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Computer
Arithmetic
Algorithms
2nd edition

Israel Koren

ISBN 1-56881-160-8
Hardcover; 296 pp.; \$ 49.00, £36,00

This text explains the fundamental principles of algorithms available for performing arithmetic operations on digital computers. These include basic arithmetic operations like addition, subtraction, multiplication, and division in fixed-point and floating-point number systems as well as more complex operations such as square root extraction and evaluation of exponential, logarithmic, and trigonometric functions. The algorithms described are independent of the particular technology employed for their implementation. Numerical examples illustrate the working of the algorithms presented and explain the concepts behind the algorithms without relying on gate diagrams.

This new edition includes sections on floating-point adders, floating-point exceptions, general carry-look-ahead adders, prefix adders, Ling adders, and fused multiply-add units. New algorithms and implementations have been added to almost all chapters. An on-line JavaScript-based simulator for many of the algorithms contained in the book is available at : www.ecs.umass.edu/ece/koren/arith/simulator.

Features:

- Concentrates on the underlying principles
 - Similarities between different algorithms easily identified
 - Facilitates selection of algorithms appropriate to a given technology
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From a review of the 1st edition:

“In the flood of ho-hum publications on personal computers, a contribution of true computing significance is rare. But this is such a book...I highly recommend this book for computer arithmetic professionals. Its value is its summary of the most interesting aspects of arithmetic algorithms.”

—*IEEE Computer*
