



# Rules of the Helvetic Coding Contest 2012

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## 1 Introduction

1. The Helvetic Coding Contest wishes to provide a friendly environment where some of the best students in the Swiss educational system can compete at the highest level.

The Contest environment should allow first and foremost the dissemination of knowledge, the improvement of individuals' skills and an opportunity for social networking among the participants.

2. True to this objective, the HC2 organizers vow to provide a competitive and fair environment.

## 2 Conditions of Participation

### 2.1 Team Eligibility

3. A team is eligible to participate in the contest provided that its members are students, predoctoral/PhD students, or interns currently enrolled in a Swiss educational institution (high school, HES, university, ETH or vocational school), or currently enrolled in a foreign educational institution but doing an internship, bachelor/master thesis in Switzerland. All members must be between the ages 14 and 28 (included). At least half the team must be made up of full-time students.
4. Each team must be composed of at least 1 and at most 3 members.
5. The judge may ask contestants to prove their age and prove the data they entered in the registration form (such as affiliation and student status) is correct.

### 2.2 Special Eligibility

6. The Contest Judge may authorize a team to compete despite not fulfilling the eligibility criteria.
7. Such an authorization may only be delivered if it is justified by the Contest objectives enunciated in the introduction to the Contest rules (§ 1).

### 2.3 Participation “just for fun”

8. The Contest Judge may authorize a team that does not fulfill the eligibility criteria (for example, people who finished their studies, or people who work for a company) to compete in a separate division.
9. These teams are not eligible to win any prizes and will not receive diplomas.

## 2.4 Team Registration

10. Teams willing to take part in the Contest must register on the Helvetic Coding Contest website (<http://hc2.ch>) no later than the date indicated on the website.
11. The contest judge may decide to close the registration early if too many people register.
12. The contest judge may put teams on a waiting list if too many people register.
13. Individuals without a team may also register. The judges will try to form balanced teams (to the best of their abilities) out of all individuals who are not yet in a team. The judge's decision on team composed in this manner is final.

## 2.5 Post-registration task

14. Teams are required to solve a simple task/problem to prove that they know how to program.
15. This task will have to be solved at the latest 8 hours after the end of the registration deadline.

## 2.6 Payment

16. A team ultimately confirms its participation by proceeding to the payment of its registration fees as indicated either by email or on the Contest website.
17. The deadline for the payment ("value date") is 2 days after the registration deadline.
18. The registration fee for members of the PolyProg student association is waived if they indicate their affiliation as "PolyProg".
19. Teams who have not paid or who are unable to prove payment of their participation fee in full will not be admitted to the Contest.
20. Teams not showing up during at the team registration may be disqualified from the contest and forfeit their registration fee and t-shirt. (The Contest Judge may make exceptions for contestants living far away from Lausanne, at his discretion.)
21. Teams not showing up, sleeping, behaving rudely or interfering in any way during the sponsors' presentations will be disqualified and forfeit their registration fee and t-shirt.
22. Travel expenses and accomodation will not be reimbursed.

## 2.7 Early registration deadline

23. A team is considered to have met the "early registration deadline" if (1) they register before **Wednesday, February 29, 2012 at 23:59:59 UTC**, (2) they solve the post-registration task before **Thursday, March 1st, 2012 at 07:59:59 UTC**, (3) their registration fees gets credited on the PolyProg account ("value date") on or before **Friday, March 2, 2012**.
24. Teams who miss at least one of the three deadlines above will not be guaranteed to obtain a T-shirt. Furthermore, they might have to yield their place to teams on the waiting list, at the Judge's discretion. (The registration fee for teams disqualified in that manner will be payed back in full.)

## **3 Conduct of the Contest**

### **3.1 Contest Judge**

25. The Contest Judge is the sole authority regarding Contest matters. He is allowed to nominate a deputy to act on his behalf should he be unable to preside over the Contest.

### **3.2 Dry Run**

26. The Contest will be preceded by a dry run. The aim of the dry run is to get the contestants acquainted with the judging system.
27. The duration of the dry run is 30 minutes.
28. The judge may extend the duration of the dry run for up to 30 minutes at his discretion.
29. The ranking of the dry run will in no way influence the ranking of the contest.
30. All data on the team's computers will be erased after the dry run.

