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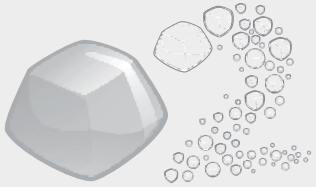
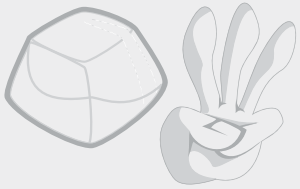
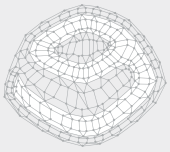
Content:

BUBBLE CHRONICLES








Bubble Cup is an international team coding competition aimed at university and high school students, powered by Microsoft Development Center Serbia. The purpose of Bubble Cup is to improve programming skills and algorithmic knowledge through solving interesting algorithmic puzzles. It promotes not only problem-solving skills, but also teamwork, communication, and companionship.
This book contains the story of how Bubble Cup started, how it evolved through years and how it impacted lives and careers of people involved.

First things first

A thank you note

Bubble Book, just like Bubble Cup itself, was created as an all-enthusisasm-based effort of a very special group of people. We would like to say a huge thank you to:

Folks who shared their testimonials about Bubble Cup: **Dragan Tomić, Milan Novaković, Andreja Ilić, Milan Vugdelija, Marko Panić, Duško Obradović, Vanja Petrović Tanković, Nenad Božidarević,**
Tamara Letić, author and editor of the MDCS 10th anniversary book, as well as to **Marko Panić** for his contribution to writing the history of Bubble Cup,

Problem authors and booklet editors throughout the years: **Abhijith Padmakumar, Aleksandar Ivanović, Aleksandar Kiridžić, Aleksandar Milovanović, Aleksandar Samardžija, Aleksandar Tomić, Andrej Ivašković, Andreja Ilić, Andrija Jovanović, Boris Grubić, Borna Vukorepa, Branko Fulurija, Daniel Silađi, Danilo Vunjak, David Milićević, Dejan Kraković, Dimitrije Dimić, Dimitrije Erdeljan, Dimitrije Filipović, Đorđe Maksimović, Dražen Žarić, Dušan Zdravković, Filip Panjević, Ibragim Ismailov, Ivan Dejković, Ivana Tomić, Janko Šušteršič, Lazar Milenković, Luka Milićević, Marko Rakita, Marko Živanović, Milan Novaković, Milan Vugdelija, Miloš Kurškonja, Miloš Lazarević, Miloš Milovanović, Miloš Šuković, Miloš Todić, Miroslav Bogdanović, Mladen Radojević, Monika Čolić, Nenad Bauk, Nikola Mihajlović, Nikola Nedeljković, Nikola Puzović, Nikola Smiljković, Predrag Ilkić, Rastko Suknjaja, Saket Bharambe, Slavko Ivanović, Slobodanka Jovanović, Stefan Stojanović, Stefan Tarana, Stefan Velja, Stevan Jončić, Vanja Petrović Tanković, Vuk Jovanović** and **Željko Nikoličić**,

Jelena Đorđević, Marijana Mikić , Teodora Roković and **Una Stanković** for their special help,
and to all the organizers, crew members, competitors, and to everyone who helped make Bubble Cup into what it is today and worthy of having a book made about it.

Aleksandar Damjanović, Nada Krstić and Sava Čajetinac
Bubble Book Crew

Bubble Cup – how it all began

It was 11th January 2008 when Dragan Tomić initiated what turned out to be an irreversible path to success that the Bubble Cup is today. The path that took us from an idea (and an e-mail from Dragan) to an international coding competition that has by now had 2,500 university and high-school contestants and a wide recognition as one of the top coding contests in the region. It was an honor to be the coordinator of the first Bubble Cup and I would like to tell a story of how it all started. The original idea was to create a competition which would boost the success of our teams at the regional ACM contest. The ACM (Association for Computing Machinery) International Collegiate Programming Contest is a renowned annual programming competition among the universities of the world. Today, it is great to witness the Bubble Cup achieving not only this, but becoming a fully-fledged regional competition in its own right, gathering competitors across Europe (such as the UK, Poland, Russia, Lithuania and other countries) eager to showcase their skills and test them out against other top contestants.

From: Dragan Tomic
Sent: Friday, January 11, 2008 12:44 PM
To: Bojan Zivkovic (Intl Vendor); Goran Predovic (Intl Vendor); Marko Tintor (Intl Vendor); Aleksandar Antonijevic (Intl Vendor)
Cc: Milan Vugdelija (Intl Vendor)
Subject: ACM Prep.

Hey folks,

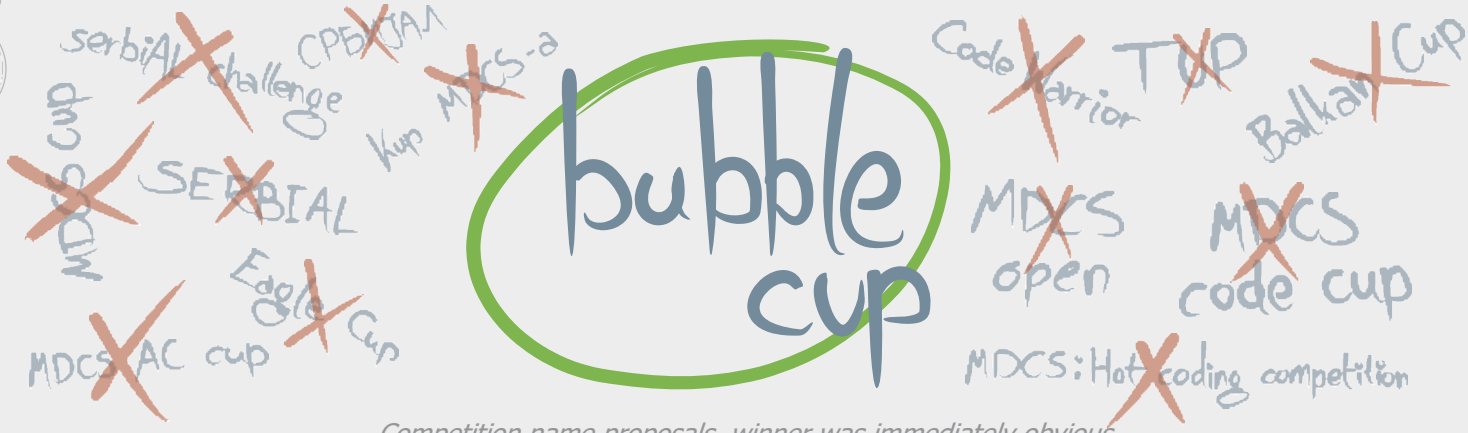
One of the ideas for this (or future) years is to organize MDCS Cup. It would be an ACM style contest that would improve the performance of our teams at ACM regional contest.

