

A faint, light gray world map is visible in the background, centered on the Atlantic Ocean. The continents are outlined in a darker shade of gray, and the map covers the entire frame.

PYTHON TRAINING PROGRAM PART - 1

WHAT IS PYTHON

- PYTHON IS

- ✓ GENERAL PURPOSE PROGRAMMING LANGUAGE
- ✓ OBJECT ORIENTED PROGRAMMING LANGUAGE
- ✓ HIGH LEVEL PROGRAMMING LANGUAGE (Compiled or Interpreted)
- ✓ DYNAMICALLY TYPED LANGUAGE
- ✓ INTERPRETED PROGRAMMING LANGUAGE

MACHINE LEVEL LANGUAGE - BINARY CODE

```
110 1 01010 00010 10 010 11 0 010 1001 0010 10 0 11101
001 1 10 1010 0110 0100 011 100 0 1010 01 00 01
01010 10 001 10011 1000 10 10 0 101 10 0 10 101 11 11
1 00 010100 0101 01010 11 101 01 11 101 01 0 1101
1010001 10110100 01101 1 01011 0 1 01011 001 10 00
101 100001 01 0 10 0 001 110 0 1 1 110 0 1 010 10
11001 0 0 00 101 01 1 0 0101 1 0 101
101 0 10101 00101101 10 01 101 0 10101 1 01010
11000 110 001 10 0 1011 101 11000 110 101 10
1100 00 01 01000 0 101 10 110 1100 00 01 010 00 101
1000101 10 0 101 10 0001 11 1000101 01 101 0
0 01 0 00 101 111 100 10 1 1 0 01 0 00 1001 10 10
1 001001 100100 1 110101 0111010 1 00 001 100 0 0 101
1 10 0 0 1010 011 00 01101 10 0 100 10100
10101 0 1 0100 1 1000 101 0 0101 0 1 0 01 10
110 001010 0001 110 010 1 10 01110 001010 0 11 1
01 001 1 0 1 0 1011 0 101 01 001 1 0 1 00 00
0101011 01101 011 1 000 01 0 0101 11 01100 10 1
1 0100 1 01 00101 0 0100 0 11 0100 1 011 01 10
10100 10101 0 00 011 1001 1 010100 10101 011 00
0 01 00 0110100 10 0101 0100 01 00 011010 0 1
11001 101 010 01011 101001 101 11 01 101 010 11 0 1
010 0 0101 0 10 0 110 01001 01 010 0 0101 01 0100
010 011 0 01 01001 1010 01 0 010 011 0 01 0 010 0
1 01001 10001 101 10011 001 1 01001 10 1101
10100 1010 0010 001 1101 110 101 0 101 1001 0 1 10
1 01 00 1 01 0 0 10 1 001 1 01 00 1 10 1 0110
1100 0 1 10 1000 011010100 1 1 00 0 1 10 10 01 101
010 01 101001 1 1011 0 0 01 0 0 01 101001 0 00
010 11000 110 0 11101 00010110 010 11000 110 01 10
001 1010 0001 0 010 11 0 001 1010 0 11101
1010 01010100 0010 101 10 101 01010 0101 00 1 01 10
```

Binary Alphabet

a	01100001	n	01101110
b	01100010	o	01101111
c	01100011	p	01110000
d	01100100	q	01110001
e	01100101	r	01110010
f	01100110	s	01110011
g	01100111	t	01110100
h	01101000	u	01110101
i	01101001	v	01110110
j	01101010	w	01110111
k	01101011	x	01111000
l	01101100	y	01111001
m	01101101	z	01111010

