

PDF FREE FUNDAMENTALS OF LOGIC DESIGN ROTH 5TH EDITION (2023)

UPDATED WITH MODERN COVERAGE AND A STREAMLINED PRESENTATION THIS SIXTH EDITION ACHIEVES YET AGAIN AN UNMATCHED BALANCE BETWEEN THEORY AND APPLICATION AUTHORS CHARLES H ROTH JR AND LARRY L KINNEY CAREFULLY PRESENT THE THEORY THAT IS NECESSARY FOR UNDERSTANDING THE FUNDAMENTAL CONCEPTS OF LOGIC DESIGN WHILE NOT OVERWHELMING STUDENTS WITH THE MATHEMATICS OF SWITCHING THEORY DIVIDED INTO 20 EASY TO GRASP STUDY UNITS THE BOOK COVERS SUCH FUNDAMENTAL CONCEPTS AS BOOLEAN ALGEBRA LOGIC GATES DESIGN FLIP FLOPS AND STATE MACHINES BY COMBINING FLIP FLOPS WITH NETWORKS OF LOGIC GATES STUDENTS WILL LEARN TO DESIGN COUNTERS ADDERS SEQUENCE DETECTORS AND SIMPLE DIGITAL SYSTEMS AFTER COVERING THE BASICS THIS TEXT PRESENTS MODERN DESIGN TECHNIQUES USING PROGRAMMABLE LOGIC DEVICES AND THE VHDL HARDWARE DESCRIPTION LANGUAGE IMPORTANT NOTICE MEDIA CONTENT REFERENCED WITHIN THE PRODUCT DESCRIPTION OR THE PRODUCT TEXT MAY NOT BE AVAILABLE IN THE EBOOK VERSION MASTER THE PRINCIPLES OF LOGIC DESIGN WITH THE EXCEPTIONAL BALANCE OF THEORY AND APPLICATION FOUND IN ROTH KINNEY JOHN S FUNDAMENTALS OF LOGIC DESIGN ENHANCED 7TH EDITION THIS EDITION INTRODUCES YOU TO TODAY S LATEST ADVANCES THE AUTHORS HAVE CAREFULLY DEVELOPED A CLEAR PRESENTATION THAT INTRODUCES THE FUNDAMENTAL CONCEPTS OF LOGIC DESIGN WITHOUT OVERWHELMING YOU WITH THE MATHEMATICS OF SWITCHING THEORY TWENTY ENGAGING EASY TO FOLLOW STUDY UNITS PRESENT BASIC CONCEPTS SUCH AS BOOLEAN ALGEBRA LOGIC GATE DESIGN FLIP FLOPS AND STATE MACHINES YOU LEARN TO DESIGN COUNTERS ADDERS SEQUENCE DETECTORS AND SIMPLE DIGITAL SYSTEMS AFTER MASTERING THE BASICS YOU PROGRESS TO MODERN DESIGN TECHNIQUES USING PROGRAMMABLE LOGIC DEVICES AS WELL AS VHDL HARDWARE DESCRIPTION LANGUAGE WITH AN ABUNDANCE OF INSIGHTFUL EXAMPLES PROBLEMS AND COMPUTER EXPERIMENTS INTRODUCTION TO LOGIC DESIGN PROVIDES A BALANCED EASY TO READ TREATMENT OF THE FUNDAMENTAL THEORY OF LOGIC FUNCTIONS AND APPLICATIONS TO THE DESIGN OF DIGITAL DEVICES AND SYSTEMS REQUIRING NO PRIOR KNOWLEDGE OF ELECTRICAL CIRCUITS OR ELECTRONICS IT SUPPLIES THE THIS TEXT WAS DEVELOPED SPECIFICALLY TO MEET THE NEEDS OF A SELF PACED COURSE THE BOOK PROVIDES BASIC MATHEMATICAL TOOLS NEEDED TO ANALYZE AND SYNTHESIZE AN IMPORTANT CLASS OF SWITCHING NETWORK IN ADDITION TO THE STANDARD READING MATERIAL AND PROBLEMS STUDY GUIDES AND OTHER AIDS FOR SELF STUDY ARE INCLUDED IN THE TEXT IT IS SUITABLE FOR BOTH ENGINEERING AND COMPUTER SCIENCE STUDENTS THE TEXT ATTEMPTS TO ACHIEVE A BALANCE BETWEEN THEORY AND APPLICATION FOR THIS REASON THE TEXT DOES NOT OVER EMPHASIZE THE MATHEMATICS OF SWITCHING THEORY HOWEVER IT DOES PRESENT THE THEORY WHICH IS NECESSARY FOR UNDERSTANDING THE FUNDAMENTAL CONCEPTS OF LOGIC DESIGN AFTER COMPLETING THIS TEXT THE STUDENT SHOULD BE PREPARED FOR A MORE ADVANCED DIGITAL SYSTEM DESIGN COURSE WHICH STRESSES MORE INTUITIVE CONCEPTS LIKE THE DEVELOPMENT OF ALGORITHMS FOR DIGITAL PROCESSES PARTITIONING OF DIGITAL SYSTEM INTO SUB SYSTEMS AND IMPLEMENTATION OF DIGITAL SYSTEMS USING CURRENTLY AVAILABLE HARDWARE DESCRIPTION THE BOOK IS AN ATTEMPT TO MAKE DIGITAL LOGIC DESIGN EASY AND SIMPLE TO UNDERSTAND THE BOOK COVERS VARIOUS FEATURES OF LOGIC DESIGN USING LOTS OF EXAMPLES AND RELEVANT DIAGRAMS THE COMPLETE TEXT IS REVIEWED FOR ITS CORRECTNESS THIS BOOK IS AN OUTCOME OF SINCERE EFFORT AND HARD WORK TO BRING CONCEPTS OF DIGITAL LOGIC DESIGN CLOSE TO THE AUDIENCE OF THIS BOOK THE SALIENT FEATURES OF THE BOOK EASY EXPLANATION OF DIGITAL SYSTEM AND BINARY NUMBERS WITH LOTS OF SOLVED EXAMPLES DETAILED COVERING OF BOOLEAN ALGEBRA AND GATE LEVEL MINIMIZATION WITH PROPER EXAMPLES AND DIAGRAMMATIC REPRESENTATION DETAILED ANALYSIS OF DIFFERENT COMBINATIONAL LOGIC CIRCUITS COMPLETE SYNCHRONOUS SEQUENTIAL LOGIC UNDERSTANDING DEEP UNDERSTANDING OF MEMORY AND PROGRAMMABLE LOGIC DETAILED ANALYSIS OF DIFFERENT ASYNCHRONOUS SEQUENTIAL LOGIC TABLE OF CONTENTS UNIT 1 DIGITAL SYSTEM AND BINARY NUMBERS PART 1 DIGITAL SYSTEM AND BINARY NUMBERS PART 2 BOOLEAN ALGEBRA AND GATE LEVEL MINIMIZATION UNIT 2 COMBINATIONAL LOGIC UNIT 3 SEQUENTIAL CIRCUITS UNIT 4 MEMORY PROGRAMMABLE LOGIC AND DESIGN UNIT 5 ASYNCHRONOUS SEQUENTIAL LOGIC DIGITAL LOGIC DESIGN SECOND EDITION PROVIDES A BASIC UNDERSTANDING OF DIGITAL LOGIC DESIGN WITH EMPHASIS ON THE TWO ALTERNATIVE METHODS OF DESIGN AVAILABLE TO THE DIGITAL ENGINEER THIS BOOK DESCRIBES THE DIGITAL DESIGN TECHNIQUES WHICH HAVE BECOME INCREASINGLY IMPORTANT ORGANIZED INTO 14 CHAPTERS THIS EDITION BEGINS WITH AN OVERVIEW OF THE ESSENTIAL LAWS OF BOOLEAN ALGEBRA K MAP PLOTTING TECHNIQUES AS WELL AS THE SIMPLIFICATION OF BOOLEAN FUNCTIONS THIS TEXT THEN PRESENTS THE PROPERTIES AND DEVELOPS THE CHARACTERISTIC EQUATIONS OF A NUMBER OF VARIOUS TYPES OF FLIP FLOP OTHER CHAPTERS CONSIDER THE DESIGN OF SYNCHRONOUS AND ASYNCHRONOUS COUNTERS USING EITHER DISCRETE FLIP FLOPS OR SHIFT REGISTERS THIS BOOK DISCUSSES AS WELL THE DESIGN AND IMPLEMENTATION OF EVENT DRIVEN LOGIC CIRCUITS USING THE NAND SEQUENTIAL EQUATION THE FINAL CHAPTER DEALS WITH SIMPLE CODING TECHNIQUES AND THE PRINCIPLES OF ERROR DETECTION AND CORRECTION THIS BOOK IS A VALUABLE RESOURCE FOR UNDERGRADUATE STUDENTS DIGITAL ENGINEERS AND SCIENTISTS NEW UPDATED AND EXPANDED TOPICS IN THE FOURTH EDITION INCLUDE EBCDIC GREY CODE PRACTICAL APPLICATIONS OF FLIP FLOPS LINEAR AND SHAFT ENCODERS MEMORY ELEMENTS AND FPGAS THE SECTION ON FAULT FINDING HAS BEEN EXPANDED A NEW CHAPTER IS DEDICATED TO THE INTERFACE BETWEEN DIGITAL COMPONENTS AND ANALOG VOLTAGES A HIGHLY ACCESSIBLE COMPREHENSIVE AND FULLY UP TO DATE DIGITAL SYSTEMS TEXT A WELL KNOWN AND RESPECTED TEXT NOW REVAMPED FOR CURRENT COURSES PART OF THE NEWNES SUITE OF TEXTS FOR HND 1ST YEAR MODULES IN THIS VOLUME DRAWN FROM THE VLSI HANDBOOK THE FOCUS IS ON LOGIC DESIGN AND COMPOUND SEMICONDUCTOR DIGITAL INTEGRATED CIRCUIT TECHNOLOGY EXPERT DISCUSSIONS COVER TOPICS RANGING FROM THE BASICS OF LOGIC EXPRESSIONS AND SWITCHING THEORY TO SOPHISTICATED PROGRAMMABLE LOGIC DEVICES AND THE DESIGN OF GAAS

