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The Voice of K–12 Computer Science Education and its Educators

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CSEd Week

CS & IT: 12 Years of Success

Steve Cooper

AT THE CONCLUSION of the 12th annual CSTA Computer Science & Information Technology (CS & IT) Conference, I am sitting back thinking about the amazing changes that have occurred in the conference over the past several years. CS & IT has grown from a one-day event to two days hosted at a premier CS research institution. The learning experiences have grown in both quantity and quality.

It's interesting that the two biggest complaints that I heard during the conference were that some of the workshops should have been full-day events rather than half-day events, and that the sessions should have been videotaped because there were too many interesting presentations going on at the same time and attendees couldn't get to them all. (The cost of videotaping this year would have put us seriously over budget.) What wonderful problems to have! The conference committee will certainly consider the suggestions in planning for next year's CS & IT Conference.

Nearly 200 registrants spent two days in Irvine, CA, attending workshops and sessions presented by world-class authorities and educators. A day of three-hour hands-on workshops prior to the traditional CS & IT schedule enabled teachers to dig deeper into a variety of topics including Bootstrap, SNAP, Kodu Alice, Exploring Computer Science, and HTML5.

For the first time ever, conference attendees were invited to tour several computing laboratories and visit with researchers at a CS research university, the University of California, Irvine (UCI).

Conference attendees loved learning about the exciting research projects at UCI and higher education opportunities for their own students. Following the tours, the university hosted a reception encouraging more dialog and networking.

Cameron Wilson, ACM Director of Public Policy, and Baker Franke, a CS high school teacher in Chicago, delighted attendees during the conference opening keynote with their experiences in advocacy and public policy. During his closing keynote address, Alex Suter, a software engineer from Industrial Light and Magic (ILM), showcased some of the amazing graphics and animation being developed for the film and game design industries, and some of the exciting computing career opportunities for our students.

The rest of the day featured practical and thoughtful sessions on topics such as Collaborating to Engage Underrepresented Youth in CS, Introductory Python in the Browser, AP CS A, Game Design for Social Causes; Oracle Academy, Piloting CS Principles, Rocking Robotics, Exploring Computational Thinking in Math and Science, CS in Middle School, Gaming and Mathematics, Nifty Assignments, and many more.

Most of the presentations are now available for download from the conference site (www.cstaconference.org).

CSTA is greatly appreciative of the support from this year's CS & IT Conference sponsors: The Anita Borg Institute, Google, Microsoft Research, and UCI, as well as the guidance and hard work of the CS & IT Planning Committee.

CSTA THANKS

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& Computer Sciences
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CS & IT Conference.

Executive Officers

Stephen Cooper
Chair

cooper@cs.stanford.edu

Deborah Seehorn
Chair Elect

deborah.seehorn@dpi.nc.gov

Staff

Dr. Chris Stephenson
CSTA Executive Director

Phone: 1-800-401-1799

Fax: 1-541-687-1840

cstephenson@csta.acm.org

Pat Phillips
Editor

Phone: 1-608-436-3050

Fax: 1-928-855-4258

cstapubs@csta.acm.org

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CS Principles

Q&A with Janice Cuny

Editor's note: For the past few years, you have probably been hearing about the proposed Advanced Placement Computer Science Principles (AP CSP) course. Development is in full swing, and we are beginning to see the pieces of this massive project to transform high school CS education come together. CSTA is committed to keeping our members informed of its progress and how they can get involved. This conversation with Janice Cuny, National Science Foundation's Computing Education for the 21st Century Program Officer, is the first in a series of Voice columns and stories to keep you apprised of new developments.

What is the CS 10K Project?

The CS 10K Project aims to get rigorous, academic computing into (at least initially) 10,000 U.S. high schools. The National Science Foundation (NSF) is providing some of the foundational research and development that will be needed. NSF has, for example, funded the development of two rigorous CS courses: Exploring CS (ECS) is a great introductory course for all students; and CSP is a new, soon-to-be AP CS course.

