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The first microprocessor

Although computers were somewhat scarce in the 1960s, there was a large and growing market for electronic desktop calculators. In 1970, the Japanese calculator company Busicom approached Intel with a request to design a set of twelve integrated circuits for use in a new calculator.

The task was presented to one Marcian "Ted" Hoff, a man who could foresee a somewhat bleak and never-ending role for himself designing sets of special-purpose integrated circuits for one-of-a-kind tasks. However, during his early ruminations on the project, Hoff realized that rather than design the special-purpose devices requested by Busicom, he could create a single integrated circuit with the attributes of a simple-minded, stripped-down, general-purpose computer processor.

The result of Hoff's inspiration was the world's first microprocessor, the 4004, where the '4's were used to indicate that the device had a 4-bit data path. The 4004 was part of a four-chip system which also consisted of a 256-byte ROM, a 32-bit RAM, and a 10-bit shift register. The 4004 itself contained approximately 2,300 transistors and could execute 60,000 operations per second. The advantage (as far as Hoff was concerned) was that by simply changing the external program, the same device could be used for a multitude of future projects. Knowing how pervasive micro-processors were to become, you might be tempted to imagine that there was a fanfare of trumpets and Hoff was immediately acclaimed to be the master of the known universe, but such was not to be the case.

The 4004 was so radically different from what Busicom had requested that they didn't immediately recognize its implications (much as if they'd ordered a Chevy Cavalier, which had suddenly transmogrified itself into an Aston Martin), so they politely said that they weren't really interested and could they please have the twelve-chip set they'd originally requested (they did eventually agree to use the fruits of Hoff's labors).

In April 1975, Bill Gates and Paul Allen founded Microsoft.

In March 1976, two guys called Steve Wozniak and Steve Jobs (who had been fired with enthusiasm by the Altair 8800) finished work on a home-grown 6502-based computer which they called the Apple 1 (a few weeks later they formed the Apple Computer Company on April Fool's day).

Although it was not tremendously sophisticated, the Apple 1 attracted sufficient interest for them to create the Apple II, which many believe to be the first personal computer that was both affordable and usable. The Apple II, which became available in April 1977 for \$1,300, comprised 16 K-bytes of ROM, 4 K-bytes of RAM, a keyboard, and a color display. Apple was one of the great early success stories. In 1977 they had an income of \$700,000 (which was quite a lot of money in those days), and just one year later this had soared tenfold to \$7 million! (which was a great deal of money in those days).

One point that may seem strange today is that there were practically no programs available for the early microcomputers (apart from the programs written by the users themselves). In fact it wasn't until late in 1978 that commercial software began to appear. Possibly the most significant tool of that time was the VisiCalc spreadsheet program, which was written for the Apple II by a student at the Harvard Business School and which appeared in 1979.

It is difficult to overstate the impact of this VisiCalc, but it is estimated that over a quarter of the Apple machines sold in 1979 were purchased by businesses solely for the purpose of running this program. In addition to making Apple very happy, the success of VisiCalc spurred the development of other applications such as wordprocessors.

When home computers first began to appear, existing manufacturers of large computers tended to regard them with disdain ("It's just a fad it will never catch on"). However, it wasn't too long before the sound of money changing hands began to awaken their interest. In 1981, IBM launched their first PC for \$1,365, which, if nothing else, sent a very powerful signal to the world that personal computers were here to stay.

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