ICPC

WORLD
FINALS
DHAKA

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worldfinals.icpc.global

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Bisnakandi, Sylhet

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ICPC **World Finals Dhaka**

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Welcome from the President People's Republic of Bangladesh

It is a great pleasure for me to know that The ICT Division, University of Asia Pacific and Bangladesh Computer Council are jointly hosting the 45th International Collegiate Programming Contest (ICPC) World Finals for the first time in Dhaka. I welcome and thank all the participants from home and abroad for joining this prestigious event.

ICPC is the world's largest programming contest for the college students. In this age of Globalization and Information Technology, programming is an essential tool for solving problems of diverse nature. As the world is transforming at an incredible pace, solving problems in an effective and timely manner requires greater knowledge, skills and expertise. I hope this ICPC would play a vital role as a platform for the young programmers to share and enrich their ideas and knowledge among themselves

I have been informed that the participants are from the top ranked universities across the world and have already proven their deep coding knowledge, skills and abilities to solve intricate problems through diligence and fortitude. I believe that they would definitely become the great minds of the future to lead and provide solutions to the multidimensional problems of the world. I wish them all the success.

The ICT sector which has tremendous growth in last few years is one of the most promising sectors in Bangladesh. I hope this ICPC would play an inspirational role in motivating our young talents from ICT sectors.

I would like to express my sincere appreciation to the ICPC Foundation for selecting Dhaka to be the host of the 45th World Finals and wish the event a grand success.

Joi Bangla.

Khoda Hafez, May Bangladesh Live Forever.

Md. Abdul Hamid
Honorable President of the People's Republic of Bangladesh

Welcome from the Prime Minister People's Republic of Bangladesh

I am happy to know that Bangladesh for the first time is hosting the 45th International College programming contest (ICPC) world finals this year.

Problem solving is undeniably one of the most important skills for programmers which allows them to resolve a real-world problem with the best possible solution in limited time. This enhances their analytical and rational thinking eventually Making them better IT professionals. Solutions to make human life easier are now implemented more and more with the use of AI and other data centric tools. Keeping this in mind, the Awami League government has taken timely initiatives to train, educate and make our young generations prepared to be part of that solution more than two decades ago.

Bangladesh has relentlessly been working to accomplish the vision of building a digitally driven smart nation envisioned by our Father of the Nation Bangabandhu Sheikh Mujibur Rahman. He envisaged a knowledge-based nation well-equipped with science and information technology. Accordingly, Bangabandhu Sheikh Mujib took the initiative to establish the satellite-earth station in Bangladesh more than 50 years ago.

My profound thanks to the ICPC Foundation for providing us with this opportunity to host such a prestigious event. I also wish all teams good luck and well-deserved feat in the upcoming global contest. I hope, you will have a pleasant stay in Bangladesh and also take away with your delightful memories back home.

I wish ICPC World Finals Dhaka a grand success.

Joi Bangla, Joi Bangabandhu
May Bangladesh Live Forever.

Sheikh Hasina
Honorable Prime Minister, Peoples' Republic of Bangladesh

Welcome from the Foreign Minister People's Republic of Bangladesh

Today marks some incredible achievements. First, it is a memorable day for Bangladesh, as we are the first South Asian country to lost the prestigious 45th International Collegiate Programming Contest (ICPC) World Finals this year.

As a country making great strides toward the development of the ICT sector and globalization, it is fitting to be able to host the world's largest programming contest for college students. So, we extend our warmest welcome to the innovative and versatile minds from outstanding universities across the globe.

This leads me to the most important achievement of today. Present here are some of the brightest minds in the world, the finalists of this year. Coming as far as you all have is an amazing accomplishment in itself. It reflects knowledge, skills, ingenuity, and problem-solving ability. These skills are not only necessary in programming, but also to shape the world. In fact, thanks to the advancement of technology and globalization, your contributions have the potential to shape the world.

I want to acknowledge the joint effort of the ICT Division, the University of Asia pacific, and the Bangladesh Computer Council for the premier global event. Furthermore, I thank the ICPC Foundation for selecting Dhaka to host the 45th World Finals.

With that, I will end by wishing the best of luck to all the brilliant participants. No matter the outcome, I hope you will all use your brilliance and problem-solving skills to make an impact and change the world.

Dr. A. K. Abdul Momen, M.P.
Honorable Minister
Ministry of Foreign Affairs
People's Republic of Bangladesh

Welcome from the Planning Minister People's Republic of Bangladesh

It's a great delight to be here and witness the prestigious 45th International Collegiate Programming Contest (ICPC) World Finals this year. It is truly a remarkable day for Bangladesh, being the South Asian country to host the world's largest and most prestigious programming contest for college students.

In the era of globalization and technology, this competition is exactly what we need. This event also makes the honor of being able to host this year another step toward our progressing ICT sector development in Bangladesh.

Now, a few words to the bright minds present today, congratulations on becoming the finalists. It is an incredible sight, to see the best minds from all across the world under one roof. Take all the lessons you have learned, as they will empower and enable you to become future innovators and game-changers. Know that your resourcefulness, originality, adaptability, and mindset to see problems as challenges are the skillsets you will need to accomplish great things. Best of luck to you all. I hope you all will continue to learn and grow.

I want to thank the ICT Division, the University of Asia Pacific and the Bangladesh Computer Council for their partnership effort with this impressive event. Lastly, I thank the ICPC Foundation for the honor of choosing Dhaka to host the 45th World Finals.

M. A. Mannan MP
Honorable Minister
Ministry of Planning
People's Republic of Bangladesh

Welcome from the Adviser to the Honorable Prime Minister, People's Republic of Bangladesh

Dear Championship participants, friends, and guests.

Bangladesh is incredibly honored to organize one of the most prestigious Programming competitions-the International Collegiate Programming Contest (ICPC). We are here to cheer you all and wish you all the best.

We are fortunate that as the first southeast Asian country, we are hosting this wonderful event. This competition is equivalent to Olympic Games for computer programming students. The teams compete in terms of speed, creativity, and innovation in solving problems.

You are the innovators and problem solvers who will change history. The ICPC is an event that improves the relations between students and institutions of higher education in different countries; captures the public's interest at the forefront of scientific and technological knowledge; and serves as an interface between academia, community, and industry.

Dhaka is a city steeped in a heritage of excellence and digitalized in every sector. It is a marvelous opportunity to promote the city of Dhaka internationally. We have the privilege to host highly qualified young people with extraordinary talent in an area of great scientific, economic and social potential, such as computer programming. You'll find that we have a high standard of safety for the guests, and a vibrant culture during your stay. We are committed to ensure your needs during your visit. You will have a pleasant stay overall, I promise.

Welcome to Bangladesh, young people, and best of luck.

Sajeeb Wazed
Adviser to the Honorable Prime Minister, GoB
Information and Communication Technology Affairs

Welcome from the State Minister for ICT, People's Republic of Bangladesh

With great pleasure, I welcome you to the World Finals of the ACM International Collegiate Programming Contest (ICPC) hosted by the University of Asia Pacific in association with ICT Division of Bangladesh and Bangladesh Computer Council (BCC). We are here to celebrate you- the world's best collegiate problem solvers- and the global community supporting you.

Holding the World Finals in our country has strategic meaning for the development of the IT industry in Bangladesh, helping to strengthen the idea of coding competitions, more importantly, stimulating young people's interest in IT professions in our country. Since Bangladesh is gradually walking in the path of the digital world, it's a very inspiring opportunity for us to host the world's best programming contest. The contest provides a unique opportunity for talented students from more than 75 countries to demonstrate their knowledge and skills and discuss issues related to the development and use of the latest scientific achievements in the World.

We're going to do everything within our reach to make sure that all students, coaches, team attendants, and other members of each team have a comfortable stay in Dhaka.

I wish all the participants and guests of the Championship a wonderful time in Dhaka and fulfillment of their innovative plans.

Bangladesh says best of luck to you, finalists!

Zunaid Ahmed Palak, MP
Honorable State Minister for ICT, People's Republic of Bangladesh

Welcome from the Senior Secretary, ICT Division, People's Republic of Bangladesh

Being present for the 45th International Collegiate Programming Contest World Finals this year is a wonderful pleasure. Being the first South Asian nation to hold the biggest and most impressive programming competition for college students, Bangladesh is experiencing a truly historic day.

The opportunity to host this event is a milestone in Bangladesh's ICT sector development. As a country on a journey towards building a Smart Bangladesh, we extend our welcome to the brilliant minds across the world whose journeys led them to this monumental day. I am excited about what is in store. I believe you all have the resourcefulness, ingenuity, and go-getter mindset to do great things.

Finally, I thank the University of the Asia Pacific and the Bangladesh Computer Council for partnering with us to pull off this impressive event and the ICPC Foundation for choosing Dhaka to host the 45th World Finals.

Mr. NM Zeaul Alam, PAA
ICT Division

Welcome from Executive Director, Bangladesh Computer Council

Looking round this room, at all the bright minds full of potential, fills me with hope. It is a remarkable experience to be here today, making a new Milestone on Bangladesh's journey to becoming Smart Bangladesh.

I want to thank the ICT Division and the University of Asia Pacific for our partnership. More Importantly, I want to thank ICPC Foundation for honoring us with the opportunity to host the 45th International Collegiate Programming Contest World Finals.

As we all know, ICPC is the world's most prestigious programming contest. So, expect no shortage of brilliant ideas today that will blow your minds.

I congratulate the finalists on making it to this round. Reaching the finals is an excellent show of feat and what you are capable of. However, it is only the beginning of what you can all do to shape the future.

Ranajit Kumar
Executive Director
Bangladesh Computer Council

Welcome from Director, ICPC World Finals Dhaka & Vice-Chancellor, University of Asia Pacific (UAP)

Congratulations on qualifying for the ICPC World Finals.

It is the first time the International Collegiate Programming Contest (ICPC) has been scheduled in Bangladesh, and the University of Asia Pacific (UAP) is happy to host this program. We are glad to welcome you to the city of mosques, Dhaka.

We hope your time with us is memorable and life-changing - engaging with the best computing talents from all over the globe, and visiting one of the most beautiful regions in the world. Our excellence in computer science is the reason for which the ICPC final is being held here this year.

UAP is maintaining a highly qualified and strongly motivated faculty to educate students in subjects that accommodate latest advances in science and technology and best practices in teaching and learning supported by modern laboratories, library facilities, and vibrant co-curricular activities. In pursuit of creativity, cutting-edge knowledge and technological innovation, UAP encourages and supports faculty members in research, publications, and sharing knowledge with co-professionals.

UAP would like to thank all the volunteers, coaches, mentors, and the organizers who have made this competition possible. In particular, we want to thank BCC, the ICT Division, and the ICPC Foundation.

I wish the ICPC great success. Have a wonderful stay in Dhaka, and good luck!

Prof. Dr. Qumrul Ahsan
Director, ICPC World Finals Dhaka
Vice-Chancellor, University of Asia Pacific (UAP)

Welcome from the Convener ICPC WF Dhaka Publicity-Publication, Gifts and Branding Sub-Comittee

I am delighted to welcome the university teams of the 45th International Collegiate Programming Contest (ICPC) World Finals Dhaka. It is indeed a great honour that Bangladesh is going to host the world's largest and most prestigious programming contest. ICPC will foster leadership, team building and lasting bond amid students and institutions of higher education of different countries. It will also develop the players 'digital competence; capture public interest when it comes to scientific and technological know-how; and serve as an interface among the academia, community and industry.

ICPC World Finals Dhaka will provide a unique opportunity to the global competent to acquaint with the rich cultural, architectural heritage and human wealth our city and the university offers.

I wish best of luck to the innovative and bright minds. Hope you will have a pleasant and comfortable stay in our country during the problem solving extravaganza.

Mohammad Navid Safiullah
Additional Secretary (Organizational Support Wing)
ICT Division
and
Convener
ICPC WF Dhaka Publicity-Publication,
Gifts and Branding Sub-Committee

Welcome from ICPC Executive Director & ICPC Foundation President

Welcome to the 45th Annual World Finals of the International Collegiate Programming Contest, ICPC World Finals Dhaka! In recent years, ICPC Regionals have annually hosted over 59,000 team members and 5,043 coaches at over 3,400 universities in 111 countries at 643 sites. Some 138 teams of the world's strongest collegiate teams of problem solvers have advanced to the ICPC World Finals Championship! Exceptional coaching and thousands of committed volunteers made this happen around the globe.

Now we gather in Dhaka, one of the largest cities in South Asia, just north of the Buriganga River, to celebrate some of the most brilliant minds on our planet. Congratulations to the ICPC World Finalists! You outperformed 99% of the teams who challenged you to do your best. What does it take to earn the right to compete in the world's oldest, largest, and most prestigious programming competition? The answer is simple. It takes your very best.