When will the course be available as an AP course?

The curriculum framework and learning objectives for CSP are already available at csprinciples.org. The course was piloted at five universities in 2010–11 and at roughly 20 universities and 40 high schools in 2011–12 (including official and unofficial pilot sites). Materials from many of these courses are available online and we expect

that an online Community of Practice will be available to any interested teacher later this year.

However, the course will not become an official AP course until a test is created. The test is not expected to be available until the spring of 2017, so the school year of 2016–2017 will be the first year that we might see official Advanced Placement CSP courses offered. Some schools, however, are already building up to the course, offering their own version now. See collegeboard.com/html/computerscience.

What is the status of the test development?

There is a long and rigorous process that must be followed in creating any AP test, but the CSP test is particularly challenging. That's because the AP Commission and its Advisory Committee have asked the College Board to investigate whether the test can be programming language-independent and whether it could be portfolio-based (that is, whether it could include student-developed artifacts submitted over the course of the year). Work on the test development is underway. The first standard multiple-choice test items were piloted in classrooms this past year and the portfolio approach will be piloted this fall. Sample test items will be released more broadly as they become available.

Will there be resources for the course? When?

YES! As a part of the CS 10K Project, there will be an online portal that will serve as both a communications hub for teachers and a repository for course materials and

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CSTA Voice is a quarterly publication for members of the Computer Science Teachers Association. It provides analysis and commentary on issues relating to K–12 computer science education, resources for educators, and information for members. The publication supports CSTA's mission to promote the teaching of computer science and other computing disciplines.

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resources. NSF and the Department of Education are planning to collaborate on the first iteration of this portal with a prototype online Community of Practice. We expect that many of the teachers who are currently piloting the course will make their materials available. In addition, the College Board will produce its course documents and begin to run AP professional development as we get nearer to the initial test date.

Who is teaching the course now and how do I find out what they are doing?

The curriculum framework is openly available and many people are teaching the course now in a variety of forms. You may just need to look to your neighboring schools to find someone.

Last year, 10 high school teachers and 10 university faculty taught the course as official College Board pilot sites. You can find out about these teachers and their courses by visiting csprinciples.org.

Is there going to be an online community of some kind where I can get help?

YES! The Online Community of Practice will have a forum for asking questions and be moderated by others in the

community. We know that often times CS teachers are alone in their schools, and we are doing all that we can to create a vibrant community of support.

How is NSF contributing to teacher professional development?

NSF is providing foundational support for research and development of models and materials for massively scalable teacher professional development through our Computing Education for the 21st Century program. We will have 12 active award recipients working on professional development by the end of summer 2012. The current projects, together with some others funded by Google and Microsoft, will provide 500 teachers with professional development around either ECS or CSP courses.

How will I find professional development?

We are hoping that there will be many more opportunities for professional development after summer 2012 and that they will be publicized through the CSTA website (csta.acm.org), the csprinciples.org site, and the Community of Practice.

The curriculum framework is openly available and many people are teaching the course now in a variety of forms.

Anticipating CS Principles

Leslie Keller

HIGH SCHOOL COMPUTER SCIENCE (CS) curricula are constantly changing as we strive to keep up with post-secondary and industry needs, and to provide the best education for our students. In response to these needs and to increase the number of students in computing-related studies, the College Board, with funding from the National Science Foundation, set out to develop a new CS course.

Unlike some CS courses, CS Principles (CSP) will focus on the “big CS ideas” in creative ways that emphasize conceptual knowledge and thinking practices rather than on programming alone. The big ideas in CSP include computing as a creative ac-

tivity, abstraction, facilitating knowledge creation through computing, algorithms, problem-solving, the Internet, and the global impact of computing. While not all of these topics are new to CS education, the pedagogy underlying the new course is unique.

