

The 2009 ICPC World Finals Team Notebook Handouts
Stockholm, Sweden
April 18-22, 2009

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Schedule of Events

Final Print Edition - April 1, 2009

Teams: contestants

Teams++: contestants, coaches, team guests

* Required Team

Attendance

Saturday- April 18 - Welcome - Grand Hôtel Stockholm

		Location	Attendees
8:00 AM - 9:00 AM	RCD and CLI Symposia Registration & Breakfast <i>By invitation. courtesy of KTH</i>	Vapensalen/Spejlsalen (Hall of Weapons/Hall of Mirrors)	Symposia Attendees
9:00 AM - 6:00 PM	RCD and CLI Symposia <i>By invitation.</i>	Bolinder 1	Symposia Attendees
Noon - 1:30 PM	Volunteer Appreciation Luncheon <i>By invitation. courtesy of IBM</i>	Vapensalen/Spejlsalen	By Invitation
6:00 PM - 10:00 PM	* ICPC Team Registration <i>Team Notebook initial inspection is performed.</i>	Vinterträdgården Street Entrance (Winter Garden)	Teams++
6:00 PM - 11:00 PM	IBM Welcomes the Attendees (come and go)	Vinterträdgården	All Attendees

Sunday - April 19 - IBM TechTrek, Excursions, Opening Ceremony

		Location	Attendees
6:30 AM - 8:30 AM	Breakfast <i>courtesy of KTH</i>	at your hotel included with room	
8:00 AM - 3:00 PM	* IBM TechTrek & Vaxholm's Fortress Excursion <i>Transportation to TechTrek departs from ICPC Hotel Bus Stop.</i>	Vaxholm's Fortress	Teams++
11:30 AM - 3:00 PM	IBM Luncheon & Vasa Museum Excursion	Vapensalen/Spejlsalen at the Grand Hôtel Stockholm, then to the Vasa Museum	Symposia Attendees, ICPC Staff, Other Badged Guests
11:30 AM - 12:30 PM	Luncheon at the Grand Hôtel Stockholm		
12:30 PM - 1:00 PM	<i>Transportation to Vasa Museum departs from ICPC Hotel Bus Stop.</i>		
4:30 PM - 5:00 PM	* Walking Tour to City Hall <i>Meet your KTH guide at your hotel lobby.</i>	meet at your hotel lobby	All with Badges
4:15 PM - 4:30 PM			
5:30 PM - 7:30 PM	* Opening Ceremony <i>No one may enter once the program has begun.</i> <i>- Spectators are pre-seated.</i> <i>- Coaches and teams enter down stairway, Team Photo Taken</i> <i>- Dress is business or business casual.</i>	City Hall of Stockholm	All with Badges
7:30 PM - 9:00 PM	KTH Opening Dinner	City Hall of Stockholm - Golden Hall	All with Badges

Monday - April 20 - Orientation, Showcase, Challenge, Practice Contest

		Location	Attendees
6:30 AM - 8:30 AM	Breakfast <i>courtesy of KTH</i>	at your hotel included with room	
7:00 AM - 8:30 AM	Transportation to KTH Campus	ICPC Hotel Bus Stop	All with Badges
9:00 AM - 4:00 PM	CLI Symposium II	KTH Main Building	Symposium Attendees
9:00 AM - 11:00 AM	ICPCLive Preview <i>Watch the World Finals Orientation.</i>	KTH Student Union	All with Badges
9:30 AM - 11:00 AM	* Contest Orientation <i>Teams wear ICPC T-shirts - No food or drinks, please.</i> <i>Team photos are taken with coach.</i>	KTH Library	Teams On-Site Coaches
11:00 AM - 1:00 PM	IBM Technology Showcase	KTH Student Union	All with Badges
11:00 AM - 1:00 PM	* ICPC Challenge Tournament with Lunch <i>courtesy of KTH</i>	KTH Student Union	All with Badges
1:00 PM - 4:00 PM	IBM Technology Showcase	KTH Student Union	Public
1:00 PM - 1:30 PM	* Answers to Orientation Session Questions	KTH, F1 Auditorium	Teams++
1:45 PM - 4:00 PM	ICPCLive Coverage of the Practice Contest <i>Watch the World Finals Orientation</i>	KTH Student Union	Public
1:45 PM - 4:00 PM	* Practice Contest <i>Dress rehearsal for the 2009 ACM-ICPC World Finals</i> <i>- 1:45PM - On-Site Coaches enter the balcony.</i> <i>- 1:45PM - Contestants prepare to enter the Contest Area.</i> <i>Teams wear ICPC T-shirts - No food or drinks, please.</i> <i>Teams leave Notebooks at workstations at end of contest.</i>	KTH Library	Teams On-Site Coaches
2:30 PM - 3:30 PM	Guided Tours Visit the Practice Contest	leave from KTH Student Union	All with Badges
2:30 PM - 3:30 PM	Coaches Meet with ICPC Executive Director	KTH, F1 Auditorium	All Coaches
4:00 PM - 7:00 PM	Free Time (shuttle or KTH escort to hotel)		
4:15 PM - 5:30 PM	IBM Technology, A Smarter Planet Keynote by Doug Heintzman	KTH, F1 Auditorium	Public
7:00 PM - 8:30 PM	* UPE Dinner Reception	Vinterträdgården (Winter Garden)	All with Badges
7:00 PM - 10:00 PM	CyberCafé - come and go <i>both courtesy of IBM</i>	Grand Hotel Stockholm	

