ECNA 2022–2023 Regional Programming Contest

Preliminary Final Report

The East Central NA region held its 2022–2023 regional contest on February 25, 2023. The contest was successful, although not without issues. The following report summarizes the contest.

92 teams from 33 colleges and universities across the region competed in the contest. The contest was held simultaneously at three sites:

- University of Cincinnati (Cincinnati, OH) — 22 teams from 8 schools
- Grand Valley State University (Allendale, MI) — 17 teams from 6 schools
- Youngstown State University (Youngstown, OH) — 29 teams from 10 schools
- In addition, 24 teams from 9 Canadian schools competed from their home institutions

The contest was held in conjunction with the Northeast NA regional contest. Judges and problem setters from both regions collaborated to develop problem sets for both regions consisting of some shared and some unique problems. The contests were held simultaneously. The joint effort was quite successful and ECNA is looking forward to possible future collaborations with NENA.

Some observations regarding the contest:

- The software environment was modeled after the specifications for the 2023 ICPC World Finals, with adaptations made at each institution for security and printing.
- Kattis was the contest control system.
- Eight of the contest problems were shared with the Northeast NA region. The start and end times of both contests were synchronized to preserve secrecy of the problem set prior to the contests' start.
- The contest began at 11am and ended at 4pm. This is a departure from our usual 10am start time, and was changed to facilitate the travel needs of teams in the Northeast NA region.
- The contest consisted of 12 problems with 75 teams solving at least one problem.
- The maximum number of problems solved by any team was 10.

Issues

There were two significant issues and four other issues of note prior to and during the contest.

Host Issues

We were informed of a scheduling conflict with the University of Windsor which prevented them from being a host for the contest. An attempt was made to find an alternate host for Canadian teams, although the effort was unsuccessful. It was decided to have Canadian teams compete at their home institutions. While not an optimal solution, it seems to have been successful, with 24 teams from nine institutions competing, which is comparable to past years. All Canadian institutions had teams that submitted successful solutions to contest problems.

Discussions with the Windsor site director indicate that this is a one-off situation, and we are looking forward to Windsor being a host site again at the next regional.

Contest Issues

The most significant issue during the contest involved problem F (It's About Time). Late in the contest, the judges in both regions realized that any given input could potentially have multiple correct answers, although the judges' solutions were all expecting a single result. As this was a shared problem between ECNA and NENA, this affected both regions. Several teams in both regions were affected, having submitted "incorrect" solutions.

A validator was created that would accept any correct answer to a given input. This was given to Kattis, who rejudged all submissions to the problem. Standings were adjusted accordingly, removing time penalties for misjudged submissions and crediting the first correct solution for all affected teams.

The correction resulted in nine teams moving ahead of at least one other team on the scoreboard, although one of those was passed by multiple teams resulting in a net loss of rank. The one notable change was Waterloo Black moving from fourth place overall to second place overall, making it the top team from Waterloo.

Other issues that arose during the contest:

- There are differences in the versions of languages used by the World Finals image and those used by Kattis. Teams were alerted of this difference prior to the contest.
- One of the IDEs in the World Finals image had an issue supporting Java projects. Teams were alerted of this issue as well.

- Teams at the Youngstown site were delayed in being let into the contest rooms. As a result, Youngstown teams did not begin until three minutes into the contest.
- Late in the contest, it was reported that three teams at the Michigan site could not submit a potential solution to one problem. Two of the three teams were eventually able to submit, although the third team was unable to submit prior to the end of the contest. The cause is unknown.
- There was discussion after the contest regarding problem L (Which Warehouse?) and the interplay between the stated bounds on the input data, the stated time limit and the time complexity of the most likely solution. While the stated bounds on the data were 1000 warehouses and 1000 products, the test data had a maximum of 100 of each. This resulted in a fairly low time limit. The time complexity of the most likely solution was $O(n^3)$, which would almost certainly exceed the time limit had an actual test case of size 1000 existed. In the discussion, it was stated that this may have discouraged teams from attempting the problem, thinking that a solution involved a different approach.

  It should be noted that 11 teams solved the problem, including the top 9 ranked teams and the top five teams eligible to advance.