

The Y2K Problem

The “Y2K Problem” includes a whole range of problems that may persist for several years and result from the way some computer software and hardware represent dates—hence the name “Y2K,” which stands for “Year 2000” (K is an abbreviation for “kilo,” or 1,000). In short, because many computer systems store only the last two digits of the year in a date, you can’t really tell in which century that date falls.

whole range of problems that from the way some computer software and hardware represent dates—hence the name “Y2K,” abbreviation for “kilo,” or store only the last two digits of the year in a date, you can’t really tell in which century that date falls.

Until recently, this ambiguity hasn’t mattered in most instances. Computers have manipulated dates relating to recent events, and so they have been able to treat all dates as belonging to the current century. As we get closer to the new millennium, however, many more systems will need to juggle dates from two different centuries, and they will have to be able to distinguish between them if they are to avert myriad failures.

Consider the new credit cards you might be carrying—many of which already have expiration dates in the next century. When you try to buy something, the credit card terminal has to determine whether or not the card has expired. To do so, it runs a program that checks whether the expiration date is greater than the current date. If the card expires in 2003, then obviously the answer should be yes. But if the system uses only two digits to represent the year, it will find that 03 is not greater than 99, and that your card has already expired. This kind of problem—faced already by some major credit cards—can plague any system that depends on date comparisons.

In the situation above, there is at least one person standing by who can intervene when the problem occurs: the card owner or issuer. More disturbing, perhaps, are the “silent killer” versions of the Y2K problem, which can occur with any of the millions of embedded processors used in computers, toasters, cars, power plants and many other devices.

Next, consider a system that is required to run an internal safety test once a year. The system regularly checks whether the difference between the current date and the last test date is greater than 365 days. When a last test date in this century is subtracted from a date in the next century, though, the answer is a negative number less than 365, so the system will not believe it is time to perform the test. And in fact, left as is, the system will not perform another safety check for another 100 years.

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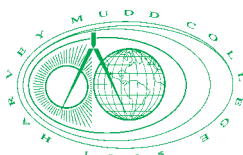


What Are We Doing About the Y2K Problem?

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Occasional Downtime is composed on a Macintosh G3 computer using Adobe PageMaker 6.5 and Microsoft Excel 5.0. The primary typefaces used are Times and Optima. We wish to thank Sally Rich Arroyo of the HMC Office of College Relations for all her help.



Many users have been asking what CIS is doing to avert Y2K-related problems on campus. Year 2000 compliance testing must take into account three levels of testing: hardware, operating system software, and application software.

CIS has been checking the Year 2000 compliance of the hardware and operating system software on its main servers to make sure that they will be ready for January 1, 2000. This includes the main UNIX server, Orion; Thuban and the academic VMS cluster; HMCADM; and the Novell file servers Kato, Jeeves, Lurch, and Igor. We do not anticipate any Y2K-related problems on our main servers. The administrative software has also been examined and appears to be Y2K compliant.

CIS will also be conducting Y2K compliance testing of the Windows-based PC's in our labs as well as other Windows-based PC's that we have purchased. These include PC's in the administrative offices and faculty PC's purchased under the *PC's for Faculty* program. In general, CIS has been purchasing Dell computers for its labs and users on campus. Dell computers shipped on or after January 1, 1997 are certified Year 2000 compliant at the hardware level by Dell. Dell computers shipped before January 1, 1997 may be eligible for a BIOS upgrade that will make them Year 2000 compliant. PC's purchased from other vendors may or may not be Year 2000 compliant, however, and will need to be tested. CIS will be using the YMARK2000 test from the National Software Testing Laboratories (NSTL) to test the PC's. YMARK2000 is a freeware

YEAR 2000 WEB SOURCES

GENERAL

President's Council on Year 2000 Conversion
<http://www.y2k.gov/>
Y2K Compliance Database
<http://y2k.y2kbase.com/>

HARDWARE

Dell Computer
<http://www.dell.com/year2000/>
Apple Computer
<http://www.apple.com/about/year2000/>
Sun Microsystems
<http://www.sun.com/y2000/>
Compaq
<http://www.compaq.com/year2000/>
NSTL
http://www.nstl.com/html/nstl_ymark2000.html