Tuesday - April 21 - World Finals, Awards, Celebration

		Location	Attendees
6:30 AM - 8:30 AM	Breakfast <i>courtesy of KTH</i>	at your hotel included with room	
7:00 AM - 8:30 AM	Transportation to KTH Campus	ICPC Hotel Bus Stop	All with Badges
9:00 AM - 3:00 PM	ICPCLive Coverage <i>Watch the World Finals and have some fun!</i>	KTH Student Union	Public
9:00 AM - 3:00 PM	* 2009 ACM-ICPC World Finals <i>- 9:00 AM - On-Site Coaches enter the balcony.</i> <i>- 9:15 AM - Contestants prepare to enter the Contest Area.</i> <i>- 9:30 AM - Contestants enter the Contest Area.</i> <i>Teams wear ICPC T-shirts - Team Notebooks are at their workstations.</i>	KTH Library	Teams On-Site Coaches
10:30 AM - 2:30 PM	Guided Tours Visit the Contest Area	leave from KTH Student Union	All with Badges
12:00 PM - 1:00 PM	Coaches Appreciation Luncheon <i>courtesy of KTH</i>	KTH Student Union	All with Badges
3:00 PM - 4:00 PM	ICPCLive Wrap-up <i>Watch the results unfold. Preliminary medalists and champs revealed.</i>	KTH Student Union & KTH Library	All with Badges
4:00 PM - 4:30 PM	Transportation to Hotel	ICPC KTH Bus Stop	All with Badges
5:00 PM - 5:30 PM	Transportation to Concert Hall	ICPC Hotel Bus Stop	All with Badges
6:00 PM - 7:30 PM	* ACM-ICPC World Finals Award Ceremony	Concert Hall	Public
7:30 PM - 11:30 PM	* World Finals Celebration <i>courtesy of IBM</i>	TBA	all with badges



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11 Dec 2008 wbp Final Version

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Mission

The ACM International Collegiate Programming Contest (ICPC) provides college students with opportunities to interact with students from other universities and to sharpen and demonstrate their problem-solving, programming, and teamwork skills. The contest provides a platform for ACM, industry, and academia to encourage and focus public attention on the next generation of computing professionals as they pursue excellence. (from the ICPC Policies and Procedures)

Introduction

The contest is a two-tiered competition among teams of students representing institutions of higher education. Teams first compete in Regional Contests, held around the world from October to November each year. The winning team from each Regional Contest advances to the ACM International Collegiate Programming Contest *World Finals* that is typically held in March. Additional high-ranking teams may be invited to the World Finals as *Wild Card* teams. These rules are subject to change.

Organization

The ICPC is organized according to the [ICPC Policies and Procedures](#). The Executive Committee, chaired by the Executive Director, sets the policy and general rules for the conduct of the contest. The Executive Director is solely responsible for interpreting the rules and for ruling on unforeseen situations.

World Finals Site

The World Finals will be held in Stockholm on Tuesday, April 21, 2009. Teams will arrive by Saturday, April 18, 2009 and depart on or after Wednesday, April 22, 2009. The [Schedule of Events](#) will be posted by December 15, 2008.

Team Requirements

Teams qualify to advance to the World Finals through Regional Contests. Only one team from a given institution may advance to the World Finals. Contestants and registered student Team members will be provided free one-year memberships in [ACM](#). No team member on the qualifying team may have competed as a contestant in two previous World Finals.

The coach of a qualifying team is the point-of-contact prior to and during World Finals activities. The coach must complete certification at the Team [Certification](#) Web Site within five (5) business days of notification. Qualifying teams will be issued an invitation by email and postal mail (if requested) soon after completing certification.

Qualifying teams requiring visas must initiate the process of applying for visas within 10 business days of being issued an invitation. Teams failing to comply with any of these requirements will be ruled ineligible

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to compete in the World Finals. Upon completion of these requirements, a qualifying team will be advanced to the World Finals.

A team advancing to the World Finals will be comprised of the same three members as when it qualified. In the event that a team member is unwilling, unable or unfit to compete in the World Finals, the coach must notify the [manager](#) in a timely manner. A team member who is unwilling or unfit to compete in the World Finals will be disqualified from further ICPC competitions. The team member may appeal disqualification to the Appeals Committee.

At on-site registration, participants must provide picture ID (passport, driver's license, etc). Contestants must show proof of enrollment at the university during the term of the regional contest at which they qualified. A letter on university stationery with the signature of a university official accompanied by an English translation is sufficient.

Attendance

Finalists must attend all required events from On-Site Registration to Celebration as indicated in the [Schedule of Events](#). Failure to attend any required event will result in disqualification and forfeiture of scholarships and prizes. Coaches must be accessible during On-Site Registration, the Practice Session, the World Finals, and the Awards Ceremony.

Support and Prizes

Each finalist team will be provided with hotel accommodations for the coach and three contestants for four nights, arriving three days before the World Finals and departing the day after. The hotel accommodations will be two separate sleeping rooms, with a third room for gender privacy if necessary. The teams and coaches will be treated to a full schedule of activities including a full course of complimentary food functions. Transportation to the World Finals is the responsibility of the finalists. The ICPC encourages teams to raise funds for transportation and extracurricular activities from local sources to better strengthen community ties among academia, industry, and government.

The UPE Computer Science Honor Society provides \$300 to each World Finals team, plus an additional \$450 to teams representing institutions with UPE chapters or who are in the process of establishing UPE chapters.

Teams finishing in the top four positions will be awarded Gold Medals. Those teams finishing fifth through eighth place will be awarded Silver Medals. Those teams finishing ninth through twelfth place will receive Bronze Medals. Additional Bronze Medals may be awarded.

The highest scoring team is the World Champion and will receive the World Champion Cup and plaques. The North American Champions, the Latin American Champions, the European Champions, the South Pacific Champions, the Asian Champions, and the Africa & Middle East Champions will be presented plaques.

