

Second AP\* Edition  
— with GridWorld

# *Java*

# *Methods*

Object-Oriented Programming  
and  
Data Structures

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## How to Use This Book

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The *Java Methods* companion web site —

`http://www.skylit.com/javamethods`

— is an integral part of this book. It contains five chapters and several appendices. It also has downloadable student files for case studies, labs, and exercises, assembled together in what we call *Student Files*. Also on the book’s web site are links, errata, supplemental papers, and syllabi and technical support information for teachers.

We have chosen to place Chapters 1, 16, 17, 18, and 27 and the appendices on the web either because they rely on many web links or because the material they cover is less theoretical and handy to have online for reference.



The web symbol indicates a “webnote”; you will find it in the alphabetical list of webnote links on the book’s web site.



refers to *Java Methods Student Files*. For example, “you can find HelloWorld.java in JM\Ch02\Hello” means the HelloWorld.java file is located in the Ch02\Hello subfolder in the StudentFiles folder.



This icon draws your attention to a lab exercise or a hands-on exploration of an example.



“Parentheses” like these, in the margin, mark supplementary material intended for a more inquisitive reader. This material either gives a glimpse of things to come in subsequent chapters or adds technical details.



1.▪, 2.♦ In exercises, a square indicates an “intermediate” question that may require more thought or work than an ordinary question or exercise. A diamond indicates an “advanced” question that could be treacherous or lead to unexplored territory — proceed at your own risk.

(MC) We have included a few multiple-choice questions in the exercises. These are marked (MC).

- ✓ A checkmark at the end of a question in an exercise means that a solution is included in `JM\SolutionsToExercises.pdf`. We have included solutions to about one-third of the exercises.

The *Teacher Files* folder, which contain complete solutions to all the exercises and labs, is available for downloading free of charge to teachers who use this book as a textbook in their schools. Go to [skylit.com/javamethods](http://skylit.com/javamethods) and click on the “Teachers’ Room” link for details.

*Java Methods* uses the College Board’s GridWorld case study. The GridWorld Student Manual and Java code are available at [www.collegeboard.com](http://www.collegeboard.com). The code is distributed under the GNU license. The Solutions Manual is available to teachers on the GridWorld page at <http://apcentral.collegeboard.com>.



(To a slightly different subject...)

How you use this book will depend on your background in computers. If you are familiar with computers and programming, you can glance quickly at Chapters 1 and 2 to see whether they fill any gaps.

Chapters 3, Objects and Classes, 4, Algorithms, and 5, Java Syntax and Style, can be covered in any order, depending on your taste.

If you know C++, Chapters 6, 7, and 8 will be easy for you. But do still read them for the sake of the case studies and labs, which cover broader concepts than the chapter headings imply. Chapters 15, Streams and Files, 16, Graphics, 17, GUI Components and Events, and 18, Mouse, Keyboard, Sounds, and Images, are optional as far as the AP exams are concerned. Chapter 19 begins the discussion of more advanced topics: big-O, the Java collections framework, and data structures. These chapters can be read after the AP exam is behind you. The concluding chapter, Design Patterns, aims to inspire you to continue studying object-oriented design.