



SEEK WISDOM, ELEVATE YOUR INTELLECT AND SERVE HUMANITY!



EiABC

Ethiopian Institute of Architecture,
Building Construction and City Development
የኢትዮጵያ ኢንሹቲዩት ለስራ ለብሔር ለሕይወት ለብሔር
Addis Ababa University
አዲስ አበባ ዩኒቨርሲቲ

Building Ethiopia Since 1954

Computer Programing and Application

Assignment_1

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#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 programming languages that are widely used. Among these programming languages, python programming, C#, Java ... are the most common and popular programming languages.

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

I. 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
- It is widely used in AI and Machine Learning space.
- Desktop GUIs
- Business applications.

➤ 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:

- ✓ Not ideal for Mobile Computing
- ✓ Python's database access layer is bit underdeveloped and primitive.

II. 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

Comparison between C++ and Python programming

parameter	Python	C++
Code	Has less 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.