

ISIJ Rules V7/2023

1. Preambles

1.1. These Rules cover Competition Procedures. This draft may be revised to address omissions or inconsistencies, but will not change substantially.

1.2. The terminology used in this document is from IOI Regulations.

1.3. *Delegation Leaders have the responsibility of ensuring that all members of their delegation fully understand these rules and abide by them.*

2. Competition Schedule

2.1. Cup ISIJ final stage. There will be six competition days. The Cup rounds include: Training tour for 4 h. and 3 tasks (qualification of the participant confirming the distribution into groups B (basic) and A (advanced for participants over 15 years old)) and Type Tour (this tour is a blitz tour (20 minutes) and tests the technical input keyboard skill and includes only one task), Mathematical blitz round of mathematical computer science problems (2 h.), Coder-tour for programming in C++ (3-4-hour), Marathon tour (as IOI, on 3 tasks for 4 hours), a Estafette round (1hour on one IOI task, different for each team member).

2.2. Countries can hold the ISIJ National Cup as the Spring Online Qualifying Stage, which is provided by the ISIJ International Committee on two rounds (math tour and programming tour) on dates agreed upon. The National Cup is held for 4 days: the first day is a trial round, days 2 and 3 are competitions, day 4 is summing up and awarding for groups A and B (25% of the best rated by the sum of points of the two rounds are Winners, the next 50% are Prize-winners, the remaining 25% are participants, with equal points on the boundary of the results is decided by the Jury of the stage), as well as the formation of teams from the country for the final International stage of the ISIJ Cup. The registration of teams for the qualifying stage of the Cup, as well as the number (by quota) and the composition of teams for the final stage of the Cup is determined by the country of the ISIJ National Cup.

2.3. Additional tournaments on the applied task can be held as a Robot tournament and a chess blitz tournament with full-time participation in the second half of the competition days (training days and competition day)

2.4. No later than 10 days before the start of the Cup, the countries must register the participating teams based on the ISIJ Regulations, taking into account quotas, receive a personal Login and Password for each participant to log in to the competition system and put them to each participant in a timely manner.

2.5. All tours are conducted on the online competition platform Yandex Contest, which corresponds to the competition procedure for IOI.

3. Tasks

3.1. Each contestant will receive the English or Russian text of the tasks on each contest day.

3.2. In addition, each contestant will have online access to the text of tasks and in electronic format (PDF).

3.3. The number and kind of files that the contestant must submit as a solution (for example, "source code of the program in a text file") will be specified in the task statement.

3.4. Direct access to any file, excluding standard input and standard output, is forbidden. In some tasks reading from file and writing in file this could be not necessary at all because data will be exchanged through the interfaces specified in the task statement

3.5. Each task will be checked on set of single test cases or/and groups of test cases with specific properties (subtasks), each worth a portion of the total points. Points for subtask will be assigned only when all test cases of the subtask are solved.

3.6. Time limit for a single test case and memory limit will be specified for every task.

When few tests are grouped in a subtask then time limit is applied for each test case in

the group separately. The memory limit is on the overall memory usage including executable code size, stack, etc. In general, time and memory limits will be generous.

3.7. All necessary files regarding the statement of a task as well as electronic documentation will be provided through the grading system.

4. Open Practice Session (trial round)

4.1. There will be online Practice Session prior to the first competition day, to familiarize all contestants with the grading system. The trial tour without time limit.

4.2. Contestants may bring printed solutions to the practice tasks, on paper only, during the Practice Session.

4.3. Participants use the tour schedule and group entry links on the Yandex Contest website in a special section of ISIJ - <https://contest.yandex.ru/ISIJ?lang=en>

4.4. Participants must complete a trial round to verify their Login and Password and report possible problems to their coach. Only the coach of the team solves all the problematic issues of the team members with the ISIJ Scientific and Technical Committee.

5. Competition Equipment and Environment

5.1. All tours are conducted in the Yandex Contest online platform and are used (in the case of programming tasks) the C++ language. The Yandex competition system is provided for ISIJ by Yandex, including special ISIJ pages in Russian and English on the Yandex.Contest website.