The World Champion team will be awarded \$10,000. Each of the other three Gold Medal teams will be awarded \$3,000. Each Silver Medal team will be awarded \$2,000. Each Bronze Medal team will be awarded \$1,000. In the event of a tie, benefits of the affected places will be pooled and distributed evenly among the tying teams.

Conduct of the Finals

Eight or more problems have been posed in recent World Finals.

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Problems will be posed in English. During the contest, all communications from contest officials to contestants will be in English. Each team may identify an interpreter for translating questions posed by contestants to contest officials. Contestants may bring electronic natural language translators provided that they do not support math operations.

Solutions to problems submitted for judging are called *runs*. Each run is judged as accepted or rejected, and the team is notified of the results. *Rejected runs* will be marked as follows:

- run-time error
- time-limit exceeded
- wrong answer
- presentation error

Notification of accepted runs will be suspended at the appropriate time to keep the final results secret. A general announcement to that effect will be made during the contest. Notification of rejected runs will continue until the end of the contest.

A contestant may submit a claim of ambiguity or error in a problem statement by submitting a *clarification request*. If the Judges agree that an ambiguity or error exists, a clarification will be issued to all contestants.

While the contest is scheduled to last five hours, the Finals Director has the authority to lengthen the contest in the event of unforeseen difficulties. Should the Contest duration be altered, every attempt will be made to notify contestants in a timely and uniform manner.

Scoring of the World Finals

The World Finals Judges are solely responsible for determining the correctness of submitted runs. In consultation with the World Finals Judges, the Director of Judging is responsible for determining the winners of the World Finals. They are empowered to adjust for or adjudicate unforeseen events and conditions. Their decisions are final.

Teams are ranked according to the most problems solved. Teams placing in the first twelve places who solve the same number of problems are ranked first by least total time and, if need be, by the earliest time of submittal of the last accepted run.

The *total time* is the sum of the time consumed for each problem solved. The *time consumed* for a solved problem is the time elapsed from the beginning of the contest to the submittal of the first accepted run plus 20 penalty minutes for every previously rejected run for that problem. There is no time consumed for a problem that is not solved.

Computing Environment

The World Finals programming language tools include Java, and C/C++. See the [Programming Environment Web Site](#), for detailed configuration information. Prior to the World Finals, the judges will have solved all problems in Java and C/C++.

Each team will be provided with a single computer and a calculator. All teams will have equivalent computing equipment.

Contestants may not bring any printed materials or machine-readable versions of software or data to the Contest Area. Contestants may not bring their own computers, computer terminals, calculators, or other

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electronic devices to the Contest Area.

Each team member may bring an unannotated natural language printed dictionary. On-line reference materials will be made available as described in the Reference Materials section of the [Programming Environment Web Site](#). Each team will be permitted to provide a PDF file of up to 25 pages of notes within the limits described at the [Team Notebook Requirements](#). Details are provided at [On-Site Registration Instructions](#).

Contestant Conduct in the Contest Area and During the World Finals

DO NOT TOUCH ANYTHING at the team workstations until so directed by the Finals Director.

Contestants are not to converse with anyone except members of their team and personnel designated by the Finals Director. Systems support staff may advise contestants on system-related problems such as explaining system error messages.

A team may be disqualified by the Finals Director for any activity that jeopardizes the World Finals such as dislodging extension cords, unauthorized modification of contest materials, or distracting behavior.



ACM INTERNATIONAL COLLEGIATE PROGRAMMING CONTEST



California State University, Sacramento's

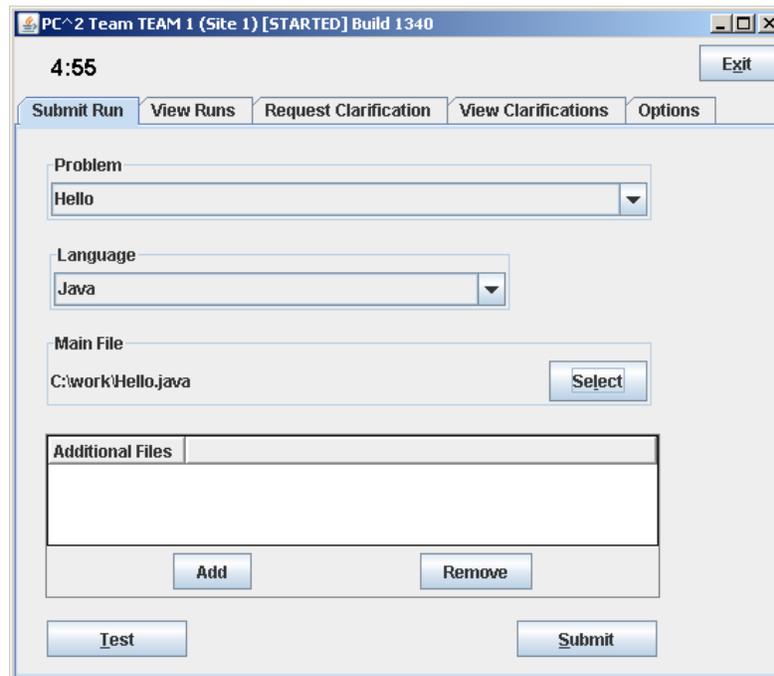
PC² Version 9 Contestant's Guide

This guide is intended to familiarize you with the process of submitting programs to Contest Judges using the PC² ("P-C-Squared") Programming Contest Control system. Starting PC² will bring up the PC² **login screen**, shown below:

To login to PC², click once on the **Name** box on the login screen, enter your assigned team ID, press the TAB key or click on the **Password** box, then enter your assigned password. Your team ID will be of the form **teamxx**, where xx is your assigned team number (for example, "**team3**" or "**team12**"). After entering your team name and password, click on the **Login** button.