At Apex High School in Apex, NC, and the North Carolina Virtual Public School, CSP will be based on the course *Beauty and Joy of Computing* taught at the University of California, Berkeley and the University of North Carolina, Charlotte. *Beauty and Joy of Computing* uses the book *Blown to Bits* by Hal Abelson, Ken Ledeen, and Harry Lewis. *continued on page 4*



Let us know if your contact information changes.

cstephenson@csta.acm.org

Contribute to the CSTA Voice

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Letters to the Editor are limited to 200 words and may be edited for clarification.



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ANTICIPATING CS PRINCIPLES

continued from page 3

My students will work with visual programming languages including SNAP (BYOB – Build Your Own Blocks), Game Maker, and App Inventor. SNAP is a visual language created to teach CS concepts to non-CS major students. Students drag puzzle-piece shaped blocks of code that ‘click’ together to create a program or script, which they use to define the behavior of a “sprite” (a graphical object). Only pieces that create syntactically-correct code will snap together. When executed, the script causes the sprite to act. The course leverages downloadable, pre-written blocks created by users, as well as sample projects.

My students will also learn with App Inventor, developed in Google Research by MIT professor Dr. Hal Abelson and now supported by the MIT Center for Mobile Learning. App Inventor is a visual language for creating mobile phone applications, and it runs within an Internet browser. The students drag an object, such

My students will also learn with App Inventor, developed in Google Research by MIT professor Dr. Hal Abelson and now supported by the MIT Center for Mobile Learning.

as a button, onto the simulated Android phone screen workspace. After objects are positioned, the students can change the objects’ properties and edit the code. If the students try to connect code blocks that are syntactically incorrect, explanatory mes-

sages are displayed. Using these visual languages allows students to focus on problem-solving instead of on syntax details.

I am excited about offering this new CS learning paradigm to my students. They seem interested in the course, and I’m hopeful that enrollments will increase after our initial fall 2012 pilot of 20 students. Because there are no prerequisites, I am planning to recruit from math courses, primarily algebra

and geometry. My goal is to spark student interest in computing courses overall and CS courses in particular, with the ultimate result of increasing the number of students interested in computing as a career.

You can find more information and resources for the new CSP course at: csprinciples.org.

Exciting New CSTA Publication

K–8 CS Education: Building a Solid Foundation

Patrice Gans and Irene Lee

THE POWER OF THE COMPUTER is its ability to be something for everyone. Computing is not a goal in and of itself, but the means to an end, enabling students to take control, solve problems, and build a future based upon their imaginations and creativity. And it can start with the youngest of our students.

A new CSTA publication, *Computer Science K–8: Building a Strong Foundation* (csta.acm.org/Curriculum/sub/CSK8.html) is ready for download. It provides a review of current thought on K–8 CS education, explores how CS topics and concepts can impact learning in the K–8 classroom, and offers practical strategies and resources.

Here you will find updates on research from higher education, including a study at Harvey Mudd College on a new approach to teaching middle school CS curriculum, ideas on teaching CS skills by playing criminal detective using databases, and suggestions for planning after-school and summer CS camps.

Computer Science K–8: Building a Strong Foundation provides plans for integrating CS into classes as diverse as fine arts and mathematics, and the personal experiences of dozens of classroom teachers using a wide variety of tools and techniques. Examples abound. Multimedia stories can be crafted in language arts classes, multi-

level computer games can be designed in mathematics, and art and music projects can be delivered through electronic media. And of course, problem-solving is an integral part of any CS activity.

Increasing high-quality CS content in K–8 education may help reverse alarming enrollment and career-choice trends by illustrating, for all students, the potential for personal power afforded by computing skills. Researchers are considering the possibility that early exposure will translate into increased enrollment and a lifetime engagement in CS. They believe that positive experiences at an early age will motivate students to further explore the opportunities that a CS education has to offer.

It's important to take advantage of this developmental stage to build a CS literate and functional population. It is in everyone's best interest and we have the tools to make it happen.

Computer Science K–8: Building a Strong Foundation can be an ideal resource in your advocacy efforts. Download yours today (csta.acm.org/Curriculum/sub/CSK8.html).

K–8 CS IS A GOOD IDEA.

