PC history

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What Was The First PC?

The Computer Museum in Boston asked that question in 1986, and held a contest to find the answer. Judges settled on John Blankenbaker's Kenbak-1 as the first personal computer.

Kenbak-1 (1971) early desktop

The Computer History Museum recognizes the Kenbak 1 as one of the *very earliest* machines that could be described as a PC.

Demonstrated in the spring of 1971, before Intel introduced the 4004 MPU, the Kenbak-1 was a stored program, automatically sequenced unit. It sold for $750 as a completely assembled and functioning machine. The logic consisted of TTL SSI and MSI circuits mounted on one printed circuit board. MOS shift registers implemented the 256-byte serial memory. Switches keyed the input and lights displayed the output. The memory contained 256 bytes and the computer executed several hundred instructions per second. [http://www.kenbak-1.net/]

First PC

The title of first personal computer using a *microprocessor* went to the 1973 Micral. Designed in France by André Truong Trong Thi and Francois Gernelle, the Micral used the Intel 8008 microprocessor.

" The [1975] Altair 8800 from Micro Instrumentation Telemetry Systems (MITS) of Albuquerque, NM, is considered by many to be the first "personal computer" - a computer that is easily affordable and obtainable. "

At about the same time, there was also a good competitor: the IMSAI "Series Two". (There was also an "Altec-Lansing" model similar to this.)

"PC" history-- home computers

John Mick: "Actually, Altair started the home computer revolution with an article in Radio Electronics (I think that was the magazine) in about 1973. They expected to sell about a dozen. They got orders for over 200 units the first couple of weeks after the article appeared. They were located in Albuquerque. Bob Roberts was their President. Bill Gates and Paul Allen were working there doing "Tiny Basic". I visited them several times and we built an 8080 emulator for them at AMD using 2900-family bit-slice microprocessor devices."

"I had my first home computer, an Altair 8800B in 1975. Several of us bought refurbished teletypes from Tymshare for our I/O. We had to toggle in a 56 byte boot loader with switches on the front panel and then load BASIC with paper tape via the teletype. Then we advanced to audio cassette (via Bill Gates work) and finally to 8-inch floppies running CPM. That was real computing!"

Dr Jeff: More great stuff on the early PCs, John. Here is an excerpt from *Wikipedia*:
"The Altair created a new industry of microcomputers and computer kits, with many others following, such as a wave of small business computers in the late 1970s based on the Intel 8080, Zilog Z80 and Intel 8085 microprocessor chips. Most ran the CP/M-80 operating system developed by Gary Kildall at Digital Research. CP/M-80 was the first popular microcomputer operating system to be used by many different hardware vendors, and many software packages were written for it, such as WordStar and dBase II."

John Mick: "Jobs and Wozniak brought the Apple 2e with the 6805 (I think it was) every week to show."

Dr Jeff: I believe Apple switched MPU suppliers from Motorola (6800) to Synertek (6502, 6505) for some reason. (I attached a photo of the Apple II, from *Wikipedia*.)

1st "PCs"
I claim that far and away the "PC" became real with the introduction in Aug 1981 of the IBM PC. I base the term "PC" not on hardware, but on software and hence "usability". I suggest the prior art of the PC and its evolution followed these 6 stages:
1. hobby/home "microcomputers" that were built from kits based on the first microprocessors (8008, 8080, and later M6800) -- think Heathkit and Radio Shack.
2. fully built, off-the-shelf "microcomputers"-- I suppose the first was the MITS Altair 8800, but I claim the Apple I and II (especially) was the first mass marketed consumer "PC", which changed the model from kit or industrial looking (MITS) to a consumer computer (Apple).

3. Kildall's CP/M adopted for "PC" use was a seminal change too. this was the first use of a user-friendly and fully functional OS for a PC. there was the Radio Shack TRS-80 and then a Xerox PC too.
4. the IBM PC (Aug 1981) changed the PC world. full OS plus built-in Basic for user programs, plus library of business software, plus monitor, keyboard and printer -- a complete business solution. and just a couple years later (1983?), the IBM PC-AT became the first to use a hard disk (10 MB).
5. just a year later in 1984, the Apple Mac changed the world of OS into mouse-pointed GUI-based, along with a single casing housing all peripherals, including monitor but excluding printer.
6. "portable" PCs started with the Osborne, followed by Compaq's first portable. these much later morphed into the ubiquitous "laptop" and "notebook" PCs, with Apple also making "Mac Books".

Oddly enough, *Wikipedia* claims the best selling early PC was the *Commodore 64*, which used an 8-bit 6510 MPU by MOS Tech, which was owned by Commodore. Prior to the *Commodore 64,* intro'd in 1983, there was the very popular original *Commodore PET* (likely 6502-based). It is noteworthy that the Apple II might have been the first "PC" to use a floppy disk drive, and the *Commodore 64* was the first from Commodore to use a disk drive. Prior "PCs" used tape cassettes for storage. (I had a contract job developing "The Home Accountant" for the *Commodore 64* back in 1983, but I had to cope with a tape cassette for program storage for 6 months, until the floppy disk drive finally arrived.)
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Tony DiColli

Commodore was in my territory (Pennsylvania). We used to

deliver boxes of EPROM wafers in August to MOS Technology, Commodore's IC subsidiary, in prep for the Christmas season. I think they were considered the best selling product at the time because they had a very extensive sales team covering all of South America. Also, if memory serves, once this product reached maturity (cradle to grave was 1982-1994 - intro price $595), the commodore build cost was in the $10-$20 range.

