

Microsoft
Learn

STUDENT AMBASSADOR



VSCode for Competitive Programming

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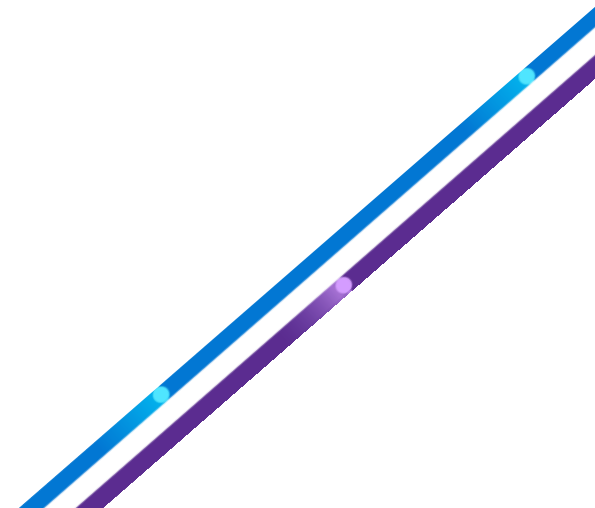
What is Competitive Programming?

Competitive programming is a mind sport usually held over the Internet or a local network, involving participants trying to program according to provided specifications. Contestants are referred to as sport programmers.



Benefits of Competitive Programming

- Career preparation and advancement.
- Higher-quality work.
- The ability to deliver results under pressure.
- New ways of solving problems, and the ability to solve more complex problems.



What in an Online Judge?

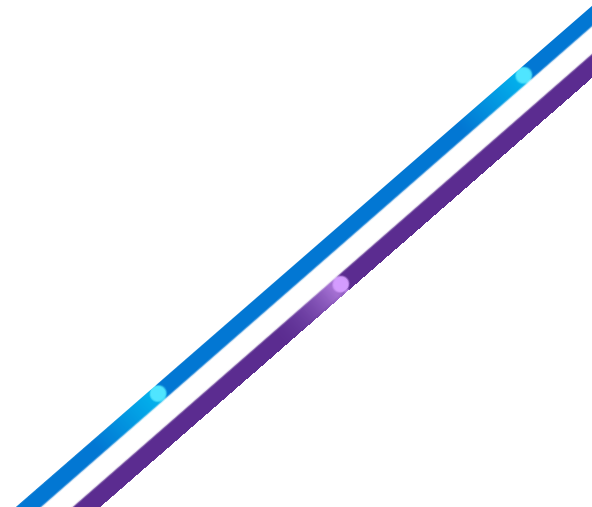
An online judge is an online system to test programs in programming contests. They are also used to practice for such contests. Many of these systems organize their own contests. The system can compile and execute code, and test them with pre-constructed data. Submitted code may be run with restrictions, including time limit, memory limit, security restriction and so on. The output of the code will be captured by the system, and compared with the standard output. The system will then return the result. When mistakes were found in a standard output, re-judgement using the same method must be made.



Details of a problem

A problem contains 4 parts mainly,

- Statement
- Constraints
- Sample Input
- Sample Output



Type of Limits

A problem have 2 types of limits,

- Time limit
- Memory limit

Generally 10^8 iterations are allowed per second.

A solution must pass every limit also match the correct output to receive an accepted verdict.



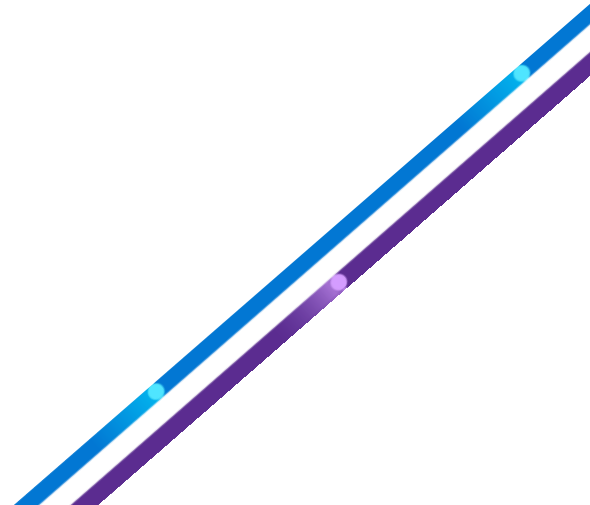
Type of Errors

There are 4 types of error,

- Wrong Answer: There is at least one case where your code gives a wrong output.
- Time Limit Exceeded: There is at least one case where your code fails to run within a given time limit.
- Runtime Error: There is at least one case where your code gives an exception
- Compilation Error: Your code fails to compile.

