

# **General Assembly: Minutes for the Meetings hosted by Singapore for IOI 2021**

**19 June – 28 June, 2021**

**Venue: Online, via Zoom and Matrix**

## **Saturday 19 June: GA Meeting 1 11:00 – 12:00 SGT**

### **1. Welcome and presentation of GA chair**

IOI President Greg Lee welcomed everybody to IOI 2021. He thanked all the leaders and deputy leaders for making IOI 2021 possible, and gave a big thank you to the host team for giving us the full experience of IOI despite the online setting.

Sun Teck Tan, Host of IOI 2021, also welcomed everybody to Singapore (virtually). He thanked the IOI community for trusting Singapore to host another IOI after 2020, and mentioned the original plan to hold this IOI as a hybrid on-site/online competition. He welcomed those committee members who were assisting on-site (Fredrik Niemelä as ITC chair, and Benjamin Burton as Secretary), and noted that there would be more on-site visitors coming as representatives of the Indonesian host committee for IOI 2022.

He highlighted that the online IOI 2021 would not be the same as IOI 2020 – instead it would be closer to the experience of a full IOI, including elections, the IOI conference, and virtual tours of Singapore. However, as with IOI 2020, we depend on all of the delegation leaders to ensure the integrity of the contest.

To finish, he introduced Steven Halim as GA Chair for IOI 2021.

### **2. Explanation of GA procedure**

GA Chair Steven Halim briefly summarised the logistics and etiquette for how GA meetings would work over zoom, with supporting discussions happening over Matrix.

He welcomed everyone to the 33<sup>rd</sup> IOI (and the second online IOI), including invited observers from Ecuador and Peru, as well as Moldova who are returning to IOI after an absence. In total there are 88 teams plus 2 invited observers, with a theoretical maximum of 352 contestants (excluding the second Singapore team).

He noted that the zoom meetings will be recorded for minuting, but will not be released to the general public, and gave the link to the unofficial live blog from Mathias Hiron (Team Leader, France). He talked through who has access to the GA zoom meetings and the various channels in Matrix (in particular, there are adjunct proctors this year, which is not usual for IOI), and reminded us of how to use the IOI-GA mailing list. Approval voting (yes/no/abstain) will be done through Matrix, with the help of IOI-Bot. Sensitive information (in particular, contest tasks) will be discussed through Matrix only, not zoom.

He noted differences between IOI 2020 and IOI 2021: we will bring back elections, social activities, the IOI conference, a full set of GA meetings, and an optional coding game challenge for contestants. The opening and closing ceremonies will be livestreamed.

He briefly noted which contestants had not appeared in the (online) venue for the practice contest, so that leaders could ensure that things run smoothly for the real contest days.

### **3. Presentation and confirmation of agenda**

IOI Secretary Benjamin Burton showed the GA agenda, which was also sent to the GA mailing list, and highlighted that this is intended to look as much as possible like a “normal” IOI. There were no questions about the agenda, and so we prepared to take a vote to approve the agenda.

At this point Lai Zit Seng (HTC) talked everyone through the mechanics of voting over Matrix. Due to technical issues, the vote was deferred until after the presentation of contest rules.

### **4. Presentation and approval of contest rules**

HSC Chair William Gan presented the major changes in the contest rules between IOI 2020 and IOI 2021. Specifically:

- Java is no longer supported – the only language that can be used for submission is now C++.
- CMS has a new feedback: “Protocol Violation”, triggered when a program does not follow the protocol given in the task statement. This is explained more thoroughly in the full contest rules.
- Screen recording is now mandatory; the software, procedure and upload instructions are explained on the IOI 2021 website.

The IOI 2021 Contest Operations Manual describes what preparations you need to be doing in the few hours before and after each contest – this manual should be checked the day before each contest in case there are any updates.

Madhavan Mukund (India) asked what happens if the screen recording software crashes. Lai Zit Seng talked through some of the complications and said we would need to look at this on a case-by-case basis. Steven Halim emphasised that the screen recordings were an extra layer of backup in the event that we need to investigate something, and likewise mentioned that real technical issues could be worked through on a case-by-case basis. The lack of a screen recording would itself not be grounds for disqualification, but may work against a student who is already under investigation for other reasons. The main intention of screen recordings is to help defend students who may have been accused of misconduct, and to help certify the legitimacy of their work.

Felix Jingga (Indonesia) asked if contestants may use alt-tab from time to time to see whether ffmpeg (for the screen recordings) is still running. Lai Zit Seng confirmed that yes, this is allowed, but it should be the proctor who does this.

Two votes were taken at this point:

- Do you approve the GA agenda for IOI 2021? Passed with 68 yes, 0 no, 2 abstain;
- Do you approve the IOI 2021 additional rule changes, and will enforce them during IOI 2021? Passed with 63 yes, 0 no, 1 abstain.

William Gan returned to discuss the procedure for requesting extra time. In particular, if the contest ends while the ISC is still deciding whether to grant extra time, the contestant should continue working and not communicate with anyone else. Extra time will not be awarded for issues at the remote end (e.g., internet failure, power failure, fire alarms, etc.).

He then talked through the procedure for lodging appeals, and when and how contestants can access the necessary resources (translated tasks, test data, CMS analysis mode).

