

# The 8088 And 8086 Microprocessors Programming Interfacing Software Hardware Applications Walter A Triebel

This fourth edition of "The Intel Microprocessors 8086/8088, 80186, 80286, 80386, 80486, Pentium, and Pentium Pro Processor: Architecture, Programming, and Interfacing" is a practical book for anyone interested in all programming and interfacing aspects of this important microprocessor family.

Providing a systems-level understanding of the 80x86 microcomputer and its hardware and software, this text gives equal emphasis to both assembly language software and microcomputer circuit design. There are four new chapters in the Second Edition: Assembly Language Program Development and the Microsoft MASM Macroassembler; PC Bus Interfacing, Circuit Construction, Testing, and Troubleshooting; The 80386, 80486, and the Pentium TM..Processor Families - Software Architecture; and The 80386, 80486, and Pentium Processor Families - Hardware Architecture. Both the assembly language programming section and the microcomputer interface circuits section have been significantly enhanced.

Designers of microprocessor-based electronic equipment need a systems-level understanding of the 80x86 microcomputer. This volume offers thorough, balanced, and practical coverage of both software and hardware topics. Develops basic concepts using the 8088 and 8086 microprocessors, but the 32-bit version of the 80x86 family is also discussed. Examines how to assemble, run, and debug programs, and how to build, test, and troubleshoot interface circuits. Provides detailed coverage of floating-point processing and the single instruction multiple data (SIMD) processing capability of the advanced Pentium processor. Includes added material on number systems, logic functions and operations, conversion between number systems, and addition/subtraction of binary numbers. Includes new advanced material such as floating Point Architecture and Instructions, Multimedia (MMX) Architecture and Instructions, and the hardware and hardware architecture of the Pentium 3 and Pentium 4 processors. Covers the Intel architecture microprocessor families: 8088, 8086, 80286, 80386, 80486, and the latest Pentium® processors. Illustrates commands of the DEBUG program and how to assemble, disassemble, load, save, execute, and debug programs on the IBM PC. Introduces the contents of the 8088's instruction set.

Explores practical implementation techniques, covering the use of latches, transceivers, buffers, and programmable logic devices in the memory and I/O interfaces of the microcomputer system. A valuable handbook for self-study in learning microprocessors, for electrical engineers, electronic technicians, and all computer programmers.

Keeping readers on the forefront of technology, this timely book offers a practical reference to all programming and interfacing aspects of the popular Intel family of microprocessors. Organized in an orderly and manageable format that stimulates and challenges understanding, the book contains numerous example programs using the Microsoft Macro Assembler program, and provides a thorough description of each Intel family member, memory systems, and various I/O systems. Topics include an introduction to the microprocessor and computer; the microprocessor and its architecture; addressing modes; data movement instructions; arithmetic and logic

