May 11th

Edsger Wybe Dijkstra

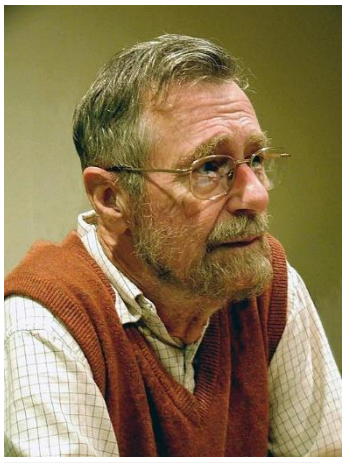
Born: May 11, 1930;

Rotterdam, Netherlands
Died: Aug. 6, 2002

Among Dijkstra's many contributions is the shortest path algorithm (aka Dijkstra's algorithm), the first comoiler for ALGOL 60 [Jan 11], Reverse Polish Notation and the related shunting yard algorithm, the THE multi-level multiprogramming system; the Banker's algorithm for deadlock prevention, the semaphore, and self-stabilizing distributed systems.

Dijkstra's "Cooperating Sequential Processes" (1965) is often cited as the paper that laid the conceptual foundation for abstract concurrent programming.

In 1968, Dijkstra sent a brief letter to the editor of *Communications of the ACM* (CACM) entitled "GOTO statement considered harmful" calling for the unrestricted GOTO to be removed from higher-level languages.



Edsger W. Dijkstra. Photo by Hamilton Richards. CC BY-SA 3.0.

Aside from the insightful contents of that letter, the title has proved immensely popular – many articles have appeared since that proclaim 'X considered harmful' for almost any X, including one called "Dijkstra considered harmful". However, Dijkstra's original title for the piece was "A case against the GOTO statement"; it was changed by the CACM editor, Niklaus Wirth [Feb 15].

In 1972 Dijkstra co-authored 'Structured Programming' with Ole-Johan Dahl [Oct 12] and Tony Hoare [Jan 11], perhaps the best academic book about software written in that decade. The phrase, 'Structured Programming' was coined by Dijkstra. The Oxford English Dictionary also attributes "vector" and "stack" in a computing context to Dijkstra.

Dijkstra was well known for composing his manuscripts with a fountain pen; his favorite was the Montblanc Meisterstück. The manuscripts are numbered, and prefixed by his initials EWD. The last one, EWD 1318, dates from April 14, 2002.

Dijkstra believed he was the first Dutchman to become a programmer (in the Spring of 1952). When he got married in 1957 the municipal authorities in Amsterdam wouldn't allow him to state his profession as "programmer" on the civil paperwork since no such profession existed at the time. Instead the certificate lists him as a "theoretical physicist". (After leaving high school, Dijkstra had first thought he would become a physicist.)

A few quotes:

"The question of whether machines can think is about as relevant as the question of whether submarines can swim."

"If debugging is the process of removing bugs, then programming must be the process of putting them in."

"There is not now, nor has there ever been, nor will there ever be, any programming language in which it is the least bit difficult to write bad code."

"Testing can only prove the presence of bugs, not their absence."

Forrester's Core Memory

May 11, 1951

Jay Forrester [July 14] filed a patent application for magnetic ferrite core memory entitled "A multicoordinate digital information storage device". It was granted as US 2736880 on Feb. 28, 1956.

Core memory consists of a large number of small toroidal ferromagnetic ceramic ferrites (i.e. cores) held together in a grid by wires woven through the cores' holes.

Several people developed magnetic core technology in the late 1940's, but Forrester received the principal patent, even though he submitted his application after An Wang's [Feb 7] on [Oct 21] 1949.

During the 1950's and 1960's, it was hotly debated, both in and out of court, who should receive main credit for the discovery. Forrester could point to a June 15, 1949 entry in his notebook, which recorded his first thoughts on a core memory system.

Forrester's system required one of the wires to run at 45 degrees to the cores, which proved impossible to construct automatically by machine. The result was that early core grids had to be assembled by hand, with the aid of a microscope and excellent hand-eye coordination.

The automation problem was solved by the late 1950's, and manufacturing costs fell to the point where core became largely universal as main memory in the early 1960's. Costs had begun at roughly $1.00 per bit and had dropped to roughly $0.01. Vacuum tubes, transistors, and even inexpensive, but low-performance, drum memory were discarded.

Forrester once remarked, “It took us about seven years to convince the industry that random-access magnetic-core memory was the solution to a missing link in computer technology. Then we spent the following seven years in the patent courts convincing them that they had not all thought of it first.”

