

THE SECOND INTERNATIONAL OLIMPIAD
IN INFORMATICS OF PUPILS
Minsk, July 15-21, 1990

F I N A L R E P O R T

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Introduction

The Second International Olympiad in Informatics of pupils took place in Minsk, BSSR, USSR on July 15-21, 1990.

The Second International Olympiad in Informatics (the IOI-90) was under the aegis of UNESCO and was organized by the USSR State Committee of Public Education, the BSSR Ministry of Public Education, the All-Union Society of Informatics and computing technique, the Byelorussian scientific and production association of computing technique.

25 teams from 24 countries took part in the Olympiad. One country was represented by observers (see p.3). For comparison: 16 teams from 13 countries took part in the first IOI-89. The total number of participants was 94 (in the IOI-89-46).

The Competitions of the IOI-90 were in two rounds (at the IOI-89 - in one round). Each round lasted four hours & besides, the participants had the right to ask questions in written form during the first 30 minutes without any direct contact with the Jury members, who gave written answers. The Jury selected one problem per round from a number of problems which the Scientific Committee had worked out beforehand based on the problems given by the countries-participants. The participants were given the formulations of the selected problems translated by the team leaders into their native languages.

A Personal computer, compatible with IBM PC XT was at each participant's disposal. Besides, the participants had the right to use their own personal computers. China and FRG used the right.

At the end of each round team leaders and representatives of the Jury Coordination Commission collected solutions of problems from participants of corresponding teams. The solution was a diskette with a startin text of the program, a feasible code and also a listing of the program. All these materials were handed in two identical copies: one of them was for the leader of a corresponding team and the other for the coordinator of the team.

Appreciation of the solutions was done on the basis of the test system, worked out by the Scientific Committee and confirmed by the Jury. Examination of the solutions was done by team leaders and the Coordination Commission members independently. Then the joint control was done during which marks for a decision were given and the Jury confirmed them after that.

According to the results of the competitions the Jury distributed diplomas, prizes and special prizes which were handed at the closing ceremony. Besides, every participant was handed a diploma about participation in the Olympiad.

During the Olympiad in Minsk on July 17-19 there was the International Scientific and Methodical Seminar 'Informatics and Education'.

16 reports on the three main themes were heard at the seminar:

- Conception of Informatization of Education;
- Informatics at School;
- Training of Informatics Experts.

111 persons took part in the Seminar.

2. Regulation of the Second International Olimpiad in Informatics

2.1. General Information about the Olympiad

2.1.1. The IOI is the competition in Informatics for pupils not elder than 20 years at the beginning of the competition. (i.e they were born after July 15, 1970).

2.1.2. A team of four (or less) members stands for each country at the Olympiad. The participants are accompanied by an adult team leader. It is preferable to have both boys and girls in a team.

2.1.3. The participants of IOI compete between themselves in solving of two tasks with the help of a personal computer (PC). The IOI is carried out in two rounds, each round a day.

2.1.4. The International Jury selects tasks from a number of them (see p.2.2.2.) proposed by the participating countries beforehand.

2.1.5. The tasks must be independent from the architecture of a concrete PC, they must have an algorithmic character and not demand specialized program passages. High-level programming languages, such as BASIC, PASCAL, C, LOGO, etc. may be used.

2.1.6. The complete solution of a problem includes:

- a) The starting text of the program and the results of its fulfilment printed with the help of a PC (2 copies)
 - b) The last version of the program, the starting text and, perhaps, an executed code, written on a floppy disk (2 copies)
- It is desirable also to present an informal description and grounds of the algorithm on the basis of which the program is written.

2.1.7. One copy of the materials mentioned in p.2.1.6. a) and b) is handed to a representative of the Coordination Commission (see p.2.2.3.) after finishing the competitions. The second copy of these materials is left for a team leader.

2.1.8. A preliminary appreciation of the solution is done by the leader of a corresponding team. The final solution is carried out by the Coordination Commission and the International Jury.

2.1.9. The participants of the competitions may use their own PC familiar to them. Each participant must be able to input, edit and run a program, as well as to carry it from one carried to another. The participants may use the essential quantity of their own floppy disks, on which necessary for them software is written.

Every participant must have two spare disks for writing the results of his (her) work.

According to the participants advanced requirements the organizers may give them, PC compatible with IBM / PC / XT / AT.

2.1.10. The working languages :

- a) All participants use their native languages
- b) A team leader must understand the languages of team members, as well as speak one of the working languages of the competitions - Russian or English.

2.1.11. The Olympiad Organization Committee pays expenses to the team members & the leaders for their staying in Minsk during the IOI.

The expenses dealing with the staying the other persons from the countries-participants and also with the journey of all participants to Minsk and back are not payed.

2.2. The Executive Bodies

2.2.1. The Organization Committee of the IOI.

2.2.2. The International Jury.

The Jury includes :

- a) Chairman
- b) Deputy Chairman
- c) Scientific Secretary
- d) Chairman of the Scientific Committee
- e) team leaders

2.2.3. The Coordination Commission.

The Coordination Commission is a working body of the Jury and is responsible for selection of problems, examination and marks. The Commission includes mainly representatives of the organizer-country.

The Coordination Commission includes :

- 1) The Scientific Committee
- 2) A Group of Coordinators
- 3) A Group of Interpreters

All participating countries may send a representative at their expense for the work in the Coordination Commission.

2.3. Preparation and Carrying out the IOI.

2.3.1. The participating countries are proposed to send 1-2 problems(with the solution in one of the working languages of the Olympiad) at the Organization Committee address up to April 1, 1990.

2.3.2. The Scientific Committee proposes each day problems of the competitions. Not more than five problems are chosen for each round from a number, presented by all participating countries.

2.3.3. Selection of the problems by the International Jury.

- a) The International Jury chooses one problem from five, proposed by the Scientific Committee and discusses its solution, the level of difficulty and the method of appreciation. The appreciation must admit the possibility of the marks of the partial solutions. The Jury formulates the selected problem in the working languages of the IOI (Russian & English).
- b) A team leader translates the provisions of a selected problem into the national language of his team. The Jury checks up and affirms texts of translations.
- c) The Jury decides all other matters.

