

GANPAT UNIVERSITY
U. V. PATEL COLLEGE OF ENGINEERING
B.Tech CE/IT Semester IV
2CEIT404: Python Programming

Practical-1: Introduction

Discuss the following points:

1. History of Python

➤ Python is a widely used general-purpose, high-level programming language. It was initially designed by Guido van Rossum in 1991 and developed by Python Software Foundation. It was mainly developed for emphasis on code readability, and its syntax allows programmers to express concepts in fewer lines of code.

2. Differentiate compiler and interpreter.

S.No.	Compiler	Interpreter
1.	Compiler scans the whole program in one go.	Translates program one statement at a time.
2.	As it scans the code in one go, the errors (if any) are shown at the end together.	Considering it scans code one line at a time, errors are shown line by line.
3.	Main advantage of compilers is it's execution time.	Due to interpreters being slow in executing the object code, it is preferred less.

4.	It converts the the instructions into systematic code.	It doesn't convert the instructions instead it directly works on source language.
Eg.	C, C++, C# etc.	Python, Ruby, Perl, SNOBOL, MATLAB etc.

3. What types of applications can be developed by using Python?

- Game App Development
- Machine Learning Applications
- Blockchain Applications
- Command-line Applications
- Web and Software Applications
- Audio and Video Applications
- Web Crawlers
- Image Processing and OCR
- Automated Testing
- System Administration Applications

4. List down Python versions.

Python Version	Released Date
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Python 1.0	January 1994
Python 1.5	December 31, 1997
Python 1.6	September 5, 2000
Python 2.0	October 16, 2000
Python 2.1	April 17, 2001
Python 2.2	December 21, 2001
Python 2.3	July 29, 2003
Python 2.4	November 30, 2004
Python 2.5	September 19, 2006
Python 2.6	October 1, 2008
Python 2.7	July 3, 2010
Python 3.0	December 3, 2008
Python 3.1	June 27, 2009
Python 3.2	February 20, 2011
Python 3.3	September 29, 2012
Python 3.4	March 16, 2014
Python 3.5	September 13, 2015
Python 3.6	December 23, 2016
Python 3.7	June 27, 2018
Python 3.8	October 14, 2019
Python 3.9	Oct. 5, 2020

5. List out Python IDE.

- IDLE
- Spyder
- Pycharm
- Jupyter Notebook
- Atom
- Pydev
- Thonny

- Kite

6. List out the features of Python.

- Easy to code
- Free and Open Source
- Object-Oriented Language
- GUI Programming Support
- High-Level Language
- Extensible feature
- Python is Portable language
- Python is Integrated language
- Interpreted Language
- Large Standard Library
- Dynamically Typed Language

7. Write advantages of Python language over other languages.

- It Is Free
- It is Object Oriented compare to C
- It Needs Less Coding than java
- It has rich built-in libraries than other languages
- It is Dynamically typed unlike java,c++
- It is Interpreted ,so doesn't store intermediate file
- It has powerful control capabilities as it calls directly through C, C++ or Java via python.
- Python also processes XML and other markup languages as it can run on all modern operating systems through same byte code

8. Differentiate dynamic and static types programming.

Dynamically typed languages:

- A language is dynamically-typed if the type of a variable is checked during run-time.
- Common examples of dynamically-typed languages include JavaScript, Objective-C, PHP, Python, Ruby, Lisp, and Tcl.
- In Dynamically typed languages, variables are bound to values at run-time by means of assignment statements, and it is possible to bind the same variables to values of different types during the execution of the program.
- Dynamically-typed languages do not require you to declare the data types of your variables before you use them. Example: example in python `data = 10; data = "Hello World!";` # No error

Statically typed languages:

- A language is statically-typed if the type of a variable is known at compile-time.
- Common examples of statically-typed languages include Java, C, C++, FORTRAN, Pascal and Scala.
- In Statically typed languages, once a variable has been declared with a type, it cannot ever be assigned to some other variable of different type and doing so will raise a type error at compile-time (some IDE's generally shows a Red Cross mark denoting the error).
- Statically-typed languages require you to declare the data types of your variables before you use them. Example: example in java `int data; data = 50; data = "Hello World!";` // This is illegal & causes a compilation error

9. Differentiate procedural and object oriented programming.

Procedural Oriented Programming	Object Oriented Programming
In procedural programming, program is divided into small parts called functions.	In object oriented programming, program is divided into small parts called objects.

Procedural programming follows top down approach.	Object oriented programming follows bottom up approach.
There is no access specifier in procedural programming.	Object oriented programming have access specifiers like private, public, protected etc.
Adding new data and function is not easy.	Adding new data and function is easy.
Procedural programming does not have any proper way for hiding data so it is less secure.	Object oriented programming provides data hiding so it is more secure.
In procedural programming, overloading is not possible.	Overloading is possible in object oriented programming.
In procedural programming, function is more important than data.	In object oriented programming, data is more important than function.
Procedural programming is based on unreal world.	Object oriented programming is based on real world.
Examples: C, FORTRAN, Pascal, Basic etc.	Examples: C++, Java, Python, C# etc.