Reason #1: Thinking is good for thinking.

We know that students at an early age are capable of thinking algorithmically. Students can develop habits of mind and perseverance in problem-solving that can last a lifetime.

Reason #2: Sustaining the Next Generation of Creators and Innovators. As K–8 students are exposed to technologies through entertainment, communication, and social applications, it is important that they see themselves as more than consumers.

Maintaining creative expression from early experiences as creators and innovators using technology is vital.

Reason #3: Empowering Students to Change the World. Students can begin to experience computational thinking as a means of addressing community-relevant issues. The learning experiences can promote their perceptions of themselves as proactive and empowered problem-solvers and innovators

capable of changing the world.

Reason #4: Preparing Students for Future Endeavors. Early exposure to the five strands in the *CSTA K–12 Computer Science Standards* significantly impacts students' progress towards higher-level CS classes and programs. Early CS activities and programs provide opportunities for students to develop a deep sense of their own technological potential.

Reason #5: Collaboration, Communication, and Teamwork – key 21st Century Skills. Collaborative problem solving prepares students to work in teams and builds supportive partnerships.

Researchers believe that positive experiences at an early age will motivate students to further explore the opportunities that a CS education has to offer.

Meet the Authors

Steve Cooper

Stanford University

Steve is an Associate Professor in the Computer Science Department and holds a courtesy appointment in Stanford's School of Education. He is the Chair of CSTA Board of Directors.

Patrice Gans

Newtown, CT

Patrice teaches CS and technology at the Fraser Woods Montessori School. She is also the K–8 Representative to the CSTA Board of Directors and the Chair of CS K–8 Task Force.

Leslie Keller

Apex, NC

Leslie teaches CS at Apex HS, as well as for the North Carolina Virtual Public School. She has recently been involved in updating the North Carolina CS curriculum.

Irene Lee

Santa Fe Institute, NM

Irene is the program director and principal investigator of Project GUTS, an NSF-funded program that engages students in the computational modeling of locally relevant issues as complex systems.

Sue Sentance

Anglia Ruskin University, UK

Sue is a senior lecturer and trains new school teachers in information and computing technology. She provides CS in-service training courses for teachers and has run two .NET Gadgeteer pilot projects in secondary schools.

Leigh Ann Sudol-Delyser

Academy for Software Engineering, NY

Leigh Ann is a member of the Advisory Board of the Academy for Software Engineering, a new unscreened public high school in New York City.

Chinma Uche

Hartford, CT

Chinma is a CS teacher at the Greater Hartford Academy of Math and Science. She advocates for increased access to CS in K–12 schools as a member of the CSTA Leadership Cohort and as President of the CSTA Connecticut Chapter.

CSTA Congratulates

Microsoft Partners in Learning 2012 U.S. Forum winners

CSTA Members: Gina McCarley, Denise Spence, Rodrigo Anadon, Jennifer Bevil, Nancy Ale, Michelle Lipson, Brenda Green, Jenifer Conard, and Pamela Volakis.

Educators were selected based on how their projects inspired critical thinking, extended learning beyond the classroom, and used technology in creative ways to inspire learning.

www.microsoft.com/education/en-us/Training/US-Forum/pages/default.aspx

Spotlight

Academy for Software Engineering

Leigh Ann Sudol-DeLyser

This fall, ninth-grade students all over the country will walk into their new high schools with a sense of anticipation. Who will our teachers be? What will become our favorite subjects? What new friends will we make? For 120 ninth-graders in New York City (NYC), the questions will be magnified because the high school they will be attending is brand new, and unlike any other school in the city.

The Academy for Software Engineering (AFSE) is a new unscreened public high school in NYC and this fall it opens its doors for the inaugural freshman class. The high school is a joint partnership between the Department of Education, several of the universities in the NYC area, and the professional technology community in NY. The driving force behind the creation of the school is the NYC technology industry and the desire to increase the pool of talented developers. When announcing the school, Mayor Bloomberg said, "It's a new way of thinking about secondary school, based on today's economic realities." The school is not expected to make a significant change alone, but the hope is that it will become a proving ground for a series of schools in various neighborhoods in NYC, and will help refine curriculum that can be shared with other NYC public schools.

