PRACTICAL-1

OPEN SOURCE SOFTWARE: PYTHON

AIM: To study about the Open Source Software Python

1. IDEA:

Python's name is derived from the British comedy group [Monty Python](https://en.wikipedia.org/wiki/Monty_Python), whom Python creator Guido van Rossum enjoyed while developing the language. Monty Python references appear frequently in Python code and culture; for example, the [metasyntactic variables](https://en.wikipedia.org/wiki/Metasyntactic_variable) often used in Python literature are [*spam* and *eggs*](https://en.wikipedia.org/wiki/Spam_(Monty_Python)) instead of the traditional [*foo* and *bar*](https://en.wikipedia.org/wiki/Foobar). The official Python documentation also contains various references to Monty Python routines. The prefix *Py-* is used to show that something is related to Python. Examples of the use of this prefix in names of Python applications or libraries include [Pygame](https://en.wikipedia.org/wiki/Pygame" \o "Pygame), a [binding](https://en.wikipedia.org/wiki/Language_binding) of [SDL](https://en.wikipedia.org/wiki/Simple_DirectMedia_Layer) to Python (commonly used to create games); [PyQt](https://en.wikipedia.org/wiki/PyQt" \o "PyQt) and [PyGTK](https://en.wikipedia.org/wiki/PyGTK" \o "PyGTK), which bind [Qt](https://en.wikipedia.org/wiki/Qt_(software)" \o "Qt (software)) and [GTK](https://en.wikipedia.org/wiki/GTK) to Python respectively; and [PyPy](https://en.wikipedia.org/wiki/PyPy" \o "PyPy), a Python implementation originally written in Python.

1. IMPACT:

Python [interpreters](https://en.wikipedia.org/wiki/Interpreter_(computing)) are available for many [operating systems](https://en.wikipedia.org/wiki/Operating_system). A global community of programmers develops and maintains [CPython](https://en.wikipedia.org/wiki/CPython" \o "CPython), an [open source](https://en.wikipedia.org/wiki/Open-source_software)[reference implementation](https://en.wikipedia.org/wiki/Reference_implementation). A [non-profit organization](https://en.wikipedia.org/wiki/Nonprofit_organization), the [Python Software Foundation](https://en.wikipedia.org/wiki/Python_Software_Foundation), manages and directs resources for Python and CPython development.

Most Python implementations (including CPython) include a [read–eval–print loop](https://en.wikipedia.org/wiki/Read%E2%80%93eval%E2%80%93print_loop) (REPL), permitting them to function as a [command line interpreter](https://en.wikipedia.org/wiki/Command_line_interpreter) for which the user enters statements sequentially and receives results immediately.

Other shells, including [IDLE](https://en.wikipedia.org/wiki/IDLE_(Python)) and [IPython](https://en.wikipedia.org/wiki/IPython" \o "IPython), add further abilities such as auto-completion, session state retention and [syntax highlighting](https://en.wikipedia.org/wiki/Syntax_highlighting).

As well as standard desktop [integrated development environments](https://en.wikipedia.org/wiki/Integrated_development_environment), there are [Web browser](https://en.wikipedia.org/wiki/Web_browser)-based IDEs; [SageMath](https://en.wikipedia.org/wiki/SageMath" \o "SageMath) (intended for developing science and math-related Python programs); [PythonAnywhere](https://en.wikipedia.org/wiki/PythonAnywhere" \o "PythonAnywhere), a browser-based IDE and hosting environment; and Canopy IDE, a commercial Python IDE emphasizing [scientific computing](https://en.wikipedia.org/wiki/Scientific_computing)

1. POPULARITY:

Since 2003, Python has consistently ranked in the top ten most popular programming languages in the [TIOBE Programming Community Index](https://en.wikipedia.org/wiki/TIOBE_Programming_Community_Index) where, as of December 2018, it is the third most popular language (behind [Java](https://en.wikipedia.org/wiki/Java_(programming_language)), and [C](https://en.wikipedia.org/wiki/C_(programming_language))). It was selected Programming Language of the Year in 2007, 2010, and 2018.

An empirical study found that scripting languages, such as Python, are more productive than conventional languages, such as C and Java, for programming problems involving string manipulation and search in a dictionary, and determined that memory consumption was often "better than Java and not much worse than C or C++".

