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MICROPROCESSORS AND MICROCONTROLLERS

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MICROPROCESSOR AND MICROCONTROLLERS

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PREFACE

About the Book 8086 Microprocessor and its Applications, 2e is a book on microprocessor 8086 programming and interfacing which has been crafted and designed to meet students' requirements. Considering the complex technical nature of this subject, equal emphasis has been given to programming and design aspects. Considerable effort has been made to explain the assembly language programs with step-by-step algorithms and flowcharts. The main objective of this book is to explore the basic concepts of popular INTEL 8086 microprocessor programming and interfacing techniques in a simple and easy-to-understand manner.

This book with its lucid writing style and germane pedagogical features will prove to be a master text for engineering students and practitioners. The peripheral interfacing techniques have been explained with simple sketches clearly showing the necessary signals. Short questions and answers with varied difficulty levels are given in the text to help students get an intuitive grasp on the subject.

This book attempts to explain the basic concepts of programming and interfacing techniques by taking INTEL 8086 microprocessor as an example. It includes the system design applications based on 8086 Microprocessor. It discusses the concepts using numerous examples and programs and step-wise approach which makes it easier for the readers to grasp the concepts. The book has been designed as a self-study material for the students of engineering, polytechnic, arts and science colleges.

Salient Features

- Lucid and easy language for concept explanation
- Extensive coverage to Instruction sets, Memory and Peripheral Interfacing of 8086 Microprocessor
- Discusses programming concepts for 8086 using assembly language
- Use of simple methodology (i.e., Problem analysis Flowchart Algorithm Code Sample Data) for programming examples
- Numerous solved examples, programs and chapter-end questions with answers

EC8691 MICROPROCESSOR AND MICROCONTROLLERS

UNIT I THE 8086 MICROPROCESSOR

Introduction to 8086 – Microprocessor architecture – Addressing modes – Instruction set and assembler directives – Assembly language programming – Modular Programming – Linking and Relocation – Stacks – Procedures – Macros – Interrupts and interrupt service routines – Byte and String Manipulation.

UNIT II 8086 SYSTEM BUS STRUCTURE

8086 signals – Basic configurations – System bus timing –System design using 8086 – I/O programming – Introduction to Multiprogramming – System Bus Structure – Multiprocessor configurations – Coprocessor, Closely coupled and loosely Coupled configurations – Introduction to advanced processors.

UNIT III I/O INTERFACING

Memory Interfacing and I/O interfacing – Parallel communication interface – Serial communication interface – D/A and A/D Interface – Timer – Keyboard /display controller – Interrupt controller – DMA controller – Programming and applications Case studies: Traffic Light control, LED display , LCD display, Keyboard display interface and Alarm Controller.

UNIT IV MICROCONTROLLER

Architecture of 8051 – Special Function Registers(SFRs) – I/O Pins Ports and Circuits – Instruction set – Addressing modes – Assembly language programming.

UNIT V INTERFACING MICROCONTROLLER

Programming 8051 Timers – Serial Port Programming – Interrupts Programming – LCD & Keyboard Interfacing – ADC, DAC & Sensor Interfacing – External Memory Interface- Stepper Motor and Waveform generation – Comparison of Microprocessor, Microcontroller, PIC and ARM processors TOTAL: 45 PERIODS

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