Microprocessors and Microcomputer Systems

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Preface

This topical state-of-the-art analysis is an integrated digest of the large volume of information presently available on the subject of digital computers as oriented toward the latest innovations, microprocessor and microcomputer.

With an unpredictably short learning phase covering a total of approximately 25 years of changing technology, the digital computer has swiftly moved at an accelerated pace of development, from the relay to the vacuum tube, from the tube to the discrete solid-state temperature-sensitive germanium transistor, parametrics and tunnel diode, from the discrete transistor to the stable silicon monolithic individual integrated circuit (IC), then from the IC to the small- and medium-scale integration (MSI) of the minis, and finally from the MSI to the high-technology of the mass-produced *large-scale* integrated form of microelectronics, LSI, to present eventually a dedicated powerful Microcomputer-on-a-chip that performs at speeds enhanced by 4 to 5 orders of magnitude—as compared to the original vacuum-tube versions.

With each advance in the reduction of size, the digital computer has achieved progressively higher reliability in operation. With regard to its flexibility and its computation capacity, the microcomputer is more powerful than the first- and second-generation digital computers built during the 1950s to occupy oversized rooms.

The author presents this analysis on the presently available microprocessors and microcomputer systems and the associated LSI hardware and firmware, at a time when the technology of microelectronics is fairly well established. The various topics in the text are chosen in order to facilitate communication between not only hardware and software specialists, but also marketing and training personnel. In view of the unavoidable terminology involved, two complete readings are recommended for a better grasp of the hardware and software terms.

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