CENTRE FOR DIFFERENTLY ABLED PERSONS
BHARATHIDASAN UNIVERSITY

III BCA – V SEMESTER

PYTHON PROGRAMMING

(20UCA5CC6)

UNIT – I

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UNIT – I

Python ─ Overview

- Python is a high-level, interpreted, interactive and object-oriented scripting language. Pythonis designed to be highly readable.
- It uses English keywords frequently where as otherlanguages use punctuation, and it has fewer syntactical constructions than other languages.

- Python is Interpreted: Python is processed at runtime by the interpreter. You do notneed to compile your program before executing it. This is similar to PERL and PHP.

- Python is Interactive: You can actually sit at a Python prompt and interact with theinterpreter directly to write your programs.

- Python is Object-Oriented: Python supports Object-Oriented style or technique
- ofprogramming that encapsulates code within objects.
- Python is a Beginner's Language: Python is a great language for the beginner-
- levelprogrammers and supports the development of a wide range of applications fromsimple text processing to WWW browsers to games.

History of Python

- Python was developed by Guido van Rossum in the late eighties and early nineties at theNational Research Institute for Mathematics and Computer Science in the Netherlands.
- Python is derived from many other languages, including ABC, Modula-3, C, C++, Algol- 68,SmallTalk, Unix shell, and other scripting languages.
- Python is copyrighted. Like Perl, Python source code is now available under the GNU GeneralPublic License (GPL).
- Python is now maintained by a core development team at the institute, although Guido vanRossum still holds a vital role in directing its progress.

Python Features

- Python's features include:
  - Easy-to-learn: Python has few keywords, simple structure, and a clearly definedsyntax. This allows the student to pick up the language quickly.
  - Easy-to-read: Python code is more clearly defined and visible to the eyes.
  - Easy-to-maintain: Python's source code is fairly easy-to-maintain.

- A broad standard library: Python's bulk of the library is very portable and crossplatform compatible on UNIX, Windows, and Macintosh.
- Interactive Mode: Python has support for an interactive mode which allowsinteractive testing and debugging of snippets of code.
- Portable: Python can run on a wide variety of hardware platforms and has the sameinterface on all platforms.
- .

Extendable:

You can add low-level modules to the Python interpreter. These modules enable programmers to add to or customize their tools to be more efficient.

Databases:

Python provides interfaces to all major commercial databases.

GUI Programming:

Python supports GUI applications that can be created and ported to many system calls, libraries, and windows systems, such as Windows MFC,Macintosh, and the X Window system of Unix.

Scalable:

Python provides a better structure and support for large programs than shell scripting

- Apart from the above-mentioned features, Python has a big list of good features:
  - It supports functional and structured programming methods as well as OOP.
  - It can be used as a scripting language or can be compiled to byte-code for buildinglarge applications.
  - It supports automatic garbage collection.
  - It can be easily integrated with C, C++, COM, ActiveX, CORBA, and Java.

Structure of Python Program

- The typical structure of a python program include 3 parts Import statements
  - // import statements are used to include library files to the python program Function definitions
  - //This section include the definitions of various functions Program statements
    - // This section include the set of statements for solving the given problem.

Elements of Python

- Python has 4 components
    1. IDLE (Python GUI): It is a cross platform GUI IntegratedDevelopment Environmental that is provided with Python forediting and running a Python programs. It is a bundled set ofsoftware's tools such as Python Shell for Scripting programs andtext editor for creating and modifying Python's source code, anintegrated interactive debugger for finding error, help system etc.
    2. Module Docs: This component allows us to access the pythondocuments such as build in modules, DLLs, libraries, packages etc.