SOFTWARE

Microsoft
<http://www.microsoft.com/technet/year2k/>
FileMaker
<http://www.filemaker.com/support/y2k.html>
Lotus
<http://www.lotus.com/products/smrtsuite.nsf/wPages/Year2000>
WordPerfect
<http://www.corel.com/year2000/index.htm>

SOME Y2K HUMOR

<http://www.hartscientific.com/y2k.htm>
<http://www.wise2k.com/humor.htm>
<http://www.nerds-by-choice.com/milbug.htm>

program which can be run from a floppy disk that tests a PC for its ability to support the year 2000. It performs several tests of the hardware, including the BIOS and the real-time clock. Many computer companies use this test as a standard for Year 2000 hardware compliance. CIS will make this program available to other departments or individuals who would like to test the PC's in their labs or offices for Year 2000 compliance. Please contact the Help Desk for more information at extension 7-7777.

Most companies have posted Year 2000 compliance statements on their Web sites with information on the Year 2000 status of their products. Macintosh users can rest easy, however. All Macintosh computers are Year 2000 compliant.

There are quite a few different operating systems in use on the desktop computers on campus. The PC's on campus run a mix of Windows 95, Windows 98, Windows NT, and Linux. The Macintoshes run a variety of different versions of the Macintosh operating system. Linux and the Macintosh operating system are all Year 2000 compliant. The various flavors of Windows will be compliant with the installation of service packs supplied by Microsoft. CIS will be installing the service packs when we test PC's for Year 2000 compliance. Microsoft's Year 2000 site at <http://www.microsoft.com/technet/year2k/> has a great deal of information about the status of Windows 95/98/NT and its other products.

Evaluating the Year 2000 status of all of the software applications in use on desktop computers on campus is by far the hardest job. Many applications do not rely heavily on the use of dates and will probably be fine, especially if they have been upgraded within the past year or two. Applications that depend greatly on dates, such as spreadsheets and databases, are more of a concern. In terms of the software that CIS

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ditor's Notes

This month's issue of *Occasional Downtime* is devoted to some topics of concern to our users at HMC: the Year 2000 problem, printer problems, and laptop security.

Several users have inquired about the Y2K status of computers on campus, as well as their home computers. In addition to an article describing the measures CIS will be taking to prepare for the Year 2000, we also have included a short article by Prof. Joshua Hodas about what is actually meant by the Y2K problem.

Laptop security is also a hot topic on campus after we experienced several thefts of laptops over the summer and early in the fall semester. In response we've written a short article with some tips for keeping your laptop safe.

And finally, we've been having an unusual number of printer problems in the administrative offices over the past couple of months. While some problems are caused by a need for printer maintenance or repair, others are caused by pushing the limits of a printer's capabilities. With the help of Sally Rich Arroyo in College Relations we've put together some hints for getting better performance out of your printer.

—Elizabeth Hodas

Occasional Downtime is published bimonthly by the Computing and Information Services Department at Harvey Mudd College. It is also available in PDF format on the HMC Web Server. Comments and questions can be directed to downtime@hmc.edu.

Why do these systems make such bad assumptions? In most cases, designers just never thought the programs they were writing would be in use for so long—namely into the 21st century. And there were real practical advantages to using shorter, two-digit years in dates at the time they were put in place.

There are many different ways to fix the problem. Ideally we could just rewrite all the offending programs and modify all the existing stored data. But in many cases the program is so old that the original “source code” (the form written by the programmer before it is converted into a digital form understood by the computer) is lost and it is impractical or impossible to modify the digital form.

When the source code does exist, there may be no “compilers” (the programs that convert source code to its digital form) compatible with that version of the code’s language anymore. And even if the program could be successfully modified, changing all the stored data would be impractical. Many non-date-dependent programs would also need to be changed because the placement of data in the file would change when space for the additional date digits was added.

