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E869120   BLOG   TEAMS   SUBMISSIONS   GROUPS   CONTESTS

E869120's blog

[Tutorial] A way to Practice Competitive Programming : From Rating 1000 to 2400+

By **E869120**, 9 months ago, 🇬🇧, ✎

Dear Codeforces community.
Finally red :)

Today, I want to share about some ways to practice competitive and gain your rating. I hope that this is helpful for those who is practicing competitive programming harder but rating is sluggish. There are 54,000+ people who participated in Codeforces contests actively, but sadly only a few people reach a red-ranked coders. For people who can't reach red, I will introduce my way to gain rating in some steps.

This blog is an extended and more detailed version of my previous tutorial blog, but 2 years and now are different. So there are many points that are different from blog which has written 2 years ago. Note: Some people who already read my previous tutorial blog may doubt, but do not doubt — I should say that the "from rating 1000 to 2000" part of this blog is not the copy of my previous blog and it's very different.

Since the size is very big, if I wrote contents to Codeforces blog directly, it might be too long. So, this time, I will share a 19-page PDF link of my tutorial blog. This time, my blog includes introduction, knowledge of some contests systems (AtCoder, TopCoder) and some convenient websites, some ways to practice for improve rating, and conclusion. Also, optimal practice method is differ by rating. So, this time, I will write in 4 steps: **1000 -> 1400**, **1400 -> 1900**, **1900 -> 2200**, and **2200 -> 2400**.

The link of my blog (PDF) is as follows:

[Tutorial] A way to practice competitive programming — from rating 1000 to 2400+

Please comment if you have suggestions, comments to my blog, and opinions on my way to practice.
Thank you for reading!

<> #tutorial, way, practice, 2400, #rating, thankyou!

△ **+607** ▽   👤 E869120   📅 9 months ago   💬 78

💬 Comments (78)   **Write comment?**

→ Pay attention

Before contest
Educational Codeforces Round 82 (Rated for Div. 2)
24:33:40
Register now »

Like   2 people like this. Sign Up to see what your friends like.

→ Top rated

#	User	Rating
1	MiFaFaOvO	3600
2	tourist	3549
3	Um_nik	3378
4	TLE	3356
5	apiadu	3351
6	Benq	3299
7	mnbvmar	3281
7	Radewoosh	3281
9	LHiC	3276
10	ainta	3226

Countries | Cities | Organizations   View all →

→ Top contributors

#	User	Contrib.
1	antontrygubO_o	191
2	Errichto	190
3	tourist	181
4	Radewoosh	168
4	vovuh	168
6	pikmike	166
7	ko_osaga	161
7	Um_nik	161
9	Petr	155
10	rng_58	154

View all →

→ Find user

Handle:

Find

nilesh8757

9 months ago, # | ← Rev. 2 ▲ **+20** ▼

Thank you !

→ Reply

grextrex

9 months ago, # | ▲ **+16** ▼

Thank You for the amazing tutorial!. I hope you become LGM soon.

→ Reply

RockyB

9 months ago, # | ▲ **+26** ▼

Could you please, write a tutorial about preparation for Olympiads in Informatics?

I appreciate your dedication and all this work very much, thank you for a new amazing tutorial!

→ Reply

MoreVodka

9 months ago, # ^ | ▲ **+13** ▼

If you reach yellow+ in CF and/or topcoder. Plus you solve enough past OI problems from the well-known checklist by **ko_osaga**, I guess you're pretty much set to win atleast a bronze.

→ Reply

RockyB

9 months ago, # ^ | ▲ **+19** ▼

E869120 has already won a gold medal at the IOI, link.

For my country whole history only 2 students won a gold medal and it was 12 years ago. This fact confuses me, I don't think that we don't have talented hard-working students.

Thus, I'm very curious about how to win a gold medal and it's a reason why I ask **E869120** for help.

