



Introduction to PYTHON

Module 1 / Lecture-1

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Lecture-1 Topics

- About Python
- History
- Python Version
- Features of Python
- How to execute Python Program

About Python

- **Guido van Rossum**
- First released in the early 1990s.
- Its name comes from a 1970s British comedy sketch television show called ***Monty Python's Flying Circus*** .



History

- It was developed in **National Research Institute for Mathematics and Computer Science** in the **Netherlands**.
- Python is derived from many other languages:
 - ABC
 - Modula-3
 - C
 - C++
 - Algol-68
 - SmallTalk
 - Unix shell and other scripting languages.

Python Version

- Python 1.0 was released in November 1994.
- In 2000, Python 2.0 was released.
- Meanwhile, Python 3.0 was released in 2008.
- **Python 3 is not backward compatible with Python 2.**
- **Python 3.10**

Python 2 vs. Python 3

- Python 2 uses **print** as a statement and used as ***print "something"***
- Python 3 uses **print** as a function and used as **print("something")**
- Python 2 uses the function ***raw_input()*** to accept the user's input.
- Python 3 uses **input()** function
- In Python 2, the implicit string type is ASCII, whereas.
- Python 3, the implicit string type is Unicode.
- Python 2 uses **xrange()** function which returns a xrange object that works similar to Java iterator.
- Python 3 **range()** returns a list for example the function **range(0,3)** contains 0, 1, 2.
- There is also a small change made in Exception handling in Python 3. It defines a keyword **as** which is necessary to be used.

Features of Python

Python is Interpreted:

- Processed at runtime by the interpreter.
- Do not need to compile your program before executing it.

Features of Python...

Python is Interactive

- You can actually sit at a Python prompt and interact with the interpreter directly to write your programs.

```
>>>2+3
```

```
5
```


Features of Python...

Python is Object-Oriented

- Python supports Object-Oriented style or technique of programming that encapsulates code within objects.

Features of Python...

Python is a Beginner's Language

- Python is a great language for the beginner-level programmers.
- Supports the development of a wide range of applications from simple text processing to WWW browsers to games.

Features of Python...

A broad standard library

- Python's bulk of the library is very portable and cross-platform compatible on UNIX, Windows, and Macintosh.

Features of Python...

Portable

- Python can run on a wide variety of hardware platforms and has the same interface on all platforms.

Features of Python...

Databases

- Python provides interfaces to all major commercial databases.

Features of Python...

GUI Programming:

- Python supports GUI applications that can be created and ported to many system calls, libraries and windows systems.

Features of Python...

Dynamically Typed Language:

- Does not require the declaration of type of a variable.
- **Python** interpreter does **type** checking only as code runs, and
- The **type** of a variable is allowed to change over its lifetime.

```
>>> a= 10
```

```
>>>type(a)
```

```
int
```

```
>>>a ="Hello"
```

```
>>>type(a)
```

```
str
```

Python Applications

1. Web and Internet Development

- Python offers many choices for web development:
- Frameworks such as **Django** and **Pyramid**.
- Micro-frameworks such as **Flask** and **Bottle**.
- Python's standard library supports many Internet protocols:
 - **HTML** and **XML**
 - **JSON**
 - **E-mail processing**.
 - Support for **FTP**, **IMAP**, and other Internet protocols.



2. Scientific and Numeric

- **SciPy** : collection of packages for mathematics, science, and engineering.
- **Pandas** : data analysis and modeling library.



3. Desktop GUIs

- The **Tk** GUI library is included with most binary distributions of Python.
- Some toolkits that are usable on several platforms are available separately:
 - **wxWidgets**
 - **Kivy**, for writing multi-touch applications.
 - **Qt** via **pyqt** or **pyside**



4. Software Development

- Python is often used as a support language for software developers, for build control and management, testing, and in many other ways.
 - **SCons** for build control.
 - **Buildbot** and **Apache Gump** for automated continuous compilation and testing.
 - **Roundup** or **Trac** for bug tracking and project management.

5. Business Applications

- Python is used to build Business applications like ERP and e-commerce systems.
- Tryton is a high level application platform.