BINARY NUMBERS

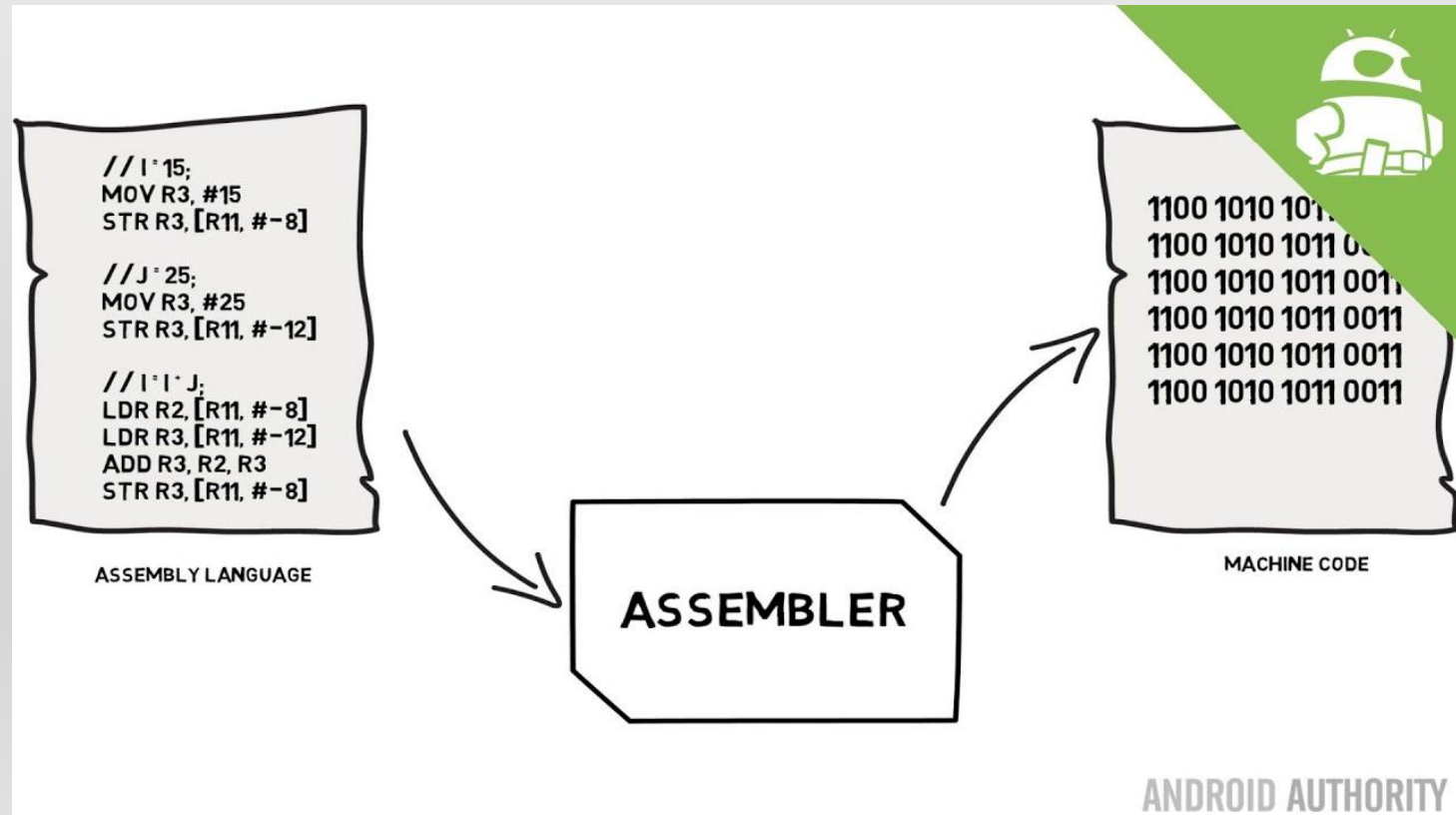
1	1	14	1110
2	10	15	1111
3	11	16	10000
4	100	17	10001
5	101	18	10010
6	110	19	10011
7	111	20	10100
8	1000	21	10101
9	1001	22	10110
10	1010	23	10111
11	1011	24	11000
12	1100	25	11001
13	1101		

ASSEMBLY LANGUAGE CODING

```
; Example of IBM PC assembly language
; Accepts a number in register AX;
; subtracts 32 if it is in the range 97-122;
; otherwise leaves it unchanged.

SUB32 PROC          ; procedure begins here
    CMP  AX,97      ; compare AX to 97
    JL   DONE       ; if less, jump to DONE
    CMP  AX,122     ; compare AX to 122
    JG   DONE       ; if greater, jump to DONE
    SUB  AX,32       ; subtract 32 from AX
DONE:  RET          ; return to main program
SUB32 ENDP          ; procedure ends here
```

FIGURE 17. Assembly language



GENERAL PURPOSE PROGRAM LANGUAGE

- General purpose Programming Language designed to use for writing software in wide variety of application domains without being restricted to particular domain.
- Python is a General Purpose Programming Language which means, Python code is used to build software for different domains.
- Like.....
 - Google is using python code in Search Engine
 - Nasa is using python in critical project to gather important data from outer space
 - New York Stock Exchange use python for secured financial transactions

PYTHON IS USED TO BUILD APPLICATIONS LIKE....