→ Reply

E869120

9 months ago, # ^ | ← Rev. 2 ▲ **+29** ▼

Okay, now I know that there are a lot of people who wants to know how to get gold medal in IOI.

Since writing so many blogs in short period is not so good for me, I'll write a blog about "[Tutorial] How to win a gold medal in IOI" (title is tenative) 2-3 weeks later.

Thank you for your proposal. :)

→ Reply

RockyB

9 months ago, # ^ | ▲ **+16** ▼

Great!

I'm very grateful to you!

→ Reply

dmkozyrev

6 months ago, # | ← Rev. 2 ▲ **0** ▼

Any updates? Have you won something on IOI?

→ Reply

E869120

6 months ago, # + 1

Finally, IOI 2019 finished.
Sorry for waiting, but I will publish the blog about "IOI strategy & practice method" at Wednesday, August 14, 13:00 JST. Thank you for your patience.

UPD: The publish time will be delayed by 150 minutes. UPD2: Since Codeforces page reload is heavy, the publish time will be delayed by 10 more minutes. The new publish time will be Wednesday, August 14, 15:40 JST.

→ Reply

6 months ago, # ^ 0
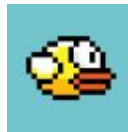
I have set up my alarm tomorrow ;)

Also, thank you for the souvenirs ;)

AngryAdhami

→ Reply

6 months ago, # ^ +3 Rev. 2

Now, new blog is open! Link: My winning theory in IOI 2018 & 2019 — Why I won 2 golds in IOI

E869120

Thank you for waiting, and thank you for your patience.

→ Reply

9 months ago, # ^ | 0
Hurry up, so all contestants can win gold

Hurry up, so all contestants can win gold
medal in IOI2019 if that's even possible.
→ Reply

AngryAdhami

9 months ago, # ^ | ▲ **0** ▼

Now I am during school trip, so I
cannot write now :(
→ Reply

E869120

9 months ago, # **0** ▼
|

Ignore my comment,
enjoy your time :D
→ Reply

AngryAdhami

8 months ago, # ^ | ▲ **0** ▼

I dont mean to pester you, but as an
absolute beginner, I am highly anticipating
the blog!When do you plan to post it?
→ Reply

chiragm

9 months ago, # | ▲ **+39** ▼

How do you see performance rating in cf?
→ Reply

tfg

9 months ago, # ^ | ← Rev. 2 ▲ **+34** ▼

First, I should apologize that I did not show how to calculate
performance in Codeforces in my blog. Thank you for your comment.

Actually, in Codeforces, your **approximate** performance in
contests/virtual is calculated as follows:

- p : Your rank in Codeforces contest
- a : Initial rating of participant who got rank p
- b : Rating change of participant who got rank p
- $perf = a + 4 * b$ (approximately)

E869120

For example, if you got 20th place in contest and rating changed from
2513 to 2604, your performance is approximately
$2513 + 4 * 91 = 2877$.
Another example is virtual contests. If you got 4200 points and it was
between 13-th place and 14-th place in **actual contest**, your
performance is approximately the average of performance of 13-th
player and performance of 14-th player.

But there could be error of ~50 rating performance. So if you want to
calculate more precisely, you can pick the rating change of several
people who got very near rank and rating does not change so much.

Sorry for not showing performance calculation formula in my blog.
→ Reply

9 months ago, # ^ | ▲ **0** ▼

Thanks, you are really a good contributor.
→ Reply

naveen.dugar1010

8 months ago, # ^ | +10

Juve45

I think you can also calculating it by finding the value of the rating for which the rating change of the virtual contest is 0, using this tool.

I assume that if the rating change is 0 in some contest, then the performance is approximately equal the your rating.

→ Reply

8 months ago, # ^ | ← Rev. 3 0

Woooooooow very good idea to calculate rating! From next time, I will use this idea. Thank you!

E869120

1179	3543	
0	2518	

CALCULATE

Results	
Expected Rank	88
Rank	31
Rating Change	+60

→ Reply

6 months ago, # ^ | 0

Also, for a predictor of rating changes during the contest or much earlier than CF shows, you can use an extension with chrome here.