VisiCalc Demoed
May 11, 1979

Dan Bricklin [July 16] and Bob Frankston [June 14] gave the first demo of their VisiCalc spreadsheet at the 4th West Coast Computer Faire to dealers and the press. The first public announcement and demo was held at the National Computer Conference in NYC in June 1979. VisiCalc was released on [Oct 19].

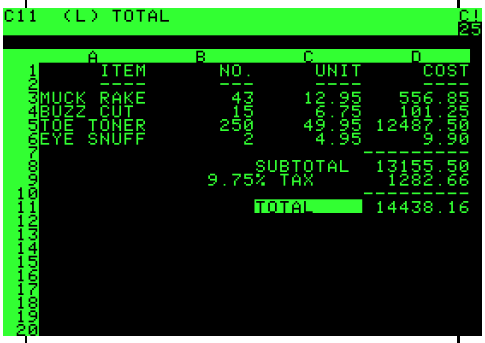
The software traces its history back to a presentation that Bricklin attended at Harvard Business School in 1977. The professor drew a financial model on the blackboard, ruled with lines to create a table, with formulas and data written into the cells. (The professor may have been Barbara Jackson who was teaching a course on financial forecasting tools that Bricklin attended at this time.)

When the professor found an error or wanted to change a parameter, she had to rewrite multiple entries in the table. In that moment, Bricklin realized that he could replicate the process on a computer.

Bricklin coded the first prototype in BASIC on a PDP-10 [Nov 00] at Harvard in the spring of 1978. He was keen on converting it into a product, and Charles Kelso, another Harvard finance professor, suggested that he talk to Dan Fylstra [March 26] who sold software through his company, Personal Software. Their first meeting was on Sept. 25. 1978.

Bricklin borrowed Dan Fylstra’s Apple II [June 5], and over a long weekend (probably Oct 7-9 (the 9th was Columbus Day)), he prototyped a version of VisiCalc in AppleSoft BASIC. This persuaded Fylstra to support the full project, and to become the distributor of VisiCalc.

Since Bricklin was finishing off his Masters, Frankston did most of the programming. He coded in 6502 assembler via an account on MIT’s Multics System [Nov 30], which he logged into from his attic apartment in Arlington. He downloaded the code over the phone, and tested it on the Apple II borrowed from Fylstra. Apparently, Fylstra never got the machine back.



VisiCalc on an Apple II. Photo by Gortu.

Frankston later described VisiCalc as a “magic sheet of paper that can perform calculations and recalculations”. This was sometimes abbreviated to “magic blackboard”. However, the VisiCalc name supposedly stood for visible calculator, and was probably coined by Frankston and Fylstra during a breakfast meeting at “Vic’s EGG on ONE” coffee shop on Massachusetts Avenue in Boston. Other names that floated around at various times were “electronic blackboard”, “CalcuLedger”, and “CompuLator.”

There were earlier spreadsheet systems than VisiCalc [July 00], but they focussed on making it easier to write formulae which processed numerical data. Crucially, none of them offered an interactive, grid-based GUI.

Rusty n Edie’s BBS
May 11, 1987

Rusty n Edie’s BBS, founded by Russell and Edwina Hardenburgh, had become one of the largest bulletin board system by the early 1990's, with over 14,000 subscribers across the US, Canada, and Europe, and over 120 modem lines.

Their motto was: “No Censorship! No Rules! No Hassle!” and the claim that “We are the friendliest BBS in the World”. They were proud of their huge adult section, including over 5 GB of pictures, conveniently watermarked with the BBS’s name and telephone number.

On Jan. 30, 1993, Rusty n Edie’s was shut down by the FBI due to software piracy. By some accounts, the BBS contained copies of just about every commercial game, as well as Microsoft, Novell, Borland, and other business software. PCs, modems, LAN cabling, software packages, and subscriber records were seized.

A sysop of another BBS commented, “Rusty n Edie’s was the worst-kept secret in the industry. I don’t know if it’s a shame or about time.”

On March 11, 1993, a copyright infringement lawsuit was filed by Playboy Enterprises in response to the availability of over 400 adult GIFs on the site which had been scanned without permission from *Playboy* magazine. A mere five years later, on Feb. 3 1998, the case was dismissed after a private settlement had been reached.

For more bulletin boards, see [Feb 16], [Nov 28], [Dec 10].

First E3
May 11-13, 1995

The first Electronic Entertainment Expo (E3), a trade show for the video game industry, was held in Los Angeles, organized by the

Entertainment Software Association (ESA).

The show took its name from the "Electronic Entertainment" magazine, and around 350 game companies displayed 1,300 games. Total attendance was somwhere between 30,000 to 50,000. Highlights included Sony's announcement of the PlayStation's release date and pricing [Dec 3], Sega's surprise launch of the Sega Saturn [Nov 22], and Nintendo's showcase of the Virtual Boy console [Nov 14].

