interactions

Newsletter of Shodor: a national resource for computational science education

STUDENT ENRICHMENT

CURRICULUM MATERIALS

FACULTY DEVELOPMENT

Summer Brings Workshops for Students and Educators

By Amy Wen, Computational Science Intern

No summer plans? Escape from your routine to have a memorable, educational experience! Shodor will be providing many exciting opportunities both in Durham and across the country. As in previous summers, Shodor will offer a variety of **SUCCEED workshops for middle and high school students** in the Triangle area, ranging from forensics to graphics to environmental science. In addition, Shodor will serve educators around the country through its **National Computational Science Institute (NCSI) workshops**.

SUCCEED workshops, with support from the Burroughs Wellcome Fund, aim to provide middle and high school students with first-hand experience in using computational tools. In the **forensics** workshop, for example, students will decipher codes and explore models of the decomposition of the human body, taking into account factors such as time, temperature, humidity, and trauma. In the **environmental science** workshop, students will investigate population dynamics, examining such models as predator-prey interactions.

Most of the workshops meet three hours a day for a week. A more in-depth workshop, the **Shodor Scholars Program**, meets all day for two weeks, giving each student a chance to explore a science- or technology-related topic in depth.

While students enjoy the SUCCEED programs in Durham, our NCSI workshops will welcome educators at **many locations around the country**. These workshops aim to introduce educators to the wide array of computational tools available in their fields.

Since it began as a Shodor project in 2001, NCSI has drawn several national organizations as supporters, including the **National Science Foundation**, the **Mathematical Association of America**, and **TeraGrid**. NCSI workshops now take place all year rather than just during the summer. Just this past month, Shodor hosted a workshop on computational biology.

During a SUCCEED workshop, students use knots as a way to think about concepts in science and computation.

Great Developments

Welcome to New Staff–Shodor welcomes **Mary Paisley**, who joined in January as Communications Coordinator. Prior to joining Shodor, she worked in communications and development roles at Triangle Day School in Durham and at two United Way organizations. We also congratulate **Calandra McNeill**, formerly a Shodor intern, who has become our new Program Coordinator. She graduated from ECPI this spring with an Associate's Degree in web design.

Interactivate Receives A+ Review–In January, Shodor's *Interactivate* website (shodor.org/interactivate), a set of online math lessons and activities, was featured by **Education World** and given **A+ ratings**, both for content and site design. Education World (education-world.com) is a highly rated website for educators that features about 12 education-related websites each month.

Second Module of Interactive Translated to Spanish–The Spanish-language education technology web portal **Eduteka** (eduteka.org), run by the **Gabriel Piedrahita Foundation** of Colombia, has completed the translation of the first half of Shodor's *Interactivate* website into Spanish. The site, **Matemática Interactiva**, is available at www.eduteka.org/MI/master/interactivate/.

Shodor Recognized as Webby Honoree in Two Categories–Two of Shodor's websites, the *Computational Science Education Reference Desk* (CSERD) and *Interactivate*, were selected as **Official Honorees in the 11th Annual Webby Awards**. *CSERD* and *Interactivate* were honored in the categories of Science and Education, respectively. The Official Honoree distinction has been awarded to sites that score in the **top 15%** of submissions. With over 8,000 entries received from all 50 states and over 60 countries, this is an outstanding accomplishment.

Shodor Supports Durham Central Park Pavilion–Thanks to a special gift from Shodor's board, The Mentor Center @ Shodor is proud to be a recognized "Pillar Sponsor" of the Durham Central Park Pavilion. The site, dedicated on April 7, 2007, will provide an outdoor space and shelter for the Farmers' Market and other public events, including some to be sponsored by Shodor. See our plaque the next time you visit the park!

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Panoff Award Accepting Nominations
By Mike Hall, Computational Science Intern

In November of 2007, the annual Undergraduate Computational Engineering and Sciences (UCES) Awards ceremony, sponsored by the Krell Institute, will be held at the Supercomputing 07 conference in Reno, Nevada. Among the awards announced at the event will be the first-time presentation of the **Dr. Robert M. Panoff Student Award for Explorations in Science Through Computation**, named after Shodor's Executive Director and National Computational Science Institute (NCSI) founder.

As stated by sc-education.org, the UCES awards support advanced development of innovative educational resources and programs, recognize exceptional CES educators, and spread educational material and ideas to the scientific and engineering undergraduate community.

