

No Thresholds and No Limits

The aim of this book is to teach you to write programs as you would use a pencil: as an outlet for creativity and as a tool for understanding.

These pages follow a fifty-year tradition of using programming as a liberating educational tool, with no thresholds for beginners, and no limits for experts. Seymour Papert's LOGO is the inspiration. Start with a few lines of code, and progress to writing programs to explore art, mathematics, language, algorithms, simulation, and thought.

The language is CoffeeScript. Although CoffeeScript is a production programming language used by pros, it was chosen here because it has an elegance and simplicity well-suited for beginners. While the first examples make the language look trivial, CoffeeScript has a good notation for all the important ideas: algebraic expressions, lists, loops, functions, objects, and concurrency. As you learn the language, remember that the goal should be not mastery of the syntax, but mastery of the underlying concepts.

Edit and run your programs on pencilcode.net. The site is a live experiment in community learning: everything posted is public, so write programs that would be interesting to others. Accounts are free.

As you experiment by building your own ideas, you will find that at first your programs will behave in ways that you do not intend. Details matter, and persistence pays off. If you are patient in adjusting and perfecting your work, you will be rewarded with insight.

Read, think, play, and strive to create something beautiful.

David Bau, 2013