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Dennis Ritchie, Trailblazer in Digital Era, Dies at 70

By **STEVE LOHR**

Dennis M. Ritchie, who helped shape the modern digital era by creating software tools that power things as diverse as search engines like Google and smartphones, was found dead on Wednesday at his home in Berkeley Heights, N.J. He was 70.

Mr. Ritchie, who lived alone, was in frail health in recent years after treatment for prostate cancer and heart disease, said his brother Bill.

In the late 1960s and early '70s, working at Bell Labs, Mr. Ritchie made a pair of lasting contributions to computer science. He was the principal designer of the C programming language and co-developer of the Unix operating system, working closely with Ken Thompson, his longtime Bell Labs collaborator.

The C programming language, a shorthand of words, numbers and punctuation, is still widely used today, and successors like C++ and Java build on the ideas, rules and grammar that Mr. Ritchie designed. The Unix operating system has similarly had a rich and enduring impact. Its free, open-source variant, Linux, powers many of the world's data centers, like those at Google and Amazon, and its technology serves as the foundation of operating systems, like Apple's iOS, in consumer computing devices.

"The tools that Dennis built — and their direct descendants — run pretty much everything today," said Brian Kernighan, a computer scientist at Princeton University who worked with Mr. Ritchie at Bell Labs.

Those tools were more than inventive bundles of computer code. The C language and Unix reflected a point of view, a different philosophy of computing than what had come before. In the late '60s and early '70s, minicomputers were moving into companies and universities — smaller and at a fraction of the price of hulking mainframes.

Minicomputers represented a step in the democratization of computing, and Unix and C were designed to open up computing to more people and collaborative working styles. Mr. Ritchie, Mr. Thompson and their Bell Labs colleagues were making not merely software but, as Mr. Ritchie once put it, "a system around which fellowship can form."

C was designed for systems programmers who wanted to get the fastest performance from operating systems, compilers and other programs. "C is not a big language — it's clean, simple, elegant," Mr. Kernighan said. "It lets you get close to the machine, without getting tied up in the machine."

Such higher-level languages had earlier been intended mainly to let people without a lot of programming skill write programs that could run on mainframes. Fortran was for scientists and engineers, while Cobol was for business managers.

C, like Unix, was designed mainly to let the growing ranks of professional programmers work more productively. And it steadily gained popularity. With Mr. Kernighan, Mr. Ritchie wrote a classic text, "The C Programming Language," also known as "K. & R." after the authors' initials, whose two editions, in 1978 and 1988, have sold millions of copies and been translated into 25 languages.

Dennis MacAlistair Ritchie was born on Sept. 9, 1941, in Bronxville, N.Y. His father, Alistair, was an engineer at Bell Labs, and his mother, Jean McGee Ritchie, was a homemaker. When he was a child, the family moved to Summit, N.J., where Mr. Ritchie grew up and attended high school. He then went to Harvard, where he majored in applied mathematics.

While a graduate student at Harvard, Mr. Ritchie worked at the computer center at the Massachusetts Institute of

Technology, and became more interested in computing than math. He was recruited by the Sandia National Laboratories, which conducted weapons research and testing. “But it was nearly 1968,” Mr. Ritchie recalled in an interview in 2001, “and somehow making A-bombs for the government didn’t seem in tune with the times.”

Mr. Ritchie joined Bell Labs in 1967, and soon began his fruitful collaboration with Mr. Thompson on both Unix and the C programming language. The pair represented the two different strands of the nascent discipline of computer science. Mr. Ritchie came to computing from math, while Mr. Thompson came from electrical engineering.

“We were very complementary,” said Mr. Thompson, who is now an engineer at Google. “Sometimes personalities clash, and sometimes they meld. It was just good with Dennis.”

Besides his brother Bill, of Alexandria, Va., Mr. Ritchie is survived by another brother, John, of Newton, Mass., and a sister, Lynn Ritchie of Hexham, England.

Mr. Ritchie traveled widely and read voraciously, but friends and family members say his main passion was his work. He remained at Bell Labs, working on various research projects, until he retired in 2007.

Colleagues who worked with Mr. Ritchie were struck by his code — meticulous, clean and concise. His writing, according to Mr. Kernighan, was similar. “There was a remarkable precision to his writing,” Mr. Kernighan said, “no extra words, elegant and spare, much like his code.”