One of the questions that was raised is when to stage the contest so that it does not conflict with other things on the academic calendar? My suggestion was mid-September because it is about 1 month before the regional ACM contest, but apparently that is the time for the exams in Belgrade (and other locations).

What are some of the better times during the year to stage such contest? You are included on this mail because you participated in the ACM contest in the past.

Thanks,
Dragan.

None of this would have been possible without the hard after-hours and voluntary work of the first Bubble Cup crew (in alphabetical order, as this was truly a joint effort of a group of equally dedicated individuals): Sava Čajetinac, Željko Nikoličić, Marko Panić, Danica Porobić, Goran Predović, Milan Stojić, Zoran Subić, Dragan Tomić, Aleksandar Uzelac, Milan Vugdelija and Bojan Živković; with the support of MDCS and its then Director Bodin Drešević, as well as the Microsoft subsidiary (sales, marketing and services group) in Belgrade. Thanks also go to the Information Society of Serbia and University of Belgrade, School of Electrical Engineering. The first, very important task was to choose the right name to carry the spirit of the competition. The working title for the competition was the MDCS Cup. We brainstormed and came up with a range of names that were put up for voting in which the whole MDCS and the Microsoft subsidiary participated. We had a variety of descriptive suggestions (like Microsoft Programming Cup and MDCS Code Cup), some more imaginative ones (such as MDCS Hot Coding Cup, Eagle Cup), and some sport-inspired (like MDCS Open and SerbiAL). The organizing crew met on February 8th to review the results and select the name, and... We, of course, came up with one that wasn't even on the suggestions list – and Bubble Cup it was! Along with its slogan "Rise to the top" the name couldn't be more fitting.



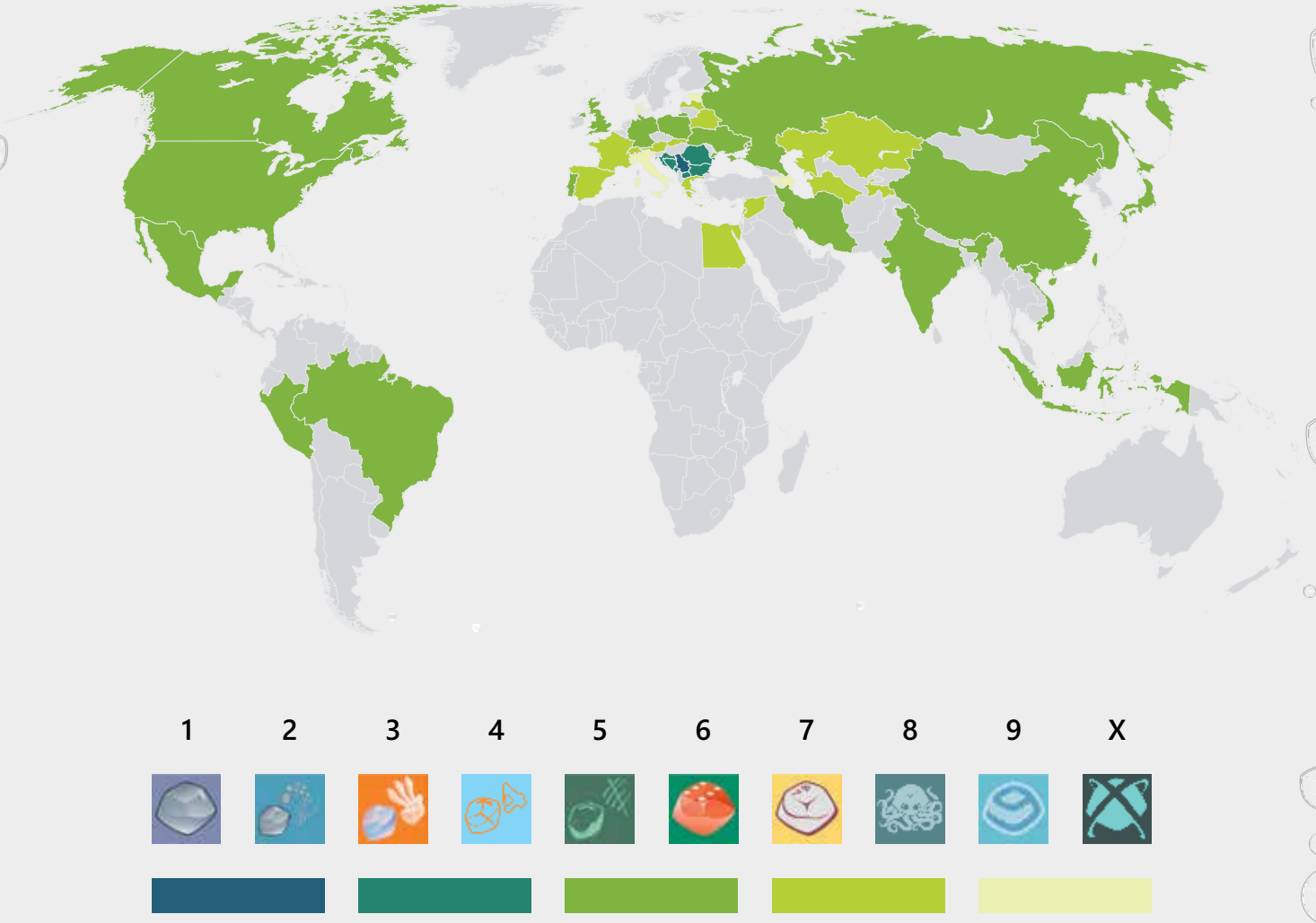
Competition name proposals, winner was immediately obvious

