

Computing Concepts with Java Essentials

Third Edition

Advanced Placement*
Computer Science Study Guide

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PREFACE

This Study Guide is designed to assist high school students preparing for the AP Computer Science Examination. It is organized and designed to accompany *Computing Concepts with Java Essentials, 3rd. ed.*, and *Big Java*, both by Cay Horstmann and published by John Wiley & Sons, Inc.

To the Student

Advanced Placement Computer Science is a college level course. As a student in an AP course, you are expected to understand college level material and to read college level textbooks. Because these texts may be used in multiple college courses, they contain material that is not tested on the AP Computer Science (CS) Examinations. This guide identifies and stresses the content that is tested on the AP CS Exams. This does not imply that you should skip the additional material in the text. Your teacher may include the additional material in your course and hold you responsible for that material. Some of the material that is not tested on the exam is extremely useful and may be included in your course. By following this guide, you will be able to focus on the topics included in the AP CS 2003-2004 Topic Outline and the elements of the AP Java subset that will be tested on the exam. Because the guide is designed for students taking either the A or the AB Computer Science exam, topics covered on the AB Exam are marked “AB only.” If you are participating in an AP CS A course, this should not discourage you from reading these sections; it merely indicates that those topics will be tested on the AB exam and not the A Exam.

Features of the Study Guide

This guide is organized to help students recognize and master those topics that will be tested on both the A and AB examinations. Where applicable, each chapter includes:

Topic Summary

This section parallels the material in the textbook, adding additional examples and explanation of topics presented in the text. Students will find special emphasis here on topics that are likely to be tested.

Expanded Coverage of Topics not Found in the Text

Any topics in the AP CS Topic Outline or the AP Java subsets that are not covered in the text are presented in this section. In addition, Appendix A includes two additional textbook chapters that expand the coverage of data structures and algorithms needed for the AP exam.

Topics That are Useful but not Tested

This section alerts students to sections of the textbook that present useful features of the Java language. Although these sections are not required for the AP exam, they address features of Java programs that students are likely to encounter, or that they will need to progress in their programming ability.

Things to Remember When Taking the Exam

Each chapter restates important concepts and provides specific suggestions for avoiding common errors.

Key Words

Vocabulary used in the chapter is listed alphabetically here for student review and reference. Each key word is accompanied by the page number(s) where it is defined and/or discussed in the text.

Connecting the Detailed Topic Outline with the Text

This listing links the topics presented in the guide to the pages in the text where the same topics are covered.

Practice Questions (Multiple Choice and Free Response)

A large number of practice questions, modeled after those on the AP exam, are included in each chapter. The questions use the multiple-choice and free-response formats that students will encounter on the exam. Answers to the practice questions are provided in Appendix D.

AB Examination Topics

Any sections (and practice questions) that cover topics that will not be tested on the Computer Science A exam are clearly marked “AB only.” Students who are preparing for the AB exam should be sure to complete these sections.

Web Resources

The AP Computer Science Topic Outline and Quick Reference Guides that students may use during the AP exam are available from the College Board’s Web site at <http://www.collegeboard.com/ap/students/compsci/>. The Quick Reference Guides list the classes, interfaces, and methods contained in the Java subset covered by the AP exam. The AP Computer Science Topic Outline and the AP testable Java subsets may be revised from time to time, so you are encouraged to check for the most current version of these documents in the AP Computer Science Course Description on the College Board site.

Web sites associated with this guide and with *Computing Concepts with Java Essentials, 3rd. ed.*, and *Big Java* are another important resource for users of this guide. Cay Horstmann’s site, <http://www.horstmann.com>, contains an expansion of Chapter 19, Help with Common Compilers, that provides installation tips and getting started instructions for the most commonly used Java compilers and environments. You will also find source code for programs in the text(s) and Appendix A, solutions to selected exercises in the text(s), frequently asked questions, a programming style guide, and more.

Many of these same items are also available from the Wiley Web site at <http://www.wiley.com/college/horstmann>, plus instructor resources not available to students.

Acknowledgments

It has been a sincere pleasure working with Cay Horstmann, master computer scientist and teacher, in the creation of this guide. I will always value this experience.

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My energy and enthusiasm for AP Computer Science is constantly renewed by the many AP CS teachers that I work with at AP CS workshops and, of course, by my AP CS students, some of whom are now AP CS teachers!

Finally, thanks to Eli for his patience, encouragement and support.

*This work is dedicated to my mother.
F.T.*

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