MESFET AND HEMT LOGIC CIRCUITS LOGIC DESIGN THE SECOND EDITION OF THIS TEXT PROVIDES AN INTRODUCTION TO THE ANALYSIS AND DESIGN OF DIGITAL CIRCUITS AT A LOGIC INSTEAD OF ELECTRONICS LEVEL IT COVERS A RANGE OF TOPICS FROM NUMBER SYSTEM THEORY TO ASYNCHRONOUS LOGIC DESIGN A SOLUTION MANUAL IS AVAILABLE TO INSTRUCTORS ONLY REQUESTS MUST BE MADE ON OFFICIAL SCHOOL STATIONERY THIS BOOK PROVIDES THE READER WITH THE KEY CONCEPTS AND TECHNIQUES OF MODERN DIGITAL LOGIC DESIGN AND APPLICATIONS THIS CONCISE TREATMENT PROVIDES ESSENTIAL DEVELOPMENT AND EXPLANATIONS FOR BOTH CLASSICAL AND MODERN TOPICS THE MODERN TOPICS INCLUDE UNICODE UNIPOLAR TRANSISTORS COPPER TECHNOLOGY FLASH MEMORY HDL VERILOG AND LOGIC SIMULATION SOFTWARE TOOLS ALSO COVERED ARE COMBINATORIAL LOGIC CIRCUITS AND TRANSISTOR CIRCUITS IT WILL BE AN ESSENTIAL RESOURCE FOR COMPUTER SCIENTISTS LOGIC CIRCUIT DESIGNERS AND COMPUTER ENGINEERS THIS BOOK PRESENTS THE BASIC CONCEPTS USED IN DESIGNING AND ANALYZING DIGITAL CIRCUITS AND INTRODUCES DIGITAL COMPUTER ORGANIZATION AND DESIGN PRINCIPLES THE FIRST PART OF THE BOOK TEACHES YOU THE NUMBER SYSTEMS LOGIC GATES LOGIC FAMILIES BOOLEAN ALGEBRA SIMPLIFICATION OF LOGIC FUNCTIONS ANALYSIS AND DESIGN OF COMBINATIONAL CIRCUITS USING SSI AND MSI CIRCUITS IT ALSO EXPLAINS LATCHES AND FLIP FLOPS TYPES OF COUNTERS SYNCHRONOUS AND ASYNCHRONOUS COUNTER DESIGN AND APPLICATIONS AND SHIFT REGISTERS AND ITS APPLICATIONS THE SECOND PART OF THE BOOK TEACHES YOU FUNCTIONAL UNITS OF COMPUTER VON NEUMANN AND HARVARD ARCHITECTURES PROCESSOR ORGANIZATION CONTROL UNIT HARDWIRED CONTROL UNIT AND MICROPROGRAMMED CONTROL UNIT PROCESSOR INSTRUCTIONS INSTRUCTION CYCLE INSTRUCTION FORMATS INSTRUCTION PIPELINING RISC AND CISC ARCHITECTURES INTERRUPTS INTERRUPT HANDLING MULTIPROCESSOR SYSTEMS MULTICORE PROCESSORS MEMORY AND I O ORGANIZATIONS THIS TEXT DEMONSTRATES STATE OF THE ART TECHNOLOGIES FOR THE DESIGN OF MODERN LOGIC CIRCUITS INCLUDING CAD TOOLS RAPID PROTOTYPING AND PROGRAMMABLE LOGIC DEVICES IT PROVIDES PRACTICE IN TRADITIONAL TECHNIQUES OF LOGIC DESIGN AND INCLUDES EXAMPLES OF IMPLEMENTATIONS FROM MANY CAD TOOLS THIS TEXTBOOK BASED ON THE AUTHORS FIFTEEN YEARS OF TEACHING IS A COMPLETE TEACHING TOOL FOR TURNING STUDENTS INTO LOGIC DESIGNERS IN ONE SEMESTER EACH CHAPTER DESCRIBES NEW CONCEPTS GIVING EXTENSIVE APPLICATIONS AND EXAMPLES ASSUMING NO PRIOR KNOWLEDGE OF DISCRETE MATHEMATICS THE AUTHORS INTRODUCE ALL BACKGROUND IN PROPOSITIONAL LOGIC ASYMPTOTICS GRAPHS HARDWARE AND ELECTRONICS IMPORTANT FEATURES OF THE PRESENTATION ARE ALL MATERIAL IS PRESENTED IN FULL DETAIL EVERY DESIGNED CIRCUIT IS FORMALLY SPECIFIED AND IMPLEMENTED THE CORRECTNESS OF THE IMPLEMENTATION IS PROVED AND THE COST AND DELAY ARE ANALYZED ALGORITHMIC SOLUTIONS ARE OFFERED FOR LOGICAL SIMULATION COMPUTATION OF PROPAGATION DELAY AND MINIMUM CLOCK PERIOD CONNECTIONS ARE DRAWN FROM THE PHYSICAL ANALOG WORLD TO THE DIGITAL ABSTRACTION THE LANGUAGE OF GRAPHS IS USED TO DESCRIBE FORMULAS AND CIRCUITS HUNDREDS OF FIGURES EXAMPLES AND EXERCISES ENHANCE UNDERSTANDING THE EXTENSIVE WEBSITE ENG TAU AC IL GUY EVEN MEDINA INCLUDES TEACHING SLIDES LINKS TO LOGISIM AND A DLX ASSEMBLY SIMULATOR AN EXPLORATION OF BOTH THE TRADITIONAL TOPICS OF LOGIC DESIGN AND THE VARIOUS NEW TOPICS AND APPROACHES THAT ADDRESS THE SPECIAL PROBLEMS POSED BY VLSI THE AUTHOR OUTLINES A NEW METHOD FOR COMPUTATION OF MAXIMUM COMPATIBLE CLASSES AND FOR INFORMATION OF STATE TABLES OF SEQUENTIAL MACHINES IN ADDITION HE DISCUSSES IMPORTANT RESULTS AS RIGOROUSLY PROVED THEOREMS INCLUDES A DETAILED DISCUSSION OF THE QUINE MCCLUSKY METHOD CONSIDERS PLA MINIMIZATION AND FOLDING METHODS AND EXPLORES DESIGN FOR TESTABILITY BUILT IN SELF TEST AND LSSD METHODS THIS TEXT IS INTENDED FOR A FIRST COURSE IN DIGITAL LOGIC DESIGN AT THE SOPHOMORE OR JUNIOR LEVEL FOR ELECTRICAL ENGINEERING COMPUTER ENGINEERING AND COMPUTER SCIENCE PROGRAMS AS WELL AS FOR A NUMBER OF OTHER DISCIPLINES SUCH AS PHYSICS AND MATHEMATICS THE BOOK CAN ALSO BE USED FOR SELF STUDY OR FOR REVIEW BY PRACTICING ENGINEERS AND COMPUTER SCIENTISTS NOT INTIMATELY FAMILIAR WITH THE SUBJECT AFTER COMPLETING THIS TEXT THE STUDENT SHOULD BE PREPARED FOR A SECOND ADVANCED COURSE IN DIGITAL DESIGN SWITCHING AND AUTOMATA THEORY MICROPROCESSORS OR COMPUTER ORGANIZATION REQUEST INSPECTION COPY PACKED WITH NEARLY 400 ILLUSTRATIVE EXAMPLES AND EXERCISES THIS BOOK BEGINS WITH BOOLEAN ALGEBRA AND COMBINATION LOGIC CIRCUITS AND GOES ON TO EXPLAIN THE VARIOUS METHODS OF SIMPLIFICATION OF BOOLEAN EXPRESSIONS A BRIEF DEVIATION IS TAKEN TO LOOK AT VARIOUS LOGIC FAMILIES THEIR STRUCTURE AND OPERATION THIS IS FOLLOWED BY A SIMPLE APPROACH TO THE DESIGN OF COMBINATION CIRCUITS WITH MSI COMPONENTS AND PROGRAMMABLE LOGIC DEVICES WITH ILLUSTRATIONS OF ADDERS COMPARATORS DECODERS ENCODERS MULTIPLIERS AND VARIOUS FORMS OF PLDS A TREATISE ON SEQUENTIAL CIRCUITS BEGINS WITH EXPLANATIONS OF ALL TYPES OF FLIP FLOPS AND THEIR APPLICATIONS BACKED BY DELIGHTFUL EXAMPLES AND EXERCISES THE BOOK CONCLUDES WITH AN INTERESTING CHAPTER ON THE ANALYSIS AND DESIGN OF SYNCHRONOUS SEQUENTIAL CIRCUITS WHILE THE BOOK IS A REMARKABLE REFERENCE MATERIAL FOR LOGIC DESIGN ENGINEERS IT PROVIDES A SIMPLIFIED AND WELL ILLUSTRATED APPROACH TO STUDENTS WHO DESIRE A SYSTEMATIC AND VIBRANT APPROACH TO THE STUDY OF LOGIC DESIGN CONTENTS LOGIC DESIGN USING MSI COMPONENTS AND PROGRAMMABLE LOGIC DEVICES SIMPLIFICATION OF BOOLEAN EXPRESSION LOGIC GATES AND FAMILIES FLIP FLOPS AND THEIR APPLICATIONS SYNCHRONOUS SEQUENTIAL CIRCUITS APPENDIX LOGIC DESIGN A REVIEW OF THEORY AND PRACTICE DESCRIBES COMPUTER DESIGN FOCUSING ON THE THEORETICAL AND PRACTICAL RELATIONSHIPS OF SEQUENTIAL MACHINES THIS BOOK REVIEWS THE MAJOR TECHNOLOGIES THAT MAKE THE COMPUTER PARTICULARLY THE SWITCHING CIRCUIT DESIGN INVOLVING VACUUM TUBES DISCRETE TRANSISTORS AND INTEGRATED CIRCUITS THE SWITCHING THEORY ASSOCIATED IN THE LOGIC DESIGN OF SEQUENTIAL MACHINE MODELS AND SYNTHESIS TECHNIQUES LEAD TO UNDERSTANDING OF CONSTRAINTS DUE TO STRAY DELAYS INPUT CHANGE RESTRICTIONS AND MEMORY ELEMENT OPERATION THIS TEXT ALSO DESCRIBES THE LOGIC DESIGN PROCESSES INCLUDING THE USE OF FLOW CHARTS DESIGN LANGUAGES SIMULATIONS AND SYSTEM TIMING THREE ASPECTS NEEDED PRIOR TO THE DESIGN PHASE THAT SHOULD BE CONSIDERED BY THE PROGRAMMER ARE DATA FLOW THE MICRO OPERATIONS AND THEIR SEQUENCING AND THE TIMING MACHINE CYCLE OR LOGIC THE SIGNIFICANCE BETWEEN THEORETICAL AND MATHEMATICAL MODELS CAN THEN BE DETERMINED THROUGH FAULT DETECTION MASKING