The **Dr. Robert M. Panoff Student Award for Explorations in Science Through Computation** is one of two new awards for the 2007 ceremony. It will be awarded for insight and discovery in the use of computational modeling, simulation, and/or data analysis. This award will be given in three different categories, recognizing outstanding high school, undergraduate, and graduate student submissions.

The second new UCES award is the **Dr. Mary Ellen Verona Computational Science Teacher Leader Award**, which will be presented in two different categories, one for "classroom teachers who use computational science as a part of their classroom instruction," and the other for "individuals who lead after-school or weekend programs that introduce K-12 students to computational science and who support the use of computational science by others."

In 2006, the winners of the UCES awards were **Rubin Landau**, **Angela Shiflet**, and **Robert Panoff**, all of whom are affiliates of Shodor's **National Computational Science Institute** (**NCSI**), a program providing faculty workshops across the country. Robert Panoff, who is the founder of NCSI, has often worked alongside Rubin Landau and Angela Shiflet, who are on NCSI's steering committee and who have taught at previous NCSI workshops.

Rubin Landau received an award for publication of "A First Course in Scientific Computing;" Angela Shiflet was awarded for publication of "Introduction to Computational Science: Modeling and Simulation for the Sciences." Finally, Shodor's very own founder, Robert Panoff, was recognized for implementation of NCSI.

More information on the Panoff Award is available at www.sc-education.org/awards/panoff.shtml

Staff Profile: Ismael Torres
By Joel Feiner, Computational Science Intern

Ismael Torres is one of our many younger staff members. Despite being only 21, Ismael has actually been working full time at Shodor since late 2005. He began as an intern and moved up to a staff position after graduating from the Electronics, Communications, Programming and Information Systems (ECPI) College of Technology in Raleigh in early summer 2006. Before his two-year stint at ECPI, where he got a two-year associate's degree in web design, he went to high school in Rockingham, NC. He has since moved to Raleigh.

At Shodor, Ismael specializes in projects related to the website. He also does print graphics. Ismael has helped develop the *Interactivate* and *CSERD* sites, a new time clock application for the office, and a tool for creating web forms. He also created the t-shirt design for last summer's SUCCEED workshops and co-taught a number of summer and after-school graphics workshops for middle and high schoolers. Finally, he serves as a mentor for students in the SUCCEED Apprenticeship Program, answering questions and advising as they complete projects.

But Ismael is much more than just another young Shodor staff member. He is also heavily involved in bodybuilding. In addition to training himself, Ismael also goes to a number of bodybuilding events and competitions, although he does not (yet!) compete in any of them. He says that he enjoys the bodybuilding culture and the difficulty that professional bodybuilding entails. "Not only do you have to work out hard," he says, "but you have to eat right and get the correct amount of rest. Eventually bodybuilding becomes more of a lifestyle than a hobby." Ismael is known for eating chicken and rice several times a day. Ismael is also a big music fan and finds himself going to concerts in his free time.

Ismael's mother is from Baltimore, and his father is from New York. Ismael has two brothers and one sister.

Apprentices Team Up with Community Organizations

By Ernest Edinboro, Computational Science Intern

This summer, high school students in their second year of Shodor's SUCCEED Apprenticeship Program will work on three different projects for local organizations. These projects will challenge the knowledge of the apprentices, and allow them to work with real clients in the community.

One project involves apprentices creating a **conference registration system** for the **North Carolina School of Science and Mathematics** (NCSSM). A member of this gourp, Trevor, says that his group's project will "cut down on the enormous amount of paperwork that is usually required in order for such an event." Alex and Sandy add that the tedious process of assigning students to their selected sessions will become an automated process.

Another group is creating an **e-learning course on business literacy** for the **Avadon Group**, a business education and consulting group. Victoria says she hopes that her group's project will "benefit the community by helping teenagers learn how to manage their money and make wise investments."

The third group will be working on an **interactive map of Durham** for *Digital Durham*, a historical reference website. The map will show how the city has changed during the last 100 years. Ryan Stephen commented, "we hope to gain a better understanding of Durham's history through our project... [it] should be an interesting way to get a better feeling for the downtown community."

As Shodor's second year apprentices move forward with their endeavors, our first year apprentices are completing and presenting **mini-projects on modeling**. In early April, first-years Kelley, Alex and Michael gave a demonstration of computer models projecting the number of police officers needed to control the criminal activity in a fictional town called Mayberry. This included an agent-based model to track behaviors of an individual, and an aggregate model to track the behaviors of the group.

By the end of the summer, Shodor's apprentices will have gained valuable skills and real-world experience from their group projects– knowledge that will prepare them for many challenges that lie ahead.