instructions; program control instructions; programming the microprocessor; using assembly language with c/c++; 8086/8088 hardware specifications; memory interface; basic I/O interface; interrupts; direct memory access and dma-controlled I/O; the arithmetic coprocessor and mmx technology; bus interface; the 80186, 80188, and 80286 microprocessor; the 80386 and 80468 microprocessors; the Pentium and Pentium pro microprocessors; and the Pentium ii microprocessor. For those interested in the electrical engineering, electronic engineering technology, microprocessor software or microprocessor interfacing aspects of the Intel family of microprocessors. This comprehensive text provides an easily accessible introduction to the principles and applications of microprocessors. It explains the fundamentals of architecture, assembly language programming, interfacing, and applications of Intel's 8086/8088 microprocessors, 8087 math coprocessors, and 8255, 8253, 8251, 8259, 8279 and 8237 peripherals. Besides, the book also covers Intel's 80186/80286, 80386/80486, and the Pentium family micro-processors. The book throughout maintains an appropriate balance between the basic concepts and the skill sets needed for system design. A large number of solved examples on assembly language programming and interfacing are provided to help the students gain an insight into the topics discussed. The book is eminently suitable for undergraduate students of Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, Computer Science and Engineering, and Information Technology. The 8088 and 8086 Microprocessors: Pearson New International Edition Programming, Interfacing, Software, Hardware, and Applications Pearson Higher Ed Intel's 80x86 family of microprocessors is the most widely used architecture in modern microcomputer systems. This widely acclaimed edition provides comprehensive coverage of both the software and hardware of the 8088 and 8086 microprocessors. New material has been added on number system conversions, binary arithmetic, and combinational logic operations. \*Part I explores the software architecture and how to write, execute, and debug assembly language programs. It includes many practical concepts and software applications. In addition, the various steps of the assembly language program development cycle are explored. \*Part II examines the hardware architecture of microcomputers built with the 8088 and 8086 microprocessors. It presents the function and operation of each of the microprocessors' hardware interfaces: memory, input/output, and interrupt. The role of each of these subsystems is explored in relation to overall microcomputer system operation. \*Part III provides detailed coverage of the other microprocessors in the 80x86 family: the 80286, 80386, 80486, and Pentium' processors. The newest Pentium(R) family--Pentium(R) III and Pentium(R) IV# are also examined. Discusses the Architecture & Characteristics of the 8086 Chip, & Details Programming Concepts, Techniques, & Structure For one or two-semester courses in Microprocessors or Intel 16-32 Bit Chips. Future designers of microprocessor-based electronic equipment need a "systems-level" understanding of the 80x86 microcomputer. This text offers thorough, balanced, and practical coverage of both software and hardware

topics. Basic concepts are developed using the 8088 and 8086 microprocessors, but the 32-bit versions of the 80x86 family are also discussed. The authors examine how to assemble, run, and debug programs, and how to build, test, and troubleshoot interface circuits.

The third edition of this popular text continues integrating basic concepts, theory, design and real-life applications related to the subject technology, to enable holistic understanding of the concepts. The chapters are introduced in tune with the conceptual flow of the subject; with in-depth discussion of concepts using excellent interfacing and programming examples in assembly language Features:

- Updated with crucial topics like ARM Architecture, Serial Communication Standard USB
- New and updated chapters explaining 8051 Microcontrollers, Instruction set and Peripheral Interfacing along with Project(s) Design
- Latest real-life applications like Hard drives, CDs, DVDs, Blue Ray Drives

This book presents the full range of Intel 80x86 microprocessors, in context as a component of a comprehensive microprocessor system. It provides a thorough, single volume coverage of all Intel processors relative to their application in the PC, and is as much an introduction to the PC itself as to Intel chips. Covers all PC-related technologies, including memory, data communications, and PC bus standards. The second edition of The 8086/8088 Family: Design, Programming, and Interfacing has been revised to include the latest, most up-to-date information and technologies. This edition now covers Windows; a description of the MS-DOS BIOS services and function calls; two completely revised software chapters; an updated chapter on memory; coverage of the 16550 UART and common modern standards; and a new chapter on PC architecture and the common bus systems.

Describes the internal structure of the 8086 and 8088 microprocessors, explains the fundamentals of programming them, and discusses their use with the IBM Personal Computer

Keeping students on the forefront of technology, this text offers a practical reference to all programming and interfacing aspects of the popular Intel microprocessor family. " ... is written for the under graduate students of almost all departments of Engineering and Technology. It includes the latest developments in the field of microprocessors and microcontrollers. The architecture and programming of these programmable logic devices are described elaborately. Assembly level language programming of these devices have been developed and explained in detail with flow chart. This book also includes interfacing memory and input output devices."--Back cover.

Future designers of microprocessor-based electronic equipment require a systems-level understanding of the 80x86 microcomputer. This widely acclaimed edition provides balanced and comprehensive coverage of both the software and hardware of the 8088 and 8086 microprocessors. The book examines how to assemble, run and debug programs and how to build, test and troubleshoot interface circuits. New material has been added on number-system conversations, binary arithmetic and combinational logic operations.