Voldmort

→ Reply

9 months ago, # | +10

Thank you so much for your great contribution to the Codeforces community.

shahidul_brur

→ Reply

9 months ago, # | +18

Thank you for your tutorial !!!!!!!!!!!!!!! Love you so much !!!!!!!!!!!!! I want be the best !!!!!!!!!!!!!!!!!!!!!!!!!!

TwentyFour

→ Reply

9 months ago, # | ← Rev. 2 +120

A way to increase contribution from 0 to 100:

0-20: leave stupid comments

antontrygubO_o

20-40: write a blog on how to increase contribution from 0 to 20

40-60: write a blog on how to increase contribution from 20 to 40

60-80: write a blog on how to increase contribution from 40 to 60

80-100: write a blog on how to increase contribution from 60 to 80

→ Reply

9 months ago, # ^ | 0

Will you tell how to increase from 100 to 120?

RockyB

Just 17 points to write from 120 to 140 XD

Just 17 points to write from 120 to 140 xD

→ Reply

6 months ago, # ^ | ▲ 0 ▼

$120 - 140$: set contests

→ Reply

antontrygubO_o

9 months ago, # ^ | ▲ 0 ▼

How about how to get minus contribution? Your comment is not too informative. Please review your shallow comment.

→ Reply

polaris25641

9 months ago, # ^ | ▲ 0 ▼

To increase contribution from 80-100, you need to be a red coder too xD

→ Reply

IKnowNothing_ATN

9 months ago, # ^ | ▲ 0 ▼

I appreciate your humor. And seems like it worked for you. The only reason I see for this is the fact that you are a Grand Master. But can you explain how much upvotes make +1 contribution and how some people have even negative contributions too?

→ Reply

naveen.dugar1010

9 months ago, # | ▲ +10 ▼

Astonishing effort, thank you!

→ Reply

__shangu__

9 months ago, # | ▲ +13 ▼

It's about time you add a new character to your name and get the Nutella node in your avatar.

→ Reply

pleb

9 months ago, # | ▲ +10 ▼

Thank you very much for your article. Because you didn't participate for so long on codeforces but you trained a lot, now you will probably get to constant IG no problem.

→ Reply

21August

9 months ago, # | ▲ +10 ▼

Thank you!

→ Reply

eggag32

9 months ago, # | ▲ +29 ▼

Very thank you for so many number of readers and so many comments.

I know that there are many, and countless number of people who want to gain rating in Codeforces. I'm really hoping that my blog is usable for some people. Also, I'm really hoping that tutorial blog will increase in Codeforces, because it can be very beneficial for readers and Codeforces users.

Anyway, I really appreciate for hundreds (maybe over 1000) of people who read my blog. Cheers!

→ Reply

E869120

9 months ago, # | +14 ▲ ▼

segwit

Hi, which 50 topcoder problems to solve to get better, also how can I submit topcoder problems on the online judge.

→ Reply

9 months ago, # | +15 ▲ ▼

DonnieDarko

You are awesome, thank you very much **E869120**, my goal is to be candidate master before finish this year, Just for curiosity, How many hours do you train per week?

→ Reply

9 months ago, # ^ | +12 ▲ ▼

E869120

Because I have some classes in high school, on weekdays, I trains ~3 hours per day. On weekends, I trains ~8 hours per day. So, on average, I trains approximately 25-30 hours per week.

But just before IOI was different. In Japan, there is summer vacation from late July to late August. So, usually, just before IOI is during summer vacation in Japan. So I was able to train 12-14 hours per day from 1-2 weeks before IOI.

→ Reply

9 months ago, # | +10 ▲ ▼

TillEnd

Amazing!

→ Reply

9 months ago, # | +13 ▲ ▼

Soul_Full_Of_Thunder

Great job!

