



19CSE100 -Problem Solving and Algorithmic Techniques

Programming Language Survey Assignment

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Python Language

INTRODUCTION:

Python is an open-source, high-level programming language that is frequently used for web development, scientific computing, data analysis, artificial intelligence, and other purposes. Guido van Rossum, a Dutch programmer, originally made it available in 1991. Python is a fantastic option for both beginning and expert developers because it is made to be simple to learn and understand.

It is simple to learn, write, and maintain code because of its clear, intelligible structure. It is also straightforward, intuitive, and simple to use. Python is frequently used in web development, particularly for server-side scripting, which generates customised responses to website user requests. Python has a large library selection, including well-known frameworks such as Django and Flask, making it ideal for web development.

Python is a multipurpose language that may be applied to many different jobs. It's a versatile language that may be used for a variety of tasks, including game creation, desktop and mobile application development, machine learning, and artificial intelligence. Python is a common choice among developers for a variety

of applications since it is a straightforward and simple-to-use programming language with a large selection of libraries and frameworks.

DETAILS REGARDING PYTHON:

Python is an interpreted, general-purpose programming language. It is easy for developers to use since it is an interpreted language that does not require compilation.

Python is a multi-paradigm language and supports several programming paradigms, including imperative, functional, object-oriented, procedural, and reflective.

Python runs on most operating systems, including Windows, macOS, Linux, and Unix-like operating systems. It is implemented in C and its source code is available for anyone to use, modify and distribute.

Python is heavily influenced by languages like C, C++, Java, and Perl. It has also influenced other languages like Jython, IronPython, and PyPy.

SYNTAX OF PYTHON:

Python has a less verbose syntax than other languages like PHP and is straightforward and easy to learn. In contrast to PHP, Python does not require specific tags like `<?php` and `?>` to denote the beginning and conclusion of a script. You might use the following code to create a straightforward "Hello World!" Python programme:

```
print("Hello World!")
```

HTML tags do not need to be included in the code because Python is not integrated in HTML. However, if you want to build a web page in Python, you may do it by utilising a web framework like Flask or Django, which let you write server-side code in Python and then build the front end of the website using HTML and CSS.

DATA TYPES AND DECLARING VARIABLES IN PYTHON:

Python supports the following data types:

- String
- Integer
- Float
- Boolean

- List
- Tuple
- Set
- Dictionary
- None

For declaring a variable in Python, we do not need to put any special symbol before the variable name. We simply assign a value to the variable name, like so:

example: `x = "Hello World!"` - declares a string with the name `x` and stores "Hello World!" in it

`y = 100` - declares an integer with the name `y` and stores the value 100 in it

REAL WORLD APPLICATIONS OF PYTHON:

Python is widely used in a variety of real-world applications due to its simplicity, flexibility and powerful libraries. Some of the major applications of Python are:

- **Web Development:** Python provides several frameworks and libraries like Django, Flask, Pyramid, and web2py that help in developing web applications.
- **Scientific and Numeric Computing:** Python has several libraries such as NumPy, SciPy, and Matplotlib that are widely used in the field of scientific and numeric computing.
- **Machine Learning and Artificial Intelligence:** Python has several libraries like TensorFlow, PyTorch, and scikit-learn that are used for developing machine learning and artificial intelligence models.
- **Data Science:** Python is widely used for data analysis and visualization, with libraries like Pandas, Seaborn, and Matplotlib.
- **Game Development:** Python is widely used for game development, using libraries like Pygame and PyOpenGL.
- **Network Programming:** Python provides libraries like Scapy, Paramiko, and Twisted that are used for network programming.
- **GUI Development:** Python provides several libraries like Tkinter, PyQt, and wxPython that are used for developing graphical user interfaces.

Major companies that use Python include:

- Google
- NASA
- Netflix

- IBM
- Spotify
- Dropbox
- Instagram
- Uber
- Pinterest
- Quora