## **5. Call for nominations for President, IC, ISC, ITC**

IOI President Greg Lee reminded the GA that elections were postponed during IOI 2020 due to COVID-19, and committee members were asked to serve an extra year. This year the IC felt it was important to bring elections back despite the contest still being online. Greg opened a call for nominations for: President (3 years), three IC positions (1, 2 and 3 years), two ISC positions (1 and 3 years), and one ITC position (3 years).

Forms should be submitted to Greg (for President, IC or ISC) or Jakub Łącki (for ITC) by the end of GA 2. Candidate will give presentations during GA 3, and the elections will take place during GA 5.

## **6. Call for proposals for Honourable Mentions**

IOI Secretary Benjamin Burton gave some brief history of the proposal to introduce Honourable Mentions to IOI: during IOI 2020, the GA voted against introducing Honourable Mentions with the specific criteria that were presented at the time, but the GA did vote to continue searching for different criteria that could be put to a formal vote during IOI 2021.

He invited everyone to submit proposals for criteria for Honourable Mentions, to be mailed to the IOI Secretary by the end of GA 2. These would then be collated and prepared for an informal GA meeting to be held on 24 June: at this informal meeting, all the proposals would be presented and discussed, and there would be a straw poll to determine which proposal (if any) was best placed to bring back to GA 5 for a formal vote.

## **7. Reminder of Code of Conduct for opening ceremony**

IOI Secretary Benjamin Burton reminded the GA of the IOI Code of Conduct, which has been in place now for a few years. He noted that online harassment was just as important as physical harassment, and asked delegation leaders to ensure that their contestants have read the Code of Conduct and understand it. He looked forward to a respectful, inclusive and diverse IOI.

At this point, GA 1 ended, and the zoom meeting transitioned to the practice translation session.

## **Tuesday 22 June: GA Meeting 2 11:00 – 12:00 SGT**

### **8. Issues arising from practice session**

HSC Chair William Gan talked through some of the clarification requests submitted through CMS:

- For people asking about the new "Protocol Violation" feedback, a description has been added to the Notice for both contest days. The main causes are reading from standard input, writing to standard output, and calling `exit(0)`. In the past this has resulted in a "Wrong Answer" or "Security Violation", and so the new "Protocol Violation" is to help contestants understand what they are doing wrong.
- Some task statements had invalid or missing constraints: William emphasised that the task statements have been prepared much more carefully for the real contest days.
- There were some inconsistencies between the test case examples in the task statements vs attachments; the SC will check carefully that these are consistent on the real contest days.
- The 1 minute submission interval was lifted only 10 minutes before the end of the contest: this will be 15 minutes during the real contests, and announcements will be made on Matrix.
- All submissions will be compiled as C++17. No Java submissions will be accepted.

HTC member Lai Zit Seng said that technically, the practice session went smoothly; however, there were a number of minor issues:

- Some screens unlocked and locked around a minute later than they should have, due to the operating system not executing the scheduled jobs on-time. This will be addressed.
- One machine ran very late, and this could not be reproduced; such issues will be dealt with on a case-by-case basis if/when they arise.
- Most other issues were “typical” non-issues, such as forgotten account credentials, connectivity issues, IDEs hanging, contestants’ own code hanging the VM, and so on.

We expected 356 contestants: 332 of these appeared online during the practice contest, and 67 of these did not upload screen recordings, which was an alarming number. Zit Seng reminded leaders of the requirement to take and upload screen recordings.

There were some minor changes to the protocol that proctors need to follow in setting up each contest, as well as finalising things after each contest and requesting extra time. Zit Seng talked through these changes, and noted that this is all in the updated Contest Operations Manual.

HTC Chair Ranald Lam walked through the protocol for requesting extra time through CMS, which includes proctors asking for time via Matrix as a backup plan if CMS is inaccessible. He also walked through the protocol for managing and checking on screen recordings and highlighted that it is the proctors who must manage this. Contestants must not switch away from the contestant VMs themselves.

Ranald answered some questions that had appeared on Matrix:

- Livestreams of the contest venues are not allowed; teams may only upload recordings of their venue (if they wish) after the end of each contest day.
- The “ioisubmit” script should not be used if CMS is accessible. It is designed for emergency only, and any submission via “ioisubmit” must be accompanied by an appeal for extra time (which must be granted for such submissions to be considered).

Finally, Ranald talked through the format and filename requirements for screen recordings, presented the specifications of the judging servers, and reminded leaders and proctors of how they can best communicate any changes to contestants.

Eduard Kalinichenko (IC) asked why teams cannot livestream their venues this year. Ranald said that, after viewing one of the team’s livestream of the practice contest, they determined that such livestreams could leak information about the contest results, and so since there was no live scoreboard during this online IOI, there should be no livestreams either. Steven Halim and William Gan highlighted that this constraint was about livestreams to the public (as opposed to livestreams only to team leaders which were being used for proctoring purposes).

## **9. Appointment of scrutineers for elections**

IOI President Greg Lee reminded everyone that nominations for election were due at the end of this meeting, and that some committees still had more seats open than nominations received.

He noted that scrutineers were typically past IOI chairs and/or past IOI presidents, and that this year we had four such people who were not running for election themselves: Gyula Horváth (Chair, IOI 1996);

Troy Vasiga (Chair, IOI 2010); Mohammad Ali Abam (Chair, IOI 2017); and Richard Forster (past president of IOI). Troy Vasiga and Richard Forster have already accepted, and the other two are yet to respond.

A vote was taken to approve all of these scrutineers if they accept, and was passed with overwhelming majority.

