

Tutorial to use the codeforces.com website

Codeforces (codeforces.com)

First, go to the website and create a login. After you do that, there are several ways to practice contest problems:

1. Register for a real contest and compete.
2. Run a contest in virtual participation.
3. Run a gym in virtual participation.
4. Solve random problems in the Problem Set.

Submitting Problems on Codeforces

Most codeforces problems use standard input (keyboard) and standard output (screen). Thus, if you're using Java, you just use a Scanner from System.in to read input and System.out.println for output. If you're using C++, just use cin and cout. If you're using C, just use printf and scanf. In Python, use print and input, without any prompt.

On occasion, some codeforces problems will use file input or file output. If they do, when you look at the problem, right underneath the title there will be a section labeled input and output and instead of saying "standard input" and "standard output", they will say which file to read from and which file to write to.

If you use Java on Codeforces and are working on a problem that has 10^5 pieces of input or more, don't use a Scanner, use a BufferedReader. Some UCF programming team members have written their own class, FastScanner, which uses a BufferedReader on the backend so that you can get the speed of BufferedReader but use the syntax of a Scanner.

So, when you see a problem, to submit a solution to it, on the bottom right portion of the problem description screen there's a box titled, "Submit?". In this box, there is a pull down menu to select your language and then a button to choose the source file you want to submit. Click the button, choose the file and then hit the "Submit" button. After you do this, depending on how you are using codeforces, you receive your feedback in slightly different ways. But usually, in a window, you'll see your submission with a status update, saying which case it's currently run on. After a decision, there will be a box by your name and submission ID with the result of your submission. You can get things like "Accepted", "Wrong Answer of case 37", "Time limit exceeded on case 4", "Run time error on case 12", or "Compile Error". Hopefully you never get the last one!

1. Live Contests on Codeforces

This is the most difficult because you must compete at a fixed point in time, and the live contests are only periodically scheduled. But #1 is the only way to get a rating and improve that rating. Also, for our class, COP 4516, for any codeforces activity to count towards the online contest grade, you must run a live contest.

To compete in a live contest, you must first register for the contest. When you login to codeforces, if there is a live contest in the near future, on the top right of the website, a little box will say, "Pay attention" and inside of it it'll have a "Register now" link. Click on that link and you are registered for the contest! Then, log onto Codeforces a few minutes before the contest. (When you register, there's a count down until when the contest starts, you can use that to determine the start time of the contest.) When you do, a few minutes before the contest starts, there will be a button on the top right that asks if you want to enter the contest. Click it. Then, when the contest starts, the page will refresh with links to the problem descriptions. Click on one of them. Codeforces is very good about having its real contest problems in order of difficulty. So, if you are a beginner, I strongly recommend just going in order instead of reading all the problems. Then,

when you think you have a solution to the problem, submit, as was previously explained. Here, you'll get your feedback in a window that only shows your submissions under a Status tab. If you don't get Accepted, you should probably debug your program, fix any issues you see and resubmit. You can resubmit as many times as you want. At first, I recommend not being deterred and resubmitting, but only if you changed something! (No point in doing so if you didn't change anything in your code.)

2. Virtual Participation on a Contest

The beauty of this is that you can practice on an old contest any time you want with the environment looking nearly identical to that of a real contest. To do this, click on Contests out of the top menu choices, then look in the contest history. If there is a contest you'd like to do (I recommend Division 3 for most students in COP4516), then hit the Virtual Participation Button. Then, it'll have a little message telling you when your contest will start and the rules. Just hit accept and in a minute or so, it'll look like a real contest and you just do everything as you would do for a live contest. The only difference here is that this won't affect your rating. But, for practice purposes, this is just as good as a live contest!

3. Virtual Participation on a Gym

This is the same as #2, but instead of competing on an old codeforces competition, you can compete on an old competition from somewhere else. Codeforces allows users to upload contests that occurred elsewhere (ACM ICPC Regionals or Olympiads or Company Sponsored contests or High School contests, etc.) to their platform. Relatively few people do this (it takes quite a bit of time), but the cool thing is that everyone can benefit from those users' work! So, to do this, go to Gym, find a contest and click the "Virtual participation" button. Most of these will probably be too difficult for most students in COP 4516, but I just wanted the tutorial to be somewhat complete.

4. Solve random problems in the Problem Set

This is what I did in class. Click on Problem Set at the top menu. Find a problem and click on it and submit if you think you've got a solution! You can Filter problems based on difficulty or the tags that show up by the name of the problems (which are problem categories like "Brute Force" or "Graphs"). You can also do what I did in class, which is sort the problems by 3 of users who have solved them, which is a proxy for sorting them by difficulty.

A sample solution to a problem Elephant, from a Codeforces contest, is linked on the course webpage outside of this tutorial. (In other years, I may solve other problems live for students. But the main page has a solution to the problem Elephant.)