Because AFSE is a public high school, students will be expected to complete the standard NY State Regents curriculum, requiring math, English, social studies, and science. In addition, they will be expected to complete a computer science (CS) sequence as a graduation requirement. AFSE is also working to ensure that CS is not just an elective topic at the school, but instead is a core discipline that will span the students' school experiences. Additionally, content area teachers will work with a CS curriculum specialist in order to create lessons and units that not only meet the needs of their discipline, but also surface the CS that is embedded in many of the recently released STEM standards.

All students, regardless of background, will take a common "toolbox" course in the first semester. This course is designed to introduce students to the big ideas of CS, and also give them a common set of basic skills that teachers from other disciplines can call upon when designing assignments. After completing the toolbox course, students will spend the next year and a half completing courses based on a topic of interest. Currently there are three topical strands including art and media, applications and entrepreneurship, and scientific computing. After completing the three-course sequence, students in their junior and senior years will be able to choose from a menu of courses, either going more in-depth with the topics they explored in the previous two years, or choosing to take courses with more breadth in topics such as web design, systems, data structures, or advanced project courses.

The school has an advisory board with members from Google, Facebook, Fog Creek Software, and a number of startup companies in the city. As the school moves from an idea to an institution, the plan is to incorporate mentors and internship opportunities connecting the students with professionals. In the students' first years at the school, they will work with the mentors in classroom settings and develop not only software engineering skills, but also the communication and collaboration skills necessary to be successful in a company. As the students mature, they will transition to more of an internship model where they will work part of the day on-site in partner companies.

Finding a balance between a rigorous high school program that includes a variety of subjects as well as a strong foundation in CS and software engineering is the ongoing goal of the school. We aim to prepare graduates to be successful in an entry-level position out of high school or in a post-secondary degree program. Although we anticipate a large percentage of our students will become CS majors or professionals, we also recognize the importance of having a strong foundation in CS for those students who may choose another career field.

For more information about the Academy for Software Engineering visit www.afsenyc.org or follow us on twitter @afsenyc.

International CSTA

Building with .NET Gadgeteer in the United Kingdom

Sue Sentance

.NET Gadgeteer is a platform for assembling your own electronic devices using a wide variety of hardware modules and a powerful programming environment. Students with little or no electronics background can build robot-like devices made up of components that sense and react to their environments using switches, displays, motor controllers, and more. Components are plugged into a mainboard and programmed to make them work together (www.netmf.com/gadgeteer).

.NET Gadgeteer originated in Microsoft Research in Cambridge, U.K. It was designed as a tool for researchers to make it faster and easier to prototype new kinds of devices. Since then, it has proven to be of interest to hobbyists and for secondary and higher education.

.NET Gadgeteer can offer exciting possibilities for teaching computer programming, simple electronics, and computer-aided design. A digital camera can be built in about half an hour! A starter kit consists of a mainboard and various modules, including a camera, joystick, buttons, LEDs, potentiometer, ethernet port, and touch-sensitive screen. In addition, there are many other sensors and modules that can be added separately. The gadget is constructed by connecting the modules with cables, then programming for the events triggered when using the device. The programming language used is Visual C#. Microsoft Research has launched .NET Gadgeteer as open-source software/hardware and .NET Gadgeteer kits are now available from a variety of hardware vendors.

In the U.K., 16 schools are piloting the .NET Gadgeteer during two 10-week sessions. In the first pilot, the teachers were initially trained in the use of .NET Gadgeteer and provided with session plans and examples. They then introduced .NET Gadgeteer to their schools in the form of after-school or lunchtime clubs. The students attending the club ranged from 11 to 15 years old, with one school choosing to use .NET Gadgeteer with an older group of 17 year olds. The collaborative groups worked in teams of three students to one kit because promoting teamwork is an essential part of our .NET Gadgeteer work.

