24-12-2024

Training Day -1

Python (INTRODUCTION)

Python: is an Open Source, High Level Language with simple syntax used in versatile domains.

Why Python is so popular:

1. Easy to Learn, is a very flexible programming, very user friendly
It is more English Like language
2. Used in Versatile Domains
3. Python is having a big library set. 2.35 Lakhs+ libraries. Each
Library may have 50 to 50k different ready made functions.
4. Python is an open source programming langauge.
5. Python is having a big community. Lakh+ Community Members including multiple big MNC's
6. Python is a Platform Independent Langauge.
Portability: WORA: Write Once Run Anywhere
If we write our code on one OS and if the same code, without any change can be executed on any other OS also then we say our langauge is : Portability
Actual Code: Programming Code, which is human understandable code
Compiled Code: is not human understandable
Platform Independent: CORA: Compile Once Run Anywhere
If we write our code on one OS and compile it,
after compilation, if the compiled file can be executed on any other OS also then we say our langauge is Platform Independent.
Whether you got it?
7. Python supports Modular Approach: We can divide the project into different modules and all the modules can be interfaced together
8. Python supports Dynamic Data Type Definition.
9. Python supports Dynamic Memory Allocation.
10. Python is an Interpreter Based language: In python, code executes line by line.

Python is a dynamic programming language: Everything happens at
run time in Python.
C Lang, C++, Java are Compiler based languages.

Python File Extension: .py

Python Compile File Extension: .pyc

Used in Versatile Domains:

Data Driven Domains: DA, BA, ML, DS, DL, AI, NLP, IP....

Other Domains: Web Development, Mobile Application Development,
Hardware Specific Applications, Gaming apps,
Cyber Security, Networking, CAD Designing....

Python supports Dynamic Data Type Definition: Data types in python
are defined at run time. You need not to define data types of variables
in advance.

```
a=5     #a int type
a=7.5   #a float type
a=True  #a bool type
a=2+3j  #a complex type
```

In C Lang, we need to define the data types of variables at compile
time ie in advance before using the variables. So if we want to hold
a whole number then we will define: int a; #C Syntax

```
a=5;        #C Syntax
a=7;        #C Syntax
```

But limitation in C : There are 2 Limitation:
1. is that these data types can store a fixed amount
of data ie int will have some max values and min value
2. we can't save different types of data in a variable
There limitation are not there in python.

In C Lang int consumes 2 or 4 bytes depends upon the compiler.

1 Byte: 8 bits

111111111111111: 16 bits: 2 bytes

Int: Signed int: 15 Bits : 111111111111111: Binary to Decimal:

2 power 15 -1= 32767

In C Lang if int is taking 2 bytes: C Lang int Range: -32768 to +32767

Variables are stored in RAM: Volatile Memory

Python supports Dynamic Memory Allocation: ie memory is allocated at run time.

a=5 #a will be stored at say 1000 location

a=100000000 #a will be stored at a different location 2000

a="CETPA" #a will....3000

Dynamic Data Type Definition: We can store any type of data in a variable

Dynamic Memory Allocation: We can store any small or big value in a variable.

Data Types: In real world, being humans, we can differentiate different types of data like whole number, decimal point number, complex number, textual data....Similarly in programming also, different types of data are categorized.

Program

```
# import math
# r=math.pow(5,3)     #5 to the power 3
# print(r)
```

 # #New Program

```
# import math
# r=math.log(100,10)      #100 means 10 to the power2
# print(r)
```

 # #New Program

```
# print("CETPA")
# print("Vikas Kalra")
# print("Welcome")
# pr("Hello World")
# print("ABC")
# print("How are you?")
```

 # #New Program

```
# a=5
# print(type(a))
# a=2.0
# print(type(a))
# a=True
# print(type(a))
# a=2+3j
# print(type(a))
```

Data Driven Track:

DA (BA) jupyter or sypder, ML (DS) google colab, DL (AI)..

Web Developer Track/Full Stack Developer

Django Framework, Web Designing (HTML, CSS, JSS,,),

Framework (React)