W1-Lets learn C++

This is for week-1 (ANCC - Shivalik 2023)

From 23/10/2023 Monday

To 29/10/2023 Sunday.

Introduction

As discussed in the orientation C++ is the way to go for CP due to its huge adoption, So its important for use to ensure the everyone is comfortable with it before starting anything related to Algorithms.

So This week its time to learn the fundamentals of C++ with an expectation that everyone is comfortable writing code in it.

We will have a poll at the end of the week to know the status of the everyone wtr to this task, to extend to next week or go with further concepts.

All the best.

What are we going to learn this week

It turns out that the amount of C++ you need to know to start CP is way less that what is need to build a full blown application.

We want you to learn the following concepts in C++ :

1. Basic code structure/template.
2. Data types (int, long long, float, double, char, bool ...etc) and their ranges.
3. Operators
    1. +, - , *, /,% (modulus operator)
    2. &, |, ^ (AND, OR, XOR bit wise operators). >>, << (bit shift operators), ~ (negation operator)
    3. +=, -=, *=, /=, %=, &= ...etc (Assignment operators)
    4. ++, -- (both prefix and suffix forms)

4. Using cin and cout. (exploring various cases like input separated by a space, line multiple, spaces ...etc)
    1. getline statement also.
5. conditional statements (if, else if, else)
6. loops(for loop, while loops)
7. functions (may be do this at last, as this takes time)
    1. normal function
    2. function with parameters
    3. recursion function
    4. reference parameter and pointer usage (skip this.)
8. Arrays.
9. basic inbuilt standard data structures (Note: you are not supposed to learn the implementations of this, nor do you need to know how they work, its enough to know how to use them.)
    1. vector
    2. map / unordered_map
    3. set / multi_set
    4. queue
    5. stack
    6. priority queue
10. For all of the above data structures learn the time and space complexity.

From where do we learn all these?

You can search the topic names one by one online to find them, But we do have resources to suggest

Lets do it from CP Hand Book (you can find it in the standings/rating changes pdf we shared for the last contest.)
Here is what to do from it

1. Page 3 to 5 (basic template of code, cin and cout)
2. Page 6 to 8 (From working with numbers)
3. At this point its might be hard to follow form the book without prior c++ knowledge. So lets switch gears

Luv's Youtube playlist for CP (again find link in the standings/rating changes pdf we shared in the group).

1. start with part -1 EP-2, its 4th video in the playlist.
2. go till EP-6
3. EP-7 and EP-8 (lets do later.)
4. Hmm guess what, lets switch gears again (It's a good playlist to go with but we have other things to cover first.)

Getting back to CP Hand book

1. Page 35 to 43 (vectors, stacks, queues, maps...etc)
2. Page 29 to 30 (Sorting in C++)

Now learn Functions followed by references and pointers from EP-7 and EP-8 also if time permits go with Time complexity chapter in CP hand book.