Submitting a Program to the Judges

Once the system accepts your login, you will be at the PC² **Main Menu** screen, shown below. Note that the team ID and the team's site location are displayed in the title bar, and the amount of time remaining in the contest is displayed below the title bar.



Clicking on the **SUBMIT RUN** tab near the top of the screen displays the run submission screen, which is shown above.

Clicking in the **Problem** box will display a drop-down list of the contest problems; choose the problem for which you wish to submit a program (called a “run”) to the Judges (in the example, a problem named “Hello” has been chosen).

Clicking in the **Language** box will display a list of the programming languages allowed in the contest; choose the language used by the program that you wish to submit to the Judges (in the example, “Java” has been chosen).

To submit a program to the Judges, you must specify the name of the file containing your **main program**. Click on the **Select** button to invoke a “File Dialog” which lets you locate and select your main file. The dialog lets you automatically navigate to the correct path and file location (in the example, the main program file “C:\work\Hello.java” has been selected). Select only source code files for submission to the Judges. Do not submit data files or executable files.

Test Runs

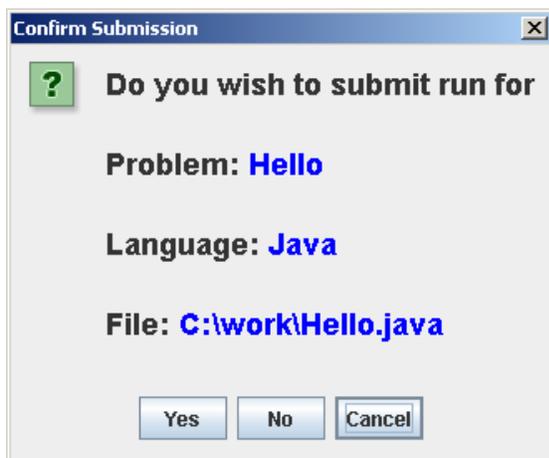
Once you have selected the problem, language, and file to be submitted to the Judges, you should click the **Test** button. This will make a “**TEST RUN**”, meaning it will compile and execute your program *on your machine*, using an environment as nearly identical to that of the Judges as possible (except that it will use *your* data file, not the Judge’s data file).

It is *important* to make a Test Run before submitting your program to the Judges. Just because your program runs the way you intend in the development environment in which you created it does NOT mean that it will necessarily run precisely the same way in the Judge’s environment. Making a Test Run will check this. Test Runs do not count against your score in the contest, but they may save you a lot of time and penalty points by identifying environment problems or differences *before* you submit the program to the Judges.

NOTE: prior to making a Test Run, you must insure that the data file for the program exists, *in the same directory as the source code file.*

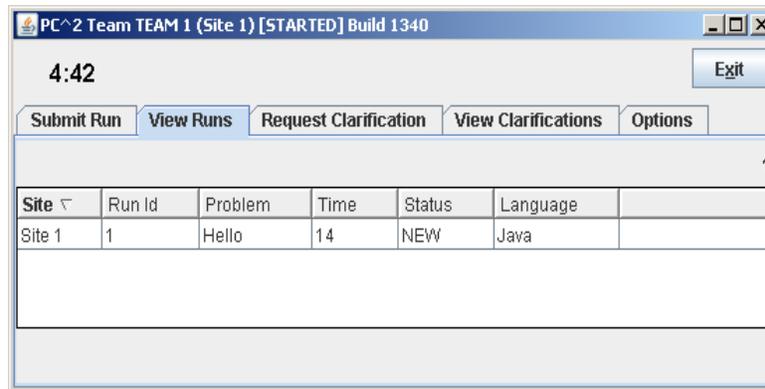
Once you are satisfied with the results of your Test Run, click the **Submit** button. The confirmation dialog shown on the left below will appear; verify the data and then click YES to confirm the submission and send the run to the Judges.

When your run submission has been received by the Judges you will get a “Run Received” confirmation message as shown on the right below.



Run Results

To see the status of runs you have submitted, click the **VIEW RUNS** tab. This will display a screen similar to the one shown below.



When a run is first submitted, the “Status” will be **NEW**, as shown above. The columns on the **VIEW RUNS** display can be *resized* by clicking in the column header margin and sliding the margin left or right. The Runs display can be *sorted* based on any column by clicking in the desired column header. Clicking again in the column header will toggle the sort between ascending and descending order.

When the Judges finish judging your submitted program, a **Judge’s Response** message similar to the one shown below will pop up (provided that PC² is still running on your machine):

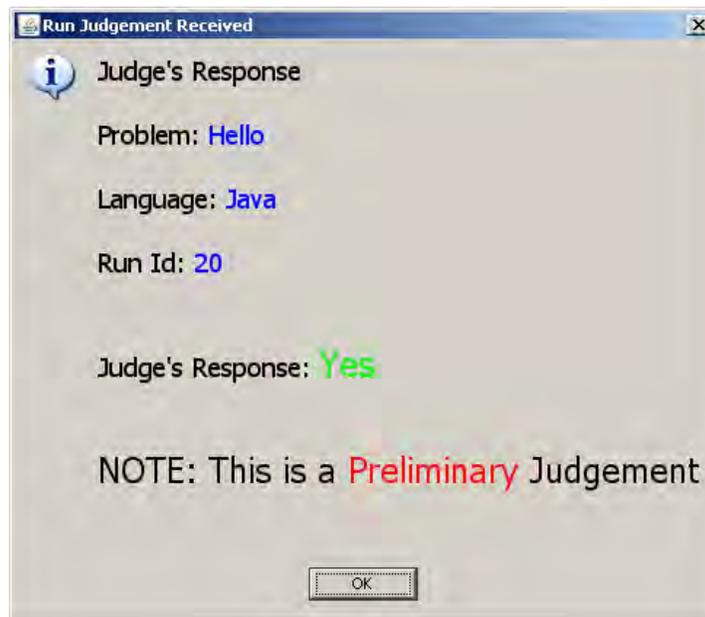
The Judge’s Response message identifies the submission and includes an indication of whether the submitted program correctly solved the problem or not. The “Status” field on the **VIEW RUNS** grid will also change to reflect the Judge’s response.¹



¹ Note: the Contest Administrator has a mechanism which allows suppression of Judge’s Response messages and the display of run status near the end of a contest; you will only be able to see the status of runs which were submitted prior to the suppression time determined by the Contest Administrator. Check with your Contest Administrator to determine what suppression time, if any, is being enforced.

