K.E.Iverson

Kenneth Iverson

Charismatic mathematician who invented the APL computer programming language A GIFTED mathematician and a charismatic teacher, Ken Iverson made a highly influential contribution to the field of computer science. In the early 1960s a mathematical notation which he had developed as an aide to teaching algebra formed the basis of APL, one of the languages used in programming IBM's early mainframe computer, the System/360. This concise and powerful language contributed substantially to IBM's domination of the emerging computer industry during the 1960s and 1970s.

Kenneth Eugene Iverson was born in Camrose, Alberta, Canada, in 1920. He demonstrated an early aptitude for mathematics he taught himself calculus in his teens. During the Second World War he served in the Royal Canadian Air Force as a flight engineer specialising in reconnaissance. After the war he obtained a degree in mathematics and physics from Queen's University, Ontario, and went on to postgraduate study at Harvard where, in 1954, he obtained a doctorate in applied mathematics, and from 1955 to 1960 he was assistant professor of applied mathematics.

During this period he developed a novel way of teaching algebra to students, the "Iverson notation". It attracted the interest of IBM, which was already well established in commercial and scientific computing fields and was developing a new mainframe, the System/360.

IBM recruited Iverson and three colleagues to turn his teaching notation into a programming language which could be used on the System/360. The result, expounded in his book A Programming Language (1962), came to be known as APL.

APL is one of the most concise, consistent and powerful programming languages yet developed. It encourages prototyping and experimentation in a way that was revolutionary at the time of its launch, and is a concrete expression of Iverson's oft-stated view that a programming language is "a tool for thought".

Despite its use of unusual characters, which necessitated a special keyboard, APL quickly became a popular language and was used widely in the 1960s and 1970s. Iverson continued to work on its development and implementation for many years, and was appointed an IBM Fellow in 1980 in recognition of the importance of his achievement. After leaving the company in 1980 he returned to Toronto, where he worked for IP Sharp Associates, a company

that had developed System/360 programs to support time-sharing, the simultaneous use of the computer by many people.

Although he retired in 1987, Iverson remained an active researcher and worked on the development of programming languages which extended the ideas underpinning APL. The most successful of these, the J notation, has a large and growing user base in the scientific computing community. Iverson actively promoted the diffusion of J until the end of his life.

Iverson's contribution to computer science was widely recognised. He received the Harry Goode Award in 1975, the Turing Award in 1979, the IEEE Computer Pioneer Award in 1991 and the National Medal of Technology in 1991.

Iverson was married to Jean, who survives him, along with their four children.

Kenneth Iverson, inventor of the APL programming language, was born on December 17, 1920. He died on October 19, 2004, aged 83.

Harvard

Ph.D. died October 19, 2004, in Toronto. While at Harvard in the early 1950s, he assisted economist Wassily Leontief by devising the data structures and algorithms that enabled his Nobel Prize-winning input-output model to be calculated on the computers of the day. He also taught the world university course in using computers for business applications; frustrated that no existing mathematical notation was adequate to the task, he devised his own, A Programming Language (APL). Later, at IBM, he helped develop APL into an interactive programming language used widely in academic and commercial applications, especially He received the A.M. Turing Award of the Association for Computing Machinery, the most prestigious award in computer science, in 1979. He leaves his wife, Jean (Nicholson), a daughter, Janet Cramer, three sons, Eric, Paul, and Keith, and two foster daughters, Robin Dick and Sherry Matusky.

Birthday of APL

David Ness,

It's safe to say that 1963 is an impossible date for G&R. That was in the days when it was called Iverson notation. APL was given that name only in 1966. I remember the date very well because I had Eric Iverson working for me that summer along with two of his fellow

recent high-school graduates, and one day, while I was passing the office they shared (at the Mohansic Laboratory where I was then working) Eric shouted to me, "Mr. McDonnell [the last time he ever called me mister], isn't this notation we're using called APL?" I said, "Where did you get that idea? That's a terrible name." (IBM's programming language NPL had just been forced by Britain's National Physics Lab to change its name to PL/I). Eric said, "Well, that's what they call it at Research." (Which was ten miles south of Mohansic on the Taconic Parkway.) It was several months before I found out that Eric was right, Adin Falkoff's acronym for Ken's book A Programming Language was now the name for Iverson notation. I thought Jean Iverson's name "Iverson's Better Math" was much better.

It does suggest, however, that 1973 is the date of original publication of G& R. Len Gilman compiled the text from Al Rose's lectures, as I noted before, and I made suggestions to G&R for additions or changes to the proofs, but I'm sure I only got my gift copy from them after I and the entire APL group had moved to Philadelphia to form the IBM Philadelphia Scientific Center. We moved there in the summer of 1970, and I'm pretty sure the gift copy I got was toward the end of our stay in Philadelphia – and we moved to Palo Alto in the late summer of 1974.

Eugene McDonnell

Birthday of J

"One summer weekend in 1989, Arthur Whitney visited Ken Iverson at Kiln farm and produced — on one page and in one afternoon — an interpreter fragment on the AT&T 3B1 computer. [Roger Hui] studied this interpreter for about a week for its organization and programming style; and on Sunday, August 27, 1989, at about four o'clock in the afternoon, wrote the first line of code that became the implementation described in this book."

/An Implementation of J/ by Roger K.W. Hui, pg. 74, "Incunabulum"