The students were invited to develop gadgets of their choice to demonstrate at the final show-and-tell event at the end of the pilot. We were amazed with their creativity and innovative gadgets. The student-built gadgets included a Gadgesketch (based on the Etch-A-Sketch toy), a burglar alarm, a reaction timer game, and a FaceBooth application. Students also enjoyed building the housing for the gadgets, which in some cases was quite sophisticated, using molded plastic, or as simple as using polystyrene or cardboard.

The second U.K. pilot is in progress and builds on our experiences of using .NET Gadgeteer and will include a project based around a temperature sensor. Another longer pilot has been taking place simultaneously in Seattle, WA.

Teachers are very enthusiastic about using .NET Gadgeteer and this intervention is very timely. We are facing significant change in computer science (CS) education in the U.K. An influential report “Shut Down or Restart?” (royalsociety.org/education/policy/computing-in-schools/report) was published in January 2012 by The Royal Society. It sent a clear message to rethink the way in which information and computer technology (ICT) and computing are taught. Simultaneously, the Secretary of State for Education announced that schools are no longer required to follow the existing National Curriculum for ICT after September 2012, and the government is encouraging more CS in the curriculum. This means that exciting initiatives such as .NET Gadgeteer can now be incorporated into the curriculum. We are planning to develop additional materials for teaching Gadgeteer that can be used within the new CS qualifications due to be launched in September.

CSEd Week

Yes, I Can Program!

Chinma Uche

Computer Science (CS) students at the Greater Hartford Academy of Math and Science (GHAMAS) and the Academy of Aerospace and Engineering (AAE) organized a “Yes, I Can Program” event in celebration of CSEd Week 2011 (www.csedweek.org). The event was well attended by parents and family members who learned from CS students to program computers and robots.

Eight stations showcased different activities and projects that students had completed in the first quarter of the academic year. Two of the stations were run entirely by AAE students who were participating in the College Board proposed CS Principles course (GHAMAS/AAE is one of the pilot sites). In various stations, students taught parents to use App Inventor (www.appinventor.mit.edu) to make and upload simple apps to their smart phones, to manipulate digital images using a variant of Javascript (www.codeinthebrowser.org), and to program the Finch robot (www.finchrobot.com).

GHAMAS/AAE students who had attended an after-school program at Trinfo Café (a community technology center run by Trinity College), showcased their apps and other students led parents in completing a *CS Unplugged* activity on representing images. The “Santa Comes Early” station provided CS gifts to parents who had received stamps for participating in any two activity stations.

After the classroom activities, Professor Ralph Morelli of Trinity College explained to parents the statistics for projected job openings, highlighted CS career opportunities, and described the value CS skills can bring to any career area. The final event of the evening was a screening of the movie, *Tron Legacy*.

Most of the ideas used in the CSEd Week celebration came from CSTA Leadership Cohort members during sessions and discussions at the CSTA Leadership and Advocacy Workshop held in conjunction with the Grace Hopper Conference 2011.

And now it's time to start planning for CSEd Week 2012! Take a look at the ideas and resources for teachers, students, parents, administrators, counselors, university educators, and professionals on the CSEd Week website (www.csedweek.org). Form a team of allies, make big plans, and change history for CS education and your students.

Member News

Time to Verify Your Contact Information

Is your e-mail or postal address out-of-date? Can't remember your membership number? Are you taking full advantage of your CSTA member benefits? To receive all of your membership benefits and your voting rights, your e-mail and postal address must be up-to-date. Don't miss out; update your information today! Visit csta.acm.org/Membership/sub/MyMemberInfo.html or contact cstahelp@hq.acm.org for assistance.

Membership in CSTA provides a wealth of member benefits from communications and key policy documents to curriculum resources and professional development. U.S. members will find the new brochure detailing their benefits included with this issue of the *Voice*. It is also available for download (csta.acm.org) for international members. Take a look! In addition to reviewing the list of benefits, it is an excellent recruitment tool. Use it to talk about CSTA with your colleagues and community.

