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THE BULGARIAN COLLEGIATE PROGRAMMING CONTEST

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Abstract: Republican Student Programming Olympiad (Bulgarian Collegiate Programming Contest – BCPC) is a programming contest for teams of Bulgarian universities have undergraduate programs in informatics. It is held every year on the ACM International Collegiate Programming Contest (ICPC) rules. The Olympiad is an incentive for the best students to improve in subjects algorithms and programming, and it is also an objective criterion for the level of teaching these subjects in higher schools in Bulgaria. Good ranking of the NBU at the Olympics in recent years is a good reason to make a historical overview of the participation and achievements of universities in Bulgaria in this competition also and to pay attention to preparation in the competitive programming of students at NBU.

Keywords: *competitive programming*

ACM Classification Keywords: *K.3.2 Computer and Information Science Education - Computer science education*

Introduction

From 15 years until now, Bulgarian Collegiate Programming Contest (Republican Student Programming Olympiad) – BCPC [2] is held every year. The beginning of such kind of competition was in the 80s of the 20th century. It is conducted a few years, and after a break, was revived in 1998 under the name "Interuniversity Programming Tournament" (IPT). In 2005 the organizers changed the name to "Republican Student Programming Olympiad".

Rules of the competition and ranking of universities

BCPC is the only national programming contest for university students. It is an independent event organized by the participants – Bulgarian universities which offer courses in algorithms and programming.

Table 1: List of univesities name, participating in the contest

	Name of the university
AUB	American University in Bulgaria
BFU	Burgas Free University
NBU	New Bulgarian University
PU	Plovdiv University "Paisii Hilendarski"
SU	Sofia University "St. Kliment Ohridski"
SWU	South-West University "Neofit Rilski"
TUG	Technical University of Gabrovo
TUS	Technical University of Sofia
TUV	Technical University of Varna
UEV	University of Economics – Varna
ULSIT	University of Library Studies and Information Technologies
UNWE	University of National and World Economy
UR	University of Ruse "Angel Kanchev"
USH	University of Shumen "Konstantin Preslavsky"
UVT	University of Veliko Tarnovo "St. Cyril and St. Methodius"
VFU	Varna Free University "Chernorizets Hrabar"

BCPC is held every year in May and is organized by a Bulgarian University – host of the competition. The rules are close to those of ACM International Collegiate Programming Contest [1]. They have approved and changed by the participants . Each university in Bulgaria can participate and is represented by one or more teams. The team consists of three contestants and a coach. The official ranking includes only the best performed team of each university in the scoreboard of the

testing system (team standings).

Table 2: Ranking of the universities (2008-2015). (a) – serial nimber of the conest; (b) – year; (c) – host university

(a)	XXVIII	XXVII	XXVI	XXV	XXIV	XXIII	XXII	XXI
(b)	VFU	SWU	TUV	Sofia	BFU	USH	UR	UEV
(c)	2016	2015	2014	2013	2012	2011	2010	2009
1	NBU	SU	SU	SU	SU	SU	SU	SU
2	AUB	AUB	NBU	NBU	NBU	NBU	AUB	USH
3	SU	NBU	UR	TUS	UVT	AUB	UR	VFU
4	BFU	USH	TUV	USH	UEV	TUS	TUS	TUS
5	UR	UR	USH	UR	AUB	USH	USH	UR
6	TUV	TUV	SWU	UEV	UR	UVT	UEV	NBU
7	UVT	BFU	BFU	VFU	TUV	BFU	NBU	UEV
8	VFU	TUG	TUG	BFU	USH	UR	BFU	AUB
9	TUG	VFU	AUB	UVT	TUS	NBU	UVT	UVT
10	UEV	SWU	VFU	SWU	VFU	TUG	VFU	BFU
11		UEV	UVT	TUV	BFU	VFU	PU	PU
12			UEV	PU	TUG		TUG	SWU
13			TUS	TUG			SWU	
14				ULSIT				

In Bulgaria there is a well developed and functioning system for conducting Olympiads in programming for school students of all ages. Well-known are the achievements of Bulgaria at the International Olympiad of Informatics (IOI) and other international competitions in programming. Sofia University is the oldest and most prestigious university in Bulgaria and therefore almost all students with excellence in programming competitions are recorded to study there. Therefore, this university is ranked first in almost all competitions conducted until now. In other universities there are also good students, but was not involved (or without significant success)

Table 3: Ranking of the universities (2000-2007). (a) – serial nimber of the conest; (b) – year; (c) – host university; *PMF – Skopje University

(a)	XX	XIX	XVIII	8 IPT	7 IPT	6 IPT	5 IPT	?
(b)	SU	VFU	NBU	SU	PU	USH	BFU	AUB
(c)	2008	2007	2006	2005	2004	2003	2002	2000
1	SU	SU	SU	SU	SU	SU	SU	SU
2	USH	TUS	USH	USH	PU	AUB	AUB	PMF*
3	UR	USH	PU	NBU	NBU	USH	BFU	AUB
4	TUS	BFU	TUS	PU	AUB	PU	PU	UVT
5	PU	TUG	BFU	UR	USH	UEV	TUG	NBU
6	NBU	UR	VFU	BFU	UEV	SWU	UEV	USH
7	VFU	VFU	NBU	UNWE	BFU	NBU	SWU	
8	BFU	AUB	UEV		SWU	UR	NBU	
9	AUB	UEV	SWU		UR	TUG	USH	
10	UVT				UVT	VFU	UVT	
11	UEV				VFU			
12	TUG							

in competitions.