#### **10. Presentation of regulation changes**

IOI Secretary Benjamin Burton talked through the proposed regulation changes, which were also mailed to the IOI-GA mailing list. He encouraged people to send comments or questions to the IOI Secretary or IC before the end of GA 4, which would allow the IC to refine these changes in time for the vote during GA 5. The changes presented here did not include Honourable Mentions, which will be discussed and voted on separately.

In summary, the changes included:

- Modernisation to bring the regulations up to date with actual current practice, covering the way we manage the contest rules, solutions, clarifications, evaluations, and appeals;
- Allowing minuting to be separated, if desired, from the position of Secretary;
- Clarifications to what happens if IC positions are left unfilled;
- Requiring disagreements between ISC and HSC to be resolved by a formal ISC vote;
- Requiring hosts to give final results and participant lists to the committees (with the intent of incorporating into the IOI Statistics site), rather than hosts posting them themselves;
- Clarifying that the Distinguished Service Awards are for contributions beyond the usual duties of a Team Leader, Deputy Leader or Host;
- Requiring “experimental regulations” to be ratified at the first GA meeting of the IOI, at which point they become binding;
- Other minor language clarifications.

There were also changes to the notes (which are not part of the formal regulations), including a new table of quick links, clarifications about countries who return after a 3-year absence, and removing the temporary exception to the requirement to invite all countries, which was granted to the known future hosts (2016-2020) when this requirement was first introduced.

Separately, he reminded people that the deadline for submission Honourable Mention proposals was the end of this meeting. The submissions received so far included:

- Full success in at least one task (Germany & Latvia);
- Success in a predetermined set of subtasks (Syria);
- Top 60% or 50% on any one day (Italy & UK);
- Top 70% overall (IC proposal from last year);
- No Honourable Mentions (Canada).

There was also a proposal from Azerbaijan to gather supporting statistics if possible.

A question was asked about the requirement in the regulations that the GA must hold six meetings during IOI (which we are violating this year by holding only five). Benjamin said that we are trying to do what we can with an online IOI supporting a wide range of timezones, and that we are trying to fit in more this year than last year, attempting to make this as normal an IOI as possible; the technical answer is that regulation E3.4 says that in exceptional circumstances the IC is able to change things as necessary, and with COVID-19 we are still dealing with such exceptional circumstances.

Latvia suggested incorporating main topics from the Contest Rules and Code of Conduct into the regulations. Benjamin noted that we have three IC meetings before the final GA and we can look into this; however, also the regulations are much more difficult to change than the Contest Rules, which need to be able to be changed quickly if necessary. The IC will discuss this and come back with suggestions for GA 5.

#### **11. Presentation of tasks for Competition Day 1**

HSC member Ken Sung presented the tasks for Competition Day 1. The task presentation moved to Matrix at this point, and the zoom meeting ended. Team leaders had the opportunity to lodge objections, but due to the constraints of an online IOI there was no GA vote: the final approval was made by ISC/HSC.

### **Thursday 24 June: GA Meeting 3 11:00 – 12:00 SGT**

#### **12. Report on Competition Day 1**

HTC Chair Ranald Lam summarised the technical issues that arose on the first competition day:

- One contestant was logged into the wrong version of the VM, and so was not able to access CMS. HTC was unable to contact the delegation at first, but this was eventually resolved. The contestant worked from printed task statements, and no extra time was requested.
- One contestant requested assistance in compiling and running C++ programs. ISC allowed proctors to give this assistance, but emphasised that proctors should not help with compilation/runtime errors, including crashes or freezes.

HSC Chair William Gan summarised the scientific issues that arose:

- An error was found before the contest started in the compile script for all public attachments. This was fixed in CMS, but due to connectivity issues could not be pushed to all contestant VMs. As a result, the SC decided to provide the attachments on CMS only – not on the VMs – and for consistency this will be done on competition day 2 also.
- A clarification request was made during the contest that the solution stub for the task “Parks” had incorrect logic for the case  $n=1$ . ISC made an announcement around half an hour later to clarify the correct logic. No solutions were rejudged, and no extra time was given.

#### **13. Summary of appeals for Competition Day 1**

An appeal was made regarding the “Parks” issue (see above), not requesting any rejudging, but instead asking the ISC/HSC to shed further light on the issue. ISC acknowledged that contestants may have lost time and apologised for the issue; however, since the issue affected all contestants and the lost time could not be determined for each contestant, no time extensions were made. For day 2, the SC will aim to design solution stubs to solve a sample test case, and to avoid encoding corner case logic. Contestants were encouraged to make clarifications in CMS where unsure.

Three requests were made for extra time:

- One was due to Visual Studio crashing, which was rejected since it was an IDE usage issue and not due to technical faults in the VM;
- One was due to the contestant’s computer freezing, which was rejected because it was determined this was due to local networking/machine issues and not the VM;
- One was due to the “Parks” issue described above, which was rejected because the issue affected all contestants.

There were no changes to the statements, graders or tests, no rejudges, no submissions made using the backup mechanism, and no appeals asking to rejudge any submission.

The number of official contestants after day 1 was 351, and all of these contestants made at least one submission.

William also presented some more detailed statistics from CMS.

Australia asked how much extra time was requested for the “Parks” issue: William said that there was no specific duration requested, but the contestant had been debugging the issue for 1-2 hours.