We quickly settled on the format of the Bubble Cup (which has in essence remained unchanged): a university and high-school teams-of-three competition, with preliminary qualifying rounds at an online archive of programming problems with an automated judging system (Timus Online Judge in the first years) held in spring, and the in-person finals round taking place in Belgrade in September. In less than three months' time of focused preparation and promotional activities across universities and the IT community, we were off! Round 1 of the preliminary competition started on May 1st, 2008. Over the course of the two rounds (during May and June), we had over 200 registered participants from universities and high schools across Serbia, competing for a place in the finals. In the end, the top 16 teams earned the right to attend the finals and compete for the coveted title of the first ever Bubble Cup champions. During this time, the Bubble Crew were hard at work preparing for the finals. We wanted to make this a memorable experience and the one to set the stage for what we hoped to be the first of many great finals to come. And so it was. And it couldn't have happened without the resourcefulness and connections of the crew (all legal I assure you!) and without numerous friends in Microsoft and IT community. Someone knew the right person to ask for the perfect venue recommendation, someone came up with where to hold the party, and someone knew just the right caterer...

We created our own problems and designed elaborate software to test the submitted answers real-time and update the live scoreboards for the finals. The finals were held on Saturday, 27th September 2008 at the Computing Center located at the University of Belgrade School of Electrical Engineering, with a contestant meet & greet and practice run happening the day before. We made every effort to make the contest as fun and memorable as it was difficult. Each team had personalized soccer-style T-shirts, and as each problem was solved, helium balloons would go up on team desks raising the challenge to the other teams. The teams even delivered a suspenseful finish – since the scoreboards went off as the allotted solving time ended, there was no clear winner! Everyone (except for the selected few of course) had to wait for the announcement until the award ceremony at the evening's party. The party was hosted at Microsoft's "external conference rooms", café Cappuccino, inside Eurocentar (in Makedonska Street) where MDCS offices were located. With the stress of the competition over, the teams were free to enjoy themselves, relax and meet new friends. To relax, at least until the moment of the reveal of the winners of the maiden Bubble Cup. This proved to be the team Old School from the School of Electrical Engineering in Belgrade and the Faculty of Sciences in Niš and Novi Sad, and interestingly, among them was MDCS's now very own Milan Novaković. To ensure that top teams actually had something to take with them apart from glory, something tangible, we awarded them trophies and Windows smart phones, Xbox 360 consoles and Zune music players. It is worth mentioning how well the only two high-school teams did, one from Mathematical Grammar School in Belgrade and the other from Svetozar Marković Grammar School in Niš, and it is great to see that they planted a seed which grew into an independent high-school finals competition in Bubble Cup 7.
Based on, most importantly, the feedback from the contestants and a very positive press coverage, the inaugural Bubble Cup was a huge success and it gives me great pleasure to see it growing considerably in all respects and reaching new heights with each new version. May there be many more!

Marko Panić, the first Bubble Cup coordinator
The Book – MDCS: 10 years and counting..., Belgrade 2015

Bubble Chronicles – year after year



Bubble Cup expansion map

Bubble Cup 1

The initiative to organize **Bubble Cup**, a student coding competition modeled after the ACM (Association for Computing Machinery) International Collegiate Programming Contest, originated inside the Microsoft Development Center Serbia on 11th January 2008. Over the next eight months, a lot of work had been put in to organize this inaugural competition that would lay the foundations of Bubble Cup for years to come.

The format of the contest had university and high-school teams-of-three competing in online preliminary qualifying rounds, held in spring, and the in-person finals round taking place in Belgrade in September.

The first Bubble Cup was designed as a national competition and there were over 200 participants in total, with top 16 teams earning the right to attend the finals.

The finals were held on Saturday, 27th September 2008 at the Computing Center of the University of Belgrade School of Electrical Engineering. The finals were also an opportunity for the contestants to meet, socialize and learn about Microsoft Development Center Serbia.

The **first ever Bubble Cup champions** were team **Old School** from the School of Electrical Engineering in Belgrade and the Faculty of Sciences in Niš and Novi Sad. Team **BubbleTrouble** from the Faculty of Sciences in Niš and Novi Sad earned the second place, while team **Royal Air Force** from the School of Computing in Belgrade finished in third place.

Marko Panić, the first Bubble Cup coordinator
The Book – MDCS: 10 years and counting..., Belgrade 2015







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OLD SCHOOL
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Bubble Cup 2

The second **Bubble Cup** programming competition proved to be extremely significant for a couple of reasons:
It successfully built on the achievements of the first Bubble Cup establishing the competition as an annual event.
Bubble Cup became an international contest – with competitors from Romania, Croatia and Serbia.

The finals were held on 5th September 2009 at the Computing Center of the University of Belgrade School of Electrical Engineering like the previous year. It featured 17 teams from universities and high schools across Serbia (12 teams), Romania (4) and Croatia (1). Our travelling contestants stayed at the King Aleksandar I student dormitory, thanks to the support of the Belgrade University, and all enjoyed a tour of the Microsoft Development Center Serbia offices in downtown Belgrade.

The three-person teams bravely tackled nine challenging problems in five hours. The suspense did not let up until the winners were announced at the closing party, thanks to the customary freezing of the scoreboard half an hour before the pencils were down. In the end, it proved to be a clear win for the team **Surlaši** from Zagreb, with very little separating the **Royal Air Fork** team in second place and **Royal Air Force** in third, both from Belgrade.

Marko Panić, the first Bubble Cup coordinator


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Bubble Cup 3

The finals of **Bubble Cup 3** were held on 11th September 2010 at the School of Electrical Engineering in Belgrade. Fifteen teams competed in solving nine problems. The competition lasted five hours, and the goal was to solve as many problems as possible, but also as quickly as possible – if two or more teams solved the same number of problems, the one who needed the least time was ranked the best. Additionally, teams received bonus points depending on their qualification results, but for each problem, there were time penalties if a team had incorrect submissions before managing to solve it. The problems were of varying difficulty – on one end, one problem was solved by every team, while on the other there were two problems that no team managed to solve (and for one of those no one even attempted to submit a solution!).