- **Desktop Application – Application which are running in a single system / Stand along system.**
- **Web Application – Ecommerce Application / Blog Application / Mailing Application with frameworks like Django, Flask.**
- **Network Application**
- **Mobile Application**
- **Gaming Application**
- **Data Analysis**
- **Data Science – ML, AI, IOT.....**

WHY CHOOSE PYTHON ?

- EASY TO UNDERSTAND AND LEARN
- FREE WARE AND OPEN SOURCE LANGUAGE
- FEWER CODE LINES, LESS TIME
- APPROVED BY DATA SCIENTISTS
- HUGH COMMUNITY (FORUMS) TO SUPPORT PYTHON.

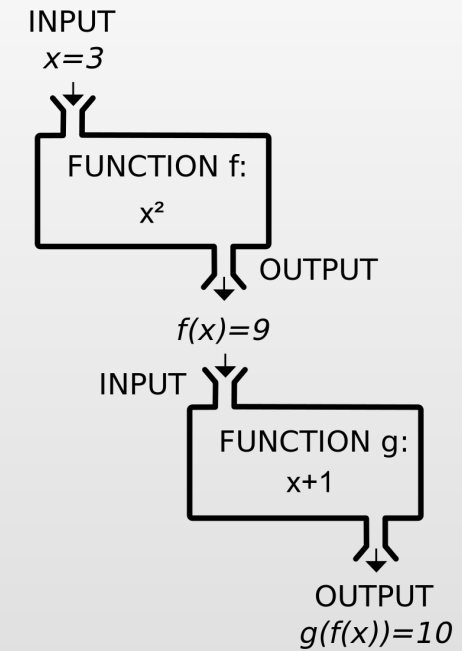
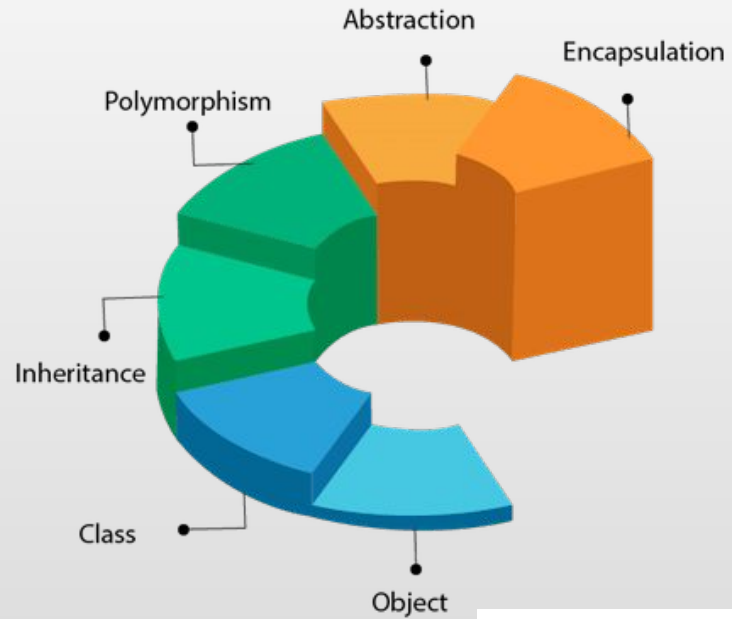
KEY FEATURES OF PYTHON

- EASY TO CODE DUE TO ELEGANT SYNTAX:
- FREEWARE AND OPEN SOURCE:
- PROCEDURAL AND OBJECT-ORIENTED LANGUAGE PARADIGM :
 - (INCULDING SCRIPTING & MODULAR)
- DYNAMICALLY TYPED & HIGH LEVEL PROGRAMMING LANGUAGE
- PYTHON IS PORTABLE LANGUAGE (CROSS PLATFORM LANGUAGE):
- PYTHON IS INTEGRATED LANGUAGE:
- EXTENSIBLE & EMBEDDED FEATURE – INTO PYTHON
- INTERPRETED LANGUAGE:
- LARGE STANDARD LIBRARY (WORLDWIDE COMMUNITY)

PYTHON FEATURES ARE INFLUENCED BY

- **Functional Programming** – This feature is influenced by C(1978)
- **OOPS** – This feature is influenced by C++ (1985)
- **Scripting Language** – This feature is influenced by PERL (1987)
- **Modular Programming** – This feature is influenced by Modular series
(Modular / Modular2/ Modular3)