You are the first generation of digital natives that have never been disconnected. Being connected is best when we bind our strengths together toward a common cause. Do that and prepare to meet the challenges that will define your generation. Life needs you. We are born to compete. We compete best when we compete together, in good faith, goodwill, and with good deeds, all in the best interests of our neighbors and communities.

Let me introduce you to our friends and family. First, I would like to thank the Late National Professor, Dr. Jamilur Reza Choudhury, Former Vice Chancellor of the University of Asia Pacific. His vision inspired many students and paved the way for the ICPC World Finals Dhaka. I would also like to thank the University of Asia Pacific Vice Chancellor, Dr. Qumrul Hasan, ICPC World Finals Dhaka Director, and Dr. Mohammed Alauddin, University of Asia Pacific President, for their unending support of the ICPC World Finals.

My cherished friends, the Late Dr. James Comer, ICPC Director of Regional Contests Emeritus, Dr. Roy Anderson, ICPC Director of Regional Contests, Dr. C.J. Hwang, ICPC Governor of Asia, and Dr. Phalguni Gupta, ICPC Director of Asia West Contests, have worked together to improve the lives of students for decades. All have played an instrumental role in the outstanding event that awaits you this week. These are the champions of bringing this ICPC World Finals to Dhaka.

The community support for ICPC World Finals Dhaka is stunning. Thank you to Mr. Muhammed Zafar Iqbal, Former professor of the CSE dept. SUST, and the City of Dhaka, for your outstanding hospitality. Thanks go to the ICT Division and Mr. N.M. Zeaul Alam, the Bangladesh Computer Council, and Mr. Ranajit Kumar, Engr. Mohammad Enamul Kabir, Mr. Mohammod Rashedul Islam, Engr. Md. Golam Sarwar and Mr. Madho Sudun Chanda for your steadfast support. Your commitment to future generations will impact lives in Bangladesh and across the globe for years to come.

Thank you, Huawei, ICPC Diamond World Finals Sponsor, and ICPC Challenge Sponsor! Thank you, JetBrains, ICPC Global Programming Tools Sponsor, for leading with a six-year commitment! You are the champions behind the champions. Your unwavering support allows us to spotlight the world's most excellent problem solvers and enables their dreams of competing on a global stage to come true. Accolades go to IBM Quantum (ICPC AlgoQueen Program Sponsor), Two Sigma, AWS Educate and Endure Capital for all of their support.

It takes steadfast institutional commitment to serve a global community. The UPE Honor Society has participated for over 50 years. ICPC Asia West Dhaka leaders have faithfully served and built up the ICPC Community, led by C.J. Hwang and Phalguni Gupta, ICPC Asia West Dhaka Regional Volunteers, Abul L. Haque, Mohamed Kaykobad, Shahriar Manzoor, Derek Kisman, Monirul Hasan, Mohammad Mahmudur Rahman, Md. Mahbubul Hasan, Rujia Liu, Syed Akhter Hossain, and Bilkis Jamal Ferdosi have worked together to grow the ICPC Dhaka Regional into a cooperative endeavor enabling opportunities for some of the finest young minds in computing today. I would also like to commend Phalguni Gupta, Abul L. Haque, Mohammad Ghodsi, Maheshwara Chaitanya, Hamid Zarrabi-Zadeh, and Md. Mustafizur Rahman for their extraordinary contributions across ICPC Asia West. And to our host, the University of Asia Pacific, thank you for your example as forerunners of the digital age.

Best wishes from ICPC Friends and Family with our 400,000 ICPC Alumni building the digital future for the past 50 years. And best wishes from the ICPC Foundation and me! Create those engines of prosperity and mission-critical platforms that give birth to abundant opportunities for you, your neighbors, and your communities to seek happiness here in the Dawn of the Digital Millennium. You have a lifetime to get that done. It is so much more fun to do it together.

Best,

Bill Poucher
ICPC Executive Director
ICPC Foundation President

Welcome from ICPC Deputy Executive Director and Director of World Finals Contests

I want to extend a heartfelt welcome to everyone attending the ICPC World Finals in Dhaka! Our ICPC World Finals experience together began several years ago during 2020-21 ICPC Regional Contests. We have connected through technology during unexpected challenges from all over the planet. We have come here today to Dhaka, the home of over fifty diplomatic missions and countless technological and industrial innovation examples. This city, known for its unparalleled growth in digital development, is a world leader in creating opportunities for students. The ICPC, the University of Asia Pacific, Dhaka, the Bangladesh Computer Council, and the Information and Communication Technology Division have all come together to honor you, the world's greatest young problem solvers.

Today, we begin a long-awaited celebration of you and everything you have accomplished. You are all an embodiment of the ICPC spirit, undeterred by hardship and bound together by challenges. I look forward to getting to know you and cheering you on in the ICPC World Finals in Dhaka!

I congratulate you, the champions of champions! Approximately 75,000 coaches, contestants and volunteers at over 3,450 universities in 111 countries in 643 sites competed in ICPC Regional Contests. Only 137 teams worldwide have advanced to the ICPC World Finals in Dhaka. You will make history and improve the lives of generations to come with your inspiring example. You have persevered through extraordinary circumstances mastered the art of teamwork, and dedicated yourselves to the unyielding pursuit of excellence.

Speaking of excellence, I would like to thank the Late National Professor, Dr. Jamilur Reza Choudhury, Former Vice Chancellor of the University of Asia Pacific. He was a true champion of the ICPC World Finals Dhaka, and his influence lives on in all of our hearts and lives today. I would also like to thank the University of Asia Pacific Vice Chancellor, Dr. Qumrul Hasan and ICPC World Finals Dhaka Director, and Dr. Mohammed Alauddin, University of Asia Pacific President. Their support has been

instrumental in making the ICPC World Finals Dhaka a success.

Many dedicated Host Volunteers have also helped make the upcoming World Finals memorable. Their efforts are consistent with the spirit of hospitality Dhaka is known for and have made it possible for us to meet in Dhaka, a city rich with history and culture that serves as one of the world's fastest-growing technological centers.

Recent events have shown us that the need for people who can turn the "impossible" into the achievable is greater than ever. You have already proven your extraordinary determination, conscientiousness, and perseverance by being here. You are a prime example of what is possible through education and competition. You shine a bright spotlight on yourselves, your families, your coaches, and your universities through your actions. You will make history this week, and the ICPC is proud of everything you have accomplished.

Sincerely,

Dr. Michael Jeffry Donahoo
ICPC Deputy Executive Director
Director of World Finals Contests

Welcome from
UPE Executive Director

Welcome from UPSILON PI EPSILON

On behalf of UPE, I would like to welcome student teams and their coaches, ICPC support personnel, and guests to the 45th ICPC World Finals. You have made tremendous effort to join us here in Dhaka during these difficult times – the on-going pandemic and war in some parts of the world. Thank you for your commitment and support in upholding the ideals of UPE and the ICPC.

The ICPC is truly a significant event for all of us in UPE. We are privileged to recognize the World's best and brightest students in the computing and information disciplines. The World Finals is always an exciting time for UPE as we strive to expound the primary mission of the ICPC.

The World Finals will show the world that we can provide new venues for our participating students and be recognized as the best of the best in the globally competitive world of computing. We wish to encourage everyone to experience as much of the Dhaka environment as possible with the knowledge that this city is the academic and cultural center of Bangladesh.

Finally, I take the opportunity to say thank you to our sponsors, especially the ICPC Foundation, and the ICPC World Finals Host, the University of Asia Pacific. Thank you also to ICPC Global Sponsors JetBrains, Huawei, AWS Educate, Two Sigma, and IBM Quantum.

Orlando Madrigal Ph.D.
Executive Director of UPE

ICPC Global Sponsors
Welcome from Huawei

On behalf of Huawei, I would like to congratulate all students who have reached the 45th ICPC World Finals in Dhaka, Bangladesh. We are incredibly proud of each and every one of you, and we hope this will be the start of an amazing journey.

ICPC, as proven by its success over previous decades, is a wonderful and practical platform that offers opportunities and resources to students who are driven and dedicated to improving their programming skills.

Huawei is excited to play its role as a diamond sponsor, and is committed to shouldering its responsibility to bring additional value to current and future contestants, coaches, and organizers. Huawei will continue to open up its resources, provide opportunities to international competition communities to work on real-world industrial problems and anticipated future challenges. We aim to create a better connected and intelligent world via strengthening the bond between the industry and academia. We have prepared some special activities for the Dhaka ICPC World Finals, which we hope you will enjoy.

Competing at these Finals is a tremendous achievement, marking another remarkable step in your journey towards the pursuit of scientific progress, exciting careers, and a wonderful life. During the Finals, it is our sincere hope that you will be able to gain new knowledge, hone your skills, and fully utilize the platform, all while doing your best to solve some truly fascinating problems. Always think freely and keep moving forward!

Dr Zhou Hong
President of the Institute of Strategic Research, Huawei

ICPC Global Sponsors
Welcome from JetBrains

My name is Andrey Ivanov, and it is my pleasure to welcome you on behalf of JetBrains to Dhaka, Bangladesh, for the 2021 ICPC World Finals Dhaka.

JetBrains is honored to be a sponsor of this event, and we are overwhelmed by the talent and passion on display here. As a company that is committed to investing in the future of the field, the ICPC World Finals are particularly special for us.

JetBrains is dedicated to seeking out talented people, supporting their initiatives, and working together to create great things that will make the world a better place. That's why we are proud to be a Global Tools Sponsor of the ICPC. A number of ICPC alumni also work at JetBrains, and together we have created some amazing things like the Kotlin programming language, professional development tools like CLion, IntelliJ IDEA, and PyCharm, and educational tools that help people learn and teach programming.

The tools we build are designed to help you achieve your potential, eliminate tasks that take you out of your flow, and allow you to focus on problems that demand your full attention. Stop by our booth to meet our team, learn more about our tools, and solve problems in Kotlin with our ICPC World Champion colleagues.

Congratulations on qualifying for this event! Even amidst a grueling competition, we hope you can take some time to enjoy such a major accomplishment in the company of your peers. We look forward to following your achievements.

Andrey Ivanov
SVP of Investments, Research, and Education
JetBrains

ICPC Global Sponsors
Welcome from IBM Quantum

Welcome to the ICPC World Finals Dhaka, Bangladesh! And congratulations for coming this far in this prestigious global competition. IBM Quantum is proud to be a sponsor of ICPC Algo Queen this year as we collaborate to provide an exciting learning experience for the Algo Queen participants through the Quantum Explorers program.

Whether you have been an avid follower of quantum technology or only recently heard about this buzz word in your life, IBM Quantum, an industry leader in quantum computing, believes quantum education should be accessible and inclusive to everyone, and is working to reduce barriers of entry for students around the world. Qiskit Quantum Explorers, is the ultimate community experience and a learning journey for all persons who are interested in studying this exciting field of quantum computing.

We wish all finalists of ICPC the best of luck in the contest and encourage you to also take part in the future of computing called quantum.

Dr. Radha Pyari Sandhir
India Community Lead, IBM Quantum

ICPC Global Sponsors
Welcome from Endure Capital

World Finals Information

On behalf of Endure Capital, it is an honour to welcome you to the 45th ICPC World Finals in Dhaka. We are impressed by the constant evolution of the competition from year to year, and are very proud to be supporting the ICPC.

To all you amazing contestants, congratulations. You made it to the finals, all those long nights of practicing and training paid off. You should all be very proud of yourselves.

We, at Endure, love problem solvers like you. Endure is an investment firm based in Palo Alto, California. We invest in early-stage tech-driven startups worldwide. We invest in brillant technical people solving major problems in the world. Our investments solve a diverse set of problems including ride-sharing, 3D bio-printing, supersonic jets, education platforms, and much more.

As we saw during COVID, challenges inspire amazing human beings, like yourselves, to use their skill and talent to create technical solutions for many challenges. During COVID, startups worked on issues ranging from virus tracking and diagnostics to delivering medications, groceries, and remote education. All these advancements wouldn't have been possible if it wasn't for problem solvers like you.

We want to congratulate the organizing team and everyone who worked day and night to make this event possible. Thank you for making it happen.

Finally, good luck to all the teams. You all deserve to be here, now enjoy this moment.

Tarek Fahim
Managing Partner
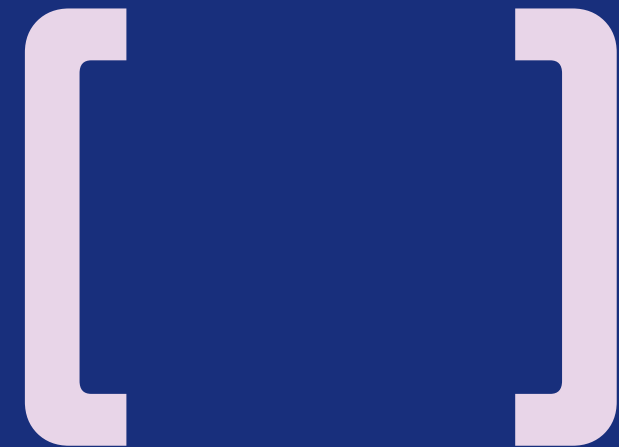
About the Contest
– icpc.global

ICPC FACT SHEET

The 45th Annual World Finals of the ICPC International Collegiate Programming Contest

Hosted by University of Asia Pacific (UAP)
Dhaka, Bangladesh, 6-11 November 2022

The ICPC International Collegiate Programming Contest is the premiere global programming competition conducted by and for the world's universities. The ICPC operates under the auspices of the ICPC Foundation which hosts ICPC Global Headquarters. We shine the spotlight on the students, coaches, universities, industry, and communities working to advance prospects of prosperity through team-based, algorithmic competitive programming.