Contest problems are sometimes configured to support what is called *preliminary judging*, which means that the system will return an automated preliminary response immediately following a submission for that problem².

Preliminary responses represent the system's "best estimate" of what the judges are *likely* to return for the problem. If a run is submitted for a problem which is configured for preliminary judging, then a "preliminary judgment" message similar to the one shown below will pop up very shortly after the run is submitted (assuming PC² is still running on your machine):

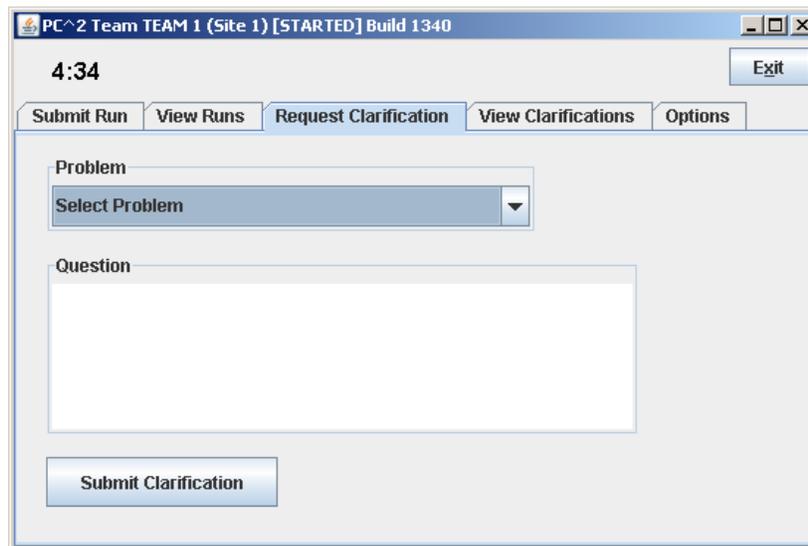


Note that while preliminary responses are intended to help teams by providing rapid feedback, ***they are not official results***. The judges may later return an official Judge's Response with either the same or a different result.

² Check with the Contest Administrator to determine which problems, if any, have been configured for preliminary judging.

Clarification Requests

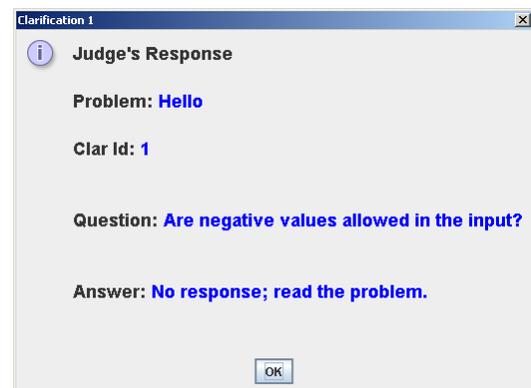
If you feel that one of the Contest problem statements is *ambiguous*, you may submit a “clarification request” to the Judges. To submit a clarification request, click the **Request Clarification** tab near the top of the Main screen. This will bring up a display similar to the following:



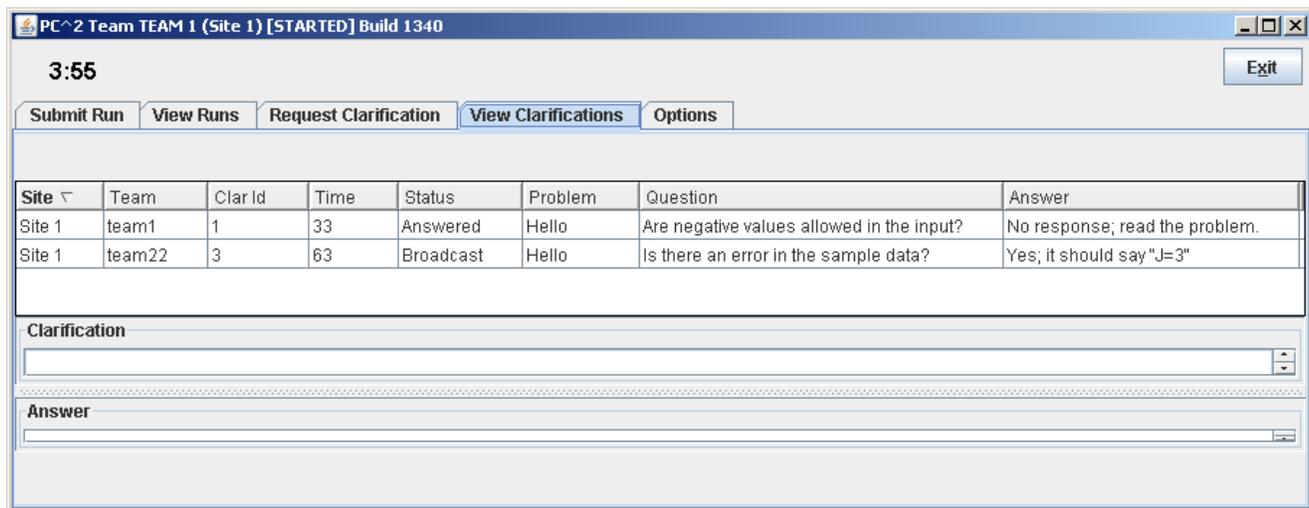
Click the “Problem” box and select the problem for which you are submitting a clarification request, type your question in the text box in the center, and click the “Submit Clarification” button.