The main goal of the BCPC is to stimulate teachers and students from all universities to improve the skills of the best students in programming and algorithms and provide a platform for these students. In NBU than 10 years operating School of competitive programming, which prepare students (as a rule without racing experience) for participation in the BCPC.

NBU participation and preparation of teams

NBU regularly participates the contest.

The first successful performance of NBU was in 2004 at XVI BCPC hosted by Plovdiv University when a team of the NBU ranked the University third after SU

Table 4: General university ranking. (a) – number of shares; (b) – number of households

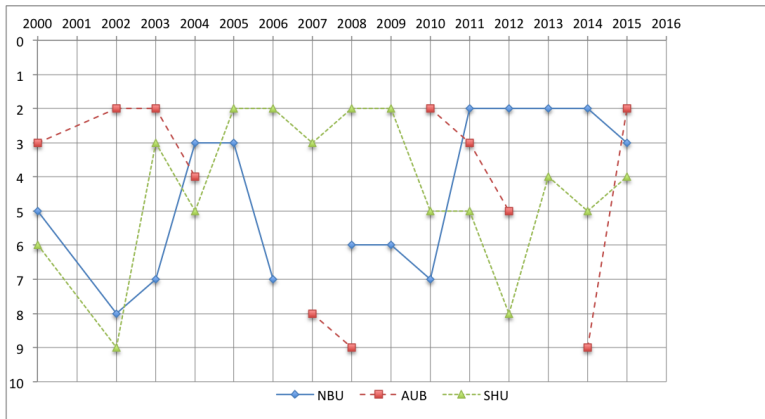| Rank		I	II	III	IV	V	VI	(a)	(b)
1	SU	15	-	1	-	-	-	16	3
2	NBU	1	4	3	-	1	2	15	2
3	AUB	-	5	2	1	1	-	13	1
4	USH	-	4	2	2	4	1	15	2
5	TUS	-	1	1	5	-	-	9	1
6	PU	-	1	1	3	1	-	12	1
7	UR	-	-	3	-	5	2	13	1
8	BFU	-	-	1	2	1	1	14	2
9	UVT	-	-	1	1	-	1	11	0
10	VFU	-	-	1	-	-	1	14	2
11	UEV	-	-	-	1	1	4	13	1
12	TUV	-	-	-	1	-	1	5	1
13	TUG	-	-	-	-	2	-	11	0
14	SWU	-	-	-	-	-	2	9	1
15	ULSIT	-	-	-	-	-	-	1	0
15	UNWE	-	-	-	-	-	-	1	0
	Total:	16	15	16	16	16	16	-	18

and the hosts from Plovdiv. In the last six Olympiads NBU has ranked one third place, four second places and first place this year.

Systematic preparation of students of the NBU for programming competitions began in the 2002/2003 academic year when the author was teaching programming at three universities – BFU, SWU and NBU. Since 2009 in NBU operates School of competitive programming with the financial support of the university management.

The classes are six hours a week and consisted of explaining and solving tasks, lectures on selected topics, discussions. Governing classes are teachers from NBU and other universities, the former competitors and students themselves. Regularly conducted inter-university competitions also play an important role in

the preparation of the team. Sometimes teams from other universities in Sofia also participate in these competitions.

Each year, the NBU leadership awards with scholarships students achieved good results at the BCPC.
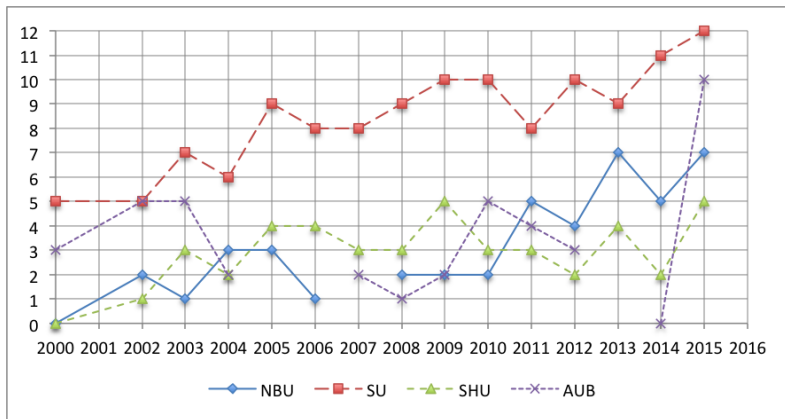

Figure 1: Ranking of the NBU, AUB and USH in years

Conclusion

More data can be found in the web version of this article at [3] and an extended version in Bulgarian at [4].

References

[1] ACM   International   Collegiate   Programming   Contest
    `https://icpc.baylor.edu/welcome.icpc`

[2] Site of the Bulgarian Collegiate Programming Contest (in Bulgarian)
    `http://bcpc.eu`

Figure 2: Number of solved tasks of the best teams from NBU, SU, SHU and AUB

[3] The   Bulgarian   Collegiate   Programming   Contests   (history)
    http://nikolay.kirov.be/2016/WCP/rsop_en.html

[4] The   Bulgarian   Collegiate   Programming   Contests   (history)
    http://nikolay.kirov.be/2016/WCP/rsop.html

[5] International   Olympiad   in   Informatics   (IOI)
    http://www.ioinformatics.org/index.shtml

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