DIGITAL SIMULATION AND TEST GENERATION THIS BOOK CAN BE BENEFICIAL FOR COMPUTER ENGINEERING INSTRUCTORS AND ADVANCED STUDENTS IN COMPUTER SCIENCE THERE ARE THREE OUTSTANDING POINTS OF THIS BOOK FIRST FOR THE FIRST TIME A COLLECTIVE POINT OF VIEW ON THE ROLE OF ARTIFICIAL INTELLIGENCE PARADIGM IN LOGIC DESIGN IS INTRODUCED SECOND THE BOOK REVEALS NEW HORIZONS OF LOGIC DESIGN TOOLS ON THE TECHNOLOGIES OF THE NEAR FUTURE FINALLY THE CONTRIBUTORS OF THE BOOK ARE TWENTY RECOGNIZABLE LEADERS IN THE FIELD FROM THE SEVEN RESEARCH CENTRES THE CHAPTERS OF THE BOOK HAVE BEEN CAREFULLY REVIEWED BY EQUALLY QUALIFIED EXPERTS ALL CONTRIBUTORS ARE EXPERIENCED IN PRACTICAL ELECTRONIC DESIGN AND IN TEACHING ENGINEERING COURSES THUS THE BOOK'S STYLE IS ACCESSIBLE TO GRADUATE STUDENTS PRACTICAL ENGINEERS AND RESEARCHERS TODAY'S ENGINEERS WILL CONFRONT THE CHALLENGE OF A NEW COMPUTING PARADIGM RELYING ON MICRO AND NANOSCALE DEVICES LOGIC DESIGN OF NANOSCALE DEVICES BUILDS A FOUNDATION FOR LOGIC IN NANODIMENSIONS AND GUIDES YOU IN THE DESIGN AND ANALYSIS OF NANOSCALE DEVICES USING CAD THE AUTHORS PRESENT DATA STRUCTURES DEVELOPED TOWARD APPLICATIONS RATHER THAN A PURELY THEORETICAL TREATMENT REQUIRING ONLY BASIC LOGIC AND CIRCUITS BACKGROUND LOGIC DESIGN OF NANOSCALE DEVICES DRAWS CONNECTIONS BETWEEN TRADITIONAL APPROACHES TO DESIGN AND MODERN DESIGN IN NANODIMENSIONS THE BOOK BEGINS WITH AN INTRODUCTION TO THE DIRECTIONS AND BASIC METHODOLOGY OF LOGIC DESIGN AT THE NANOSCALE THEN PROCEEDS TO NANOTECHNOLOGIES AND CAD GRAPHICAL REPRESENTATION OF SWITCHING FUNCTIONS AND NETWORKS WORD LEVEL AND LINEAR WORD LEVEL DATA STRUCTURES 3D TOPOLOGIES BASED ON HYPERCUBES MULTILEVEL CIRCUIT DESIGN AND FAULT TOLERANT COMPUTATION IN HYPERCUBE LIKE STRUCTURES THE AUTHORS PROPOSE DESIGN SOLUTIONS AND TECHNIQUES GOING BEYOND THE UNDERLYING TECHNOLOGY TO PROVIDE MORE APPLIED KNOWLEDGE THIS DESIGN ORIENTED REFERENCE IS WRITTEN FOR ENGINEERS INTERESTED IN DEVELOPING THE NEXT GENERATION OF INTEGRATED CIRCUITRY ILLUSTRATING THE DISCUSSION WITH APPROXIMATELY 250 FIGURES AND TABLES 100 EQUATIONS 250 PRACTICAL EXAMPLES AND 100 PROBLEMS EACH CHAPTER CONCLUDES WITH A SUMMARY REFERENCES AND A SUGGESTED READING SECTION PACKED WITH NEARLY 400 ILLUSTRATIVE EXAMPLES AND EXERCISES THIS BOOK BEGINS WITH BOOLEAN ALGEBRA AND COMBINATION LOGIC CIRCUITS AND GOES ON TO EXPLAIN THE VARIOUS METHODS OF SIMPLIFICATION OF BOOLEAN EXPRESSIONS A BRIEF DEVIATION IS TAKEN TO LOOK AT VARIOUS LOGIC FAMILIES THEIR STRUCTURE AND OPERATION THIS IS FOLLOWED BY A SIMPLE APPROACH TO THE DESIGN OF COMBINATION CIRCUITS WITH MSI COMPONENTS AND PROGRAMMABLE LOGIC DEVICES WITH ILLUSTRATIONS OF ADDERS COMPARATORS DECODERS ENCODERS MULTIPLIERS AND VARIOUS FORMS OF PLDS A TREATISE ON SEQUENTIAL CIRCUITS BEGINS WITH EXPLANATIONS OF ALL TYPES OF FLIP FLOPS AND THEIR APPLICATIONS BACKED BY DELIGHTFUL EXAMPLES AND EXERCISES THE BOOK CONCLUDES WITH AN INTERESTING CHAPTER ON THE ANALYSIS AND DESIGN OF SYNCHRONOUS SEQUENTIAL CIRCUITS WHILE THE BOOK IS A REMARKABLE REFERENCE MATERIAL FOR LOGIC DESIGN ENGINEERS IT PROVIDES A SIMPLIFIED AND WELL ILLUSTRATED APPROACH TO STUDENTS WHO DESIRE A SYSTEMATIC AND VIBRANT APPROACH TO THE STUDY OF LOGIC DESIGN CONTENTS LOGIC DESIGN USING MSI COMPONENTS AND PROGRAMMABLE LOGIC DEVICES SIMPLIFICATION OF BOOLEAN EXPRESSION LOGIC GATES AND FAMILIES FLIP FLOPS AND THEIR APPLICATIONS SYNCHRONOUS SEQUENTIAL CIRCUITS APPENDIX THIS TEXTBOOK FOR COURSES IN DIGITAL SYSTEMS DESIGN INTRODUCES STUDENTS TO THE FUNDAMENTAL HARDWARE USED IN MODERN COMPUTERS COVERAGE INCLUDES BOTH THE CLASSICAL APPROACH TO DIGITAL SYSTEM DESIGN I.E. PEN AND PAPER IN ADDITION TO THE MODERN HARDWARE DESCRIPTION LANGUAGE HDL DESIGN APPROACH COMPUTER BASED USING THIS TEXTBOOK ENABLES READERS TO DESIGN DIGITAL SYSTEMS USING THE MODERN HDL APPROACH BUT THEY HAVE A BROAD FOUNDATION OF KNOWLEDGE OF THE UNDERLYING HARDWARE AND THEORY OF THEIR DESIGNS THIS BOOK IS DESIGNED TO MATCH THE WAY THE MATERIAL IS ACTUALLY TAUGHT IN THE CLASSROOM TOPICS ARE PRESENTED IN A MANNER WHICH BUILDS FOUNDATIONAL KNOWLEDGE BEFORE MOVING ONTO ADVANCED TOPICS THE AUTHOR HAS DESIGNED THE PRESENTATION WITH LEARNING GOALS AND ASSESSMENT AT ITS CORE EACH SECTION ADDRESSES A SPECIFIC LEARNING OUTCOME THAT THE STUDENT SHOULD BE ABLE TO DO AFTER ITS COMPLETION THE CONCEPT CHECKS AND EXERCISE PROBLEMS PROVIDE A RICH SET OF ASSESSMENT TOOLS TO MEASURE STUDENT PERFORMANCE ON EACH OUTCOME THIS BOOK IS DESIGNED TO SERVE AS A HANDS ON PROFESSIONAL REFERENCE WITH ADDITIONAL UTILITY AS A TEXTBOOK FOR UPPER UNDERGRADUATE AND SOME GRADUATE COURSES IN DIGITAL LOGIC DESIGN THIS BOOK IS ORGANIZED IN SUCH A WAY THAT THAT IT CAN DESCRIBE A NUMBER OF RTL DESIGN SCENARIOS FROM SIMPLE TO COMPLEX THE BOOK CONSTRUCTS THE LOGIC DESIGN STORY FROM THE FUNDAMENTALS OF LOGIC DESIGN TO ADVANCED RTL DESIGN CONCEPTS KEEPING IN VIEW THE IMPORTANCE OF MINIATURIZATION TODAY THE BOOK GIVES PRACTICAL INFORMATION ON THE ISSUES WITH ASIC RTL DESIGN AND HOW TO OVERCOME THESE CONCERNS IT CLEARLY EXPLAINS HOW TO WRITE AN EFFICIENT RTL CODE AND HOW TO IMPROVE DESIGN PERFORMANCE THE BOOK ALSO DESCRIBES ADVANCED RTL DESIGN CONCEPTS SUCH AS LOW POWER DESIGN MULTIPLE CLOCK DOMAIN DESIGN AND SOC BASED DESIGN THE PRACTICAL ORIENTATION OF THE BOOK MAKES IT IDEAL FOR TRAINING PROGRAMS FOR PRACTICING DESIGN ENGINEERS AND FOR SHORT TERM VOCATIONAL PROGRAMS THE CONTENTS OF THE BOOK WILL ALSO MAKE IT A USEFUL READ FOR STUDENTS AND HOBBYISTS NUMBER SYSTEMS BASE 2 ARITHMETIC BOOLEAN ALGEBRA SPECIAL BOOLEAN FUNCTIONS AND BASIC LOGIC CONVENTIONS MINIMIZATION PROCEDURES FOR BOOLEAN FUNCTION BINARY ARITHMETIC UNITS DECIMAL ARITHMETIC INTRODUCTION TO SEQUENTIAL CIRCUIT DESIGN PRACTICAL FLIP FLOP CIRCUITS BINARY COUNTERS REGISTER DESIGN TECHNIQUES ADVANCED ARITHMETIC UNITS THE THIRD EDITION OF DIGITAL LOGIC TECHNIQUES PROVIDES A CLEAR AND COMPREHENSIVE TREATMENT OF THE REPRESENTATION OF DATA OPERATIONS ON DATA COMBINATIONAL LOGIC DESIGN SEQUENTIAL LOGIC COMPUTER ARCHITECTURE AND PRACTICAL DIGITAL CIRCUITS A WEALTH OF EXERCISES AND WORKED EXAMPLES IN EACH CHAPTER GIVE STUDENTS VALUABLE EXPERIENCE IN APPLYING THE CONCEPTS AND TECHNIQUES DISCUSSED BEGINNING WITH AN OBJECTIVE COMPARISON BETWEEN ANALOGUE AND DIGITAL REPRESENTATION OF DATA THE AUTHOR PRESENTS THE BOOLEAN ALGEBRA FRAMEWORK FOR DIGITAL ELECTRONICS DEVELOPS COMBINATIONAL LOGIC DESIGN FROM FIRST PRINCIPLES AND PRESENTS CELLULAR LOGIC AS AN ALTERNATIVE STRUCTURE MORE RELEVANT THAN CANONICAL FORMS TO

