

WHAT ARE THE ADVANTAGES OF C LANGUAGE

C is a very popular language throughout the world and is ideal for a programmer to learn at the beginning of their career. There is little vocabulary to learn, the syntax is simple, and the modular structure of the language is easier to learn.

1. It is easy to understand

One of the main reasons why people choose C over other programming language is its simplicity. C is a highly portable language as programs coded in it are far more fast and efficient. This makes learning C easier than any other programming language. You can easily grasp the concepts behind C because there aren't many keywords or symbols involved. In addition, you don't need to be an expert in computer science to get started with C programming. All you have to do is read through some tutorials online and start writing your own codes. Also, there are system-generated functions and user-defined functions in C Language.

2. Presence of many Libraries

C Language provides lots of built-in functions which consist of system-generated functions and user-defined functions. Many general functions can be used to develop a program, while the programmer can also create a function as per their requirements, which is called a user-generated/defined function, in C Compiler.

3. Easy to write

Another reason why C is so popular as an efficient language among programmers is that it allows them to create their own software without having to worry about syntax errors. If you're not familiar with coding, then using structured language C will help you develop better skills. With C, you'll find yourself creating more efficient and effective solutions compared to those created by other programming languages.

4. Low cost

If you want to build something from scratch, then C is definitely worth considering. Because of its simple structure, you won't spend too much time trying to figure out whether you've made a mistake or not when developing your program. And if you decide to hire someone else to complete the task, they would only charge you less money.

5. Fast execution speed

If you want to execute your application quickly, then C is probably the right choice for you. Since C uses fewer instructions, it executes faster than other programming languages such as Java, Ruby, PHP, etc.

6. Portable

Since C is based on ASCII characters, it works well across different platforms including Windows, Linux, Mac OS X, Android, iOS, etc. Therefore, you can run your C programs anywhere regardless of where you live.

7. Easy debugging

Since C doesn't require complex statements like loops, conditionals, variables, functions, arrays, pointers, etc., you can debug your code easily. For example, if you encounter problems while executing your program, just press CTRL+D to stop the process immediately. Then, you can simply step back one line and continue working until you reach the problematic statement.

8. Procedure Oriented Language

Users create procedures or functions to execute their tasks in C Language. It's very easy to learn a procedure-oriented language because of the way it works (algorithm to execute the statements you write). If you want to develop a program using procedure-oriented language, you need to frame an algorithm and start converting it into a function.

9. Speed of Compilation

The C compiler produces machine code very fast. Close to a thousand lines of code can be put together in a couple of seconds. The C Compiler makes the code more efficient for faster execution.

10. Execution of algorithms and data structures

The utilization of algorithms and data structures in C has made program calculations extremely quick and smooth. Subsequently, the C language can be employed in complex estimations and tasks like MATLAB.

11. Dynamic memory allocation

In C Language you can allocate memory dynamically or statically. In dynamic allocation, we don't know how much space will be required for our data structure at run time. But if we use static allocation then we need to reserve a fixed amount of memory before starting the execution of the application. So this feature makes us more flexible than other languages like Java where we must declare all variables as final.

In dynamic memory allocation, you are allowed to distribute memory at run time. For instance, considering that you don't have the foggiest idea of how much memory is needed by objects in your program, then you can proceed to run a program in C and appoint the memory simultaneously.

WHAT ARE THE DISADVANTAGES OF C LANGUAGE

1. Lack of Object Orientation

C is a very vast and powerful language and simply follows the procedural programming approach. It doesn't extend its support to the concept of OOPs (Inheritance, Polymorphism, Encapsulation, Abstraction, Data Hiding). Here, you can't create a class with multiple inheritances like Java, Python, or C++. In OOP languages like Java, we can inherit methods from the parent class. But there is nothing similar in the C language. We cannot create subclasses for our classes. So it makes it difficult to reuse existing codes.

2. Inefficient Memory Management

In C Language you don't need any memory management techniques because it automatically manages all allocated resources for you. But if you want to use dynamic allocation then you should allocate dynamically by malloc function. If you do this manually then you will get a segmentation fault error. So we must always remember about Memory Management Techniques.

3. No Garbage Collection

Garbage collection is a feature that automatically reclaims memory from objects no longer needed by an application or library. It can be used for both automatic and manual garbage collection. Automatic garbage collection occurs when there is insufficient free space on the heap to allocate new objects; this may occur because all available physical RAM was allocated to other processes running on the computer system. Manual garbage collection involves explicitly freeing unused blocks of memory with calls to functions such as malloc.

But in C/C++ languages, there's no such feature of garbage collection as the culture of these languages is to leave storage management to the developer or programmer. Hence, it would be technically tedious and harsh on pockets to implement a precise garbage collector for C / C++.

4. Run-time checking

In the C programming language, the errors are not detected after each line of code. The compiler shows all the errors in the code only during the run-time of the whole which makes the checking of code (debugging) exceptionally complex in enormous projects.

Also, the compiler doesn't check whether a variable was declared before its use. The programmer must remember this rule while writing programs.

5. Concept of namespace is not present in C

C doesn't carry out the idea of namespaces. A namespace is organized as a chain of commands to permit the reuse of names in various settings. Without namespaces, we can't pronounce two factors of a similar name.

However, C programming is devoid of this feature, and consequently, you can't characterize a variable with the same name in C.

6. Absence of Exception Handling

Special case Handling is perhaps the main element of programming dialects. While compiling the code, different errors and bugs can happen. Exception Handling permits you to identify the bugs and rectify them. Be that as it may, C doesn't show this significant feature.

7. Lacks Constructor and Destructor

C doesn't have any object-oriented functionalities, and hence, it doesn't have Constructor and Destructor features. So in C Language, you need to carry out the manual construction and/or destruction of the variable, either by utilizing a function or by different means.

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