2.3.4. Procedure of the rounds.

- a) Every round is carried out in one day and lasts for 4 hours.
- b) During the first 30 minutes after the beginning of a round the

participants may ask questions, clarifying the formulation of a problem. The questions are asked in written form in a participant's native language. The Jury decides what to answer.

- c) After finishing of a round a team leader together with a representative of the Coordination Commission collect the participants' solutions of a corresponding team.
- d) The team leaders check up all team members' solutions of the problems, submit a proposal about marks and reconcile them with the Coordination Commission. The Jury makes decisions about final marks.
- e) The Jury determines the quantity of marks for getting 1, 2, 3 prizes.

2.3.5. Official Closing.

- a) The prizes are presented at the special ceremony.
- b) All participants get diplomas about participation in the IOI.

3. List of Participating Countries

1. Argentina
2. Byelorussia
3. Bulgaria *
4. Great Britain
5. Hungary *
6. Vietnam *
7. GDR *
8. Greece *
9. Italy
10. Spain
11. China *
12. Korea
13. Cuba *
14. Kuwait
15. Morocco
16. Mongolia
17. Netherlands
18. Norway
19. Poland *
20. Romania
21. USSR *
22. Thailand **
23. FRG *
24. Czechoslovakia
25. Sweden
26. Yugoslavia

Note: Countries marked with a symbol * took part also in the 101-89.
Countries marked with a symbol ** were represented at the
101-90 only as observers.

4. Organizers and sponsors.

It is rather symbolic that the 2nd IOI is being held in 1990- the year proclaimed by the UN General Assembly the International Literacy Year. The choice of venue is also by no means accidental - it is here that Francisk Skorina, the first Byelorussian printer and an outstanding scientist and enlightener whose 500th anniversary is celebrated all over the world this year, was born.

It is a great honour for our Republic to host the international forum of young people from Europe, Asia, Latin America and Africa.

We sincerely believe that this event will further promote friendly links and mutual understanding between peoples through cooperation in the sphere of education.

The 2nd IOI has been made possible by the joint efforts of various governmental, scientific and professional organizations: UNESCO, State Committee of the USSR for People's Education, the Ministry of People's Education of the Byelorussian Soviet Socialist Republic and the All-Union Computer and Informatics Society, Byelorussian research - and - production association of computers are among them.

The 2nd IOI has been sponsored by

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Minsk Branch

USSR, 220002, Minsk

Starovilensky Trakt, 41

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Fax : 200 22 16/17

5. The Organization Committee of the Second
International Olympiad in Informatics.

Sukhnat Lyudmila Konstantinovna	- Chairman of the Organization Committee
Kozulin Alexander Vladislavovitch	- Deputy Chairman of the Organization Committee
Kruglei Maxim Maximovitch	- Deputy Chairman of the Organization Committee
Kurbatsky Alexander Nicolayevitch	- Deputy Chairman of the Organization Committee
Petrovsky Gennady Nikolayevitch	- Deputy Chairman of the Organization Committee
Shemetov Dmitry Ivanovitch	- Deputy Chairman of the Organization Committee
Ratobylskaya Emilia Sergeevna	- Executive Secretary of the Organization Committee

6. The Jury Leading Bodies of the Second International Olympiad in Informatics

The Jury Chairman:

Krasovsky Nicolai Nikolayevich
Academician of the Academy of Sciences of the USSR,
Sverdlovsk

Deputies of the Jury Chairman:

Sidorov Anatoly Fyodorovich
Corresponding member of the Academy of Sciences of the USSR;
Katkov Vladislav Leonidovich
Professor, Minsk

The Chairman of the Coordination Commission
Rogovich Valery Iosifovich
Sverdlovsk

The Jury Scientific Secretary
Strusevich Vitaly Alexandrovich
Minsk

The Scientific Committee:
Korzhenovich Yury Vladimirovich, Minsk
- Chairman of the Scientific Committee
Volkov Igor Anatolyevich, Minsk
- Member of the Scientific Committee
Derzhansky Ivan, Bulgaria
- Member of the Scientific Committee
Strusevich Vitaly Alexandrovich
- Member of the Scientific Committee

7. Commentaries to the Preparatory Period

1. The representatives of 13 countries took part in the previous International Olympiad in Informatics (the 101-89, Pravets, Bulgaria, 1989). To increase the number of participating countries the organizers of the Second International Olympiad in Informatics (the 101-89) sent information about the forthcoming competitions to more than 50 countries. As the Olympic movement hasn't taken shape yet and in some countries such competitions don't take place, the organizers didn't know institutions and personalities in each concrete country, which had the right to make a decision about participation of a country in the 101. The following channels were used while sending information about the forthcoming Olympiad:

- UNESCO corresponding subdivisions;
- the countries embassies in the USSR;
- personal connections

It's a pity, but the organizers didn't get the proper support from the Working Coordination Group for organization of the International Olympiads in Informatics. The Group had been specially organized at the 101-89 for the support of the future international Olympiads. The representatives of 8 countries from different regions, as well as UNESCO, became members of it. But the organization of the Group had apparently the declarative character. The necessary financial issues were not solved and as a result the representatives of the Working Group could not meet between the first and the Second Olympiads.

2. The first informational letter and the preliminary regulation of the 101-90 were sent in October 1989. There was a request in the letter to the participating countries to send and order for participation in the Olympiad and versions of the problems, used at the national competitions in informatics in the address of the Organization Committee of the 101-90 up to December 15, 1989. But as it turned out not all countries could give such information in good time since the documents sent found people with interests at stake in most cases above the Organization Committee accepted the orders up to June 1990.

Not all participating countries found it possible to send to the organizers versions of the problems of the national competitions in informatics. The Organization Committee considered it to be a pleasant duty to express its thankfulness to the countries, which fulfilled the organizers' request: Bulgaria, Hungary, Mongolia, Kuwait, Romania, FRG, Yugoslavia.

The Information given by these countries helped the Organization Committee to make a fuller idea about traditions of carrying out of competitions of such a kind in different countries, to make well-founded conclusions about the types of problems, which were reasonable to select for carrying out of the 101-90 rounds.

