MICROPROCESSOR AND MICROCONTROLLER

Mr. D. Balaji
Assistant Professor – ECE Dept.
Mahendra College of Engineering
Salem, Tamil Nadu, INDIA.

Mr. J. Logeshwaran
Assistant Professor – ECE Dept.
Mahendra College of Engineering
Salem, Tamil Nadu, INDIA.

Mr. Y.M. Mehaboob John
Assistant Professor – ECE Dept.
Mahendra College of Engineering
Salem, Tamil Nadu, INDIA.

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PREFACE

We are very happy to witness the launch of this First edition of our work, which we are sure will generate a lot of interest amongst readers. The field of microprocessors and microcontrollers has undergone phenomenal developments. The Intel microprocessor family has evolved from those early days of 4-bit and 8-bit microprocessors through a long evolution of 16-bit, 32-bit microprocessors to Pentium and the advanced I-7 in addition to many variants of Pentium, Celeron and Itanium.

The arena of multi-core processors has already begun. On the other hand, 8-bit microprocessors are mostly of academic interest only, and microcontrollers are widely used for small, dedicated hardware systems and embedded applications. In this background, we present a brief overview of microprocessors, starting from the basic concept of a microprocessor followed by the intermediate microprocessors, and concepts of microcontrollers and interfacing with microcontrollers.

It introduces undergraduate students to the field of microcontrollers – what they are, how they work, how they interface with their I/O components, and what considerations the programmer has to observe in hardware-based and embedded programming.

This text is not intended to teach one particular controller architecture in depth, but should rather give an impression of the many possible architectures and solutions one can come across in today's microcontrollers. We concentrate, however, on small 8-bit controllers and

their most basic features, since they already offer enough variety to achieve our goals.

✍ *Mr. D. Balaji*

✍ *Mr. J. Logeshwaran*

✍ *Mr. Y.M. Mehaboob John*

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Finally, this work would not have been possible without the love and support of **our colleagues, family members and friends**. We are extremely grateful to one and all.

✍ *Mr. D. Balaji*

✍ *Mr. J. Logeshwaran*

✍ *Mr. Y.M. Mehaboob John*

Thirumigu. M.G.BHARATHKUMAR
Founder & Chairman, Mahendra Educational Trust

Forward

"Computing in their capacity as a tool, computers will be but a ripple on the surface of our culture. In their capacity as intellectual challenge, they are without precedent in the cultural history of mankind".

-Edsger Dijkstra, 1972 Turing Award Lecture

The ECE Department seeks to educate engineers who will possess the basic concepts, tools, skills, and vision necessary to enhance the technological and economic competitiveness of society. This fact, combined with the undeniable impact of Electronics and Communication Engineering on the modern world, demands an introductory college text book comparable with commonly-used textbooks in physics, chemistry, or biology. Accordingly, this book is intended to meet the need for an introductory college text in ECE. The distinctive feature of the book is that it has broader coverage of the field than is found in many texts that are currently in use.

I am delighted to note that the Faculties of Electronics and Communication Engineering of Mahendra College of Engineering Dr.N.Malmurugan along with Mr.J.Sampathkumar have written this book on "MICROPROCESSOR & MICROCONTROLLER" nicely, for the benefit of student community. They have accomplished this goal, and I trust their work will encourage and enlighten all who have an interest in Microprocessor, Realtime applications and the growing role on Telecommunication sector in the modern world.

M.G.BHARATHKUMAR
Founder & Chairman, Mahendra Educational Trust

Dedicated
To
Our Family, Friends & Students

CONTENTS