#### **14. Presentation of candidates for elections**

The following nominations had been received:

- President: Benjamin Burton (Australia)
- IC: Ricardo Anido (Brazil), Zide Du (China), Catherine Espinoza (Chile), Simon Mauras (France), Araz Yusubov (Azerbaijan)
- ISC: Michal Forišek (Slovakia), Jakub Łącki (Poland)
- ITC: Hamid Zarrabi-Zadeh (Iran)

The nominees gave brief presentations. Only the IC positions will require an election during GA 5, since the other positions are uncontested.

#### **15. Discussion on Honourable Mentions**

At this point the GA moved to an informal discussion on Honourable Mentions. This was akin to the group discussions seen during an on-site IOI: it was not a formal part of the GA meeting, and so is not minuted here. The aim was to determine which of the eight submitted criteria was best placed to bring to GA 5 for a formal vote. The options were:

- Top 70% overall (Mile Jovanov, IC proposal from last year);
- Top 60% on any one day (Giorgio Audrito, Italy & David Mestel, UK);
- Top 50% on any one day (Giorgio Audrito, Italy & David Mestel, UK);
- Top 70% overall or top 50% on one day (Mile Jovanov, Macedonia);
- Success in a predetermined set of subtasks (Ubai Sandouk, Syria);
- Full success in at least one task (Wolfgang Pohl, Germany & Mārtiņš Opmanis, Latvia);
- Top 40% in at least one task (Hirotaka Yoneda, Japan);
- No Honourable Mentions (Troy Vasiga, Canada).

The discussion ran for roughly 90 minutes. At the end, a straw poll was taken using the Schulze method, which is a voting method that allows people to submit ranked preference lists, and which avoids common problems such as similar options splitting the vote. The criterion with the most support was the third option: top 50% on any one day.

### **Friday 25 June: GA Meeting 4 11:00 – 12:00 SGT**

#### **16. Approval of GA minutes from IOI 2020**

IOI Secretary Benjamin Burton noted that he had mailed the minutes from GA 2020 to the IOI-GA mailing list the previous day. He asked for delegation leaders to read these minutes and send any comments to the secretary, and the GA would vote to approve the minutes during GA 5. He also thanked those who had already written back with comments.

## **17. Update on Honourable Mentions**

Benjamin Burton reported the result of the informal GA discussion on Honourable Mentions, in particular noting the winning criterion of awarding contestants who rank within the top 50% on any one day. He has mailed the IOI-GA list with a full analysis of the informal vote (which used the Schulze method), and he will mail a full set of draft regulation changes after the current GA meeting (GA 4) to implement the proposed criterion for Honourable Mentions. He asked leaders to read these changes and send any comments to the secretary, and the GA will vote on this during GA 5.

## **18. Eligibility issue**

Benjamin Burton spoke on an eligibility issue that had been brought to IC, and had also been discussed in public forums outside the IOI:

- The issue involved an IOI contestant who is enrolled at university and also competing in ICPC. The IC's understanding is that the contestant was enrolled full-time at university since September 2020, but also enrolled at a secondary school in June 2021.
- The IC had informed the delegation leader that the contestant was eligible, since IOI regulations are only concerned with secondary school enrolment, though also they were unaware that the university enrolment was full-time. The IC are seeking further clarification from the delegation leader on this dual enrolment, and are awaiting their reply.
- Benjamin talked through the current eligibility rules in detail, and explained that regardless of how this particular case pans out, the IC will be drafting a proposed change to the eligibility rules to make it clear that full-time tertiary students are not eligible, since the IOI is fundamentally a competition for secondary school students.

Michal Forišek (Slovakia) asked what happens if it is determined that the secondary school enrolment was only formal, without any attendance. Benjamin explained that, according to the IC's understanding, the secondary school and university are in two different countries, and the contestant is currently located in the same country as the secondary school (which does not answer the question, but does nevertheless provide more data). The IC is waiting on the further information that has been requested from the delegation leader before making any firm decisions.

Benjamin briefly discussed the one recent precedent for such issues, involving two students who were deemed ineligible in IOI 2016. In this case their delegation leader confirmed that they were tertiary students, but did not volunteer any information about any simultaneous secondary enrolment (and the IC did not ask). The case here in 2021 is not necessarily the same.

Alexander Buslavsky (Belarus) noted that it is common for their students to have some university classes while still being enrolled in secondary school; however, they still have yet to finish their high school final examinations. In this sense they do not see the tertiary classes as an eligibility problem. He also noted that completing a full-time first-year university programme while still at secondary school could well be feasible for an IOI contestant, given the relatively lightweight nature of first-year studies. Benjamin noted that whatever changes the IC does propose, the intent will be to not exclude students who do university courses as an extension to their secondary studies.

Steven Halim expressed the host's surprise that the secondary and tertiary enrolments were both full-time. Sun Teck Tan (IOI 2021 host) also noted that the contestant in question has done extremely well during competition day 1. He expressed concern that the secondary enrolment could be "in name only", and he interprets the requirement for full-time secondary study as preventing contestants from being university students simultaneously and thus having an unfair advantage.



Benjamin noted that perhaps the student is genuinely doing two full-time loads (which could be possible for talented students such as we have at IOI), and we do need this additional information from the delegation leader to see the full picture.

