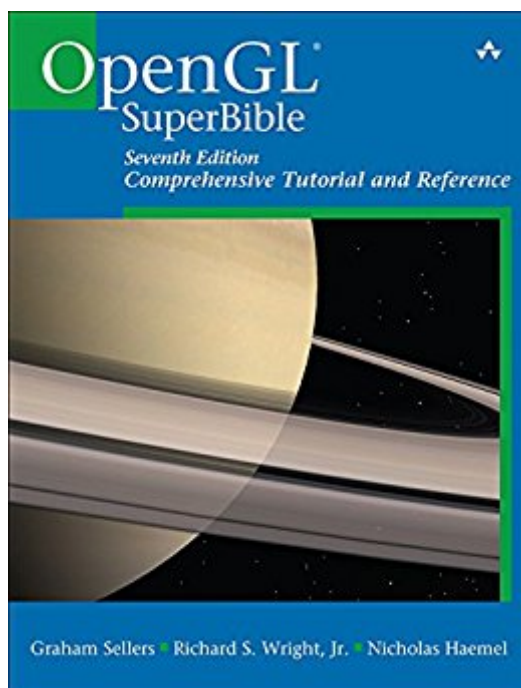


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# OpenGL Superbible: Comprehensive Tutorial And Reference



## Synopsis

OpenGL® SuperBible, Seventh Edition, is the definitive programmer's guide, tutorial, and reference for OpenGL 4.5, the world's leading 3D API for real-time computer graphics. The best introduction for any developer, it clearly explains OpenGL's newest APIs; key extensions; shaders; and essential, related concepts. You'll find up-to-date, hands-on guidance for all facets of modern OpenGL development—both desktop and mobile. The authors explain what OpenGL does, how it connects to the graphics pipeline, and how it manages huge datasets to deliver compelling experiences. Step by step, they present increasingly sophisticated techniques, illuminating key concepts with worked examples. They introduce OpenGL on several popular platforms, and offer up-to-date best practices and performance advice. This revised and updated edition introduces many new OpenGL 4.5 features, including important ARB and KHR extensions that are now part of the standard. It thoroughly covers the latest Approaching Zero Driver Overhead (AZDO) performance features, and demonstrates key enhancements with new example applications. Coverage includes

- A practical introduction to real-time 3D graphics, including foundational math
- Core techniques for rendering, transformations, and texturing
- Shaders and the OpenGL Shading Language (GLSL) in depth
- Vertex processing, drawing commands, primitives, fragments, and framebuffers
- Compute shaders: harnessing graphics cards for more than graphics
- Pipeline monitoring and control
- Managing, loading, and arbitrating access to data
- Building larger applications and deploying them across platforms
- Advanced rendering: light simulation, artistic and non-photorealistic effects, and more
- Reducing CPU overhead and analyzing GPU behavior
- Supercharging performance with persistent maps, bindless textures, and fine-grained synchronization
- Preventing and debugging errors
- New applications: texture compression, text drawing, font rendering with distance fields, high-quality texture filtering, and OpenMP

Bonus material and sample code are available at [openglsuperbible.com](http://openglsuperbible.com).

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## Customer Reviews

First, let me say that the reorganization of text and code embodied in the Sixth Edition of the OpenGL Superbible was a good move. Oh, I have a few gripes and grumbles relating to the reorganization (e.g., it seems like Chapter 5 will never end. It could be split, deferring pieces to later and appropriate contexts.) The reorganization of the sample code is a good step forward. There is less dependence on mysterious libraries. And, the essential support code has been reorganized into a more attractive framework. Be prepared for a lot of emphasis on shader programming. Face up to it: It's the nature of the modern beast. If you're not ready for that, one suggestion is to start with an earlier edition – one that focuses on earlier versions of OpenGL, and then grow to love it. Having gone through many (aborigines are said to have a ternary number system: 1, 2, many) editions of the Superbible, I find it necessary to keep a copy of a corresponding Redbook (OpenGL Programming Guide) edition handy. In that sense, I find the Superbible to be an essential learning aid. But it was indeed unfortunate to find that the current authors and publisher continued to follow the habits of previous authors and publishers of walking away from what I view as their responsibility to their readership:1. Others have complained about the quality of the black and white illustrations. They were correct: the printing of screenshots is terrible. The majority of the current authors are experienced authors. (a) They should have avoided the problem. (b) The editor should have caught the problem before going to press. (c) The printer should have called attention to the problem before committing to a run.2.

This book has been a critical part of me getting started with OpenGL. I had a general understanding of 3D graphics and limited experience with Direct3D, but it had been a while and I found OpenGL to

be fairly intimidating, especially since immediate mode was deprecated. OpenGL SuperBible has gotten me past the intimidation and initial hurdles in pretty short order. There's a lot to OpenGL, but the book presents it plainly and clearly. The tone is clear above all else. It's light and personal, but not super familiar or cheeky - it strikes a good balance. The clear introduction to the pipeline and the lucid and well-explained code examples have gotten me going far faster than I would have expected. After reading Part I of the book I'm familiar enough with the basics that I'm already working on my project in earnest and reading the rest of the book either as reference and as I have time. The writing continues to be clear and the figures are really clear on the Kindle, both on phone and tablet. The code samples can be a little difficult on a narrow screen, but that's just the nature of reading code on a phone. I think anyone entering the OpenGL world should be warned that it (OpenGL) is a bit of a mess, especially if you're trying to target multiple platforms and be reasonably backwards compatible. This book is about a particular version of OpenGL and, as it's not intended as a history lesson, doesn't do a tremendous amount to be clear about the differences between versions. It'll take some independent work on the reader's part to come to understand which version of GL suites their purposes best and then a bit more work to understand what parts of the book don't apply to that version. Having said that, I am targeting OpenGL 3.2/GLSL 1.

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