I enjoyed every page of your tutorial ;)

→ Reply

9 months ago, # | +15 ▲ ▼

Diuven

Hi! I remember you as one of the tomato twins. :)

I guess I'm the only one among the IOI18 golds, who had gone purple from orange after IOI. I always wanted to be a red coder, but now I know that I never practiced seriously for that. Maybe I just have been lost, forgetting how to practice.

This post is not only amazing itself, but it also reminds me that if there is a shining achievement, there should be corresponding efforts.

Congrats to you being a red coder, and thanks for your guidelines. Hope to see you again!

→ Reply

9 months ago, # ^ | +8 ▲ ▼

E869120

Thank you! And hope to see you again!

By the way, my mascot that I brought in IOI 2018 was not a tomato, but an apple :)

→ Reply

9 months ago, # ^ | +10 ▲ ▼

Whoops, sorry. Its color was so tomato-ish. XD Thanks

Diuven   Whoops, sorry. Its color was so tomato-ish. XD Thanks anyway!

→ Reply

9 months ago, # | ▲ **+10** ▼

thank you

→ Reply

riyazhusain812

9 months ago, # | ← Rev. 2   ▲ **+13** ▼

Oh,Chinese can't use Google. So can you give the link in another websites such as github.com?

→ Reply
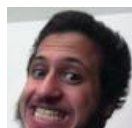
xukuan

9 months ago, # ^ | ▲ **+8** ▼

Sorry for replying very late, because I was busy for practicing for APIO.

This is the link of my tutorial in github. Sorry for replying late, and thank you for mentioning that Chinese cannot use google. (I didn't know about that)

→ Reply

E869120

9 months ago, # | ▲ **+15** ▼

Does AtCoder release English editorials for ABC contests ?

→ Reply
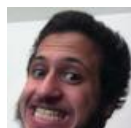
motatoes

9 months ago, # ^ | ▲ **0** ▼

Sometimes. Not in every ABC.

→ Reply

nilesh8757

9 months ago, # ^ | ← Rev. 3   ▲ **-8** ▼

Thanks. As I later read in the OP's tutorial, the editorials usually contain code samples, so that helps. I also tried google translate for some of the problems and it worked OK for me.

(I was writing this comment while boarding a plane so I missed this part :))

→ Reply

motatoes

9 months ago, # | ▲ **+10** ▼

Thanks for your help. You are kind hearted

→ Reply

xiaoshizhan

9 months ago, # | ▲ **-14** ▼
→ Reply

do_good_

The comment is hidden because of too negative feedback, click here to view it

9 months ago, # | ▲ **0** ▼
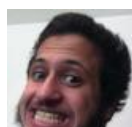
Dear **E869120** thanks to you for posting all your insights. I would like to know your opinion about Hackerrank problems. Do you ever use hackerrank for practice or do you think the other judges mentioned in your tutorial have more rich problems?

→ Reply

motatoes

E869120

9 months ago, # ^ | ▲ 0 ▼

Yes!

2 years ago, I was solving hackerrank problems, and participating in hackerrank contests including "Week of Code" or "Hourrank". In my opinion, since many of hackerrank contests there are many partial scoring, if you want to practice for OI-like contests (IOI, APIO, POI, national selection camp for IOI) it is good idea to practice hackerrank.

Since there are many typical problems in hackerrank, I think that if you think you are lacking of using typical algorithm efficiently, solving hackerrank is also a good idea. But if you want to improve skills to solve problems faster, or skills to thinking about solution, you should upsolve problems in AtCoder.

→ Reply

9 months ago, # | ▲ 0 ▼

Hey, I wanted to know how can some people on codeforces are able to solve questions like just in a minute. They have a submission for A-type problem on 00:01 and for B-type problem on 00:03. How's that possible? if I only consider the reading time for question and then even copy paste the code it goes beyond a minute. Please suggest some tips to increase our speed like that.

naveen.dugar1010

→ Reply

9 months ago, # ^ | ▲ 0 ▼

Actually it is not that hard ... 00:01 in CF actually means that the submission was made before the second minute of the contest. So 40 seconds to read problem statement and 1 minute 19 seconds to write code amd submit. Shouldn't be too hard for problem As in div 2.