Troy Vasiga (Canada) asked what the course of action would be if the IC does not receive the requested information from the team leader. Benjamin said that the IC does have a certificate from the school certifying the contestant's enrolment, and they cannot ask for more evidence of the enrolment without questioning the integrity of the school. He therefore suggests that – given the evidence of secondary enrolment and the current IOI eligibility rules – he finds it hard to see how we would be able to declare the contestant ineligible this year. He suggests the real solution is to update the regulations going forwards so that we have better clarity around tertiary enrolment in future years. (He also noted that he cannot speak here on behalf of the IC, who will meet to discuss the issue later in the day).

Fredrik Niemelä (ITC) asked if it was the IC's opinion that the intent behind the regulations (regardless of the specific wording) was to exclude full-time tertiary students. Benjamin said that the IC's initial ruling for this case was based on a reading of the exact regulations as written (which was all the IC had to work with). He said that the *intent* of the rule was for to the GA to decide, since this is a significant question, and it is the GA that ultimately "owns" the IOI – and therefore it is the GA who should decide how we should treat tertiary enrolment in the regulations going forwards.

#### **19. Presentation of tasks for Competition Day 2**

HSC member Ken Sung presented the tasks for Competition Day 2. Again the task presentation moved to Matrix, and the zoom meeting ended at this point. As with day 1, team leaders had the opportunity to lodge objections, but there was no GA vote: the final approval was made by ISC/HSC.

#### **Monday 28 June: GA Meeting 5 19:00 – 22:00 SGT**

#### **20. Report and summary of appeals for Competition Day 2**

HSC Chair William Gan said there were no major technical issues on day 2, and CMS had no noticeable downtime. Technically, everything went smoothly, and he thanked HTC for making this happen.

There were six requests for extra time, all made during the last 30 minutes of competition, and all rejected by ISC:

- One due to the contestant receiving the wrong version of a printed task statement, rejected because ISC were unable to determine how much time was lost, and were also unable to verify the issue with the contestant.
- One with no reason given, despite the ISC asking the contestant for clarification.
- One due to a wi-fi connectivity problem, rejected because the contestants could still work on the tasks with printed statements.
- One due to a contestant starting an hour late, rejected this because this is not sufficient grounds for extra time; this was requested again one minute before the end of the contest.
- One due to connectivity issues with CMS.
- One due to the contestant's computer freezing for 20 minutes, rejected because ISC could find no evidence of the freeze, and the computer had maintained an active connection with CMS throughout this time.

One appeal was received: a contestant could not solve subtask 2 of a problem, but they solved subtask 1 despite their code not being correct for subtask 1 (i.e., it was possible to create a test case for subtask 1 that their code would fail). This led the contestant to debug in the wrong direction for 30 minutes. The contestant argued that if the test cases were stronger then they could have solved subtask 2, and thus should receive the marks. ISC rejected this: they cannot award marks for a subtask that was not solved during the contest, and contestants should know that test cases cannot cover all possible inputs.

William summarised the questions that had been received through CMS: most were answered with “Answered in task description”, “No comment”, or “Invalid question”. There were some exceptions: “Can I leave if I solve all the tasks?” (no, since they could miss any unanticipated updates, and there could be questions around communicating with other contestants); and “Does  $\text{move}(t,y)$  retain the values of the bits in  $y$ ?” (yes, since it was deemed this was not 100% clear in the task statement). He thanked all the team leaders for their objections during the translation session, which helped make the task statements as clear as possible.

There were no changes to the statements, graders or tests, no rejudges, no submissions using the backup mechanism, and no appeals that requested rejudging submissions. William thanked the HSC and ISC for helping ensure that the contest ran as smoothly as possible.

The number of official contestants remains 351, and all of these contestants had a positive score in day 2 (an outcome that has not been achieved in a number of years). William finished with some statistics on submissions and compilation errors.

Japan asked for the number of official countries; William said there were 88.

## **21. Eligibility issue, revisited**

IOI Secretary Benjamin Burton gave an update on the eligibility issue discussed in GA 4 (see item 18). The IC now have further information on the contestant, and have confirmed to their satisfaction that the secondary enrolment is genuine and significant. Since the IOI regulations do not prohibit simultaneous enrolment in secondary and tertiary education, the IC has confirmed again that the student is eligible for IOI 2021. The IC congratulated the contestant for their performance, and thanked the delegation leader for their cooperation.

## **22. Financial report, budget and registration fee**

IOI Treasurer Eljakim Schrijvers presented the budget (both projected and effective) for 2020-2021, and also the projected budget for 2021-2022. He noted some of the irregularities around the fact that registration fees were waived for IOI 2020 and were collected early for IOI 2021, and noted that the IOI is moving from cash-based to accrual-based accounting, which gives a better long-term view of the IOI's finances. Some countries are behind (or a little ahead) with their payments due to issues with bank transfers, and this can be resolved when IOI returns on-site in 2022.

Wolfgang Pohl (Germany) asked why we are moving to accrual-based accounting, given that the IOI holds no assets other than cash. Eljakim explained that it makes the overview easier to understand in scenarios where some countries pay by bank before IOI and some pay by cash during IOI.

The GA were given the opportunity to request a discussion or vote on the finances, but there were no such requests.

#### **24. President's report**

IOI President Greg Lee began by thanking the IOI community for pulling together to make IOI happen this year. Behind the scenes, the IC had held many more online meetings throughout the year, with the discussion largely centred on how to run a full online IOI. He welcomed the new countries Ecuador and Peru as invited observers, and looked forward to their participating with a full team in 2022. He also highlighted that IOI now has a second multi-year corporate sponsor, alongside Acer, and we continue to seek more sponsorship to help offset the cost of hosting an IOI.

