

First Bytes and Project Illuminate: Recruiting Girls to Computer Science

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Abstract

Since 2003, The University of Texas at Austin Department of Computer Science has hosted First Bytes, a camp for high-school girls. This camp is designed to counteract negative preconceptions of CS held by many high school girls, and it also teaches programming through team programming projects. This past year, the attendees learned to program by controlling LED lights. First Bytes is a successful outreach and recruitment tool for the department---so far, 43% of the attendees that are graduating high school in 2013 have been admitted to the Department for Fall. In this talk, we'll describe how we created a successful camp and provide a demonstration of our programming project, Project Illuminate.

Introduction

For the past ten years, The University of Texas at Austin Computer Science Department has hosted First Bytes Computer Science Summer Camp for Girls, a week-long residential camp for high school girls. The camp is an outreach and recruiting tool for the department.

First Bytes promotes Computer Science as a great field for young women to consider. The camp addresses the need to educate, nurture, and encourage young women to pursue their dreams of a career in computing technology. Camp attendees are taught computer programming and are exposed to many research areas, including, but not limited to: robotics, biomedical engineering and research, security issues, mobile device application development, and game development. The goal is to introduce them to the exciting world of computer science and to encourage them to pursue a degree in the field and then move into careers in technology.

At First Bytes we focus on providing hands-on activities. Presenters are asked to provide something engaging and challenging for the campers to solve using their CS, math and science skills, whether on paper or at the computer. We also have a team programming project in a specific area such as digital animation, robotics, or game development. In 2012, the team programming project was Project Illuminate.

Project Illuminate coupled the Arduino board, an open-source circuit board, with color-changing programmable LED lights. We modified the lights so that they were controlled by the Arduino board, and then taught the attendees to program (using constructs such as conditionals, loops, and functions) through controlling the lights. Campers first learned to blink the lights and control their color and brightness. By the end of the week, they progressed to creating complicated moving light patterns---many of the teams synchronized their lights to music.

In this talk, we'll provide a demonstration of our programming project, Project Illuminate, and describe how we've made the camp successful so that other colleges and universities might emulate our model.

Audience

Anyone interested in outreach to and/or the recruitment of high school girls to the Computer Science major.

Outcomes

First Bytes has won two university outreach awards and gained statewide recognition among students, parents, high school teachers and administrators as a way for young women to experience firsthand the richness and excitement of Computer Science.

In the Summer of 2012, First Bytes had 60 attendees. Of those, 17 (43% of the rising high school seniors) have been admitted to the Department of Computer Science at The University of Texas at Austin for the Fall 2013 semester.

Additionally, we presented a simplified version of Project Illuminate at ExploreUT, a demo day during which The University of Texas at Austin opens its doors to the general public. Many visitors to the Project Illuminate exhibit enjoyed programming the lights to blink and change color. Through that outreach, many young people expressed an interest in programming, and many young ladies expressed an interest in returning for First Bytes.

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