



Python Refreshers

Module

- Refreshers Classes → ②
- Time & Space complexity
- OOPS → open source (ZCM)
- Functional Programming
- Modules & Packages
- File handling
- Exception handling

Basics

① print ("Hello World")

⇒ 9, "Hello", 9.5,

★ Does Python have data type?

Python doesn't have datatype

↓
Python instead have FCS

↙
First Class Citizen.

⇒ Is python dynamic typed language.

In python you don't have to define data type while writing the code → only at the time of execution they come into picture.

Compiler

- Very fast
- Hard to debug

Interpreter

Slow
Easy to debug

⇒ Write code in C++



Compile

machine

A

Write a code in Python



Interpretor



machine

B

Write a code in Python



Convert it to C++



Compile



machine

C

A is faster than C →

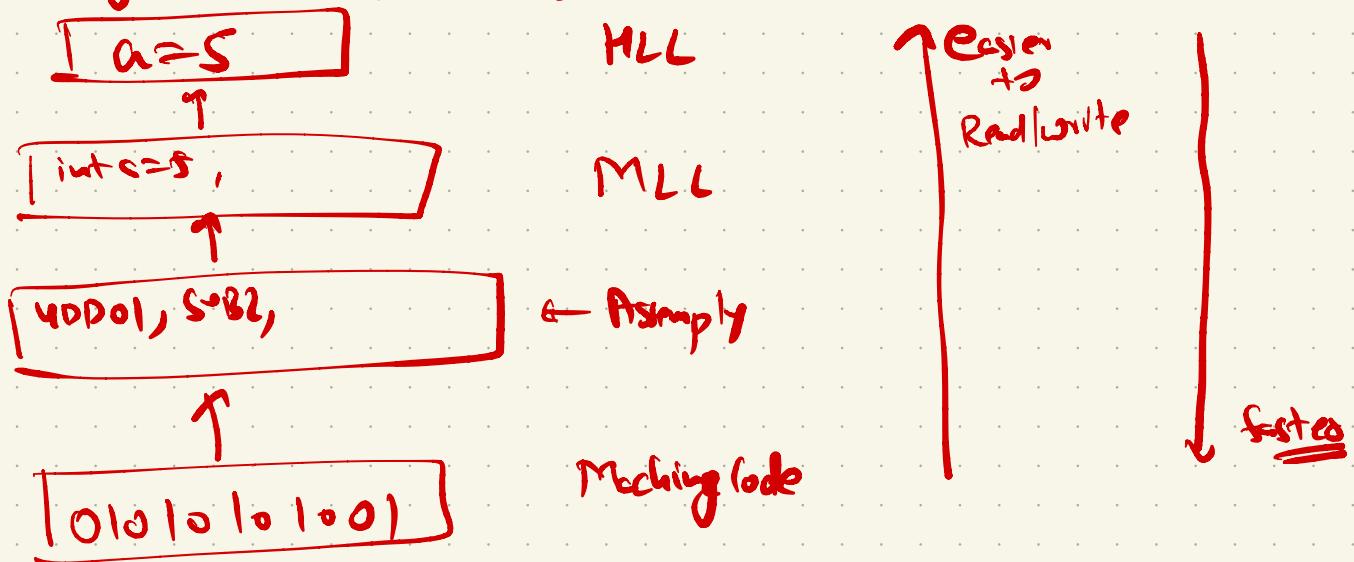
B against C → It depends

Cython

Code wrapped
on top
of C for
python

⇒ Hierarchy of Programming language.

- Machine Code (byte)
- Assembly language
- Mid level languages (C, C++, Java)
- High level language (Python, JavaScript)



⇒ FCC →

32GB RAM →



1 GB → Gigabytes → 1024 MBs → 10^6

$1024 \times 1024 \times 1024$ Bytes

$$1\text{GB} = (1024)^3 \times 8$$

$$1\text{GB} = \underline{\underline{2^{33} \text{ bits}}}$$

RAM can store
RAM is 32GB $\rightarrow 2^5 \times 2^{33} \rightarrow 2^{38}$ bits

