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A novel debugging aid to promote the implementation of OBTL in computer courses

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Abstract:

Finding errors in program codes (debugging) is a core skill for practical programmers. The ability to debug programs is an essential component present in various ILOs in a typical programming course. Currently, in addition to most science and engineering students, students from other disciplines such as creative media and business are also taking programming courses to strengthen their logical thinking and problem solving skill using computers. One major and important TLA to achieve this ILO is to do more practices. However, debugging programs can be very tedious. Even worse, repetitive failures may defeat enthusiasm for learning. Unfortunately, debugging is a process every programmer-in-training has to go through. The presence of a mentor giving hints and help will make such learning process much more effective and enjoyable. However, this requires lots of manpower and resources. In this project, we aim at developing a novel system consisting of a suite of resources and tools for providing certain level of automatic debugging assistance. On the one hand, instructors can identify common errors found in students' programs and incorporate useful debug-guiding information into the system. On the other hand, students will be prompted with pertinent hints when common errors are detected in their programs.