5.2. Participants can use computers with Windows or Linux operating systems. In each operating system, the organizers install the necessary programming tools in C++, such as Code::Blocks, with the compiler package MinGW (Linux и Windows).

5.2.1. C++ compilers on Yandex.Contest supports 17 and 20 language standards. Therefore, the C++ 17 standard is usually set in Code::Blocks

5.3. In case of force majeure (technical failures) during the competition, the team coach must contact the jury to consider the possibility of extending the tour time.

5.4. In order to hold the National Cup (Spring Online Qualifying Stage of the ISIJ) in the country on two rounds – the mathematical tour and the programming tour - it is possible to add Python and Pascal languages to the programming tour with the pre-installation of the appropriate development environments on the participant's computer along with the necessary compilers:

- Python: Python 3.9 or 3.11 (interpreter for Linux or Windows), development environments - PyCharm (Linux or Windows), Wing IDE (Linux or Windows)

- Pascal: PascalABC.NET (Windows, Mono is required under Linux), Free Pascal (Linux or Windows), compilers are built into development environments.

5.5. At the same time, according to the results of the National Cup ISIJ, the winners of the National Cup (25% of the total number of participants according to ratings in groups A and B separately according to the sum of points for two rounds) who used C++ are included in the teams for the final International stage of the ISIJ Cup.

6. Supplies

6.1. In the competition room, working paper and writing tools will be provided. On the competition days, contestants may not bring anything into the competition rooms, except for the following items under the provision that they cannot transmit or store any data in electronic or printed format (other than the purpose for which they have been designed):

- clothing,
- keyboards (without wireless and/or calculation functions),
- small mascots,
- English dictionaries,

- video camera.

6.2. If a contestant wants to bring a keyboard, small mascots or English dictionaries to the competition, these must be submitted to the technical staff (p.6.1) during the practice competition day. Any of these will be checked and, if cleared, will be given to the contestant in the first competition day. After the first competition day, the contestant must leave these items on his or her workstation if he or she wants to use them during the next competition day. Once again these will be checked and, if cleared, will be given to the contestant in the next competition day. After the last competition day, the contestant must take all of these items with him or her.

6.3. Any attempt to bring any other item into the competition room will be considered cheating. In particular, during competition rounds it is strictly prohibited to bring:

- any computing equipment (e.g. calculators, laptops, tablets, smart watches, activity tracker, and not presented in advance keyboards),
- any books, manuals, written or printed materials,
- any data storage medium (e.g., CD-ROMs, USB drives, flash cards, micro-drives),
- any communication devices (e.g., mobile phones, radios of any sort).

6.4. Contestants comply with the ISIJ Participant Code and perform tasks independently, excluding external consultants. The jury reserves the right to check decisions for anti-plagiarism.

6.5. Online participants can work at the workplace at home or in the classroom under the supervision of a coach, the jury has the right to request the inclusion of video surveillance.

6.5.1. The team coach is responsible for the correct work of the participant during the tour, as well as in the case of the remote presence of the participant outside the school – supervises video surveillance at the participant's place of residence and preventing the use of the browser by participants, except for logging into the competition system.

7. Competition and Grading

7.1. All contestants must wear their ID badges during the competition, use the personal Login and password assigned by the jury to access the contests for access to tours in their age group A (advanced for participants over 15 years old) or group B (basic for participants up to 15 years old inclusive).

7.1.1. All coaches get access to the Cup rounds in Group C and can get points for solutions and analyze the complexity and specifics of tasks independently.

7.2. Each contestant will have a pre-assigned workstation. The workstations have network access to the grading system, as well as facilities for printing.

7.3. Contestants should be in their seats at least 5 minutes prior to the start of the competition. Contestants must find their assigned computer, sit down, and wait for the competition to begin without touching anything (such as keyboards, mice, pen or paper).

7.4. Contestants must submit their solutions for tasks by using the grading system.

7.5. During the competition, contestants may submit written questions concerning any ambiguities or items needing clarification in the competition tasks. Questions and comments must be submitted through the grading system or on the provided Clarification Request Forms, expressed either in the contestant's native language or in English. If required, delegation leaders will translate their contestants' questions into Russian/English after they are submitted and before they are sent to the Scientific Committee. The Scientific Committee will respond to every question submitted by the contestants during the competition. Since this might take some time, contestants should continue working while waiting for the answer to their questions.