... Listed in the Guinness Book of World Records as the highest-selling single computer model of all time ... Wikipedia
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for my software development on it, I wrote in Basic, which was built-in, like for the Apple II and the Atari at that time (1982), and I used a standard color TV as my monitor, with a simple composite color on a coax. but I wasnt happy unitl my first floppy disk drive (external box) arrived, as the tape cassette I had been stuck with using was painful to use.

to John: nice utilization of our AMD/C "System/8" CP/M based boxes -- to run standard business CP/M apps on it. that is what the AMC exec's didnt get: running CP/M as our box OS was a big deal, one that we should have promoted not concealed. (that was one of my marketing battles with them.) so they called the OS "AMD/OS".

But John, that "System/8" was a $30,000 box!
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Rick Marz rick@marz-net.com

We all have our own 'history' of the personal computer and my timeline precedes my start at AMD in 1977 by a few years. Around 1973, when I was still at Motorola, we introduced a 6800 (not 68000) evaluation kit. It was a single board affair with a numeric keyboard for hex input (with a few extra

control keys) and an LED display. I found machine language to be tedious and uninteresting.

In 1974 I joined Cramer Electronics as the VP, GM in their Northern CA division. Cramer was well positioned to see the launch of the entire PC revolution. I recall that we sold to dozens of the early S-100 computer manufacturers in the Bay Area, the most important names were IMSAI, (remember the famous computer in the movie War Games with Matthew Broderick), Processor Technology (Sol computers), Cromemco, Morrow Designs, Northstar Computer and many others.

I remember the famous Popular Electronics article in January 1975 covering the MITS Altair 8800. I knew it was the beginning of a revolution.

These were basically 8080 machines running CP/M and external storage was often cassette tape machines or 8" floppies. One of Cramer's customers was Paul Terrell, owner of The Byte Shop on El Camino in Mountain View. Paul was providing components and boards to the early Homebrew Computer Club members which included Steve Jobs. When the two Steve's (Jobs and Wozniak) got their first order for a small quantity of computers, it was Terrell (with Cramer) that provided the parts and The Byte Shop did the assembly of the mother board. The beginning of Apple Computer.

Back to 'my' personal computers, my first recollection was the purchase of a TRS-80 from Radio Shack in late 1977 after I started at AMD. This unit really was a BASIC interpreter machine and had a few 3rd party programs distributed on cassette tape, their original external storage media. In 1978 they introduced a disk operating system module that I purchased, and having great connections to companies like Shugart Associates I bought two 5" floppies for about $700 total. My next big adventure was to build a computer from the ground up using a Z-80 CPU and Zilog peripherals on a motherboard design known as a Ferguson board. Connections helped, and obviously all those Zilog samples were freebies. I remember an AMD guy helping me write a software driver to operate an Epson dot-matrix printer. I added four, 8" floppy drives for external storage. The disks weighed about 80 pounds and provided about 160K storage per drive. It ran CP/M as the operating system, and my early productivity software included Wordstar-8, VisiCalc and a few utility programs. I still have the system and it still booted last time it ran, about 35 years ago. I built the whole computer into a Tandem CRT/Keyboard so it was pretty much an 'all-in-one' design. Used it for several years until I moved to Boston in 1983. (Nobody told me about his Space Invaders game.)

That year I bought my first IBM PC, complete with two 5" floppies and green CRT monitor. Soon after, I replaced one of the floppies with a half-height 10MB (that's correct, megabyte) hard disk. The hard disk came at the bargain price of $795 from Everex, including controller board. Not long after that the PC market was heating up and Compaq announced their Am80286 'luggable' portable. I had to have that for sure. While in Boston I also added a TRS-100 notebook computer, the first of the communications enabled devices with built-in 300 baud modem. I remember Tony Rea and I marveling and sending early email to each other although I can't recall what service we used. I still have that machine.

When I returned to Sunnyvale in 1985, I was still using my own computer at the office. I can't recall if AMD was even providing them to employees at that time.

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Dave Laws

The first "PC" to use Kildall's CP/M disk operating system with the BIOS code that allowed the OS to run on any hardware based on the Intel 8080 was the IMSAI 8080. The BIOS was developed by Kildall working with Glenn Ewing a consultant to IMSAI of San Leandro, CA and released as v. 1.3 in 1976. The machine began shipping with the floppy disk drive in Spring 1977. Woz's famous disk drive controller for the Apple II was demonstrated a year later at the 1978 Consumer Electronics Show. There's more than you ever wanted to know about IMSAI (Integrated Management Systems Associates Inc) at: http://www.imsai.net/history/imsai_history.htm