This book provides the students with a solid foundation in the technology of

microprocessors and microcontrollers, their principles and applications. It comprehensively presents the material necessary for understanding the internal architecture as well as system design aspects of Intel's legendary 8085 and 8086 microprocessors and Intel's 8051 and 8096 microcontrollers. The book throughout maintains an appropriate balance between the basic concepts and the skill sets needed for system design. Besides, the book lucidly explains the hardware architecture, the instruction set and programming, support chips, peripheral interfacing, and cites several relevant examples to help the readers develop a complete understanding of industrial application projects. Several system design case studies are included to reinforce the concepts discussed. With exhaustive coverage provided and practical approach emphasized, the book would be indispensable to undergraduate students of Electrical and Electronics, Electronics and Communication, and Electronics and Instrumentation Engineering. It can be used for a variety of courses in Microprocessors, Microcontrollers, and Embedded System Design.

Microprocessors and Interfacing is a textbook for undergraduate engineering students who study a course on various microprocessors, its interfacing, programming and applications.

PC Hardware in a Nutshell is the practical guide to buying, building, upgrading, and repairing Intel-based PCs. A longtime favorite among PC users, the third edition of the book now contains useful information for people running either Windows or Linux operating systems. Written for novices and seasoned professionals alike, the book is packed with useful and unbiased information, including how-to advice for specific components, ample reference material, and a comprehensive case study on building a PC. In addition to coverage of the fundamentals and general tips about working on PCs, the book includes chapters focusing on motherboards, processors, memory, floppies, hard drives, optical drives, tape devices, video devices, input devices, audio components, communications, power supplies, and maintenance. Special emphasis is given to upgrading and troubleshooting existing equipment so you can get the most from your existing investments. This new edition is expanded to include:

- Detailed information about the latest motherboards and chipsets from AMD, Intel, SiS, and VIA
- Extensive coverage of the Pentium 4 and the latest AMD processors, including the Athlon XP/MP
- Full details about new hard drive standards, including the latest SCSI standards, ATA/133, Serial ATA, and the new 48-bit "Big Drive" ATA interface
- Extended coverage of DVD drives, including DVD-RAM, DVD-R/RW, and DVD+R/RW
- Details about Flat Panel Displays, including how to choose one (and why you might not want to)
- New chapters on serial communications, parallel communications, and USB communications (including USB 2.0)
- Enhanced troubleshooting coverage

PC Hardware in a Nutshell, 3rd Edition provides independent, useful and practical information in a no-nonsense manner with specific recommendations on components. Based on real-world testing over time, it will help you make intelligent, informed decisions about buying, building, upgrading, and repairing PCs in a cost effective manner that will help you maximize new or existing computer hardware systems. It's loaded with real-world advice presented in a concise style that clearly delivers just the information you want, without your having to hunt for it.

"Intel microprocessors have gained wide application in many areas of electronic communications, control systems, and desktop computer systems. This practical text is

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written for anyone who requires or desires a thorough knowledge of microprocessor programming and interfacing."-back cover.

For one or two-semester courses in Microprocessors or Intel 16-32 Bit Chips. Future designers of microprocessor-based electronic equipment need a systems-level understanding of the 80x86 microcomputer. This text offers thorough, balanced, and practical coverage of both software and hardware topics. Basic concepts are developed using the 8088 and 8086 microprocessors, but the 32-bit versions of the 80x86 family are also discussed. The authors examine how to assemble, run, and debug programs, and how to build, test, and troubleshoot interface circuits.

Detailed coverage of hardware circuits, software concepts and interfaces, test equipments and diagnostic aids; complete hardware design at the systems and components level of an IBM PC and its clones; common problems with their detailed troubleshooting procedure; practical tips for troubleshooting and quick diagnosis; systematic analysis of the POST sequence. CD includes: Video on PC Assembling: Step-by-step procedure of assembling a PC (supplement to Chapter 13), followed by a live demonstration; Anti-Virus software: Trial version of Vx2000 plus an antivirus package from K7 COMPUTING.

