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Title: How Do You Teach Debugging? Resources and Strategies for Better Student Debugging.

Abstract: "Why doesn't my code work?" Instructors and TAs hear this question day in and day out during introductory computer science courses, and beyond. Students arguably have a harder time learning how to debug their own (and others') code than they do in learning how to plan and write the code in the first place. Debugging strategies are difficult to teach, and there are pros and cons to different debugging methods (e.g., print statements vs. gdb vs. Googling). This BoF will elicit strategies for teaching debugging to CS students, and we will discuss the benefits of introducing certain tools earlier or later in the curriculum. We will also discuss how to assess whether students are able to debug code effectively. All suggestions will be posted on CSTeachingTips.org for dissemination (See tinyurl.com/CSTT-TAs for tips from SIGCSE 2015). We welcome attendance from seasoned and novice instructors, and from teaching assistants.

Significance and Relevance of the Topic: Learning how to debug efficiently is a core competency that CS students should be able to do, and there are numerous strategies available at all levels of instruction. A student's debugging toolbox begins in CS1 and continues to grow as they take more challenging classes. As the programming exercises and assignments get more complex, more elaborate tools become necessary. However, basic strategies remain important. CS instructors and TAs do not always know when to introduce good debugging tactics to students, nor do they often formally assess whether their students have learned how to debug well or not. This BoF will investigate debugging pedagogy, primarily in the introductory level CS classes.

Expected Audience: The audience is expected to consist of faculty and teaching assistants who teach programming courses. Participants who interested in sharing their own experiences teaching debugging are welcome, as are others who would like to improve their own instruction on debugging and are looking for ideas. We expect at least 20 participants, but we can scale up as necessary.

Discussion Leader(s): Colleen Lewis and Chris Gregg

Expertise of Discussion Leader(s): Colleen M. Lewis is currently faculty at Harvey Mudd (an undergraduate-only institution with a strong CS curriculum), and has taught many introductory and intermediate programming classes at Harvey Mudd and at the University of California, Berkeley. Chris Gregg is a computer science lecturer at Tufts University, and has taught introductory and intermediate programming courses, as well.

Special Requirements, if any: No special audio-visual equipment will be needed.

Keywords: Undergraduate, debugging, pedagogy, assessment