John Backus

Overview/ Early Life

John Backus is the software engineer who is best known for creating the programming language Fortran, the first high level programming language to be put to broad use.

Born in Philadelphia, Pennsylvania on December 3rd 1924, Backus spent most of his early life in his hometown. The son of a wealthy stockbroker, he attended The Hill School in Pittstown, Pennsylvania. After graduating in 1942, he went to the University of Virginia where he majored in Chemistry. He was expelled from the university less than one year after enrolling due to poor attendance.

His life would take a turn for the better after being conscripted into the US army in 1943. Whereupon his aptitude test results were so high that he was "dispatched on government financed programs to three universities, with his studies ranging from engineering to medicine". (Lohr, 2007)[5] He graduated from Columbia University with a master's degree in mathematics in 1950.

Introduction to IBM

Shortly before graduating, whilst on a tour of the IBM headquarters in New York, he made a comment to his tour guide about his current studies as well as how interested he was in working with computers. Whereupon he was taken upstairs and given a series of questions he described as, "math brain teasers". After answering their questions, he was hired on the spot (Booch, 1977)[2]. Given that the first computer science degree wasn't created until 1953(ibm.com)[4], he didn't need any qualifications in the field of computer science in order to get the job.

Speedcoding & Fortran

When Backus joined IBM, programming meant writing code at the machine level, in order to make this process easier, he created a programme called 'Speedcoding', which was the first high level programming language useable on an IBM computer (Allen, 1981)[1]. Speedcoding "allowed operations on floating numbers to be described in a more symbolic form." (Booch, 1977)[2]. Following his work on Speedcoding, Backus proposed that he could devise a way to simplify programming. After receiving the greenlight from his superiors, he composed a team of 10 people. A short time later, in late 1953, development began.

Influence of Fortran

Development finished and Fortran was released in 1957, at first the public were sceptical as to whether a high level programming language could be compiled as fast as a hand coded assembly language. However, after it was proven that Fortran reduced the number of statements it took to operate a machine by a factor of 20 (Gray, 2001)[3], it was widely accepted.

Fortran opened the field of programming to those whose expertise were in areas other than computer science, such as mathematicians and scientists. “Fortran began the process of abstracting software from the hardware on which it ran (Gray, 2001)[3].” Whereas previous languages had to be written for a specific computer, Fortran could run on any computer with a Fortran compiler.

The language found its way into many different industries; banks began to use it for building programmes that involved processing massive amount of numbers in order to assess risk. While insurance companies used Fortran to create actuarial tables.

By 1966 it was used in almost all of the data centres in the US and around Europe.

Fortran Today

Today, Fortran is the language used by the programmes that rank the world’s fastest supercomputers. The programme used for this is called LINPACK and it measures a system’s floating-point computing power. Fortran is also commonly used to analyse the data gathered from a Doppler radar, which is used in weather forecasts as well as studying atmospheric pressure (Gray, 2001)[3].

Later Life/Death

John Backus received the ACM Turing award in 1977 for “His profound, influential, and lasting contributions to the design of practical high level programming systems.” He went to work on many other projects right up until his retirement in 1991. Shortly after his death in 2007 he had an asteroid named “6830 Johnbackus” in his honour (Booch, 1977)[2].

It is clear that John Backus, as well as Fortran, were extremely influential within the field of software engineering, paving the way for people without in-depth knowledge in computing to be able to create software, as well as enabling experts to write code within a fraction of the time it used to take.

Bibliography

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