Note that while the Judges in a contest will consider requests for clarification of ambiguities in a problem statement, they will not normally respond to other types of questions. If you submit a “clarification request” which asks about something which the Judges feel is adequately covered in the problem statement, they may simply respond to your clarification request with an answer such as “No Response – Read the Problem Statement”.

When the Judges respond to your submitted clarification request, a “Judge’s Response” message similar to the one shown on the right will pop up on your screen (provided that PC² is still running on your machine).



To go back at a later time and view the Judge's responses to previous clarification requests, click the **VIEW CLARIFICATIONS** tab. This will display a screen similar to the one shown below. Note that the grid displays not only clarification requests/responses for *your* team, but also any "broadcast" clarifications from the Judges. It is your team's responsibility to check the Clarifications grid periodically for any such broadcast clarifications from the Judges.



The columns in the display grid can be resized and sorted in the same way as previously described for the Runs display. If a clarification request or corresponding answer text is too long to be easily viewed in the grid, simply click on the grid row containing the clarification request; the clarification request and corresponding answer will be displayed in the boxes below the grid.

Exiting PC²

The **Exit** button logs your team out and shuts down PC² on your machine. This does not affect the status of runs or clarification requests previously submitted, and any Run or Clarification responses sent by the Judges while PC² is shut down will be viewable in the corresponding grids the next time you login. Note however that the dynamic "instant notification" messages which pop up on your screen to notify you of responses from the Judges will not appear unless you are logged in to PC².

Additional Note

Under some operating systems, when PC² is started there will be a "command window" in the background. This window may be "minimized", but *it must not be closed*. Closing the command window will terminate PC².



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PLEASE!

DO
NOT
TOUCH
ANYTHING

UNTIL
TOLD TO DO SO!



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Orientation Problem

Input File: orientation.in

Problem Statement:

For a given integer N , compute the sum of integers between 1 and N inclusive.

Input:

The input consists of integers, one per line. The end of input is denoted by the integer 0.

Output:

For each integer N in the input except the terminating 0, print a single line of output containing two values: the input value N , appropriately labeled, and the sum of all the integers between 1 and N inclusive, also appropriately labeled.

Sample Input	Acceptable Output for the Sample Input
3	N = 3 Sum = 6
6	N = 6 Sum = 21
0	



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Orientation Session Script

This script will be used during the Contest Orientation to take you through the major steps for using the contest environment for the World Finals of the ACM International Collegiate Programming Contest.

At the start of the orientation session your team will be given two sets of account names and passwords: an account name and password for Linux, and a separate account name and password for the PC² contest control system (refer to the separate PC² Contestant's Guide handout for details on the PC² system).

During the orientation session your team must follow *precisely* the directions below to insure that you know how to submit programs, submit clarification requests, check the status of submitted runs and clarification requests, and view the contest scoreboard. The goal of this script is to familiarize you with *all aspects* of the contest environment, and to insure that your system is properly configured for the Contest. It is not merely for you to write a program to solve the Orientation Problem.

Complete each of the following steps during the orientation session.

1. Read the **Orientation Problem** given in the separate handout.
2. Login to the Linux operating system using the Linux account name and password for your team. *Note:* You will be given a new Linux password for the actual World Finals.
3. Start a new terminal command window. If you are using the GNOME desktop, which is the default configuration, click the "Applications" menu item at the top of the screen and then select the "Accessories → Terminal" menu to start a new terminal command window. The "current directory" in the new terminal window will be your "home directory", which is **/home/teamx**, where **x** is your team number.
4. Create a subdirectory named **orientation** in your home directory. Do all your work for the orientation session in the **orientation** directory.

Note: During the actual contest, you may create other directories beneath your home directory to organize your work on different problems. However, do not at any time save anything in any location on your machine except inside your home directory or its subdirectories (unless specifically instructed otherwise); doing so constitutes grounds for disqualification from the Contest.

5. Write a program in C, C++, or Java to solve the Orientation Problem. *Refer to the separate language-specific notes for the language and development environment you choose. Code your solution using the following algorithm.* (Note that this algorithm is not correct. It is designed to illustrate the results of submitting an incorrect solution.)

```

Open the input file
Read N
While ( N ≠ 0 ) do this:
    Initialize the sum to zero
    For K = 1 up to N inclusive
        Add K to the sum
    Write N and the sum, appropriately labeled
    Read the next N

```

Note: The preceding algorithm is provided for the orientation session only. Problems in the actual contest will **not** include solution algorithms or test data.

6. Save your program source code in the **orientation** directory.
7. Create a test data file in the **orientation** directory containing data to test your program. Use the input file name specified in the Orientation Problem as the name of your test data file.

Note: For each contest problem, the name of the data file in your program should be exactly as specified in the problem statement, including case. It should be a simple name with no path.

8. Start the **PC²** system. With the default desktop this is accomplished by clicking on the “Applications” menu, selecting the “Contest Software” submenu, and clicking on the “PC² Team” menu item. Follow the instructions in the **PC² Contestant’s Guide** to login to **PC²** using the **PC²** account name and password provided to you at the start of the Orientation Session. *Note:* you will be given a new **PC²** password for the World Finals.
9. Follow the instructions in the **PC² Contestant’s Guide** to make a “Test Run” of your program. The table below specifies the problem letter you should select when making test runs and when submitting runs and problem clarification requests to the judges during the orientation session. *Do not submit anything to the judges during the orientation session using any other problem letter than the one identified in the table below.* To make a “Test Run”, click the “**Submit Run**” tab on the **PC²** main screen, select the problem, language, and program main file (from the **orientation** directory), then click the **Test** button.