In the last case, where code can be changed but stored data cannot, it is sometimes possible to buy some time. The most popular technique is called “windowing:” it takes advantage of the fact that many systems store information only about a relatively brief period, called the window. For example, at HMC, which was founded in 1955, we can safely assume that any stored graduation date in the range from 00 to 55 refers to the next century. As a result, no ambiguity about graduation dates will occur for another 55 years, and with a little programming, we can put off the larger problem until then. Of course,

for recording students’ birth dates, we must use a different window. For the birth dates of faculty members, there is yet a different window, and so forth.

Another popular technique involves reusing the space allocated for a two-digit date in a more efficient way. Since the same space is used, other data doesn’t move, and other programs that don’t access the date fields don’t need to be rewritten. It turns out that this is possible because in many older databases, the numbers are stored using a fairly inefficient representation, called Extended Binary Coded Decimal Interchange Code (EBCDIC, pronounced “ehb-sih-dik”).

Although there are many proposed solutions floating around, the real problem is that it is hard to imagine how all the systems that need fixing can be fixed in the necessary time frame. Moreover, in the case of the millions of embedded processors, it is unclear how the fix might be disseminated.

So, should you sell your house and move to a cabin with a 10,000-gallon fuel tank and a bunker full of food? As bad as all this sounds, there are many who feel that the doom-and-gloom predictions are really just variations on millennialist fever. Although there will certainly be bumps in the road, most experts believe that the worst problems will be avoided. Many major industries and government agencies have already run tests: They set the clocks on their computers forward to various dates in the next century to see what would happen. And in most important cases—including banks, nothing did. 🐾

by Prof. Joshua Hodas

Originally published on *Scientific American’s* “Ask the Experts” Web site, June 21, 1999.

<http://www.sciam.com/askexpert/computers/computers11/computers11.html>

Getting the most out of your printer...

...or, how to avoid those printer jams!

Printers are notoriously picky and sensitive machines. They jam, crinkle your paper, smear toner, and sometimes just refuse to print on the type of paper you want. And all at the most inconvenient times of course. Here are some tips for getting the most out of your printer while avoiding those annoying problems.

Extra blank sheets of paper that come out of the printer should never be reused in the printer. Blank sheets that have gone through the printer once already have traces of toner and other chemicals that will deposit on the rollers and lead to jamming. That extra blank sheet that you reuse may not jam immediately, but will lead to an increased risk of jamming in the future. Use those extra blank sheets for scrap paper instead!

Humidity can be a real problem for printers. To reduce the effects of humidity keep your printer paper and letterhead in their wrappers until you actually need them. If you open a package of paper and don't use all of it at once, rewrap the paper in the wrapper as tightly as possible. The wrappers are designed to keep out humidity.

Each printer model has specifications for the weight and size of paper that it can print on. However, those specifications may vary depending on the paper tray. Most black-and-white Hewlett Packard laser printers can handle paper up to 24-28 lb. in their paper trays, but heavier papers such as card stock, transparencies and labels should be put in Tray #1, sometimes called the manual feed or multi-purpose tray. Similarly, while many HP printers can print on paper as small as 3.9 x 7.5 in and as large as 11.7 x 17.7 in, only the most

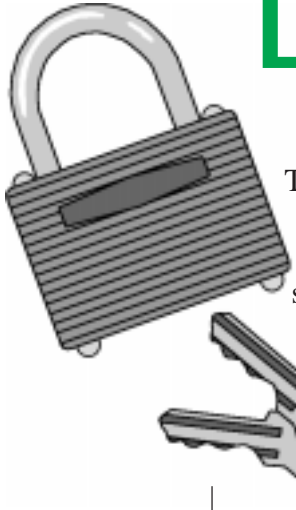
standard paper sizes can be put in the paper trays. Unusual sizes of paper should be passed through the multi-purpose tray. In addition, because of the way the rollers are spaced inside the printer, small paper or cards should be placed in the multi-purpose tray with the shortest edge facing front. This will decrease the risk of jamming.

Transparencies and label sheets can cause a lot of damage to a printer if you use the wrong type. Always make sure that you are using transparencies and label sheets that are intended for laser printers. Color laser printers sometime require a thicker transparency. If you're not sure that you have the correct type, check the part number in the printer manual before using it. Here are some Do's and Don't's specific to transparencies and labels.

