Introduction to Competitive Programming

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What?

Competitive programming is

- ▶ Mental sport
- ▶ Solving well-defined problems quickly in given time and memory constraints.

Why?

Because

- good way to spend time if you're jobless :P
- Pick up CS concepts faster
- Algorithmic maturity
- Improves problem solving ability
- Master debugging
- Prepares you well for technical interviews
- Great learning experience
- because it's fun, hobbies don't need to have benefits

What if I don't like it?

▶ You don't need to learn it
▶ Regarding smug opposition to competitive programming
▶ Don't need to be a world class athlete to get into military.

Where?

Online judges

An online judge is an online system to test programs in programming contest. Some great online judges (in no particular order):

- ▶ Topcoder
- ▶ Codeforces
- ▶ Online Judge - formerly known as UVa OJ
- ▶ Atcoder
- ▶ Codechef
- ▶ Hackerrank
- ▶ Hackerearth

Programming Competitions

- ICPC
- Facebook hacker cup
- Google code jam
- Google Kickstart
- Snackdown

How?

Tools you need

▶ A text editor (you don't need an IDE, don't bother with codeblocks or DEV C++)
▶ Working knowledge of at least one programming language that is allowed in the competition.
▶ Packages for your language installed on your system for local testing.

How do I learn?

▶ Be active in the community

Enough links to overwhelm you

▶ Resources for competitive programming
▶ Resources curated by codechef

Some nice books

▶ Competitive programmer's handbook
▶ Competitive programming 3
▶ Math for programmers
▶ Learn Python The Hard Way

What if I get stuck?

- Google
- Ask your seniors
- Community

What to solve? How to improve?

▶ Basic tracks on hackerearth and hackerrank
▶ CSES problemset
▶ Junior training sheet by Mostafa saad
▶ Starred problems in CP3
▶ Regular contests on various online judges
▶ Solve at least one problem you weren't able to solve in contest

Further reading

▶ A way to practice Competitive programming : From Rating 1000 to 2400+
▶ The science of training in competitive programming

Some tools to try out

- CF tool
- CLIST
- uHunt
- CP editor
- Thonny - Python, IDE for beginners