

[Tutorial] From rating 1900 to 2200

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1. Summary

Dear Codeforces community.

Today, I will write about the way to get **2200+** rating from **1900** in Codeforces. I think this is useful for experts, candidate masters and masters. For beginners, I strongly recommend to read my last year's blog: [\[Tutorial\] A way to practice competitive programming: from rating 1000 to 2000](#) .

This is only my way so I think the way may be not the best way, but I'd like to share my way to practice. Anyway, I hope performance of many people who read this document will increase.

This blog is extension version of my blog which is written about from 1000 to 2000. As previous blog, I will divide with 3 steps: from **1900** → **2100**, **2100** → **2200+**. Recently, Codeforces rating division changed. So, I will explain with New Codeforces Rating Color and Division. (Which <2100 can participate in Div.2 contests)

2. Before My Way: Some Types of Contests (Knowledge)

Before main part, I should teach about some types of contests and statistics, so I added this part. I will explain about Codeforces and AtCoder contests with statistics of rating and solved.

2-1. Codeforces (Div. 2 contests, if 5 problems)

Problem	Div2 A	Div2 B	Div2 C	Div2 D	Div2 E
Exp. rating	1050	1450	1750	2100	2600

- Codeforces Div2 problems are called Div2A, Div2B, Div2C, Div2D, Div2E, in order.
- “Exp. Rating = A “ means that if you solved this problem, your performance (rating) will be A .
- For example, if you solve normal-difficulty Div2 D problems and all previous problem, your performance will be 2100.

2-2. Codeforces (Div. 1 contests, if 5 problems)

Problem	Div1 A	Div1 B	Div1 C	Div1 D	Div1 E
Exp. rating	1600	1950	2250	2750	3200

- Codeforces Div1 problems are called Div1A, Div1B, Div1C, Div1D, Div1E, in order.
- Usually, Div1 problems needs a lot of concept. Conversely, usually Div2 problems needs less concept, and it can be solved with implementation and some techniques (Graph Theory, Number Theory, 2-SAT, Bitmasks, ... etc.)

2-3. AtCoder Regular Contest

Problem	ARC-C	ARC-D	ARC-E	ARC-F
Exp. Rating (in CF)	1400	1800	2200	2500

- AtCoder Regular Contest (ARC) consists of 4 problems. Each problem called ARC-C, ARC-D, ARC-E, ARC-F, in order.
- Usually, ARC problems need a lot of concept like Codeforces Div1.
- AtCoder have 3 types of contests which called AtCoder Beginner Contest, AtCoder Regular Contest, AtCoder Grand Contest. But I only use ARC for my explanation.

2-4. How to solve AtCoder problems?

I think many people think “You can choose problem that I didn’t solve in Codeforces, but in AtCoder, I can’t”. But there is a convenient website, which called [AtCoder Problems](#), and you can see what problem did you solved.

User ID: Rivals:

AtCoder Grand Contest

Contest	A	B	C	D	E	F
AGC025	A. Digits Sum	B. RGB Coloring	C. Interval Game	D. Choosing Points	E. Walking on a Tree	F. Addition and Andition
AGC024	A. Fairness	B. Backdoor	C. Sequence Growth	D. Isomorphism Freak	E. Sequence Growth	F. Simple Subsequen...
AGC023	A. Zero-Sum Ranges	B. Find Symmetries	C. Painting Machines	D. Go Home	E. Inversions	F. 01 on Tree
AGC022	A. Diverse Vowels	B. GCD Sequence	C. Remainder Game	D. Shopping	E. Median Replace	F. Checkers
AGC021	A. Digit Sum 2	B. Holes	C. Tiling	D. Reversed LCS	E. Ball Exit Chameleons	F. Trinity

This website is very good: for example, you can know how much percent of ARC-E did you solve, and know your progress.

3. Step 1: Rating 1900 → 2100

In order to gain rating from 1900 to 2100, you should solve 3 problems stable and faster.

For example, in Codeforces Round 484 (Div2), in reality, ~250 out of 370 contestants who solved problem D solved this problem after 1 hour passed. Although this, most people who can solve problem faster (solved 4 problems in <1 hours) got <50-th place in this Div2 contest.

So, I think fast solving is very important, even more important than solving difficult problems for most candidate masters.

So, I recommend to do following things for people whose rating is 1900-2100:

- Solve Div2 D or ARC-D problems (at least 50 problems) with conscious of speed-solving, because fast-solving form grows with experience.
- To solve problem, you should do virtual which correct only proper problem. For example in Codeforces, do 2 hours virtual contests of 5 Div.2 problems which the number of solvers during contest is 300-500.
- If you want to solve a single problem, you should use a timer which indicate the time you solved.



Goal (Rating 2100)

- You can solve problem faster than other problems – in particular, being Top-100 fastest solver for most problems in Div2 contests.
- If you achieve this, median value of your Div2 contests' rank will be less than 100 – it means you will go to Div1 at least once!

4. Step 2: Rating 2100 (Once) → 2200 (Stable)

In order to gain rating from 2100 to 2200, you should play high performance in Div1 contests. (It is obvious, because ≥ 2100 is not rated in Div2 contests)

To get higher scores in Div1 contests, you should know trends of Div1 contests. The trends that I investigated is as follows:

- There are more concepts / considering in Div1 problems than Div2 problems. Although this, you should use high-level techniques in some contests.
- As usual, Div2 problems can solve with major techniques but some Div1B or Div1C needs your brain. The problems are a little similar to ARC problems. (But still, for some problems implementation is heavy)
- You should solve at least 2 problems to maintenance your rating. (If you are not good at speed-solving, you should solve 3)

To achieve this, I did following 2 things.

- Know all techniques which use frequently to participate in CF Div1 contests. The list of this is as follows:

RMQ	BIT	Lazy Segment Trees	Union Find	Cycle Detection
Dijkstra	SCC	Maximum Flow	Mincost Flow	Mod Inverse
Rolling Hash		Suffix Array	FFT	2-SAT

- To polish your concept skills, you should solve ARC-E problems. There are 40+ English ARC-E problems, so you can solve a lot. Even if you want to give up, I recommend to challenge at least 1 hours to solve the problem. (If you can't solve the problem even after 1 hours, you can solve it after 1-2 months. If you can't solve the problem in 2nd or 3rd challenge, you should see editorials.)
- Actually, I solved 97/98 problems of ARC-E.
- There is another way to polish your brain: It's TopCoder. Harder problems of TopCoder Div1 Easy (the first problem) uses your brain much. So, if you solve almost all problems of ARC-E, you should solve TopCoder Div1 Easy or Medium.

Goal Indication (Rating 2200 stable)

- Solve 70%+ of ARC-E problem.
- Being Top 200 in Div1 contests – it means solve 2 problems faster or sometimes, solve 3 problems

5. Extra Corner

I did these things which is not related to solve problems, but they boost your rating mentally.

- Some people will be nervous during the contest, So, you should take a rest from 10 minutes before the contests.
- Don't mind about rating during the contest – if you mind about your rating strongly, when you fail to solving easier problems faster, you cannot solve latter problems.

6. Conclusion

How was this document? Do you think that it is useful?

I wrote about an example of practice to boost rating from 1900 to 2200. I will say as a premise: This way not always fit for some people. The number of ways to practice is not only one: there are googols of ways. But I guess that my way is one of the effective way. I hope it will be useful even a little. (Also, sorry for my poor English.)

Thank you for reading.