### **3.3 Duration**

31. The Contest duration is 4 hours and 30 minutes.
32. Under exceptional circumstances, including, but not limited to, contest-halting technical problems, the Contest Judge may extend the Contest duration for up to one hour.

### **3.4 Problems**

33. The Contest features between four and eight algorithmic problems, which must be solved either in C, C++ or Java. Each problem will be divided into three sub-problems.
34. Initially, only the problem statement for the first sub-problem will be visible.
35. When a team has solved the first sub-problem, the problem statement of the second sub-problem will be made available to the team on the web interface. A printout of the problem statement will then be delivered as soon as possible to the team's workstation.
36. Likewise, the third sub-problem will be made available once the second sub-problem has been solved.

### **3.5 Computing Environment**

The Contest will take place on computers with the following specification.

37. Hardware:
  - CPU: Intel Xeon E5520, 2.4 GHz
  - RAM: 3.5 GB or more
  - Screen: 1280 x 1024
  - Keyboard: Standard Swiss-French keyboard  
(keyboard layout can be changed in the desktop environment)
  - Mouse: Standard 2 button mouse with scroll wheel.

38. Software:
- |                |                                       |
|----------------|---------------------------------------|
| OS:            | Linux (distribution: Debian live) x86 |
| Desktop:       | GNOME                                 |
| Editors:       | gvim, emacs, gedit, geany, eclipse    |
| C compiler:    | gcc 4.4.5_8                           |
| C++ compiler:  | g++ 4.4.5_8                           |
| Java compiler: | OpenJDK 1.6.0_18                      |
39. Pencils or pens, and blank paper will be provided. Contestants may not bring their own.
40. Teams may bring their own USB keyboard and mouse, however these have to be approved by the Contest Judge. Especially noisy hardware, hardware containing a storage space, or hardware which would give the team an unfair advantage over their competitors will not be allowed.
41. For reasons of fairness and security, root access and internet access are disabled on the machines.
42. The Contest Judge is allowed to monitor the participants' computers to prevent activities which are contrary to the spirit or the rules of the contest.
43. Furthermore, regular backups of your code will be made to the organizers' server.

### 3.6 Reference Material

44. During the Contest, the following documentation will be at the participants' disposal:
- C/C++ reference
  - Java Platform SE 6.0 API Docs
  - Documentation for the GNU Multiple Precision Arithmetic Library
45. The use of any other material, whether in digital, written, or printed form, is forbidden and will be considered an attempt to cheat. This also includes t-shirts containing too much text (such as the "Linux Cheat Shirt").

### 3.7 Printing Service

46. The participants may request the organizers to print their source code in order to help with the debugging.
47. The printing will be delivered to the team's workstation as soon as possible.
48. The organizers reserve the right to deny further prints to teams who have made excessive use of this service.

### 3.8 Dress Code

49. Contestants who have received a T-shirt must wear that T-shirt during the whole day (until after the diploma ceremony).
50. Contestants who haven't received a T-shirt are strongly encouraged to wear a black T-shirt, and are strongly discouraged from wearing a green T-shirt.

### 3.9 Unauthorized Behaviors

51. The participating teams should in no way try to gain an unfair advantage over their competitors.
52. Food and drinks are not allowed in the computer labs or the auditorium. Teams might be held liable for damages due to the presence of food and drinks in these areas. Teams will be requested to clean up any spills and crumbs should they bring food into the labs or the auditorium.
53. During the contest, problem statements, printouts and draft paper are not to leave the immediate vicinity of your assigned computer. It is absolutely forbidden to take these out of the computer lab. It is also forbidden to write anything related to the contest on your hand, clothes, the walls, toilet doors, or any other place where they might be seen by other teams while outside the lab.
54. During the contest, it is forbidden to talk about the problems outside the computer labs.
55. Collusion or sharing of any information about the problems between two teams are grounds for immediate disqualification of both teams.
56. The Contest Judge is authorized to disqualify a team with or without warning should he notice deliberate attempts at hindering the Contest progress or fairness.
57. The disqualifying behaviors include, but are not limited to, trying to crash the Contest server, making excessive use of the printing service, trying to access the Judging System filesystem (fopen, fwrite, etc.) and forking to obtain a larger chunk of the Judging System computational resources or render them otherwise unavailable for the competing teams.
58. The use of forbidden functions (filesystem, multithreading) by a team will cause its immediate and irrevocable disqualification.

