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Special Issue Reprint

Future Trends in Computer Programming Education

Edited by: Stelios Xinogalos

Computer programming education is a field that has attracted the interest of practitioners and researchers for several decades. It is widely accepted that learning programming is difficult, while the classic teaching approach for programming, which is based on the use of conventional programming languages and environments for solving number and symbol processing problems, is quite problematic. Students must be supported, motivated and engaged in the learning process in order to comprehend the principles of programming, acquire problem-solving skills or even more general Computational Thinking (CT) skills, and write high-quality code. Students' difficulties with various programming techniques, concepts/constructs and languages have been extensively investigated, while several alternative teaching approaches and tools have been proposed for dealing with the intricacies of teaching and learning programming.

This reprint aimed to investigate the current state of the field and its future trends. It includes twelve articles from thirty-two researchers coming from nine countries. The articles fall into four thematic areas: CT and its place in the Computer Science Curriculum; students' misconceptions on programming constructs and performance prediction; innovative teaching approaches and tools for enhancing programming education; and automated programming assignment creation and assessment.

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