

Programming I. – Exam

28/11/2021

1. Describe in a few sentences the advantages and disadvantages of the C and C++ programming languages.

What is C language?

A general-purpose, procedural, middle-level language (as it supports both low-level and high-level functionalities) that was originally developed by Dennis M. Ritchie to foster the UNIX operating system at Bell Labs, C was initially first carried out on the DEC PDP-11 PC in the year 1972.

Advantages of C language

- It is easy to understand
- Presence of many Libraries
- Easy to write
- Fast execution speed
- Portable
- Easy debugging
- Procedure Oriented Language
- Dynamic memory allocation

Disadvantages of C language

- Lack of Object Orientation
- Inefficient Memory Management
- No Garbage Collection
- Run-time checking
- Concept of namespace is not present in C
- Absence of Exception Handling
- Lacks Constructor and Destructor

What is C++ language?

C++ is one of the most adaptable and flexible high-level programming languages, developed by Bjarne Stroustrup who worked at Bell Labs in the United States. Stroustrup created C++ as an extension of the C programming language, seeking a new, object-orientated language instead of a procedure-orientated one.

Advantages

- Portable
- Easy low-level manipulation
- Compatible with programs written in C
- Multi-paradigm programming language
- Full control over memory allocation using pointers
- An object-oriented language
- Pre-compiled
- Scalable
- Large community of programmers

Disadvantages

- Object-orientated programming languages have several security issues
- The pointers take up a lot of memory
- Cannot support built-in code threads
- Manually control memory allocation
- Lacks a garbage collector
- Difficult programming language to learn

2. Write a few sentences about what solutions exist for the return value of a function to an array.

Functions can't return arrays in C and C++ functions can not return C-style arrays by value. However, inorder to return the array in C by a function, the alternatives are:

- Using Dynamically Allocated Array
- Using static array
- Using struct

Once C++ is derived from C, the above alternatives are also valid, yet in C++ we can also:

- Return Array Using Std
- Return Array Through Vector Container

Resources

- <https://www.ko2.co.uk/advantages-disadvantages-of-c-plus-plus/>
- <https://dare2compete.com/blog/advantages-and-disadvantages-of-c-programming-language>
- <https://www.geeksforgeeks.org/return-local-array-c-function/>
- <https://linuxhint.com/return-array-from-function-c/>