3. There was a request in the sent regulations of the 101-90 in October 1989 to the participating countries to give one or two problems in the address of the Organization Committee. The Scientific Committee of the International Jury was to select the

problems for the Olympiad rounds. The Organization Committee expresses its sincere gratitude to the countries which sent the problems:

- Bulgaria (2 problems)
- Great Britain (2 problems)
- China (2 problems)
- Korea (2 problems)
- Romania (2 problems)
- Checkoslovakia (1 problem)
- FRG (2 problems)

It's a pity but not all the authors of the problems informed about the algorithm of the solution (in the form of the program in one of the algorithmical languages or of the pseudocode), sometimes there was no information about the existence of the author's solution at all.

The authors proposed the system of testing of solutions and estimation of tests very seldom. Not all formulations of the problems were done in one of the working languages of the Olympiad.

All problems were sent too late. It is enough to say, that to May 1990 the Organization Committee had not a single problem at its disposal sent from abroad. Four from the above mentioned problems were presented some days of the beginning of the Olympiad and, of course, no proper approbation before was done. Under such conditions the Organization Committee was forced to rely upon the problems presented by the USSR and Byelorussia.

4. The Organizers of the Olympiad were faced with certain difficulties while forming the leading bodies of the International Jury. The corresponding members of the Academy of Sciences of the USSR S. S. Lavrov (Leningrad) was invited as Chairman of the Jury in October 1989 S. S. Lavrov took an active part in the working out of the preliminary regulation of the Olympiad and in the formation of the working bodies of the International Jury. It is a pity but Professor Lavrov couldn't head the work of the Jury during the Olympiad because of his health. The Organization Committee expresses its deep gratitude for the great work done during the preparation of the Olympiad and wishes him to recover soon.

In June 1990 the Organization Committee addressed a request to the academician of the Academy of Sciences of the USSR, N. N. Krasovsky (Sverdlovsk) to take duties of Chairman of the Jury. The corresponding member of the Academy of Sciences of the USSR, A. F. Sidorov (Sverdlovsk) was invited as Deputy Chairman of the Jury. The Organization Committee expresses its deep gratitude to N. N. Krasovsky and A. F. Sidorov who agreed kindly to assume hard duties in the leadership of the International Jury.

5. The Organization Committee succeeded in avoiding many difficulties of the preparatory period and during the Olympiad owing to the great assistance rendered by the Organizers of the previous Olympiad. Professor P. Kenderov, P. Azalov, A. Boychev, M. Gorancheva, I. Derzhansky, E. Kelevedzhiev, K. Manev and many other Bulgarian colleagues shared their experience generously. The Organization Committee expresses to all of them sincere gratitude.

The Organization Committee of the Second International Olympiad in Informatics assures the Organizers of the following International Olympiads that it is ready to support and share its experience in carrying out such competitions.

8. General programme.

15.07.90 SUNDAY

(The day of arrival)

Arrival of the participants of the IOI in Minsk. Registration. Accommodation at the hotel.

- 9.00 Breakfast at the hotel
- 13.00 Lunch at the hotel
- 17.30 Dinner at the hotel
- 19.00 Theatre
- 19.30 The first meeting of the Jury (Place: Minsk Young Pioneer Palace)

16.07.90 MONDAY

- 8.30 Breakfast at the hotel
- 10.00 A tour of Minsk
- 13.00 Lunch at the hotel
- 15.00 The Opening Ceremony of the 2nd IOI (Palace)
- 16.00 Computer equipment introducing
- 16.00 The second meeting of the Jury (until 18.00)
- 19.00 Dinner at the hotel

17.07.90 TUESDAY

- 6.30 Coffee for the Jury (Palace)
- 7.00 The third meeting of the Jury (until 10.00)
- 8.30 Breakfast at the hotel (for the teams and coordinators)
- 10.00 The 1st Round of the IOI (until 14.00)

- 11.00 Breakfast at the hotel (for the Jury)
- 12.30 The fourth meeting of the Jury (until 14.00, Palace)
- 15.00 Lunch at the hotel
- 16.30 Session of the Coordination Commission.
Checking up the solutions of the 1st Round problem (Palace)
- 18.00 Joint analysis of solutions (the team leaders + participants, until 19.30, Palace)
- 20.00 Dinner at the hotel

18.07.90 WEDNESDAY

- 6.30 Coffee for the Jury (Palace)
- 7.00 The fifth meeting of the Jury (until 10.00)
- 8.30 Breakfast at the hotel (for the teams and coordinators)
- 10.00 The 2nd Round of the IOI (until 14.00)
- 11.00 Breakfast at the hotel (for the Jury)
- 12.30 The sixth meeting of the Jury (until 14.00, Palace)
- 15.00 Lunch at the hotel
- 16.30 Session of the Coordination Commission.
Checking up the solutions of the 2nd Round problem (until 20.30, Palace)
- 16.30 Joint analysis of solutions (the team leaders + participants, until 18.00, Palace)
- 18.30 Dinner at the hotel (the team leaders + participants)
- 20.30 The Party at the Palace. Entertainment Programme
- 21.00 Dinner at the hotel (Coordination Commission)

19.07.90 THURSDAY

- 7.00 Coffee for the Jury and Coordinators (Palace)
- 7.30 Joint Session of the Coordination Commission and team leaders. Estimation of the results of the 1st Round of the IOI (until 11.30)
- 8.30 Breakfast at the hotel (for the teams)
- 9.30 A full day tour of the countryside for the teams : coach excursion to Khatyn, Raubichy or to the pioneer camp "Zubrionok"
- 11.30 Joint Session of the Coordination Commission and team leaders. Estimation of the results of the 2nd Round of the IOI (until 13.00)
- 13.30 Lunch at the hotel (for the Jury)
- 15.00 The continuation of the Joint Session (until 18.00, Palace)
- 18.00 The seventh meeting of the Jury (Palace)
- 21.00 Dinner at the hotel

20.07.90 FRIDAY

- 8.30 Breakfast at the hotel
- 9.30 Joint Session of the Coordination Commission and team leaders. Final marking of the results of the IOI (until 11.00)
- 10.00 A tour of Botanic Gardens, Museums, Children's Railway
- 13.00 The eighth meeting of the Jury. Summing up. Making decisions on diploma-, prize- and special prize-winners
- 13.30 Lunch at the hotel (for the teams)
- 14.30 Lunch at the hotel (for coordinators and team leaders)
- 17.30 Dinner at the hotel

- 18.30 The Presentation of Awards Ceremony (Palace)
- 20.30 Cocktail-party on behalf of the Minister
of Public Education of Byelorussia (at the hotel)

21.07.90 SATURDAY
(the day of departure)

- 8.30 Breakfast at the hotel
- 13.00 Lunch at the hotel
- 18.00 Dinner at the hotel

Results of the Discussion of the Submitted Problems.

