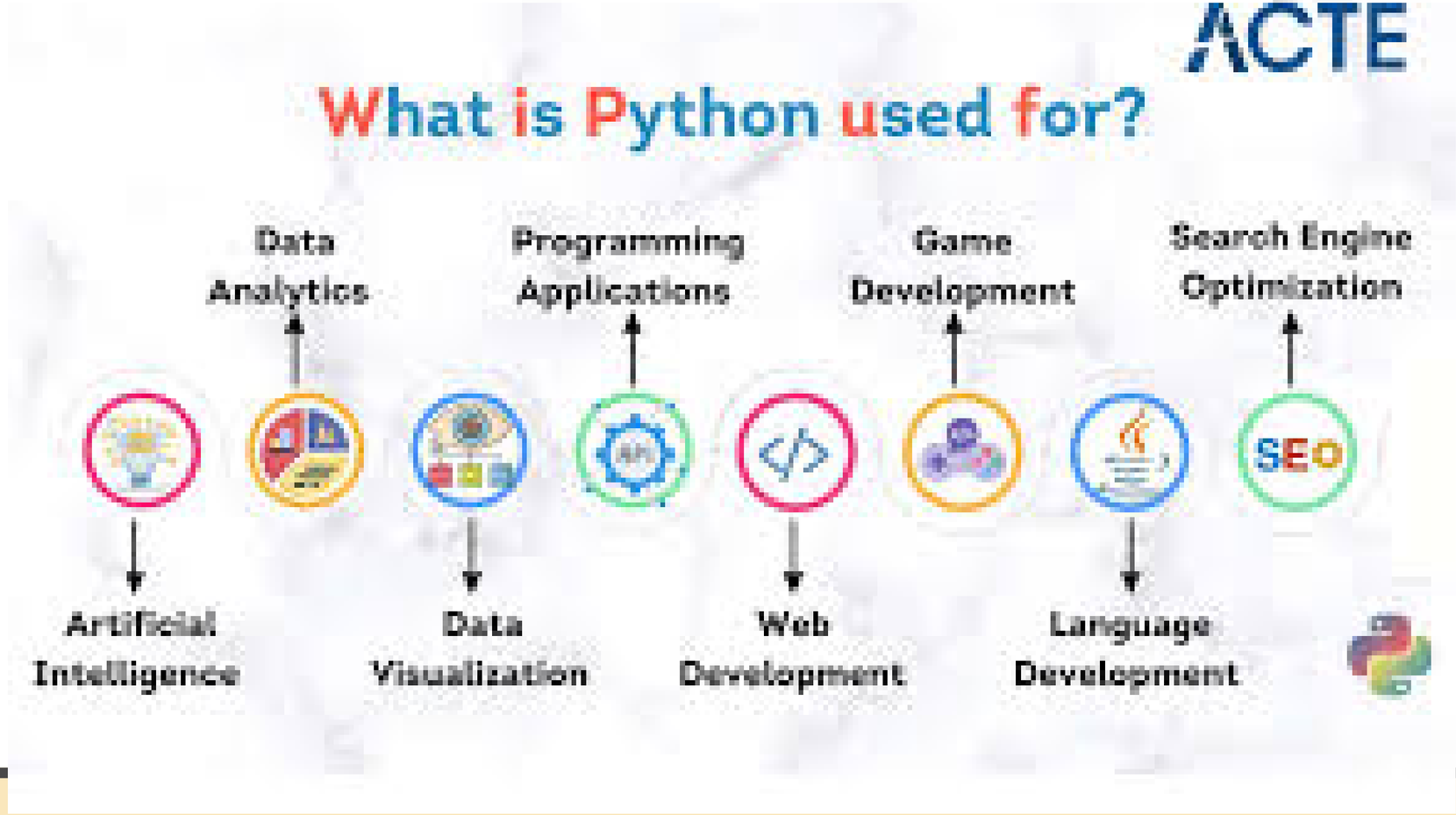
```
a=10

b=20

print ('The result a+b = ', a+b)
```

VERSATILE & POWERFUL

Python is everywhere: Web, AI, Data Science, Automation!



LIBRARIES

Create project from scratch

Using python libraries

Top 10 Python Libraries

Pandas
Data analysis and manipulation

NumPy
Mathematical functions

Matplotlib
Data visualisations

SeaBorn
Data visualisations

Tensorflow
Machine Learning

Keras
Deep Learning

SciPy
Scientific computing

PyTorch
Machine Learning

Scrapy
Web crawling

SQLModel
Interact with SQL databases

DATA RUNDOWN

PYTHON TOKENS: BUILDING BLOCKS OF CODE

Smallest individual unit in a program

1. Keywords	2. Identifiers	3. Literals	4. Operators	5. Punctuators
if, else, in, for, while, and, or, True, false, etc.	ABC, ab123, Ab_123, xyz, PQ, A_1, _123	String Numeric Boolean None	Arithmetic Relationship Logical Membership	[ ], { }, ( ), : #, @

Fig: Tokens in Python

BASIC OPERATORS

OPERATORS IN PYTHON

Types	Operators
Arithmetic Operators	+, -, *, /, %, **, //
Assignment Operators	+=, -=, *=, /=, %=, **=, //=
Comparison/Relational Operators	==, !=, >, <, >=, <=
Logical Operators	AND, OR, NOT
Bitwise Operators	&, |, ^, ~, <<, >>
Identity Operators	is, is not
Membership Operators	in, not in

BUILT-IN DATA TYPES

Text Type:	`str`
Numeric Types:	`int`, `float`, `complex`
Sequence Types:	`list`, `tuple`, `range`
Mapping Type:	`dict`
Set Types:	`set`, `frozenset`
Boolean Type:	`bool`
Binary Types:	`bytes`, `bytearray`, `memoryview`
None Type:	`NoneType`

THANK YOU