LanceTheDragonTrainer

Also, you can watch the screencast of several GMs on youtube to see how they do it.

→ Reply

9 months ago, # ^ | ▲ +1 ▼

Hey thanks, I was not aware that it's a 1 min and 59 secs game. And can u share some links of the screencast?

→ Reply

naveen.dugar1010

9 months ago, # ^ | ▲ +1 ▼

Oh c'mon. Don't be lazy. Just google codeforces round screencast.

→ Reply

LanceTheDragonTrainer

9 months ago, # | ▲ -8 ▼

Can someone please elaborate how these contributions increases or decreases on codeforces?

→ Reply

naveen.dugar1010

9 months ago, # | ← Rev. 3 ▲ +19 ▼

This is incredible !

I have been following your posts ever since you were a Candidate Master and this is a fantastic achievement ! Many Congratulations. I am quite proud of you.

ghoshsai5000

Your tutorial is also quite helpful. Solving problems on AtCoder does do wonders.

Thank you very much for sharing the website kenkoooo. On AtCoder, we cannot

Thank you very much for sharing the website kenkoooo. On AtCoder, we cannot see which problems we have solved in one screen and need to go to the Submissions page of each individual contest. This website is certainly very helpful. (Although now that AtCoder Beginner Contest has started including 6 problems, the interface of kenkoooo will also have to change. Not sure if they will be able to accomodate that.)

Wish you all the best !

May God bless you

→ Reply

9 months ago,   # | ▲ **+10** ▼

Thanks for your experience.

"But getting average performance of rating 2400 is much more difficult than you think."

I have been stuck in orange for long time, and reached red by luck. I admit that I can't keep red. Training skill above 2200+ mentioned in your tutorial seems very useful to me.

palayutm

→ Reply

9 months ago,   # | ▲ **+3** ▼

I'm weak at math.Can you drop some suggestions to grow decent knowledge on topics like combinatorics,probability,geometry etc.?Thank you for the tutorial!
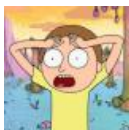
Fuad

→ Reply

8 months ago,   # | ▲ **0** ▼

Thank you very much, I might finally reach green (maybe beyond green) if I follow this.

_Shush

→ Reply

6 months ago,   #   ^ | ▲ **0** ▼

congrats man you reached green..time for me also :D

→ Reply

etlxpw

8 months ago,   # | ▲ **0** ▼

thank you for this great effort , your are helpful ;

→ Reply

Khaled_Mahmoud

8 months ago,   # | ▲ **+25** ▼

Thanks for a great tutorial!

I disagree with some points but it's ofc. hard to say which method is the best. What I would recommend:

Errichto

1. Don't go to the editorial after some fixed time like 20 minutes of solving a problem. Give up only if you are stuck for 10-30 minutes (10 in case of easy problems, more for harder ones). As long as you have some ideas, do investigate them and maybe you'll solve the problem yourself.
2. Upsolving problems is very important. This way you learn new things. After a contest or virtual participation, try to solve at least one more problem. This should be said early in the PDF, not only in parts about getting red rating.
3. I don't think you should copy segment trees from your code library (reference document). It's better to struggle for some time and implement them every time. You will get faster and will understand them better. Plus this is a must for those who prepare for IOI. My friends and I implement seg-trees from scratch every time. I don't remember if I ever used to copy them.
4. It's unnecessary to do "50+ virtual participations in CF". Just solve problems

4. It's unnecessary to do 50+ virtual participations in CF . Just solve problems slightly above your level. Do some virtual participations if you want to.

5. Consider changing *"Make a routine that you will do just before the contest. It directly leads to the concentration during the contest."* to *"don't care about the contest, just have fun solving problems"*. I'm quite sure people perform better when they are relaxed (but not distracted).