Finally, Greg acknowledged the hosts: whereas last year was a minimal online IOI, this year was a full IOI experience, which would not have been possible without the dedication and professionalism of the Singapore host team, who have set a very high bar for future IOI hosts. He thanked Sun Teck Tan, Steven Halim and the entire host team, at which point all of the leaders and deputy leaders turned on their cameras and gave the hosts a round of applause for a job well done.

At this point, GA Chair Steven Halim (representing Singapore) also thanked the team leaders, deputy leaders, coaches, translators and proctors who worked with the host operations team to make the competition a success, both last year and this year.

#### **25. Secretary's report**

IOI Secretary Benjamin Burton noted that this year was much calmer than the previous year. There was the usual corresponding and ongoing tasks, which he encouraged GA members to read about in the IOI Regulations (E3.8). He also encouraged people to volunteer, since the position of Secretary will become vacant this evening, and he again thanked the previous Secretary Margôt Phillipps for her hard work.

Regarding new countries: in addition to the successful applications by Ecuador and Peru, there are ongoing discussions with several other countries, and we are working with them to help them understand what needs to be done.

A GA member had asked for a report on any exceptions to the eligibility requirements. We had received several questions on age limits and one on studying abroad, both of which are covered by the current IOI Regulations, but no exceptions for eligibility were requested for IOI 2021. Historically, the last time the IC received an request for an exception was in IOI 2019, when a student had moved from country A to B, had studied in country A during the eligibility window, but wished to compete for country B which was their new permanent home; this exception was granted.

#### **26. Approval of GA minutes from IOI 2020**

Following up from item 16: Benjamin Burton noted that revised minutes had been mailed to the GA with only cosmetic changes from the initial version. There were no comments or questions from the GA, at which point the GA voted to accept the minutes from IOI 2020 (61 yes, 0 no, 1 abstain).

#### **27. ITC report**

ITC Chair Fredrik Niemelä listed the current ITC members, and reminded the GA of the three main purposes of ITC: (1) to assist the current host; (2) to develop and maintain long term tools and systems; and (3) to transfer knowledge and experience to future hosts.

Again the cooperation with the host worked very well. Since the contest was again online, and since most of the issues with an online IOI had been worked through in 2020, there was less hands-on work

than usual for the ITC to do, and in particular there were no technical issues at all. He highlighted the excellent work done by the HTC.

He outlined the supporting software tools that ITC maintains, all available at <https://github.com/ioi/>, and encouraged countries to use these tools in their own competitions. There is also a technical checklist for future hosts; this was previously on the IOI wiki, but the wiki has now been retired and so the checklist has moved to github. There is further information on the ITC webpage at <https://itc.ioinformatics.org/>, and contributions from the community are very welcome.

He listed the mailing lists, and in particular encouraged people to ensure they were subscribed to the IOI-Announce list, which is low-volume and moderated. The IOI-Training list has had no traffic at all since February 2019, and if this list stays empty for another year then the ITC may retire it.

Regarding supported languages: the ITC does not plan to add Python since the post-IOI surveys show a negative trend regarding Python from year to year. However, Python remains the most popular language that is not supported, and so the ITC will continue to ask about it in the surveys.

Mile Jovanov (IC) asked if any of the software that managed this online IOI is available for use. Fredrik said there was a new IOI repository (Contestant VM), which will be made available.

Wolfgang Pohl (Germany) asked if ITC is looking into CMS development as well. Fredrik said there are no CMS developers currently on ITC (which is not ideal), but ITC are keeping an eye on it.

Mārtiņš Opmanis (Latvia) asked if the translation system is currently being developed. Fredrik said that yes, there had been bugfixes and improvements, and encouraged leaders to talk with ITC if they are aware of any specific errors. Jonathan Irvin Gunawan (ISC) gave the repository for the translation system and encouraged people to file issues or requests there. Indonesia will fork from this repository for IOI 2022.

## **28. ISC report**

ISC Chair Jakub Łącki listed the current ISC members, and thanked Ali Sharifi Zarchi whose term ends this year. He talked through the virtual meeting in February, where the ISC selected 9 of the 17 submitted tasks, and encouraged people to submit task proposals for IOI 2022. He listed and thanked the authors of the selected tasks, and noted that backup task authors must remain anonymous in case the tasks are resubmitted for a future IOI.

Jakub continued the discussion on Python which was also raised in the ITC report. He noted that, if Python were added, it would most likely need to be a second-class language; i.e., some tasks may not be completely solvable in Python. If people are keen on adding Python, the ISC would need more data (e.g., how many points Python would score in past IOIs, and how consistent this is from year to year). He encouraged anyone who is interested in adding Python to volunteer to help gather this data by writing to the IOI-SC mailing list.

Ubai Sandouk (Syria) asked about the bronze medal cutoff: the regulations require that we resolve ties by rounding down the number of medallists, and this year there are three contestants tied at this cutoff point who would not receive a medal. He asked for the IOI to be lenient and round up this year, due to the differences in environments and setup at the different online contest sites, which could have been a little unfair to some participants.

