ADA (p. 9) “...it has always seemed to me that the ridiculous legalisms associated with language name trademarks and heavy-handed attempts at control impede the free discussion of a language in publications and effectively block the publication of textbooks. If a language is not written about and does not stimulate good textbooks, it will decline and die. I hope that trademarking Ada does not bring about a similar decline in its use and importance.”

ADA IN THE ‘80s (p. 11) “In 1975 the United States Department of Defense began an effort aimed at reducing the rapidly increasing expense of military software systems. This effort has now evolved into one of software engineering’s most exciting and far-reaching developments—the Ada* programming language and associated support environment.

*Ada is a trademark of the US Department of Defense.”

PROSPECTIVE ADA (p. 13) “Ada seems destined to become the dominant programming language of the 1980’s. A modern general-purpose language with unique features to aid the implementation of large real-time systems, Ada fully satisfies the requirements of the US Department of Defense, which funded its development, and does so without compromising its utility in nonmilitary applications. The enthusiastic, rapidly growing community of Ada implementors and prospective users includes many people who have no DoD ties whatsoever.”

WHAT ADA IS (p. 17) “During the five years that Ada was being developed under the sponsorship of the US Department of Defense, considerable effort went into determining what requirements a language intended principally for embedded computer applications had to satisfy. The resulting language, however, is suitable not only for embedded computer applications, but also for general systems programming, real-time industrial applications, general applications programming, numeric computation, and for teaching good programming practices. ...”

THE ADA ENVIRONMENT (p. 26) “Can the Ada environment meet the goals of the DoD high-order language effort? The approach described here promises to be both practical and cost-effective.”

PORTABLE ADA (p. 38) “Software portability goals are a pervasive influence on the Ada effort. The language and environment are specifically designed to promote portability of application programs. Moreover, the Stoneman requires that entire projects be easily moved from one host computer to another. As a natural consequence of this, the environment software itself is largely required to be portable. Portability is so important that the Stoneman goes to the unusual extreme of actually suggesting, in broad terms, a layered architecture for environment implementation. ...”

VALIDATING ADA (p. 57) “A unique part of our effort is the Ada Compiler Validation Implementers’ Guide, or IG. This document discusses the implications of the Ada standard, especially those that are not obvious and those that may pose implementation difficulties. The analysis presented in the IG is needed to design a comprehensive set of validation tests; this analysis will be available to implementers. ...”

TOP-DOWN DESIGN (p. 65) “Top-down system design is an effective approach for designing and constructing systems to successfully meet the gamut of information processing needs.”

TUTORIAL (p. 69) “Research during the last decade has revealed techniques by which future operating systems can avoid the problems associated with previous and present systems.”

GRAPHICS DESIGN (p. 86) “This article, along with a companion to appear in next month’s Computer, is intended to help close the gap between graphics designers and the rest of us. ...”

PLUS VIRTUAL MEMORY (p. 93) “A 48-bit superminicomputer system, the Harris 300 is fully compatible with other systems in the present Harris line and utilizes the company’s Vulcan operating system. Utilizing a powerful 48-bit word architecture and compact magnetic peripherals, the system provides up to two million bytes of real memory and over 12 million bytes of virtual memory.”

FIBER OPTICS (p. 99) “Hughes Aircraft Company is developing a fiber optics communications system for the US Army that will enable a safely concealed gunner to remotely direct a guided missile to a battlefield target. ...”
BUG FIXING (p. 10) “Software engineers chuckle at the thought of being paid for discovering defects in the products they create. This reward scheme would bankrupt even Microsoft’s coffers within days—okay, maybe a week at most. But suppose the cost of repairing bugs were not incurred by the corporation but by the team, including the managers who spawn the bugs?”

PROBLEM SOLVING (p. 11) “There is really a spectrum of desirable programming tools and methodologies that depend on the uniqueness of the application. Our problem today is that too often applications are developed by using the most general-purpose approach (C or C++), rather than first figuring out how to get the job done with as little programming as possible. As I tell students in my classes, the fastest way to program is don’t.”

DIGITAL TELEVISION (p. 14) “The conversion from analog to digital TV has begun. With billions of dollars at stake, computer and television makers are fighting about whether the digital receivers that will replace the millions of existing analog TVs will be more like PCs or televisions.”

MODEMS (p. 20) “… software modems may have a bright future because their relatively low cost allows computer manufacturers to lower the price of modem-equipped systems. However … their future could be limited because of the demand that software modems place on host CPUs.”

Y2K (p. 23) “The Year 2000 problem has already arrived for some people. Credit cards that expire in 2000 are being rejected at some older US point-of-sale terminals. Like software for many large computer systems, these terminals recognize only the last two digits of a year and assume the first two digits are 1 and 9. …”

SOFTWARE LIABILITY (p. 29) “… Like the sword of Damocles, the prospect of seemingly unbounded liability hangs over the heads of today’s software developers: We may well be entering an age in which haphazard development philosophies result in severe penalties. So many people have become dependent on software that it is only a matter of time before lawsuits over information and its quality become commonplace.”

COMPUTING IN INDIA (p. 40) “It is thus important for India to nurture and strengthen its computer industry. In some cases, particularly at the top national research institutions, that has taken place. However, in many cases insufficient funding, an inadequate infrastructure, and other obstacles have hurt the ability of researchers to do high-quality work.”

INTRODUCTION (p. 49) “[Java has become the lingua franca of the Internet not only because it is secure, robust, and safe but also because it is a pleasure to program with. …”

THE AIM OF JAVA (p. 53) “Java is a blue collar language. It’s not PhD thesis material but a language for a job. Java feels very familiar to many different programmers because we preferred tried-and-tested things.”

JAVA SYNCHRONY (p. 59) “Application frameworks targeted for wireless mobile systems can considerably simplify application development. …”

SECURE JAVA (p. 77) “Below I describe two approaches to authentication for code distribution. One extends the Java Virtual Machine to include a digital signature in applets; the other uses MIME (Multipurpose Internet Mail Extension) encapsulation to take advantage of available security infrastructures. …”

ONTOGICAL JAVA (p. 80) “Aside from their many advantages, ontologies have a major disadvantage: They are difficult to construct. We therefore developed the Java Ontology Editor (JOE) to help users build and browse ontologies. …”

NETWORKED JAVA (p. 83) “Nokia developed the Distributed Computing Platform prototype to support distributed telecommunications services. In the process, engineers learned several lessons about Java and CORBA integration.”

DATABASE MANAGEMENT (p. 105) “With the SQL Test Suite, users worldwide will have the tools to determine whether the SQL products they use conform to standards. As SQL applications blossom on the Internet, electronic commerce expands, and distributed queries across heterogeneous databases become a business necessity, the value of the SQL standard rises exponentially. …”

COSIMULATION (p. 111) “Tosca is a step further along the road toward an effective, high-level hardware/software codesign environment. In the future, we will extend the high-level cosimulation strategy to cover target architectures with multiple microprocessors. …”

THE CAPABILITY MATURITY MODEL (p. 114) “And this is the essence of the common features of the CMM—those enablers and evaluators that help ensure that what people want to do is, in fact, being done and is being done right the first time and every time. …”

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