**Ultimate Advantages and Applications of Python in the IT World**

In the world of advanced programming languages, why Python has become so popular among the SOFTWARE developers ? Let’s move ahead and uncover all the best reasons:

**Advantages of Python**

1. **Quick to learn.**

Python is simpler to learn over the various programming languages that are currently available in the world of computer programming. Beginners often get confused and leave the learning in the middle of the journey, all because of complex syntax. But in the Python programming language, the syntax is pretty easy; say, a simple English language.

**Ex:** If a newbie wants to print the word **HELLO WORLD**.

**Syntax: print (“HELLO WORLD”)**

1. **Open-Source**

Python programming is completely free. What does this mean? Open source means Python is accessible to developers as well as for non-developers basically for all without paying a penny. As the source code of this language is readily available, it has number of active community who contributes and build up a robust ecosystem of top-notch libraries.

Being free, the Python programming language ensures that anyone can download and use it without purchasing a license, and all these principles have made it a global superstar and created a deep impact on the IT universe.

1. **Ample Libraries and Frameworks**

Libraries and frameworks are the heart and soul of any programming language. In the Python programming language, there are a huge number of libraries and modules such as NumPy, Matplotlib, Seaborn, SciPy, JSON, Pandas, TKinter (GUI), Django, etc. In terms of web development, there are Django, Flask, Tornado, and Beautiful Soup, and in terms of machine learning and data science, there are Scikit-learn, Tensor Flow, PyTorch, Keras, etc.

1. **Versatility and Integrity**

Python's versatility shines through its wide applicability across multiple domains. Right from website development to data science to scientific computing to analysis, the Python programming language acts as an ideal option and fits in perfectly. The Python programming language has a rich library ecosystem, readability, and flexibility that make it a most-loved language.

The other important feature of Python is that it can also integrate with other programming languages, such as C, Java, etc. Python is highly supportive of cross-platform app development and creates powerful and robust web applications.

1. **Dynamically Typed Programming Language**

Python is a dynamically typed language. Now, what is Dynamically typed !! Despite Python, in other programming languages like C or alike, programmers are required to declare variables. For example, if a variable is an integer, programmers declare the variable using INT, FLOAT, etc. Whereas in the Python programming language, programmers do not require declaring variables, as it’s of no use because variable types are determined during the runtime. This amazing feature provides flexibility, but it can also lead to potential errors during code execution.

1. **No Compile Process**

Before getting to know about the NO compile process in Python, first explore what the compile process is for better understanding. The coding process is nothing but the conversion of human-written code into machine-understandable code. In the C programming language, there are 4 steps involved; in Java, there are 5 phases (edit, compile, load, verify, and execute). Whereas in the Python programming language, there is no compilation process at all, the Python code is executed without any such compilation steps.

This special feature makes Python a globally recognized and most-loved programming language, as it streamlines the development process as well as fastens the testing process. Also, due to the NO Compile process, there's a high requirement for regular monitoring to get the required results.

* **Disadvantages of Python**

No doubt Python is the most powerful programming language, but unlike many other programming languages, Python too has demerits. Some of the cons that Python has are listed below:

1. **Performance Limitations:**

Python's interpreted nature and dynamic typing lead to slower execution speed as compared to other programming languages such as C++ or Java and this seems to be one of the major demerits of applications that require high performance and speed.

1. **Global Interpreter Lock (GIL):**

Global Interpreter Lock, i.e., GIL, is one of the pain points that generally disappoints hardcore Python developers, as GIL does not effectively support the implementation of multi-threads all together and acts as a bottleneck in multi-core systems.

1. **Mobile and GUI Development:**

The Python programming language is not appreciated by the mobile application developer, as developing mobile applications using Python requires additional frameworks, resulting in less native and efficient solutions.