Intended for the beginning programming student taking the first course on the 8086, a 16-bit microprocessor manufactured by Intel. It serves as a companion text to Ayala's The 8051 Microcontroller: Architecture, Programming, and Applications, 2nd (1997). The text has a software programming emphasis and focuses on assembly language geared to IBM PCs. Digital logic design or basic binary fundamentals are prerequisites, but no prior study of computers or assembly language is necessary. ALSO AVAILABLE INSTRUCTOR SUPPLEMENTS CALL CUSTOMER SUPPORT TO ORDER

Transparency Masters, ISBN: 0-314-05764-1

Includes bibliographical references and index.

For introductory-level Microprocessor courses in the departments of Electronic Engineering Technology, Computer Science, or Electrical Engineering. The INTEL Microprocessors: 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Pentium Pro Processor, Pentium II, Pentium III, Pentium 4, and Core2 with 64-bit Extensions, 8e provides a comprehensive view of programming and interfacing of the Intel family of Microprocessors from the 8088 through the latest Pentium 4 and Core2 microprocessors. The text is written for students who need to learn about the programming and interfacing of Intel microprocessors, which have gained wide and at times exclusive application in many areas of electronics, communications, and control systems, particularly in desktop computer systems. A major new feature of this eighth edition is an explanation of how to interface C/C++ using Visual C++ Express (a free download from Microsoft) with assembly language for both the older DOS and the Windows environments. Many applications include Visual C++ as a basis for learning assembly language using the inline assembler. Updated sections that detail new events in the fields of microprocessors and microprocessor interfacing have been added. Organized in an orderly and manageable format, this text offers more than 200 programming examples using the Microsoft Macro Assembler program and provides a thorough description of each of the Intel family members, memory systems, and various I/O systems.

The national semiconductor PACE and INS8900; The general instrument CP

1600; The Texas instruments TMS 9900, TMS 9980, and TMS 9440 products; Single chip nova microcomputer central processing units; The intel 8086; The zilog Z8000 series.

Explains the workings of the 99000 microprocessor and discusses how the 99000 operates as part of a microcomputer system

**KEY BENEFIT:** Updated and current, this book provides a comprehensive view of programming and interfacing of the Intel family of microprocessors from the 8088 through the latest Pentium 4 microprocessor.**KEY TOPICS:** Organized in an orderly and manageable format, it offers over 200 programming examples using the Microsoft Macro Assembler program, and provides a thorough description of each Intel family members, memory systems, and various I/O systems.**MARKET:** For Electronic engineering specialist, programmers, computer scientists, or electrical engineers.

For one-semester courses in Microprocessors. This text provides a systems-level understanding of the 80X86 microprocessor and its hardware and software. Equal emphasis is given to both assembly language software and microcomputer circuit design.

The era of the 16-bit microprocessor began in 1978 with the introduction by Intel of the 8086 and 8088 processors. Embedded controller versions of some of the general purpose cpu's were also added to the families. The 16-bit microprocessors were a follow-on to the previous 8 bit chips. They offered not only greater integer word size, but more address range, and faster operation than their predecessors. Initially implemented in multiple chips, the march of technology finally allowed these 16-bit machines to be a single chips design. Floating point hardware was developed for the 16-bit integer cpu's, and would later be incorporated into the same chip as the later 32-bit processors. At the same time, single-chip versions of some of the popular 16-bit minicomputers evolved. These included the DEC PDP-11 and Data Genera NOVA series. The 16-bit machines finally brought processing power to the desktop to begin to threaten the reign of the mainframes. Just imagine. A computer on every desktop. What would we do with that?

The 8085 Microprocessor: Architecture, Programming and Interfacing is designed for an undergraduate course on the 8085 microprocessor, this text provides comprehensive coverage of the programming and interfacing of the 8-bit microprocessor. Written in a simple and easy-to-understand manner, this book introduces the reader to the basics and the architecture of the 8085 microprocessor. It presents balanced coverage of both hardware and software concepts related to the microprocessor.

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