For over four decades, the ICPC has grown to be a game-changing global competitive educational program that has raised aspirations and performance of generations of the world's problem solvers in the computing sciences and engineering. With 400,000 alumni, The ICPC community spans the globe with recent annual participation levels reaching 111 countries, 3,450 universities, and 75,000 team members, coaches and volunteers.

The ICPC community purpose remains at the heart of the ICPC: to advance prospects for the next generation, by bringing students together, working collaboratively to solve algorithmically challenging problems, preparing them to build dependable systems that benefit their neighbors with the support of universities, industry, and community leaders, globally. With ICPC principles, "Put people first."; "Practice goodwill."; and "Follow the Golden Rule.", the doors are open for students from all universities to compete in ICPC regional competitions with the opportunity to advance to the ICPC World Finals.

ICPC World Finals host institutions offer hospitality comparable to visiting grandma's house with special assistance to obtain passports and visas so that all who qualify may participate. The 45th ICPC World Finals in Dhaka, hosted by the University of Asia Pacific, will continue over four decades of global inclusion advancing participants of any race, ethnicity, gender, religion, or nationality who qualify.

In ICPC competitions, teams of three students represent their universities in multiple levels of regional competition. Volunteer coaches prepare their teams with intense training and instruction in algorithms, programming, and teamwork strategy. Several ICPC universities and ICPC volunteers provide online judging systems, free of charge. Top teams from regional competitions held on six continents advance to the ICPC World Championship round of the ICPC World Finals, hosted by University of Asia Pacific (UAP) on 10 November, 2022, in Dhaka, Bangladesh.

The ICPC traces its roots to a competition held at Texas A&M in 1970 hosted by the Alpha Chapter of the UPE Computer Science Honor Society. The idea quickly gained popularity within the United States and Canada as an innovative initiative to raise the aspirations, performance, and opportunity of the top students in the emerging field of computer science.

The contest evolved into a multi-tier competition with the first Finals held at the ACM Computer Science Conference in 1977. Operating under the auspices of the ICPC Foundation, the contest has expanded into a global network of universities hosting regional competitions that advance teams to the ICPC World Finals. In the past 25 years alone, ICPC participation has increased by more than 2000%.

The contest fosters creativity, teamwork, and innovation in building new software programs, and enables students to test their ability to perform under pressure. Quite simply, it is the oldest, largest, and most prestigious programming contest in the world and the root of competitive programming competitions the world over.

The annual event is comprised of several levels of competition:

- Local Contests – Universities choose teams or hold local contests to select one or more teams to represent them at the next level of competition. Selection takes place from a field of over 300,000 students in computing disciplines worldwide.

- Regional Contests – Annually, ICPC Regional Contests include participants from 111 countries, with 3,450 universities, 75,000 volunteers, coaches, and team members involved.

- World Finals – November 6-11, 2022 in Dhaka, Bangladesh – Hosted by University of Asia Pacific (UAP), the ICPC World Finalist teams will compete for awards, prizes, and bragging rights. These teams represent the best of great universities on six continents - the cream of the crop.

Battle of the Brains

The contest pits teams of three university students against eight or more complex, real-world problems, with a grueling five-hour deadline. Huddled around a single computer, competitors race against the clock in a battle of logic, strategy, and mental endurance.

Teammates collaborate to rank the difficulty of the problems, deduce the requirements, design test beds, and build software systems that solve the problems under the intense scrutiny of expert judges. For a well-versed computer science student, some of the problems require precision only. Others require a knowledge and understanding of advanced algorithms. Still others are simply too hard to solve – except, of course, for the world's brightest problem-solvers.

Judging is relentlessly strict. The students are given a problem statement – not a requirements document. They are given an example of test data, but they do not have access to the judges' test data and acceptance criteria. Each incorrect solution submitted is assessed a time penalty. You don't want to waste your customer's time when you are dealing with the supreme court of computing. The team that solves the most problems in the fewest attempts in the least cumulative time is declared the winner.

To learn more about the ICPC, please visit icpc.global

For full coverage of the World Finals including social media, photos, video, live coverage, and live scoreboard, go to ICPCNews, news.icpc.global and ICPC Live, live.icpc.global

Contest Growth

The ICPC Foundation and UPE are thrilled that the contest continues to attract the best and brightest students from around the world. The ICPC student participation has increased by 2000% in 25 years.

ICPC World Finals Dhaka hosted in Dhaka, Bangladesh– the final round following the 2020-21 Regionals.

Teams from regional contests servicing universities worldwide will advance to the World Championship Round of the ICPC World Finals hosted by University of Asia Pacific to be held in Dhaka, Bangladesh, 6-11 November, 2022.

Recent medal winners in order of finish are:

2020 Gold
Nizhny Novgorod State University
Seoul National University
St. Petersburg ITMO University
Moscow Institute of Physics and
Technology

2020 Silver
University of Wroclaw
University of Cambridge
Belarusian State University
University of Bucharest

2020 Bronze
Massachusetts Institute of Technology
Kharkiv National University of Radio Electronics
University of Illinois at Urbana-Champaign
National Research University Higher School of Economics

2019 Gold
Moscow State University
Massachusetts Institute of Technology
The University of Tokyo
University of Warsaw

2019 Silver
National Taiwan University
University of Wroclaw
Seoul National University
KimChaek University of
Technology

2019 Bronze
Sharif University of Technology
Moscow Institute of Physics & Technology
National Research University Higher School of Economics
The Chinese University of Hong Kong

2018 Gold
Moscow State University
Moscow Institute of Physics & Technology
Peking University
The University of Tokyo

2018 Silver
Seoul National University
University of New South Wales
Tsinghua University
Shanghai Jiao Tong University

2018 Bronze
St. Petersburg ITMO University
University of Central Florida
Massachusetts Institute of Technology
Vilnius University
Ural Federal University

About the ICPC Foundation

The ICPC Foundation is a 501(c)(3) organization founded to advance the art and sport of competitive programming for the benefit of society. The foundation is responsible for ICPC sponsorship, fundraising, outreach, and operational matters. The ICPC Foundation strives to provide ample opportunity for the underserved, to create a tier of regional championships to recognize far more star performers and showcase emerging talent, and to bring ICPC alumni together, assuring future generations paths of excellence to being great problem solvers. The ICPC Foundation is actively engaged in creating equal opportunities for women or other underrepresented groups to pursue excellence within a culture of global inclusion and authenticity. For more information about the ICPC and the ICPC Foundation visit icpc.foundation.

Upsilon Pi Epsilon's Commitment

The Upsilon Pi Epsilon International Computer Science Honor Society recognizes the best students of computer science and engineering in the world. Since its earliest participation, the UPE has provided support and scholarships to the World Finals teams. The UPE boasts the longest continuous relationship to the ICPC, dating back to 1970 with the first event held at Texas A&M by members of the Alpha Chapter of the UPE. For more information about other UPE activities, its chapters, and its membership click on upe.acm.org.

ICPC
World Finals Information
About the Contest - icpc.global

ICPC
World Finals Information
About the Contest - icpc.global

About the World Finals Host Country

Bangladesh, a country of South Asia, located in the delta of the Padma (Ganges) and Jamuna (Brahmaputra) rivers in the northeastern part of the Indian subcontinent. Civilization in the Bengal Delta dates back more than 4,300 years. The borders of present-day Bangladesh were established during the British partition of Bengal and India in 1947 when the region became East Pakistan, part of the newly formed state of Pakistan. It was separated from West Pakistan by 1,600 km of Indian territory. Due to a desire for political, economic, and linguistic self-determination, popular agitation and civil disobedience grew against the Pakistani state. This culminated in the Bangladesh Liberation War of 1971. The People's Republic of Bangladesh was founded as a constitutional, secular, democratic, multiparty, parliamentary republic. The Bangladesh story is about a man named Sheikh Mujibur Rahman who sacrificed his life for a country he had named "Bangladesh."
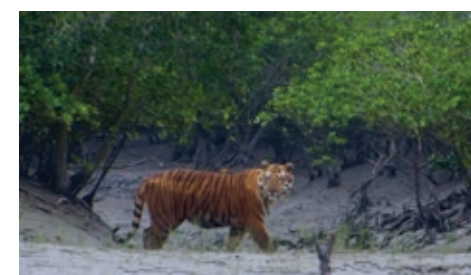
Bangladesh has an impressive track record of growth and poverty reduction. It has been among the fastest growing economies in the world over the past decade, supported by a demographic dividend, strong ready-made garment (RMG) exports, and stable macroeconomic conditions. Continued recovery in exports and consumption will help growth rates pick up to 6.4 percent in the fiscal year 2021-22. Bangladesh tells the world a remarkable story of poverty reduction and development. From being one of the poorest nations at birth in 1971, with per capita GDP tenth lowest in the world, Bangladesh reached a lower-middle-income status in 2015. It is on track to graduate from the UN's Least Developed Countries (LDC) list in 2026.

Bangladesh is home to the world's largest river delta, roaming Bengal tigers in the Sundarbans, a mangrove and swampland in the delta, the longest natural uninterrupted sea beach in Asia (Cox's Bazar beach), which is 150 km long, the Malnicherra Tea Estate, the oldest tea garden in the subcontinent, ancient historical Panam City, Ilish fish and Muslin gauze like Jamdani.

About the World Finals Host City

Dhaka is Bangladesh's capital and largest city. It is the largest city by population in the historical region of Bengal and a major city in South Asia. It is a hub for trade and culture, with a long history as a Bengali capital. It has been called the City of Mosques and the Venice of the East due to its Islamic architecture and a riverfront facing the Buriganga River. It is also known as the Rickshaw Capital of the World, as there are over 500,000 cycle rickshaws running on its roads.

As the center of Bangladesh's independence movements, Dhaka also hosts some significant national monuments and structures. A number of annual cultural events are held in Dhaka, like Pohela Falgun, Pohela Baishakh, and Ekushe Book Fair, which add a unique flavor to the city.


Bangladesh Parliament Building

About the World Finals Host University

University of Asia Pacific (UAP) in 1996 by the UAP Foundation. UAP is ranked 5th among private universities and 19th among all public and private universities in Bangladesh in the Scimago Institution Ranking (SIR), 2021.

UAP is ranked 11th in Computer Science, 12th in Energy, and 12th in Engineering among all public and private universities in Bangladesh (SIR 2021). At present, UAP offers eight undergraduate and ten graduate programs. All the programs of UAP are accredited by the professional bodies of Bangladesh, such as the Institute of Architects Bangladesh (IAB), Institution of Engineers Bangladesh (IEB), Bangladesh Bar Council, Pharmacy Council of Bangladesh, etc. UAP has a total of 5208 registered students and 278 academic staff. UAP has a renowned academic staff like Prof. Dr. Abdul Matin Patwari, Professor Emeritus, and Prof. Dr. M. Shamim Z. Bosunia, Professor Emeritus. National Professor Dr. Jamilur Reza Choudhury, an internationally acclaimed engineer, and academician, was the Vice Chancellor of UAP.
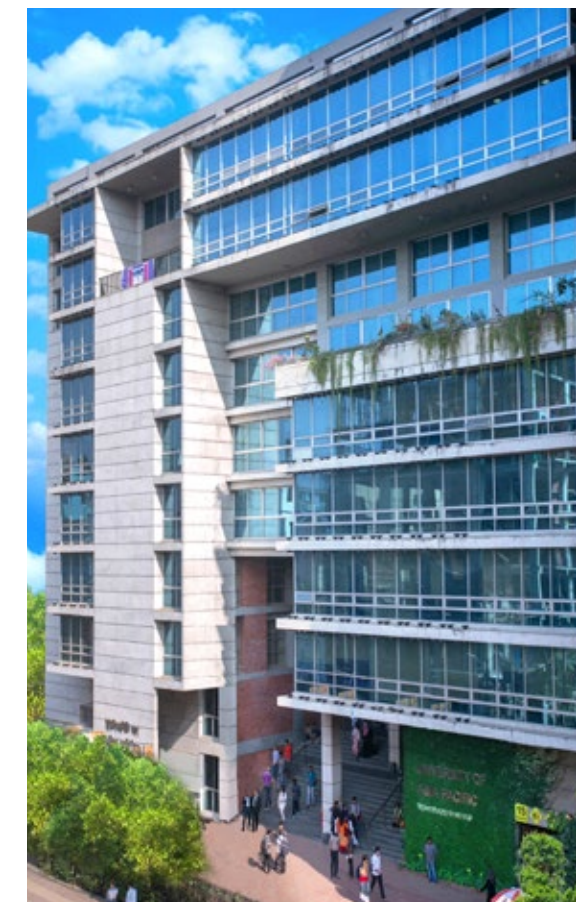
About the World Finals Host Entities

ICT Division

ICT Division was established to lead the digitalization initiatives in Bangladesh. Since its establishment, the ICT Division has taken various initiatives to create digital opportunities for the citizen and industry, drive e-government activities, promote the IT industry, and liaise with international stakeholders. In recent years, leading innovation in ICT and developing startup culture have become important areas of intervention. ICT Division facilitates hi-tech industries and investment in the country through networking and partnership with local and global stakeholders.