6. *"Although I experienced competitive programming for 3 years, I think that I don't know many techniques"* — I think that's because you're doing too much virtual participation. You spend a lot of time on easy problems this way.

→ Reply

8 months ago, # ^ | ← Rev. 4   ▲ **+21** ▼

Wow great idea & suggestion from a coder once reached legendary grandmaster...! Thank you for your comment.

→ Reply

E869120

8 months ago, # ^ | ▲ **0** ▼

Is this a variation of "Wow! cool post. Thanks for sharing."

→ Reply

8 months ago, # ^ | ▲ **0** ▼

I don't quite care about rating and enjoy CF contests for fun. But when I go to IOI I can't quite do the same and I failed hard...

→ Reply

fivedemands

8 months ago, # | ▲ **0** ▼

Hi did you wrote the IOI tutorial?

→ Reply

BanazadehAria

8 months ago, # | ▲ **+3** ▼

Great thanks to this blog, I think I should practice much harder than before.

→ Reply

oToToT

7 months ago, # | ▲ **+10** ▼

Thanks a lot for the tutorial, very helpful!

I'm trying to solidify my rating above 1400. One problem I'm seeing is that I tend to do well on Div2-only rounds, but pretty poorly on combined rounds. I reached a peak rating of 1521, then lost 214 points in just 3 combined rounds (CF Global 3+4 and Forethought Future Cup).

dunpeal   Is it mostly weak "mathematical concepts and thinking" like your guide claims? If so, should I focus my practice on TopCoder to strengthen those? Specifically, Div1Easy?

→ Reply

7 months ago, # ^ | ← Rev. 2   ▲ **0** ▼

To solve problem on combined round (ex. Codeforces Global Round), mathematical concepts are needed. For example, in the third problem on Global Round 4, the answer only outputs 2^{H+W} — definitely one great example of mathmatical problem. Another example is the fourth problem on Global Round 4, just think about loop which the degree of all vertex is 2, and adding some edges. Graph theory is also the main part of mathematics, and many people who are familiar with TopCoder SRM can solve this problem easily.

E869120

I think that you are mainly stuck on problem with mathematical concepts. Solve TopCoder Div2Medium and Div1Easy. (I think that

concepts. Solve TopCoder Div2Medium and Div1Easy. (I think that Div2Med is bit easy for cyans) I have three notices to solve TopCoder problems as follows:

- Some of the round is very difficult — even 4 in 5 of Div1 participants could not able to solve during the contest. Check https://competitiveprogramming.info/ and you can check the difficulty of each problem.

- Thinking long time is important for the introduction of solving TopCoder SRM. So in your pattern, don't give up for at least 60 minutes before looking editorial.

- When you solve some problems on TopCoder SRM and you feel that your skill of mathematical concepts is improving, I recommend to solve SRM 600-719. They are bit difficult, but they are good for you.

→ Reply

7 months ago, # | ▲ 0 ▼

Thanks a lot.

→ Reply

AmanYdv20

6 months ago, # | ▲ 0 ▼

Thanks!!!

→ Reply

Devarsh

6 months ago, # | ▲ 0 ▼

I like it SO MUCH!

Thank you for working!

→ Reply

orzyyc

5 months ago, # | ▲ 0 ▼

Thank you!!

→ Reply

SarfarazA

5 months ago, # | ▲ 0 ▼

Nice, thank you!

→ Reply

Taybor

6 weeks ago, # | ▲ 0 ▼

Thanks a lot !!! Hope this helps me to come out from being stagnant in Grey-Green Zone

→ Reply

CodeSherlock

5 weeks ago, # | ▲ 0 ▼

Good share！ My recent goal is to be a red man,LoL.

→ Reply

Qoogle

The only programming contests Web 2.0 platform
Server time: Feb/11/2020 19:58:14^{UTC+6} (i2).
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