Large organizations that use Python include [Wikipedia](https://en.wikipedia.org/wiki/Wikipedia), [Google](https://en.wikipedia.org/wiki/Google), [Yahoo!](https://en.wikipedia.org/wiki/Yahoo!), [CERN](https://en.wikipedia.org/wiki/CERN), [NASA](https://en.wikipedia.org/wiki/NASA), [Facebook](https://en.wikipedia.org/wiki/Facebook), [Amazon](https://en.wikipedia.org/wiki/Amazon_(company)), [Instagram](https://en.wikipedia.org/wiki/Instagram), [Spotify](https://en.wikipedia.org/wiki/Spotify)and some smaller entities like [ILM](https://en.wikipedia.org/wiki/Industrial_Light_%26_Magic) and [ITA](https://en.wikipedia.org/wiki/ITA_Software). The social news networking site [Reddit](https://en.wikipedia.org/wiki/Reddit" \o "Reddit) is written entirely in Python.

Python can serve as a [scripting language](https://en.wikipedia.org/wiki/Scripting_language) for [web applications](https://en.wikipedia.org/wiki/Web_application), e.g., via [mod\_wsgi](https://en.wikipedia.org/wiki/Mod_wsgi" \o "Mod wsgi) for the [Apache web server](https://en.wikipedia.org/wiki/Apache_web_server). With [Web Server Gateway Interface](https://en.wikipedia.org/wiki/Web_Server_Gateway_Interface), a standard API has evolved to facilitate these applications. [Web frameworks](https://en.wikipedia.org/wiki/Web_framework) like [Django](https://en.wikipedia.org/wiki/Django_(web_framework)), [Pylons](https://en.wikipedia.org/wiki/Pylons_(web_framework)), [Pyramid](https://en.wikipedia.org/wiki/Pyramid_(web_framework)), [TurboGears](https://en.wikipedia.org/wiki/TurboGears), [web2py](https://en.wikipedia.org/wiki/Web2py), [Tornado](https://en.wikipedia.org/wiki/Tornado_(web_server)), [Flask](https://en.wikipedia.org/wiki/Flask_(web_framework)), [Bottle](https://en.wikipedia.org/wiki/Bottle_(web_framework)) and [Zope](https://en.wikipedia.org/wiki/Zope) support developers in the design and maintenance of complex applications. [Pyjs](https://en.wikipedia.org/wiki/Pyjs" \o "Pyjs) and [IronPython](https://en.wikipedia.org/wiki/IronPython" \o "IronPython) can be used to develop the client-side of Ajax-based applications. [SQLAlchemy](https://en.wikipedia.org/wiki/SQLAlchemy" \o "SQLAlchemy) can be used as [data mapper](https://en.wikipedia.org/wiki/Data_mapper_pattern) to a relational database. [Twisted](https://en.wikipedia.org/wiki/Twisted_(software)) is a framework to program communications between computers, and is used (for example) by [Dropbox](https://en.wikipedia.org/wiki/Dropbox_(service)).

1. LICENSE:

The **Python License** is a deprecated computer [software license](https://en.wikipedia.org/wiki/Software_license) created by the [Corporation for National Research Initiatives](https://en.wikipedia.org/wiki/Corporation_for_National_Research_Initiatives) (CNRI). It was used for versions 1.6 and 2.0 of the [Python programming language](https://en.wikipedia.org/wiki/Python_(programming_language)), both released in the year 2000.

The Python License is similar to the [BSD License](https://en.wikipedia.org/wiki/BSD_License) and, while it is a [free software license](https://en.wikipedia.org/wiki/Free_software_license), its wording in some versions meant that it was [incompatible](https://en.wikipedia.org/wiki/License_compatibility) with the [GNU General Public License](https://en.wikipedia.org/wiki/GNU_General_Public_License) (GPL) used by a great deal of free software including the [Linux kernel](https://en.wikipedia.org/wiki/Linux_kernel). For this reason CNRI retired the license in 2001, and the license of current releases is owned by the [Python Software Foundation License](https://en.wikipedia.org/wiki/Python_Software_Foundation_License).