Bangladesh Computer Council

Bangladesh Computer Council (BCC) is a pioneer in realizing the ICT agenda of the Government of Bangladesh. It started its journey in the early 90s. From 2009, BCC played a crucial role in learning Digital Bangladesh, the vision that led the nation to embrace information technology aggressively. It builds IT infrastructures, develops IT human resources, and ensures hardware and software quality in the country. BCC hosts a Tier-III data center, and at the same time, it operates the most extensive public network in Bangladesh, connecting 18400+ Government offices. It also strengthens IT industries by promoting creativity, innovation, and capacity building.

Welcome to the ICPC World Finals Dhaka!

We ask that all participants wear their provided masks at all times indoors.

Here are some details on the different events you will be experiencing while in Dhaka:

Team Registration

All teams and coaches must present themselves and all required documents for registration at the time selected by appointment. Provided by the ICPC Foundation and UPE, representatives certify that team paperwork and Team Reference Documents comply with ICPC World Finals Rules.

Participant Welcome

Dinner is hosted by the ICPC World Finals Dhaka Host University of Asia Pacific to welcome all registered attendees.

Tech Showcase

This special on-site event is courtesy of the University of Asia Pacific and the ICPC Foundation. It's a great way to learn about new technologies and innovative practices directly from industry visionaries. Try to solve challenges that top companies are working on, meet your future colleagues, listen to presentations from top industry leaders, and discover future job trends and opportunities.

ICPC Challenge powered by Huawei

The ICPC Challenge powered by Huawei is a required activity that presents a problem from some domains in computing. The domain and problem style may be very different from the standard ICPC problems. This contest provides ICPC participants the opportunity to learn about and experience leading-edge issues in computing, typically of contemporary interest to industry. The ICPC Challenge also provides a platform for ICPC to experiment with new problem types. Get ready for the opportunity to win some amazing prizes from our friends at Huawei!

ChillZone

An area to relax, play games, engage with other teams and interact with neat demos featuring varied, innovative technologies..

Opening Ceremony

This required event recognizes some of the hundreds of volunteers who have worked to make this year's World Finals a reality and represents the first public introduction of this year's World Finals contestants – the best of the best collegiate programmers.

The World Finals Dress Rehearsal

This required event is a full-scale rehearsal and practice of the World Finals. During the Dress Rehearsal, you will have the opportunity to submit questions on the process that will be answered directly afterward at the "Answers to Questions" session, following an open practice slot to apply those learnings.

ICPC Alumni Talk

ICPC World Finals is a unique opportunity to get together, know each other better, share your knowledge, and help fellow programmers. The ICPC Foundation has prepared a speaker series about the future of tech industry jobs. They will be sharing their experience as founders, co-founders, chief technology officers, and software engineers at top international companies. We hope this opportunity will provide some tips and answer all your questions concerning your professional career path. Don't miss this chance to ask them questions!

The World Finals

The time has come. Teams from six continents battle in a five-hour competition to see who takes home this year's prizes, accolades, and bragging rights as the top collegiate programmers in the world.

Closing Ceremony

This required event will be held to crown the ICPC World Finals Champions and medal winners!

The World Finals Celebration

Qualifying for the World Finals is no small feat. This night celebrates all teams! Relax, enjoy, and share memories from the week's events.

ICPC
World Finals Dhaka
Rules

Mission

The International Collegiate Programming Contest (ICPC) provides college students with opportunities to interact with students from other universities and to sharpen and demonstrate their problem-solving, programming, and teamwork skills. The contest provides a platform for industry, and academia to encourage and focus public attention on the next generation of computing professionals as they pursue excellence. (from the ICPC Policies and Procedures)

Introduction

The contest is a two-tiered competition among teams of students representing institutions of higher education. Teams first compete in Regional Contests, held around the world from September to December each year. Based on their performance in Regional Contests, top-ranking teams advance to the International Collegiate Programming Contest World Finals. Additional high-ranking teams may be invited to the World Finals. At most 140 teams will be invited to compete onsite. These rules are subject to change.

Organization

The ICPC is organized according to the *ICPC Policies and Procedures.* The Executive Committee, chaired by the Executive Director, sets the policy and general rules for the conduct of the contest. The Executive Director is solely responsible for interpreting the rules and for ruling on unforeseen situations.

Team Requirements

Teams qualify to advance to the World Finals through Regional Contests. See the ICPC Regional Rules and Region-Specific Rules for details on advancing to the World Finals. Only one team from a given institution may advance to the World Finals. No team member on the qualifying team may have competed as a contestant in two previous World Finals.

The coach of a qualifying team is the point of contact before and during World Finals activities. A contestant of a team may not serve as the coach. The coach must complete certification at the Team Certification Web Site within five (5) business days of notification. Qualifying teams will be invited by email and postal mail (if requested) soon after completing certification.

All team members attending the team's institution on visas must be permitted to return to their point of origin after the World Finals. Qualifying teams requiring visas must initiate the process of applying for visas within 10 business days of being invited to apply for a visa. Teams failing to comply with any of these requirements will be ruled ineligible to compete in the World Finals. Upon completion of these requirements, a qualifying team will be advanced to the World Finals.

A team advancing to the World Finals will comprise the same

three members as when it qualified. (Reserves are not allowed at the Finals.) If a team member is unwilling, unable, or unfit to compete in the World Finals, the coach must notify the ICPC Contest Manager in a timely manner. A team member who is unwilling or unfit to compete in the World Finals will be disqualified from further ICPC competitions. The team member may appeal disqualification to the Appeals Committee.

At on-site registration, participants must provide a picture ID (passport, driver's license, etc). Contestants must show proof of enrollment at the university during the term of the regional contest at which they qualified. A letter on university stationery with the signature of a university official accompanied by an English translation is sufficient.

Due to COVID, exceptions to these rules take precedence. All team members are responsible to follow all health safety rules.

Attendance

Finalists must attend all required events from On-Site Registration to Celebration as indicated in the Schedule of Events. Failure to attend any required event will result in disqualification and forfeiture of scholarships and prizes. Coaches must be accessible during On-Site Registration, Dress Rehearsal, the World Finals Championship, and the Closing Ceremony.

Support and Prizes

Each finalist team will be provided with hotel accommodations for the coach and three contestants according to dates published on ICPC Invitations. The hotel accommodations will provide gender privacy. The teams and coaches will be treated to a full schedule of activities including a full course of complimentary food functions.

Transportation to the World Finals is the responsibility of the finalists. The ICPC encourages teams to raise funds for transportation and extracurricular activities from local sources to better strengthen community ties among academia, industry, and government.

Teams finishing in the top four positions will be awarded Gold Medals. Those teams finishing fifth through eighth place will be awarded Silver Medals. Those teams finishing ninth through the twelfth place will receive Bronze Medals. Additional Bronze Medals may be awarded to teams solving the same number of problems as the twelfth place team and in a total elapsed time no more than 60 minutes more than the twelfth place team. Such teams will be awarded twelfth place.

The highest-ranked team is the World Champion and will receive the World Champion Cup and plaques. The remaining teams through twelfth place, as well as the Africa & Middle East Champions, the Asia East Champions, the Asia Pacific Champions, the Asia West Champions, the Europe Champions, the Latin America Champions, the Northern Eurasia Champions, and the North America Champions will also receive plaques.

Conduct of the Finals

Ten or more problems have been posed in recent World Finals.

Problems will be posed in English. During the contest, all communications from contest officials to contestants will be in English. Each team may identify an interpreter for translating questions posed by contestants to contest officials. Contestants may bring electronic natural language translators provided that they do not support math operations.

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. Rejected runs will be marked as follows:

- ❑ run-time error
- ❑ time-limit exceeded
- ❑ wrong answe

Notification of accepted runs may be suspended at the appropriate time to keep the final results secret. A general announcement to that effect will be made during the contest. Notification of rejected runs will continue until the end of the contest.

A contestant may submit a claim of ambiguity or error in a problem statement by submitting a clarification request. If the Judges agree that an ambiguity or error exists, a clarification will be issued.

The competition is scheduled to last five hours. The Finals Director has the authority to lengthen the contest in the event of unforeseen circumstances. Should the Contest duration be altered, every attempt will be made to notify contestants in a timely and uniform manner.

Scoring of the Finals

The World Finals Judges are solely responsible for determining the correctness of submitted runs. In consultation with the World Finals Judges, the Director of Judging is responsible for determining the winners of the World Finals. They are empowered to adjust for or adjudicate unforeseen events and conditions. Their decisions are final.

Teams are ranked according to the most problems solved. Teams placing in the first twelve places who solve the same number of problems are ranked first by least total time and, if need be, by the earliest time of submission of the last accepted run.

The total time is the sum of the time consumed for each problem solved. The time consumed for a solved problem is the time elapsed from the beginning of the contest to the submission of the first accepted run plus 20 penalty minutes for every previously rejected run for that problem. There is no time consumed

for a problem that is not solved.

Computing Environment

The World Finals programming language tools include Java, C, C++, Kotlin, and Python3. See the *Programming Environment Web Site* for detailed configuration information. Before the World Finals, the judges will have solved all problems in languages from at least two of the three distinct language groups (Java/Kotlin, C/C++, and Python3).

Each team will be provided with one computer. All teams will have equivalent computing equipment.

Contestants may not bring any printed materials or machine-readable versions of software or data to the Contest Area. Contestants may not bring their own computers, computer terminals, calculators, or other electronic devices to the Contest Area.

Each team member may bring an unannotated natural language printed dictionary. Online reference materials will be made available as described in the Reference Materials section of the *Programming Environment Web Site.* Each team will be permitted three copies of the **Team Reference Document** described in the *On-Site Registration Instructions.*

Contestant Conduct

DO NOT TOUCH ANYTHING at the team workstations until so directed by the Finals Director.

Contestants are not to converse with anyone except members of their team and personnel designated by the Finals Director. Systems support staff may advise contestants on system-related problems such as explaining system error messages.

A team may be disqualified by the Finals Director for any activity that jeopardizes the World Finals such as dislodging extension cords, unauthorized modification of contest materials, distracting behavior, or behavior contrary to the ICPC Code of Ethics and Overview.

Participant Conduct

Any participant may be disqualified from further participation due to any activity that compromises an ICPC event or due to behavior that is not in harmony with the ICPC Code of Ethics and Overview.
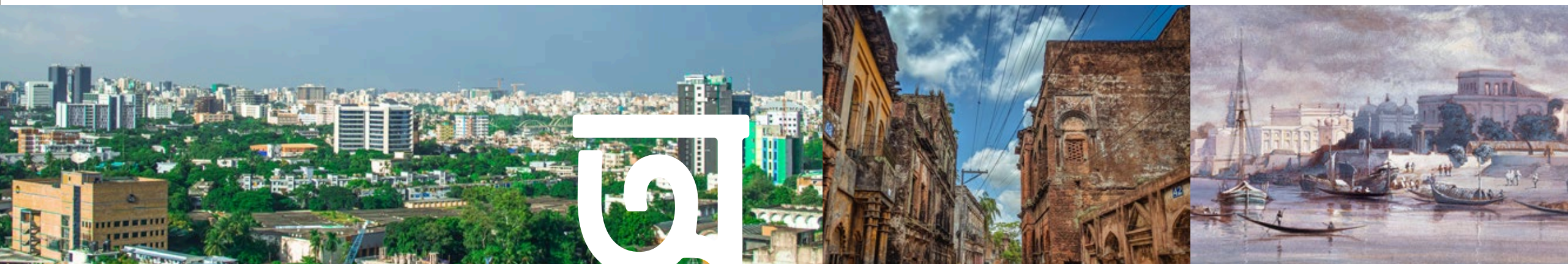
ICPC Code of Ethics

About the Host City

Dhaka
the story of an ever-sprawling city!

