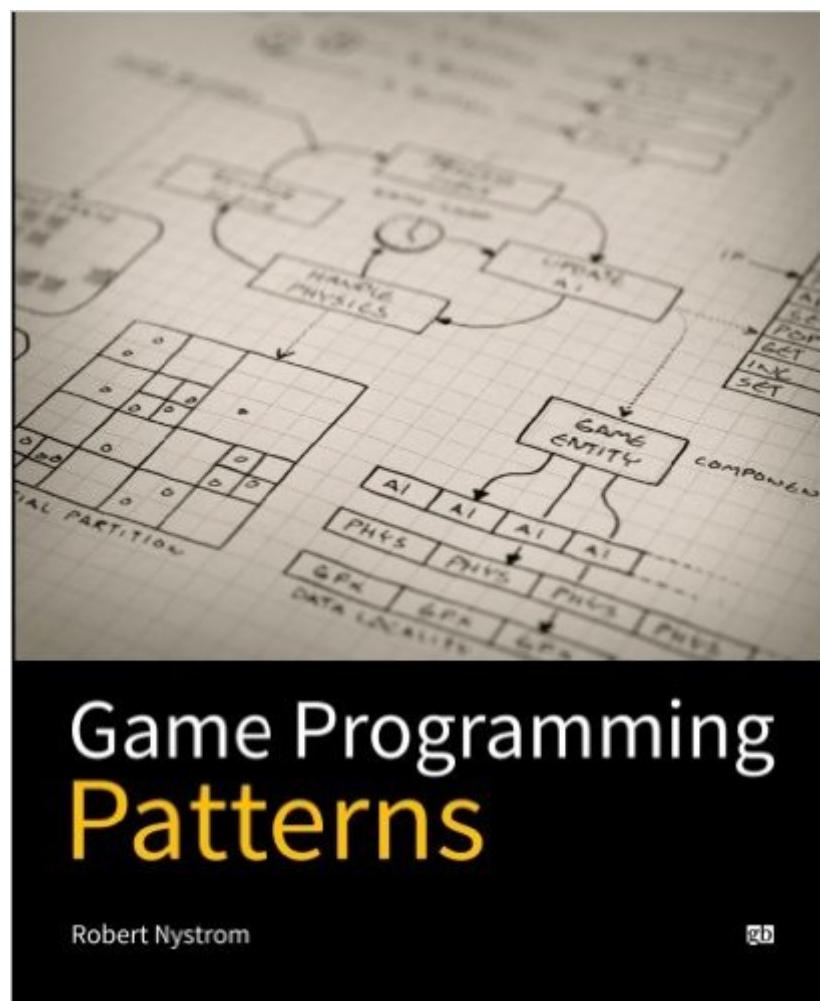


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# Game Programming Patterns



## Synopsis

The biggest challenge facing many game programmers is completing their game. Most game projects fizzle out, overwhelmed by the complexity of their own code. Game Programming Patterns tackles that exact problem. Based on years of experience in shipped AAA titles, this book collects proven patterns to untangle and optimize your game, organized as independent recipes so you can pick just the patterns you need. You will learn how to write a robust game loop, how to organize your entities using components, and take advantage of the CPUs cache to improve your performance. You'll dive deep into how scripting engines encode behavior, how quadtrees and other spatial partitions optimize your engine, and how other classic design patterns can be used in games.

## Book Information

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TL;DR: To understand the code and some of the more performance-oriented patterns, you must understand C/C++ pointers and memory model. This book WILL give you:- An excellent introduction to good software design and how to think about design issues.- A great background in the notion of software design "patterns." - An exploration of some key categories of problem that come up in software, and especially in games.- A VERY detailed exploration of 19 concrete software patterns that are particularly useful in the hairiest parts of game programming. This book will NOT:- Teach you how to program.- Give you specifics of working with a particular library, language, game engine, or platform.- Give you a 100% complete architectural blueprint for your next

game.-----This book is a gem, and should certainly be considered required reading for any new industry or hobbyist software engineer, regardless of whether they work on games."Game Programming Patterns" delivers, providing an in-depth look at the core engineering patterns used ubiquitously in games but seldom known outside of the games industry. Each pattern gets a full treatment, including everything from background to motivation to concrete examples of where the pattern would apply and where it might go awry. Each chapter also includes a healthy dose of discussion, including going into the trade-offs between each pattern and other possible approaches. However, at its core, Game Programming Patterns is about much more than games. I find it to be one of the most accessible and most complete books on Software Design in general.

Computer game engines can be massive and monstrously complex pieces of software consisting of millions of lines of code comprising systems including rendering, physics, artificial intelligence and more. Poor design decisions can make the game engine code a pain to interact with. This book doesn't describe how to design a particular system or game engine but instead describes how to use programming patterns to organize game engine code so that systems are decoupled, fast, and easily maintained. What's remarkable about this book is that it takes on such a complex topic and delivers it in a simple, vivid, and humorous way. The concrete examples, gorgeous diagrams, and entertaining text make reading a pleasant experience instead of feeling like study. Each chapter describes a single pattern, explains what it can be used for, gives sample code for how to implement it, and details considerations that should be made by a designer when deciding if the pattern should be used in their engine. These chapters are self contained so that a developer can dive into the particular patterns they are interested in without having them read anything earlier in the book. A reader will need basic knowledge of object-oriented programming in a C-like language. Although the code is written in C++, anyone writing in C# or Java should have no problem applying the patterns to their own engines. However, two of the twenty chapters of the book describe patterns that use manual memory management to increase game engine performance. Despite the patterns being used to address problems encountered in game engine design, most of the patterns described are also applicable to problems in numerous domains of programming.

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