1. Python (Command line): Python can also be access from thecommand line. Command line mode provide very less features incomparison to IDLE but it is fast.
2. Python Manual : This component include various documents related to Python

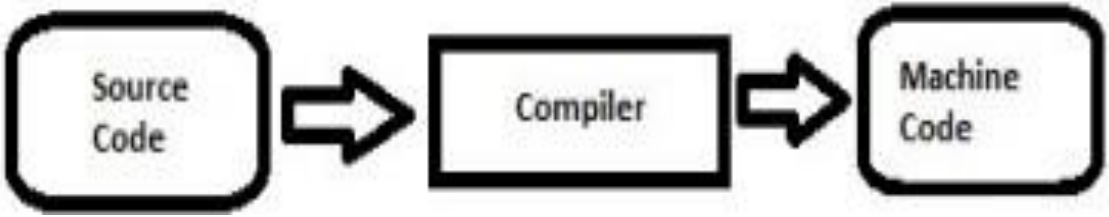
- such as installation cum setup guide, tutorials, Python API , FAQs etc.

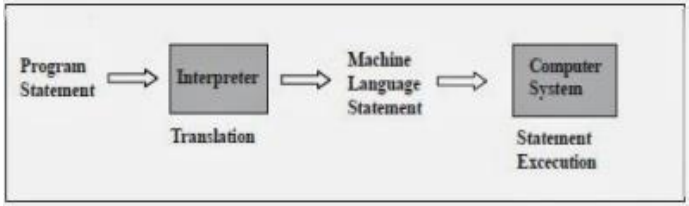
Python Interpreter

- Python is a high level language.
- We know that computer understand machine language or binarylanguage which is also known as low level language.
- The job to translate programming codewritten in high level language to low level language is done with the help of two type of software's such as compilers and interpreters.

Working of Compiler

- Compiler is a special type of software it first check the source code of the complete program forth syntax errors, if no error found in the program code then the source code of the program is converted to the machine code and finally the executive file of the program is created.
- The executive file can be executed by the CPU and can produce desired result as per the program requirements.



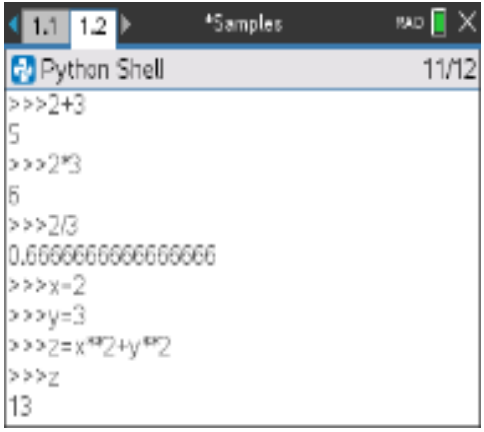


Working of Interpreter

- Interpreter check the code of program line by line if no error is found it is converted into themachine code and simultaneously gets executed by the CPU.
- An interpreter is a computer program, which coverts each high-level program statement into the machine code.
- This includes source code, pre-compiled code, and scripts.
- Both compiler and interpreters do the same job which is converting higher level programming language to machine code.
- However, a compiler will convert the code into machine code (create an exe) before program run.
- Interpreters convert code into machine code when the program is run.

Python as a Calculator

- Python can be used as a calculator to compute arithmetic operations. Python can also be used for trigonometric calculations and statistical calculations.
    - Simple arithmetic calculations can be completed at the Python Prompt, also called the Python REPL. REPL stands for Read Evaluate Print Loop.
    - The Python REPL shows three arrow symbols >>> followed by a blinking cursor.
    - Programmers type commands at the >>> prompt then hit [ENTER] to see the results.



PYTHON SHELL

- The Python Shell is the interpreter that executes your Python programs, other pieces of Python code, or simple commands.
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Indentation

- Indentation in Python refers to the (spaces and tabs) that are used at the beginning of a statement.
- The statements with the same indentation belong to the same group. For Example: a=2

```
print(a)
if a==3 :
    print(“hello
    world”)
    print(“HELLO
    WORLD”)
else :
    print(“ bye
    world”) print(“
    BYE
    WORLD”)
```

Atoms

- Atoms are the most basic elements of expressions. The simplest atoms are identifiers or literals.
- Forms enclosed in reverse quotes or in parentheses, brackets or braces are also categorizedsyntactically as atoms.
- The syntax for atoms is:
  - atom: identifier | literal | enclosure

Thank you