

THE C PROGRAMMING LANGUAGE

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Abstract- The C language by far is the most popular programming language. C originated at Bell Labs while writing the first UNIX operating system for a DEC PDP-7 computer with only 8K bytes of memory by Dennis Ritchie. C not just serves as an operating system language but all other programming languages are derived directly or indirectly from C programming concepts. It is one simple and powerful language that has been ported to many platforms. C is a good choice for system-level programming and is still stable. Yet, if one takes a more in depth look at C, one realizes that it is rather weak and has an extremely small vocabular.

I. INTRODUCTION

C is a programmer's language of choice. Although it was developed for performing UNIX operations. The programmers found the language to be useful for their programs without any hindrance, and they began using it. As the popularity of UNIX grew, so did that of C. One of the very strong reasons why C programming language is so popular and used so widely is the flexibility of its use for memory management. Programmers have opportunities to control how, when, and where to allocate and deallocate memory. C has often been termed as a "Pseudo high level language" or a "Middle level language" by many programmers because of its capability to access the system's low level functions.

C is now such a popular programming language that there have been several descendants from it that is in wide use. One such descendant, Objective C, was adopted by the NeXT computer company for their OpenStep operating system. Apple Computer recently bought out NeXT, and Obj-C is now the main development language at Apple for its next generation operating system, codenamed Rhapsody. Another descendant from C is Concurrent C, which came out of Bell Labs by Dr. Narain Gehani and Dr. William D. Roome. The C++, which is an object oriented extension of C has become almost as popular as its parent in recent years.

II. FEATURES OF C LANGUAGE

C is one of the easiest and simplest programming languages. It is taught as basic programming platform in most of the schools and colleges. The C language rose to popularity because of its Language such as Assembly Language. It is easier to write Assembly codes in C. C also has high level language portability i.e. the code written in one system can be transferred to other systems as well.

C is Closely Related to Lower level features as it more eco friendly than the previous languages such as BCPL, PASCAL etc. It makes use of the pointers to bodge into C some vital features which are missing from the original language: arrays, strings, & writeable function parameter. C has built-in functions to implement dynamic memory allocation and save the wastage of memory. C has a large library of built in functions to simplify any complex program. C language is the most widely used language in operating systems and embedded system development today.

III. HOW C WORKS

The machine requires instructions that are exact and detailed. It would be very easy if we could write programs in our own languages but the human language is full of ambiguity and imprecision. The C language acts as a link between the human and the machine. Programs in C were used so that it can be understood well by the human brain and then the translator would convert them into machine language which the computer understood. The programs in C are made up of data and instructions. The data in a computer is stored as a series of bytes. Data declarations are used by the programmer to describe the computer what kind of memories will alloted. For example while declaring a variable:

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int data;
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This is to tell the compiler that we want to use a section of computer's memory to store an integer named data. C is a high-level language. It lets us write a high-level statement. Then the compiler will

translate these series of statements into a series of low-level machine instructions. C provides the program with a rich set of standard functions that perform common operations such as searching, sorting, measuring length etc.

All the elements in a C language are designed to allow the programmer to express and organize his tasks clearly such that it gets easy for him and according to him, not to the computer. The C language lets you organize your programs using a simple yet powerful syntax. With the help of a powerful syntax with good programming techniques, the programmer can create useful programs that perform complex and wonderful operations, but also the programs need be organized in a way that makes them easy for the programmer to understand when modifications and editing need to be performed.

IV. ADVANTAGES

C is extremely easy to interoperate with, the already existing libraries can be reused again and again. Another advantage is that C was designed to be fast. The compiler programs the instructions much faster as compared to primitive programming languages. C is the basic platform of several programming languages, so learning this language becomes sufficient.

V. DISADVANTAGES

C does not support the concept of OOP (Object Oriented Programming), neither does it have classes. The idea of Constructor, Destructor is missing in C language. There is no runtime checking in C language.

VI. USES

C is used for system programming including OS and Embedding system because of its ability of mobility. C is a basic tool in website development using CGI as a gateway. The main implementation of new languages like Python, Perl, Ruby are written in C.

VII. RESULT

Due to few drawbacks of C, several descendants of C like C#, C++ are developed and are highly popular.

Although there are many new platforms in market, C is still preferred for learning and programming as its easy and mobile.

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