VLSI IMPLEMENTATION HE THEN ADDRESSES SEQUENTIAL LOGIC DESIGN AND DEVELOPS A STRATEGY FOR DESIGNING FINITE STATE MACHINES GIVING STUDENTS A SOLID FOUNDATION FOR MORE ADVANCED STUDIES IN AUTOMATA THEORY THE SECOND HALF OF THE BOOK FOCUSES ON THE DIGITAL SYSTEM AS AN ENTITY HERE THE AUTHOR EXAMINES THE IMPLEMENTATION OF LOGIC SYSTEMS IN PROGRAMMABLE HARDWARE OUTLINES THE SPECIFICATION OF A SYSTEM EXPLORES ARITHMETIC PROCESSORS AND ELUCIDATES FAULT DIAGNOSIS THE FINAL CHAPTER EXAMINES THE ELECTRICAL PROPERTIES OF LOGIC COMPONENTS COMPARES THE DIFFERENT LOGIC FAMILIES AND HIGHLIGHTS THE PROBLEMS THAT CAN ARISE IN CONSTRUCTING PRACTICAL HARDWARE SYSTEMS THIS TEXT AND REFERENCE PROVIDES STUDENTS AND PRACTICING ENGINEERS WITH AN INTRODUCTION TO THE CLASSICAL METHODS OF DESIGNING ELECTRICAL CIRCUITS BUT INCORPORATES MODERN LOGIC DESIGN TECHNIQUES USED IN THE LATEST MICROPROCESSORS MICROCONTROLLERS MICROCOMPUTERS AND VARIOUS LSI COMPONENTS THE BOOK PROVIDES A REVIEW OF THE CLASSICAL METHODS E G THE BASIC CONCEPTS OF BOOLEAN ALGEBRA COMBINATIONAL LOGIC AND SEQUENTIAL LOGIC PROCEDURES BEFORE ENGAGING IN THE PRACTICAL DESIGN APPROACH AND THE USE OF COMPUTER AIDED TOOLS THE BOOK IS ENRICHED WITH NUMEROUS EXAMPLES AND THEIR SOLUTIONS OVER 500 ILLUSTRATIONS AND INCLUDES A CD ROM WITH SIMULATIONS ADDITIONAL FIGURES AND THIRD PARTY SOFTWARE TO ILLUSTRATE THE CONCEPTS DISCUSSED IN THE BOOK MARKET DESC ELECTRICAL ENGINEERS LOGIC DESIGNERS IN COMPUTER INDUSTRY SPECIAL FEATURES PROVIDES EXTENSIVE EXERCISES FOR READERS TO WORK OUT WHILE STUDYING A TOPIC PRESENTS UP TO DATE APPROACHES IN LOGIC DESIGN IN LATER CHAPTERS DISCUSSES THE RELATIONSHIP BETWEEN DIGITAL SYSTEM DESIGN AND COMPUTER ARCHITECTURE ABOUT THE BOOK THIS IS AN INTRODUCTORY LEVEL BOOK ON THE PRINCIPLES OF DIGITAL LOGIC DESIGN WHILE PROVIDING COVERAGE TO THE USUAL TOPICS IN COMBINATIONAL AND SEQUENTIAL CIRCUIT PRINCIPLES IT ALSO INCLUDES A CHAPTER ON THE USE OF THE HARDWARE DESCRIPTION LANGUAGE ABEL IN THE DESIGN OF CIRCUITS USING PLDS AND A CHAPTER ON COMPUTER ORGANIZATION BOOLEAN ALGEBRA AND COMBINATIONAL NETWORKSPRINCIPLE OF DUALITY BOOLEAN FORMULAS AND FUNCTIONS NORMAL FORMULAS CANONICAL FORMULAS MINTERM CANONICAL FORMULAS M NOTATION MANIPULATIONS OF BOOLEAN FORMULAS EQUATION COMPLEMENTATION EXPANSION ABOUT A VARIABLE EQUATION SIMPLIFICATION THE REDUCTION THEOREMS MINTERM CANONICAL FORMULAS MAXTERM CANONICAL FORMULAS COMPLEMENTS OF CANONICAL FORMULAS GATES AND COMBINATIONAL NETWORKS GATES COMBINATIONAL NETWORKS ANALYSIS PROCEDURE SYNTHESIS PROCEDURE A LOGIC DESIGN EXAMPLE INCOMPLETE BOOLEAN FUNCTIONS AND DON T CARE CONDITIONS DESCRIBING INCOMPLETE BOOLEAN FUNCTIONS DON T CARE CONDITIONS IN LOGIC DESIGN ADDITIONAL BOOLEAN OPERATIONS AND GATES THE NAND FUNCTIONS THE NOR FUNCTIONS UNIVERSAL GATES NAND GATE REALIZATIONS NOR GATE REALIZATIONS THE EXCLUSIVE OR FUNCTION THE EXCLUSIVE NOR FUNCTION SIMPLIFICATION OF BOOLEAN EXPRESSIONSFORMULATION OF THE SIMPLIFICATION PROBLEM CRITERIA OF MINIMALITY THE SIMPLIFICATION PROBLEM PRIME IMPLICANTS AND IRREDUNDANT DISJUNCTIVE EXPRESSIONS IMPLIES SUBSUMES IMPLICANTS AND PRIME IMPLICANTS IRREDUNDANT DISJUNCTIVE NORMAL FORMULAS PRIME IMPLICANTS AND IRREDUNDANT CONJUNCTIVE EXPRESSIONS KARNAUGH MAPS ONE VARIABLE AND TWO VARIABLE MAPS THREE VARIABLE AND FOUR VARIABLE MAPS KARNAUGH MAPS AND CANONICAL FORMULAS PRODUCT AND SUM TERM REPRESENTATIONS ON KARNAUGH MAPS USING KARNAUGH MAPS TO OBTAIN MINIMAL EXPRESSIONS FOR COMPLETE BOOLEAN FUNCTIONS PRIME IMPLICANTS AND KARNAUGH MAPS ESSENTIAL PRIME IMPLICANTS MINIMAL SUMS MINIMAL PRODUCTS MINIMAL EXPRESSIONS OF INCOMPLETE BOOLEAN FUNCTIONS MINIMAL SUMS MINIMAL PRODUCTS THE QUINE MCCLUSKEY METHOD OF GENERATING PRIME IMPLICANTS AND PRIME IMPLICATES PRIME IMPLICANTS AND THE QUINE MCCLUSKEY METHOD ALGORITHM FOR GENERATING PRIME IMPLICANTS PRIME IMPLICATES AND THE QUINE MCCLUSKEY METHOD PRIME IMPLICANT PRIME IMPLICATE TABLES AND IRREDUNDANT EXPRESSIONS PETRICK S METHOD OF DETERMINING IRREDUNANT EXPRESSIONS PRIME IMPLICATE TABLES AND IRREDUNDANT CONJUNCTIVE NORMAL FORMULAS PRIME IMPLICANT PRIME IMPLICATE TABLE REDUCTIONS ESSENTIAL PRIME IMPLICANTS COLUMN AND ROW REDUCTIONS A PRIME IMPLICANT SELECTION PROCEDURE DECIMAL METHOD FOR OBTAINING PRIME IMPLICANTS MAP ENTERED VARIABLES LOGIC LEVELS AND FAMILIESLOGIC LEVELS INTEGRATION LEVELS OUTPUT SWITCHING TIMES THE PROPAGATION DELAY FAN OUT AND FAN IN EXTENSION TO OTHER LOGIC GATES LOGIC CASCADES TRANSISTOR TRANSISTOR LOGIC WIRED LOGIC TTL WITH TOTEM POLE OUTPUT THEE STATE OUTPUT TTL SCHOTTKY TTL THE MOS FIELD EFFECT TRANSISTOR OPERATION OF N CHANNEL ENHANCEMENT TYPE MOSFET THE N CHANNEL DEPLETION TYPE MOSFET THE P CHANNEL MOSFETS CIRCUIT SYMBOLS THE MOSFET AS A RESISTOR NMOS AND PMOS LOGIC THE NMOS INVERTERS NMOS NOR GATE NMOS NAND GATE PMOS LOGIC PERFORMANCE THE CMOS INVERTER CMOS NOR GATE CMOS NAND GATE PERFORMANCE COMPARISON OF THE ABOVE LOGIC FAMILIES LOGIC DESIGN WITH MSI COMPONENTS AND PROGRAMMABLE LOGIC DEVICESBINARY ADDERS AND SUBTRACTORS BINARY SUBTRACTORS CARRY LOOKAHEAD ADDERS DECIMAL ADDERS COMPARATORS DECODERS LOGIC DESIGN USING DECODERS DECODERS WITH AN ENABLE INPUT ENCODERS MULTIPLEXERS LOGIC DESIGN WITH MULTIPLEXERS PROGRAMMABLE LOGIC DEVICES PLDS PLD NOTATION PROGRAMMABLE READ ONLY MEMORIES PROMS PROGRAMMABLE LOGIC ARRAYS PLAS PROGRAMMABLE ARRAY LOGIC PAL DEVICES FLIP FLOPS AND SIMPLE FLIP FLOP APPLICATIONSTHE BASIC BISTABLE ELEMENT LATCHES THE SR LATCH AN APPLICATION OF THE SR LATCH A SWITCH DEBOUNCER THE SR LATCH THE GATED SR LATCH THE GATED D LATCH MASTER SLAVE FLIP FLOPS PULSE TRIGGERED FLIP FLOPS THE MASTER SLAVE SR FLIP FLOP THE MASTER SLAVE JK FLIP FLOP EDGE TRIGGERED FLIP FLOP THE POSITIVE EDGE TRIGGERED D FLIP FLOP NEGATIVE EDGE TRIGGERED D FLIP FLOPS CHARACTERISTIC EQUATIONS REGISTERS COUNTERS BINARY RIPPLE COUNTERS SYNCHRONOUS BINARY COUNTERS COUNTERS BASED ON SHIFT REGISTERS DESIGN OF SYNCHRONOUS COUNTERS DESIGN OF A SYNCHRONOUS MOD 6 COUNTER USING CLOCKED JK FLIP FLOPS DESIGN OF A SYNCHRONOUS MOD 6 COUNTER USING CLOCKED D T OR SR FLIP FLOPS SYNCHRONOUS SEQUENTIAL NETWORKSSTRUCTURE AND OPERATION OF CLOCKED SYNCHRONOUS SEQUENTIAL NETWORKS ANALYSIS OF CLOCKED SYNCHRONOUS SEQUENTIAL NETWORKS EXCITATION AND OUTPUT EXPRESSIONS TRANSITION EQUATIONS TRANSITION TABLES EXCITATION TABLES STATE TABLES STATE DIAGRAMS NETWORK TERMINAL BEHAVIOR TEXTBOOK PRINCIPLES OF MODERN DIGITAL DESIGN FROM UNDERLYING PRINCIPLES TO IMPLEMENTATION A THOROUGH INTRODUCTION TO DIGITAL LOGIC DESIGN WITH THIS

BOOK READERS DISCOVER THE CONNECTION BETWEEN LOGIC DESIGN PRINCIPLES AND THEORY AND THE LOGIC DESIGN AND OPTIMIZATION TECHNIQUES USED IN PRACTICE THEREFORE THEY NOT ONLY LEARN HOW TO IMPLEMENT CURRENT DESIGN TECHNIQUES BUT ALSO HOW THESE TECHNIQUES WERE DEVELOPED AND WHY THEY WORK WITH A DEEPER UNDERSTANDING OF THE UNDERLYING PRINCIPLES READERS BECOME BETTER PROBLEM SOLVERS WHEN FACED WITH NEW AND DIFFICULT DIGITAL DESIGN CHALLENGES PRINCIPLES OF MODERN DIGITAL DESIGN BEGINS WITH AN EXAMINATION OF NUMBER SYSTEMS AND BINARY CODE FOLLOWED BY THE FUNDAMENTAL CONCEPTS OF DIGITAL LOGIC NEXT READERS ADVANCE TO COMBINATIONAL LOGIC DESIGN ARMED WITH THIS FOUNDATION THEY ARE THEN INTRODUCED TO VHDL A POWERFUL LANGUAGE USED TO DESCRIBE THE FUNCTION OF DIGITAL CIRCUITS AND SYSTEMS ALL THE MAJOR TOPICS NEEDED FOR A THOROUGH UNDERSTANDING OF MODERN DIGITAL DESIGN ARE PRESENTED INCLUDING FUNDAMENTALS OF SYNCHRONOUS SEQUENTIAL CIRCUITS AND SYNCHRONOUS SEQUENTIAL CIRCUIT DESIGN COMBINATIONAL LOGIC DESIGN USING VHDL COUNTER DESIGN SEQUENTIAL CIRCUIT DESIGN USING VHDL ASYNCHRONOUS SEQUENTIAL CIRCUITS VHDL BASED LOGIC DESIGN EXAMPLES ARE PROVIDED THROUGHOUT THE BOOK TO ILLUSTRATE BOTH THE UNDERLYING PRINCIPLES AND PRACTICAL DESIGN APPLICATIONS EACH CHAPTER IS FOLLOWED BY EXERCISES THAT ENABLE READERS TO PUT THEIR SKILLS INTO PRACTICE BY SOLVING REALISTIC DIGITAL DESIGN PROBLEMS AN ACCOMPANYING WEBSITE WITH QUARTUS II SOFTWARE ENABLES READERS TO REPLICATE THE BOOK S EXAMPLES AND PERFORM THE EXERCISES THIS BOOK CAN BE USED FOR EITHER A TWO OR ONE SEMESTER COURSE FOR UNDERGRADUATE STUDENTS IN ELECTRICAL AND COMPUTER ENGINEERING AND COMPUTER SCIENCE ITS THOROUGH EXPLANATION OF THEORY COUPLED WITH EXAMPLES AND EXERCISES ENABLES BOTH STUDENTS AND PRACTITIONERS TO MASTER AND IMPLEMENT MODERN DIGITAL DESIGN TECHNIQUES WITH CONFIDENCE FUNDAMENTALS OF SWITCHING THEORY AND LOGIC DESIGN DISCUSSES THE BASICS OF SWITCHING THEORY AND LOGIC DESIGN FROM A SLIGHTLY ALTERNATIVE POINT OF VIEW AND ALSO PRESENTS LINKS BETWEEN SWITCHING THEORY AND RELATED AREAS OF SIGNAL PROCESSING AND SYSTEM THEORY SWITCHING THEORY IS A BRANCH OF APPLIED MATHEMATIC PROVIDING MATHEMATICAL FOUNDATIONS FOR LOGIC DESIGN WHICH CAN BE CONSIDERED AS A PART OF DIGITAL SYSTEM DESIGN CONCERNING REALIZATIONS OF SYSTEMS WHOSE INPUTS AND OUTPUTS ARE DESCRIBED BY LOGIC FUNCTIONS

FUNDAMENTALS OF LOGIC DESIGN 2007-08-01

UPDATED WITH MODERN COVERAGE AND A STREAMLINED PRESENTATION THIS SIXTH EDITION ACHIEVES YET AGAIN AN UNMATCHED BALANCE BETWEEN THEORY AND APPLICATION AUTHORS CHARLES H ROTH JR AND LARRY L KINNEY CAREFULLY PRESENT THE THEORY THAT IS NECESSARY FOR UNDERSTANDING THE FUNDAMENTAL CONCEPTS OF LOGIC DESIGN WHILE NOT OVERWHELMING STUDENTS WITH THE MATHEMATICS OF SWITCHING THEORY DIVIDED INTO 20 EASY TO GRASP STUDY UNITS THE BOOK COVERS SUCH FUNDAMENTAL CONCEPTS AS BOOLEAN ALGEBRA LOGIC GATES DESIGN FLIP FLOPS AND STATE MACHINES BY COMBINING FLIP FLOPS WITH NETWORKS OF LOGIC GATES STUDENTS WILL LEARN TO DESIGN COUNTERS ADDERS SEQUENCE DETECTORS AND SIMPLE DIGITAL SYSTEMS AFTER COVERING THE BASICS THIS TEXT PRESENTS MODERN DESIGN TECHNIQUES USING PROGRAMMABLE LOGIC DEVICES AND THE VHDL HARDWARE DESCRIPTION LANGUAGE IMPORTANT NOTICE MEDIA CONTENT REFERENCED WITHIN THE PRODUCT DESCRIPTION OR THE PRODUCT TEXT MAY NOT BE AVAILABLE IN THE EBOOK VERSION

