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The Bulgarian Collegiate Programming Contest

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- Republican Student Programming Olympiad (**Bulgarian Collegiate Programming Contest** – BCPC) is a programming contest for teams of Bulgarian universities have undergraduate programs in informatics (`bcpc.eu`).
- It is held every year on the **ACM International Collegiate Programming Contest** (ICPC) rules (`icpc.baylor.edu`).
- Good ranking of NBU at the Olympiad in recent years is a good reason
  - to make a historical overview of the participation and achievements of universities in Bulgaria in this competition;
  - to talk about for the preparation in the competitive programming of students at NBU.

Rules

- BCPC is the only national programming contest for university students.
- BCPC is held every year in May and is organized by a University – host of the event.
- It is an independent event organized by the participants – Bulgarian universities which offer courses in algorithms and programming.
- The rules of BCPC have approved and changed by the participants.
- Each university in Bulgaria can participate and is represented by one or more teams.
- The official ranking includes only the best performed team of each university in the scoreboard of the testing system (team standings).

Univeritis, 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 Preslavski"
UVT	University of Veliko Tarnovo "St. Cyril and St. Methodius"
VFU	Varna Free University "Chernorizets Hrabar"

Rules

- The team consists of three contestants and a coach.
- The contestants have to solve 8-12 algorithmic problems in 5 hours using one computer with programming language tools (Java, and C/C++).
- 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.
- The problem is considered solved when passes all set by the author test examples examples in the determined run time.
- The *total time* is the sum of the time (from the beginning of the contest) consumed for each problem solved plus 20 penalty minutes for every previously rejected *run* for that problem.
- Teams are ranked according to the most problems solved. Team who solve the same number of problems are ranked first by least *total time*.

Rank	Name	Solved	Time	a	b	c	d	e	f	g	h	i	j	Attempts
1	NBU 1 (5)	8	935	5 (0)	86 (0)	36 (0)	26 (0)	279 (2)	187 (0)	0 ()	151 (3)	62 (0)	0 (1)	14
2	AU BG (25)	5	691	283 (3)	178 (0)	16 (0)	60 (0)	0 (1)	0 (4)	0 ()	0 ()	93 (0)	0 ()	13
3	SU2 MettatO(n) (9)	5	721	279 (0)	34 (0)	99 (5)	57 (0)	149 (0)	0 (2)	0 ()	0 ()	0 ()	0 (2)	14
4	SU3 SU3 (10)	4	695	0 ()	219 (1)	40 (0)	75 (0)	0 (1)	0 (3)	0 ()	0 ()	260 (4)	0 ()	13
5	SU4 SU4 (11)	3	457	0 ()	0 ()	169 (1)	82 (0)	0 (2)	0 ()	0 ()	0 ()	0 (2)	145 (2)	10
6	SU1 ActiO(n) (8)	3	457	0 ()	0 (3)	136 (3)	44 (0)	0 (2)	0 ()	0 (1)	0 ()	196 (1)	0 (3)	16
7	BFU 1 (2)	2	294	85 (7)	0 ()	68 (0)	0 ()	0 ()	0 ()	0 ()	0 ()	0 ()	0 ()	9
8	RU1 RU1 (16)	2	383	241	0	121	0 ()	0 ()	0 ()	0	0 ()	0 ()	0	6

History

- The beginning of a national competition in programming for university students was in the 80s of the 20th century.
- The competition is held 9 times with individual participation of students from at least three universities.
- After 1990 the event stops to be held because of instability in society and poor financial situation of universities.
- In 1998 a new programming competition started under the name "Inter-university Programming Tournament" (IPT).
- In 2005 the organizers changed the name to "Republican Student Programming Olympiad".
- The source of this presentation is the data taken from the Internet.
- There are no data on the Internet for the competitions in 2001 and before 2000.
- Information about them was obtained with oral communication with some of the participants.

Ranking of the universities (2000-2008). (a) – serial number of the contest; (b) – host university; (c) – year; *PMF – Skopje University

(a)	XX	XIX	XVIII	8 IPT	7 IPT	6 IPT	5 IPT	3 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							

Ranking of the universities (2009-2016). (a) – serial number of BCPC; (b) – host university; (c) – year.

(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				

- SU is ranked first in almost all competitions conducted until now. Why?
  - SU is the oldest and most prestigious university in Bulgaria
  - 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.
  - Organizers, managers and coaches of school teams for international competitions are mainly professors at SU.
  - Almost all students with excellence in programming contests are recorded to study at SU.
  - SU conducts preparation and training for teams – with specialized courses, seminars and frequent internal competitions (controls).

General university ranking. (a) – participations; (b) – hosts.

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

Rivals

- AUB is also a prestigious university and often good competitors in school Olympiads from different countries study there.
- In the town of Shumen there is a strong school (academy) to prepare school students for programming, and so SHU has good scores on BCPC.
- In other universities there are also good students, but were not involved (or without significant success) in competitions.
- The main goal of the BCPC is to stimulate professors and students from all universities to improve the skills of the best students in programming and algorithms and provide a platform for these students.