Team **mljivo** (Tomislav Grbin, Luka Dondjivid and Davor Jerbid, all from the faculty FER Zagreb) won the competition. They managed to solve five problems and edged out **Suit Up!** (Ivan Katanić, Marin Smiljanić and Stjepan Glavina, all high school students), who also had five solved problems but a larger time penalty. The third place went to **Prongrammers** (Slobodan Mitrović, Rajko Nenadov and Nemanja Škorić, from PMF Novi Sad), which was the quicker of the two teams with four solved problems.

Bubble Cup 3 Booklet, Belgrade 2010


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Bubble Cup 4

The **Bubble Cup 4** finals were held on 2nd and 3rd September 2011, at the School of Electrical Engineering in Belgrade. The competitors had five hours for eight problems. That year, the problems at the finals were slightly easier than those from the previous year. The emphasis was on stimulating students' creativity – some of the problems were not so standard for programming competitions. The idea behind this was to test the contestants in some areas for which they were not very well prepared. The Scientific Committee was pleasantly surprised with the skill the competitors have shown. Three problems were solved by all teams, while on the other hand, there was only one problem that no team managed to solve.

Team **Suit Up!** won the competition (improving on last year, when they were second). The second place went to **wehmuma**. They managed to solve six problems and edged out **ex1t** thanks to a smaller time penalty.

This year the Scientific Committee decided to give some special awards:
Award: **Silver lightning**
Team **wehmuma** – Rumen Hristov, Georgi Georgiev and Alex Ivanov, for the first accepted solution to a problem.
Award: **system ("pause")**
Team **Gastartbubblers** – Rajko Nenadov, Slobodan Mitrović and Nikola Škorić, for a lifetime achievement in programming excellence and spreading the Bubble Cup spirit.
Award: **Hardcoding Expert**
Team **v.haralampiev** – Vladislav Haralampiev, for being the first to solve LR Primes despite the lack of manpower.

Bubble Cup 4 Booklet, Belgrade 2011


Microsoft

Bubble Cup 5

The finals of **Bubble Cup 5** were held on 8th September 2012, with 17 teams competing at the Faculty of Electrical Engineering in Belgrade. There were nine problems and five hours to solve them. The were no changes to the rules from previous years.

The difficulty of the problems was relatively balanced – no problem was solved by more than 12 teams (unlike the last year, when three problems were solved by every team), and one problem remained unsolved. The accent was mostly on problems which required out-of-the-box thinking, with only a few that were tricky to implement.