The Scientific Committee of the International Jury selected six problems from a number sent in the address of the Olympiad Organization Committee. The International Jury was to choose one of them. On the eve of the Olympiad there was a sitting of the Jury where the procedure of voting was discussed. Four procedures were submitted:

- secret voting when every Jury member votes for only one problem; the problem for a round is determined by the majority of the given voices for it;
- open voting when every Jury member can vote for any number of problems; the problem for a round is determined by the majority of the given voices for it;
- open voting, when every Jury member may vote for not more than 3 problems; the problem for a round is determined by the majority of the given voices for it;
- multistage open voting, at every stage of which every Jury member may vote for any number of problems, but the problem taken a minimal number of voices in the previous voting is not admitted for the next stage.

The Jury confirmed the last procedure of voting by the majority of voices. The analogous procedure of voting was used while selecting the problems in the 101-89.

According to the Jury Chairman's proposal it was decided that in the voting during the selection of a problem only the team leaders would vote since 5 representatives of one and the same country were in the Jury.

The Jury members were proposed the texts of the problems formulations in the working languages of the Olympiad. Corrections eliminating errors and ambiguities were made in some formulations during the discussion.

After the two-hours study and discussion of the problems formulations the Jury proceeded to voting. And as a result problem 1 was selected. The results of the voting are reflected in the following table:

STAGES OF VOTING					
PROBLEM	1	2	3	4	5
1	14	16	17	16	16
2	12	11	9	-	-
3	10	11	12	12	10
4	12	14	14	11	-
5	7	-	-	-	-
6	10	7	-	-	-

However, some team leaders paid attention to the fact that the formulations of the selected problem required a closer definition. It was proposed to describe the way the problem was put more strictly, to characterize the type of input and output

information. As a result of the discussion the formulation of the problem was worked out in Russian, then it was read out, interpreted in English and confirmed by the Jury. After that the worked out formulation of the problem was translated into English and printed in both working languages in a necessary number of copies.

It's a pity, but four hours had passed from the moment of the selection of the problem till its final formulation in native languages was arrived at. Thus, the round began at 13.00, but not at 10.00, as it had been planned.

The sitting of the Jury was held after the beginning of the round and the following decisions were arrived at:

- to begin the second round of the Olympiad not at 10.00 on July 18, as it had been planned, but at 13.00;
- to assign the Scientific Committee to represent for the Jury not six problems, as it had been done for the first round, but 3-4;
- to allow the Scientific Committee to change the author's formulation of problem in order to reduce time for the working out of the final problem formulation selected by the Jury for the second round.

11. Distribution of Diplomas, Prizes and Special Prizes

The results of the distribution of diplomas, prizes and special prizes of the Second International Olympiad in Informatics are given below. The rewards were distributed at the special sitting of the International Jury and were Handed at the Closing Ceremony.

The First Degree Diplomas and Prizes

1. Tsvetomir PETROV, Bulgaria
2. Fridtjof SIEBERT, FRG
3. Teodor TONCHEV, Bulgaria
4. Dmitry KOZLOV, USSR
5. Daniel SZABO, Hungary
6. Georgy DATUASHVILI, USSR
7. JIANG XIAOYE, China
8. Nicolas KUZMINSKI, Argentina

The Second Degree Diplomas and Prizes

1. YANG CHENG, China
2. LI YIAN, China
3. Jacek CHRZASZCZ, Poland
4. THAN HOAI LINH, Vietnam
5. Andrei-Horia CALDARARU, Romania
6. Aleksandar SUSNJAR, Yugoslavia
7. Ulf NIELANDER, GDR
8. Zoltan HORNAK, Hungary
9. Christian KLOSS, FRG
10. Oleg TABOROVETS, BSSR

The Third Degree Diplomas and Prizes

1. YANG YUNHE, China
2. Miroslav KOCAN, Czecho-Slovakia
3. Petter ERICSON, Sweden
4. Castro ABDUL VARTINEZ, Cuba
5. NGUYEN VIET HA, Vietnam
6. Igor MALY, Czecho-Slovakia
7. Rafal BOGACZ, Poland
8. Yuri ZAITSEV, USSR
9. Dario ROBAK, Argentina
10. NGUYEN ANH LINH, Vietnam
11. Leon MAGDIC, Yugoslavia
12. Sergei LINEV, BSSR

Encouragement Prizes

1. Rein VARBLANE, USSR
2. Radim KRIVANEK, Czecho-Slovakia
3. Mircea-Valer PAUCA, Romania
4. Fleur KEPLIN, Netherlands
5. Stoyan KHALKALIEV, Bulgaria
6. Georgi CHALAKOV, Bulgaria
7. Ralf LEHNMAN, GDR
8. Vanja MALIDZAN, Yugoslavia
9. Erno FEGES,, Yugoslavia
10. Szymon KIELBASA, Poland
11. Radu PREDA, Romania
12. Uwe RAST OFER, GDR
13. Horhe Armando NAVARRO PARSIA, Cuba
14. Stephan KOHLITZ, FRG
15. Rares-Dorin PORUTIU, Romania