OOPs (Object-Oriented Programming System)



Modular Programming

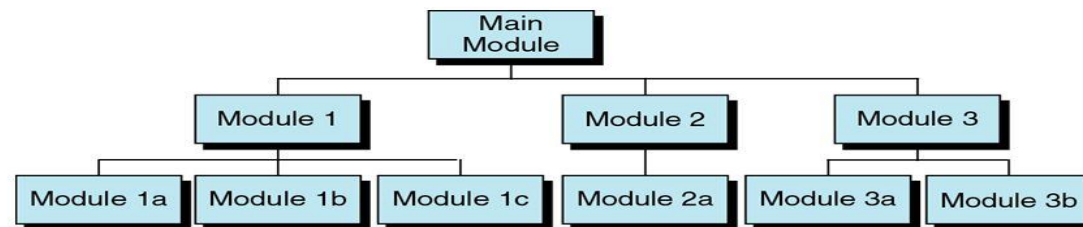


Figure 4-1: Structure Chart

HISTORY OF PYTHON

- Python was developed by Guido Van Rossum in 1989 and officially was released in the year 1991
- Guido Van Rossum is a Dutch Programmer born in the year 1956, After completion of his master from Amsterdam University in Netherland. He joined CWI as Research Analyst (Mathematics & Computer Languages)
- Guido Van Rossum developed python when he was working in CWI which is a part of National Research Institute of Netherland.
- He was influenced by ABC Language (**SETL** (SET Language) & **ALGOL** (short for *Algorithmic Language*) which was interpreted language
- Rectifying the setbacks in ABC Language, he developed all together a new language called PYTHON.

PYTHON NAME ORIGIN

- Guido Van Rossum developed Python in year 1989 -1991,
- He named it based on famous and his favorite TV Show called Monty Python's Flying Circus(Monty Python were group of 5 comedian) which was broadcasted on BBC from Late 1968 to 1975.

COMPANY WHICH ARE USING PYTHON....



Testing Masters
TECHNOLOGIES

- Google.
- YouTube
- Instagram
- Quora
- Dropbox (Client / Server)
- Netflix
- Bit torrents
- NASA
- Mozilla
- UberMany More



PYTHON RELEASES

- Python beta version was released in 1989
- Python official version was released in 1991
- Python 1.0 was introduced in January 1994
- Python 2.0 was introduced in October 2000 (Py2K)
- Python 3.0 was introduced in December 2008 (Py3K)

- Latest Python 2.0 release – 2.7.17 (Date :19th Oct 2019)
- Latest Python 3.0 release – 3.8 (Date: 15th Oct 2019)

FLAVORS OF PYTHON



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**Python
Flavors**



FLAVORS OF PYTHON

- Cpython : PYTHON + C
- Jython / Jpython : PYTHON + JAVA
- Iron Python : PYTHON + .NET FRAMEWORK
- Ruby Python : PYTHON + RUBY
- Anaconda Python : PYTHON FOR BIGDATA
- PyPy : JIT (JUST IN TIME) + PYPY
- MicroPython : Python for Microcontrollers



Python Flavors



Python Implementations

“Why uses a alternative Python implementation? To be able to uses all the stuff regarding this technology stack, for example using Jython it is possible use all the Java stuff and Libraries.”

Implementation	Virtual Machine	Language
CPython	CPythonVM	C
Jython	JVM	Java
IronPython	CLR	C#
Brython	Javascript Interpreter(V8)	Javascript
RubyPython	RubyVM	Ruby

PYTHON 2.0 & PYTHON 3.0

- No backward compatibility
- Print "Hello" / print("Hello")
- Range / xrange
- Input // Raw_input
- Immutable / Mutable (Global Variable in For loop can change)
- Division Operator

PYTHON IDENTIFIER



- A Python identifier is a name used to identify a variable, function, class, module or other object.
- An identifier starts with a letter
- Identifiers are case sensitive.. All the best identifiers are different
- Keywords / reserved words cannot be used as identifiers.
- No Length limit for identifier
- Identifiers with (_) ☐
- Five Major Things
 - 1) identifier should use either small alphabets / Capital Alphabets / Digits from 0-9 / underscore... It will not accept anyother character apart from
 - 2) Identifier cannot start with a Number
 - 3)Case Sensitive
 - 4)