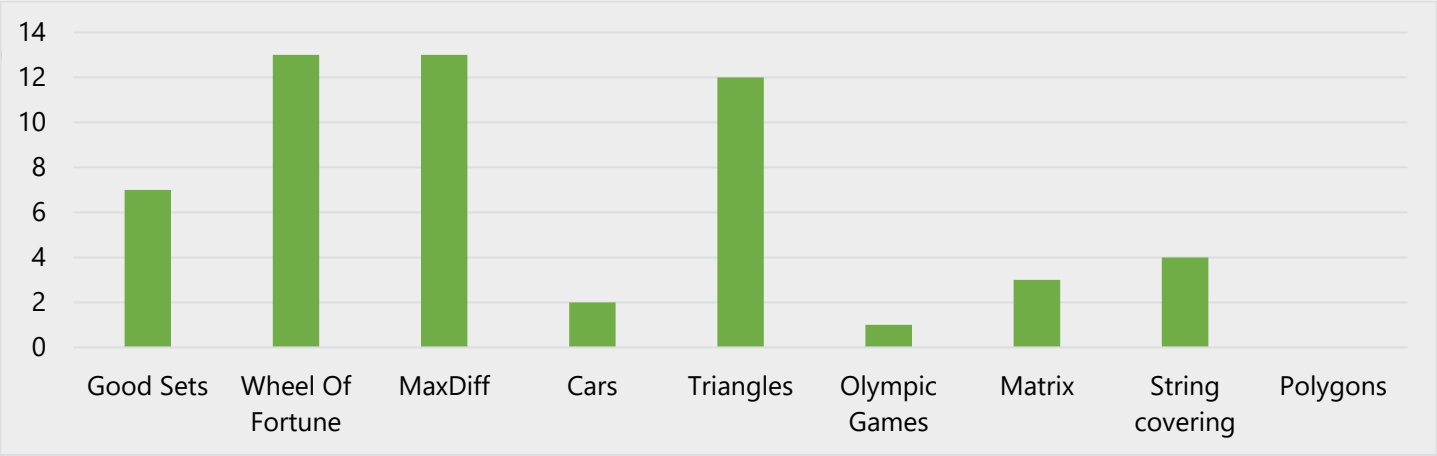


Figure 1. Number of accepted solutions per problem

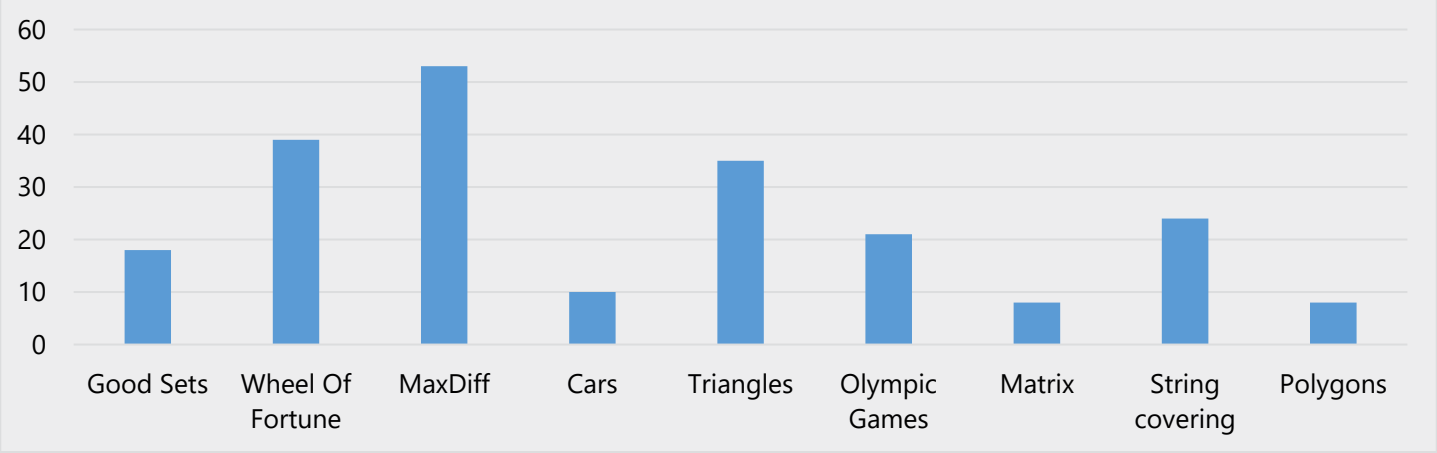


Figure 2. Number of submissions per problem

The competition was initially very close, but towards the end, the team **koko koko euro spoko** pulled away from the rest and had no problems winning first place with 8 solved problems. The fight for the second and third was very exciting and continued until the last couple of minutes. In the end, the second place went to ☺**S-Force**☺ and the third to **Suit Up!** (finishing in the top three for the third consecutive year).

Like the previous year, the Scientific Committee decided to give some special awards:
The first accepted solution – Silver lightning: **koko koko euro spoko** (Poland)
The shortest accepted solution – Vertipaq coders: **H-Rast** (Croatia)
The most persistent team – while (! accepted): **The Code Breathers** (Germany)
Bubble Cup friend – The best mentor: Dusko Obradovic, team **Gimnazija Sombor** (Serbia)

Bubble Cup 5 Booklet, Belgrade 2012


COSTA

Bubble Cup 6

The finals of **Bubble Cup 6** for high school students were held on 7th September 2013 at the Microsoft Development Center Serbia. There were 13 teams in the finals, trying to tackle eight problems in five hours. The battle was intense. Some of the tasks proved to be too hard for the competitors, as three problems remained unsolved. Every team managed to solve at least two problems, with six teams solving five problems. In the end, the penalty was the deciding factor for the top places. **Me[N]talci** were the most efficient, winning the top spot, followed by **We're not on IOI, so we are here** and **abbabaab**.

Bubble Cup 6 Booklet, Belgrade 2013


Microsoft


adidas

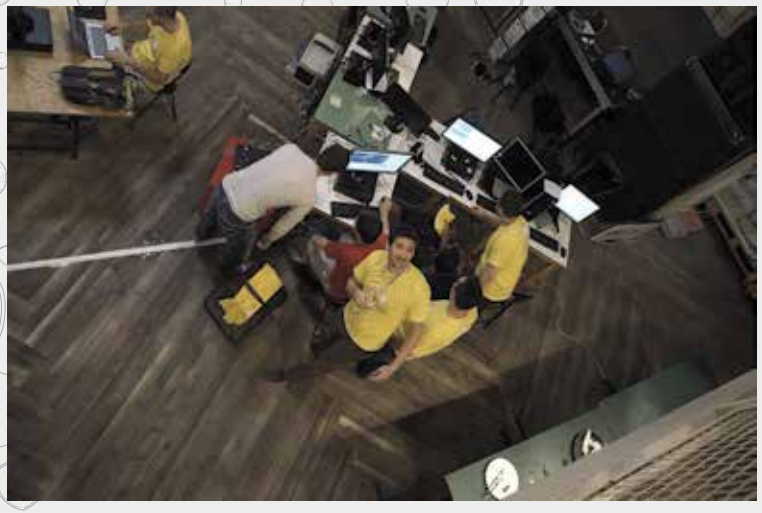
Bubble Cup 7

The format of the **Bubble Cup 7** remained the same this year. All competitors fought for the place in the finals during two qualifications rounds. They were split into two categories in the finals, with top 10 university teams competing in **Bubble Run**, the 24 hours long contest, and top 14 high school teams competing in **Bubble Cup**, the traditional 5-hour-long contest.

Bubble Run finals were held on September 5th and 6th 2014 at Mikser House, Belgrade. Tasks at the finals consisted of mostly open-ended problems with no known solution. Problems encompassed a wide variety of areas, including artificial intelligence, classification, sound and image processing, cryptography, DNA sequences, graph theory etc. The competition was tough, and competitors had to keep their concentration up all the time, whether to improve their bots in a continuous running game or to solve a new problem that appeared in the middle of the night.

As the scoreboard froze a couple of hours before the end of the competition, there was no way of knowing who the winner would be, as the points of top teams were really close to each other. The battle was tight until the very end. After 24 hours of coding, the final difference in penalty points between the top 3 teams was only around 400 points. The winners of the Bubble Cup category for university students were **Magowie Psychodelicznej Klawiatury** (Poland), team **KTU #1** (Lithuania) won second place for the second time in a row, and team **Grafom plovi jedan mali Dijkstra** (Serbia) was third.

Bubble Cup 7 Booklet, Belgrade 2014



Bubble Cup 8

Bubble Cup finals were held on September 4th and 5th 2015 at Mikser House, Belgrade. The event started with the Bubble Cup Conference, where **Mike Mirzayanov, Michal Forišek** and **Przemysław Dębiak (Psyho)** shared their stories, experience and tips and tricks with the competitors. The final competition remained in the traditional 5-hour format, similar to ACM ICPC. This year, university and high school students competed in the same category. In one of the most exciting Bubble Cup finals so far, 21 teams were presented with a total of 9 problems.

Final standings were unknown until the very end of the competition. Many successful submissions and changes on the scoreboard happened in the last 15 minutes of the finals. Ultimately, the team **3/4 IOI Polish Team** (Poland, high school) rose to the top, as the only team that solved 7 problems. The second place went to **LNU Penguins** (Ukraine, university), followed by the team **unusual** (Latvia, university) with 6 problems solved and only a 1-minute penalty behind.

In addition to the on-site finals in Belgrade, an online mirror of the finals was organized on Codeforces (www.codeforces.com), with more than 2800 teams registered for the competition. The winner of the online competition was the **tourist** (**Gennady Korotkevich**), solving all 9 problems in 4 hours and 17 minutes.

