
McGill

Technical Interview Workshop

Part I

— Christian Yongwhan Lim —
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Yongwhan Lim



Education



Part-time Jobs



Full-time Job



Workshops



Coach/Judge



<https://www.yongwhan.io>

Yongwhan Lim



- Currently:
 - **CEO** (Co-Founder) in a Stealth Mode Startup;
 - **Co-Founder** in Christian and Grace Consulting;
 - **ICPC Internship Manager**;
 - **ICPC North America Leadership Team**;
 - **Columbia ICPC Head Coach**;
 - **ICPC Judge** for NAQ and Regionals;
 - **Adjunct** at Columbia CS;
 - **Visiting Instructor** at Cornell-Tech;



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Terse Guides

- Please take a look as needed:
<https://bit.ly/christian-terse-guide>



Overview

- **Part I: Interview Preparation**
 - Interview Types
 - Technical Interview
 - Interview Topics
 - Interview Preparation Resources
- **Part II: Competitive Programming**
 - CodeForces
 - ICPC

Part I: Interview Preparation

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- Recruiter Call
- 0-1 Online Coding Challenge
 - automated screening with 2-3 questions.
- 2-3 Technical Phone Screens
 - first technical conversation with human.
- 4-7 Interviews in Onsite
 - similar to phone screening but more in-depth; you may get probed on your claimed expertise.
- 0-5 Fit Calls & Negotiation

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Interview Topics

- **Fundamentals**
 - Arrays and Linked Lists
 - Binary Trees
 - Heaps
 - Sorting

Interview Topics

- **Important**
 - Stacks and Queues
 - Hash Tables
 - Binary Search Trees
 - Searching
 - Recursion

Interview Topics

- **Real Differentiators (Tech vs Quant)**
 - Strings
 - Dynamic Programming
 - Greedy Algorithms and Invariants
 - Graphs

Interview Topics

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- **Dynamic Programming**
- **Greedy Algorithms** and Invariants
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 - BFS; DFS; Dijkstra; Bellman-Ford; Floyd-Warshall;
 - Ford-Fulkerson/Edmond-Karp; Dinic;
 - Prim; Kruskal (DSU);

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Any Idea?

Model Solution

```
int minInsertions(string &s) {  
    int n = s.size();  
    vector<vector<int>> dp(n, vector<int>(n,0));  
    for (int i = 1; i < n; i++)  
        for (int j = 0, k = i; k < n; j++, k++)  
            dp[j][k] = (s[j]==s[k]) ?  
                        dp[j+1][k-1] :  
                        min(dp[j][k-1], dp[j+1][k])+1;  
    return dp[0][n-1];  
}
```


Interview Preparation Resources (Tech)

- **Popular Websites**

- LeetCode: Solve all four weekly/biweekly problems in **60 minutes!**
 - $3+6+12+24$ (+15 buffer)
- CodeForces: Get to 1800+ rating
 - Clear 4 questions out of 6!
- AtCoder; TopCoder; CodeChef;

- **Annual Contests**

- Meta Hacker Cup; ~~Google Code Jam; TopCoder Open;~~

Interview Preparation Resources (Quant)

- **Popular Websites**

- LeetCode: Solve all four weekly/biweekly problems in **20 minutes!**
 - $1+2+4+8$ (+5 buffer)
- CodeForces: Get to 2200+ rating
 - Clear 5 questions out of 6 **fast!**
- AtCoder; TopCoder; CodeChef;

- **Annual Contests**

- Meta Hacker Cup; ~~Google Code Jam; TopCoder Open;~~

Interview Preparation Resources

- **Elements of Programming Interview**
- **Competitive Programming 4**

Part II: Competitive Programming

CodeForces

- Get to **2200+** rating as fast as you can!
- Join the training sessions through **Programming Zealots**
(<https://bit.ly/programming-zealot>).



Success Pathways

- Those who are **just starting** should focus on the **first half** of problems in Zealot Problem Set. Your main focus should be gaining some experiences with an explicit goal to enjoy the process of solving new problems and potentially making it to the *ICPC North America Championship (NAC)*!
- Those who are **more serious** should focus on the **second half** of problems in Zealot Problem Set. Your goal should be making into the *ICPC World Finals* and potentially winning a medal!

Practice Strategies

- If your goal is to get to a rating of **X**, you should practice on problems that are **X + 300** typically, with a spread of 100. So, picking problems within the range of:

$\{X + 200, X + 300, X + 400\}$

would be sensible!

- So, if you want to target becoming a **red**, which has a lower-bound of 2400, you should aim to solving $\{2600, 2700, 2800\}$.
- **(Eventual) Target:** You should focus on solving it for 30 minutes or less!

Practice Strategies

- You should focus on solving each problem for **30 minutes or less**; if you cannot solve any problem with this range, you should consider solving a problem with a lower rating.
- You should aim to solve **10 ~ 15 problems** each day within this range to expect a rank up within a quarter (3 months).

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 - Look at editorial for full solutions, and try to solve the problem.
 - Look at accepted solutions, and try to solve the problem.
 - Make sure you look back after two weeks and see if you can solve it.

Sneak Peek into the Part II!

- We will talk about how to do well in:
 - **Behavioral** Interviews;
 - **System Design** Interviews;
 - **Quant or Machine Learning/Data Science** Interviews;
- We will have few **typical example questions** that you can expect on each of these interview types!

Contact Information

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- LinkedIn Profile: <https://www.linkedin.com/in/yongwhan/>
 - Feel free to send me a connection request!
 - Always happy to make connections with promising students!