

Experiences with Bloomberg's Codecon by

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A little history: I was introduced to Codecon environment during the summer of 2014 in a virtual meeting that included a demo of the Codecon environment. I was quite impressed with the simplicity and ease of use of this problem solving and programming (coding) environment that I decided to adopt this for the Realtime and Embedded Operating Systems course (CSE321) that I am teaching now (Fall 2014).

Some background about the course: Most of the projects in the course are solved using C language. The students enrolled in the course have had experience in problem solving in Java but not C. To bridge this gap in programming language we planned to use Codecon with C language environment. We decided on about 8 projects (problems) to be assigned to the students, released at the rate of 2 problems per 2 weeks, with 2 weeks deadline for the 2 problems.

Traditional projects vs Codecon: Traditionally when a project is assigned a deadline or due date is decided. Students go away and work at their own time and pace. Many of them wait until the last minute and somehow complete the work and submit it. Teaching assistants grade the individual projects submitted for correctness and assign a grade. In the traditional projects we see only the end product and not the path taken to arrive at the end product. With Codecon I can clearly observe the attempts made, how they approached the problem, how they improved the timing (performance) to meet the limits, and kept trying even after an "accepted Submission" to get a better rank!

Student Engagement: First thing I observed when Codecon projects were assigned was that the students were engaged in what they were doing. Proof of this in the numerous emails I got about how they solved the problems, how they improved to get better rank, and the clever methods they used. While these are anecdotal when I found out that more than 100 out of 125 have submitted the Codecon project I was taken aback. I assigned a traditional project well before the Codecon project but only 25 people submitted that. Codecon has "gamified" problem solving and coding.

Accessibility and Scalability: While the students were struggling to find out about right compiler (gcc vs g++) and the operating system dependent (Linux vs Windows) attributes, Codecon provided them a uniform, web-accessible, cloud-enabled environment that they could work with without worrying about any system dependencies. On Codecon they focus on problem solving, coding and submit; the environment takes care of the rest (compile and execute and evaluate). Codecon performed well for a load of 125 students, I am sure with the elastic cloud infrastructure it can easily scale to thousands and more. Students really liked the web-accessibility.

Opening up Codecon:

K-12 Education: The target audience that would immensely benefit by such an environment is the K-12 teachers and students. High school Computer Science is in such a dire need for teachers to teach programming and students to embrace computing. Since Codecon needs Internet connectivity, anybody and anywhere can access it and go through a tutorial in their own time. Students who do not have computers or connectivity can go to a public library and get a lesson in the programming language of their choice. (I often visit schools with 70% of students under poverty level, I can help in this if we can design a solid plan.)

Support tool for distance learning and online courses: Most online courses do not have support for hands-on components or even if they have support require students to install a whole lot of software. Codecon could provide a seamless, easy, simple and effective way to support these courses. And can be rolled out to masses without much effort since it is on the cloud.

Model for collaboration between industry and academia: Codecon and the interaction we had with Rangan's team offers an excellent model for synergistic collaboration between academia and industries.