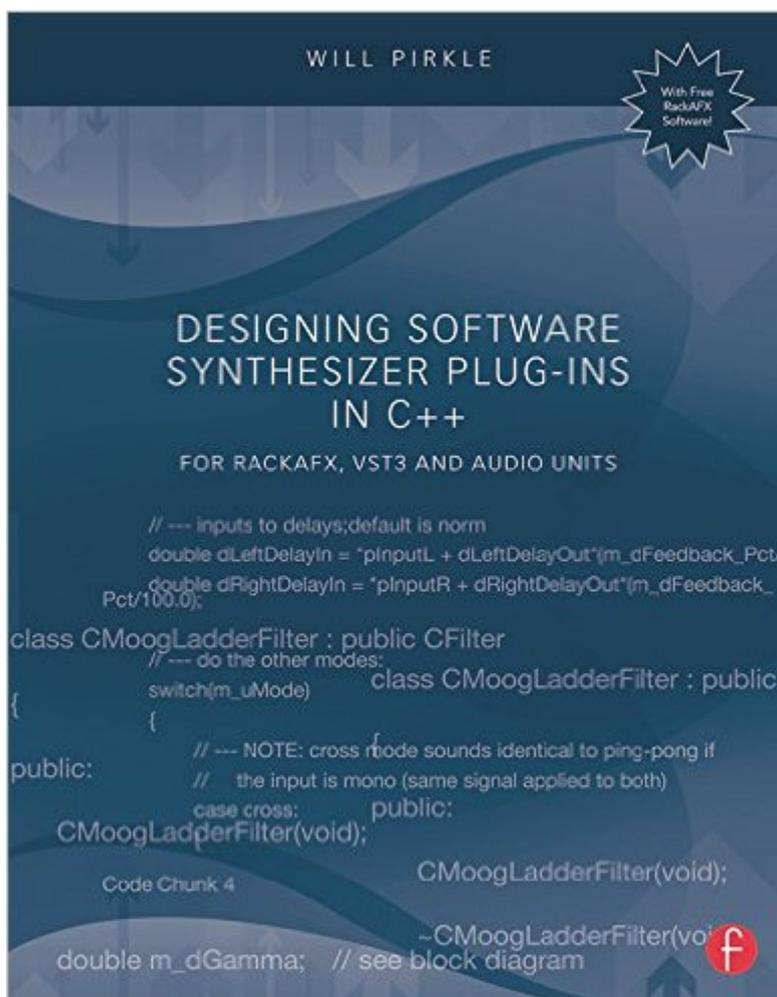


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# Designing Software Synthesizer Plug-Ins In C++: For RackAFX, VST3, And Audio Units



## Synopsis

Bridging the gap from theory to programming, *Designing Software Synthesizer Plug-Ins in C++ For RackAFX, VST3 and Audio Units* contains complete code for designing and implementing software synthesizers for both Windows and Mac platforms. You will learn synthesizer operation, starting with the underlying theory of each synthesizer component, and moving on to the theory of how these components combine to form fully working musical instruments that function on a variety of target digital audio workstations (DAWs). Containing some of the latest advances in theory and algorithm development, this book contains information that has never been published in textbook form, including several unique algorithms of the author's own design. The book is broken into three parts: plug-in programming, theory and design of the central synthesizer components of oscillators, envelope generators, and filters, and the design and implementation of six complete polyphonic software synthesizer musical instruments, which can be played in real time. The instruments implement advanced concepts including a user-programmable modulation matrix. The final chapter shows you the theory and code for a suite of delay effects to augment your synthesizers, introducing you to audio effect processing. The companion website, [www.focalpress.com/cw/pirkle](http://www.focalpress.com/cw/pirkle), gives you access to free software to guide you through the application of concepts discussed in the book, and code for both Windows and Mac platforms. In addition to the software, it features bonus projects, application notes, and video tutorials. A reader forum, monitored by the author, gives you the opportunity for questions and information exchange.

## Book Information

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## Customer Reviews

As the title suggest, this book is about writing Software Synthesizers in C++, so this really implies that this book is not for the weak hearted only from reading the title. So far for the other review, only giving it 3 stars, it's completely useless and has absolutely nothing to do with what this book is about in the first place, and does not assess the quality of the writings in any way. This book is a god send for me, I have been waiting for this for many years! I am only half through so far (will update this review after I have worked it through) but I can already tell that this is a total quality product as it does not often happen with computer books. I would even go as far as to say that it is stroke of genius. Let me explain. I am "flitring" with DSP since years, but without a deep academic background, I always faced some hurdles that were very difficult to overcome. First there is the math, and then if you want to do stuff like synthesizers containing a plethora of different objects acting together to form a quite complex network. Sure, all the information found in this book can be found elsewhere online (if you are willing to dig hard enough and bang your head against the wall for many months), but how it is present here in a concise manner is almost too good to be true. You get in depth and current information on how it is done the right way. Oscillator design, filters, envelopes, all explained with cross-references to all the great synthesizers made in the last few decades. Many a nice detail of the history can be found in the texts, e.g. i didn't know that Dave Smith was involved in designed Korgs Wavestation.

I received a free item to review. This isn't like those game programming/graphics books from years back where you could just "play with the executables" and skip the explanations and theory (I suppose that's possible if you're good enough to simply build it all and let it rip - but I think that defeats the purpose). The real value in "Developing Software Synthesizers Plug-Ins in C++" is not simply getting the six synths to run with your choice of plug-in container and platform. It's understanding what Pirkle has to say about software synth design, component details, and

recognizing similarities across common plug-in APIs well-enough to customize and extend the designs, or use them as jump-off points for your own. Depending on your DSP background I recommend Polmann's "Principles of Digital Audio" as Pirkle does in the very useful bibliographies at the end of each chapter. I still have my second edition of Polmann and, while it's been updated several times, the fundamentals remain the same and I think it's one of the more readable DSP books out there that doesn't drown you in math. And speaking of math, Pirkle doesn't drown you here either - although as he states it's impossible to avoid it completely - even the dreaded C word - calculus. But fear not, to his credit, Pirkle keeps it all very readable and interesting. And that's true across the board: While the book is ambitious it will reward those willing to put in the time. There's quite a lot of discussion of DSP, MIDI and synth theory but Pirkle doesn't presume much expertise or even advanced knowledge and the writing is very clean and straightforward.

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