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Charles Bachman

The key figure in software engineering I have decided to focus on is Charles Bachman the third, who is renowned for his work in the early development of database management systems. Charles Bachman was an American computer scientist who was born in 1924 and lived until 2017.

Charles Bachman was born in 1924 in Manhattan, Kansas. His father was head football coach at Kansas state college and was also named Charles Bachman. He attended school in Michigan. During world war 2 he joined the US army and served in the anti-aircraft artillery corps in Australia, the Philippine islands and New Guinea. He was discharged in 1946 and studied at Michigan state college where he graduated with a bachelor's degree in mechanical engineering. During this time he was a member of Tau Beta Pi.

After he graduated from Michigan he then attended the University of Pennsylvania where he graduated with a master’s degree in mechanical engineering. He had apparently shown an interest in mechanical engineering from a young age, as he entered and progressed to a national competition in Akron Ohio in a soap box racing competition.. He also attended the Wharton school of business. During this time he got married to Constance Hadley who he would then go on to have four children with. Chandini, Jonathan, Sara and Thomas, all of whom he would be survived by.

After his graduation he began to work for Dow chemical company in Michigan as an engineer on operations research problems. Then in 1957 he was chosen to be the head of the new data processing division. During this time he worked with SHARE , an IBM user group, to develop the IBM 709 Data Processing Package, called 9PAC , a new version of report generation software. After this in 1961 he joined the General Electric Company in New York. It was around this time that Charles Bachman also introduced “Bachman Diagrams” which were data structure diagrams which helped supply a visual map of these data structures as well as offering a clear view on how to navigate them.

Nine years later in 1970, the General Electric company was purchased by Honeywell inc. He then moved to Boston to work for their advanced research group until 1981 when he then moved to Cullinane Database Systems Inc, where he worked on the thing he is most famous for , databases.

In 1983 he formed his own consulting firm called Bachman Information Systems inc. This company built computer aided engineering products (also known as C.A.S.E products). The main product was the BACHMAN/Data Analyst which automated the design and publication of Bachman diagrams and generated database schemas through forward and reverse engineering. After numerous acquisitions and mergers, Charles Bachman eventually turned to freelance consultation.

Throughout Charles Bachman's life he contributed hugely to the field of computer science , and won numerous awards. One such award he won was the Turing award in 1973 for his work in database technology. This award is referred to as the computer science equivalent of a Nobel prize, he was also the first person to win a Turing award that did not hold a PHD. He was also elected a Distinguished Fellow by the British Computer Society in 1977, he was named an ACM (Association for Computing Machinery) fellow in 2014 for contributions to database technology and was also made a fellow of the computer history museum in 2015 for his early work on developing database systems. Another major award Bachman was given was the national medal of technology and innovation by president Barack Obama in 2012.

His best known invention was the invention of the first random access database management system, the Integrated Data Store (IDS), which carries out what, to this day, we still consider some of the core tasks necessary for data management systems. This IDS had numerous features such as a database language that integrated smoothly with pre-existing programming languages, virtual memory storage , an integrated translation oriented monitor among other features.

Bachman designed it to be used as a practical tool rather than a research product. This database was widely used due to its high performance, and eventually became the basis CODASYL database task group standards.

The IDS was considered to be ahead of its time, as it was able to implement capabilities that had been theorised but had not been put into practice. It is considered the first database management system. This creation of the IDS was what led to Charles Bachman winning the Turing award in 1973.

Bachman holds over a dozen US patents in database software, which is the field of software engineering he is most well known for. It was largely what he worked on and for his work with databases he was awarded numerous times and had a huge impact on the progress of computer science due to its innovation.

Another contribution Bachman made to software engineering and computer science was when he chaired the American National Standards Institute (ANSI) and the International Standards Organization (ISO) from 1978 until 1982. These organisations are committees which standardised the OSI seven layer reference model.

It is considered that both the fields of computer science and software engineering that Charles Bachman played a hugely influential role. Despite living in an ever changing world of software tools and new innovations, a debt is owed to Charles Bachman the third for his pioneering work in the areas, be it something as simple as a product search online.

In 1996 he eventually retired to Arizona, after spending over 50 years working in the industry. His wife of 62 years and sometimes business partner passed away in 2012, the same year he was awarded by Barack Obama the national medal of technology and innovation. Charles Bachman himself sadly passed away in 2017 due to Parkinson's disease, aged 92.

I believe it clear to see the huge impact Charles Bachman had on the world of software engineering mainly due to his pioneering work and numerous innovations which helped fuel the academic research of computer science and moreover the world of computer science itself. Due to his creation of things such as the IDS and his projects on database work he has established himself as a huge contributor to this field as he helped popularise computers in the corporate world.

References.

* <https://www.washingtonpost.com/local/obituaries/charles-bachman-engineer-who-devised-a-better-way-to-manage-data-dies-at-92/2017/07/16/8eb8ebde-6a36-11e7-96ab-5f38140b38cc_story.html>
* <https://cacm.acm.org/magazines/2016/7/204036-how-charles-bachman-invented-the-dbms-a-foundation-of-our-digital-world/fulltext>
* <https://computerhistory.org/profile/charles-w-bachman/>
* <https://en.wikipedia.org/wiki/Charles_Bachman>
* <https://history.computer.org/pioneers/bachman.html>
* https://en.wikipedia.org/wiki/Integrated\_Data\_Store