

Microprocessors 13917

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If there is one piece of technology in this world today that has been through thousands of revolutions and evolutions in the past several decades, it is the computer. The basis of all computers is the microprocessor, which is integrated on the motherboard which functions as the computer's nucleus or brain. The microprocessor has evolved heavily since Intel's discovery of the 4004 in 1971 to the present Pentium III class processors. Even today, the speed, complexity, versatility, and efficiency of processors are enhancing at a lightning fast pace.

Microprocessors serve as the brain of the computer, meaning that all cycles of data, which is virtually trillions of numbers that are crunched at extremely high speeds, are calculated inside them. The speed at which these calculations are resolved are measured by hertz or Hz, which is a single cycle of data per second. Processors are mounted on the motherboard which is connected to all other components of the computer including its RAM (Random Access Memory), hard drive, and storage drives.

The first microprocessor was founded by Intel during 1971 and it was called the 4004, which computed calculations at a speed of 750 kilohertz. Intel's goal was to boost its speed to 1 megahertz (Mhz), or 1, 000, 000 cycles of data per second. This was not accomplished for quite some time since consumers rarely, if at all, owned and knew how to operate a computer. Through the next 10 years, Intel would create several upgraded versions of their 4004 which slowly became faster and faster.

Computers first became commercialized when Intel created the 80286, also known as the i286. It was created in 1982 which was also the year that

Microsoft's revolutionary operating system, MS DOS 1.0, was released. This new processor could run at speeds of 6 - 8 Mhz, which was revolutionary in the world of microprocessors.

Not only was the speed revolutionary, but it also had the capability of multitasking, meaning that it could calculate data for several applications at once. Before the 286, multitasking was possible only in the most advanced processors at very slow speeds.

By the late 80s, Intel's technology had increased significantly and they produced the i386 class microprocessor. The first of its kind was released in 1989 and it was clocked at a blazing fast speed of 25 Mhz. As the processors became more advanced, new motherboards which had the size and power to house them also became more advanced. More RAM and hard drive space was needed to fully expand on their potential capabilities. With MS DOS 3.0 released at the time, the consumer based computer market was beginning to boom.

When the year of 1991 came around, the consumer computer market had officially become abundant and commercialized. The main reason for this was the release of Microsoft's Windows 3.0, which was powered by Intel's revolutionary new power chip, the 486. Never before was a microprocessor advanced enough to process a graphic based operating system at reasonable speeds.

The first 486 computer was launched by IBM and ran at a speed of 33 Mhz. The new processor introduced a new type of memory called cache, which

basically saved recent cycles of data and replicated them when used again. For example, if a word processor was launched and took 10 seconds to load, it would be cached which would reduce its second loading time to 2 seconds. The amount of cache a processor is capable of producing is measured in kilobytes, which is 1000 bytes of data. The first 486 had 128 kb of cache memory.

By this time, several other companies began to jump onto IBM's bandwagon and began to make IBM compatibles, or clones. This was due to the popularity of Intel's 486 processor, which by 1995 had reached speeds of 75 Mhz. Intel diversified its revolutionary microprocessor and began to distribute it with several other companies such as Compaq, Gateway, and Hewlett Packard to name a few. IBM was still the dominant leader until Intel created a new, even more powerful processor.

In 1995, a breakthrough in microprocessing was made once again by Intel when they released the first 586, or Pentium class processor. The new Pentiums were 32 bit microprocessors which had integrated mathematic co-processors which greatly enhanced the efficiency and maximum workload of the processor. The first processor was released with a blistering clock speed of 100 Mhz, meaning 100 million cycles of data per second could be calculated.

From 1995 through 1997, two upgrades of Intel's new Pentium class processor were made. These upgrades were the integration of MMX and Pentium Pro technology, which are basically minor upgrades to the processor's mainframe which allows it to perform calculations at faster speeds. MMX,

which stood for MultiMedia eXtension, specialized in speeding up graphical applications. The Pentium Pro processors were integrated with BiCMOS, which allowed it to process non-graphical data at incredible speeds which were never achieved before.

With Intel's growing success, several other companies began to breach into the microprocessor market. These newly found processor companies created processors which were very similar to Intel's Pentium and were offered at a much lower price. The most popular and competitive rival to Intel is AMD, which stands for Advanced Microprocessor Development. They introduced their AMD K6 and K62 to compete with Intel's Pentium and Pentium Pro processors. By the end of 1997, the maximum clock speed threshold reached an incredible 200 Mhz.