Dhaka as an urban center of Bangladesh has its deep roots in history. The city's rise and fall bears witness to not only this part of the Indian subcontinent but also to the history of Europe. From a relatively obscure position in the ancient time, Dhaka rose to eminence in the early 17th century as the capital of Mughal province of Bengal, Bihar, and Orissa and the most dominant urban center of eastern India. Since then, the history of Dhaka has been one of outstanding economic, social, and cultural progress, as well as decline and degeneration. The pre-Mughal Dhaka was indeed a very old settlement of mostly traders and artisans with a small contingent of officials and religious leaders. It truly exhibits the characteristics of urbanization in the riverine Bengal. Rising on the banks of river Buriganga, Dulai Khal and other small channels, Dhaka formed a center of exchange for trade and manufactures. The forces which led to this growth of urban Dhaka were primarily administration, internal and international trade and commerce, manufactures, and culture.

Dhaka thus became the chief center of trade and commerce in the area, handling the rich harvests of eastern Bengal, collecting manufactures, especially cotton goods, for exports to the Ganges Valley, and overseas, and acting as distributor for the raw materials and imports following in. Indian and foreign merchants including Europeans came to Dhaka to do business. The organized European companies and the English, French, and Dutch also established their factories in the city. Later the organized European companies began to appear in Dhaka . Dhaka around this time began to export muslins (famous for its delicacy and thinness) to such remote places as Khurasan, indicating that already by 1640 North Indian and other Asiatic traders were doing business in Dhaka. These traders and merchants carried out their commercial activities on their own accounts and contributed significantly to the export trade of Dhaka to different parts of the world but also to the growth of the commercial enclaves of Dhaka.

By the 17th century, Dhaka was queen of the cities of Eastern India. Many beautiful palaces, mosques, gardens, markets, and amusement centers were built. The city became the meeting place of many people and interests from different corners of the globe. At the height of Mughal rule and prosperity, Dhaka city was estimated to have a population of some 900,000 - which today is 22,478,000. The city proper stretched seven to ten miles along the river Buriganga and up to two and a half miles inland. The suburbs extended from the Buriganga to the Tongi Bridge, 15 miles to the north, and from Mirpur-Jafarabad on the west, some ten miles east to Postogala.

The modernization process of Dhaka further increased with the establishment of the Dhaka Municipality in 1864. For decades, the municipality carried out various development works which eventually made Dhaka a modern city. These development works were mostly connected with the improvement of the communication system of the city, improvement of sanitation and health, drainage, and other civic amenities. The first major plan for the modernization of Dhaka was made in 1870 through an act. The act resolved to improve the road systems of the city, enhance beautification of the town, start the clearance of the slums, develop the sanitary system, undertake the supply of filtered water, install street lights and take health care.

In 1905, Dhaka became the capital again of a new province; namely, Eastern Bengal and Assam. Though this proved short-lived, Dhaka gained much in infrastructure and urban ways of life. By 1905, it had become a divisional town with a reasonable population and vibrant economic activities. But it was not ready to become a capital city of the British Empire. Thus, extra measures were needed to upgrade it to a provincial capital. The context to which it became a capital, however, inspired the officials in charge to make it a memorable venture. A grand plan was adopted to bring back its past glory. That bright future came in 1947, when Dhaka again became the capital of the newly created province of East Pakistan after the British departed. As the capital of East Pakistan, Dhaka embarked upon the life of a modern city with planned development activities.

New areas were developed as commercial and business hubs and residential areas. Motijheel area developed as the new financial and commercial hubs of Dhaka, and New Market became the forerunner of the present-day shopping malls. Planned suburbs were started, leading to the present-day beautiful and modern – as well as expensive – areas of Banani, Gulshan, Baridhara, and Uttara. A new capital was built, called the Second Capital of Pakistan in Sher-e-Bangla Nagar, where the architecturally famous Parliament was constructed.

ICPC World Finals Host University:
UNIVERSITY OF ASIA PACIFIC (UAP)

After independence in 1971, Dhaka also grew into the most important center of many other sectors of life like education, trade, commerce, and sports. From 1947, the educational growth of the city progressed steadily, but after 1971 it leaped forward dramatically, and at present Dhaka houses several public and private universities. Other than universities there are thousands of other categories of schools and colleges and special religious institutions. Many technical and medical institutions also have appeared. Dhaka is now the chief education center of the country. The literacy rate in Dhaka City Corporation areas was only 52.36 per cent in 1985. In 2011, the literacy rate improved to 74.55 per cent, which was above the national average literacy rate of 69.34 (BBS, 2014) per cent, which stands at about 74.91% today. Per the data in 2016, the city has hosted 8 public universities and 52 private universities (University Grant Commission, 2016).

Today, Dhaka has developed into one of the most important cultural centers of Asia, holding national and international art, music, cinema, theatre, dance, and literary conferences and festivals. Western-influenced theatrical performances started in the middle of the conservative Dhaka society in the 19th century. Today, theatre is the most popular entertainment in the city, though the organizers and performers are mostly from the educated middle class. The hub of these activities is the Segun Baghicha, Ramna Sanskritik Boloy or the Dhaka Cultural Enclave. Shilpakala Academy, the Bangla Academy, the Bangladesh National Museum, the National Archives of Bangladesh, the Nazrul Institute, the Institute of Fine Arts, the Bulbul Academy of Fine Arts, and many other government and non-government organizations are playing their significant roles in this regard.

Very recently, Dhaka's name has appeared on the international sporting scenes, hosting international cricket, hockey, volleyball, and other games. In particular, the rise of Dhaka as a venue of international cricket competition has made the name of Bangladesh a talking point for millions across the world. The Mirpur Sher-e-Bangla National Stadium has been especially selected for this purpose. Dhaka's sprawl has never stalled throughout history, whether in tangible manner, in the form of expansion and development or in intangible silent influence it keeps exerting on the global scene!

University of Asia Pacific (UAP) was established in 1996 as a private university under the Private University act 1992, with a vision to enhance the opportunities for higher education in Bangladesh. University of Asia Pacific (UAP) has its permanent campus at 74/A, Green Road, Dhaka 1215, which provides 388,800 sqr. ft. of space in an eleven storied building on slightly more than an acre of land. Besides, UAP has been allotted a land space of 2.65 acres, i.e., 160,32 kathas of land at road number 224, sector number 21 at RAJUK Purbachal Project, the biggest planned township in Bangladesh, for a larger permanent campus. Now UAP offers undergraduate programs in English, Law, Architecture, Business Administration, Civil Engineering, Computer Science and Engineering, Electrical and Electronic Engineering and Pharmacy, with 5069 students currently studying in different programs.

The curriculum of UAP has been approved by University Grants Commission (UGC) of the GoB. The University started its operation in 1996 and offered four years bachelor degree programs in Computer Science and Engineering and Business Administration. At present UAP offers undergraduate programs in nine disciplines and graduate programs in eight disciplines. UAP, sponsored by UAPF, a non-profit, non-commercial foundation based in Dhaka, Bangladesh. The principal aim of the Foundation is to promote human and social development through improve educational opportunities, innovative educational programs relevant to the needs of an emerging society and to develop skills, know-how and awareness of the youth through appropriate institutional grooming. The Foundation has been

established by a group of eminent educationists, industrialists, and administrators who share the same vision and social commitments. UAP is the first project of the foundation aimed at realizing these noble goals. The main objective of UAP is to provide high quality education at tertiary level relevant to the demands of a high-quality dynamic academia in Bangladesh. The courses and curricula are designed to enable and equip a student to enter into the national and international job market or pursue higher academic and professional goals with a solid academic foundation.

UAP has a multi-disciplinary research institute named Institute for Energy, Environment, Research Development (IEERD) to encourage and sponsor meaningful research activities by the teachers and students of the university. By this time IEERD has organized several seminars on Energy and Environment by nationally and internationally known speakers, including a three-day research and development exposition from July 19-21, 2012 UAP enjoys collaborative ties with a number of reputed foreign and national Universities, institutions of higher education and research in foreign countries, such as USA, Canada, Australia, Ireland, Japan and Latvia UAP organize curricular and co-curricular activities all the year round. Some of the recent events include International Conference on Computer and Information Technology (ICCIT) 2017, Association for Computing Machinery-International Collegiate Regional Programming Contest, 9th National Math Olympiad, Drama Festival on the birth anniversary of William Shakespeare and a number of other programs. UAP has a number of achievements both on the institutional and personal levels including

the award for ACI Outstanding University 2017. All engineering, architecture, pharmacy and law degrees are accredited by respective professional institutions such as Institute of Architects (IAB), Board of Accreditation for Engineering and Technical Education (BAETE), Bangladesh, Institute of Engineers Bangladesh (IEB), Pharmacy Council of Bangladesh, and Bangladesh Bar Council. UAP has been the first Bangladeshi private university which has become a member of the Association of Commonwealth Universities, UK.

UAP is a member of American Chamber of Commerce (AmCham), the Association of Universities of Asia and the Pacific and International Association of University Presidents (IAUP). UAP has departmental student forums and clubs to carry out regular cultural activities and bring out student publications, wallpapers and souvenirs. UAP has provisions within the UAP campus for sports activities centrally as well as within each department. UAP provides high speed broadband internet connection to all the departments and the laboratories.

All the 8 (eight) undergraduate programs of UAP have been classified as 'Very Good' in a recent external peer review by teams consisting of international quality experts, subject specialists and UGC experts under Higher Education Quality Enhancement Project (HEQEP), a project of University Grants Commission of Bangladesh, with the assistance of the World Bank. UAP has recently formed a permanent center named 'Directorate of Students Welfare (DSWY to enable students face the challenges of a highly competitive world outside. Its functions include assistance in job placement, organizing workshops, seminars,

training programs, career fairs and club fairs, supervising all the central clubs and counselling on physical and mental health issues.

The staff development programs at UAP support employee development by providing various trainings on relevant stream, seminars and workshops that enable the employees to improve performance. The programs include teacher training programs such as Improving Learning and Teaching Skills (ILTS). Spacious classrooms, equipped with computers, air conditioners and projectors, are available. Portable sound systems are adjusted on demand to provide the support of audio-visual aid. A state-of-the-art seminar room is made available for holding seminars and workshops for UAP students and faculties in each department. UAP is a pioneer among the private universities of Bangladesh in providing state-of-the-art laboratory facilities for the students. The laboratories are self-sufficient and rich in instruments and other facilities to carry out practical classes as well as experimental research. The faculty members, in collaboration with students, have a large number of research publications as well as papers in reputed national and international journals and conferences. UAP has played leadership roles in national and international research works on Total Quality Management (TQM), Concrete Technology, Earthquake Engineering, Robotics, Development of Indigenous Technology, Digitization of Machines etc. Some of these ventures have been funded by the government as well as private institutions.

ABOUT THE WORLD FINALS
HOST HOTELS

Intercontinental Dhaka

A stay at InterContinental Dhaka, an IHG Hotel places you in the heart of Dhaka, within a 15-minute walk of Baily Road and St. Mary's Cathedral. This 4.5-star hotel is 1 mi (1.6 km) from University of Dhaka and 1.4 mi (2.3 km) from New Market. Make yourself at home in one of the 226 air-conditioned rooms featuring espresso makers and flat-screen televisions. Complimentary wireless Internet access is available to keep you connected. Private bathrooms with separate bathtubs and showers feature complimentary toiletries and hair dryers. Conveniences include phones, as well as safes and desks. Don't miss out on recreational opportunities including an outdoor pool and a fitness center.

Additional features at this hotel include complimentary wireless Internet access, concierge services, and free babysitting. Enjoy a meal at the restaurant or snacks in the coffee shop/cafe. The hotel also offers 24-hour room service. Unwind at the end of the day with a drink at the bar/lounge or the poolside bar. Buffet breakfasts are available daily from 6:30 AM to 10:00 AM for a fee. Featured amenities include complimentary wired Internet access, a business center, and express check-in. This hotel has 8 meeting rooms available for events. A roundtrip airport shuttle is provided for a surcharge (available 24 hours), and free self parking is available onsite.

Address:
1 Minto Road GPO Box 504, Dhaka
Phone: +880-2-55663030
E-mail: dhaka@intercontinental-dhaka.com

Pan Pacific Sonargaon Dhaka

Affectionately known as the City of Mosques and the Rickshaw Capital of the World, Dhaka is rich with history and culture. Journey through the enchanting city on one of 400,000 cycle-rickshaws during your stay at Pan Pacific Sonargaon hotel near Bashundhara city, and marvel at stunning old-world architecture. Or, be enthralled by the European Quarter with its charismatic Presidential Palace and the fascinating National Museum, where insights to the city's spirited past await the curious traveller.

For unique retail experiences, stroll through the bustling shopping areas of New Market and Elephant Road, and be intrigued by this megacity's extravagant offerings of pink pearls and ethnic handicrafts.

Address:
107 Kazi Nazrul Islam Avenue, Dhaka 1215.
Phone: +88 02 55028008
E-mail: enquiry.ppdac@panpacific.com

The Westin Dhaka

A stay at The Westin Dhaka places you in the heart of Dhaka, within a 5-minute drive of Gulshan Ladies Park and Gulshan Circle 1.

