

4th Virginia Tech High School Programming Competition

Virginia Tech

Coach: Dr. Godmar Back

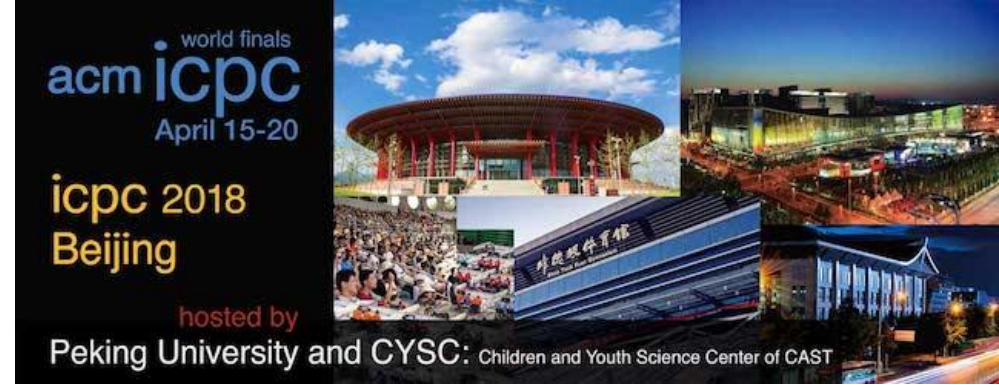
Outline

- What is Computer Science at Virginia Tech?
- What is the ACM ICPC?
- Rules and Hints for today's contest
- Schedule:
 - 11:15am – 11:55 practice
 - 12:00pm – 5:00pm contest
 - All times are Eastern Standard Time (EST; UTC-05:00)
- Acknowledgements

Computer Science at Virginia Tech

- AY 2017/18: > 40 full-time faculty + instructors, >900 undergraduate majors, >200 graduate students
- Accredited undergraduate program
 - Specialized tracks in key study areas
 - Capstone courses
 - Active corporate partners/job fairs
 - Research-active, award-winning faculty
- Highly regarded by recruiters and companies nationwide
- Passion for Computer Science and teaching it!

ICPC FACTS (2017)



The ACM International Collegiate Programming Contest (ICPC) is the **premiere global programming competition conducted by and for the world's universities**. The competition operates under the auspices of ACM, is sponsored by IBM, and is headquartered at Baylor University. For nearly 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.

Teams of three students represent their universities in multiple levels of regional competition.

Virginia Tech competes within the MidAtlantic Region against universities in Virginia, Maryland, North Carolina, West Virginia, Eastern Pennsylvania, Delaware, and Southern NJ.

Virginia Tech's has sent a team to the World Finals in 2014, 2015, 2016, 2017 and is expected to in 2018.

Rules for Today's Contest

- Full Set of Rules published on [site](#)
- Teams may not:
 - Communicate with any human outside their team about the problems, including their coaches
 - Use more than 1 computer during the contest
- Teams may:
 - Use the Internet for reference (e.g. programming language documentation)
 - Refer to any documentation prepared by themselves before the contest
 - Use a non-programmable calculator as a 2nd device
 - Ask their on-site coaches for assistance with technical matters, e.g. workstation internet access or computer setup.
 - Use a printer (if available)
 - Submit clarification requests to the organizers (please do!)

Today's Problem Set

- We expect a wide range of teams (freshman to seniors, possibly some USACO/IOI aspirants...)
- Will contain 12 problems
 - Following trend at ICPC
- Problems are not sorted by difficulty.
- You will not have failed if you don't solve all problems!
 - Our goal is to maximize choice for all teams.
 - We believe parts of the problem set would provide a challenge even to college students – aim high!
 - Feel good about the problems you do solve.
- Keep an eye on the scoreboard to spot problems that many teams were able to solve!

Hints for Today's Contest

- Have Java solutions for all problems
 - But we do not guarantee that all problems are solvable in all contest languages
 - If we program in Python 2, consider selecting PyPy
- #1 mistake for Java Programmers is adding a package statement. Don't.
- Most common causes of Runtime Error judgment:
 - `ArrayIndexOutOfBoundsException`
 - `StringIndexOutOfBoundsException`
 - `StackOverflowError` (infinite recursion)
- Always check your program on the provided test data **before** you submit it!
 - PCS gives penalty points even if you just fail the sample data
- Be sure to read each problem carefully regarding the required accuracy. Unless the problem states an error bound (such as 10^{-5} , etc.) you are expected to compute exact results (hint: Java/C **double** floating point numbers will introduce rounding errors in most cases.)

Post Contest

- As in past years, we will
 - Leave the contest site up and running for a few weeks for upsolving (team credentials will still work)
 - Publish judge data and judge solutions after contest
 - Publish solution sketches
 - Eventually publish problems on open.kattis.com for archiving and to allow for independently organized practice contests
- Plenty of opportunity for post-contest study:
 - First, try to solve it yourself
 - Second, read solution sketch
 - Third, study judge solution
 - Fourth, reproduce it yourselves – and apply it to the next problem!
- A common misconception is that you learn only if you never look at someone else's solution.

Sunday Rerun

- Due to inclement weather, some teams in NoVa area might not be able to participate today.
- To allow them to experience the contest in a similar setting, we will do a rerun of the contest (same problems, possibly in different order), tomorrow at the same time.
- You must register for only one contest on the site:
<https://vthscontest.cs.cloud.vt.edu/>
- This means that the problems will not be public/available for upsolving after the contest until Sunday :-)
- Will publish the URL for the problem set PDF via a clarification that only contestants can see at the beginning of the contest.

Getting Help

- Use Clarification system for problem-related doubts
 - There will be helpful judges at the other end
 - Of course, we will not give hints to individual teams that could give them unfair advantage
 - If we feel something is unclear/worth clarifying, we will issue a clarification to all teams
- For contest-related issues unrelated to the problems itself, ask your coach to use the WebEx chat; we will be monitoring the WebEx chat all day.

Last but not least

- Thanks to our volunteers from the ACM ICPC team
 - 9 student problem setters: Ariana Herbst, Jacob Merizian, Peter Steele, Harrison Fang, Aarav Singh, Spencer Pao, Henry Wang, Justin Park, Akshay Goel
- Thanks for Scott Pruett (ICPC world finalist, formerly Virginia Tech, now engineer at Facebook) for developing PCS 2.0.
- Thanks to our sponsors
 - Department of Computer Science
 - stack@cs Center for Systems Research
- The top 3 teams will be listed on our website
- Prizes: Amazon Gift Certificates for 1st, 2nd, and 3rd placed team.