# Rules and conditions of participation of the Lëtzebuerger Informatiksolympiad (LIO) 2024

1. The Lëtzebuerger Informatiksolympiad (LIO) is a national high school programming contest that is organized annually by the non-profit association (a.s.b.l.) of the same name, with the public support of the Service de Coordination de la Recherche et de l'Innovation pédagogiques et technologiques (SCRIPT) of the Ministère de l'Éducation nationale, de l'Enfance et de la Jeunesse as well as the Centre de Gestion informatique de l'Éducation (CGIE). Financial support is also provided by private sponsors (Proximus/Telindus, Dupont, Chamber of Commerce, Chamber of Employees), logistical support is provided by the Athénée de Luxembourg, the Lycée classique de Diekirch and the Lycée technique de Bonnevoie.

2. The Lëtzebuerger Informatiksolympiad is the new version of the former Concours Informatique Luxembourgeois (CIL), organized since 1991 by the SCRIPT respectively the Centre de Technologie de l'Education (CTE). In 2024, the contest will be organized for the 34$^{zh}$ time.

3. LIO 2024 is officially launched on December 1, 2023.

4. The contest aims to identify young students with special skills in solving problems on computers, designing algorithms and implementing programs using a programming language.

5. To participate in the LIO 2024, the contestant must be enrolled during the school year 2023/2024 in a public, private or international high school in the Grand Duchy of Luxembourg. A school certificate may be requested by the LIO organizers.

6. There is no age limit to participate in the LIO. However, there is an age limit for the participation in international contests (IOI, EGOI and WEOI - see below).

7. The registration for LIO is done by means of an online registration form. The deadline for submitting the online registration form is February 29, 2024, at 23:59.

8. All communication between the contestants and the organizers will take place in English, via e-mail.

9. By registering for the contest, participants agree to abide by these rules and to comply with all instructions of the organizers. Legal recourse is excluded.

10. LIO 2024 is held in 4 rounds:

    Round I - qualification round;

    Round II - semi-finals;

    Round III - programming and algorithmic training;

    Round IV - finals.

11. The LIO a.s.b.l. collects and processes the personal data of the participants provided to it on the registration form in accordance with the applicable legislation, in an adequate and limited manner with respect to what is necessary for the intended purpose. The processing of personal data is the responsibility of LIO a.s.b.l., which undertakes not to share such data with third parties. Personal data are stored in Luxembourg and are anonymized after 2 years.

12. The qualification round consists of 4 algorithmic problems of varying degrees of difficulty that must be solved at home. The four tasks are assessed together for 100 points. The statements of the problems are formulated in a task

description in English, available online. The programming languages accepted for the qualification round are C/C++, Java, and Python 3 (C/C++ is preferred, due to runtime effectiveness).

13. To participate in the contest, an attempted solution must be submitted for at least one problem.

14. The contestants with the highest scores in the qualification round are admitted to the semi-finals.

15. The semi-finals consist of a practical test in which the contestants must individually solve 3 problems of varying degrees of difficulty within a given time. The contestants have 4 hours to design solutions to the algorithmic problems and to implement the corresponding programs. The three tasks are assessed together for 100 points. The task descriptions are formulated in English, and the use of Google Translate is allowed. The programming languages accepted for the semi-finals are C/C++ and Java and Python 3 (C/C++ is preferred, due to runtime effectiveness).

16. The semi-finals will take place on March 12, 2024, from 2:00 p.m. to 6:00 p.m. in a computer room of the Athénée de Luxembourg.

17. A maximum of 15 contestants, with the highest scores in the semi-finals, will be admitted to the programming and algorithmic training (round III).

18. The programming and algorithmic training allows the selected participants to deepen their knowledge of programming, to acquire algorithmic methods and to learn - if necessary - the C++ programming language required in the finals. It is a direct preparation for the finals. The training, which can be organized in several face-to-face sessions in a computer room of a high school or carried out online, takes place during the months of March and April 2024.

19. In principle, all contestants who have taken part in the programming and algorithmic training are eligible for the finals. Contestants who have already participated in an international contest in informatics are exempt from this training.

20. The finals consist of a practical test in which the participants must individually solve 2 problems of varying degrees of difficulty within a given time. The participants have 4 hours to design solutions to the algorithmic problems and to implement the corresponding programs. The two tasks are assessed together for 100 points. The task descriptions statements are formulated in English, and the use of Google Translate is allowed. The problems require the implementation of algorithmic methods covered in the programming and algorithmic training. The accepted programming language for the finals is exclusively the current version of C/C++.

21. The finals will take place on April 30, 2024, from 2:00 p.m. to 6:00 p.m. in a computer room of the Athénée de Luxembourg.

22. The four contestants with the highest scores in the finals will be declared the winners of LIO.

23. If a contestant is absent from the semi-finals or finals, his/her participation in LIO is terminated. No second session will be organized.

24. Any contestant who is found to be cheating during the semi-finals or finals will be excluded from the contest. Any use of programs or portions of programs that represent plagiarism is considered fraud. Documentation on the use and implementation of the instructions of a programming language is nevertheless permitted.