Teams 1 – 10:	Problem A	Teams 51 – 60:	Problem F
Teams 11 – 20:	Problem B	Teams 61 – 70:	Problem G
Teams 21 – 30:	Problem C	Teams 71 – 80:	Problem H
Teams 31 – 40:	Problem D	Teams 81 – 90:	Problem I
Teams 41 – 50:	Problem E	Teams 91 – 100:	Problem J

10. You should see a window displaying the output of your program. Verify that the output is what you expect from your test data, then close the window.
11. After completing the Test Run, submit the program source code to the judges by following the steps in the **PC² Contestant's Guide**: select the problem (using the problem letter given in step 9 above), the language, and the program main file, then click the **Submit** button. **PC²** will display a "Run Submission Confirmation" dialog; check the displayed data to be sure it is correct and then press the **Submit** button on the Confirmation screen. You should then receive a submission confirmation message box confirming receipt of your submission; click the "Close" button to close the box.

*Note: Submit only source code files to the judges. Do *not* submit executable files or test data files.*

12. Judging for the Orientation Problem includes automated "Preliminary Judgment" notification (refer to the **PC² Contestant's Guide** for more information on automated judging and Preliminary Judgment notifications). Shortly after submitting your program you should receive a Preliminary Judgment from the automated judging system. If you coded your program according to the algorithm given in step 5, the Preliminary Judgment should indicate that the program does not correctly solve the problem (see below for an explanation of the reason).

*Note: an announcement will be made prior to the start of the actual World Finals contest regarding which World Finals problems, if any, will be configured to provide automated Preliminary Judgments. Note also that Preliminary Judgments *are not official*; they show only what the unofficial automated judging system thinks is likely to be the judgment which will be applied to a submitted program. Only the final judgment as determined by the World Finals Judges is official.*

13. Click the "**View Runs**" tab on the **PC²** main screen to see the "Runs display grid" showing the status of submitted runs. The Runs display grid is automatically updated when the status of a run changes (such as when it has been judged). Refer to the Run Results section in the **PC² Contestant's Guide** for further details on the Runs display grid.

*Note: While automated Preliminary Judgments are returned quickly, it takes time for the judges to determine the official (final) judgment for a run. A status message "New" or "<Not Judged Yet>" in the Runs display grid means that no judgment (preliminary or final) has been made yet; a status message containing the word "Preliminary" means that the automated judging system has made a preliminary determination but that the judges have not yet made a final determination. Judges will respond with official final judgments as rapidly as possible; **please** be patient.*

14. If you implemented the solution to the Orientation Problem as instructed in step 5, the eventual final judgment from the judges, like the automated Preliminary Judgment, should be "No", indicating the problem was not solved. This is because the algorithm of step 5 does not work for negative integers, and one of the integers in the judges' input data file is -5. The sum of all the integers between 1 and -5 inclusive is -14 [1+0+(-1)+(-2)+(-3)+(-4)+(-5) = -14], but the algorithm does not produce this answer.

15. Ask the judges to clarify whether the input includes negative numbers. To do this, click on the “**Request Clarification**” tab on the **PC²** main screen. Follow the steps under “**Clarification Requests**” in the **PC² Contestant’s Guide** to compose a new clarification request asking “Can the numbers in the input file be negative?” and submit it to the judges. Be sure to select the correct problem letter (as specified in step 9) prior to submitting the clarification request to the judges.

Note: Problem statements in the actual World Finals contest are intended to contain all of the descriptions and specifications required to solve the problem, and the judges will only respond to clarification requests which document a clear ambiguity in the problem statement. The judges do not anticipate responding to clarification requests with any answer except “No response” during the actual contest. (In particular, the judges should reply “No response” to the above clarification request, since the Orientation Problem statement specifies that the input values are integers, and -5 is an integer.) Please read each problem description very carefully to avoid submitting unnecessary clarification requests.

16. While waiting for a reply to your clarification request, fix your program so that it computes the sum of all the integers between 1 and N inclusive for *all* possible values of N. Save the updated program source code in the **orientation** directory. Return to **PC²**, make a Test Run, then submit the program to the judges as before. Be sure to use only the problem letter for your team identified in step 9.
17. While waiting for the judges to respond to your submission and your clarification request, make a hard-copy printout of your updated source code. To do this, go to a terminal window command prompt and type the command `lp <filename>` where `<filename>` is the name of the source code file you wish to print. (See the separate handout “Language-Specific Technical Notes” for information about the location of source code files within specific language development environments.) Your printout should be delivered to your workstation by a runner within 5 minutes; if not, raise your hand and notify contest personnel. (Note that the purpose of this step is to verify that printing from your workstation works correctly.)
18. Click the “**View Clarifications**” tab on the **PC²** main screen to determine whether the judges have responded to your clarification request. You will see a grid displaying all of the clarification requests you have submitted and the responses given by the judges so far. To view the details of any clarification request/response, click on the row for that clarification request. The clarification request question and corresponding answer will be displayed in the boxes below the grid. Note that there may be *other* clarifications or notices that the judges have broadcast to *all* teams; be sure to read those also.

Note: It is your responsibility to check for clarification notices from the judges during the contest.

19. View the development software documentation. If you are going to use Java, click on the Applications → Programming → Java API menu item and verify that it displays the Java API documentation. If you are going to use C++, click on the Applications → Programming → STL Documentation menu item and verify that it displays the C++ Standard Template Library documentation.

