

## **ReFreshPHD Report**

### **ICPC Asia Jakarta Regional 2018**

After being one of the top 8 NUS teams in ICPC Asia Singapore Preliminary Contest, our team was selected to represent NUS in ICPC Asia Jakarta Regional Contest. We went to Jakarta on Friday, 9 November 2018. After arriving at Soekarno-Hatta International Airport, we had a lunch there and afterward we went to our stay in Jakarta, which was Binus Square. There was no schedule on that day, so we could do our own activities. Ammar and most of the other NUS representatives went to a mall near Binus Square and Steven met his parents who live in Jakarta. Unfortunately, Yehezkiel did not manage to really enjoy that time. He had to take an afternoon flight due to his final project presentation. At midnight, we and the other Indonesian from NUS teams introduced a local food called Martabak to Robin and Minh (other representatives of NUS) by having a Martabak party. It marked the end of our first day in Jakarta.



#### **Day 1 - Saturday, 10 November 2018**

In the morning, as soon as everyone was ready with our pink ICPC Singapore t-shirt, we took a photo together and afterward went to Binus Anggrek, the ICPC contest site.



There, we did the registration using QR codes which had been sent to us previously. Thereafter, each of us received a bag containing ICPC Jakarta t-shirt and other merchandises from sponsors. We were then asked to change our t-shirt and took a team photo.



As the three of us are Indonesian, we met with a lot of friends there and had quite a reunion with them. After the photo session, we went for breakfast and then, we attended the opening ceremony.

In the opening ceremony, there was a performance from Binus Kolintang Team, a traditional music instrument group from Indonesia. At its end, Jonathan Irvin Gunawan who was the chief judge of ICPC Asia Jakarta Regional 2018 gave a short briefing about the contest rules and several technical information. Unexpectedly, the opening ceremony ended much faster than the schedule. As a result, we went for lunch just 3 hours after breakfast.

After that, we went to our contest site for practice session. Dr. Steven Halim suggested all of the NUS teams to use the practice problem set as a speed contest. For our team, it was quite a big success as we were able to secure the highest rank among NUS teams and second best among all participants, left behind by Deobureo Minkyu Party from KAIST. It was quite a good warm up for us because we realized that two of us (Steven and Yehezkiel) were still freshmen and still had not learned many advanced algorithms, so we needed to secure at least the lowest penalty points from all participants who solved the same number of problems. Later on, we also tried to adjust ourselves to several differences between Linux, which we had always used for practice, and Windows that was used in the contest site. We also did some testing for time limit, stack limit, and other technical issues that might arise.

## **Day 2 - Sunday, 11 November 2018**

The real contest started on Sunday at 10 am. One hour before, we finished our breakfast and discussed our strategy. We were going for fast and safe strategy: minimizing penalty time while solving as many problems as possible. Therefore, we planned to code fast but still did a rigorous testing. Minh also told us some short useful tips like printing utilization, debugging, and checklist of common mistakes.

The contest began on time. ICPC Asia Jakarta Regional usually set problem A as the easiest problem, but it's not the case for this year. We realized that there was a trap on problem A, but unfortunately, we still got Wrong Answer verdict because of other tricky cases. After fixing it quickly, we then got Accepted verdict. We, actually, had already solved some problems on paper (before coding them), and hence, after a problem was solved, we directly attacked the next problem. Our performance was really great, most of the time we were on top 3! We had solved 7 problems on the first half (2.5 hours) of the contest, but sadly it faded slowly after that.

On the second half of the contest, we panicked. There were problems C, G, and K which were solvable by other teams but we didn't have any concrete idea for them. Finally, we found an  $O(N^3)$  solution for problem G. As we believed that our solution might exceeded the time limit, we did a lot of optimization in our code. Sadly, we got Wrong Answer verdict for it. We also had

some greedy and randomized algorithm for problem C as we modeled it as Hamiltonian Path NP-problem, but we didn't manage to solve it either. We were focusing on solving C and G so we didn't make any attempt for K, nevertheless we still couldn't solve and found any tricky case for both problems on that last 2.5 hours. The contest ended and we were escorted to have a lunch.



Right before the closing ceremony, we were given a printed editorial for each problems. We were a bit annoyed because the solution for problem G was a straight-forward implementation in  $O(N^3 \log N)$  complexity, knowing that  $N$  is up to 500! Problem C was also a wikipedia-problem: you might find the solution by googling. But other than those, the problem set for this contest was really great and the solutions were cool. We also did ask other teams about their performance on last hour of the contest. It turned out that most of them were solving at least 8 problems. So we just accepted our fate and didn't expect anything to win.

The closing ceremony began with a nice choir performance — they even sang [“Awimawe” song!](#) Resolving the result, we just knew that there were prizes for First-to-Solve each problem, which had never been done on previous ICPC Asia Jakarta Regional. Not only that, there were also prizes for top 12 teams whereas for last year, only the top 3 teams got the prize. The best part was actually knowing that we were on the 12<sup>th</sup> place! We were the only team on top 12 that solved less than 8 problems. Having a significantly less penalty time broke the tie and we were glad that our strategy was a success to get this 12<sup>th</sup> place. Another good news was that our friend, 3Sophomores, won the 3<sup>rd</sup> place winning a gold medal!

After the closing ceremony, there was a gala-dinner. There are MANY foods here, both Indonesian or non: Siomay, Chicken Satay, Chicken Steak, Grilled Seafood, Pancake with Ice Creams, Soto, Bakwan Malang, Gulai Kambing, etc. We also did a lot of chit-chat with other teams and coaches as well as the judges to get some strategy insight for further competitions. Going back to hotel, we also had some Indomie party to end this memorable day.



## Return Day - Monday, 12 November 2018

We did not have any plan for this day except going back to Singapore. Our flight was quite early because some of NUS representatives had a scheduled plan on that day. For our team, Steven and Yehezkiel had to attend a final quiz for one of their modules at 6pm, and fortunately we arrived at Changi International Airport at 3pm. Thus, it marked the end of our journey for ICPC Asia Jakarta Regional Contest 2018 and the continuation of our university life. From this event, we learned that we still need to hone our skills in order to solve harder problems. We hope that we will be able to show better result in the upcoming ICPC Asia Singapore Regional Contest on December 2018. See you on our next report!