Equity Initiatives

Award for Aspirations in Computing

Do you know a young woman with outstanding aptitude in technology and computing, great leadership ability, and plans for post-secondary education? Encourage her to apply for the NCWIT Award for Aspirations in Computing.

The Award for Aspirations in Computing honors young women at the high-school level for their computing-related achievements and interests. A National and many local “affiliate” competitions generate support and visibility for women's participation in communities nationwide.

The Award for Aspirations in Computing is open to all high school girls residing in the U.S. They may re-apply each year but may only receive the National award once. Each National award winner receives \$500 in cash, a laptop, a trip to attend the National Awards Ceremony in Charlotte, NC, and an engraved crystal award for both the student and the student's school.

Applications are accepted from September 15 to October 31, 2012. Award recipients are notified in early December and award events take place around the country December through May. To apply, girls must register online at: awardportal.ncwit.org/register.php.

SHOW ME THE NUMBERS Predicted Job Growth for Select Computing Professions 2010–2020		
OCCUPATIONAL	PREDICTED GROWTH	MEDIAN PAY 2010
Software Developers	30%	90,530
Database Administrators	31%	73,490
Network Systems Administrator	28%	69,160
Web Developers	22%	65,700
Computer Systems Analysts	22%	77,740
Information Research Scientists	19%	100,660

Source: www.bls.gov/ooh/computer-and-information-technology/home.htm



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MARK YOUR CALENDAR

CSTA Central Virginia Annual Conference

September 28, 2012, Richmond, Virginia
vacsta.wordpress.com/2012/06/07/csta-va-annual-conference

Grace Hopper Celebration of Women in Computing

October 3–6, 2012, Baltimore, Maryland
gracehopper.org/2012

International Conference on Cryptology and Information Security (Latincrypt 2012)

October 7–10, 2012, Santiago, Chile
2012.latincrypt.org

Consortium for Computing Sciences in Colleges (Midwest)

October 5–6, 2012, Charleston, Illinois
www.ccsc.org/midwest/Conference

Consortium for Computing Sciences in Colleges (Northwestern)

October 5–6, 2012, Olympia, Washington
www.ccsc.org/northwest

CSTA New York Fall Conference

October 12, 2012, Buffalo, New York
srecoon@williamsvillek12.org

Consortium for Computing Sciences in Colleges (Rocky Mountain)

October 12–13, 2012, Denver, Colorado
www.ccsc.org/rockymt

Consortium for Computing Sciences in Colleges (Eastern)

November 2–3, 2012, Galloway, New Jersey
www.ccsc-eastern.org

Consortium for Computing Sciences in Colleges (Southeastern)

November 2–3, 2012, Marietta, Georgia
www.ccscse.org

CSTA Florida CS Education Training

November 8, 2012, Orlando, Florida
ljbarrettsrq@gmail.com

Workshop in Primary and Secondary Computing Education (WiPSCE)

November 8–9, 2012, Hamburg, Germany
wipsce.org

China International Conference on Information Security and Cryptology (Inscrypt'2012)

November 28–December 1, 2012, Beijing, China
cis.sjtu.edu.cn/asiacrypt2012

Indocrypt 2012

December 9–12, 2012, Kolkata, India
www.isical.ac.in/~indocrypt

CSEd Week

December 9–15, 2012, your community and around the world
www.csedweek.org

FETC

January 28–31, 2013, Orlando, Florida
fetc.org

TCEA

February 4–8, 2013, Austin, Texas
tceaconvention.org

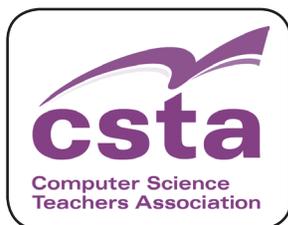
SIGCSE 2012

March 6–9, 2013, Denver, Colorado
www.sigcse.org/sigcse2013

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