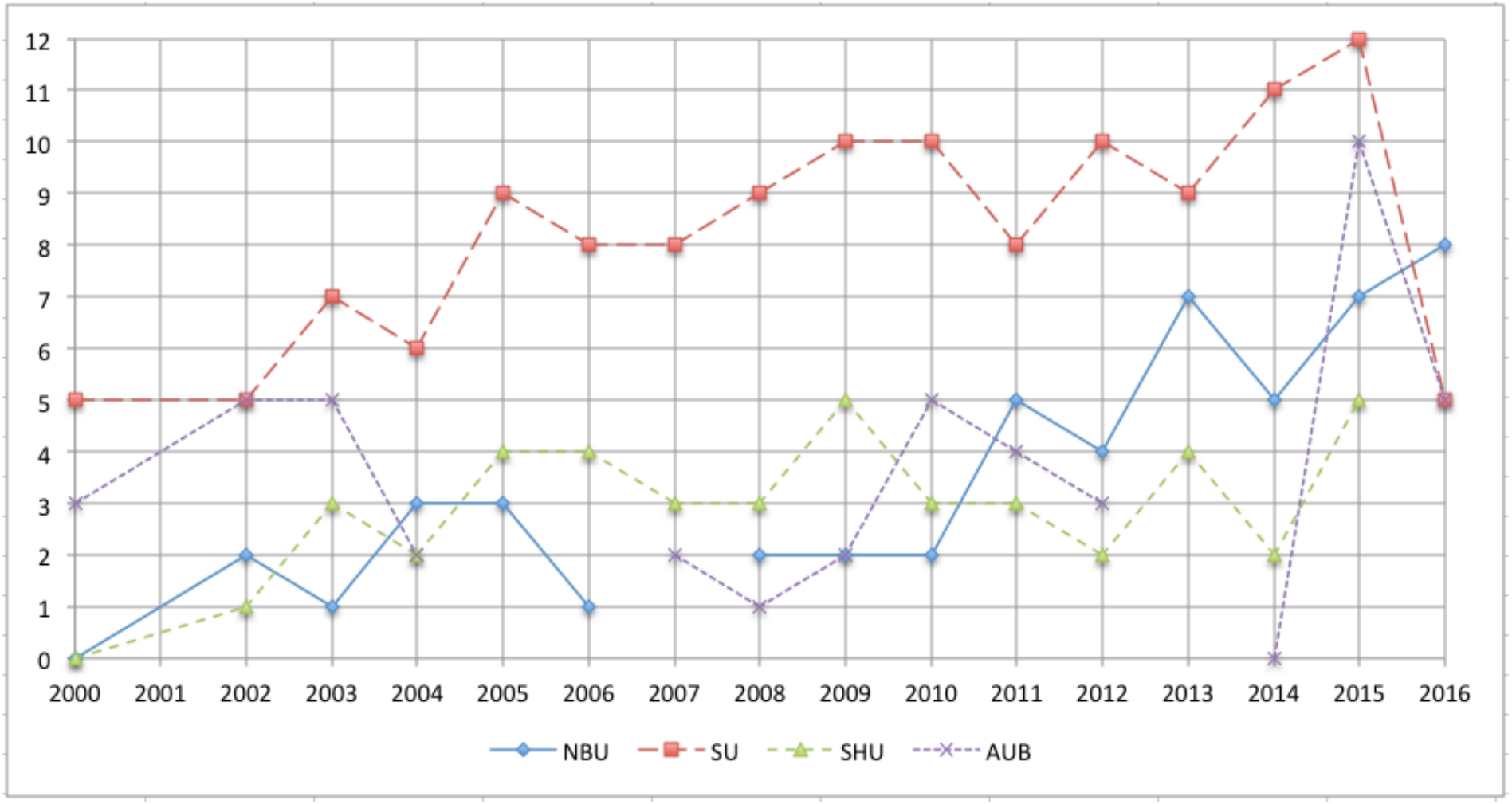
Standings


2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
0
1
2
3
4
5
6
7
8
9
NBU
SU
SHU
AUB

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 PU when a team of the NBU ranked the University third after SU and the hosts from Plovdiv.
- In the last six Olympiads NBU has ranked one third place, four second places and first place this year.
- My experience of preparing students for programming began in 2002, when I taught programming at three universities – BFU, SWU and NBU.

Number of problems solved by the leading team



NBU participation and preparation of teams

- Department "Informatics" at NBU supports 4 undergraduate (bachelor) programs:
  - Informatics
  - Information technologies
  - Network technologies (in English)
  - Multimedia and computer graphics
- Also 2 graduate (master) programs:
  - IT project management
  - Software technologies in Internet
- Courses in programming (including C++ and Java), data structures and algorithms, discrete mathematics, algorithms in graphs, linear algebra, analytical geometry, etc.

NBU participation and preparation of teams

- Since 2009 in NBU operates *School of competitive programming* (`nikolay.kirov.be/2016/WCP`) 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.

NBU participation and preparation of teams

- The success of the NBU mainly due to competitors – good and ambitious students who with a desire and zeal work independently and as a team constantly and persistently for each competition.
- The participation of students in various online programming contests is also an important element of their training.
- Each year, the NBU leadership awards with scholarships students achieved good results at the BCPC.
- Velislav Nikolov, Dimitar Dragostinov, Kiril Vuchkov (part-time lecturers at NBU)
- Sonya Mileva, Stanislav Ivanov, Valeri Colov (the 2016 winners)

More data about BCPC:

`nikolay.kirov.be/2016/WCP/rsop.html` (in Bulgarian)

`nikolay.kirov.be/2016/WCP/rsop_en.html` (in English)

Thank you for your attention.

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