FUNDAMENTALS OF LOGIC DESIGN 1985

MASTER THE PRINCIPLES OF LOGIC DESIGN WITH THE EXCEPTIONAL BALANCE OF THEORY AND APPLICATION FOUND IN ROTH KINNEY JOHN S FUNDAMENTALS OF LOGIC DESIGN ENHANCED 7TH EDITION THIS EDITION INTRODUCES YOU TO TODAY S LATEST ADVANCES THE AUTHORS HAVE CAREFULLY DEVELOPED A CLEAR PRESENTATION THAT INTRODUCES THE FUNDAMENTAL CONCEPTS OF LOGIC DESIGN WITHOUT OVERWHELMING YOU WITH THE MATHEMATICS OF SWITCHING THEORY TWENTY ENGAGING EASY TO FOLLOW STUDY UNITS PRESENT BASIC CONCEPTS SUCH AS BOOLEAN ALGEBRA LOGIC GATE DESIGN FLIP FLOPS AND STATE MACHINES YOU LEARN TO DESIGN COUNTERS ADDERS SEQUENCE DETECTORS AND SIMPLE DIGITAL SYSTEMS AFTER MASTERING THE BASICS YOU PROGRESS TO MODERN DESIGN TECHNIQUES USING PROGRAMMABLE LOGIC DEVICES AS WELL AS VHDL HARDWARE DESCRIPTION LANGUAGE

FUNDAMENTALS OF LOGIC DESIGN 2009-03-13

WITH AN ABUNDANCE OF INSIGHTFUL EXAMPLES PROBLEMS AND COMPUTER EXPERIMENTS INTRODUCTION TO LOGIC DESIGN PROVIDES A BALANCED EASY TO READ TREATMENT OF THE FUNDAMENTAL THEORY OF LOGIC FUNCTIONS AND APPLICATIONS TO THE DESIGN OF DIGITAL DEVICES AND SYSTEMS REQUIRING NO PRIOR KNOWLEDGE OF ELECTRICAL CIRCUITS OR ELECTRONICS IT SUPPLIES THE

FUNDAMENTALS OF LOGIC DESIGN 2020

THIS TEXT WAS DEVELOPED SPECIFICALLY TO MEET THE NEEDS OF A SELF PACED COURSE THE BOOK PROVIDES BASIC MATHEMATICAL TOOLS NEEDED TO ANALYZE AND SYNTHESIZE AN IMPORTANT CLASS OF SWITCHING NETWORK IN ADDITION TO THE STANDARD READING MATERIAL AND PROBLEMS STUDY GUIDES AND OTHER AIDS FOR SELF STUDY ARE INCLUDED IN THE TEXT IT IS SUITABLE FOR BOTH ENGINEERING AND COMPUTER SCIENCE STUDENTS THE TEXT ATTEMPTS TO ACHIEVE A BALANCE BETWEEN THEORY AND APPLICATION FOR THIS REASON THE TEXT DOES NOT OVER EMPHASIZE THE MATHEMATICS OF SWITCHING THEORY HOWEVER IT DOES PRESENT THE THEORY WHICH IS NECESSARY FOR UNDERSTANDING THE FUNDAMENTAL CONCEPTS OF LOGIC DESIGN AFTER COMPLETING THIS TEXT THE STUDENT SHOULD BE PREPARED FOR A MORE ADVANCED DIGITAL SYSTEM DESIGN COURSE WHICH STRESSES MORE INTUITIVE CONCEPTS LIKE THE DEVELOPMENT OF ALGORITHMS FOR DIGITAL PROCESSES PARTITIONING OF DIGITAL SYSTEM INTO SUB SYSTEMS AND IMPLEMENTATION OF DIGITAL SYSTEMS USING CURRENTLY AVAILABLE HARDWARE

INTRODUCTION TO LOGIC DESIGN 2008-01-25

DESCRIPTION THE BOOK IS AN ATTEMPT TO MAKE DIGITAL LOGIC DESIGN EASY AND SIMPLE TO UNDERSTAND THE BOOK COVERS VARIOUS FEATURES OF LOGIC DESIGN USING LOTS OF EXAMPLES AND RELEVANT DIAGRAMS THE COMPLETE TEXT IS REVIEWED FOR ITS CORRECTNESS THIS BOOK IS AN OUTCOME OF SINCERE EFFORT AND HARD WORK TO BRING CONCEPTS OF DIGITAL LOGIC

DESIGN CLOSE TO THE AUDIENCE OF THIS BOOK THE SALIENT FEATURES OF THE BOOK EASY EXPLANATION OF DIGITAL SYSTEM AND BINARY NUMBERS WITH LOTS OF SOLVED EXAMPLES DETAILED COVERING OF BOOLEAN ALGEBRA AND GATE LEVEL MINIMIZATION WITH PROPER EXAMPLES AND DIAGRAMMATIC REPRESENTATION DETAILED ANALYSIS OF DIFFERENT COMBINATIONAL LOGIC CIRCUITS COMPLETE SYNCHRONOUS SEQUENTIAL LOGIC UNDERSTANDING DEEP UNDERSTANDING OF MEMORY AND PROGRAMMABLE LOGIC DETAILED ANALYSIS OF DIFFERENT ASYNCHRONOUS SEQUENTIAL LOGIC

TABLE OF CONTENTS UNIT 1 DIGITAL SYSTEM AND BINARY NUMBERS PART 1 DIGITAL SYSTEM AND BINARY NUMBERS PART 2 BOOLEAN ALGEBRA AND GATE LEVEL MINIMIZATION UNIT 2 COMBINATIONAL LOGIC UNIT 3 SEQUENTIAL CIRCUITS UNIT 4 MEMORY PROGRAMMABLE LOGIC AND DESIGN UNIT 5 ASYNCHRONOUS SEQUENTIAL LOGIC

FUNDAMENTALS OF LOGIC DESIGN 1992

DIGITAL LOGIC DESIGN SECOND EDITION PROVIDES A BASIC UNDERSTANDING OF DIGITAL LOGIC DESIGN WITH EMPHASIS ON THE TWO ALTERNATIVE METHODS OF DESIGN AVAILABLE TO THE DIGITAL ENGINEER THIS BOOK DESCRIBES THE DIGITAL DESIGN TECHNIQUES WHICH HAVE BECOME INCREASINGLY IMPORTANT ORGANIZED INTO 14 CHAPTERS THIS EDITION BEGINS WITH AN OVERVIEW OF THE ESSENTIAL LAWS OF BOOLEAN ALGEBRA K MAP PLOTTING TECHNIQUES AS WELL AS THE SIMPLIFICATION OF BOOLEAN FUNCTIONS THIS TEXT THEN PRESENTS THE PROPERTIES AND DEVELOPS THE CHARACTERISTIC EQUATIONS OF A NUMBER OF VARIOUS TYPES OF FLIP FLOP OTHER CHAPTERS CONSIDER THE DESIGN OF SYNCHRONOUS AND ASYNCHRONOUS COUNTERS USING EITHER DISCRETE FLIP FLOPS OR SHIFT REGISTERS THIS BOOK DISCUSSES AS WELL THE DESIGN AND IMPLEMENTATION OF EVENT DRIVEN LOGIC CIRCUITS USING THE NAND SEQUENTIAL EQUATION THE FINAL CHAPTER DEALS WITH SIMPLE CODING TECHNIQUES AND THE PRINCIPLES OF ERROR DETECTION AND CORRECTION THIS BOOK IS A VALUABLE RESOURCE FOR UNDERGRADUATE STUDENTS DIGITAL ENGINEERS AND SCIENTISTS

FUNDAMENTALS OF LOGIC DESIGN (5TH Ed.) 2018-06-01

NEW UPDATED AND EXPANDED TOPICS IN THE FOURTH EDITION INCLUDE EBCDIC GREY CODE PRACTICAL APPLICATIONS OF FLIP FLOPS LINEAR AND SHAFT ENCODERS MEMORY ELEMENTS AND FPGAS THE SECTION ON FAULT FINDING HAS BEEN EXPANDED A NEW CHAPTER IS DEDICATED TO THE INTERFACE BETWEEN DIGITAL COMPONENTS AND ANALOG VOLTAGES A HIGHLY ACCESSIBLE COMPREHENSIVE AND FULLY UP TO DATE DIGITAL SYSTEMS TEXT A WELL KNOWN AND RESPECTED TEXT NOW REVAMPED FOR CURRENT COURSES PART OF THE NEWNES SUITE OF TEXTS FOR HND 1ST YEAR MODULES

DIGITAL LOGIC DESIGN 2014-05-12

IN THIS VOLUME DRAWN FROM THE VLSI HANDBOOK THE FOCUS IS ON LOGIC DESIGN AND COMPOUND SEMICONDUCTOR DIGITAL INTEGRATED CIRCUIT TECHNOLOGY EXPERT DISCUSSIONS COVER TOPICS RANGING FROM THE BASICS OF LOGIC EXPRESSIONS AND SWITCHING THEORY TO SOPHISTICATED PROGRAMMABLE LOGIC DEVICES AND THE DESIGN OF GAAS MESFET AND HEMT LOGIC CIRCUITS LOGIC DESIGN

DIGITAL LOGIC DESIGN 2010-09

THE SECOND EDITION OF THIS TEXT PROVIDES AN INTRODUCTION TO THE ANALYSIS AND DESIGN OF DIGITAL CIRCUITS AT A LOGIC INSTEAD OF ELECTRONICS LEVEL IT COVERS A RANGE OF TOPICS FROM NUMBER SYSTEM THEORY TO ASYNCHRONOUS LOGIC DESIGN A SOLUTION MANUAL IS AVAILABLE TO INSTRUCTORS ONLY REQUESTS MUST BE MADE ON OFFICIAL SCHOOL STATIONERY

AN ILLUSTRATIVE APPROACH TO LOGIC DESIGN *2002-11-01*

THIS BOOK PROVIDES THE READER WITH THE KEY CONCEPTS AND TECHNIQUES OF MODERN DIGITAL LOGIC DESIGN AND APPLICATIONS THIS CONCISE TREATMENT PROVIDES ESSENTIAL DEVELOPMENT AND EXPLANATIONS FOR BOTH CLASSICAL AND MODERN TOPICS THE MODERN TOPICS INCLUDE UNICORE UNIPOLAR TRANSISTORS COPPER TECHNOLOGY FLASH MEMORY HDL VERILOG AND LOGIC SIMULATION SOFTWARE TOOLS ALSO COVERED ARE COMBINATORIAL LOGIC CIRCUITS AND TRANSISTOR CIRCUITS IT WILL BE AN ESSENTIAL RESOURCE FOR COMPUTER SCIENTISTS LOGIC CIRCUIT DESIGNERS AND COMPUTER ENGINEERS

DIGITAL LOGIC DESIGN 2003-03-19

THIS BOOK PRESENTS THE BASIC CONCEPTS USED IN DESIGNING AND ANALYZING DIGITAL CIRCUITS AND INTRODUCES DIGITAL COMPUTER ORGANIZATION AND DESIGN PRINCIPLES THE FIRST PART OF THE BOOK TEACHES YOU THE NUMBER SYSTEMS LOGIC GATES LOGIC FAMILIES BOOLEAN ALGEBRA SIMPLIFICATION OF LOGIC FUNCTIONS ANALYSIS AND DESIGN OF COMBINATIONAL CIRCUITS USING SSI AND MSI CIRCUITS IT ALSO EXPLAINS LATCHES AND FLIP FLOPS TYPES OF COUNTERS SYNCHRONOUS AND ASYNCHRONOUS COUNTER DESIGN AND APPLICATIONS AND SHIFT REGISTERS AND ITS APPLICATIONS THE SECOND PART OF THE BOOK TEACHES YOU FUNCTIONAL UNITS OF COMPUTER VON NEUMANN AND HARVARD ARCHITECTURES PROCESSOR ORGANIZATION CONTROL UNIT HARDWIRED CONTROL UNIT AND MICROPROGRAMMED CONTROL UNIT PROCESSOR INSTRUCTIONS INSTRUCTION CYCLE INSTRUCTION FORMATS INSTRUCTION PIPELINING RISC AND CISC ARCHITECTURES INTERRUPTS INTERRUPT HANDLING MULTIPROCESSOR SYSTEMS MULTICORE PROCESSORS MEMORY AND I/O ORGANIZATIONS

