

A Collection of Awesome Competitive Programming Resources

What is Competitive Programming?

At the heart of it, competitive programming is a mind sport/e-sport, just like chess where you have a rating, and it increases as you solve more problems. You have a given coding problem and you are required to solve it by applying math, logic and concepts.

Every problem is divided into sub-parts like Problem Statement, example I/O or constraints. Watch some of these videos for a better introduction [these 2 videos are made by 2 of the leading competitive programmers in the world] -:

<https://www.youtube.com/watch?v=ueNT-w7Oluw&t=94s> (By recent IOI Champion [William Lin])

<https://www.youtube.com/watch?v=xAeiXy8-9Y8&t=5s> (By Google Code Jam 2018 Champion [Errichto/Kamil Debwroski])

Which Programming Language to choose?

As the term itself says programming, it requires you to learn a programming language using which you'll solve problems. C++ is the most used language for this because it is fast and efficient.

But the decision is yours, people do use Python and Java but my personal opinion would be to learn c++. Here are some tutorials which can help you -:

C++ - <https://www.sololearn.com/learning/1051>

Python -

<https://www.freecodecamp.org/news/learning-python-from-zero-to-hero-120ea540b567/>

Java - <https://www.w3schools.com/java/>

After learning one of the languages, you can start solving some introductory problems on these websites -:

Hackerrank -

https://www.hackerrank.com/domains/cpp?filters%5Bstatus%5D%5B%5D=unsolved&badge_type=cpp

CodeChef -

https://www.codechef.com/problems/school/?sort_by=SuccessfulSubmission&sorting_order=desc

AtCoder - [Contest 181 - 190](#) (Solve Problems A and B of Atcoder Beginner Contest 181-190[these contests are already passes by, they are not under progress])

Codeforces -

https://codeforces.com/problemset?order=BY_RATING_ASC

***Keep in mind that Codeforces.com has the most difficult problems for beginners, so please solve questions in the order I have arranged them.**

If you are not able to solve problems, then don't get demotivated. CP has many competitions too.

There are 2 types of competitions of Competitive Programming -:

- 1. Online Contests**
- 2. On the Spot Competitions**

Watch this Video for Competitions -

<https://www.youtube.com/watch?v=cpguolx2oms>

Start Reading this part only when you have solved the problems from all the websites that I gave you / when you are confident.

Now, after you are familiar with the basic ecosystem, CP Problems use a lot of Algorithms and Data Structures that contestants have to apply in order to solve the problem. [note that the problem doesn't specify which Algo/DS to use, it's you who has to figure out the right one]

Check out this Github Repository for Algorithmic Resources -
<https://github.com/shikhar1729/awesome-competitive-programming>

Data Structures Resources -
https://programmersarmy.com/DS/Intro_to_array.html

Big O Notation -
<https://www.freecodecamp.org/news/big-o-notation-why-it-matters-and-why-it-doesnt-1674cfa8a23c/>

Number Theory -
<https://www.geeksforgeeks.org/number-theory-competitive-programming/>

C++ Standard Library[STL] -
<https://www.geeksforgeeks.org/the-c-standard-template-library-stl/>

*credits - coresius.co -:

Sorting and Searching -:

- <https://www.geeksforgeeks.org/the-c-standard-template-library-stl/>
- <https://www.geeksforgeeks.org/sorting-algorithms/>
- <https://www.geeksforgeeks.org/searching-algorithms/>

Dynamic Programming:

- <https://programmersarmy.com/DP/introduction.html>
- <https://www.geeksforgeeks.org/dynamic-programming/>
- <https://codeforces.com/blog/entry/67679>

Graph Theory:

- https://programmersarmy.com/trees-and-graph/intro_to_graph-1.html
- <https://www.geeksforgeeks.org/graph-data-structure-and-algorithms/>

Problem Sets to practice:

- [CSES Problem set](#)
- [CodeChef DSA](#)
- [AtCoder Problems](#)

If you don't like these resources prepared by me, then you can definitely check out these 3 Tech Clubs Resources -:

Exun Clan(D.P.S R.K Puram- <https://exunclan.com/resources>

C.O.R.E(D.P.S Dwarka) - <https://coreisus.co/resources/>

Code-Warriors(D.P.S Vasant Kunj) -

<https://code-warriors.org/resources>