



# NEWSLETTER

19<sup>th</sup> INTERNATIONAL OLYMPIAD IN INFORMATICS  
ZAGREB, August 15 - 22



No. 1

Wednesday, August 15, 2007

## Alen Spiegl, IOI 2007 Organising Committee, President



Dear contestants, team leaders, members of IC and ISC, guests and observers!

I welcome you on behalf of organizers of 19th IOI. Big event is a big challenge, especially for a small country like Croatia. We are proud that we got a chance to show you what we are capable of. We

took our best people and they started to work a year ago so you could enjoy your stay here in Zagreb. There were no easy tasks in Olympiad preparation. I would need few pages to write all the things that we had to do so the Olympiad would go smooth and without problems. We are proud that for the first time on IOI, you will be able to connect to Internet from your rooms with really fast connection (1 Gb link to internet). Tasks are nice and I'm sure you will like them. Our own evaluation software that proved many times on online competitions is ready. In every other field we did our best.

What is the purpose of competition? We know the answer: to show our own skills and knowledge to others and to see where we are. We compete to improve ourselves, to achieve higher goals in field that we have chosen. In our case – computer science. But solving problems isn't the only thing about the IOI. It's a rare opportunity to meet people of your age from all over the world that share the same interests in life. Use your time here to socialize with other participants and make new friends. There are rare situations in life when you get a chance to meet so many different customs and different cultures in one place, so use it. Learn from others and make your young life richer.

I hope you will spend good time here in Zagreb and that you will bring nice memories and experiences to you homes. I wish you clear minds and concentration so you can give your best in the forthcoming competition.

Good luck and spend your time here wisely!

*"Great things are done by a series of small things brought together. (Vincent Van Gogh)"*

### First arrival

# IRAN



As many other newsletter teams before us, our was also very eager to find out who would arrive first. First team to arrive to Croatia was the Iranian team. That Sunday afternoon, slightly tired but visibly satisfied and curious, our first participants told us their trip has been fine so far and that they are hoping for it to stay that way. They are looking forward to the contest and we are going to keep our fingers crossed for them.

We were pleasantly surprised to see that Iranian team leader had a Croatian coat of arms on his bag – when asked, he told us he got it on the last IOI in Merida, Mexico from Croatian team and had kept it since. 😊

**"The early bird catches the worm!"**

## Bojan Antolović, IOI 2007 Host Scientific Committee, President

- *Tell us, Bojan, a little something about your role at this IOI and who are the people you work with?*

I am the President of the Host Scientific Committee. Main role of Scientific Committee is to prepare the competition tasks for this IOI. Entire Scientific Committee cooperated in creation of these tasks – Luka Kalinovič, Lovro Pužar, Ante Đerek, Frane Šarić, Zvonimir Bujanović and Ivan Sikirić.

- *It is quite a team you have there – as much as I know, they are all renown young programmers.*

Yes, they are all great experts in this field, having a lot of experience from previous programming contests where they participated either as contestants or as a part of an organizing team, for instance, at various similar contests in Croatia.

- *Could you be more precise on describing what were your duties?*

Our job considering the creation of tasks can be separated in two parts: making the very tasks and creating automatic testing for these tasks. Namely, we have a system that automatically evaluates solutions the contestants send us and that, of course, has had to be very well planned and prepared.

- *Since this Olympiad is an important event, you must have been preparing for it a long time now?*

Yes, the entire preparation involved a great amount of work so everything started around nine months ago. From that time on we have been working on developing our ideas. We've analysed around 40 various tasks before reaching the final number of nine tasks ready for the competition.

- *What happens with these tasks after they have been chosen?*

Three of these tasks have been predetermined for the first competition round, other three for the second competition round and the final three are a backup in case some problem comes up with the tasks or if a specific task should for some reason be changed. Extensive algorithm analysis has been made for each one of these tasks, all of the possibilities have been tried out and we have proven it to ourselves that the official solution is indeed the best one. In solving these tasks we have



to be one step in front of the contestants. We have even made a report on tasks' solutions that will be published when the competition comes to an end.

