IOI 2016 Contest Rules

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

The final version will be presented at the first GA meeting of IOI 2016.

Most important changes are marked with red color.

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

An updated version of the IOI syllabus can be found at http://people.ksp.sk/~misof/ioi-syllabus/.

Current approved IOI Regulations can be found at http://ioinformatics.org/rules/reg15.pdf.

Tasks

The source program provided by the contestant must be contained in one source file as specified in the task statement.

Submissions must not perform explicit input and output operations; instead data must only be exchanged through the interfaces specified in the task statement. In particular, direct access to any file, including standard input or standard output, is forbidden (though writing to standard error is allowed).

As Java Virtual Machine uses multiple threads internally, using multiple threads is allowed in all programming languages. Note, that the running time of the submission will be counted as a sum of running times of all threads. E.g. if there were two threads running for 5 seconds each (thus, the program finishes in 5 seconds), then the running time of the submission will be 10 seconds.

Each task will be divided into several subtasks, each worth a portion of the total points.

Time and memory limits will be specified for every task. In general, time and memory limits will be generous (for example, double those required by the expected solution). The memory limit is on the overall memory usage including executable code size, stack, heap, etc.

The contestant workstation will contain one folder for each programming task, which will contain interface files, a sample grading program, and a skeleton implementation of the required source file, which exercises the interface but does not correctly solve the problem. The sample grader provided on the workstation would not be the same as the official grader used by the grading system.

Competition Schedule

There will be two competition days. On each day contestants will be given three tasks to complete in five hours.

Practice Session

There will be a two-hour Practice Competition prior to the first competition day, to familiarize all contestants with the grading system. The practice tasks will be published before the IOI. Contestants may bring printed solutions to the practice tasks, on paper only, during the Practice Competition.

Quarantine

In order to protect the confidentiality of the tasks, all direct and indirect contacts and communication between contestants and delegation leaders are prohibited between the moment where tasks for a competition day are presented to the members of the GA and the end of the five-hour round on the following day. During this period the contestants are not allowed to communicate by any means, direct or indirect, with any member of the GA or anyone who knows the tasks. The GA members are not allowed to communicate task-related information to anyone who may not attend GA meetings.The contestants, the GA members and anyone else who has had access to the tasks must obey any instructions which restrict their access to specific parts of the IOI venue.

If a contestant violates the quarantine, he or she can be subject to disqualification. If some other person associated with a national delegation violates the quarantine, then all contestants of that delegation may be subject to disqualification.

Competition Equipment and Environment

Please refer to the [Contest Environment](#) page.

Task Statements

Each contestant will receive the official English version of tasks in an envelope on each contest day. For those contestants who requested the translation of the tasks, an additional version of the tasks in the requested language will be provided in the same envelope with the English version.

In addition, each contestant will have online access to the official English version of tasks and all task translations in electronic format (PDF).

Finally, working paper and clarification forms will be on paper and provided for each contestant.

Supplies

In the competition room, blank 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 proviso that they cannot transmit or store any data in electronic or printed format (other than the purpose for which they have been designed):

- clothing,
- reasonable jewelry,
- writing utensils,
- keyboards (without wireless and/or calculation functions),
- mice (without wireless and/or calculation functions),
- small mascots,
- English dictionaries.

If a contestant wants to bring a keyboard, mouse, small mascots or English dictionaries to the competition, these must be submitted to the technical staff 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 second competition day. Once again these will be checked and, if cleared, will be given to the contestant in the second competition day. After the second competition day the contestant must take any of these items with him or her.

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., keyboards, mice, calculators, laptops, tablets, smart watches),
- 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).

Any electronic or printed materials provided by the organizers during the Competition Round may be used by the contestants (e.g., a Users Guide to the Contest System, or any electronic documentation or reference manuals provided in the installed contest environment or on the provided grading system).

Starting the Competition

All contestants must wear their ID badges during the competition. Each contestant will have a pre-assigned workstation. Contestants should be in their seats by 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).

