

## JUST AMAZING

There is no doubt about it; computers are just amazing. Even though I have worked with them almost daily since 1979, their phenomenal capabilities constantly impress me. I thought I would share with you this month those things, which awe and delight me the most. Maybe your list is different.

1. The ability to accomplish what we humans view as more than one thing at a time. When writing in a word processing program, for example, one can send a file to the printer, then immediately return to writing while the file is being printed in the background. Another example that just "blows my mind" is that I can start my CD ROM playing music, and then begin any DOS or Windows program that I desire. I am using DOS-based WordStar to write this article on my computer as the same computer's CD is playing the haunting melodies of the Irish singer Enya through it's speakers. This ability to handle multiple tasks at apparently the same time is not new; it has been available since at least the early 1980s, if not earlier.
2. The blazing speed with which computers can accomplish tasks. If a human were to begin counting at the rate of one number per second, it would take about 11.6 days (without stopping, even for coffee!) to reach one million. A couple of years ago I wrote a little PASCAL program to count to a million, and I just dug it out and ran it on three computers. Here are the results:

COMPUTER	TIME TO COUNT TO ONE MILLION	FASTER THAN A HUMAN BY A FACTOR OF:
XT 10 MHz	1 min 2.00 sec	16,218
AT 386 40 MHz	1.32 sec	759,273
AT 486 66 MHz	0.44 sec	2,277,818

Even that old XT did the job about 16,000 times faster than a human, and the machine I am using to write this article did it 2.3 million times as fast! Do you know of any other tool invented by humans that can speed a task by even 16,000 times? I don't. Assuming a jet plane travels at the speed of 500 miles an hour, it is only going about 167 times as fast as a human moving at moderately brisk walk. Computers are FAST!

3. The ability of computers to do repetitive tasks without tiring. Counting to a million as shown above was nothing for even the XT. Feed 'em current, and they will work forever (well, almost). They don't get tired. They don't complain. They don't have to be taken out for a walk. Amazing.

What is on the horizon? Speed will continue to march upward in the computer world. The movement of electrons in wires has already become a stumbling block to speed in supercomputers, and it will soon force an upper limit in the average home computer as well. Light will take the place of electron flow, using fiber optic "wires" to carry light pulses from one place to another inside the case. Of course, light is already being used in CD ROM drives, to record and play back data. The newest CD ROMs even play by themselves; you drop the disk in the drive and the sounds of the symphony begin to come out of the speakers without any other human intervention. If the disk holds a program instead of music, the question "Shall I begin installation?" pops up on your screen. Nice touches.

What is coming along in the far future (25 or more years)? Most times when I mention this, people do a double take and think I am kidding. I am not. Down the line, computers will become implantable. In the human body. Someday down the line, if you want to make a phone call, you will only need to think it, and the connection will be made. If you want to look up the date one of

your employees began working for you, you will need only to think the question, and the answer will appear superimposed on your field of vision. If you want to watch a movie, a thought will cause it to begin playing, apparently before your eyes. Yep, it will happen. Remember you read about it here. Happy computing!