

## The Millennium Bug: Preparing Yourself for the Year 2000

Michael Devitt

It sounds like a fiendish plot from one of those old science fiction movies. On January 1, 2000, up to 90% of the world's computers stop functioning; power plants stop producing energy; assembly lines grind to a halt; software programs crash or display error messages; insurance claims are declared invalid or can't be processed; and people can't balance their checkbook on their personal computers.

Well, it's not an otherworldly plan to bring the Earth to its knees. Unfortunately, it's not a work of fiction, either. The source of all this gloom and doom is what's known as "the millennium bug," a computer glitch that affects older computers and software programs because they are unable to recognize the time change from one century to the next. How did this nightmare become reality? How will it affect you? And can anything be done before it's too late?

### A Brief History of the Millennium Bug

It began with the birth of modern computers in the 1960s and 70s, when computers possessed little memory and storage space. Efficiency was essential to those computer programmers, and to save space it was decided to use just the last two digits to identify the calendar year in computer hardware and software.

Money was another factor involved in the decision to use just two digits. Today, the cost of storing 400 million dates -- birthdays, anniversaries, payroll periods, hire dates and retirement dates, for example -- is roughly \$1,100. Thirty years ago, however, it could have cost as much as \$40 million to store the same amount of information.

By cutting the calendar year to just two digits, corporations have saved millions of dollars over the past few decades. But in less than two years, that bill will be due ... and what a bill it will be. Conservative estimates range that it will cost between \$300 billion to \$1.3 trillion worldwide to resolve the problem.

"This is the biggest technical screw-up in history," says Bill Schoen, a computer programmer with Ford Motor Company, who was one of the first to write about the year 2000 problem back in 1983.

"This scares me. Everybody missed the boat on this."<sup>1</sup>

### What Will Those Extra Two Digits Cost?

When the computer programmers of decades past decided to use a two digit code for the calendar year, they assumed that someone would have devised a solution to the millennium bug well before the end of the century. Unfortunately, every reputable computer analyst who has tried solving the problem agrees that there are no prospects for fixing the situation in one fell swoop. This means that in most cases, businesses and institutions will have to go over every line of software code that they have, looking for any instances where a date comes into play, and then fixing those lines one by one.

For many large corporations, this could prove to be an incredibly costly, time-consuming task. Chase Manhattan Bank, for example, has more than 280 million lines of computer code in its databases. Eighty percent of those lines contain some sort of date function, and most programming companies are offering their date-fixing services starting at a dollar per line of code. Citibank has another 600 million lines of similar code. And in one Fortune 500 company, computer programmers have already spent more than 130,000 man hours (or the equivalent of 15 years of work) cleaning up the software glitch.<sup>2</sup>

### Ramifications of the Millennium Bug

If a company is unable (or can't afford) to rework the necessary lines of code before the end of the millennium, the results could be disastrous. For example, if an organization's accounting department has a computer crash, that company might be unable to issue checks with the correct date and amount or send incorrect billing statements. Appointment records, financial transactions, patient schedules and profiles, employee hire and termination dates, vacation and pay period records could all be wiped out, or at the least, they might have to be reentered with the correct information.

For some business owners, the problem could actually strike a year earlier. That's because some older computer programs use the number "99" to mean infinity. This means that an employee who is supposed to get a check or statement on January 1, 1999 might not get a statement at all -- or they may get a signed check for an infinite amount of money. Although this might seem like a great deal to the recipient of such a check, in reality, nobody knows exactly what may happen in some cases.<sup>3</sup>

### How to Make Yourself Year-2000 Compliant

If you've purchased a computer within the last couple of years, chances are that the hardware and software you're using won't have a problem. This is especially true of the newer Macintosh and Windows 95 machines, which have incorporated year 2000 capabilities into their operating systems. However, if you're using an older machine, or if some of the software you run was made more than a few years ago, you may run into problems come next century. Therefore, it's wise to take some of the following precautions to make sure your system will still be functioning in a couple of years:

- Contact all of the companies that manufacture your computer hardware and software. Ask them what plans they have about fixing the millennium bug and see if it will cost anything to have your computer upgraded. If you're considering buying a new computer, ask the manufacturer if their system can handle the date change.

As of last year, IBM was still selling some software that was non-year 2000 compliant -- and they knew about it, too.

- If you work for a large corporation, talk to the information services or accounting departments and ask if they've started working on the problem. Many organizations in the U.S. still aren't aware of the computer problems the millennium bug will cause, and the situation is even worse overseas. The earlier you start working on the problem, the lesser your chances of a system crash on New Year's Day a few years from now.
- Also if you work for a large company, you should consider buying an inventory tool. It's a type of program that will scan your PC's lines of computer code and list any instances of date fields in the codes. By not having to look through every single line of code, your organization

could save a lot of time and money.

- Ask everyone you know who has a computer -- friends, colleagues, coworkers and patients -- what they know about the millennium bug, and see what steps they've taken to protect themselves. If nothing else, at least you'll be spreading the word and informing others about the situation.

In addition to the above suggestions, there are several websites that have been created just for the millennium bug problem:

1. <http://www.year2000.com> is a site filled with articles on the subject and news releases from a number of hardware and software manufacturers. The site also has a number of software programs you can download to test your system and make sure it will still be functional in the year 2000 and beyond.
2. <http://www.y2k.com> offers much of the same information as the above website, but it's also a great place to find out if your PC is year-2000 compliant.
3. <http://www.righttime.com> is a sister site to year2000.com and contains a free program for personal use. The program will diagnose your PC and tell you if it will work in the next century. It also contains other programs to update your BIOS and CMOS settings to make them year-2000 compliant.

There appears to be no simple solution to the millennium bug. If you weren't aware about the potential problems that could occur before reading this article, we recommend you get started on the situation immediately. If not, the effects could be disastrous, and it will only cost more as the millenium nears and computer programmers bump their fees accordingly. It could easily cost thousands of dollars in the future to fix problems that could have been averted had the proper steps been taken in time.

In our next issue of Dynamic Chiropractic, we'll give an update on several Internet-related issues, showing how they will impact the World Wide Web and its users. Future issues will include a list of free products and services you can get from the Internet, as well as websites related to auto repairs and home improvement. As always, we welcome your comments. If you have any questions or suggestions about this column, please contact us.

### *References*

1. Firms race clock to avert "millennium bug" bite. Detroit News, December 3, 1995.
2. Ibid.
3. Seiler J. The bug in the machine. Orange County Register, June 29, 1997.

*Michael Devitt*  
*Huntington Beach, California*  
*Tel: (714) 960-6577*  
*Fax: (714) 536-1482*  
*Editorial-DCMedia.com*

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