This hotel is 1.1 mi (1.8 km) from United Hospital and 3 mi (4.9 km) from Kurmitola General Hospital. Make yourself at home in one of the 235 guestrooms featuring refrigerators and minibars. Your pillowtop bed comes with down comforters. 32-inch LCD televisions with satellite programming provide entertainment, while wireless Internet access (surcharge) keeps you connected. Bathrooms with shower/tub combinations feature deep soaking bathtubs and complimentary toiletries. Pamper yourself with a visit to the spa, which offers massages, body treatments, and facials. If you're looking for recreational opportunities, you'll find an outdoor pool, a steam room, and a fitness center. Additional features at this hotel include complimentary wireless Internet access, concierge services, and a hair salon. Guests can catch a ride to nearby destinations on the area shuttle (surcharge). Enjoy Italian cuisine at Prego, one of the hotel's 5 restaurants, or stay in and take advantage of the 24-hour room service. Snacks are also available at the 2 coffee shops/cafes. Relax with a refreshing drink from the poolside bar or one of the 3 bars/lounges. Buffet breakfasts are available daily from 6:00 AM to 10:30 AM for a fee. Featured amenities include a business center, limo/town car service, and express check-in. Planning an event in Dhaka? This hotel has facilities measuring 5720 square feet (531 square meters), including conference space. A roundtrip airport shuttle is provided for a surcharge (available 24 hours), and free valet parking is available onsite.

Address:
Main Gulshan Avenue, Plot-01, Road 45, Gulshan-2, Dhaka-1212.
Phone: +880 2-222291988
E-mail: reservations.dhaka@westin.com
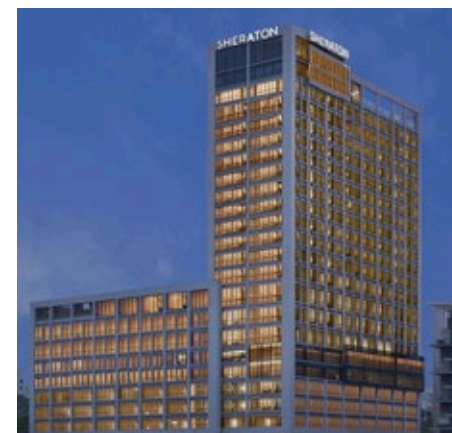
Dhaka Sheraton Hotel

Located 2.6 km from Naya Paltan, this 5-star Dhaka Sheraton Hotel offers 24 hour front desk assistance and room services. The modern hotel is a short walk from Binot Bibi Mosque.

Guests can have breakfast in the restaurant.

The luxury accommodation is about a 10-minute ride from Suhrawardy Udyan. The city centre is about 20 minutes on foot. This Dhaka hotel is situated 3.2 km of Central Shaheed Minar National Monument, while 13No lies 5 minutes' walk away.

Address:
44 Kemal Ataturk Avenue, Banani, Dhaka – 1213.
Phone: +880 2-55668111
E-mail: reservations.dhaka@sheraton.com

Renaissance Dhaka Gulshan Hotel

The Renaissance Dhaka Gulshan Hotel is located 20 minutes drive from Hazrat Shahjalal International airport. It offers an infinity pool as well as a fitness room. The hotel is a short walk from Gulshan Circle 1.

The Hotel comprises 211 rooms equipped with flat-screen TV and mini bar fridge and coffee/tea making facilities. They are outfitted with stylish decor. Featuring a roll-in shower and a separate toilet. Hair dryer and bathrobes are available in the bathrooms. The hotel offers buffet breakfast in the restaurant. Guests can visit Bahar for breakfast, late night snack and dinner or eat high tea and lunch at GBC Deli. The lounge bar is a great spot to meet up with friends for a refreshing drink. Children's menu and a wading pool are provided on site. A business center is equipped to cater office services.

Set 1.8 km to Hatir Jheel, the property is 1.8 km from Mohakhali.

Address:
78 Gulshan Avenue, Dhaka 1212
Phone: +880-2-48811021
E-mail: renaissancedhakagulshan@gmail.com

ICPC
World Finals Dhaka
Venues

ICCB

International Convention City Bashundhara (ICCB)

Hall-1

GULNAKSHA

TechTrek

Opening Ceremony

Closing Ceremony

Press Conference

Hall-2

PUSHPOGUCHCHO

Chill Zone

Tech Showcase

Hall-3

RAJDARSHAN

Team Registration

ICPC Challenge powered by Huawei for Coaches

ICPC Office

Dining Area

Hall-4

NOBORATRI

ICPC Challenge powered by Huawei for Teams

45th Annual ICPC World Finals Dhaka Contest Venue

45th World Finals | Dhaka
icpc challenge

powered by HUAWEI

The ICPC Challenge powered by Huawei provides an opportunity for the ICPC community to experience training, practice, and performance in new problem areas that showcase emerging technologies addressing contemporary issues. The Challenge fosters extra-curricular development of university students, faculty, and alumni. We look forward to seeing all teams and coaches during the Challenge on Nov 8, 2022.

ICPC Challenge
Powered by HUAWEI

IN DHAKA
*at the 45th World Finals on **November 8 from 11:00 - 14:00***
Location: ICCB - International Convention City Bashundhara, Hall 3

Join the 3-hour onsite challenge for World Finals participants!
Solve a job scheduling problem with memory bin packing while balancing the complexity of your algorithm with its running efficiency.

Amazing Huawei gifts will be awarded to top challenge participants!

AND ...

AT HOME
*online marathon from **November 17 - 30, 00:00 UTC***

Open to all participants globally for 14 days!
Solve 1 or 2 algorithm problems from the industry, gain more knowledge, and experience the marathon spirit.

Compete for a chance to win Huawei prizes ...
no matter where you live!

Think. Create. Solve. Connect.

Connect to the conversation.

ICPCNews

news.icpc.global

#ICPCWFDHAKA

icpcnews.com/facebook   icpcnews.com/twitter   icpcnews.com/youtube   icpcnews.com/instagram

Ask friends and family back home to follow and share!

LET THEM SEE YOU SOLVE

#ICPCWFDHAKA

10 NOV

LIVE.
ICPC.
GLOBAL

10:00 UTC+6

The Judges

Dhaka World Finals
Judges

Jo Perry

NC State University
Director of Judging since 2010;
World Finals judge since 1988

Our aim as judges is to challenge you for 5 straight hours. We hope you will not only excel but also delight in that challenge. The best of luck and the best of times to all of you!

John Bonomo

Westminster College
World Finals Chief Judge since 2010;
World Finals judge since 1992

Good luck to all the teams. Here's where all your hard work will pay off!

Walter Guttman

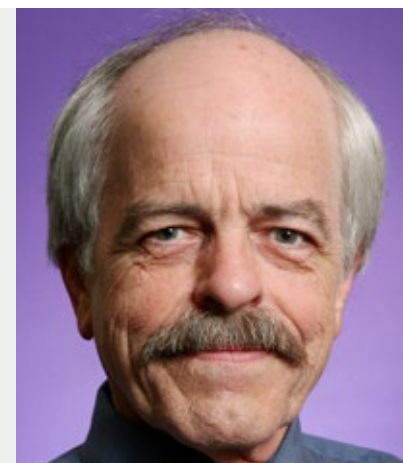**University of Canterbury**
World Finals judge since 2011

Every problem in our set
has an answer, you can bet.
Code it quick if you can find it

Derek Kisman

Apple
World Finals judge since 2004

Practice outside your comfort zone, and your comfort zone will grow...

Dick Rinewalt

Texas Christian University
World Finals judge since 1982

Meet people. Make friends. Have fun.

Robert Roos

University/ Business: Allegheny College, retired
World Finals judge since 1996

Meet and talk to as many people as you can! Take lots of photos! Tweet, post, and blog about your experiences! Be proud - after all, you worked hard to get here. But also be humble. Lots of people helped you--your teachers, your coaches, your teammates, and many, many others. Good luck in the contest, but remember that you're already a winner!

Matthias Ruhl

Cisco
World Finals judge since 1997

Good luck in the contest! Don't let the code bugs bite. And the best wishes for your future careers! This is an exciting time to be in computer science - learn as much as you can, build something great and change the world!

Stanley Wileman

University of Nebraska - Omaha
World Finals judge since 1979

I've been involved with the contest in many roles since the mid 1970s. And while the machines have certainly gotten faster since the punched card days, the problems have gotten much harder. It's ALWAYS the case that judges know the fastest (to date) algorithms to solve problems, and brute force is almost NEVER the best way (although...) . Compilers can optimize your code only so much. Wouldn't it be nice if they could choose better algorithms for us?

# Arnav Sastry

Jump Trading
World Finals judge since 2020

As the problems get harder, the teamwork becomes more important. Good luck, and have fun!

Osman Ay

Computer Science Publishing Director
Surat Publishing, Lecturer IAU
World Finals judge since 2002

I wish all our contestants to compete with each other to build a better world just like the same way they compete in the ACM ICPC World Finals. I know that they will be leading figures of technology and information world.
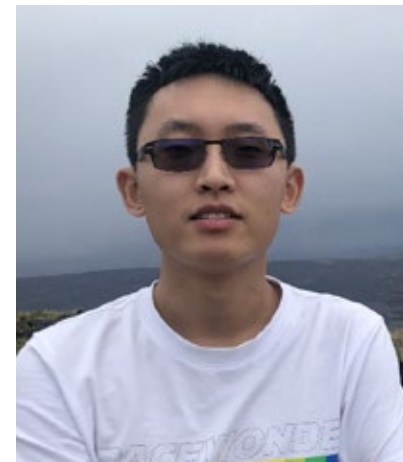
Yujie An

Google
World Finals judge since 2022

Start with a simple approach, and add optimizations. Keep an open mind, and never give up.

ICPC World Finals Teams

Dhaka World Finals
Teams

0

ICPC Latin America

EAFIT University
Team name:
Fast and Fourier
COACH
Osman David Jiménez Gutiérrez
CONTESTANTS
Santiago Cano Franco
Martin Diaz
Simón Fallon Giraldo

Facultad de Ciencias-Universidad Nacional Autónoma de México
Team name:
PumOMM
COACH
Pedro Sanchez
CONTESTANTS
Víctor Hugo Almendra Hernández
Leonardo Ariel García Morán
José Ramón Tuirán Rangel

ITESM Campus Monterrey
Team name:
Legendary Grand Newbies
COACH
Luis Humberto González
CONTESTANTS
Diego García Rodríguez del Campo
Adán López Alatorre
Fiacro Gilberto Reyes Lopez

Instituto Tecnológico Autónomo de México
Team name:
FoundTheBug.ItsMe
COACH
Fernando Esponda
CONTESTANTS
Yosshua Cisneros
Carlos Alberto Delgado Elizondo
Juan Carlos Sigler Priego

Universidad Mayor de San Simón
Team name:
Que perdio
COACH
MARIA LETICIA BLANCO COCA
CONTESTANTS
Ronaldo Franco Jaldin
Miguel Angel Ortiz Merida
Rodrigo Joaquin Salguero Morales

Universidad Nacional de Córdoba - FaMAF
Team name:
Alt 4F
COACH
Marcos Kolodny
CONTESTANTS
Mateo Carranza Vélez
Uziel Ludueña, CONTESTANT
Sebastián Marín, CONTESTANT

Universidad Panamericana Campus Bonaterra
Team name:
UPsolving
COACH
Ricardo Espinosa
CONTESTANTS
Juan Marquina Cancino
Gustavo Meza García
Hector Fernando Ricardez

Universidad Simón Bolívar
Team name:
La bomba de tenedores
COACH
Augusto Hidalgo
CONTESTANTS
Jesus De Aguiar
Marcos Lerones
Neil Villamizar

Universidad Tecnologica de Pereira

Team name:

UTP - Lucas

COACH

Hugo Humberto Morales Peña

CONTESTANTS

Yeferson Gaitan Gomez

Jhon Alex Gaviria Tobón

Juan Camilo Palacios Galvis

Universidad de Buenos Aires - FCEN

Team name:

Prim Floyd

COACH

Eugenio Borghini

CONTESTANTS

Marcos Blufstein

Julián Braier

Mateo Marenco

Universidade Estadual de Campinas

Team name:

namae wa??

