

CUNY offers extracurricular Android practice for students across multiple university campuses



At a Glance

What they wanted to do

- Provide students real-world experience programming for mobile devices
- Run the program as an enrichment opportunity outside the classroom, supplementary to coursework
- Help students be better prepared for technical computer science job interviews

What they did

- Hosted six-week and eight-week courses focused on Android programming skills, with in-person workshops hosted on weekends
- Partnered with Google engineers to help students improve their interviewing skills for computer science jobs

What they accomplished

- Provided hands-on Android programming experience for 200-250 undergraduate computer science students from across the CUNY campuses
- Helped students learn to conceptualize programming problems and design mobile apps with a go-to-market mindframe

Challenge

As the largest public urban university in the country, City University of New York (CUNY) has an incredibly diverse student population, including many first-generation American students who are the first in their family to go to college. Based on his years working with CUNY students, Dr. Joshua Brumberg, Dean of Sciences at the Graduate Center, CUNY, has also observed that “children of immigrants don’t always have easy access to higher education and training to pursue careers in the tech industry.”

At CUNY, while Computer Science courses are popular, many of the classes focus more heavily on foundational and theoretical programming concepts, thus leaving less time for applying these concepts to coding projects. Students find themselves at a disadvantage in the job market when they don’t get opportunities to write code and apply important computer science concepts to projects. If they haven’t had the experience creating software applications either in applied learning environments or internships, they are less prepared for technical job interviews and need more job training once employed. “From my experience listening to students, this can affect their confidence level in applying for jobs and increase the learning curve after they are hired,” said Dean Brumberg.

Solution

CUNY and the Graduate Center are always seeking out opportunities to give students more hands-on coding experience to better equip them for industry careers. When the opportunity came up to run an extra-curricular program focused on giving undergraduate students a chance to practice core CS concepts, Dean Brumberg jumped at the chance. For the first iteration, he partnered with faculty to solicit interest from students across seven different CUNY campuses. The workshops were then held at four CUNY campuses: Queens College, New York City Tech and Medgar Evers in Brooklyn and the Graduate Center in Midtown Manhattan. Brumberg has continued to help grow the Applied CS with Android program with CUNY – over 200 students have participated to date.

“With the program, we’re giving first-generation students opportunities they may not have otherwise dreamed of. One student, who is the first in her family to attend college, told us how much confidence she got as a result of participating in this CS program.”

– Joshua Brumberg, Dean of Sciences at the Graduate Center, CUNY

Applied CS workshops ran one unit per week, where the students would review the groundwork portion of the units independently and then meet up for the in-person workshops on the weekends on-site at CUNY campuses. Workshop time was dedicated to building the unit’s Android app, which took four to five hours. Students worked in groups of two to three on the projects. Some students would finish earlier and tackle extensions or challenges, while others could take

About City University of New York

- Opened 170 years ago with a mission to "educate the whole people," CUNY is the largest public urban university in the country
- CUNY's 24 campuses have about 243,000 graduate students and 29,000 undergraduates, with 44 percent of the students being first-generation Americans and 20 percent being the first in their family to go to college
- The Graduate Center (GC) is the focal point for advanced teaching and research at the City University of New York (CUNY), the nation's largest urban public university. Devoted exclusively to graduate education, the GC fosters pioneering research and scholarship in the arts and sciences, and trains students for careers in universities and the private, nonprofit, and government sectors. With over 35 doctoral and master's programs of the highest caliber, and 30 research centers, institutes, and initiatives, the GC benefits from highly ambitious and diverse students and alumni – who in turn teach hundreds of thousands of undergraduates every year.

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the work home with them to complete at their own pace. The workshops were not for course credit, but rather an extracurricular to grow their project portfolio and offer 30+ hours of coding time. Google engineers supported facilitating some workshops and provided all the materials for the program.

Benefits

Offering hands-on programming to enhance foundational learning

Applied CS was complementary to the student's regular course work, providing an environment where they could build a tangible, workable app using the CS concepts learned in classes. While it was certainly a time commitment, many CUNY students live within commuting distance of campus, so it was easy to attend the weekend workshops. Additionally, for students who struggled to find extra-curricular project work, it offered an opportunity to get 30+ hours of coding time. Experience writing, debugging and troubleshooting code is indispensable to a successful software engineering career. "A lot of what students learn in the computer science major is not applied learning, it's more foundational," says Dean Brumberg. "With this program the students have the opportunity to see how the knowledge they get in the classroom can be applied in a real-world setting."

Expanding programming concepts to include go-to-market ideas

In regular courses, students learn to solve different programming problems and customize algorithms, but they're not necessarily asked to create software programs that have real-world applications. Applied CS helps students design mobile apps as commercial mobile app creators do when building products. "Students learned how to conceptualize problems differently and design apps using Android Studio, working within a set of platform specifications and troubleshooting within a particular context," Dean Brumberg says. "They learned not just how to work within Android Studio, but how to adapt code to new technologies and systems, which is an important skill they can apply to real-world environments. They are getting new skills and ways of thinking."

Helping students be better prepared for technical interviews and jobs

CUNY students found the program exercises and the training prep for job interviews helpful and were pleased to get the chance to talk to Google engineers. One student told Dean Brumberg that her experience in the program was opening doors for her and leading to job interviews she might otherwise not have had. "I think it's a great opportunity for our students," says Dean Brumberg.

Future of Applied CS

"I want to make sure we continue to provide this opportunity, and if we can find ways to expand it that would be even better," Dean Brumberg says. CUNY is interested in exploring ways to expand the offering to more students across their colleges. Google has made all of their facilitator training materials, including training videos and workshop guides, talking points and lesson plans for every unit, available on their Applied CS site. Because of that, anyone who is interested in hosting an Applied CS program or workshop is equipped to do so. Ideas for CUNY include encouraging the **CUNY Digital Fellows students**, who are trained in a host of digital techniques, to serve as preceptors for the program so more students could benefit, according to Dean Brumberg.