Prizes to the Best Team Participants

1. Angus CAMPBELL, Greate Britain
2. Alixis CHOUCOULAS, Greece
3. Raffaele PELLECCIA, Italy
4. Jose Manuel ALLJARILLA CORTEZON, Spain
5. KIM VON YEN, Korea
6. Muhammed RAMADAN, Kuwait
7. Fatima TOUKHATI, Morocco
8. Chuluunbaatar LHAGVAJARGAL, Mongolia
9. Kristian Holth HANSSEN, Norway

The Special Prize for the Victory in the First Round

Fridtjof Siebert, FRG

The Special Prize for the Victory in the Second Round

1. Tsvetomir PETROV, Bulgaria
2. Dmitry KOZLOV, USSR
3. Daniel SZABO, Hungary

The Special Prize for the Best Participant of the BSSR Team
Oleg TABOROVETS, BSSR

The Special Prize "For the Will to the Victory"

Mats ANDERSSON, Sweden

The Special Prize "For the Best Result Among the Girls"

Fleur KEPLIN, Netherlands

The Special Prize "To the Youngest Participant- boy of the Olympiad"

Muhammed RAMADAN, Kuwait (born January 16, 1976)

The Special Prize "To the Youngest Participant-girl of the Olympiad"*

Fieke DEKKER, Netherlands (born October 14, 1974)

The Special Prize "To the Best Team"

1. BULGARIA
2. CHINA
3. USSR

The Special Prize To the Team, Made the Longest Way to the Place of the Olympiad
Argentina

The Special Prize To the Most Insistant Team**

* The Prize was not handed at the Closing Ceremony because of the Organizers' mistake.

The presentation was held some later.

** The Prize was handed to the Great Britain team, which to the organizers' opinion overcame great difficulties dealing with the getting of entry visas.

12. The Working Group in Coordination of Actions Dealing with the Following Olympiads

At the final sitting of the Jury Mr. Ris Kock, the Netherlands team leader proposed to create the Working Group for Coordination of Actions dealing with the organization of the following Olympiad in Informatics. The Group was created and it was decided to include in it the representatives of the following organizations and countries:

1. UNESCO
2. Bulgaria
3. BSSR
4. Greece
5. FRG
6. Netherlands
7. Great Britain
8. China
9. Argentina

Conclusion

This Olympiad was only the Second International Olympiad in Informatics. The traditions of such competitions have been just originating. The following Olympiads will take place in Greece (the 101-91) and in Germany (the 101-92). The organizers of the Second Olympiad consider the sharing of some consideration to be their pleasant duty. They must be useful for the organizers of the following Olympiads

1. As during the Olympiad-90, the competitions should be carried out in two rounds. However, unlike the 101-90, it may be recommended to plan a free day between the rounds.
2. The organizers of the 101-90 experienced certain difficulties while selecting the problems (seep.7) and it was a cause of the first round delay. The following measures may be recommended to the organizers of the following Olympiad:
 - every participating country must give at least one problem to the Organization Committee;
 - the given problem must include the author's formulation in a working language of the Olympiad, informal description of the algorithm solution, the program in one of the algorithmical languages, tests and the system of their estimation;
 - the author must also give to the Scientific Committee, or to other body, responsible for the preparation of the problem, the right to insert necessary amendments, to propose other tests ect.
 - All problems given to the following Olympiad organizers' disposal must be published in the Olympiad report.
3. According to the experience of two Olympiads the set problems as a rule have quit a certain nature. On the whole they are combinatorial-logical and games. At the same time the notion "informatics" presumes a wider spectrum, including modeling problems, development of the computing systems fragments and systems of the database control, ect. The problem No 5 set in the first round of the 101-90 may be referred to a number of such untraditional, but no doubt, interesting problems (see p.9.1). The authors of the following Olympiad problems should think about the broadening of the set problems.
4. The Scientific Committee or other body, responsible for the preparation of problems must submit for the International Jury the considered formulation of problems. Probably, the inserting of additional subproblems in a selected problem shouldn't be permitted directly at the Jury sitting. Such amendments are made in the conditions of time shortage without any preliminary approbation and can lead to undesirable consequences.

One of the former members of the 101-89 Scientific Committee became a member of the 101-90 Scientific Committee together with the representatives of the organizer-country. Such continuity seems to be preserved during the following Olympiads.

6. The representatives of other participating countries were in the 101-89 Coordination Commission together with the representatives of the organizer-country. This experience should be appreciated as a positive one and should be used in the following Olympiads.
7. The Chairman of the Coordination Commission, provided the leadership of the checking up of problems solutions is recommended to be a member of the leading Jury bodies.
8. The Jury sitting of the first two Olympiads were in two working languages - Russian and English. The use of two of them with the sequence interpretation complicates such sittings. We recommend to the future Olympiads organizers to use one working will be more productive.
9. The Working Group in coordinations of actions must help significantly the organizers of the future Olympiads (see p. 12). To work more fruitfully the Working Group must gather no less than three times between two Olympiads: in the country of the last Olympiad, in the country of the next Olympiad and in the third country.