7.6. Contestants should phrase their questions so that a **yes/no** answer will

be meaningful.

7.7. Questions will be answered with one of the following without any translation (so the contestant have to know their meaning):

- "YES"
- "NO"
- "ANSWERED IN TASK DESCRIPTION (EXPLICITLY OR IMPLICITLY)" - The task description contains sufficient information. The contestant should read it again carefully.
- "INVALID QUESTION" - The question is most likely not phrased so that a yes/no answer would be meaningful. The contestant is encouraged to rephrase the question.
- "NO COMMENT" - The contestant is asking for information that the Scientific Committee cannot give

7.8. There is no restriction on the number of times a program may be edited, compiled, and run on the workstation.

7.9. Grading and evaluation take place on the grading system, which provides a same execution environment to that of the contestant workstation. Grading workstation will have the same hardware and software configuration as contestants' workstations (without programs for monitoring and the grading system)

7.10. To avoid overloading the grading system, there are two restrictions on the number of submissions:

- Contestants may submit a solution to each task at most once per 30 seconds.
- Contestants may submit at most 100 solutions for each task for each contest day.
- Participants can use no more than 3 packages of solutions for each problem on the Math tour.

7.11. Each submitted source program must be written in C++ ONLY, it must be smaller than 256 KB, and the evaluation server must be able to compile it in less than 10 seconds and at most 256 MB of memory.

7.12. Contestants can use the grading system to view the status of their submissions and get a short report on the compilation errors of their source code.

7.13. Full feedback will be available for some of some tasks, indicating whether each single test case or subtask has been solved. For the other tasks a partial feedback (for at least one test case) will be given.

7.14. The score for each submit will be the sum of scores of solved test cases and/or groups of test cases. The final score for a task will be the *maximum score of a submit across all submissions*.

7.15. If a test case, which is chosen for feedback, is not solved, then the grading system will give the feedback, which will be one of the following (feedback is not translated and each contestant should understand its meaning):

- OK - submission is accepted,
- WA - Wrong answer,
- CE - Compilation error,
- RE - Run-time error,
- PE - Format of output error
- TL - Time-limit exceeded,
- ML - Memory limit exceeded.

Inputs are ordered the same way in all the runs. No information on the actual data, the output produced by the contestant solution or any other execution details will be given to the contestant

7.16. It should be noted that the score reported in the full feedback is only provisional. There are two ways how this score may change after it has been reported to the contestant:

- Due to a successful appeal after the contest.
- In some cases the contestants' submissions may be re-evaluated. This reevaluation may sometimes lead to a different total score. (E.g., if a solution behaves

nondeterministically or runs very close to the time or memory limit.) In such cases, the final score for the submission is the score for its latest reevaluation. This change in scoring cannot be appealed. Note that the final score for each task is still the maximum score over all submissions.

7.17. Contestants may ask the support staff for assistance at any time. The staff members will not answer questions about the competition tasks, but will deliver Clarification Request Forms and printouts, help locate toilets and refreshments, and assist with computer and network problems. The only manner in which contestants are allowed to access the network is via the grading system: even running a single "ping" command is strictly prohibited and may lead to disqualification.

7.18. Contestants should never attempt to fix or debug or even check computer or network problems themselves; instead, they should ask for assistance.

7.19. . At ending the competition, contestants must immediately stop working and wait at their desks without touching the computers or anything on their desks. An additional announcement will be made instructing them to leave their tables and exit the competition room.

7.20. At the end of the first competition, any previously submitted items a contestant would like to use during the next competition should be put in the provided plastic bag. All other items should be taken out of the competition hall, including printouts. At the end of the second competition, contestants should remove all personal items including their mascots and dictionaries or any other previously submitted item; nothing should be left behind.

8. Disqualification and Cheating

All of the above actions may lead to the disqualification of the participant by the decision of the Jury.