Clarification Requests

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 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 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.

Contestants should phrase their questions so that a yes/no answer will be meaningful. Questions will be answered with one of the following:

- "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.

Grading System
Each competitor has her or his own workstation. There is no restriction on the number of times a program may be edited, compiled, and run on the workstation. The workstations have network access to the grading system, as well as facilities such as printing and solution submission.

Grading and evaluation take place on the grading system, which provides a similar execution environment to that of the contestant workstation. Grading workstation will have the same hardware and software configuration as contestant's workstations (sans programs required for monitoring and grading system)

Printing
Contestants are allowed to print their solutions to the tasks, i.e. source code, writings, drawings, etc. Contestants are not allowed to print more than 10 pages at once. After a contestant requests that a document is printed, the support staff will deliver the printout to the contestant. Contestants should not leave their computers to find printouts. Printouts will be delivered as quickly as possible, though very large volumes may produce delays in delivery.

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

To avoid overloading the grading system, there are two restrictions on the number of submissions:
1. Contestants may submit a solution to each task at most once per minute. This restriction does not apply in the last 15 minutes of the contest round.
2. Contestants may submit at most 100 solutions for each task.

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

Feedback
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.

Full feedback will be available for every submission, indicating whether each subtask has been solved.

The final score for each subtask will be the maximum score of this subtask across all submissions. The score for each task will be sum of scores for its subtasks.

(For example, consider a contestant who made two submissions on a task that contains two subtasks. First submitted solution got 30 points for the first subtask and 10 points for the second subtask, second solution got 0 points for the first subtask and 40 points for the second subtask, then the final score for this task will be 70.)

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:

1. Due to a successful appeal after the contest.
2. In some cases the contestants' submissions may be re-evaluated. This re-evaluation 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 re-evaluation. This change in scoring cannot be appealed. Note that the final score for each subtask is still the maximum score over all submissions.

Assistance

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.

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

Ending the Competition

Three warnings will be given at 15 minutes, 5 minutes, and 1 minute before the end of the competition. Each warning will be given by an audible signal. The end of the competition will be announced both verbally and by an audible signal. At the announcement 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.

At the end of the first competition, any previously submitted items a contestant would like to use during the second competition should be left at the workstation. 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.

Cheating

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;
- contestants must not attempt to gain access to root or any account other than the one assigned to them;
- contestants must not attempt to store information in any part of the file system other than the home directory for their account or the /tmp directory;
- contestants must not touch any workstation other than the one assigned to them;
- contestants must not attempt to access any machine on the network or the Internet, other than to submit tasks and view submission results through the grading system;
- contestants must not attempt to reboot or alter the boot sequence of any workstation;
- contestants must not communicate with other people during the competition, other than IOI 2016 staff and/or Scientific Committee members.
- Contestants must not attempt to reverse engineer the test data. This is not to be construed to limit adaptive submission behaviors. Due to the varying degrees of information that a contestant may attempt to extract, such cases will be handled on a case-per-case basis, ideally with consultation with team leader.

All of the above actions are considered cheating, and may result in disqualification.

Appeal Process

Submitted solutions are evaluated using data which conform to the specification given in the problem statement, but which are hidden from competitors during the competition.

Provisional grades, based on these 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.

This hidden data will be made available electronically in the competition area during the scheduled time for analysis after each competition. Contestants and team leaders may use the contestant's workstations to verify that the grades are assessed correctly.

A Team Leader may file an appeal by completing an Appeal Form, and submitting it to the Scientific Committee at least 30 minutes prior to the final GA meeting of that competition day. The GA will be informed of where Appeal Forms can be collected, and where they can submit them to the Scientific Committee. Every appeal will be reviewed by the Scientific Committee and the team leader will be notified of the committee's decision. All appeals and their disposition will be summarized at the final GA meeting of that competition day.

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. Score changes resulting from this are not appealable.