20. View the contest scoreboard. With the default desktop this is done by selecting the “Applications→Contest Software” menu and clicking on the “Scoreboard” item. This will start a browser displaying the current (practice) contest standings. (Note: standings in the Orientation Session have no real meaning; the purpose here is to make sure you understand how to view the scoreboard during the actual contest.)
21. If your team intends to use more than one of the allowed programming language environments during the World Finals, or intends to use any special features of an environment, go back and complete each of the steps of this Orientation Script using each additional language environment or feature to insure correct operation.
22. If your team has any questions for the Question-and-Answer (Q&A) session that will follow the Orientation Session, you must submit them during the Orientation Session using the **PC² Clarification Request facility**. Select the clarification category “General” for any Q&A questions. (Even though you submit these questions through **PC²**, they will only be answered publicly during the Q&A session, not through the **PC²** clarification response system.)

*Note: Only questions submitted via the **PC² Clarification Request facility** will be answered during the Q&A session following the Practice Session.*

After you finish all the steps in this script, continue to familiarize yourself with **PC²** and the language development environments. Note: your system will be reset and all files deleted before the start of the World Finals.



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LANGUAGE-SPECIFIC TECHNICAL NOTES

This document contains important information related to the various languages and language environments available for use in the ACM-ICPC World Finals. It is important that your team read and understand *all* the information identified as relating to the language(s) and environment(s) you intend to use during the contest.

All Languages :

- The name of the data file for each problem will be given in the problem statement. Your program must read its input from a file of that name. Do not specify a “path” on the data file name in your program; the program should reference the data file without any path specifier on the front of the file name. Do not read from any other input source. Note that data file names are *case-sensitive*.
- Your program must send its output to “standard output”. Do not write to any other output destination.
- It is your responsibility to create your own test data file for each problem, named as specified in the problem statement. Each test data file must be located in the same directory as the corresponding source code file for the problem.
- All program source code files and/or test data files which you create must be located in or beneath your “home directory”. Your home directory will be named “/home/team x ”, where “ x ” is your team number. (You may create subdirectories beneath your home directory.) Team numbers will be assigned on-site.
- When making a “Test Run” in **PC²**, select only your *source code* file. Do not select any data files when selecting the file to be used in the Test Run; **PC²** will automatically look for the appropriately named data file, in the same directory as your source code file.
- When submitting a run to the Judges using **PC²**, select only your *source code* file. Do not select any data files when submitting a run to the Judges; the Judges will supply their own data file (using the name specified in the problem).

All C/C++ Programs :

- Use the filename extension “.cpp” for C++ program files; use the extension “.c” for C program files. Note that all filename extensions are *lower case*.
- Your solution for any one problem must be contained in a *single* source code file (do not create your own “.h” files, nor more than one “.c” or “.cpp” file, for a given problem).

All Java Programs :

- Your solution for any one problem must be contained in the Java “default package”. The program may not contain any other packages.
- Your solution for any one problem must be contained in a *single* source code file. In other words, all classes must be contained in a single file, exactly one of those classes can be public, that class must have a method with the signature

```
public static void main (String [ ] args)
```

and the source code file name must be identical to the name of the class containing the main method, with “.java” appended.

Command-line Compilation for C/C++ :

To compile a C or C++ program from a command line, type the command

```
compilegcc  progname.c      (for C programs) or
compilegcc  progname.cpp    (for C++ programs)
```

where `progname.c` or `progname.cpp` is the name of your source code file. The `compilegcc` command is a script which invokes the GNU GCC compiler with the parameters “-lm” and “-o progname”, where `progname` is the name of your source code file without the filename extension.

To execute the program after compiling it, type the name of the program file without the filename extension and preceded by the characters “./” (for example, “./progname”).

Command-line Compilation for Java :

To compile a Java program from a command line, type the command

```
javac  progname.java
```

where `progname.java` is the name of your source code file. This will compile the source code in the file `progname.java`, and will produce a class file named `progname.class`.

To execute the program after compiling it, type the command

```
java  progname
```

where `progname` is the name of the class containing your `main` method (your source code file name without the filename extension).

Using PC² With Eclipse:

Eclipse keeps the source code files for all the programs/classes which are part of a given project in a subdirectory whose name is the same as the project name. Project subdirectories in turn are kept in a directory named “workspace”, which is located by default directly beneath your home directory.

For example, the Java source code file named “**MySolutionA.java**” for the project named “ProblemA” would be in the directory “/home/team x /workspace/ProblemA”, where ‘ x ’ is your team number. Likewise, a C++ source file named “**MySolutionB.cpp**” for a project named “ProblemB” would be in the directory named “/home/team x /workspace/ProblemB”, where ‘ x ’ is your team number.

To submit a program to the Contest Judges using **PC²**, push the **PC²** “Select File” button, navigate to the directory containing your source code file, and select the file. *Note that it is your responsibility to insure that you have saved your source code into the file from within Eclipse prior to submitting the program to the Judges.*

You should make a “Test Run” in **PC²** prior to submitting the code to the Judges to insure that the code you are submitting produces the same results as it did within Eclipse. Use the same procedure as described in the preceding paragraph to select the source code file for the Test Run. Note that when you make a Test Run, you must have a copy of your test data file in the same directory as the source code file.

Creating a C/C++ Project in Eclipse :

A C++ program in Eclipse must be created as a “Managed Make C++ Project” (not as a “Standard Make C++ Project”). C++ source code files must have an extension of .cpp (for example, **solutionA.cpp**).

A C program in Eclipse must be created as a “Managed Make C Project” (not as a “Standard Make C Project”). C source code files must have an extension of .c (for example, **solutionA.c**).

Note that for both C and C++ projects in Eclipse, the generated executable program file is named the same as the project name, not the source code file name.