

1. Record Nr.	UNINA9910817402703321
Autore	Lu Mi
Titolo	Arithmetic and logic in computer systems // Mi Lu
Pubbl/distr/stampa	Hoboken, NJ, : Wiley-Interscience, c2004
ISBN	9786610253364 9781280253362 1280253363 9780470357743 0470357746 9780471726210 0471726214 9780471728511 0471728519
Edizione	[1st edition]
Descrizione fisica	1 online resource (270 p.)
Collana	Wiley Series in Microwave and Optical Engineering ; ; v.169
Disciplina	004/.01/51
Soggetti	Computer arithmetic Logic programming
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Arithmetic and Logic in Computer Systems; Contents; Preface; List of Figures; List of Figures; List of Tables; List of Tables; About the Author; 1 Computer Number Systems; 1.1 Conventional Radix Number System; 1.2 Conversion of Radix Numbers; 1.3 Representation of Signed Numbers; 1.3.1 Sign-Magnitude; 1.3.2 Diminished Radix Complement; 1.3.3 Radix Complement; 1.4 Signed-Digit Number System; 1.1 Numbers Represented by 4 bits in Different Number Systems; 1.2 Finding Signed Digits; 1.5 Floating-point Number Representation; 1.5.1 Normalization; 1.5.2 Bias; 1.1 Floating-point Representation 1.2 Range of the Numbers1.3 Precision of Floating-Point Numbers; 1.4 Double Precision Floating-Point Representation; 1.3 Reserved Representation in IEEE Standard; 1.6 Residue Number System; 1.7 Logarithmic Number System; References; Problems; 2 Addition and Subtraction; 2.1 Single-Bit Adders; 2.1.1 Logical Devices; 2.1 AOI

Function; 2.1 Delay Time and Area of Logic Gates; 2.2 Decoder and Multiplexer; 2.1.2 Single-Bit Half-Adder and Full-Adders; 2.3 Single-Bit Half-Adder; 2.2 Logic Function of a Half-Adder; 2.3 Logic Function of a Full-Adder; 2.4 Design of Full-Adder; 2.2 Negation
 2.4 Single-Bit Subtractor 2.2.1 Negation in One's Complement System; 2.5 Single-Bit Subtractor; 2.5 Negation in One's Complement System; 2.6 Negation in One's Complement System; 2.2.2 Negation in Two's Complement System; 2.7 Negation in Two's Complement System; 2.3 Subtraction through Addition; 2.8 Subtraction through Addition; 2.9 One-Bit Adder/Subtractor; 2.4 Over flow; 2.5 Ripple Carry Adders; 2.5.1 Two's Complement Addition; 2.10 Two's Complement Addition/Subtraction; 2.5.2 One's Complement Addition; 2.11 One's Complement Addition/Subtraction; 2.5.3 Sign-Magnitude Addition
 2.12 Block Diagram of Sign-Magnitude Addition/Subtraction
 References; 2.13 Sign-Magnitude Addition/Subtraction; Problems; 3 High-Speed Adder; 3.1 Conditional-Sum Addition; 3.1 Conditional-Sum Addition; 3.2 Carry-Completion Sensing Addition; 3.2 Conditional-Sum Adder; 3.3 Generation and Transmission of Carries; 3.4 Construction of Carry-Completion Sensing Adder; 3.3 Carry-Lookahead Addition (CLA); 3.3.1 Carry-Lookahead Adder; 3.3.2 Block Carry Lookahead Adder; 3.5 Carry-Lookahead Adder; 3.6 Block Carry-Lookahead Adder; 3.4 Carry-Save Adders (CSA); 3.7 Carry-Save Adder; 3.8 Carry-Save Adder Tree
 3.9 Two Types of Parallelization in Multi-Operand Addition 3.5 Bit-Partitioned Multiple Addition; 3.1 Maximum Inputs of CSA Trees; 3.10 Bit-Partitioned Multiple Addition; References; Problems; 3.11 Carry-Completion Sensing Adder; 3.12 Carry-Save Adder; 3.13 Bit-Partitional Adder; 4 Sequential Multiplication; 4.1 Add-and-shift Approach; 4.1 Hardware for Sequential Multiplication; 4.2 Register Occupation; 4.2 Indirect Multiplication Schemes; 4.2. 1 Unsigned Number Multiplication; 4.2.2 Sign-Magnitude Number Multiplication; 4.2.3 One's Complement Number Multiplication
 4.3 Unsigned Number Multiplication

Sommario/riassunto

Arithmetic and Logic in Computer Systems provides a useful guide to a fundamental subject of computer science and engineering. Algorithms for performing operations like addition, subtraction, multiplication, and division in digital computer systems are presented, with the goal of explaining the concepts behind the algorithms, rather than addressing any direct applications. Alternative methods are examined, and explanations are supplied of the fundamental materials and reasoning behind theories and examples. No other current books deal with this subject, and the author is a leading authority