For more information about the Apprenticeship Program, see www.shodor.org/succeed/apprenticeships

Advanced apprentices have a group discussion.

Patricia Jacobs works with beginner apprentices during a Saturday session.

SUCCEED Spring/Summer 2007 Calendar:

Event	Dates	Times	Grade Levels
Shodor Scholars Program, Session A	June 18-29	9am-4pm	Rising 9-11
Modeling Your World	July 9-13	9am-Noon	Rising 6-8
Forensics	July 9-13	1pm-4pm	Rising 6-8
Engineers in Training	July 16-20	9am-Noon	Rising 6-8
Math Explorations	July 16-20	1pm-4pm	Rising 6-8
Environmental Science	July 23-27	9am-Noon	Rising 6-8
Biomedical Science	July 23-27	1pm-4pm	Rising 6-8
Graphics and Visualization	August 6-10	9am-4pm	Rising 9-11
Shodor Scholars Program, Session B	August 13-24	9am-4pm	Rising 9-11

*Need-based financial assistance is available: no qualified student will be turned away for financial reasons.

For more information on SUCCEED Workshops, visit www.shodor.org/summer

Summer Brings Workshops for Students and Educators

One of the greatest strengths of the NCSI workshops is the community that has developed around them. The **Computational Science Education Reference Desk** (CSERD) is an excellent example of the progress we have made as a result of the contributions of this community. Subject matter experts at each workshop have been contributing new items to CSERD and submitting verification, validation, and accreditation reviews testing the current catalog items. The participants' willingness to contribute to our catalog demonstrates the growing excitement over a common place to publish, review, and search for computational science resources.

Whether you are a student or an educator, in Durham or elsewhere, Shodor's workshops will provide exciting opportunities. We hope you will join us this summer! **If you would like to explore these opportunities, visit** www.shodor.org/summer.

Students at a SUCCEED Workshop last summer.

Online Math Activities for Kids

By Jason Morrell, Computational Science Intern

It's the beginning of April and most students have already started the countdown until summer break. Whether you're counting the weeks, days, hours or minutes, you're using math skills such as addition and subtraction. These skills are the basics of how the Interactivate activity, *Stopwatch*, keeps track of time.

Stopwatch is one of our most popular pages in Interactivate. If you go to Google and search for the keyword "stopwatch" our activity is currently the second link listed. Shodor gets about 4,000 visits to the *Stopwatch* activity every month. With so many people using this activity, what do they use it for?

You could use *Stopwatch* to see how many times you can skip rope in 5 minutes. Ever wonder how many words you can type in a minute? Just time yourself with stopwatch! With the record button, you can keep track of your time and compete with friends. One of my favorite timed experiments is dropping a bowling ball and a baseball from the same height at the same time. Which one do you think will hit the ground first? I thought the bowling ball would hit first, but to my surprise they both land at the same time. A great twist on this experiment is to drop a feather and a baseball at the same time. Which will land first and why?

Even teachers use *Stopwatch* for a lot of things. It can be used when they give timed tests to keep track of how much time has passed since the test started and how much time is remaining before the test ends. Wouldn't it be nice if *Stopwatch* could let you know a few minutes beforehand that the test is coming to an end? If so, you'll be happy to hear that we are adding a buzzer to *Stopwatch* soon.

The buzzer, a new feature to be implemented within the next month, can be set to sound at a specific moment during the countdown. For example, if a teacher gives a test that is 30 minutes long, the buzzer can be set to sound when the countdown reaches 5 minutes so everyone taking the test knows to start finishing up. The buzzer can also be set to sound at particular time intervals, say every two minutes for instance. The new *Stopwatch* will also have an alarm. The alarm sounds once the timer counts down to zero. As an intern at Shodor, I have been responsible for implementing the buzzer functionality for stopwatch. It will be very interesting to see how all our users make use of the new features.

You can find the *Stopwatch* activity at: www.shodor.org/interactivate/activities/Stopwatch/

```
[ 00 ] : [ 00 ] : [ 00.0 ]

( Set Time )

○ Normal  ○ Large  ● Huge
```

Count Up

```
00 : 00 : 00.0   ▲
                 ▼

( Start )  ( Reset )  ( Record )
```

Recorded Times: (Clear Times)

Buzzer Time:

```
[ 00 ] : [ 00 ] : [ 00.0 ]   [ Sound Once ▼ ]

( Go to full version )

☒ Alarm On/Off
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