

Assignment - 2

- 1) what is python and why it is called an interpreted language?

python is a high-level general purpose programming language known for its simplicity and readability.

It is called an interpreted language because python code is executed line by line by the python interpreter rather than being compiled into machine code all at once.

2) what are the key features of python that make it popular for beginners and professionals.

- simple and readable syntax
easy to learn
- cross platform
runs on windows, mac, linux, etc.
- huge libraries and frameworks.
numpy, pandas, Django, tensorflow etc.
- object-oriented and functional programming support.
- strong community support.

3) what is the difference between python 2 and python 3

- print statement vs function
 - python 2 uses `print "Hello"`
 - python 3 uses `print("Hello")`
- integer division

in python 2, $5 / 2 = 2$;

in python 3, $5 / 2 = 2.5$

→ unicode

python 3 supports unicode by default (str is unicode)

→ end of support

python 2 is no longer maintained (stopped in 2020)

python 3 is the future.

4) what are python's applications in real world projects.

→ web development

→ data science & machine learning

→ automation and scripting

→ game development

→ cybersecurity and networking

→ desktop and GUI apps.

5) what is PEP 8 and why it is important in python programming?

PEP 8 is python's official style guide that provides rules for writing clean, readable and consistent code.

It is important because it makes code easier to read, maintain and share with other developers.

- 6) Who developed python and in which year was it released?

python was developed by Guido van Rossum

It was first released in 1991.

- 7) What do you mean by "dynamically typed" in python?

In python, you don't need to declare variable types explicitly.

Example:

`x = 10 # integer`

`x = "Hi" # now a string`

The type is decided at runtime, not in advance - that's why it's called dynamically typed.

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

Compiler

converts the entire program into machine code at once, then executes [faster execution, e.g., C, C++]

Interpreter

translates and runs code line by line (slower but easier for debugging, e.g., python)

python uses an interpreter

[python being the most common one].