LOGIC DESIGN *2018-10-03*

THIS TEXT DEMONSTRATES STATE OF THE ART TECHNOLOGIES FOR THE DESIGN OF MODERN LOGIC CIRCUITS INCLUDING CAD TOOLS RAPID PROTOTYPING AND PROGRAMMABLE LOGIC DEVICES IT PROVIDES PRACTICE IN TRADITIONAL TECHNIQUES OF LOGIC DESIGN AND INCLUDES EXAMPLES OF IMPLEMENTATIONS FROM MANY CAD TOOLS

INTRODUCTION TO LOGIC DESIGN *2012-12-06*

THIS TEXTBOOK BASED ON THE AUTHORS FIFTEEN YEARS OF TEACHING IS A COMPLETE TEACHING TOOL FOR TURNING STUDENTS INTO LOGIC DESIGNERS IN ONE SEMESTER EACH CHAPTER DESCRIBES NEW CONCEPTS GIVING EXTENSIVE APPLICATIONS AND EXAMPLES ASSUMING NO PRIOR KNOWLEDGE OF DISCRETE MATHEMATICS THE AUTHORS INTRODUCE ALL BACKGROUND IN PROPOSITIONAL LOGIC ASYMPTOTICS GRAPHS HARDWARE AND ELECTRONICS IMPORTANT FEATURES OF THE PRESENTATION ARE ALL MATERIAL IS PRESENTED IN FULL DETAIL EVERY DESIGNED CIRCUIT IS FORMALLY SPECIFIED AND IMPLEMENTED THE CORRECTNESS OF THE IMPLEMENTATION IS PROVED AND THE COST AND DELAY ARE ANALYZED ALGORITHMIC SOLUTIONS ARE OFFERED FOR LOGICAL SIMULATION COMPUTATION OF PROPAGATION DELAY AND MINIMUM CLOCK PERIOD CONNECTIONS ARE DRAWN FROM THE PHYSICAL ANALOG WORLD TO THE DIGITAL ABSTRACTION THE LANGUAGE OF GRAPHS IS USED TO DESCRIBE FORMULAS AND CIRCUITS HUNDREDS OF FIGURES EXAMPLES AND EXERCISES ENHANCE UNDERSTANDING THE EXTENSIVE WEBSITE [ENG TAU AC IL GUY EVEN MEDINA](http://eng.tau.ac.il/guy-even-medina) INCLUDES TEACHING SLIDES LINKS TO LOGISIM AND A DLX ASSEMBLY SIMULATOR

COMPUTER LOGIC *1986*

AN EXPLORATION OF BOTH THE TRADITIONAL TOPICS OF LOGIC DESIGN AND THE VARIOUS NEW TOPICS AND APPROACHES THAT ADDRESS THE SPECIAL PROBLEMS POSED BY VLSI THE AUTHOR OUTLINES A NEW METHOD FOR COMPUTATION OF MAXIMUM COMPATIBLE CLASSES AND FOR INFORMATION OF STATE TABLES OF SEQUENTIAL MACHINES IN ADDITION HE DISCUSSES IMPORTANT RESULTS AS RIGOROUSLY PROVED THEOREMS INCLUDES A DETAILED DISCUSSION OF THE QUINE MCCLUSKY METHOD CONSIDERS PLA MINIMIZATION AND FOLDING METHODS AND EXPLORES DESIGN FOR TESTABILITY BUILT IN SELF TEST AND LSSD METHODS

FUNDAMENTALS OF LOGIC DESIGN AND SWITCHING THEORY 2021-01-01

THIS TEXT IS INTENDED FOR A FIRST COURSE IN DIGITAL LOGIC DESIGN AT THE SOPHOMORE OR JUNIOR LEVEL FOR ELECTRICAL ENGINEERING COMPUTER ENGINEERING AND COMPUTER SCIENCE PROGRAMS AS WELL AS FOR A NUMBER OF OTHER DISCIPLINES SUCH AS PHYSICS AND MATHEMATICS THE BOOK CAN ALSO BE USED FOR SELF STUDY OR FOR REVIEW BY PRACTICING ENGINEERS AND COMPUTER SCIENTISTS NOT INTIMATELY FAMILIAR WITH THE SUBJECT AFTER COMPLETING THIS TEXT THE STUDENT SHOULD BE PREPARED FOR A SECOND ADVANCED COURSE IN DIGITAL DESIGN SWITCHING AND AUTOMATA THEORY MICROPROCESSORS OR COMPUTER ORGANIZATION REQUEST INSPECTION COPY

LOGIC DESIGN AND COMPUTER ORGANIZATION 1994

PACKED WITH NEARLY 400 ILLUSTRATIVE EXAMPLES AND EXERCISES THIS BOOK BEGINS WITH BOOLEAN ALGEBRA AND COMBINATION LOGIC CIRCUITS AND GOES ON TO EXPLAIN THE VARIOUS METHODS OF SIMPLIFICATION OF BOOLEAN EXPRESSIONS A BRIEF DEVIATION IS TAKEN TO LOOK AT VARIOUS LOGIC FAMILIES THEIR STRUCTURE AND OPERATION THIS IS FOLLOWED BY A SIMPLE APPROACH TO THE DESIGN OF COMBINATION CIRCUITS WITH MSI COMPONENTS AND PROGRAMMABLE LOGIC DEVICES WITH ILLUSTRATIONS OF ADDERS COMPARATORS DECODERS ENCODERS MULTIPLIERS AND VARIOUS FORMS OF PLDS A TREATISE ON SEQUENTIAL CIRCUITS BEGINS WITH EXPLANATIONS OF ALL TYPES OF FLIP FLOPS AND THEIR APPLICATIONS BACKED BY DELIGHTFUL EXAMPLES AND EXERCISES THE BOOK CONCLUDES WITH AN INTERESTING CHAPTER ON THE ANALYSIS AND DESIGN OF SYNCHRONOUS SEQUENTIAL CIRCUITS WHILE THE BOOK IS A REMARKABLE REFERENCE MATERIAL FOR LOGIC DESIGN ENGINEERS IT PROVIDES A SIMPLIFIED AND WELL ILLUSTRATED APPROACH TO STUDENTS WHO DESIRE A SYSTEMATIC AND VIBRANT APPROACH TO THE STUDY OF LOGIC DESIGN CONTENTS LOGIC DESIGN USING MSI COMPONENTS AND PROGRAMMABLE LOGIC DEVICES SIMPLIFICATION OF BOOLEAN EXPRESSION LOGIC GATES AND FAMILIES FLIP FLOPS AND THEIR APPLICATIONS SYNCHRONOUS SEQUENTIAL CIRCUITS APPENDIX

CONTEMPORARY LOGIC DESIGN 2012-10-08

LOGIC DESIGN A REVIEW OF THEORY AND PRACTICE DESCRIBES COMPUTER DESIGN FOCUSING ON THE THEORETICAL AND PRACTICAL RELATIONSHIPS OF SEQUENTIAL MACHINES THIS BOOK REVIEWS THE MAJOR TECHNOLOGIES THAT MAKE THE COMPUTER PARTICULARLY THE SWITCHING CIRCUIT DESIGN INVOLVING VACUUM TUBES DISCRETE TRANSISTORS AND INTEGRATED CIRCUITS THE SWITCHING THEORY ASSOCIATED IN THE LOGIC DESIGN OF SEQUENTIAL MACHINE MODELS AND SYNTHESIS TECHNIQUES LEAD TO UNDERSTANDING OF CONSTRAINTS DUE TO STRAY DELAYS INPUT CHANGE RESTRICTIONS AND MEMORY ELEMENT OPERATION THIS TEXT ALSO DESCRIBES THE LOGIC DESIGN PROCESSES INCLUDING THE USE OF FLOW CHARTS DESIGN LANGUAGES SIMULATIONS AND SYSTEM TIMING THREE ASPECTS NEEDED PRIOR TO THE DESIGN PHASE THAT SHOULD BE CONSIDERED BY THE PROGRAMMER ARE DATA FLOW THE MICRO OPERATIONS AND THEIR SEQUENCING AND THE TIMING MACHINE CYCLE OR LOGIC THE SIGNIFICANCE BETWEEN THEORETICAL AND MATHEMATICAL MODELS CAN THEN BE DETERMINED THROUGH FAULT DETECTION MASKING DIGITAL SIMULATION AND TEST GENERATION THIS BOOK CAN BE BENEFICIAL FOR COMPUTER ENGINEERING INSTRUCTORS AND ADVANCED STUDENTS IN COMPUTER SCIENCE

DIGITAL LOGIC DESIGN 1993

THERE ARE THREE OUTSTANDING POINTS OF THIS BOOK FIRST FOR THE FIRST TIME A COLLECTIVE POINT OF VIEW ON THE ROLE OF ARTIFICIAL INTELLIGENCE PARADIGM IN LOGIC DESIGN IS INTRODUCED SECOND THE BOOK REVEALS NEW HORIZONS OF LOGIC DESIGN TOOLS ON THE TECHNOLOGIES OF THE NEAR FUTURE FINALLY THE CONTRIBUTORS OF THE BOOK ARE TWENTY RECOGNIZABLE LEADERS IN THE FIELD FROM THE SEVEN RESEARCH CENTRES THE CHAPTERS OF THE BOOK HAVE BEEN CAREFULLY REVIEWED BY EQUALLY QUALIFIED EXPERTS ALL CONTRIBUTORS ARE EXPERIENCED IN PRACTICAL ELECTRONIC DESIGN AND IN TEACHING ENGINEERING COURSES THUS THE BOOK'S STYLE IS ACCESSIBLE TO GRADUATE STUDENTS PRACTICAL ENGINEERS AND RESEARCHERS

LOGIC DESIGN THEORY 1998-08-11

TODAY S ENGINEERS WILL CONFRONT THE CHALLENGE OF A NEW COMPUTING PARADIGM RELYING ON MICRO AND NANOSCALE DEVICES LOGIC DESIGN OF NANOICIS BUILDS A FOUNDATION FOR LOGIC IN NANODIMENSIONS AND GUIDES YOU IN THE DESIGN AND ANALYSIS OF NANOICIS USING CAD THE AUTHORS PRESENT DATA STRUCTURES DEVELOPED TOWARD APPLICATIONS RATHER THAN A PURELY THEORETICAL TREATMENT REQUIRING ONLY BASIC LOGIC AND CIRCUITS BACKGROUND LOGIC DESIGN OF NANOICIS DRAWS CONNECTIONS BETWEEN TRADITIONAL APPROACHES TO DESIGN AND MODERN DESIGN IN NANODIMENSIONS THE BOOK BEGINS WITH AN INTRODUCTION TO THE DIRECTIONS AND BASIC METHODOLOGY OF LOGIC DESIGN AT THE NANOSCALE THEN PROCEEDS TO NANOTECHNOLOGIES AND CAD GRAPHICAL REPRESENTATION OF SWITCHING FUNCTIONS AND NETWORKS WORD LEVEL AND LINEAR WORD LEVEL DATA STRUCTURES 3 D TOPOLOGIES BASED ON HYPERCUBES MULTILEVEL CIRCUIT DESIGN AND FAULT TOLERANT COMPUTATION IN HYPERCUBE LIKE STRUCTURES THE AUTHORS PROPOSE DESIGN SOLUTIONS AND TECHNIQUES GOING BEYOND THE UNDERLYING TECHNOLOGY TO PROVIDE MORE APPLIED KNOWLEDGE THIS DESIGN ORIENTED REFERENCE IS WRITTEN FOR ENGINEERS INTERESTED IN DEVELOPING THE NEXT GENERATION OF INTEGRATED CIRCUITRY ILLUSTRATING THE DISCUSSION WITH APPROXIMATELY 250 FIGURES AND TABLES 100 EQUATIONS 250 PRACTICAL EXAMPLES AND 100 PROBLEMS EACH CHAPTER CONCLUDES WITH A SUMMARY REFERENCES AND A SUGGESTED READING SECTION

