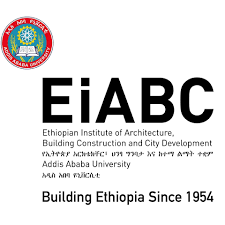
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**Computer Programing and Application**

Assignment\_1

July 19, 20

#1, Compare and contrast the difference between C# and Python programming.

**programming language** is a language that is used to develop computer programs. The programs developed can range from operating systems; data based applications through to networking solutions.

There are various common programing languages that are widely used. Among this programing languages python programing, C#, Java … are the most common and popular programing languages.

From these programing languages let’s see two of them i.e., python and C#:

1. Python Programming:

Python is an interpreted high-level general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant indentation. Its language constructs as well as its object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects.

Python is dynamically-typed and garbage-collected (which is a form of automatic memory management which happens not exist in C++. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library.

What is it used for??

* Web and Internet Development
* Scientific and Numeric applications
* Desktop GUIs
* Business applications.
* It is widely used in AI and Machine Learning space.
* Learning difficulty is easy in the case of Python programming.

Pros and Cons of Python Programming

* Pros:
* It is one of the best programming language to learn which supports multiple systems and platforms
* Object-Oriented Programming (OOPs) driven.
* Helps to improve Programmer's Productivity
* It is one of the best coding language to learn that allows you to scale even the most complex applications with ease
* Extensive Support Libraries
* Cons:
* Note ideal for Mobile Computing
* Python's database access layer is bit underdeveloped and primitive.

1. C# or C sharp

is a high-level, object-oriented programming language that is also built as an extension of C which compiles into byte-code, rather than machine code. That means it executes on a virtual computer that translates it into machine code on the fly.

C++

C++ is a low level, object-oriented programming language that is viewed by many as the best language for creating large-scale applications. C++ is a superset of the C language. A related programming language, Java, is based on C++ but optimized for the distribution of program objects in a network such as the Internet.

So here are some differences between C# and C++

* C++ is a low level programming language that adds object-oriented features to its base language C whereas C# is a high level language..
* In C++ you need to manage memory manually whereas C# runs in a virtual machine, which performs memory management automatically.
* In C++ development should follow any specific architecture and must be portable whereas C# development should be simple, modem, general-purpose, object-oriented programming language.

Pros and cons of C# and C++

* Pros:
* It is a popular language, and thus, there are many compilers and libraries
* Other programming languages like C, C#, and Java have very similar syntax to C++, make it easy to learn for everyone who knows C++.
* It is one of the popular coding languages which has no garbage collector running in the background.
* Cons
* The syntax is complex, and the standard library is small, making this language very difficult to learn for the beginner programmer.
* C++ program can't support garbage collection or Dynamic Memory Allocation
* The object orientation system in C++ is unnecessarily basic compared to other languages.

Applications

Usage applications: C++ is widely used in Game Development, Advance Computations, and Graphics Compilers

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| --- | --- | --- |
| Comparison between C++ and Python programming | | |
| parameter | Python | C++ |
| Code | Has les lines of code | Has large lines of code |
| Garbage collection | supports garbage collection | doesn’t support garbage collection. |
| compilation | uses interpreter. | pre; compiled. |
| Syntax | easy to remember almost similar to human language. | stiff learning curve as it has lots of predefined syntaxes and structure |
| Rapid Prototyping | Rapid Prototyping is possible due to the small size of the code. | Rapid Prototyping not possible due to larger code size. |
| Efficiency | Easier to maintain, object-oriented and simpler to use | Less clean and manageable in comparison to python |
| Nature | Python is dynamically typed. | C++ is statically typed. |