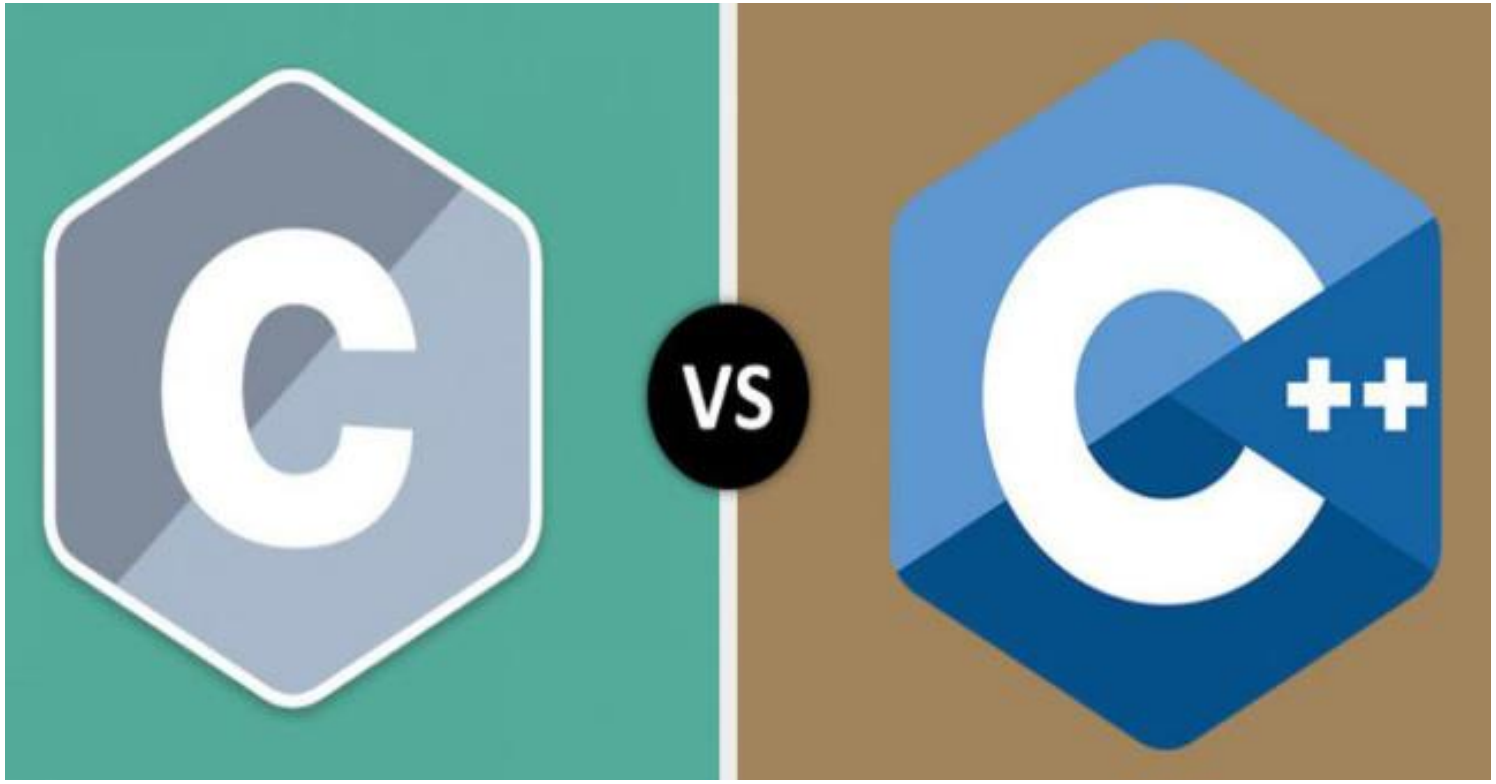
DATA STRUCTURE & PROGRAMMING II

Introduction to C++ programming

Introduction



Introduction

❑ C Vs. C++ Language

C Language

- Extension: .c
- For output/input
  - **printf**, **scanf** with placeholder
- Variable type:
  - `int, float, char,`
  - `char [ ], bool`

C++ Language

- Extension: .cpp
- For output/input
  - **cout**, **cin** without placeholder
- Variable type:
  - `int, float, char,`
  - `char [ ], bool, string`

More on C and C++

C	C++
C was developed by Dennis Ritchie between 1969 and 1973 at AT&T Bell Labs.	C++ was developed by Bjarne Stroustrup in 1979 with C++'s predecessor "C with Classes".
When compared to C++, C is a subset of C++.	C++ is a superset of C. C++ can run most of C code while C cannot run C++ code.
C supports procedural programming paradigm for code development.	C++ supports both procedural and object oriented programming paradigms; therefore C++ is also called a hybrid language.

More on C and C++

No.	C	C++
1)	C follows the **procedural style programming.**	C++ is multi-paradigm. It supports both **procedural and object oriented.**
2)	Data is less secured in C.	In C++, you can use modifiers for class members to make it inaccessible for outside users.
3)	C follows the **top-down approach.**	C++ follows the **bottom-up approach.**
4)	C does not support function overloading.	C++ supports function overloading.
5)	In C, you can't use functions in structure.	In C++, you can use functions in structure.
6)	C does not support reference variables.	C++ supports reference variables.
7)	In C, **scanf() and printf()** are mainly used for input/output.	C++ mainly uses stream **cin and cout** to perform input and output operations.
8)	Operator overloading is not possible in C.	Operator overloading is possible in C++.
9)	C programs are divided into **procedures and modules**	C++ programs are divided into **functions and classes.**

https://www.geeksforgeeks.org/difference-between-c-and-c/

Introduction

❑ Sample code: C Vs. C++

C

```c
#include<stdio.h>
main(){
        char name[20];
        printf("Hello world!\n");
        printf("What is your name?: ");
        scanf("%s", &name);
        printf("Hi, %s \n", name);
        printf("Bye!");
}
```

filename.c

C++

```cpp
#include<iostream>
using namespace std;

main(){
        string name;
        cout<<"Hello world!\n";
        cout<<"What is your name?: ";
        cin>>name;
        cout<<"Hi, "<<name<<endl;
        cout<<"Bye!";

}
```

filename.cpp

Syntax

❑ Most C and C++ syntax are the same

- Decision making
  - `if, else if, else`
- Loop
  - `for, while, do while`
- Function

- **Structure**
  - Just in C++, after the creation of structure, we dont need to use struct keyword again for creating variable
    - `struct Student{ ... };`
    - `Student st;`

Demo