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### A first course in computer science: Languages and goals

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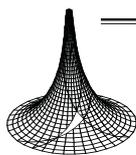
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## A first course in computer science: Languages and goals

DENNIS C. SMOLARSKI

*Abstract.* The College Board Advanced Placement exam in computer science will use the language Java starting in fall 2003. The language chosen for this exam is based on the language commonly taught in introductory computer science courses at the university level. This article reviews the purpose of an introductory course and the various suggestions for the curriculum of introductory courses published by the Association for Computing Machinery. It then proposes that such a course stress foundational concepts over specific language syntax, and then provides a list of such foundational concepts and related topics. Based on this fundamental curriculum, the article recommends C++ as the most appropriate language. An appendix provides a sample syllabus.

*Key words and phrases:* introductory computer science courses, computer languages, elementary data structures, languages structures, elementary algorithms, data encapsulation, objects, technology and society.

*ZDM Subject Classification:* B75, D35, M55.

### 1. Introduction

The College Board is a U.S. corporation known for creating and administering common exams for secondary school students, exams such as the SAT (Scholastic Aptitude Test), the PSAT (Preliminary SAT), and various AP (Advanced Placement) exams. In particular, the AP exams, available for various technical and non-technical subjects, enable students completing their secondary school education to receive credit for university level courses at some institutions, if they score appropriately high on the exams.