COACH

Fábio Luiz Usberti

CONTESTANTS

Naim Shaikhzadeh

Tiago Souza

Matheus Viana

Universidade Federal da Bahia

Team name:

União Fiasco

COACH

Rubisley Lemes

CONTESTANTS

Thalles Medrado

Bernardo Salmeron

Vinicius Teixeira Hirschle

Universidad de Costa Rica

Team name:

Chayotes UCR

COACH

Rodrigo Antonio Chaves Fernández

CONTESTANTS

Kevin Coto

César Herrera Garro

Kevin Rojas

Universidad de Guadalajara CUCEI

Team name:

Leones(0,0,0)

COACH

Marcos Kolodny

CONTESTANTS

Jorge Iván Bórquez Meza

Franco Ariel Ramirez Villa

Aida Crystal Rodriguez Soto

Universidade Federal de Campina Grande

Team name:

O amarelo é impostor

COACH

Rohit Gheyi

CONTESTANTS

Daniel Figueredo

Emerson Leonardo Lucena

João Marcos Lima Medeiros

Universidade de São Paulo

Team name:

KondZhiLa

COACH

Nathan Benedetto Proença

CONTESTANTS

Lucas Hiroshi Hanke Harada

Victor Lamarca

Jiang Zhi

Universidad de La Habana

Team name:

UH Top

COACH

Alfredo Somoza Moreno

CONTESTANTS

David Manuel García Aguilera

Denis Gómez Cruz

Lázaro Raúl Iglesias Vera

Universidad de las Ciencias Informáticas

Team name:

FreesTyle

COACH

Rubén Alcolea Núñez

CONTESTANTS

Adiane Cueto Portuondo

Vladimir Otero Mariño

Ernesto Teruel Velazco

Universidade de São Paulo - Campus de São Carlos

Team name:

deitando no gramado

COACH

Samuel Santos

CONTESTANTS

Andre Fakhoury

Lucas Fernandes Turci

Frederico Ribeiro

ICPC North America

Carnegie Mellon University
Team name:
CMU2
COACH
Danny Sleator
CONTESTANTS
Christopher Lambert
Zack Lee
Andrew Yang

Georgia Institute of Technology
Team name:
Acceptable
COACH
Jingbang Chen
CONTESTANTS
Jeffrey Chang
Arvind Ramaswami
Maxwell Zhang

Massachusetts Institute of Technology
Team name:
MIT ZEROONE
COACH
Ce Jin
CONTESTANTS
Mingyang Deng
Xiao Mao
Jerry Mao

McGill University
Team name:
Bees
COACH
David Becerra
CONTESTANTS
Eric Hu
Salih Bera Sogut
Thien-Trung Vuong,

Northeastern University
Team name:
NEU 1
COACH
Sushant Agarwal
CONTESTANTS
Jonathan Hsieh
Noble Mushtak
David Zhuang

Purdue University
Team name:
Purdue RE
COACH
Ninghui Li
CONTESTANTS
Riley Borgard
Trung Dang
Richard Li

Swarthmore College
Team name:
cout << 1/0 << endl;
COACH
Joshua Brody
CONTESTANTS
Jay Leeds
Timothy Mou
Runze Wang

Texas A&M University
Team name:
tamoo
COACH
John Keyser
CONTESTANTS
Tanner Hoke
Matthew Tran
Naixin Zong

The University of British Columbia
Team name:
UBC**********
COACH
Heng Xia
CONTESTANTS
Vincent Ling
Rahim Mammadli
Xingyu Zhou

The University of Texas at Dallas
Team name:
whoosh
COACH
Bhadrachalam Chitturi
CONTESTANTS
Evan Bailey
Suraj Mathashery
Mike Nguyen

University of Alberta
Team name:
Alberta Gray
COACH
Zachary Friggstad
CONTESTANTS
Jason Cannon
Ian DeHaan
Grayden Price

University of California, Los Angeles
Team name:
UCLA Ice Cream Sandwich
COACH
David Smallberg
CONTESTANTS
Arihant Jain
Lucas Xia
Jacob Zhang

University of Waterloo
Team name:
Waterloo Black
COACH
Troy Vasiga
CONTESTANTS
Ildar Gainullin
Wesley Leung
Jason Yuen

University of Wisconsin-Madison
Team name:
teamname or NP = D?(AdjP)*N(PP)*
COACH
Dieter van Melkebeek
CONTESTANTS
Dung Bui
Tanapoom Laoaron
Ziyuan Zhang

University of Central Florida
Team name:
UCF Juicer
COACH
Ali Orooji
CONTESTANTS
Jacob Magnuson
Seba Villalobos
Daniel West

University of Michigan at Ann Arbor
Team name:
Victors
COACH
Kevin Compton
CONTESTANTS
Ramchandra Apte
Allen Li
Junwen Tan

Yale University
Team name:
Yale-Yale
COACH
Ruzica Piskac
CONTESTANTS
Deyuan Li
Dion Stephan Ong
Andrew Yuan

University of Rochester
Team name:
Yellowjackets
COACH
Daniel Stefankovic
CONTESTANTS
Loc Bui
Vladimir Maksimovski
Bao Tran

University of Toronto
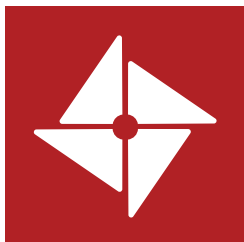Team name:
U of T Blue
COACH
Noah Fleming
CONTESTANTS
Matthew Agar
Michael Nematollahi
Victor Tao

ICPC Africa and Arabia

Adama Science and Technology University
Team name:
Andalus
COACH
Desta Zerihun
CONTESTANTS
Mukerem Ali
MUSTEFA KAMIL
Amir Kheiru

Ain Shams University - Faculty of Computer and Information Sciences
Team name:
Codey Manga
COACH
Mohamed Anany
CONTESTANTS
Mostafa Alaa
Abdelrahman Osman
Abdelrahman Sayed

Ain Shams University - Faculty of Engineering
Team name:
The G.O.A.T.S
COACH
Hazem Mostafa
CONTESTANTS
Nour E-Din El-Nhass
Mohamed Sameh
Mohamed Tawfik

Al-Azhar University
Team name:
Bug Busters
COACH
Abdelrahman Abdelmoneam
CONTESTANTS
Muhammad Al-Halaby
Ahmad Almaghraby
Ahmed Magdy

Al-Baath University
Team name:
H-DVD.org
COACH
Tony Makdissy
CONTESTANTS
Mouhanad Alaskari
Naseem Daghestani
Marcel Ibrahim

Aleppo University
Team name:
Penguins+
COACH
Mohamed Alhamid
CONTESTANTS
Mohamad Abo Dan
Nehad Nabelsi
Ali Zaiback

American University of Beirut
Team name:
Penalteam - AUB
COACH
Nagi Nahas
CONTESTANTS
Mira Awar
Charbel Chucri
Jihad Hanna

Arab Academy for Science and Technology - Alexandria
Team name:
100% Winrate
COACH
Mohamed Mahmoud
CONTESTANTS
Mahmoud Badawy
Mariam Salah
Youssef Salama

Arab Academy for Science and Technology - Cairo
Team name:
El habeda
COACH
hesham ragab aly hussein
CONTESTANTS
Ibrahim Amin
Mohamed Mostafa
Abdalrhman essam

Cairo University - Faculty of Computers and Artificial Intelligence
Team name:
FCAIyeen
COACH
Mohamed Mahmoud
CONTESTANTS
Ahmed Dardery
Ali El Masry
Abdallah Naguib

Cairo University - Faculty of Engineering
Team name:
NULL += ERROR!
COACH
Mohamed Mahmoud
CONTESTANTS
Amr Aboshama
Hassan Osama
Muhammad Sayed

Damascus University
Team name:
It is time to retire
COACH
Joud Zouzou
CONTESTANTS
Rami Alssadaqa
MHD Baraa Armoush
Mohammad Kartoumeh

El Shorouk Academy
Team name:
Angry Nerds
COACH
Mohamed Mahmoud
CONTESTANTS
Peter Mourad
mohaned el-haddad
salah elden tarek

German University in Cairo
Team name:
Treevial
COACH
Slim Abdennadher
CONTESTANTS
Abdelrahman Selim
Omar Tarek
mohamed khaled

Higher Institute for Applied Sciences and Technology
Team name:
MaZen
COACH
Jafar Alkheir
CONTESTANTS
Bashar Hussain
Ammar Hussein
Somar Mohammad

Princess Sumaya University for Technology
Team name:
WELCOME TO A CBC
COACH
Firas Alghanim
CONTESTANTS
Ahmad Hammoudeh
Asem Tuffaha
mohammad kilani

Syrian Virtual University
Team name:
Traitors
COACH
Salman ali
CONTESTANTS
Mhd Adel SaadEddin
Zaher SaadEddin
Salim Shebli

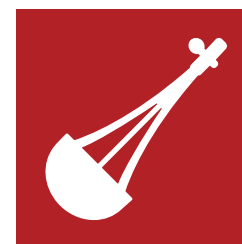## Tishreen University
Team name:
CODeIT-20
COACH
Jafar Alkheir
CONTESTANTS
Khaled Farhat
Aws Issa
Wael Mchantaf

ICPC Europe

Alexandru Ioan Cuza University of Iași
Team name:
UAIC Endgame
COACH
Alexandru Ionita
CONTESTANTS
Denis Banu
Matei Chiriac
Cristian Vintur

Charles University in Prague
Team name:
MFF2
COACH
Zdenek Dvorak
CONTESTANTS
Josef Minařík
Adam Rajský
Eldar Urmanov

ETH Zürich
Team name:
IEThargy
COACH
Konstantin Wohlwend
CONTESTANTS
Marcel Bezdrighin
Antti Röyskö
Yuhao Yao

Ecole Polytechnique
Team name:
EP Epsilon
COACH
Hang Zhou
CONTESTANTS
Pedro Cabral
Marc Dufay
Matthias Hasler

Faculty of Computer Science, Belgrade
Team name:
RAF Penguins
COACH
Dušan Zdravković
CONTESTANTS
Pavle Martinovic
Aleksa Milisavljevic
Aleksa Plavsic

Jagiellonian University in Krakow
Team name:
Jagiellonian
COACH
Lech Duraj
CONTESTANTS
Grzegorz Gawryał
Jacek Salata
Krzysztof Ziobro

KTH - Royal Institute of Technology
Team name:
CyanForces
COACH
Joseph Swernofsky
CONTESTANTS
Joakim Blikstad
Tobias Glimmerfors
Nicole Hedblom

Karlsruhe Institute of Technology
Team name:
Let's Party: Home Alone
COACH
Christopher Weyand
CONTESTANTS
Ilia Bozhinov
Christian König
Michael Zündorf

Technische Universität München
Team name:
Dolores TUMbridge
COACH
Gregor Matl
CONTESTANTS
Tobias Benjamin Schindler
Erik Sünderhauf
Atacan İyidoğan

University of Bucharest
Team name:
Echipa Dulce
COACH
Adrian Dumitran
CONTESTANTS
Stelian Chichirim
Alexandra Maria Udristoiu
Florian-Robert Usurelu

University of Cambridge
Team name:
balloonatics
COACH
Andrej Ivašković
CONTESTANTS
Tautvydas Jasiūnas
Yui Hin Arvin Leung
Vladimir Milenkovic

University of Oxford
Team name:
Los Patrons
COACH
Bartek Klin
CONTESTANTS
Stefan Buliga
Lukas Michel
Costin-Andrei Oncescu

University of Warsaw
Team name:
Warsaw Eagles 2021
COACH
Jan Madey
CONTESTANTS
Dawid Jamka
Łukasz Kondraciuk
Konrad Paluszek

University of Wroclaw
Team name:
UWr1
COACH
Paweł Gawrychowski
CONTESTANTS
Krzysztof Boryczka
Marcin Knapik
Adam Zyzik

Utrecht University

Team name:
while (false) break;
COACH
Ludo Pulles
CONTESTANTS
Ludo Dekker
Reinier Schmiermann
Richard Wols

École Normale Supérieure de Paris
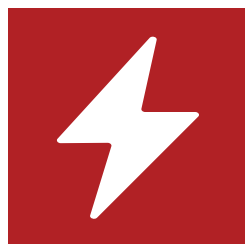
Team name:
ENS Ulm 1
COACH
Hadrien Barral
CONTESTANTS
Arthur Léonard
Etienne Rossignol
Noé Weeks

ICPC Northern Eurasia

ICPC South Pacific

Belarusian National Technical University

Team name:
FITR BNTU #1: Great team
COACH
Alena Kastsiukevich
CONTESTANTS
Pavel Sheftelevich
Viktar Vasileuski
Dzmitry Zdanovich

Belarusian State University

Team name:
BelarusianSU 3
COACH
Vladimir Kotov
CONTESTANTS
Aliaksei Filinovich
Yafim Klimasheuski
Anton Paliukhovich

UNSW Sydney

Team name:
TLE on test case 2020
COACH
Raveen de Silva
CONTESTANTS
pengsen Mao
Angus Ritossa
Temmie Yao

University of Melbourne

Team name:
taxiOverflow
COACH
Junhao Gan
CONTESTANTS
Quang Ong
Netanya Robinson
Michael Zhao

Belarusian State University of Informatics and Radioelectronics

Team name:
Belarusian SUIR #2
COACH
Andrei Tkachenka
CONTESTANTS
Valery Shavel
Ivan Udovin
Uladzislau Vishneuski

