

MACHINE LEARNING WITH PYTHON

DAY - 01

1. What is Python and why is it called an interpreted language?

Python is a high-level programming language known for its simple code and beginner friendly syntax. It's called an interpreted language because, when Python code runs, it is executed line by line by a program called the Python interpreter. This means errors can be found as the program runs, making testing and learning easier.

2. What are the key features of Python that make it popular for beginners and professionals?

- Simple Syntax
- Indentation
- Open Source
- In built Libraries
- Supports all kinds of Development
- Less Memory Consumption

3. What is the difference between Python 2 and Python 3?

Python 2 : Added more features while maintaining backward compatability with python 1.

Key Features:

-Introduced list comprehensions.

-Added Unicode support

-Introduced print as a statement

- Division between integers was floor division by default

- A huge standard library was added.

Problem - Many design Flaws became inconsistent were carried forward, the language became inconsistent.

End of line - Official support ended on January 1, 2020 but many legacy projects will use it.

Python 3:

Fix fundamental design flaws of Python 2, even if it broke backward compatibility.

key features

- Print is now function.

- Unicode strings by default.

- Integer division produces float for floor division use //.

- Better exception handling.

- More modern Libraries

- Ongoing development with regular updates.

- Modern, clean & only recommended version today.

4. What are Python's applications in real-world projects?

Python is used almost everywhere because of its flexibility:

- Web development: Building websites (using tools like Django and Flask).

- Data science and machine learning: Analyzing data, making predictions.

- Automation: Automating boring or repetitive tasks.

- Game and app development: Creating video games and desktop applications.

- Scientific computing: Simulations and calculations for research.

-Business and finance: Automating business operations and analyzing trends. Its friendliness and large library of tools make it a top choice for all kinds of projects.

5. What is PEP 8 and why is it important in Python programming?

PEP 8 is the official style guide for Python. It gives rules and suggestions about how to write Python code so that it's clear, nice-looking, and easy for everyone—beginners and professionals—to read and understand. Following PEP 8 makes it easier to spot errors, maintain code, and collaborate with others.

6. Who developed Python and in which year was it released?

Python was created by Guido van Rossum in the late 1980s(1987) and first released in 1991. Guido wanted a language that was simple and easy to use, and today Python is supported by a vibrant international community.

7. What do you mean by “dynamically typed” in Python?

"Dynamically typed" means variables in Python don't have fixed types. The Python interpreter figures out the type of variable (number, text, list, etc.) when the code runs. For example, a variable can start as a number and then become a string in the same program, and Python will handle it automatically.

8. What is the difference between a compiler and an interpreter, and which does Python use?

A compiler translates all source code into computer code before running the program, like in C or Java. It finds all errors before running.

An interpreter (like Python's) runs and checks code line by line, so you can see results and errors instantly, which is great for learning and experimenting. We can't proceed further before solving the error.

Python mainly uses an interpreter, but technically, it compiles code to “bytecode”, which is then run by the interpreter. This setup helps with portability and makes testing quick and easy for beginners.

LEVELS OF PROGRAMMING:

- 1.Binary level/Machine Level/Low level language
- 2.Assembly Level/Mid level language
- 3.High level language

PYTHON: Python is a high level, interpreted, object oriented, dynamically-typed, indented programming language.

FEATURES:

- 1.Simple Syntax
- 2.Open Source
- 3.Libraries
- 4.Supports all kinds of development
- 5.Less Memory
- 6.Platform Independent

Saving Extension – For python files the saving extension is .py, these files can be opened in all python IDEs including jupyter notebook.

For jupyter notebook the saving extension is .ipynb, these files can be opened in jupyter notebook, vscode, google colab.

JUPYTER NOTEBOOK:

CELLS:

- 1.Code cell- Used to write code.
- 2.Markdown-To store content and to give headings(only text will be displayed in output)
- 3.Raw-Used to store text and the output will be in cell box.

COMMENTS: It is a part of code but it won't take any place in extension.

Types of Comments:

- 1.Single line Comment: #

#this is my first comment

- 2.Multi line Comment: ' ' ' ' ' ' or " " " " " "

KEYWORDS: They are special reserved words that have special meaning and can't be used as identifiers(variables,function names etc).

Examples: True,False,Try,For,Else,Pass etc

DATA TYPES: It mentions what type of data it is.

Example : int,float,bool,complex

Sequence data types(data structures)-list,tuple,set,dict,str.