8.1. *Common rules of Disqualification.* Contestants must use only the workstation and account assigned to them on each competition day. In particular, contestants must not:

- attempt to submit illegal programs as discussed above, nor try to tamper with or compromise the grading system;
- attempt to gain access to root or any account other than the one assigned to them;
- attempt to store information in any part of the file system other than specified by Contest Environment;
- touch any workstation other than the one assigned to them;
- attempt to access any machine on the network or the Internet, other than to submit tasks and view submission results through the grading system;
- attempt to alter the boot sequence of any workstation;
- communicate with other people during the competition, other than the staff and/or Scientific Committee members,
- if a participant used plagiarism in the tour, **his results for the tour are reset**, if he repeatedly used plagiarism, then **he is excluded from the participants of the ISIJ Cup**.

8.2 *Disqualification for online competition.* Disqualification on the tour may be subject to participants who:

- they use plagiarism (after the tour, the jury has the right to check for plagiarism from the participants), if a participant detects plagiarism in the task of the tour, **his results for the tour are reset**,
- if a team member violated the rule to use the entrance only to one stage of the Estafette tour assigned to him by the coach, that is, if at least one of the team members used several stages of the Estafette to enter, then **the results of the team in the Estafette are reset**,

9. Appeal Process

9.1. Provisional grades, based on tests, are available immediately to competitors. In the event of an error with the test data, the Scientific Committee will attempt to, but is not obligated to follow the following process:

- Every attempt will be made to fix test data and regrade all solutions as quickly as

possible.

- Additional test data may be added only when the grading data does not meet the intention of the Scientific Committee from before the contest.
- Late detections of issues, especially during the last 2 hours of the contest, may be grounds for extending the length of the contest.

9.2. The hidden test data will be made available electronically in the competition area during 1 h. the scheduled time after tour.

9.3. The team leader may appeal to the ISIJ Jury no later than one hour after the end of the tour.

9.4. In the event that every submission of a task should be re-graded and re-scored as a consequence of an accepted appeal, note that re-scoring may result in a higher or lower score for any contestant. Should anyone's score change after grading results have been published, new results will be published again. *All appeals and their disposition will be summarized at the final protocol of that competition day. Score changes resulting from this are not appealable.*

10. Online-ISIJ Rules

The online School shift is held for team members remotely from home or for small groups of participants in their training places on the established dates.

10.1 Rules and recommendations for the team coach:

- * registers the team in the online School shift and organizes the payment of the registration fee for participants
- * helps participants to register in the School's competition system using the participant's logins and password, sent by the Jury
- * helps participants to install the necessary resources on their home computer to participate in online tours according to the recommendations of the Scientific Committee
- * selects the time limits of the tours for the teams of the country according to the table (teams from the country can work only in one time schedule according to Moscow time) and provides daily monitoring of the work of team members according to the selected time schedule of tours and classes
- * provides prompt solution of problems in case of technical failures on the participant's computer with the Scientific Committee of the School
- * conducts an interview with the participants on the rules of participation and compliance with the etiquette of the online competition provides downloading of materials from a special section of the School's website, where the coach is given access - <https://isi-junior.com/klass/oa.php>
- * translates materials, if necessary, into the native language of the participants
- * advises participants on the materials of seminars and task reviews
- * participates in the School's forum to solve operational issues, including problems that arise during tours
- * receives diplomas to his address and passes them to the participants.

10.2 Rules for participants:

- The ISIJ Scientific Committee registers each participant in the competition system (Yandex.Kontest) with a list of usernames and passwords of participants sent to the team coach, while the coach confidentially transmits personal registration to each

participant separately

- each participant is registered in the School's competition system at his e-mail address according to the rules for recording the participant's login established by the Scientific Committee

- * undertakes to constantly use only his login and Password for all I tours, for the correct support of the rating table by the School's Scientific Committee

- each participant follows the rules of etiquette of online competitions: guarantees honest work on the tours (does not use materials for writing off decisions, consultations and a mobile phone during the tour, does not post his decisions on the Internet and does not transmit them via e-mail or messengers on the day of each tour), understands that the main thing in the competition is to get personal training experience and show his potential

- * work on a home computer with an Internet connection or in meeting places in small groups with a trainer

