Intro to Problem Solving

MCPC Workshop

Outline

USACO

- USA Computing Olympiad training system

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- Provides instructions and practice problems

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- DO NOT SEARCH SOLUTION ONLINE!

Outline

GCJ 2019 R1 A: Pylons

- Complete Search

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- Complete Search
- Pruning

GCJ 2019 R1 A: Pylons

- Complete Search
- Pruning
- Constructive

GCJ 2019 Qualification A: Foregone

- Brute-Force & Constructive

GCJ 2019 Qualification A: Foregone

- Brute-Force & Constructive
- Testing

GCJ 2019 Qualification A: Foregone

- Brute-Force & Constructive
- Testing
- Optimize

GCJ 2019 Qualification B: You Can Go Your Own Way

- Constructive

GCJ 2019 Qualification B: You Can Go Your Own Way

- Constructive
- DO NOT OVERKILL!

FHC(Facebook Hacker Cup) 2019 Qualification A: Leapfrog 1

- Simplify: what if **B** frogs are not allowed move?

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- Observation 1: **A** frog has to jump over all **B** frogs anyway.

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- Simplify: what if **B** frogs are not allowed move?
- Observation 1: **A** frog has to jump over all **B** frogs anyway.
- Observation 2: the initial location of **B** frogs doesn't matter.

FHC(Facebook Hacker Cup) 2019 Qualification A: Leapfrog 1

- Simplify: what if **B** frogs are not allowed move?
- Observation 1: **A** frog has to jump over all **B** frogs anyway.
- Observation 2: the initial location of **B** frogs doesn't matter.
- What's the min and max distance to jump over all **B** frogs?

FHC 2019 Qualification B: Leapfrog 2

Your Turn

Extra bonus - FHC 2019 Qualification C: Mr. X

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- How many possible truth table?

Extra bonus - FHC 2019 Qualification C: Mr. X

- Make an assumption: no need to change any parentheses
- How to evaluate a Boolean expression if x is given? ($f(x)$)
- Actually, $f(x)$ is a truth table!
- How many possible truth table?
- How many possible ways to combine two truth tables?

Outline

Resources

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- Mr. X: https://www.facebook.com/hackercup/problem/589264531559040/

End

Thank you!