

3<sup>rd</sup> CARNET USERS CONFERENCE 2001 - Zagreb, Croatia,  
September 24 - 26, 2001

## **"Programming league": A competition in Computer Sciences**

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### **ABSTRACT**

Today the Internet is available in almost all primary and secondary schools in the Republic of Croatia.

How can it be used to improve communication and cooperation between pupils and teachers?

The example of the "Programming league", established by a group of teachers in order to organize preliminary competitions in Computer Sciences, proves that the competitions by Internet can be realized successfully and efficiently.

Can this also be applied to the other school subjects and what are the advantages and disadvantages of such competitions?

Do they help the development of communication and cooperation between pupils and teachers?

This presentation will try to answer all the existing and potential questions concerning the former subject.

### **INTRODUCTION**

The "Croatian Programming League" is the computing competition of the secondary school pupils gathered in teams of different schools. It was started by a group of teachers and members of computer science associations. Purpose of this competition is to make pupils ready for the national competition in computer science and the development of computer programming.

## ORGANIZATION OF THE LEAGUE

Teams of the Croatian Programming league consist of one or more members led by a teacher of computer science or a member of a computing club or association.

If there's a place where no team has been organized an individual can also participate, but not in the official competition.

The competitions are organized in several rounds, during the whole school year. Each round consists of a 3 hour competition in solving the problems concerning Basic, Pascal or C programming languages, at the competitor's own chose. The competitions are held in the classrooms equipped with personal computers. There are always less and more difficult tasks so that every competitor can win some points and thus gain motivation for further participation and improvement.

Tasks are distributed to the leaders of all teams by mailing list one day before the beginning of competition, so that all the necessary preparations can be done on time.

At the end of the competition, team leaders get the evaluation programmes. These programmes are sent to them by themailing list to help them correct the pupil's work and make a score table of each team.

The pupils answers and the score tables are sent to the mailing list of answers and they are presented, including the general score table, on the Web site of the "Programming League". It's interesting that besides the general score table of all competitors, the score tables of classes and teams are made, too.

Also, the mailing list of the "Programming League" is a place where every team leader can present his own opinions and suggestions to make the organizing of this competition better.

Here, the teachers of computer science and other members of the league can exchange their ideas, not only about the competition, but also about some other problems connected with teaching computer science at school.

## WORK RESULTS

The "Programming league" started its work last year. At the beginning, only a few secondary schools took part in it and at the end of the season there were as many as 17 teams with a total number of about 130 pupils.

TEAM NUMBER	NAME	TEAM LEADERS
E01	<a href="#">DIR Rijeka</a>	Elinka Barišic, <a href="mailto:elinka@dir.hr">elinka@dir.hr</a> Nenad Lazaric, <a href="mailto:lazo@dir.hr">lazo@dir.hr</a>
E02	Gimnazija Požega	Sanja Grabusin, <a href="mailto:sgrabus@jagor.srce.hr">sgrabus@jagor.srce.hr</a>
E03	3. gimnazija Split	Damir Orlic, <a href="mailto:Damir.Orlic@inet.hr">Damir.Orlic@inet.hr</a>
E04	Srednja škola Krapina	Branimir Dakovic, <a href="mailto:bdakovic@public.srce.hr">bdakovic@public.srce.hr</a>
E05	Šibenik	Saida Deljac, <a href="mailto:Saida.Deljac@public.srce.hr">Saida.Deljac@public.srce.hr</a> Romeo Vlahov, <a href="mailto:Romeo.Vlahov@public.srce.hr">Romeo.Vlahov@public.srce.hr</a>
E06	Srednja škola Ivan Švear,IK Net Ivanic Grad	Vlado Lendvaj, <a href="mailto:vlendvaj@ssivanic.hr">vlendvaj@ssivanic.hr</a>

		Predrag Brodanac <a href="mailto:predbr@ucenici.ssivanic.hr">predbr@ucenici.ssivanic.hr</a>
E07	IK GuK Križ	Vlado Lendvaj, <a href="mailto:vlendvaj@ssivanic.hr">vlendvaj@ssivanic.hr</a>
E08	Srednja škola Vrbovec	Đuro Lešćic, <a href="mailto:djuro.lescic@zg.tel.hr">djuro.lescic@zg.tel.hr</a>
E09	Gimnazija Franje Petrica Zadar	Gojko Bukvic, <a href="mailto:Gojko.Bukvic@zd.tel.hr">Gojko.Bukvic@zd.tel.hr</a>
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E15	#Ekipa Pula	Marica Puh, <a href="mailto:marica.puh@mips.hr">marica.puh@mips.hr</a>
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Excellent results of our members in the national competition in computer science can prove that such preliminary competitions are a good way of encouraging pupils to learn more and to improve their knowledge of computer programming.

We expect to have more teams this year, and we also expect primary schools to join us in the "Programming League".

### **POSITIVE EXPERIENCE**

- reduced competition expenses
- competitions can be organized frequently
- fast evaluation of pupils work and information about the results
- results are comparable on the national level
- cooperation of teachers by the mailing list of the "Programming League"
- cooperation of pupils from different schools
- exchange of knowledge

### **NEGATIVE EXPERIENCE**

- lack of computer equipment in some schools limits the number of competitors

## CONCLUSION

The "Programming League" shows that competitions by internet can be realized efficiently. A contract between the Ministry of Education and Sports and the Croatian Telecommunications about connecting primary and secondary schools to the internet by HiNet and ISDN link with an extra bonus for free calls, offers opportunity for such competitions to be organized in other school subjects, too.

In this way, the internet will certainly become widely used in education at all schools in the Republic of Croatia.

## ORGANISERS OF PROGRAMMING LEAGUE

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## REFERENCES

- Programming League: <http://www.hr-programerska-liga.org>
- Student Computing Competition of the University in Rijeka, <http://www.dir.hr/sin/>
- Croatian Computer Science League, <http://www.hsin.hr>
- International Olympiad in Informatics (IOI), <http://olympiads.win.tue.nl/ioi/index.html>
- USACO Computing Olympiad, <http://www.uwp.edu/academic/mathematics/usaco/>
- American Computer Science League (ACSL), <http://www.acsl.org/>
- Internet Olympiad in Informatics, <http://free.prohosting.com/~ioigs/>
- International Collegiate Programming Contest <http://acm.baylor.edu/acmicpc/>
- The Canadian Computing Competition <http://www.math.uwaterloo.ca/~ccc/>
- Gazeta de Informatica <http://www.ginfo.ro/>
- DIR base of tasks, <http://www.dir.hr/pripreme/2000/zadaci.html>
- Reference books for competitions, <http://www.dir.hr/natjecanja.html#literatura>