

# Cp/Dsa

## The right way to do cp

- Contests
  - Do every contest. Do not miss any contest unless it is an emergency. Consistency is the key.
  - After every contest, let's say you were able to do A part. Attempt the next two parts, B and C, that night or within the next day max, give it each 30 min to 1hr max. After that if you're still unable to do it, look at the tutorial the next day, understand it and then without looking at it write it and submit it. Do the same with the questions that you did wrong or that failed the final tests.
  - Educational contests are also contests.
  - Do not use AI. Your job is not to increase rank but develop problem solving. You won't have AI in an interview. OAs are offline in lhc, you cannot cheat your way through it, focus on developing skill.
  - If your rating drops, don't worry, just focus on reviewing questions afterwards as explained above and regular practice, you'll improve eventually so don't be sad about short term drops.
  - Don't compare yourself with others, everybody improves at different rates, focus on practicing and review and make sure you give contests regularly.
  - Speed is important.
  - Do codechef too if you can. They have weekly contests. Codeforces contests can be quite irregular.
- Practice
  - Practice at least 3 codeforces questions everyday. This is strict, again consistency is the key. This is the minimum.
  - Give 30 minutes each to the questions. If you still cannot do it, no worries, repeat the same as with contest questions, look at the tutorial given, understand it and then write on your own and submit it.
  - Max 1hr each question.
  - If your rating is x, practice questions in range (x, x+200).
  - A great source is <https://www.tle-eliminators.com/cp-sheet> (Highly Recommended)
  - Cool website so you can see expected ratings of problems and a really neat calendar of all upcoming contests is [clist.by](http://clist.by) .
- Mistakes
  - Not giving contests.
  - Not reviewing questions after the contests. Discuss approaches with friends. You'll learn new approaches. Make a circle of friends who give contests and discuss together afterwards.
  - Getting discouraged from a rating drop or rating not improving. It will improve, you should just focus on practising, it's about developing the

- problem solving skill. Contest ratings are rigged sometimes, in the sense that people cheat their way to increase rating, you shouldn't. Develop the skill.
- Not practicing regularly. Practice minimum 3 questions regularly no matter what. Making 1.5 hr for 3 questions in a 24 hour window should not be impossible. We waste that much time in random things anyway no matter how busy we are.
  - Comparing your progress with others. Everybody has a different story. Don't compare your journey with theirs. You have very little context about their story. Your only competition is your yesterday's performance.
  - Not focusing on speed. Even when practicing outside of contests, time yourself.

## The right way to do DSA

- Resources
  - Pick up a dsa sheet. Following are some good sheets:
  - <https://takeuforward.org/dsa/strivers-a2z-sheet-learn-dsa-a-to-z> 455 questions (Highly recommended if you want to start from the basics)
  - <https://takeuforward.org/dsa/strivers-sde-sheet-top-coding-interview-problems> 191 questions (This is recommended if you know the basics and want to practice medium and hard level problems only) - For people who have learnt dsa concepts while doing cp questions itself like graphs, dp, binary search, trie, fenwick tree, greedy, backtracking
  - <https://cses.fi/problemset/> (Highly Recommended) This is not your primary sheet, but while doing cp, you'll come across some problems that require dsa concepts post 1100/1200 rating questions. So this is your source to practice those concepts. Really high quality problems. You'll find actual oa level questions here. You don't have to do all the questions till the end but start solving from the top for each topic and do as much as you can per topic given time. Definitely do at least the graphs and dp part if you can't manage time for other sections.
  - <https://cp-algorithms.com/> Your go to website when you encounter new algorithms as you do cp or dsa.
- Practice
  - Time yourself. Give max 30 min to 1 hr to each question then read the discussions tab in leetcode/gfg whichever platform you're solving on.
  - In the strivers sheets, for the questions that don't have question link, search the question name on google, you'll find it on gfg. These links were there previously but later removed due to some controversy with gfg.
  - Solve pattern wise. In the strivers sheets, questions are divided by patterns, solve them that way only. You need to learn the patterns, after a while, it will start becoming obvious to you and you'll start catching the pattern in questions. And you'll know which algorithm to use.
  - Practice. Practice. Practice is the key. Be consistent. Practice regularly.

- You'll have a 2 month vacation in summers, that is your time to go all in on DSA practice. You can practice up to 10 questions per day. You have all day.
  - Make sure to keep revising as you go. You can either make a diary/doc of the questions/algorithms to revise (the ones you couldn't solve on your own or you know you'll forget) or mark them as revision in the sheet if the sheet you're following has that option. If you're practicing 8 new questions everyday, revise at least 2. Revision will take less time if it's regular.
  - You should continue learning dsa as you do cp before the vacation as well but it doesn't have to be as intense as the vacation. And remember, keep revising still. Even on codeforces or any other platform, you practice from, if you find a good algorithm/technique to solve a question and you know you might forget, maintain it somewhere. Write it down in a doc/diary/notebook whatever suits you and make sure to revise these in the vacation as well.
  - The interview or OA will be 45 min/ 1 hr for two questions or 1 hr/1.5 hr for 3 questions. You don't have more than 20-30 minutes for any question so practice accordingly, keeping that in mind.
  - You can find a set of questions and time it as if it's an OA, using no AI, no syntax helper (some OAs don't provide them, some interviews make you write code in a text editor/doc). Write your code in doc or on hackerrank editor and then submit it. You won't have your cp template with custom helper functions for dfs/bfs etc or short forms like ll for long long so practice without them when you're doing dsa, you'll have to write everything yourself, so remember them if you have forgotten.
  - Read discussions, you'll find better approaches. The goal is not to just submit the code. Leetcode time and space constraints are very weak. The goal is to submit the code with the least time and space complexity. Remember that.
  - Use AI smartly, ask it to explain to you algorithms that are too big to understand by yourself, ask it if there's any way to reduce your complexity further. Ask what are the alternate approaches you could have gone for. Do not submit code written by AI without understanding yourself. Only use it to understand algorithms and different possible approaches after you've spent time understanding them yourself ( The 30 mins). Understand it and then write it on your own in the editor.
- Mistakes
  - Not practicing regularly. Be regular to it. Consistency is the key.
  - Practicing randomly. Practice by pattern.
  - Practicing only easy questions. Questions in interviews and OAs will be either medium or hard. (mostly medium but depends on company - the better the company, more the competition, harder the questions)
  - Not timing the questions. I know you don't want to give up and see the solution but you need to understand, you have limited time and a lot to learn and a lot to practice. Quantity does matter here.
  - Relying too much on AI. Use it smartly, don't depend on it.