Bubble Cup 8 Booklet, Belgrade 2015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9. Booleans


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Microsoft


bubble cup 8
Microsoft

Bubble Cup 9

Bubble Cup 9 finals were held on September 9th and 10th 2016 at Startit Center, Belgrade. The event started with the Bubble Cup opening ceremony, where special guests spoke: Tatjana Matić – State Secretary for Telecommunications, Dražen Šumić – Principal Program Manager at MDCS, Duško Obradović – a longtime mentor of Sombor teams and Aca Ivanović – multiple BBC finalist. The final competition remained in the traditional 5-hour format, like ACM ICPC. This year, university and high school students competed in the same category.

In one of the most exciting Bubble Cup finals so far, 20 teams were presented with a total of 9 problems. The final standings were unknown until the very end of the competition. Ultimately, the team **LNU Penguins** (Ukraine, university) rose to the top, as the only team which solved 6 problems. The second place went to **koala lumpur** (Croatia, high school), followed by team **Elite Nicaraguan Eagles** (Russia, university).

For the Bubble Cup 9 we decided to give additional awards to the teams that were below the overall top three bar but are in the top three in their categories:
3rd best University – **Prvo u Drvo** (Croatia),
2nd best high school – **1/12 and still counting** (Bulgaria),
3rd best high school – **HC++** (Croatia).

In addition to the on-site finals in Belgrade, an online mirror of the finals was organized on Codeforces with team **1322 (tourist, VArtem)** emerging victorious as the only team that solved all the problems.

Bubble Cup 9 Booklet, Belgrade 2016


Windows10

Bubble Cup X

The Bubble Cup X Finals were held on September 2nd, 2017, at the Belgrade Youth Center (Dom Omladine Beograd) in Belgrade. Marko Panić, who was the coordinator of the very first Bubble Cup, was now the moderator of the Opening Ceremony and he welcomed both the finalists and guests and called on the speakers to greet them too.

Dragan Tomić presented how Bubble Cup started 10 years ago, and where we are now. He talked about the MDCS partnership with the industry, academia and official institutions, and how only together we could contribute to the society. A few short speeches were given by Ms. Tanja Matić, the State Secretary at the Ministry of Trade, Tourism and Telecommunications, Ms. Katarina Aleksić, the Advisor to the Minister of Education, Science and Technological Development, Mr. Nebojša Vasiljević, the director of the Petlja Foundation and professor Filip Marić, who held a presentation on how the portal Petlja.org works and how kids and professors can use the interactive materials for learning to code in elementary schools.

The competition started at 11.30am and lasted till 4.30pm. In the evening, at Dom Omladine Beograd, the award ceremony was held and was later followed by a lounge party organized to honor all the participants.

This is the 10th-anniversary edition of the Bubble Cup and we are extremely happy to see an increase in the number of teams that surpassed our expectations. We were so pleased with the number of the top teams and red coders that we decided to outdo ourselves this year and make it the toughest Bubble Cup competition to date. Because of that, we decided to make an exception and invite 22 teams to the finals, breaking our traditional 20-teams total number. On the other hand, we didn't change the length of the competition which remained in the classical ACM ICPC five-hour format. The university and high school students competed in the same category. Bubble Cup prizes were given not only to the top 3 overall teams but also to the teams which were the top 3 in their respective categories.

Since the scoreboard froze, there were a lot of changes in the standings and one submission could make the difference between winning one of the first three main prizes or going home empty-handed. After starting slowly, the **Los Estribos** team (Mateusz Radecki, Maciej Holubowicz, Jan Tabaszewski) ended up victorious and the only team to solve the Bob and Stages problem. The **Jagiellonian Armadillos** (Vladyslav Hlembotskyi, Michal Seweryn, Krzysztof Maziarz) were leading for a long time but in the end, they finished in second place. The biggest change in the freeze time, however, was made by the **Cheeks** team (Nikolay Zhiidkov, Petr Smirnov, Vsevolod Stepanov) that went from 4 solved problems to 7 and grabbed the 3rd overall place as the only team with 7 points. In the end, penalty points didn't matter for the first three places as all three teams had a unique number of solved problems.

Bubble Cup X Booklet, Belgrade 2017


Microsoft
Development


bubblecup


Samo turistički


Microsoft
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bubble cup

Bubble Cup in their own words

Dragan Tomić

Bubble Cup started as a simple idea more than a decade ago and in the ensuing period has become one of the signature events for MDCS during the year.

When I think about MDCS, a stream of positive thoughts, energy and ideas comes to my mind ☺.

Without previously organizing my thoughts, here are some of the first thoughts about the Bubble Cup that come to my mind: Most of the things in Serbia do not last for 10 years. Bubble Cup is one of the local contests with the longest tradition. It has become an institution. Local kids measure their coding prowess through Bubble Cup participation.

Our team in MDCS rallies around the contest every year. We had a number of MDCS crews organizing Bubble Cup and, in every iteration, we have become a better team because of the Bubble Cup.

Bubble Cup is a place where folks meet each other. Some of those casual introductions turn into enduring friendships. Also, some folks eventually decide to join our team. Therefore, today we have probably on the order of 20 Bubble Cup finalists as members of our team. Also, we have developed a wide network of folks across the globe because we met them at the Bubble Cup. Folks who participated and organized the Bubble Cup also started Petnica ML seminar and are founding members of Petlja initiative.

Bubble Cup is a place of high energy and innovation. We had a number of initiatives around the Bubble Cup. For example, we had the Bubble Run and the Bubble Bot contests as offspring from our core Bubble Cup initiative. Every Bubble Cup is a moment when we dream about a high tech future where countries from this part of Europe play a larger role in the global ecosystem.

Every new iteration of the Bubble Cup brings something new and, in some sense, evolves the original idea. However, Bubble Cup has retained some of the original goals, which are the love of problem-solving and teamwork. My hope is that the Bubble Cup will continue to evolve with latest developments in the industry and that some of the contestants will become key leaders of the tech world.