- *We can comfort our contestants and say that the tasks are soluble?*

Yes, they definitely are soluble. The only thing that

might be a problem for the contestants is how to solve them in five hours time that the contest lasts. Five hours might seem as a lot of time, but considering the level of tasks common for informatics olympiads - that might be hardly enough time even for the best world programmers to solve them correctly, with no bugs and with sufficient efficiency.

- *What was the work distribution like in your team?*

Important thing we paid attention to was that not a single task is dependent of a single person. Each preparation phase involved more than one person working on a task. In the end most of us were occupied with most of the work and most tasks which, of course, contributes in reaching objectivity.

- *You were also a contestant at informatics olympiads – how has your point of view changed now that you are a part of the organizing team and the IOI takes place in your country?*

When I was a contestant, I myself was very curious in what the competition looked like from the organizers' perspective. I am glad to have found myself in this situation, it is a great honour to be a part of this and to share my and the whole team's experience. We would like it if we could make this competition work in the best possible way and to enable the contestants the best possible stay

- *In the end, do you have a message for the participants?*

I would like to wish all of the contestants a lot of success and luck and ask them to read and solve the tasks as careful as possible. Don't rush with the first solution that comes to your mind and carefully test your solutions before you send them. It would really be a shame for someone who finds the correct solution, codes it and sends it to lose a lot of points because of some silly mistake. Be smart, careful and I wish all the best to everyone!

## Siniša Pleše, IOI 2007 Technical Committee, President

- *Mr. Pleše, what does the Technical Committee do? What were things like when you first started the work?*

Technical Committee is in charge of ensuring the complete technical support for all needs at this Olympiad which means ensuring the computers and the equipment necessary for the competition, both for the contestants as for those participating in the organization – the Host Scientific Committee, team leaders, Organizing Committee members and others involved.

All in all we have more than 500 computers. All of the computers are networked in different ways according to the contest regulations.

Everything is situated on two locations. One location is Zagreb Fair where we have nearly 400 computers among which 316 workplaces and around 30 computers for auxiliary needs (Evaluation, Organizing and Scientific Committee etc). Computers are desktop PCs with Pentium 4, with 512 MB of RAM and 120 GB hard disk. Network equipment comprises 10 Cisco layer 3 switches. We have used 16 km of network cable, arranged in a space of nearly 2800 m<sup>2</sup>.

Other location is Student Dormitory Stjepan Radić with 80 workplaces in Translation Room and around 40 for other needs.

- *Who are your assistants and what are their obligations?*

They are Technical Committee Vice Chairmen Stjepan Šalković and Josip Medved.

### Josip:

As soon as we came to Zagreb Fair we had big job of connecting all computers and performing all network and electricity cabling for them. All cables are attested for 1 Gbps connections so network throughput will not be a problem. Setup of five UPS's represented quite a challenge since those are «monsters» of 850 km each and placing them to their proper locations was real fun. :)

Everything went more or less as planned, we could even say that things were done before the schedule. Currently, we are in the middle of image deployment for each of the computers and we are ready for the competition.

### Stjepan:

A small but harmonious team was working at the SD Stjepan Radić. We had to do new cabling parallel to one existing in the Student Dormitory because of our unique needs. Most of the work has been done in the 'Spider' Hall, future Translation Room.

We also provided network access for the Press, the InfoDesk, IC, ISC and HSC. Also, two Wireless Access Points have been set up. There were some minor difficulties related to dual boot (both Linux and Windows XP environment needed to coexist on the same computer).

- *Finally, tell us something considering Zagreb Fair – 'Spider' Hall connection.*

2 Mbit connection we have ensured should be enough but we also have a backup in case difficulties occur. At this moment, as far as we are concerned, the contest can begin!