25. In each of the qualifying round, semi-finals and finals, the participants' programs are evaluated in real time in an automated manner by means of a Contest Management System (CMS), and also checked by human experts. The results of this grading are only visible to the contestants and are not made public. The grader uses a series of test cases (test vectors) to verify the correct execution of the programs. These test cases are not made public.

26. Submitted programs that do not respect the layouts and formats requested in the task statements are not considered. Each contestant must be able to write console programmes with precise input and output of data.

27. The maximum execution time ("time limit") and the maximum memory usage ("memory limit") of the submitted programs are indicated in the CMS. There will be no adaptations of the maximum execution time and the maximum memory usage for Python programs. The quality of the programming code is not considered.

28. All contestants present at the finals receive a certificate and a prize which are awarded at a prize-giving ceremony. The top 4 finalists are the winners and receive a first, second, third and fourth prize. The other contestants present at the finals receive incentive prizes.

## IOI

29. The 4 winners of LIO 2024 are automatically selected to participate as contestants in the 36th International Olympiad in Informatics (IOI). This international contest will take place from 01.09.2024 to 08.09.2024 in Alexandria (Egypt).

30. As the contestants for the IOI 2024 must not be older than 21 years of age on July 1, 2024 (IOI rules), a contestant who is not allowed to participate in the IOI can be substituted by another contestant. Also, if a contestant renounces his/her participation in the IOI for personal reasons, he/she can be substituted by another contestant.

31. An official delegation of 6 persons will participate in the IOI 2024. The delegation will consist of the 4 contestants and 2 accompanying adults, members of the Lëtzebuerger Informatiksolympiad a.s.b.l.

## EGOI

32. At most 4 of the best girls of the LIO 2024 will participate as contestants in the 4th European Girls' Olympiad in Informatics (EGOI). This international contest will take place from 21.07.2024 to 27.07.2024 in Veldhoven (The Netherlands).

33. The LIO a.s.b.l. considers a person to be a girl if she is biologically female. Personal judgements about one's own gender that are detached from anatomy are not accepted.

34. As the contestants for the EGOI 2024 must not be older than 21 years of age on July 1, 2024 (EGOI rules), a contestant who is not allowed to participate in the EGOI can be substituted by another contestant. Also, if a contestant renounces her participation in the EGOI for personal reasons, she can be substituted by another contestant.

35. An official delegation of up to 6 persons will participate in the EGOI 2024. The delegation will consist of the at most 4 contestants and 2 accompanying adults, members of the Lëtzebuerger Informatiksolympiad a.s.b.l.

## WEOI

36. At most 6 of the best finalists of the LIO 2024 will participate as contestants in the 1st West European Olympiad in Informatics (WEOI). This international contest will take place from … to … in … (United Kingdom).

37. As the contestants for the WEOI 2024 must not be older than 21 years of age on July 1, 2024 (WEOI rules), a contestant who is not allowed to participate in the WEOI can be substituted by another contestant. Also, if a contestant renounces his/her participation in the WEOI 2024 for personal reasons, he/she can be substituted by another contestant.

38. An official delegation of up to 8 persons will participate in the WEOI 2024. The delegation will consist of a maximum of 6 contestants and 2 accompanying adults, members of the Lëtzebuerger Informatiksolympiad a.s.b.l.

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39. LIO 2024 contestants who are selected to participate in an international contest (LIO, EGOI, WEOI) will receive appropriate training sessions to be well prepared for these contests. These training sessions are organized on different

dates in a computer room of a high school or conducted online. Alternatively, the training sessions can be organized in the form of a camp/workshop that will take place in a hostel (like a youth hostel) in the Grand Duchy of Luxembourg during a weekend.

40. LIO contestants who are selected to participate in an international contest (IOI, EGOI, WEOI) must participate in at least half of the training sessions intended for them and must sign a commitment form.

41. Although the programming languages used in the national contest are C/C++, Java, and Python, the official language of the international contests is exclusively C/C++.

42. The travel expenses of the Luxembourg delegation to the international contests will be covered by the LIO a.s.b.l. The expenses of the stay (accommodation, catering, cultural excursions, sports activities etc.) will be taken care of by the organizers of the international contests. However, a small financial contribution may be requested from the participants (e.g. for insurance or visa costs).

43. The organization of the Luxembourg participation in the international contests will be done exclusively by the organizers of the LIO.

44. The contestants of the international contests must commit themselves to respect the existing rules and the instructions of the 2 accompanying persons.

45. Prior to the start of the international contests, minor contestants (under the age of 18) must present a medical form and an official declaration of authorization in English, signed by a legal representative and issued by the relevant local authority.

46. The regulations of the international contests can be downloaded from the official websites.

47. Participants in the LIO and international contests and the schools they attend must agree to the publication of their names and photos in the local and international press (print and broadcast).

48. The LIO organizers will decide on any matter not covered by these rules and the selection criteria.