APPENDIX

Results of participants

COUNTRY	PARTICIPANT'S NAME	ROUND 1		ROUND 2		TOTAL	
		POINTS	PLACE	POINTS	PLACE	POINTS	PLACE
BULGARIA	PETROV	65	2	95	1	160	1
FRG	SIEBERT	87	1	66	17	153	2
BULGARIA	TONCHEV	62	3	85	7	147	3
USSR	KOZLOV	49	4	95	1	144	4
HUNGARY	SZABO	35	7	95	1	130	5
USSR	DATUASHVILI	41	5	86	5	127	6
CHINA	JIANG XIAOYE	25	22	94	4	119	7
AGENTINA	KUZMINSKI	25	22	86	5	111	8
CHINA	YANG CHENG	35	7	73	13	108	9
CHINA	LI JIAN	35	7	73	13	108	9
POLAND	CHRZASZCZ	23	41	83	8	106	11
VIETNAM	THAN HOAI	30	19	74	12	104	12
ROMANIA	CALDARARU	20	44	83	8	103	13
YUGOSLAVIA	SUSNJAR	30	19	68	16	98	14
GDR	NIELANDER	19	47	78	10	97	15
HUNGARY	HORNAK	15	48	76	11	91	16
FRG	KLOSS	25	22	66	17	91	16
BSSR	TABOROVETS	25	22	65	19	90	18
CHINA	YANG YUNHE	15	48	73	13	88	19
CZECHO-SLOV	KOCAN	25	22	62	20	87	20
SWEDEN	ERICSON	28	21	55	23	83	21
CUBA	ABDUL MARTINEZ	35	7	47	30	82	22
VIETNAM	NGUYEN VIET	20	44	62	20	82	22
CZECHO-SLOV	MALY	25	22	55	23	80	24
POLAND	BOGACZ	35	7	45	32	80	24
USSR	ZAITSEV	25	22	54	25	79	26
ARGENTINA	ROBAK	25	22	51	26	76	27
VIETNAM	NGUYEN ANH	40	6	35	40	75	28
YUGOSLAVIA	MAGDIC	23	41	51	26	74	29
BSSR	LINEV	25	22	47	30	72	30
USSR	VARBLANE	25	22	45	32	70	31
CZECHO-SLOV	KRIVANEK	10	63	60	22	70	31
ROMANIA	PAUCA	25	22	41	35	66	33
NETHERLANDS	KEPLIN	35	7	28	47	63	34
BULGARIA	KHALKALIEV	25	22	35	40	60	35
BULGARIA	CHALAKOV	35	7	24	52	59	36
GDR	LEHNMANN	35	7	24	52	59	36
YUGOSLAVIA	FEGES	15	48	41	35	56	38
YUGOSLAVIA	MALIDZAN	15	48	41	35	56	38
POLAND	KIELBASA	25	22	31	44	56	38

COUNTRY	PARTICIPANT'S NAME	ROUND 1		ROUND 2		TOTAL	
		POINTS	PLACE	POINTS	PLACE	POINTS	PLACE
ROMANIA	PREDA	4	73	51	26	55	41
GDR	RASTOFER	32	18	23	55	55	41
CUBA	NAVARRO PARSIA	35	7	17	59	52	43
FRG	KOHLITZ	25	22	26	50	51	44
ROMANIA	PORUTIU	15	48	34	42	49	45
SWEDEN	ANDERSSON	3	74	45	32	48	46
GR BRITAIN	CAMPBELL	21	43	27	49	48	46
HUNGARY	BERENDI	0	75	48	29	48	46
GDR	DANNEBERG	35	7	12	65	47	49
BSSR	KHAMENYA	25	22	20	56	45	50
ITALY	PELLECCHIA	15	48	29	45	44	51
CUBA	PEREZ SAVEDRA	20	44	24	52	44	51
KOREA	KIM VON YEN	5	71	38	39	43	53
ARGENTINA	BACKER	13	62	29	45	42	54
GR BRITAIN	OAKLEY	0	75	41	35	41	55
HUNGARY	GULYAS	35	7	3	74	38	56
POLAND	BEHR	25	22	13	61	38	56
ITALY	RUSO	25	22	13	61	38	56
FRG	WILCZEK	25	22	11	67	36	59
NORWAY	HANSSEN	0	75	32	43	32	60
GREECE	CHOUCHOULAS	15	48	16	60	31	61
KUWAIT	RAMADAN	10	63	20	56	30	62
CZECHO-SLOV	CIZEK	0	75	28	47	28	63
SPAIN	ALJARILA CORTESON	15	48	13	61	28	63
ITALY	ESPOSITO	25	22	2	75	27	65
BSSR	NAUMOV	15	48	12	65	27	65
KOREA	KIM KHAK SON	0	75	25	51	25	67
KOREA	TSOI CHOL MIN	15	48	7	69	22	68
VIETNAM	NGUYEN HOA	15	48	7	69	22	68
NORWAY	ROGNDALLEN	5	71	13	61	18	70
ARGENTINA	MASTRACCHIO	0	75	18	58	18	70
NORWAY	HOLMGREN	15	48	2	75	17	72
CUBA	GONZALEZ DIAZ	15	48	2	75	17	72
MONGOLIA	LHAGVAJARGAL	10	63	6	73	16	74
KUWAIT	GHANIM	15	48	0	82	15	75
MONGOLIA	BALDAMNYAM	10	63	2	75	12	76
ITALY	ROMANO	0	75	11	67	11	77
SPAIN	SAEZ GOMEZ	10	63	1	79	11	77
MOROCCO	TOUKHSATI	10	63	0	82	10	79
NORWAY	BRADTZAEG	1	63	0	82	10	79

COUNTRY	PARTICIPANT'S NAME	ROUND 1		ROUND 2		TOTAL	
		POINTS	PLACE	POINTS	PLACE	POINTS	PLACE
SWEDEN	BRANDSTROM	0	75	7	69	7	81
GREECE	KALNIS	0	75	7	69	7	81
GREECE	SARLIS	7	70	0	82	7	81
KUWAIT	BUKHOMAD	0	75	1	79	6	84
NETHERLANDS	SAVELSBERGH	0	75	1	79	6	84
GR BRITAIN	ANSELL	0	75	0	82	5	86
GR BRITAIN	SANDERS	0	75	0	82	5	86
KUWAIT	AL-RASHIDI	0	75	0	82	5	86
MOROCCO	AMINE	0	75	0	82	5	86
MOROCCO	HICHAM	0	75	0	82	5	86
MOROCCO	MOUHCINE	0	75	0	82	5	86
NETHERLANDS	DEKKERS	0	75	0	82	5	86
SPAIN	CHAVES SALOR	0	75	0	82	5	86
SPAIN	SANCHEZ MUNOZ	0	75	0	82	5	86