### Basic English

Hi! – Bok!  
Thank you – Hvala  
Please – Molim  
Help! – Upomoć!  
Food – Hrana  
Computer – Računalo  
Breakfast – Doručak  
Lunch – Ručak  
Dinner – Večera

### Croatian Dictionary

School – Škola  
Beach – Plaža  
Kiss – Pusa  
Girl – Cura  
Boy – Dečko  
Ice-cream – Sladoled  
How are you? – Kako si?  
Beer – Pivo  
Football – Nogomet



### What is Licitar?

**Licitar** is an original decorated cake made of honey dough. Since the old days the secret of licitar-making has been kept within a family handcraft of licitar sellers from the central and eastern Croatia. Although licitar is entirely made of edible ingredients, it is primarily used as a souvenir giving great joy to the eyes and soul. Traditionally, licitar has been made in a red-hot colour and in various shapes and sizes. Small licitars are mostly made in the shape of a heart.

## Mini problems to your enjoyment only

A selection of programming problems will be presented here for anybody wishing to make a try at them. (Some knowledge of mathematics is desirable.) If you wish you can send your comments and solutions to address [iurbiha@hsin.hr](mailto:iurbiha@hsin.hr). Please, make them short and understandable. Also, execution time of your solutions should be within reasonable limits.

### PROBLEM #1

Let us take a look at the following determinants:

$$\begin{vmatrix} 2 & 6 & 1 \\ 3 & 4 & 9 \\ 8 & 7 & 5 \end{vmatrix} = 245 \qquad \begin{vmatrix} 3 & 6 & 8 \\ 7 & 1 & 2 \\ 5 & 9 & 4 \end{vmatrix} = 314$$

We have the determinants of 3x3 matrices whose elements are all digits from 1 to 9 and the determinants can be read from the main diagonals of the corresponding matrices. Write a program that will find out how many matrices of that type are there with that property. What is the smallest and what is the largest determinant of such matrices?

Igor Urbija

### Tomorrow's Schedule

#### Contestants

8:30 – 10:30 PRACTICE  
SESSION

Zagreb Fair

11:00 – 12:15 OPENING  
CEREMONY

Zagreb Fair

17:00 – 19:00 Sightseeing in  
Zagreb

#### Leaders

8:30 – 10:30 PRACTICE  
SESSION

Zagreb Fair

11:00 – 12:15 OPENING  
CEREMONY

Zagreb Fair

14:30 – 15:30 1<sup>st</sup> GA MEETING  
SD S. Radić

18:00 – 20:00 2<sup>nd</sup> GA MEETING  
SD S. Radić

#### Guests

11:00 – 12:15 OPENING  
CEREMONY

Zagreb Fair

16:00 – 19:00 Sightseeing in  
Zagreb

### Professor Balthazar

Professor Balthazar (famous Croatian cartoon figure) lives in a magical, colorful city of Balthazartown.

In this city, as in any other, the grown ups, the children and even the pets often find themselves in quite difficult situations. When this happens, they ask the good old professor for help.

In order to help them, Balthazar comes up with various ingenious inventions and extraordinary devices.

Although it may seem that many of the problems don't have a solution, everyone leaves the house of professor Balthazar satisfied.



### Weather Forecast – Zagreb 45 49N 16 02E

		min.	max.	wind
Wednesday 15.08.2007		17 °C 63 °F	29 °C 84 °F	
Thursday 16.08.2007		18 °C 64 °F	31 °C 88 °F	

#### Newsletter No.1

##### Editors

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### Did you know that the tie originates from the Croats?

"... Around the year 1635, some six thousand soldiers and knights came to Paris to give their support to King Louis XIII and Cardinal Richelieu. Among them were a great number of Croatian mercenaries. The traditional outfit of these Croats aroused interest on account of the unusual and picturesque scarves distinctively tied about their necks. Later on, during the reign of Louis XIV, the Croatian scarf was accepted in France, above all in court, where military ornaments were much admired. The fashionable expression, 'à la croate', soon evolved into a new French word, which still exists today: la cravate."