## 4 Scoring System

### 4.1 Scoring

59. To be considered a correct solution, each submission to a sub-problem must correctly solve all testcases of that sub-problem.
60. Teams may re-submit a solution to the same sub-problem.
61. Every sub-problem that was solved correctly after the  $n$ th attempt gives one point and  $(n-1)$  penalties.

### 4.2 Ranking

62. Teams are ranked by the total number of sub-problems solved (points), where more points is better.
63. If teams tie after applying the previous rule, they are ranked by total number of penalties, where less penalties is better.
64. If teams tie after applying the previous rule, they are ranked by the sum of the elapsed times at each point that they submitted correct solutions to a sub-problem (this is similar to how teams are ranked at the ACM ICPC contest), where less is better.
65. If teams tie after applying the previous rule, they are ranked by the submission time for their latest correct sub-problem, where earlier is better.

66. If teams tie after applying the previous rule, they are ranked by the submission time for their second latest sub-problem, etc.

### **4.3 Prizes**

67. There will be at least 12 prizes awarded during the diploma ceremony.
68. The contestants in the teams that ranked first, second and third will each receive a prize.
69. There will be a raffle to determine the winners of the remaining prizes. The winning probability of a contestant will be proportional to the number of sub-problems his team solved. Contestants may not win several prizes (thus the first three teams are excluded from the raffle). Contestants who don't show up at the diploma ceremony will forfeit their prize, and a new winner will be determined.
70. The sponsors may, at their discretion, award prizes to any contestants of their choosing.
71. All contestants will receive a diploma.

### **4.4 Judging system**

72. The Judging System is based on Domjudge 3.2.1.
73. The Judging System will run on a "High-CPU Medium Instance" in Amazon's Elastic Cloud Computing (EC2) web service.
74. You will only be allowed to use a limited amount of the total memory, as deemed appropriate by the Contest Judge and the problem authors.

### **4.5 Judging Feedback**

75. The judging system provides a number of indicators regarding the success or failure of test cases.
76. The following messages are used as status indicators:
- Judging
  - Correct
  - Compiler-Error
  - Timelimit
  - Run-Error
  - No-output
  - Wrong-answer
  - Presentation-Error
  - Too-late
77. The status of a submission will be displayed on the web interface as soon as judging finished. The status will not be shown to other teams.
78. The team who submitted a solution that received a status of "compiler error" will be able to see the error message of the compiler on the judging system.
79. The Contest Judge is authorized to modify the reported status should he consider that another status is more meaningful with respect to the team submission.

## **4.6 Ranking**

80. During the first three and a half hours of the contest, the current ranking of the teams (including which problems each team attempted and solved) will be made available to all teams on the web interface.
81. During the last hour of the Contest, the ranking display will be frozen and the winners will only be announced at the HC2 Diploma Ceremony.
82. Once the winners are announced at the HC2 Diploma Ceremony, the Contest Judge decisions are final.

## **5 Insurance and liability**

83. The organizers, staff and sponsors of HC2, as well as all the people involved at EPFL don't take any responsibility for accidents, losses, or theft occurring before, during, or after the contest, including items left in the wardrobe. It is the participants own responsibility to arrange for their insurance cover.

## **6 Photography**

84. Contestants consent to being photographed by the organizers, staff, or professional photographers hired by EPFL or the organizers. Furthermore they authorize the publication of the resulting pictures: (1) On websites in the epfl.ch, ethz.ch, and hc2.ch domains. (2) In the Flash, Flash Informatique and Visionen newspapers/magazines.

## **7 Copyright of submitted code**

85. Contestants grant the PolyProg association a non-exclusive right to use and publish the source code they submit to the contest judging system.

## **8 Updates to this document**

86. The contest rules may be updated until 48 hours before the start of the contest.
87. All teams who have registered up to 60 minutes after the publication of a new revision of the contest rules will be notified by e-mail by the contest judge.
88. Teams may withdraw their registration if they do not accept a new revision of the contest rules, provided that they announce their withdrawal to the contest judge no more than 47 hours after the e-mail announcing that change was sent out, and provided that they offer a reasonable explanation as to why the changes negatively affect them. The participation fees of a team who withdraws in this manner will be paid back in full.

## **9 Final Provisions**

89. All teams participating in the Contest are required to accept the Contest rules.