Team results

COUNTRY	PARTICIPANT'S NAME	ROUND 1		ROUND 2		TOTAL	
		POINTS	PLACE	POINTS	PLACE	POINTS	PLACE
ARGENTINA Team leader: S. PORTER	BACKER	13	62	29	45	42	54
	KUZMINSKI	25	22	86	5	111	8
	MASTRACCHIO	0	75	18	58	18	70
	ROBAK	25	22	51	26	76	27
	Team sum Team mean	63 15.75	14	184 46	8	247 61.75	12
BSSR Team leader: V. KOTOV	KHAMENYA	25	22	20	56	45	50
	LINEV	25	22	47	30	72	30
	NAUMOV	15	48	12	65	27	65
	TABOROVETS	25	22	65	19	90	18
	Team sum Team mean	90 22.50	9	144 36	12	234 58.50	13
BULGARIA Team leader: P. AZALOV	CHALAKOV	35	7	24	52	59	36
	KHALKALIEV	25	22	35	40	60	35
	PETROV	65	2	95	1	160	1
	TONCHEV	62	3	85	7	147	3
	Team sum Team mean	187 46.75	1	239 59.75	3	426 106.50	1
CHINA Team leader: W. WU	JIANG XIAOYE	25	22	94	4	119	7
	LI JIAN	35	7	73	13	108	9
	YANG CHENG	35	7	73	13	108	9
	YANG YUNHE	15	48	73	13	88	19
	Team sum Team mean	110 27.50	5	313 78.25	1	423 105.75	2
CUBA Team leader: E.G. BENNET RODRIGEZ	ABDUL MARTINEZ	35	7	47	30	82	22
	GONZALEZ DIAZ	15	48	2	75	17	72
	NAVARRO PARSIA	35	7	17	59	52	43
	PEREZ SAVEDRA	20	44	24	52	44	51
	Team sum Team mean	105 26.25	7	90 22.50	16	195 48.75	14

COUNTRY	PARTICIPANT'S NAME	ROUND 1		ROUND 2		TOTAL	
		POINTS	PLACE	POINTS	PLACE	POINTS	PLACE
CZECHO-SLOVAKIA Team leader: P.TOMCSANY	CIZEK	0	75	28	47	28	63
	KOCAN	25	22	62	20	87	20
	KRIVANEK	10	63	60	22	70	31
	MALY	25	22	55	23	80	24
	Team sum	60		205		265	
	Team mean	15.00	15	51.25	6	66.25	10
FRG Team leader: P.HEYDERHOFF	KLOSS	25	22	66	17	91	16
	KOHLITZ	25	22	26	50	51	44
	SIEBERT	87	1	66	17	153	2
	WILCZEK	25	22	11	67	36	59
	Team sum	162		169		331	
	Team mean	40.50	2	42.25	11	82.75	4
GREAT BRITAIN Team leader: W.JAMES	ANSELL	0	75	0	82	5	86
	CAMPBELL	21	43	27	49	48	46
	OAKLEY	0	75	41	35	41	55
	SANDERS	0	75	0	82	5	86
	Team sum	21		68		89	
	Team mean	5.25	24	17.00	17	22.25	18
GDR Team leader: M.FOTHE	DANNEBERG	35	7	12	65	47	49
	LEHNMAN	35	7	24	52	59	36
	NIELANDER	19	47	78	10	97	15
	RASTOFER	32	18	23	55	55	41
	Team sum	121		137		258	
	Team mean	30.25	4	34.25	14	64.50	11
GREECE Team leader: S.KILIAS	CHOUCHOULAS	15	48	16	60	31	61
	KALNIS	0	75	7	69	7	81
	SARLIS	7	70	0	82	7	81
	Team sum	22		23		45	
	Team mean	7.33	20	7.67	21	15.00	21
HUNGARY Team leader: P.HANAK	BERENDI	0	75	48	29	48	46
	GULYAS	35	7	3	74	38	56
	HORNAK	15	48	76	11	91	16
	SZABO	35	7	95	1	130	5
	Team sum	85		222		307	
	Team mean	21.25	10	55.50	4	76.75	5

COUNTRY	PARTICIPANT'S NAME	ROUND 1		ROUND 2		TOTAL	
		POINTS	PLACE	POINTS	PLACE	POINTS	PLACE
ITALY Team leader: M. IOLLO	ESPOSITO	25	22	2	61	27	65
	PELLECCHIA	15	48	29	45	44	51
	ROMANO	0	75	11	67	11	77
	RUSSO	25	22	13	61	38	56
	Team sum Team mean	65 16.25	12	55 13.75	18	120 30.00	16
KOREA Team leader: VON LI YEN	KIM KHAK SON	0	75	25	51	25	67
	KIM VON YEN	5	71	38	39	43	53
	TSOI CHOL MIN	15	48	7	69	22	68
	Team sum Team mean	20 6.67	21	70 23.33	15	90 30.00	16
	Team sum Team mean	20 6.67	21	70 23.33	15	90 30.00	16
KUWAIT Team leader: A. HAJAJ	AL-RASHIDI	0	75	0	82	5	86
	BUKHOMAD	0	75	1	79	6	84
	GHANIM	15	48	0	82	15	75
	RAMADAN	10	63	20	56	30	62
	Team sum Team mean	25 6.25	22	21 5.25	22	46 11.50	23
MONGOLIA Team leader: C. PUREVSHAL- SAD	BALDAMNYAM	10	63	2	75	12	76
	LHAGVAJARGAL	10	63	6	73	16	74
	Team sum Team mean	20 10.00	18	8 4.00	23	28 14.00	22
	Team sum Team mean	20 10.00	18	8 4.00	23	28 14.00	22
	Team sum Team mean	20 10.00	18	8 4.00	23	28 14.00	22
MOROCCO Team leader: H. ABDELOUA- HAD	AMINE	0	75	0	82	5	86
	HICHAM	0	75	0	82	5	86
	MOUHCINE	0	75	0	82	5	86
	TOUKHSATI	10	63	0	82	10	79
	Team sum Team mean	10 2.50	25	0 0.00	25	10 2.50	25
NETHERLANDS Team leader: R. KOCK	DEKKERS	0	75	0	82	5	86
	KEPLIN	35	7	28	47	63	34
	SAVELSBERGH	0	75	1	79	6	84
	Team sum Team mean	35 11.67	16	29 9.67	20	64 21.33	19
	Team sum Team mean	35 11.67	16	29 9.67	20	64 21.33	19

