

Advanced Placement Computer Science: The Future of Tracking the First Year of Instruction

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1. Summary

The Advanced Placement (AP) Computer Science program is intended to reflect enough of a common core of a first semester or year of university-level computer science so that placement or credit can be awarded for work done before college. The SIGCSE symposia have a long history of providing forums for discussing the evolution of the AP program from its inception [1] to the transition from Pascal to C++ [3] to the transition from C++ to Java [2,5,7,8,9]. Panels related to how credit and placement are awarded have also been part of the SIGCSE conferences [4,6]. This special session is a report of the ongoing process of developing new and possible wide-ranging changes to the AP program.

2. Background

In April of 2008 the College Board announced the elimination of the AP AB exam (roughly corresponding to CS2). On the cusp of that announcement a *redesign commission* of high school and college educators was convened to examine the AP Computer Science program. The original charge to the commission was to develop learning claims with associated evidence to help assess what students know and to help ensure that the AP program is aligned with university programs. The elimination of one AP exam led to changes in the expectations of and charge to the commission. However, the commission is still engaged in the process of developing claims and evidence for a first year AP course in computer science.

In August of 2008 the College Board received support from the National Science Foundation (NSF) to examine new pedagogies and curricula that might impact the AP program. For example, philosophies and approaches in [12,13] could have an impact on both college and high school programs. The NRC report [14] has led to potential changes in AP Science Courses that might engender changes at the University level, a potentially new and exciting direction by which change in one area affects changes in another. Large-scale changes at the high school level funded by NSF and based on work from [10,11] may have an impact on AP programs. As part of the NSF support to the College Board's AP Computer Science program an advisory group of college and high school educators meets with the commission in September of 2008 subsequent to and in anticipation of a faculty colloquium that will be held in October of 2008. The intended audience for that faculty colloquium is department chairs, curriculum developers, and in general those responsible for the design and implementation of the first year of university computer science programs.

3. Session Details

Members of the commission, the advisory board, the College Board, and NSF will report briefly on the logistics and process by which possible changes to the AP program are being developed. Part of this development includes communication with the constituencies involved with and impacted by AP --- precisely the SIGCSE community. Part of the session will include reports from the different groups represented in this process: educators from both high schools and colleges in addition to the sponsoring groups for this process. Much of the session will be dedicated to hearing questions and concerns from the audience and from those not in attendance whose comments we will solicit before the SIGCSE conference.

4. Audience and Expectations

Questions relating to the AP Computer Science program will have wide-ranging interest among SIGCSE attendees at both the post-secondary and K-12 level. College and university educators are specifically concerned with the extent to which any new AP CS curriculum and exam will reflect the content of CS1 courses, a key consideration in the determination of whether course credit can be offered to incoming students who successfully complete the AP CS exam. High school educators are also deeply invested in proposed changes to the curriculum and how such changes will impact their students and drive the need for increased professional development. At present there is considerable interest in the future directions of the program especially in light of recent changes announced by the College Board. To date, little

information about possible new directions has been shared. This session will provide an opportunity for the computer science community to better understand the scope and possible directions currently being considered for AP CS and to engage in a dialog with the community and the AP Commission as part of the feedback and development process.

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