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8 A Technique for High-Performance Data Compression
Terry A. Welch
Streamlining data for transfer or storage increases effective data densities and helps to control rising software development costs.

21 Communication Mechanisms for Programming Distributed Systems
Sol M. Shatz
Crucial in the programming of distributed computer systems is whether or not to use synchronized sending and receiving procedures. The pros and cons have to be balanced.

30 A Software Development Environment for Improving Productivity
Barry W. Boehm, Maria H. Penedo, E. Don Stuckle, Robert D. Williams, and Arthur B. Pyster
Improving a working environment often results in improved products. This age-old notion was recently applied in the creation of several software development and measurement tools.

46 Routing Strategies in Computer Networks
Wen-Ning Hsieh and Israel Gitman
Some pointers on selection and implementation are given along with a detailed comparison of Arpanet, Tymnet, Telenet, Datapac, SNA, and DNA—some very different approaches to message routing.

57 Software Engineering Practices in the US and Japan
Marvin V. Zelkowitz, Raymond T. Yeh, Richard G. Hamlet, John D. Gannon, and Victor R. Basili
This in-depth survey of 30 companies reveals actual goings-on in software production. Results show that, while practice is 10 years behind research, we have the tools to narrow the gap.

SPECIAL FEATURES

71 Standards Can Help Us
C. Gordon Bell
In a frank, often droll look at standards, DEC's former vice president of engineering concludes that standards really are the best tools for technology evolution. It's how we use them that causes problems.

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Coming Next Month:
Software-Hardware Interaction

June 1984
Vol. 1 No. 2, May 1984 (Quarterly) Nonmembers, $55/yr.; members, $10/yr.

Guest Editor's Introduction: Linking Design and Test
Robert E. Anderson
Advances in semiconductor technology—forced and made possible—the evolution of test technology. An integrated approach to design and test is the next step toward realizing VLSI's full potential.

Self-Testing the Motorola MC6804P2
John R. Kuban and William C. Bruce
A complete built-in self test keeps test costs low for a new low-end microprocessor yet provides high fault coverage and supports parametric testing.

A Digital Polarity Correlator with Built-in Self Test and Self Repair
William S. Blackley, Mervyn A. Jack, and James R. Jordan
This chip's test and repair overhead is only one latch and two multiplexers per correlator stage. Yield on the first batch was enhanced nine to one.

Design for Testability and Self-Testing Approaches for Bit-Serial Signal Processors
Nikos Kunopoulou and G. Thomas Mitchell
A bit-serial architecture imposes some unique test requirements and fault isolation difficulties, but effective solutions—in terms of both cost and performance—can be found.

Testability Emphasis in the General Electric A/VLSI Program
Robert C. Kroeger
Testability is being emphasized from the very beginning of GE's A/VLSI Program to develop 1.25-micron, high-density, radiation-hardened ICs.

CATA: A Computer-Aided Test Analysis System
Chantal Robach, Philippe Malecha, and Gilles Michel

The Fairchild Sentry 50 Tester: Establishing New ATE Performance Limits
Rudy Garcia
High test speed and timing accuracy—essential for testing new-generation devices—require departure from traditional test engineering solutions.

Vol. 4, No. 2, Apr. 1984 (Bimonthly) Nonmembers, $60/yr.; members, $12/yr.

A Microprocessor-controlled Message Display System
Paul D. Siggall and Brian E. Lenkurt
Microprocessors replace electromechanical components to make this message display system both more efficient and less costly.

Introduction to the NS16000 Architecture
Colin B. Hunter and Erin Varghese
The 32-bit NS16000 was specifically designed to support high-level languages. Its page-based virtual memory system helps deliver true mainframe capability.

Automatic Assembler Source Translation from the Z80 to the MC6809
M. F. Smith and B. E. Luff
The automatic translation of source code from the Z80 microprocessor to the MC6809 microprocessor is technically feasible but the translation is inefficient and impractical.

Daniel Tabak
Correspondence


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