

The 2019 ICPC Asia Jakarta Regional Contest

Site Report, Team “Send Bobs to Alice”

Background

The ICPC Jakarta Regional Contest was held at Bina Nusantara University from 26 to 28 October 2019. 65 teams of three members competed against each other over twelve problems for various prizes, including qualification slots for the coveted 2020 ICPC World Finals.

After a promising showing in our début year, winning Second and First Runner-up in our first two Regional Contests, our team (Send Bobs to Alice) was quite confident coming to Jakarta this year. Our target was nothing other than to regain the Champions award, which NUS teams had consistently won over the last few years but went to KAIST in the latest edition.

Practice Session

As is tradition, the practice session consisted of old problems from last year’s Jakarta National and Regional contests, with the goal is to familiarize contestants with the working environment. As the machines were run using Windows, we did not have our most comfortable text editors available. Therefore, after quickly solving all the practice problems to warm ourselves up, we focused on experimenting to set up the IDEs.

After the practice session, we were quite sad to be informed that our “lucky object” - a manga - was not allowed in the real contest. We expected it to be accepted, as with other reading materials such as dictionaries. However, it did not affect our preparation a lot.

The contest

The night before the contest, Tuan seemed to have caught a cold. Usually, we would be worried; however, Tuan had a surprisingly good history of winning contests while being sick. Thus, we entered the contest hall with high confidence.

Having read the problems from previous contests, we knew that problem A was often quite easy. Therefore, right after the contest started, Johnny began to read problem A. To no one’s surprise, Johnny immediately found the solution and told Ming, who was holding the machine, to implement it. The solution was so simple that we decided to submit without testing and got our first problem solved in just two minutes. This was also the first correct submission of the whole contest, and we even got a fancy star-shaped gold balloon from the volunteers! After

that, Ming started reading other problems and, following a brief discussion with Tuan, found another simple solution for C. Our solution got accepted at 11 minutes - also the first correct attempt for C. Meanwhile, Johnny found a greedy approach for E, but halfway through implementing he found its flaws, so Ming continued to hunt for easy problems. After a slight hiccup, Ming solved H at the 34th minute. During that time, Johnny found another straightforward problem in G and proceeded to get it accepted right before the one hour mark. We earned ourselves first place after the early stage of the contest.

Things seemed to be going in the right direction for us during the next hour. Ming was certain that K could be solved using Segment Trees with matrix multiplication, but was not quite sure how to efficiently implement it. In the end, he opted for Square-root Decomposition instead, which was significantly easier to implement but theoretically slower. Luckily, thanks to his experience dealing with sub-optimal solutions, Ming's very first attempt was successful. Johnny fixed his idea for E as well, which helped us secure a very comfortable lead after 100 minutes. However, things unexpectedly went south, starting with Johnny's overcomplicated solution for problem J. We spent the next hour without any submission, and the first one after that was rejected, which moved us down to fifth place at one point. We decided to print Johnny's solution for J to debug and let Tuan code L, accepting the fact that we might have to give up our lead. Thankfully, it turned out that Johnny's idea, albeit complicated, was still correct, and only had a small bug. We quickly fixed it and climbed back to first, although our penalty advantage had almost entirely diminished. On a positive note, during the "one hour of silence", Tuan and Ming also found solutions for F and B and took our time to formulate them as much as possible, taking care of every possible implementation detail. That enabled us to bounce back with three more accepted solutions, with the highlight being problem B solved within 15 minutes and no bugs whatsoever from start to finish.

After getting B done at the 250-minute mark, we were left with two extremely challenging problems that no other team had tried. We agreed that problem I contained too many implementation details that were almost impossible to cover, and D had some interesting ideas that we could not both come up with and implement in such a short timeframe. As a result, we spent our last hour trying to make suboptimal solutions for D work, to no avail. However, judging from other team's submissions, we were convinced that no other team could seriously challenge our spot.

After the contest, we had some nice chat with other top teams about the experience in Jakarta before heading back to the auditorium for the closing ceremony. While we were certain that our performance was enough to win, we still had to wait until the scoreboard had fully resolved to finally congratulate each other and lift our first ICPC trophy since we came to study at NUS. With this result, our university had qualified for the ICPC World Finals for the ninth consecutive time.

Reflections and Acknowledgments

Overall, we were quite satisfied with our performance, especially considering that our competitors were also very strong and had posed a much bigger challenge than we expected. The win was such a promising start for this ICPC season, and we certainly hope to capitalize on that to gain good results in the upcoming competitions.

We would like to express our gratitude to our sponsors: SenseTime, Indeed, Seagroup, Jump Trading, HRT, and DRW for making such a wonderful experience possible. We would also like to thank NUS School of Computing, especially Professor Tan Sun Teck and our coach Dr. Steven Halim, for organizing spectacular training events such as the Discover Singapore ICPC Workshop. None of this would have been achievable without their invaluable support.