FOUNDATIONS OF DIGITAL LOGIC DESIGN 1988

PACKED WITH NEARLY 400 ILLUSTRATIVE EXAMPLES AND EXERCISES THIS BOOK BEGINS WITH BOOLEAN ALGEBRA AND COMBINATION LOGIC CIRCUITS AND GOES ON TO EXPLAIN THE VARIOUS METHODS OF SIMPLIFY CATION OF BOOLEAN EXPRESSIONS A BRIEF DEVIATION IS TAKEN TO LOOK AT VARIOUS LOGIC FAMILIES THEIR STRUCTURE AND OPERATION THIS IS FOLLOWED BY A SIMPLE APPROACH TO THE DESIGN OF COMBINATION CIRCUITS WITH MSI COMPONENTS AND PROGRAMMABLE LOGIC DEVICES WITH ILLUSTRATIONS OF ADDERS COMPARATORS DECODERS ENCODERS MULTIPLIERS AND VARIOUS FORMS OF PLDS A TREATISE ON SEQUENTIAL CIRCUITS BEGINS WITH EXPLANATIONS OF ALL TYPES OF FLIP FLOPS AND THEIR APPLICATIONS BACKED BY DELIGHTFUL EXAMPLES AND EXERCISES THE BOOK CONCLUDES WITH AN INTERESTING CHAPTER ON THE ANALYSIS AND DESIGN OF SYNCHRONOUS SEQUENTIAL CIRCUITS WHILE THE BOOK IS A REMARKABLE REFERENCE MATERIAL FOR LOGIC DESIGN ENGINEERS IT PROVIDES A SIMPLIFIED AND WELL ILLUSTRATED APPROACH TO STUDENTS WHO DESIRE A SYSTEMATIC AND VIBRANT APPROACH TO THE STUDY OF LOGIC DESIGN CONTENTS LOGIC DESIGN USING MSI COMPONENTS AND PROGRAMMABLE LOGIC DEVICES SIMPLIFY CATION OF BOOLEAN EXPRESSION LOGIC GATES AND FAMILIES FLIP FLOPS AND THEIR APPLICATIONS SYNCHRONOUS SEQUENTIAL CIRCUITS APPENDIX

INTRODUCTION TO LOGIC DESIGN 2006-01-01

THIS TEXTBOOK FOR COURSES IN DIGITAL SYSTEMS DESIGN INTRODUCES STUDENTS TO THE FUNDAMENTAL HARDWARE USED IN MODERN COMPUTERS COVERAGE INCLUDES BOTH THE CLASSICAL APPROACH TO DIGITAL SYSTEM DESIGN I E PEN AND PAPER IN ADDITION TO THE MODERN HARDWARE DESCRIPTION LANGUAGE HDL DESIGN APPROACH COMPUTER BASED USING THIS TEXTBOOK ENABLES READERS TO DESIGN DIGITAL SYSTEMS USING THE MODERN HDL APPROACH BUT THEY HAVE A BROAD FOUNDATION OF KNOWLEDGE OF THE UNDERLYING HARDWARE AND THEORY OF THEIR DESIGNS THIS BOOK IS DESIGNED TO MATCH THE WAY THE MATERIAL IS ACTUALLY TAUGHT IN THE CLASSROOM TOPICS ARE PRESENTED IN A MANNER WHICH BUILDS FOUNDATIONAL KNOWLEDGE BEFORE MOVING ONTO ADVANCED TOPICS THE AUTHOR HAS DESIGNED THE PRESENTATION WITH LEARNING GOALS AND ASSESSMENT AT ITS CORE EACH SECTION ADDRESSES A SPECIFIC LEARNING OUTCOME THAT THE STUDENT SHOULD BE ABLE TO DO AFTER ITS COMPLETION THE CONCEPT CHECKS AND EXERCISE PROBLEMS PROVIDE A RICH SET OF ASSESSMENT TOOLS TO MEASURE STUDENT PERFORMANCE ON EACH OUTCOME

LOGIC DESIGN 1972

THIS BOOK IS DESIGNED TO SERVE AS A HANDS ON PROFESSIONAL REFERENCE WITH ADDITIONAL UTILITY AS A TEXTBOOK FOR UPPER UNDERGRADUATE AND SOME GRADUATE COURSES IN DIGITAL LOGIC DESIGN THIS BOOK IS ORGANIZED IN SUCH A WAY THAT THAT IT CAN DESCRIBE A NUMBER OF RTL DESIGN SCENARIOS FROM SIMPLE TO COMPLEX THE BOOK CONSTRUCTS THE LOGIC DESIGN STORY FROM THE FUNDAMENTALS OF LOGIC DESIGN TO ADVANCED RTL DESIGN CONCEPTS KEEPING IN VIEW THE IMPORTANCE OF MINIATURIZATION TODAY THE BOOK GIVES

PRACTICAL INFORMATION ON THE ISSUES WITH ASIC RTL DESIGN AND HOW TO OVERCOME THESE CONCERNS IT CLEARLY EXPLAINS HOW TO WRITE AN EFFICIENT RTL CODE AND HOW TO IMPROVE DESIGN PERFORMANCE THE BOOK ALSO DESCRIBES ADVANCED RTL DESIGN CONCEPTS SUCH AS LOW POWER DESIGN MULTIPLE CLOCK DOMAIN DESIGN AND SOC BASED DESIGN THE PRACTICAL ORIENTATION OF THE BOOK MAKES IT IDEAL FOR TRAINING PROGRAMS FOR PRACTICING DESIGN ENGINEERS AND FOR SHORT TERM VOCATIONAL PROGRAMS THE CONTENTS OF THE BOOK WILL ALSO MAKE IT A USEFUL READ FOR STUDENTS AND HOBBYISTS

COMPUTER LOGIC DESIGN *1988*

NUMBER SYSTEMS BASE R ARITHMETIC BOOLEAN ALGEBRA SPECIAL BOOLEAN FUNCTIONS AND BASIC LOGIC CONVENTIONS MINIMIZATION PROCEDURES FOR BOOLEAN FUNCTION BINARY ARITHMETIC UNITS DECIMAL ARITHMETIC INTRODUCTION TO SEQUENTIAL CIRCUIT DESIGN PRACTICAL FLIP FLOP CIRCUITS BINARY COUNTERS REGISTER DESIGN TECHNIQUES ADVANCED ARITHMETIC UNITS

DIGITAL LOGIC DESIGN *1985*

THE THIRD EDITION OF DIGITAL LOGIC TECHNIQUES PROVIDES A CLEAR AND COMPREHENSIVE TREATMENT OF THE REPRESENTATION OF DATA OPERATIONS ON DATA COMBINATIONAL LOGIC DESIGN SEQUENTIAL LOGIC COMPUTER ARCHITECTURE AND PRACTICAL DIGITAL CIRCUITS A WEALTH OF EXERCISES AND WORKED EXAMPLES IN EACH CHAPTER GIVE STUDENTS VALUABLE EXPERIENCE IN APPLYING THE CONCEPTS AND TECHNIQUES DISCUSSED BEGINNING WITH AN OBJECTIVE COMPARISON BETWEEN ANALOGUE AND DIGITAL REPRESENTATION OF DATA THE AUTHOR PRESENTS THE BOOLEAN ALGEBRA FRAMEWORK FOR DIGITAL ELECTRONICS DEVELOPS COMBINATIONAL LOGIC DESIGN FROM FIRST PRINCIPLES AND PRESENTS CELLULAR LOGIC AS AN ALTERNATIVE STRUCTURE MORE RELEVANT THAN CANONICAL FORMS TO VLSI IMPLEMENTATION HE THEN ADDRESSES SEQUENTIAL LOGIC DESIGN AND DEVELOPS A STRATEGY FOR DESIGNING FINITE STATE MACHINES GIVING STUDENTS A SOLID FOUNDATION FOR MORE ADVANCED STUDIES IN AUTOMATA THEORY THE SECOND HALF OF THE BOOK FOCUSES ON THE DIGITAL SYSTEM AS AN ENTITY HERE THE AUTHOR EXAMINES THE IMPLEMENTATION OF LOGIC SYSTEMS IN PROGRAMMABLE HARDWARE OUTLINES THE SPECIFICATION OF A SYSTEM EXPLORES ARITHMETIC PROCESSORS AND ELUCIDATES FAULT DIAGNOSIS THE FINAL CHAPTER EXAMINES THE ELECTRICAL PROPERTIES OF LOGIC COMPONENTS COMPARES THE DIFFERENT LOGIC FAMILIES AND HIGHLIGHTS THE PROBLEMS THAT CAN ARISE IN CONSTRUCTING PRACTICAL HARDWARE SYSTEMS

DESIGN OF LOGIC SYSTEMS *1974-01-28*

THIS TEXT AND REFERENCE PROVIDES STUDENTS AND PRACTICING ENGINEERS WITH AN INTRODUCTION TO THE CLASSICAL METHODS OF DESIGNING ELECTRICAL CIRCUITS BUT INCORPORATES MODERN LOGIC DESIGN TECHNIQUES USED IN THE LATEST MICROPROCESSORS MICROCONTROLLERS MICROCOMPUTERS AND VARIOUS LSI COMPONENTS THE BOOK PROVIDES A REVIEW OF THE CLASSICAL METHODS E G THE BASIC CONCEPTS OF BOOLEAN ALGEBRA COMBINATIONAL LOGIC AND SEQUENTIAL LOGIC PROCEDURES BEFORE ENGAGING IN THE PRACTICAL DESIGN APPROACH AND THE USE OF COMPUTER AIDED TOOLS THE BOOK IS ENRICHED WITH NUMEROUS EXAMPLES AND THEIR SOLUTIONS OVER 500 ILLUSTRATIONS AND INCLUDES A CD ROM WITH SIMULATIONS ADDITIONAL FIGURES AND THIRD PARTY SOFTWARE TO ILLUSTRATE THE CONCEPTS DISCUSSED IN THE BOOK

LOGIC DESIGN *2013-03-19*

MARKET DESC ELECTRICAL ENGINEERS LOGIC DESIGNERS IN COMPUTER INDUSTRY SPECIAL FEATURES PROVIDES EXTENSIVE EXERCISES FOR READERS TO WORK OUT WHILE STUDYING A TOPIC PRESENTS UP TO DATE APPROACHES IN LOGIC DESIGN IN LATER CHAPTERS DISCUSSES THE RELATIONSHIP BETWEEN DIGITAL SYSTEM DESIGN AND COMPUTER ARCHITECTURE ABOUT THE BOOK THIS IS AN INTRODUCTORY LEVEL BOOK ON THE PRINCIPLES OF DIGITAL LOGIC DESIGN WHILE PROVIDING COVERAGE TO THE USUAL TOPICS IN COMBINATIONAL AND SEQUENTIAL CIRCUIT PRINCIPLES IT ALSO INCLUDES A CHAPTER ON THE USE OF THE HARDWARE DESCRIPTION LANGUAGE ABEL IN THE DESIGN OF CIRCUITS USING PLDS AND A CHAPTER ON COMPUTER ORGANIZATION