IOI Secretary Benjamin Burton noted that this question needed to be put to the General Assembly, since it was asking to override the IOI Regulations. While waiting for comments on Matrix, he outlined the history behind the current cutoff regulations, dating back to when final scores were kept secret and the cutoffs were decided by the GA based on unlabelled graphs. There were some comments on Matrix: Wolfgang Pohl (Germany) acknowledged it was tough but he preferred to stick to the predetermined allocation, and Troy Vasiga (Canada) worried about implications for future years if we changed the cutoffs now. The discussion continued on Matrix while a formal vote was set up by the technical team.

Benjamin drafted the following question for a formal vote: *Is the GA willing to override the regulations this year and allocate medals to more than 50% of contestants (by resolving the tie in the other direction)?* Ubai was satisfied with the wording, and highlighted that the reason for this was the special case of the online IOI, and the differences between the different sites that may have been unfair to some students. He acknowledged that his own student was affected, but noted that if he had not made this appeal then someone else might have. Ricardo Anido (Brazil) expressed concern with the wording, which was then changed to: *Is the GA willing to allocate more medals this year than the usual  $\leq 50\%$  described in the regulations?* There was some discussion about the threshold for success, since we were overriding but not changing a statute: a 50% threshold was proposed with the option to discuss further if the result was in fact found to lie between  $1/2$  and  $2/3$ .

Due to technical issues, the vote was deferred until later in the meeting.

### **29. Announcement of projects**

IC Member Mile Jovanov said there would be a call for projects in the fall, as usual, and that we had funds allocated in the budget for this. The submission deadline would be around mid-December. He encouraged people to think about possible ideas and submit a proposal.

### **30. Elections for President, IC, ISC, ITC**

The positions for President, ISC and ITC did not require an election; however, an election was required for the three IC positions. Scrutineer Troy Vasiga talked through approval voting, and explained how the anonymous voting would work via unique codes that were distributed to team leaders and deputy leaders. IOI Secretary Benjamin Burton proposed a single election with the 3-year, 2-year and 1-year seats going to the first, second and third ranked candidates; there were no objections.

Later in the meeting (during the Honourable Mention discussion), Troy presented the results on behalf of the scrutineers: Ricardo Anido (38), Zide Du (23), Catherine Espinoza (41), Simon Mauras (37), Araz Yusbobov (42). Araz, Catherine and Ricardo will take the 3-year, 2-year and 1-year seats respectively.

### **31. ISC report, continued**

At this point the GA took a formal vote on the issue raised earlier during the ISC report (but with a minor rewording): *Should we allocate more medals this year than the usual  $\leq 50\%$  described in the regulations?* The proposal failed to pass (14 yes, 44 no, 6 abstain). GA Chair Steven Halim thanked Ubai Sandouk for raising the issue, and Ubai thanked the GA for considering the request.

ISC Chair Jakub Łacki continued the ISC report from item 28. He noted in response to a question that the ISC were not planning to add Python as a new language; rather they are seeking more data on whether this is something that could/should be done. ISC is not looking into any other languages at present.

There were no further questions for the ISC.

### **32. Results and confirmation of awards**

Jakub Łącki summarised the final results: there were 351 official participants, with 30 gold medals, 58 silver medals (with a 4-way tie at the cutoff), and 85 bronze medals. He congratulated all 351 participants, as well the host scientific and technical committees for a remarkably smooth competition. The GA then voted to accept these results (52 yes, 0 no, 0 abstain).

### **33. Vote on regulation changes**

IOI Secretary Benjamin Burton noted that he had mailed the GA a new draft of the regulation changes. The new revision included several cosmetic changes, and also indicated that hosts should be prepared for a scenario where fast regulation changes are not accepted by the GA (N7.4). There were additional suggestions from the GA that were not being rushed to a vote today, since the IC needed more time to deal with them properly: these included adapting the regulations to work seamlessly with COVID-19 scenarios, and incorporating the Code of Conduct formally as a part of the regulations.

The GA then took a single vote to accept all of these regulation changes (which did not include Honourable Mentions, for which there would be a separate vote). This vote passed (54 yes, 0 no, 0 abstain).

Benjamin then referred the GA to the Honourable Mention regulation changes, which had also been mailed to the GA – these changes implemented the “top 50% on any one day” proposal. The question of ties had been discussed on Matrix, and as a result of this discussion the proposal was to use strict rounding (i.e., round to a higher cutoff with fewer Honourable Mentions), for consistency with the cutoffs for bronze medals.

Mile Jovanov (IC) repeated his arguments as to why Honourable Mentions were an important addition, and asked those countries that usually win medals to consider this proposal in the spirit of inclusiveness.

The GA voted on whether to accept the proposed regulation changes for Honourable Mentions, with a 2/3 threshold required to pass (since the changes modify the statutes). This vote passed (51 yes, 13 no, 2 abstain). Honourable Mentions will be introduced next year for IOI 2022.

Mile Jovanov thanked those who supported the decision, and made a new proposal to implement Honourable Mentions this year (IOI 2021). Steven Halim expressed some concern that the hosts would not have time to implement it (with the closing ceremony immediately after this meeting), and Benjamin suggested that, since the GA had already approved the results, the hosts had already passed the flag to the next host and IOI 2021 was closing in a few hours, we should follow the normal timeline and implement them in IOI 2022. There was no further support for implementing them in 2021 and so the discussion on Honourable Mentions closed at this point.