Before E3 began, game publishers had attended more general trade shows, such as the Consumer Electronics Show (CES [June 24]) and ECTS (the European Computer Trade Show).

According to Tom Kalinske, CEO of Sega America, "The CES organizers used to put the video games industry way, way in the back. In 1991 they put us in a tent, and you had to walk past all the porn vendors to find us. That particular year it was pouring rain, and the rain leaked right over our new Genesis system" [Oct 29].

In 2017, E3 opened its doors to the public for the first time, with around 15,000 public passes sold. The last real-world E3 was held in 2019, followed by a digital-only event in 2021. In 2024, Stanley Pierre-Louis, ESA's CEO, confirmed that the show was permanently canceled.

Deep Blue Beats Kasparov (Part 2)

May 11, 1997

The rematch between IBM's Deep Blue [Dec 5] chess-playing computer and Garry Kasparov, the reigning world champion, kicked off. The previous year [Feb 10], Kasparov had played a juvenile version of Deep Blue and won 4-2. This time Deep Blue would win: 3.5-2.5.

After the loss, Kasparov suggested that during the second game (which Deep Blue won), human chess players may have intervened to help the machine, which would have been a violation of the rules.

IBM denied this, saying that the only human intervention occurred between games. This was permitted since it let the developers fix any weaknesses in the computer's play that were revealed during the previous match.

Nate Silver [Jan 13] suggested an alternative explanation – a bug in Deep Blue's software had led to a seemingly random move which Kasparov misattributed to "superior intelligence". This made Kasparov play less well due to anxiety.

Deep Blue. Photo by James the photographer. CC BY 2.0.

Although some people argued that Deep Blue's win was a milestone for AI, the system derived its playing strength mainly from brute force computing power. It employed a massively parallel 30-node system, with each node enhanced with 480 special purpose VLSI chess chips for executing searches. This meant that it was capable of evaluating 200 million positions per second, twice as fast as the 1996 version of Deep Blue. However, the machine's performance was a mere 11.38 GFLOPS as measured by LINPACK benchmarks [Dec 1], which made it only the 259th most powerful supercomputer at the time.

Deep Blue's victory also forced professors teaching AI to update their standard example of a game where humans could beat machines. Most seemed to replace chess by the Chinese game of Go. Sadly that also fell before AI/fast hardware on [Jan 27] 2016 and [May 23] 2017.

For earlier chess playing devices, see [April 00; April 16; Jan 7; June 00; Aug 31; Sept 25; Nov 8; Nov 22; Dec 18; Dec 28].

AIBO's Barking

May 11, 1999

AIBO (Artificial Intelligence Robot, and sounding like aibō (相棒?) meaning "pal" or "partner" in Japanese) was a series of robotic pets, mostly looking like dogs. The AIBO was designed to "learn" by interacting with the environment, its owner, and other AIBOs. It could respond to more than 100 voice commands.

Sony announced the prototype in mid-1998, and the first consumer model was introduced on this day. New versions were released every year until 2005.

The AIBO was followed by the humanoid QRIO, released on [Nov 11] 2000. Both the AIBO and the QRIO came from Sony's Digital Creatures Lab, led by Toshitada Doi. AIBO's first body was designed by Hajime Sorayama.

AIBO's original hardware included a 64-bit RISC processor, 16 MB of RAM, assorted sensors (touch, camera, range-finder, microphone, accelerometer), a speaker and several actuators located in its legs, neck, mouth, and tail.

AIBOs were marketed for domestic use as "Entertainment Robots". They were also widely adopted by universities for educational and research purposes (e.g. they were popular in RoboCup competitions [Aug 23]).

Hacking associated with the entrants to RoboCup led Sony to invoke the Digital Millennium

Copyright Act [Oct 28] in Oct. 2001, but the company eventually backed down and actually released a programmer's kit for "non-commercial" use. This included a very nice C++ based SDK, and a scripting language.

Sony AIBO, model ERS-7. Photo by Maksim. CC BY-SA 3.0.

Shortly after the AIBO's introduction, *The New Yorker* published a cartoon by Jack Ziegler showing a naughty AIBO "urinating" nuts and bolts over a fire hydrant.

When the AIBO project was shut down, Toshitada Doi staged a mock funeral, attended by more than 100 colleagues, and remarked that the AIBO was a symbol of a risk-taking spirit at Sony that was now dead. Thankfully, great ideas don't often stay dead, and in Nov. 2017, Sony announced a new generation of AIBOs.

For more electric/robot dogs, see [April 30], [June 7], [Sept 27], [Nov 18].