- * they must install all the resources recommended by the Scientific Committee on their home computer in advance to participate in the competition

- * use the competition system for operational consultations and questions

- * solve problematic issues that arise during the tours through operational communication with the team coach

- each participant confirms that he accepts the rules of the ISIJ online ethics of tours

- participates in the analysis of the tasks of the tour, in theoretical seminars through the team coach

10.3 Rules for the Scientific and Technical Committee

- * ensures registration of participants in the competition system, corrects incorrect logins of participants with the coach during registration

- * provides the inclusion of online tours according to the time schedule at the Moscow time

- * provides prompt coordination when problems are detected (system or Internet failures) during the tours, makes a collective decision with the ISIJ Organizing Committee on the possible extension of the tour time if technical failures are fixed checks for anti-plagiarism of participants' decisions, in case of fixing plagiarism of decisions, the participant's result for the task is reset to zero

- * advises coaches and participants on the ISIJ website

- posts a table of tour results in a special section of the website for downloading by team coaches

- all the decisions of the participants are available to them in the system of competitions, The Scientific Committee does not transmit the archive of the participants' decisions

10.4

In the tour schedule, the time of the event is indicated as Moscow time (Moscow time corresponds to world time +3 hours). When organizing the schedule of the working day of the Cup participants, the coaches need to use their free time from the tours to consult the participants on the analysis of tasks. The analysis of tasks is laid

out to the coaches in a special section of the School's website for mailings by the coach in the team after the tour.

11. Tours of the Cup ISIJ

11.1 The Cup is a multi -event and includes, according to the ISIJ Regulations, the following rounds on the Yandex. Contest platform:

- at the National selection of at least 2 individual competitive rounds (theoretical and programming) and a trial round,
- there are at least 5 individual rounds at the ISIJ Cup Final and it is held in 7 days. The Scientific Committee may include in the set of Cup tours: theoretical and practical blitz tours (no more than 2), Olympiad programming tours (no more than 4), additionally a Robot tour (one) out of competition, as well as training and trial warm-up tours. All tours are held in the Yandex competition system. Contest

11.2 The qualification rounds of the Cup finals are held on one day and include a 3-hour programming **Training tour** on 3 tasks and one practical **Type-tour** (Keyboard input) on the speed and quality of keyboard input (no more than 20 minutes).

11.3 The theoretical Blitz tour as part of the all-around rounds of the School Cup may include a **Mathematics Tour**. The mathematical tour lasts 2 hours, includes 12 (for group B) and 15 (for group A) blitz problems on the topic of mathematical computer science and algorithms of calculations, each problem has one correct solution. It is also held for National Selection (item 11.1)

11.4. Programming tours:

- **Coder- tour** is the programming tour for groups A and B lasts up to 4 hours, includes tasks on programming techniques and code debugging.
- **Estafette tour** is a blitz programming tour with a team score, conducted on 6 tasks from the IOI archive. Each task is performed as a separate tour for 1 hour. Each team member performs only one task assigned to him out of 6 tasks of the round so that a team of 6 juniors completes all 6 rounds (for a different number of juniors in the team, the corresponding number of tasks out of 6 are solved by choice). Entry into someone else's tour is prohibited by the participant. In case of fixing a violation, the participant's result is canceled. The scoring for the round is carried out as the average score of the results of all team members (the number of participants indicated in the team). If a team member has solved a problem for a full score in less than 1 hour, the score for the problem is indexed by an increasing factor taking into account his decision time.
- **Marathon programming tour** with an individual score is conducted on 3 tasks in groups A and B and is designed for 4 hours and corresponds to the IOI (it is also held for National Selection, paragraph 11.1)

11.5 **Robot tour** using C++ for programming automatic devices for various purposes is conducted in registered teams using virtual or real robots in person using robotic equipment and software. The decision is made by the team, but only the sending of the decision by the login of the team captain is checked.

11.6 All rounds of the cup have an appeal procedure, which can be submitted to the ISIJ Scientific Committee only within one hour after the end of the tour and only by the coach of the team. The rules of all types of tours, as well as descriptions of tasks and trial tours are posted on the ISIJ website in open access.