Benjamin then followed up on the discussion regarding eligibility of contestants. As promised, the IC had drafted a change to the regulations to clarify scenarios like the one faced this year, also incorporating feedback that had been received from the GA. This change has been mailed to the IOI-GA list: in summary, it adds the requirement that, during the eligibility window, a contestant is not enrolled in a degree programme at a tertiary education institution with a half-time or greater load. It also explicitly states that exception can be requested through the IC. The specific wording was chosen with the intent of identifying “genuine” tertiary students and not inadvertently excluding secondary students who are

doing extension programmes through universities. He also noted that the student in question from IOI 2021 (discussed in items 18 and 21) who was eligible under the current rules would become ineligible under the proposed rules, and noted that it is for the GA to decide whether this is what they want.

He indicated that, if this proposal fails, there is a smaller change that the IC would propose instead (which has also been mailed to the IOI-GA list); we will come back to this if the first change does not pass.

Eduard Kalinichenko (IC) noted at this point that, had the student in question this year applied for an exception under the proposed new rule, it is quite possible given the unusual circumstances that the IC would have granted it anyway, and therefore suggested – if this resolution passes – that it could be helpful for the GA to offer their opinions on this specific case also.

At this point a vote was taken for the proposed change, with a 2/3 majority required for success. This vote passed (40 yes, 16 no and 7 abstain, noting that by A3.2 abstains are not considered in the 2/3 majority calculation).

To finish, Benjamin noted that this has been a very messy year with a lot of different changes, some controversial. He thanked everyone for being so engaged in the meetings, on the chat and on the mailing list, and said that this was the General Assembly working at its best.

#### **34. Reminder of Code of Conduct for closing ceremony**

IOI President Greg Lee reminded the GA members of the IOI Code of Conduct, and asked them to remind their delegations also. The online closing ceremony is broadcast around the world, and he asked leaders to remind their students to be respectful to the host country and the speakers when commenting on social media and in the YouTube comments.

#### **35. Proposals from GA members**

Hirota Yoneda (Japan) commented on the practice session, noting that many contestants did not achieve at least two positive scores for problems. He suggested the practice session should include one very easy task, and should also include an output-only task in order to better simulate a real IOI contest. He suggested that the practice session should be more like a real IOI. Jonathan Irvin Gunawan (ISC) said that the practice session tasks were the same as the tasks used for the online practice session, which was accessible before the IOI week, and so he hoped that contestants had had time to discuss the tasks beforehand. He agreed with Hirota that the focus of the practice session should not be solving the tasks but rather submitting solutions, testing CMS, and so on. He acknowledged the issue of task types, and said they would try to put all possible task types in future practice contests.

Fredrik Niemelä (ITC Chair) followed up on the question of changing from approval voting to ranked preferential voting (e.g., the Schulze method), as was used in the informal discussion this year to decide the best criteria for Honourable Mentions. He asked whether the GA as a whole wants to pursue this, and/or whether the IC were already working on it. Benjamin Burton (IOI Secretary) said that it will be on the IC agenda for February regardless, since he will propose it if nobody else does. He reminded the GA of why the Schulze method was selected (rich expression of preferences, encourages honest as opposed to strategic voting, avoids splitting the vote), and he asked the GA to send their feedback to IC now they have seen such a system in action.

Fredrik also asked about some other regulation issues that we had not voted on; Benjamin noted that there had been requests to incorporate home schooling into the eligibility rules as an acceptable alternative to secondary school, but the IC had been unable to find a satisfactory wording in time for this final GA meeting. The IC will work on this and propose a regulation change during the next IOI, and in the meantime he reminded delegation leaders that home schooled students are considered eligible to compete.

### **36. Other business**

There was no other business.

### **37. Closing and dates for IOI 2022**

IOI President Greg Lee reminded the GA of future IOIs, in particular IOI 2022 in Indonesia which will be held from 7-14 August in Yogyakarta. He said that we all look forward to an on-site IOI and that the hosts and the IC would take the COVID situation into consideration, and he assured everyone that there would be an IOI in 2022 and beyond. IOI 2023 will be in Hungary and IOI 2024 will be in Egypt; however, there was no bid received this year for IOI 2025. There was one country that had expressed interest, and the IC will work with them in the coming months; however, he encouraged everyone to have discussions internally and with their governments about the possibility of hosting IOI in the future (and specifically 2025 or 2026). The IOI is not possible without a host country. He indicated that the deadline for submitting bids for IOI 2025 would be extended to October 1. For IOI 2026, bids should be received before the next IOI.

Finally, as his term as President was coming to an end, Greg thanked everyone for giving him the opportunity to serve in this capacity: of his 28 years in IOI, the last four had been most fulfilling. He was pleased to have help secure multi-year sponsorship from Acer, and highlighted the benefits of this sponsorship for the IOI and also the host countries. With the help of Sun Teck Tan (IC), a new corporate sponsor has joined for at least the next three IOIs, and he hopes that we can bring in more external funding for future hosts.

He acknowledged the impact of COVID, and highlighted that every country's situation was different – we need a plan that includes not some countries, but all countries. These have been uncharted waters, and he thanked the IC for helping shape the online IOIs that we have had to lean on for the past two years. He thanked the IC, ISC, the ITC, team leaders and deputy leaders, Sun Teck Tan, Steven Halim, and the entire Singapore host team for executing the plan to perfection. He said that he just made wishes, and these were the people who made the wishes come true.

He finished with his best wishes and the hope to meet everyone again in person in Indonesia next year. (Spoiler: this time we did!)