Team Programming Contests (2023 Version)

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Hallmarks of Individual Competition

- You do all the problems.
- You use the computer the whole time.
- Debugging is on the computer.
- You must do all the testing.
- No work can be done in parallel.
- You make ALL decisions.

Analysis of Individual Competition

Strengths

- You have complete control.

- You can use the computer all the time.

- You can always run code to debug.

Weaknesses

- If you get stuck on a problem, there are fewer alternatives.

- No work can be done in parallel.

- No outside thoughts help diversify thought.

Team Competition Rules

- Three team members
- One Computer
- Printing of Code Allowed
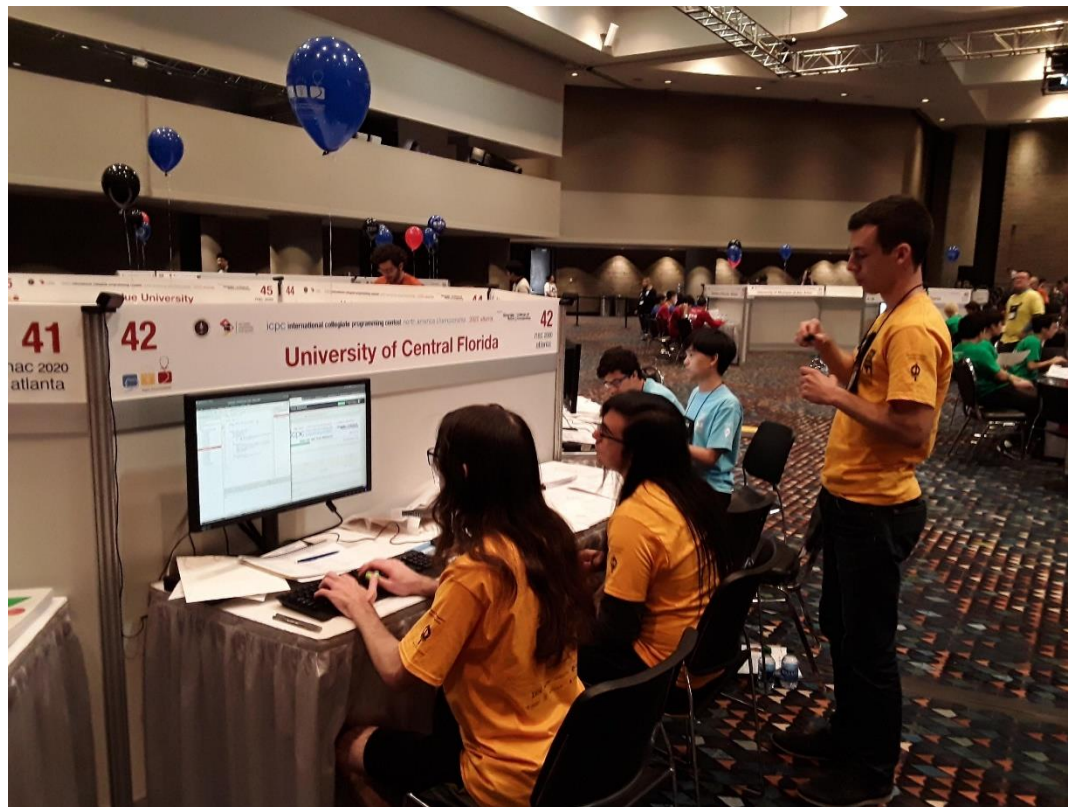
Hallmarks of Team Competition

- Different team members can do different problems, leading to possible specialization.

- Team members can communicate to brainstorm solutions.

- Debugging is on paper, usually.

- If one team member is stuck, others may still get questions so the team isn't completely stalled.

- Work **can** be done in parallel.

- Teams must negotiate which problems to do, who gets to get on the computer next, and so forth.

Harnessing the Strength of a Team

Collaboration

- Read Separately
  - ☐ Reduces misunderstanding the problem.
  - ☐ Different people can contribute to different parts of the solution.
- Debugging
  - ☐ Different person makes data.
  - ☐ Multiple eyes on the monitor and or printout.

Knowledge Specialization

- Graph
- Dynamic Programming
- Geometry
- Math
- Text/Simulation
- Data Structures
- Brute Force
- Greedy

COP 4516 Team Rules

- **TWO COMPUTERS** (as a by product of not being able to print)
- Three team members
- Internet allowed for: contest website, searching language syntax issues, course website, cloud storage for transferring files between two computers.
- **COPY PASTE ALLOWED <u>ONLY</u> FROM WEBSITES MENTIONED ABOVE, AND BETWEEN COMPUTERS.**

Idea #1: Team Manager

- Two people focus on coding.

- Each person has their own terminal.

- Each person can debug on terminal.

- One person is a manager.

- Manager's Tasks
  - Keep eye on scoreboard.
  - Read all problems carefully.
  - Make extra test data.
  - Ask coder to stop working on a problem if he/she is "sucked in" and stuck.
  - Call for team meeting to collaborate to solve a problem collectively.

Idea #2: Make Data Terminal

- Allocate one computer for fresh code.
- Use the other terminal to make data for problems.

- Each Person Codes, Makes Data.
- Data Maker is DIFFERENT than Coder
- Third person is reading set, starting a problem on paper.

Idea #3: Two Terminals for Code

- Whenever someone is ready to code a problem, they take an open terminal.

- Third person is scoping out problems and either getting ready to code on their own, or discuss with others.

- In this model, debugging is just done on terminal.

- BUT, new code still takes precedence!!!

Idea #4: Duplicate Designs/Team Coding

- Easy problems can be coded by a single individual.
- For harder problems:
  - Discuss solution as a team.
  - Separate code into modules.
  - Use both computers and two people to code modules.

- Alternatively for harder problems:
  - Discuss solution as a team.
  - Pick two people to separately implement solution.
  - Third person makes data on paper.
  - Hopefully at least one of the two of them is accepted!

COP 4516 Team Assignment

1. All Students Fill Out Questionnaire
2. I pick teams. Post in Webcourses
    1. People Tab
    2. Teams Group Set
3. One Team Member emails me a list of 3 possible team names, in order.

- Potential Team Name Themes
    - UCF Theme: Minecraft Blocks
    - Famous Computer Scientists
    - Units of Measurement
    - Planets
    - Video Game Characters
    - Pizza Toppings