International IT University

Team name:
IITU 1
COACH
Yeskendir Sultanov
CONTESTANTS
Abay Baimukanov
Parassat Kyzyrkanov
Batyr Sardarbekov

Izhevsk State Technical University
Team name:
Izhevsk STU: Ne nado dumat'
COACH
Ruslan Gatin
CONTESTANTS
Nikita Kryazhevskikh
Rustam Musin
Ilya Zylev

Kazan (Volga Region) Federal University
Team name:
Kazan FU Summertime
COACH
Kamil Khadiev
CONTESTANTS
Artem Ilikayev
Ruslan Kapralov
Maksim Yagafarov

Saratov State University
Team name:
Saratov SU N
COACH
Ivan Androsov
CONTESTANTS
Maksim Meshcheryakov
Vladimir Petrov
Mikhail Piklyaev

St. Petersburg Campus of Higher School of Economics
Team name:
SPb HSE 1: Lemon Tree
COACH
Alice Sayutina
CONTESTANTS
Vasily Alferov
Konstantin Makhnev
Maksim Surkov

Moscow Institute of Physics and Technology
Team name:
Moscow IPT LinkCat
COACH
Filipp Rukhovich
CONTESTANTS
Maksim Gaponov
Vyacheslav Surkov
Valery Zgursky

Moscow State University
Team name:
Moscow SU: Nonames
COACH
Anton Pankratyev
CONTESTANTS
Egor Chunaev
Andrei Kalendarov
Mikhail Koshelev

St. Petersburg ITMO University
Team name:
SPb ITMO University Insert your name
COACH
Gennady Korotkevich
CONTESTANTS
Nikolay Budin
Roman Korobkov
Stanislav Naumov

St. Petersburg State University
Team name:
LOUD Enough
COACH
Andrei Lopatin
CONTESTANTS
Ivan Bochkov
Nikita Gaevoi
Vladislav Makarov

National Research University Higher School of Economics
Team name:
Overtrained
COACH
Mikhail Gustokashin
CONTESTANTS
Maksim Gorokhovskii
Ramazan Rakhmatullin
Ivan Safonov

Nizhny Novgorod State University
Team name:
Lera Almost Retired
COACH
Alexey Shmelev
CONTESTANTS
Maksim Emelin
Ilya Khlyustov
Valeria Ryabchikova

Suleyman Demirel University
Team name:
SDU 1: Qataıý degen ne?
COACH
Yerbol Baigarayev
CONTESTANTS
Temirlan Baibolov
Almas Kenes
Abu Said Manap

Ural Federal University
Team name:
Ural FU: CheezeKEK
COACH
Dmitry Kosolobov
CONTESTANTS
Alexey Chizhov
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3S: 2 Silver 1 Salman
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Team name:
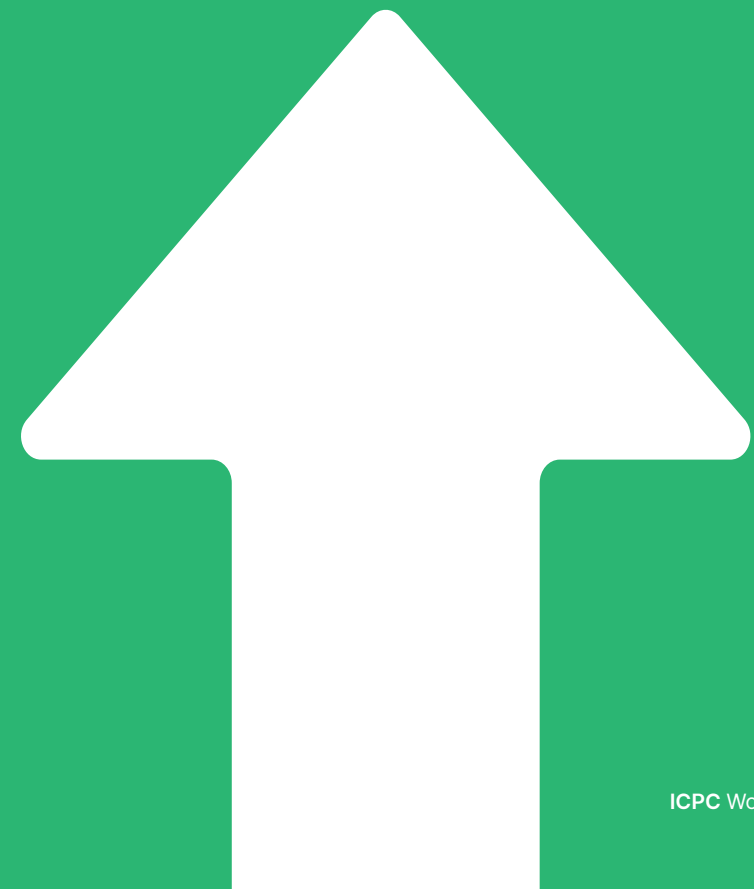**HCMUS-Illuminate**
COACH
Vi-Minh LUONG
CONTESTANT
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Leadership Awards

ICPC **World Finals Dhaka**

The ICPC Foundation
Mark Measures Distinguished Service Award

The Mark Measures Distinguished Service Award is presented annually to a person or group who has played an instrumental role in the success of the ICPC for fifteen or more years.

For ICPC leadership in Asia West: enabling opportunities for students of the ICPC since 1999, championing the art and science of competitive programming among universities in ICPC Asia West Countries, organizing regional competitions, engaging community leadership in support of ICPC programs, and championing ICPC Programs.

In service and spirit, Phalguni Gupta embodies the ideals of the ICPC.

Phalguni Gupta
GLA University, Mathura, India

Presented at the
45th Annual ICPC World Finals,
November 2022
Dhaka, Bangladesh

The ICPC Foundation
Joseph S. DeBlasi Outstanding Contribution Award

The Joseph S. DeBlasi Outstanding Contribution Award is presented annually to a person or group who has played an instrumental role in the success of the ICPC for five or more years.

Abul L. Haque

Mohamed Kaykobad

Shahriar Manzoor

Derek Kisman

Monirul Hasan

Mohammad Mahmudur Rahman

Md. Mahbubul Hasan

Rujia Liu

Syed Akhter Hossain

Bilkis Jamal Ferdosi

For advancing the art and science of computing, in the classroom and through ICPC Regional Competitions in Dhaka, and through providing gifted students in Asia West and around the globe opportunities to pursue excellence through competitive programming. ICPC Dhaka volunteers have provided training and ICPC competitions culminating in hosting the ICPC World Finals Dhaka.

The ICPC Foundation
James Comer and CJ Hwang Distinguished Regional Contest Director Award

The James Comer and CJ Hwang Distinguished Regional Contest Director Award is presented annually to an ICPC regional leader who has played instrumental roles in the success of the International Collegiate Programming Contest for twenty or more years.

Roy Andersson

For inspiring students of the ICPC since 1990, advancing excellence in the software arts, serving on the international regional leadership team since 2012, and becoming ICPC Global Director of Regional Contests in 2017. Director Andersson has played a critical role by enabling opportunities for students of computing worldwide.

Presented at the
45th Annual ICPC World Finals,
November 2022
Dhaka, Bangladesh

The ICPC Foundation
Outstanding Global Service Award

The ICPC Foundation Global Service Award is presented for global contributions to the success of the International Collegiate Programming Contest global community in keeping with the mission of the ICPC Foundation to advance the art and sport of competitive programming.

Presented to

JET BRAINS

JetBrains
ICPC GLOBAL SPONSOR

ICPC Gold Medal Patron of the ICPC Foundation

For serving as ICPC global programming tools sponsor, for providing outstanding programming tools for the ICPC global community, for sponsoring ICPC Regional Contests, for their generous support for the ICPC World Finals Dhaka, and for their championship of the ICPC community.

Presented at the
45th Annual ICPC World Finals,
November 2022
Dhaka, Bangladesh

The ICPC Foundation
Outstanding Global Service Award

The ICPC Foundation Global Service Award is presented for global contributions to the success of the International Collegiate Programming Contest global community in keeping with the mission of the ICPC Foundation to advance the art and sport of competitive programming.

Presented to

Huawei
ICPC GLOBAL SPONSOR

ICPC World Finals Diamond Sponsor ICPC World Finals Challenge

For serving as Diamond ICPC World Finals Sponsor, powering the ICPC World Finals Challenge, supporting ICPC Regionals throughout multiple ICPC Regions and enabling the development of free workshops to benefit the talent destined to develop engines of prosperity and mission-critical platforms in service to communities globally.

Presented at the
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November 2022
Dhaka, Bangladesh

The ICPC Foundation
Outstanding Global Service Award

The ICPC Foundation Global Service Award is presented for global contributions to the success of the International Collegiate Programming Contest global community in keeping with the mission of the ICPC Foundation to advance the art and sport of competitive programming.

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For serving as ICPC AlgoQueen sponsor, for providing outstanding educational opportunities for the ICPC global community, for supporting underrepresented groups in computing, for their generous support for the ICPC University Commons and the ICPC Foundation, and for their championship of the ICPC community.

Presented at the
45th Annual ICPC World Finals,
November 2022
Dhaka, Bangladesh

The ICPC Foundation
Outstanding International Contribution Award

The ICPC Foundation Outstanding International Contribution Award is presented to an individual or group that has played an instrumental role in the success of advancing the art and science of competitive programming through support of the International Collegiate Programming Contest.

The ICPC Foundation
Outstanding International Contribution Award

University of Asia Pacific
Late National Professor **Dr. Jamilur Reza Choudhury**
Former Vice Chancellor, University of Asia Pacific

The ICPC Foundation

City of Dhaka
Mr. Zunaid Ahmed Palak, MP
Honorable State Minister for ICT
People's Republic of Bangladesh

The ICPC Foundation
Outstanding International Contribution Award

City of Dhaka
Prof. Dr. Muhammed Zafar Iqbal
Former Professor of CSE Department SUST

The ICPC Foundation
Outstanding International Contribution Award

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Mr. NM Zeaul Alam, PAA
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The ICPC Foundation
Outstanding International Contribution Award

Mr. Ranajit Kumar
Executive Director & Additional Secretary
Bangladesh Computer Council

The ICPC Foundation
Outstanding International Contribution Award

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Director (Training & Development)
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The ICPC Foundation
Outstanding International Contribution Award

Professor Dr Aloke Kumar Saha
Professor
Dept. of CSE, University of Asia Pacific

The ICPC Foundation
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Engr. Md Golam Sarwar
Manager (Operation)
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Outstanding International Contribution Award

Mr. Madho Sudun Chanda
Regional Director
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Dept. of CSE, University of Asia Pacific

The ICPC Foundation
Outstanding Community Engagement Award

The ICPC Global Outstanding Community Engagement Award is presented to an individual or group that has played an instrumental role in the outreach of the International Collegiate Programming Contest.

The ICPC Foundation
Coaching Awards

For leadership bringing together the leading academic institutions of the world in recognizing excellence among female students of computing. Leading one of the premier programs of ICPC University Commons, Director Chaitanya and the ICPC AlgoQueen Team have encouraged and inspired thousands of young students worldwide to reach for a brighter future.

The ICPC Global Outstanding Community Engagement Award is presented to an individual or group that has played an instrumental role in the outreach of the International Collegiate Programming Contest.

Maheshwara Chaitanya
ICPC AlgoQueen Director & Director of ICPC Asia Amritapuri Contests

The ICPC Global Outstanding Community Engagement Award is presented to an individual or group that has played an instrumental role in the outreach of the International Collegiate Programming Contest.

Vladimir Kotov
Belarusian State University
ICPC Lifetime Coach Award
For 20+ years of ICPC World Finals Coaching

Aliaksei Tolstsikau
Belarusian State University
ICPC Coach Award
For 5+ years of ICPC World Finals Coaching

Marius Dumitran
University of Bucharest
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For 5+ years of ICPC World Finals Coaching
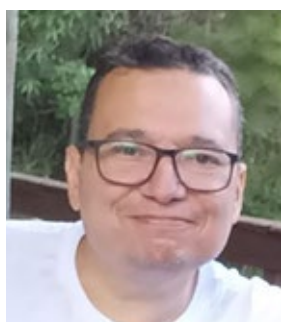
Fábio Usberti
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Luis Humberto González Guerra
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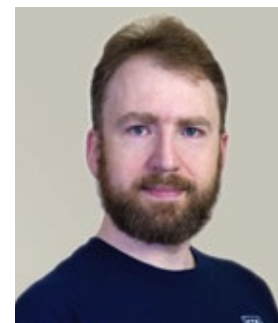
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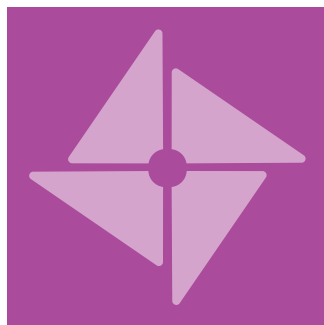
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