Overview of Online Judges

There are so many available online judges on Web. Most famous of them are,

- Codeforces
 - Atcoder
 - Codechef
 - SPOJ
 - UVA
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ICPC

Every year ICPC final are held. Almost 120-130 Teams from all over the world gets the chance to participate. Below the qualifying stages are given,

1. Regional Contest Qualification
2. Regional Contest
3. World Final




Languages

Among all languages ICPC allows 5 languages,

1. C
2. C++
3. Java
4. Kotlin
5. Python

It is highly recommend to use C++ for competitive programming.

Two parallel diagonal lines, one blue and one purple, extending from the bottom right corner towards the top right of the slide.

Compiler

A compiler is a computer program that translates computer code written in one programming language (the source language) into another language (the target language).

Compiler for different languages,

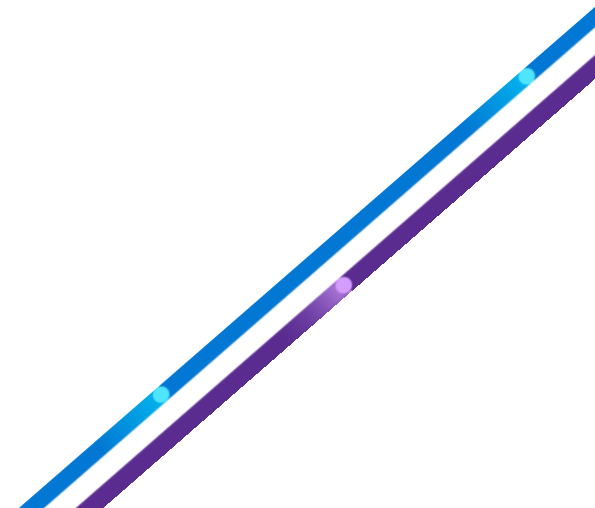
- C,C++ → GNU
- Java → Oracle Java
- Kotlin → Kotlin




How to setup C++ environment in VSCode

To setup C++ environment in VSCode, we need to follow below steps,

1. Download and Install MinGW.
2. Setup environment variables in system.
3. Install extension in VSCode

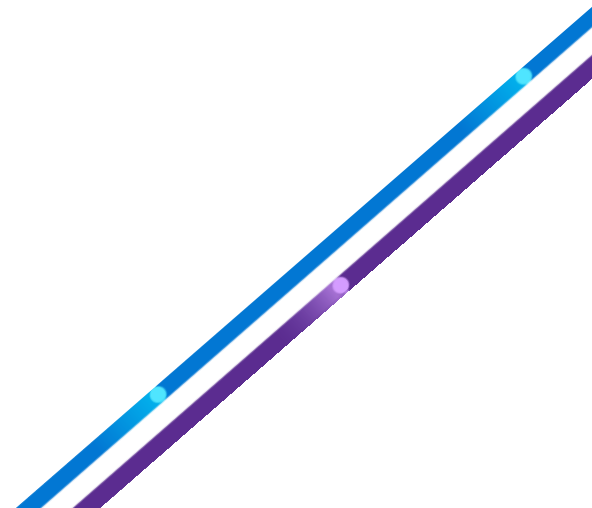


Tips for beginner

1. Try to learn new topics every 10 days.
 2. After learning a topic solve minimum 15 problems related to the topic.
 3. If you can't solve it now, bookmark it and retry your bookmark links every 30 days.
 4. Always try to solve with pen and paper.
 5. Attend every online judge contests, no matter what the result is.
 6. Store your solves in dedicated Github repository
 7. Use StopStalk
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Mistakes done by beginner

1. Not trying enough
2. Not up-solving
3. Not trying to solve hard problems
4. Not being dedicated
5. Learning algorithms from start



Resources

- <https://www.shafaetsplanet.com/>
 - [CPPS 101 | forthright48](#)
 - [Main Page - Competitive Programming Algorithms \(cp-algorithms.com\)](#)
 - <https://vjudge.net/article/461>
 - <https://algo.codemarshal.org/contests>
 - https://toph.co/problems?sort=difficulty_asc
 - https://codeforces.com/problemset?order=BY_SOLVED_DESC
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Thank You!