0111011 . 1101

$$\underline{\underline{2^{36}}} \quad 2^{36}$$

$$2 \times 2^{36}$$

$$a = \underline{\underline{1}}$$

$$b = \underline{\underline{1}}$$

$$c = a+b$$

$$2^{36} + 2^{36} \text{ ad store} \Rightarrow \underline{\underline{2^{38}}} \text{ memory}$$

$$2^{36} \rightarrow a$$

$$\boxed{a+b=c}$$

$$2^{36} \rightarrow b$$

$$2^{37} \rightarrow c+b$$

$\Rightarrow 2^{36}$ not as big as this

a lot of smaller numbers and objects

RAM \rightarrow Limited \rightarrow only finite calculations are allowed.
HDD

How to store data →

010101010101

(S) → certain no. of bits

S.2 →
 S . 2

→

100.7 → .
 100 . 7

5 → 3 bits
16 → 4 bits
30 → 5 bits
10000 → 17 bits

Why not store all numbers in same format.

00000101
00010010
00100010
10001001

In machine code → we ensure that same datatype is stored in same no. of bits

int → 8 bit

bigint → 16 bit

float → 8 bit + 6 bit →

| Check if my integer doesn't fit
| in 8 bit →
| ↓
| Throwing error

8 digit integer → do sum

String → made of characters →

A → 16 bits
B
C
D
E
⋮

Symbols - - / . → 32 bits

Is there a fix size of string.

Even restriction on strings were also →
• len were also →

sig int → 8 bit
char → 32 bit
String → 256 bit

⇒ In mid level language → every datatype was given a fix memory size

whatever you are declaring a variable → tell type

⇒ why datatype conversion is not allowed

int → 8 bit
String → 16 bit

Python → why am I restricting sizes of data.

forget about fixed size → allow any data to have
any amount of memory.

Python have FCCs → they are not bound by memory
↓
they can store as much data
as the RAM you have

datatypes → have fix memory size
FCCs → are not bounded by memory

We do not call int
 String
 float
 decimal
 boolean

} → datatypes in Python

FCCs

! First Class Citizens

⇒ Type in Python →
↳ that is just a gimmick.

Python does not stop data based on type.

Everything in Python is an Object

\Rightarrow Everything is stored as an object or FCLs

But just for sake of simplicity \rightarrow Python also tells a primitive corresponding type

\Rightarrow if a & b are the numbers

$a \% b$ represent remainder when you divide a by b .

$$a = \underbrace{kb}_{\text{quotient}} + \text{remainder}$$

For negative numbers

$$-8 = - (8)$$

$$\text{any } -ve = - (\underbrace{\text{two numbers}}_a)$$

$$-a \% b \equiv \underline{-8 \% 3}$$

$$b - a \% b = (3 - \underline{8 \% 3}) \\ (3-2)$$

①

assume that remainder should always be +ve.

$$-8 \% 3 \Rightarrow \underline{1}$$

$$-8 = k(3) + \underbrace{\text{remainder}}_{\text{quotient}}$$

$$|-8 = (-3)(3) + \underline{1}$$

$$-8 = (-2)(2) - 2 \times$$

\Rightarrow Mutable \rightarrow Value can change

Immutable \rightarrow Value will change.

There is only 3 mutable objects in

Python \rightarrow List
 \rightarrow Sets
 \rightarrow Dictionaries

everything else is immutable.

Iteration

① Iterable \rightarrow List, range, Set, String

② Iterator \rightarrow (ind values for a single execution of loop)

③ Iteration block \rightarrow Loops to be executed

\Rightarrow Career \rightarrow DA require domain knowledge

\Leftrightarrow • Business Analytics \rightarrow • Financial Data
• Orders

RA \Leftrightarrow • Product Analytics \rightarrow • User Clickstream [website / APP]
• Order

• Marketing \rightarrow • Social Media, Ads, Campaigns

• Sales \rightarrow • Customer segmentation
• Conversion rate + CRM

- Finance →
 - Fraud detection + Outlier
 - Recommendation
 - Network →
 - Social Network → Connecting multiple people or services
 - Financial Network
 - SaaS Network
- ⇒ • SQL > Excel > Tableau > Python (Analyst Role)

⇒ Data about Students & their basic works at
an institute

- (i) who is the best student in Class 7th C
- (ii) who is the student with phone no → []
- (iii) what is YOY marks growth of student

⇒ Joins → pd(~~merge~~) →