ARTIFICIAL INTELLIGENCE IN LOGIC DESIGN 2017-12-19

BOOLEAN ALGEBRA AND COMBINATIONAL NETWORKSPRINCIPLE OF DUALITY BOOLEAN FORMULAS AND FUNCTIONS NORMAL FORMULAS CANONICAL FORMULAS MINTERM CANONICAL FORMULAS M NOTATION MANIPULATIONS OF BOOLEAN FORMULAS EQUATION COMPLEMENTATION EXPANSION ABOUT A VARIABLE EQUATION SIMPLIFICATION THE REDUCTION THEOREMS MINTERM CANONICAL FORMULAS MAXTERM CANONICAL FORMULAS COMPLEMENTS OF CANONICAL FORMULAS GATES AND COMBINATIONAL NETWORKS GATES COMBINATIONAL NETWORKS ANALYSIS PROCEDURE SYNTHESIS PROCEDURE A LOGIC DESIGN EXAMPLE INCOMPLETE BOOLEAN FUNCTIONS AND DON T CARE CONDITIONS DESCRIBING INCOMPLETE BOOLEAN FUNCTIONS DON T CARE CONDITIONS IN LOGIC DESIGN ADDITIONAL BOOLEAN OPERATIONS AND GATES THE NAND FUNCTIONS THE NOR FUNCTIONS UNIVERSAL GATES NAND GATE REALIZATIONS NOR GATE REALIZATIONS THE EXCLUSIVE OR FUNCTION THE EXCLUSIVE NOR FUNCTION SIMPLIFICATION OF BOOLEAN EXPRESSIONSFORMULATION OF THE SIMPLIFICATION PROBLEM CRITERIA OF MINIMALITY THE SIMPLIFICATION PROBLEM PRIME IMPLICANTS AND IRREDUNDANT DISJUNCTIVE EXPRESSIONS IMPLIES SUBSUMES IMPLICANTS AND PRIME IMPLICANTS IRREDUNDANT DISJUNCTIVE NORMAL FORMULAS PRIME IMPLICANTS AND IRREDUNDANT CONJUNCTIVE EXPRESSIONS KARNAUGH MAPS ONE VARIABLE AND TWO VARIABLE MAPS THREE VARIABLE AND FOUR VARIABLE MAPS KARNAUGH MAPS AND CANONICAL FORMULAS PRODUCT AND SUM TERM REPRESENTATIONS ON KARNAUGH MAPS USING KARNAUGH MAPS TO OBTAIN MINIMAL EXPRESSIONS FOR COMPLETE BOOLEAN FUNCTIONS PRIME IMPLICANTS AND KARNAUGH MAPS ESSENTIAL PRIME IMPLICANTS MINIMAL SUMS MINIMAL PRODUCTS MINIMAL EXPRESSIONS OF INCOMPLETE BOOLEAN FUNCTIONS MINIMAL SUMS MINIMAL PRODUCTS THE QUINE MCCCLUSKEY METHOD OF GENERATING PRIME IMPLICANTS AND PRIME IMPLICATES PRIME IMPLICANTS AND THE QUINE MCCCLUSKEY METHOD ALGORITHM FOR GENERATING PRIME IMPLICANTS PRIME IMPLICATES AND THE QUINE MCCCLUSKEY METHOD PRIME IMPLICANT PRIME IMPLICATE TABLES AND IRREDUNDANT EXPRESSIONS PETRICK S METHOD OF DETERMINING IRREDUNANT EXPRESSIONS PRIME IMPLICATE TABLES AND IRREDUNDANT CONJUNCTIVE NORMAL FORMULAS PRIME IMPLICANT PRIME IMPLICATE TABLE REDUCTIONS ESSENTIAL PRIME IMPLICANTS COLUMN AND ROW REDUCTIONS A PRIME IMPLICANT SELECTION PROCEDURE DECIMAL METHOD FOR OBTAINING PRIME IMPLICANTS MAP ENTERED VARIABLES LOGIC LEVELS AND FAMILIESLOGIC LEVELS INTEGRATION LEVELS OUTPUT SWITCHING TIMES THE PROPAGATION DELAY FAN OUT AND FAN IN EXTENSION TO OTHER LOGIC GATES LOGIC CASCADES TRANSISTOR TRANSISTOR LOGIC WIRED LOGIC TTL WITH TOTEM POLE OUTPUT THEE STATE OUTPUT TTL SCHOTTKY TTL THE MOS FIELD EFFECT TRANSISTOR OPERATION OF N CHANNEL ENHANCEMENT TYPE MOSFET THE N CHANNEL DEPLETION TYPE MOSFET THE P CHANNEL MOSFETS CIRCUIT SYMBOLS THE MOSFET AS A RESISTOR NMOS AND PMOS LOGIC THE NMOS INVERTERS NMOS NOR GATE NMOS NAND GATE PMOS LOGIC PERFORMANCE THE CMOS INVERTER CMOS NOR GATE CMOS NAND GATE PERFORMANCE COMPARISON OF THE ABOVE LOGIC FAMILIES LOGIC DESIGN WITH MSI COMPONENTS AND PROGRAMMABLE LOGIC DEVICESBINARY ADDERS AND SUBTRACTORS BINARY SUBTRACTORS CARRY LOOKAHEAD ADDERS DECIMAL ADDERS COMPARATORS DECODERS LOGIC DESIGN USING DECODERS DECODERS WITH AN ENABLE INPUT ENCODERS MULTIPLEXERS LOGIC DESIGN WITH MULTIPLEXERS PROGRAMMABLE LOGIC DEVICES PLDS PLD NOTATION PROGRAMMABLE READ ONLY MEMORIES PROMS PROGRAMMABLE LOGIC ARRAYS PLAS PROGRAMMABLE ARRAY LOGIC PAL DEVICES FLIP FLOPS AND SIMPLE FLIP FLOP APPLICATIONSTHE BASIC BISTABLE ELEMENT LATCHES THE SR LATCH AN APPLICATION OF THE SR LATCH A SWITCH DEBOUNCER THE SR LATCH THE GATED SR LATCH THE GATED D LATCH MASTER SLAVE FLIP FLOPS PULSE TRIGGERED FLIP FLOPS THE MASTER SLAVE SR FLIP FLOP THE MASTER SLAVE JK FLIP FLOP EDGE TRIGGERED FLIP FLOP THE POSITIVE EDGE TRIGGERED D FLIP FLOP NEGATIVE EDGE TRIGGERED D FLIP FLOPS CHARACTERISTIC EQUATIONS REGISTERS COUNTERS BINARY RIPPLE COUNTERS SYNCHRONOUS BINARY COUNTERS COUNTERS BASED ON SHIFT REGISTERS DESIGN OF SYNCHRONOUS COUNTERS DESIGN OF A SYNCHRONOUS MOD 6 COUNTER USING CLOCKED JK FLIP FLOPS DESIGN OF A SYNCHRONOUS MOD 6 COUNTER USING CLOCKED D T OR SR FLIP FLOPS SYNCHRONOUS SEQUENTIAL NETWORKSSSTRUCTURE AND OPERATION OF CLOCKED SYNCHRONOUS SEQUENTIAL NETWORKS ANALYSIS OF CLOCKED SYNCHRONOUS SEQUENTIAL NETWORKS EXCITATION AND OUTPUT EXPRESSIONS TRANSITION EQUATIONS TRANSITION TABLES EXCITATION TABLES STATE TABLES STATE DIAGRAMS NETWORK TERMINAL BEHAVIOR

LOGIC DESIGN OF NanoICS *2009-01-01*

TEXTBOOK

AN ILLUSTRATIVE APPROCH TO LOGIC DESIGN 2017-04-17

PRINCIPLES OF MODERN DIGITAL DESIGN FROM UNDERLYING PRINCIPLES TO IMPLEMENTATION A THOROUGH INTRODUCTION TO DIGITAL LOGIC DESIGN WITH THIS BOOK READERS DISCOVER THE CONNECTION BETWEEN LOGIC DESIGN PRINCIPLES AND THEORY AND THE LOGIC DESIGN AND OPTIMIZATION TECHNIQUES USED IN PRACTICE THEREFORE THEY NOT ONLY LEARN HOW TO IMPLEMENT

CURRENT DESIGN TECHNIQUES BUT ALSO HOW THESE TECHNIQUES WERE DEVELOPED AND WHY THEY WORK WITH A DEEPER UNDERSTANDING OF THE UNDERLYING PRINCIPLES READERS BECOME BETTER PROBLEM SOLVERS WHEN FACED WITH NEW AND DIFFICULT DIGITAL DESIGN CHALLENGES PRINCIPLES OF MODERN DIGITAL DESIGN BEGINS WITH AN EXAMINATION OF NUMBER SYSTEMS AND BINARY CODE FOLLOWED BY THE FUNDAMENTAL CONCEPTS OF DIGITAL LOGIC NEXT READERS ADVANCE TO COMBINATIONAL LOGIC DESIGN ARMED WITH THIS FOUNDATION THEY ARE THEN INTRODUCED TO VHDL A POWERFUL LANGUAGE USED TO DESCRIBE THE FUNCTION OF DIGITAL CIRCUITS AND SYSTEMS ALL THE MAJOR TOPICS NEEDED FOR A THOROUGH UNDERSTANDING OF MODERN DIGITAL DESIGN ARE PRESENTED INCLUDING FUNDAMENTALS OF SYNCHRONOUS SEQUENTIAL CIRCUITS AND SYNCHRONOUS SEQUENTIAL CIRCUIT DESIGN COMBINATIONAL LOGIC DESIGN USING VHDL COUNTER DESIGN SEQUENTIAL CIRCUIT DESIGN USING VHDL ASYNCHRONOUS SEQUENTIAL CIRCUITS VHDL BASED LOGIC DESIGN EXAMPLES ARE PROVIDED THROUGHOUT THE BOOK TO ILLUSTRATE BOTH THE UNDERLYING PRINCIPLES AND PRACTICAL DESIGN APPLICATIONS EACH CHAPTER IS FOLLOWED BY EXERCISES THAT ENABLE READERS TO PUT THEIR SKILLS INTO PRACTICE BY SOLVING REALISTIC DIGITAL DESIGN PROBLEMS AN ACCOMPANYING WEBSITE WITH QUARTUS II SOFTWARE ENABLES READERS TO REPLICATE THE BOOK S EXAMPLES AND PERFORM THE EXERCISES THIS BOOK CAN BE USED FOR EITHER A TWO OR ONE SEMESTER COURSE FOR UNDERGRADUATE STUDENTS IN ELECTRICAL AND COMPUTER ENGINEERING AND COMPUTER SCIENCE ITS THOROUGH EXPLANATION OF THEORY COUPLED WITH EXAMPLES AND EXERCISES ENABLES BOTH STUDENTS AND PRACTITIONERS TO MASTER AND IMPLEMENT MODERN DIGITAL DESIGN TECHNIQUES WITH CONFIDENCE

INTRODUCTION TO LOGIC CIRCUITS & LOGIC DESIGN WITH VERILOG *2016-05-17*

FUNDAMENTALS OF SWITCHING THEORY AND LOGIC DESIGN DISCUSSES THE BASICS OF SWITCHING THEORY AND LOGIC DESIGN FROM A SLIGHTLY ALTERNATIVE POINT OF VIEW AND ALSO PRESENTS LINKS BETWEEN SWITCHING THEORY AND RELATED AREAS OF SIGNAL PROCESSING AND SYSTEM THEORY SWITCHING THEORY IS A BRANCH OF APPLIED MATHEMATIC PROVIDING MATHEMATICAL FOUNDATIONS FOR LOGIC DESIGN WHICH CAN BE CONSIDERED AS A PART OF DIGITAL SYSTEM DESIGN CONCERNING REALIZATIONS OF SYSTEMS WHOSE INPUTS AND OUTPUTS ARE DESCRIBED BY LOGIC FUNCTIONS

DIGITAL LOGIC DESIGN USING VERILOG *1976*

A SYSTEMATIC APPROACH TO DIGITAL LOGIC DESIGN *2017-11-22*

DIGITAL LOGIC TECHNIQUES *2009-01-28*

DIGITAL PRINCIPLES AND LOGIC DESIGN 2007-05

DIGITAL LOGIC DESIGN PRINCIPLES *2005*

LOGIC DESIGN *1993*

INTRODUCTION TO DIGITAL LOGIC DESIGN *2007-07-16*

PRINCIPLES OF MODERN DIGITAL DESIGN *1978*

LOGIC DESIGN OF DIGITAL SYSTEMS *2006-03-07*

FUNDAMENTALS OF SWITCHING THEORY AND LOGIC DESIGN

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