COUNTRY	PARTICIPANT'S NAME	ROUND 1		ROUND 2		TOTAL	
		POINTS	PLACE	POINTS	PLACE	POINTS	PLACE
NORWAY Team leader: S. HAUGE	BRADTZAEG	10	63	0	82	10	79
	HANSEN	0	75	32	43	32	60
	HOLMGREN	15	48	2	75	17	72
	ROGNDALEN	5	71	13	61	18	70
	Team sum Team mean	30 7.50	19	47 11.75	19	77 19.25	20
POLAND Team leader: A. WALAT	BEHR	25	22	13	61	38	56
	BOGACZ	35	7	45	32	80	24
	CHYZASZCZ	23	41	83	8	106	11
	KIELBASA	25	22	31	44	56	38
	Team sum Team mean	108 27.00	6	172 43.00	10	280 70.00	8
ROMANIA Team leader: H.-I. GEOR- GESCU	CALDARARU	20	44	83	8	103	13
	PAUCA	25	22	41	35	66	33
	PORUTIU	15	48	34	42	49	45
	PREDA	4	73	51	26	55	41
	Team sum Team mean	64 16.00	13	209 52.25	5	273 68.25	9
SPAIN Team leader: L. VILLACORTA	ALJARILA CORTESON	15	48	13	61	28	63
	CHAVES SALOR	0	75	0	82	5	86
	SAEZ GOMEZ	10	63	1	79	11	77
	SANCHEZ MUNOZ	0	75	0	82	5	86
	Team sum Team mean	25 6.25	22	14 3.50	24	39 9.75	24
SWEDEN Team leader: H. STROMBERG	ANDERSSON	3	74	45	32	48	46
	BRANDSTROM	0	75	7	69	7	81
	ERICSON	23	21	55	23	83	21
	Team sum Team mean	31 10.33	17	107 35.67	13	138 46.00	15
USSR Team leader: V. KIRYUKHIN	DATUASHVILI	41	5	86	5	127	6
	KOZLOV	49	4	95	1	144	4
	VARBLANE	25	22	45	32	70	31
	ZAITSSEV	25	22	54	25	79	26
	Team sum Team mean	140 35.00	3	280 70.00	2	420 105.00	3

COUNTRY	PARTICIPANT'S NAME	ROUND 1		ROUND 2		TOTAL	
		POINTS	PLACE	POINTS	PLACE	POINTS	PLACE
VIETNAM Team leader: HO SI DAM	NGUYEN ANH	40	6	35	40	75	28
	NGUYEN HOA	15	48	7	69	22	68
	NGUYEN VIET	20	44	62	20	82	22
	THAN HOAI	30	19	74	12	104	12
	Team sum	105		178		283	
	Team mean	26.25	7	44.50	9	70.75	7
YUGOSLAVIA Team leader: J.KRATICA	FEGES	15	48	41	35	56	38
	MAGDIC	23	41	51	26	74	29
	MALIDZAN	15	48	41	35	56	38
	SUSNJAR	30	19	68	16	98	14
	Team sum	83		201		284	
	Team mean	20.75	11	50.25	7	71.00	6

Programming Languages Used

COUNTRY	PARTICIPANTS NAME	PROGRAMMING LANGUAGE
ARGENTINA	BACKER KUZMINSKI MASTRACCHIO ROBAK	Quick Basic Turbo Pascal Turbo Pascal Turbo Pascal
BSSR	KHAMENYA LINEV NAUMOV TABOROVETS	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
BULGARIA	CHALAKOV KHALKALIEV PETROV TONCHEV	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
CHINA	JIANG XIAOYE LI JIAN YANG CHENG YANG YUNHE	Turbo Pascal Quick Basic Turbo Pascal Turbo Pascal
CUBA	ABDUL MARTINEZ GONZALEZ DIAZ NAVARRO PARSIA PEREZ SAVEDRA	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
CZECHO- SLOVAKIA	CIZEK KOCAN KRIVANEK MALY	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
FRG	KLOSS KOHLLITZ SIEBERT WILCZEK	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
GREAT BRITAIN	ANSELL CAMPBELL OAKLEY SANDERS	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal

COUNTRY	PARTICIPANT'S NAME	PROGRAMMING LANGUAGE
GDR	DANNEBERG LEHNMANN NIELANDER RASTOFER	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
GREECE	CHOUCHOULAS KALNIS SARLIS	Turbo Pascal Turbo Pascal Turbo Pascal
HUNGARY	BERENDI GULYAS HORNAK SZABO	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
ITALY	ESPOSITO PELLECCHIA ROMANO RUSSO	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
KOREA	KIM KHAK SON KIM VON YEN TSOI CHOL MIN	Turbo Pascal Turbo Pascal Turbo Pascal
KUWAIT	AL-RASHIDI BUKHOMAD GHANIM RAMADAN	GW Basic GW Basic GW Basic GW Basic
MONGOLIA	BALDAMNYAM LHAGVAJARGAL	Turbo Pascal Turbo Basic
MOROCCO	AMINE HICHAM MOUHCINE TOUKHSATI	GW Basic GW Basic GW Basic GW Basic
NETHERLANDS	DEKKERS KEPLIN SAVELSBERGH	LCN LOGO LCN LOGO LCN LOGO

COUNTRY	PARTICIPANT'S NAME	PROGRAMMING LANGUAGE
NORWAY	BRADTZAEG HANSEN HOLMGREN ROGNDALEN	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
POLAND	BEHR BOGACZ CHRZASZCZ KIELBASA	Turbo Pascal Turbo Pascal Turbo Pascal Turbo C
ROMANIA	CALDARARU PAUCA PORUTIU PREDIA	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
SPAIN	ALJARILA CORTEZON CHAVES SALOR SAEZ GOMEZ SANCHEZ MUNOZ	Turbo Basic Turbo Basic Turbo Basic Turbo Basic
SWEDEN	ANDERSSON BRANDSTROM ERICSON	Turbo Pascal Turbo Pascal Turbo Pascal
USSR	DATUASHVILI KOZLOV VARBLANE ZAITSEV	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
VIETNAM	NGUYEN ANH NGUYEN HOA NGUYEN VIET THAN HOAI	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal
YUGOSLAVIA	FEDES MAGDIC MALIDZAN SUSNJAR	Turbo Pascal Turbo Pascal Turbo Pascal Turbo Pascal