Milan Novaković – Bubble Up

My story about Bubble Cup is a story about a series of randomness and human connections throughout a decade. I believe it all started when I accidentally saw that one of my buddies mentioned a new domestic competition in programming on Facebook. I was a 4th year ETF student and for the previous 3.5 years, ever since I participated in IOI, I did not even think about algorithmic competitions. I suppose it was a mix of nostalgia and curiosity when I tried to solve some of the tasks from the first round of qualifications of the first Bubble Cup. "It's good, I'm not completely rusty" - I thought after that round of qualifications. At the same time, by coincidence, a friend of mine (Dimi) and former professor at the Mathematical Gymnasium (Vugdelija) told me that Microsoft has summer internships in Serbia. Right at the beginning of the second round of the qualifications of Bubble Cup I was invited for interviews at MDCS. "Who do you plan to compete with in the team?" I remember being asked that question when I came to the interview, as well as a bit frowned and disappointed faces after I said that I did not plan to compete in the second round. I did not have a good answer to their "why not, after completing all the problems from the first round?" so I found some time to do the second round.

I absolutely have no recollection of how we got together for the finals: Aca (Ilić), Savić (Marko) and myself. We knew each other from high school competitions. I only remember choosing the name Old School since we were all already at the end of the studies and were, without a doubt, the most experienced (not to say the oldest) of the competitors. And there was this song by Gru called "Stara škola, nova škola".

The finals were organized on a world-class level. The atmosphere was excellent, euphoric even. After several years, different generations of people met again in the same place. T-shirts with the names of the team on the back were something that was not seen until then. Instead of standard stale sandwiches, superb food was served, and it almost threatened to distract us all completely. Colorful balloons that appeared when someone solves a task were a cherry on top of the cake, though.

Aca and Savić solved most of the tasks. Our main competitor was the team from RAF. We went to the last hour when you don't see the Scoreboard any longer and the situation was very uncertain. While Aca and Savić were looking for an error, I typed down my only problem solution in those finals. Aca was a little skeptical because it was a geometric task, which are very tricky in general, and every unsuccessful attempt would cost us extra penalties. It was necessary to choose between looking for a bug on a previous task, spending time checking my solution and risking it by sending a solution as soon as possible. Aca spent some time testing my solution and after he said, "I think that's it", we risked it. And it was worth it. In the evening, at the party, it was officially announced that we won the first Bubble Cup. RAF took the second place and my internship colleagues the third. I remember we got Windows Mobile phones with a touchscreen and a little pencil as a reward.

The following summer I started working at MDCS. A lot of people moved from MDCS to Redmond that year, including most of the Bubble Cup organizers. Among others, my project mentor, who was one of the creators of the Bubble Cup system infrastructure. I ended up taking over the infrastructure system for the next Bubble Cup, as well as working on problems for finals with Vugdelija, my professor from the Mathematical gymnasium. Those second finals, in the role on the other side of the computer, was even more intense and exciting.

Many others joined the organization team in the following years. Aca's brother Andrejko (Andreja Ilić) was on an internship in my team and he raised the competition to the next level by publishing a booklet with solutions. Everything was mainly organized and written by him. During the years, I slowly excluded myself from the everyday organization, making some space for the "new school" that comes with some new energy and new enthusiasm. Still, one of the unforgettable moments is the first Bubble Run, when I joined the organization again. This was an extremely fun and ambitious format of the Bubble Cup finals which lasted 24 hours and it was too intense for us in the organization. We did not sleep for nights preparing everything for the finals, only to realize that we have another 24 hours to be on-call at the competition. We slept for 2-3 hours only, but in the end, everything was worth the effort.

A few years later, Aca and RAF team ended up in Facebook after the acquisition of Wowd, a startup they have worked for. My colleagues from the internship ended up in academic circles and in Google. The phone ended up in the drawer since iPhone had raised some bars. I became a kum (best man) to Dimi. Vugdelija used the Bubble Cup infrastructure to hold extracurricular classes in the Mathematical gymnasium. This effort grew, and we created Petlja, a system used by all fifth and sixth graders in Serbian elementary schools.

And everything started with that first Bubble Cup.

Andreja Ilić

The time is now. We live in a world where the speed and magnitude with which technology innovation is moving is mind-boggling, giving us an incredible opportunity to change the world. Competitive programming has its roots in the scientific study of algorithms and trains future engineers to interpret cognitive thinking into machine understandable language. Bubble Cup is an effort made by Microsoft Development Center Serbia, which should help young students achieve their goals in making humankind a bit better through IT. Bubble Cup was a part of my professional and personal development, from its first iteration in 2008. From a competitor to an organizer, from Bubble Cup through Bubble Conference to Bubble Bee, last 10+ years helped me grow as an engineer and as a person. I met some incredible people, with whom I stayed in contact and had various collaborations (during the first iteration of Bubble Cup I was competing against my brother, so it was a personal challenge as well).

I intentionally left out the "competition" part from Bubble Cup, as it's much more than a simple programming arena. It started as a local competition like the ACM college contest and overgrown over the years in the spectrum of events. All of the events have the same vision, to improve the knowledge base, interest and awareness of CS of young students in Serbia and beyond. While it may seem obvious to some of you, we live in a country with a conditional probability and great IT potential dependences on city, school, environment etc. which shouldn't be the case in the information age. Bubble Cup efforts are designed in a way to be a stepping stone in the incredible IT journeys for Serbian (and beyond) students. We love to look at it as a form of helping ourselves 10 years ago.

I remember starting the first Bubble Cup booklet in 2010, as I was very disappointed by, at that point in time, low number of programming competitions with detailed solution write-ups. As engineers, we always think about scale and booklet was one of those efforts – record solutions to Bubble Cup problems in a way which explains the thought process and all the details behind the solution. I hope that this book will help you on the CS journey – if it gets you one step closer to your goals, I would consider it a success.

Milan Vugdelija

It came naturally to me to join the organization of early versions of the Bubble Cup since I was doing similar things as a teacher in the Mathematical Grammar School and as a member of the committee for national high school competitions in programming. Still, this was different and new for me in many ways, therefore quite challenging. I have posted around a dozen problems in the first three finals (all 8 in the first), several of them completely original, composed for the occasion. Now it is all a great memory, and I feel really proud of the fact that I have participated in launching Bubble Cup and helping it become what it is today.

There was quite a lot to learn along the way. This experience made me think differently. In that sense, for both problem solvers and setters, I would like to mention and comment on the two problems that I have special memories of.

Ring (finals #1, problem C) – a short, but quite hard (I think the only problem not solved in that competition), yet elementary regarding required knowledge (nothing beyond ifs, loops and arrays, a kind that I like very much). One just needs to think very deeply in order to solve it.

It was our first BC finals with many excellent problem solvers, and it was not easy to predict how far they could go, so it seemed reasonable to have such a problem just in case. However, it turned out it was too optimistic to expect from some team to devote enough time and energy to this problem in an "8 problems for 5 hours" competition format. Because of that, I have mixed feelings about this one. One is that I still feel good about being able to create such a problem. On the other hand, I feel sorry it never produced as much fun to solvers as it could have. Now it is clear to me that such problems are much better suited for a different competition format, where there is much more time for solving (e.g. a weekend online).

For those who like such challenges, you still can try it anytime – https://petlja.org/BubbleBee/r/Problems/BBC1-C-ring

Knight (finals #2, problem D) – again a very short problem, easy to understand, medium difficulty. A few interesting facts about this problem:

If I remember well, I came up with 44 non-redundant test cases – I was surprised as well.

Official solution relied just on equations, reducing cases using symmetry, and analyzing remaining different cases, no search techniques were used.

Some problem setters (I was not alone this time), thought of this problem as potentially too easy. According to statistics, some solvers thought the same. However, as many as 14 teams have sent one or more solutions, but only 6 of them actually solved the problem. I believe such statistics are what makes a problem successful from the organizer's perspective. It made me feel quite satisfied, not that much with the problem itself, but how it went – it got a lot of attention from competitors, and it also made a fine distribution between them.

Marko Panić

As I was standing on the podium of the Belgrade Youth Center, having the honor to be hosting the 10th, anniversary edition of the Bubble Cup, in front of the sixty-three brilliant and diverse young minds who have risen to the top and qualified for the finals, in front of the guests from the academic community, the government, and members of the press, and in front of the fellow organizers from Microsoft Development Center Serbia, my mind could not help but reflect on the significance of this remarkable competition. What a wonderful journey it has been! Bubble Cup was born out of an e-mail; the e-mail lead to brainstorming meetings of a few of us; the meetings turned into the execution of a document titled the "Master Plan".

As the coordinator of the first Bubble Cup, it has been amazing to witness how much Bubble Cup has grown: from a local competition to a truly international one, from having around 80 contestants in qualification to over 500, from a contest name to a brand. Bubble Cup has been a great stepping stone for many of the competitors and there are some incredible success stories (and even love stories) taking them all the way to the likes of Microsoft, Google, Facebook and others. In the beginning, this was a volunteer and enthusiast effort heavily relying on the resourcefulness and (legal!) connections of the crew. Today, Bubble Cup is a well-organized and a well-oiled effort, each year building on the successes and learnings from the previous. I'm looking forward to witnessing this ten-year-old kid turn into a teenager and an adult!

Duško Obradović

An announcement for Bubble Cup 1.0 caught the attention of my students back in 2008. Among other things, the announcement stated that the main idea of this competition was to popularize programming in Serbia and help Serbian competitors achieve better results in a competition of a similar kind on a world level. I hope that in the future, the competition focuses more on this original intent. My students were the ones who introduced me to the world of Bubble Cup at the very beginning and ever since Somborska gimnazija has been participating regularly. At the time, the competition was on a domestic level only and only teams from Serbia were eligible to compete. We were lucky enough to participate in those first finals – with a bit of knowledge and a lot of enthusiasm.

Our School is the only one that had a team participating in all ten Bubble Cup finals. I think only RAF has achieved something similar in the University category. The greatest thing about the Bubble Cup competition for us is the process of qualifications for the finals. What my students learn during qualifications cannot be achieved in any other learning process. The motive they have in front of themselves, and that is participating in the finals, is enormous, and the diversity of problems and ideas needed to solve them, are the two main factors of their immense progress.

During these 10 years, 19 of my students participated in the finals. Vanja Petrovic Tankovic is my student and he participated in every final round of Bubble Cup he was eligible to compete in (first 6 Bubble Cup finals). In one of those finals, his team won.

Vanja Petrović Tanković

I participated in the first nine iterations of Bubble Cup – six as a competitor and three as an organizer.

I was still in high school and had just started to learn programming when I competed in the first Bubble Cup. Back then I didn't even know what recursion was. This competition was one of the first and arguably one of the most important steps of my career as a software engineer. Although my team finished last in the finals that year, it motivated me to learn and improve my skills. And I continued to participate and improve the next year, then the year after, and so on...

Every year, April and May were reserved for Bubble Cup qualifications in my calendar. Countless hours were spent with my teammates, at school, in the park, everywhere, just thinking about Bubble Cup problems, coding, researching and learning. It really helped make us better programmers and team players.

Ultimately, I ended my competitor career by winning the sixth Bubble Cup. I started working at MDCS and continued my engagement in Bubble Cup as an organizer. Since the competition gave me numerous opportunities, I wanted the newer generations to have the same. Organizing the competition was a different experience from competing in it, but it was still very interesting and a lot of hard work. Looking back, Bubble Cup played a significant role in my professional life. If I were asked to sum up what Bubble Cup meant and was to me in a few words, it would be: dedication, teamwork, learning and fun.

Nenad Božidarević

I consider myself very lucky to have been in high school when the first Bubble Cup was held. At that time, I was a mediocre programmer at best, and my main resource for learning more was (albeit good) classes.

With Bubble Cup, though, it all changed, and I was immersed into this enormous world that is programming contests. From that point on, I attended Bubble Cup every year until I finished my studies, each time not only getting better at programming through pure grinding, but also improving teamwork and other soft skills – meeting new people, reading various papers, discussing problems, enjoying the camaraderie during the finals, and overall making learning an excitement rather than a chore.

As a result, I grew immensely as a programmer and into a proper software engineer, eventually winning Bubble Cup at the last chance I got (probably the proudest moment of my studies), and that in turn helped me get internships at Microsoft Development Center Serbia and Facebook, after which I continued with full-time employment at Facebook. 10/10, would compete again.