- ▼ Use the multi-purpose tray for transparencies.
- ▼ Because transparency film tends to stick together, remove each sheet from the output bin before printing the next sheet of film.
- ▼ Load labels with the side-to-be-printed facing up, and the top, short edge toward the back, if they are Letter or A4 size.
- ▼ Don't load the trays to capacity, because labels are heavier than paper.
- ▼ Don't use labels that are separating from the backing sheet, wrinkled, or damaged in any way.
- ▼ Don't use labels that have the backing sheet exposed.
- ▼ Don't feed a sheet of labels through the printer more than once. The adhesive backing is designed for only one pass through the printer.
- ▼ Don't print on both sides of labels. 🐾



Laptop Security



This past summer there were a rash of thefts on campus. Laptop computers were one of the prime targets and several departments had laptops stolen. Unfortunately, the lightness and portability of laptops that make them so popular with users are exactly what make them vulnerable and popular with thieves. What can you do to prevent the loss of your laptop? Here are some simple suggestions to make your laptop a little less vulnerable:

- ▼ Don't leave your laptop in an unsecured location, such as an unlocked office, dorm room or classroom. This seems like an obvious suggestion, but how often do you leave your door open or unlocked when you think you're only going to be away for a short time?
- ▼ If you are not going to be using your laptop for an extended period of time, for example while you are on vacation or even overnight, consider storing it in a locked cabinet, where it is out of sight.
- ▼ Most laptops have a built-in security slot designed by Kensington. Several companies sell cables that can be inserted into the security slot and then used to secure the laptop to a desk or table. One option is a simple cable such as the one sold by Kensington that can be looped around an immovable object and then inserted into the security slot. A more sophisticated option is the Defcon 1 made by Port Incorporated that incorporates a motion sensor.

The Kensington cable lock costs about \$40 while the Defcon 1 costs about \$50. In the future CIS will be including the Defcon 1 device with all laptop computers purchased through our

department. Users who already own a laptop purchased through CIS may contact our office to obtain a security device.

- ▼ People need to be especially security conscious while they are traveling. Security cables such as those described above are easy to take with you and can be used to secure your laptop in your hotel room. Besides hotel thefts, a well-known stratagem at airports is to steal laptops while the owner is going through the metal detector. Laptop Guardian, a commercial Web site and reseller of security products, carries another security device called the TrackIT Security System which sounds an alarm if your laptop case is separated from you by more than 10 to 40 feet. This is designed to be used in places such as airports to prevent theft.
- ▼ No matter how careful you are it is best to be prepared for the possible loss of your laptop. In addition to theft, laptops are more vulnerable to damage as well. A good backup strategy is even more important for your laptop than for your desktop machine.
- ▼ If you have confidential or sensitive data on your laptop you might also want to invest in file or hard drive locking software to prevent thieves or unauthorized users from accessing your private data. There are a variety of programs which will prevent unauthorized users from turning on your computer and accessing the hard drive without the correct password. Individual files and folders can also be protected. Please contact CIS at extension 7-7777 if you are interested in more information on this type of product. 🐶

supports on its Novell file servers, the two packages most likely to be affected are Microsoft Office 97 (Excel) and FileMaker Pro. Both will be Year 2000 compliant with the installation of patches supplied by Microsoft and FileMaker. We will be installing the patches on the software installed on our Novell file servers and on locally installed copies on user machines. Users who are running other software packages should check the software companies' Web sites for information about the Year 2000 status of their applications. A useful site is the Y2K Compliance Database at <http://y2k.y2kbase.com/> which contains links to information on the Year 2000 status of everything from toasters to computers.

Another issue that should be considered on campus is the issue of embedded microprocessors. Many labs on campus have equipment with embedded microprocessors whose Year 2000 compliance status is unknown. Registered owners of lab equipment may have already received statements from companies on the Year 2000 status of the equipment. Otherwise users should contact the manufacturers for information on the Year 2000 compliance status of their equipment.



SOURCES OF COMPUTER SECURITY PRODUCTS

Kensington

<http://www.kensington.com/>

Laptop Guardian

<http://www.laptopguardian.com/>

Port Incorporated

<http://www.port.com/>

Tricks & Tips

& Tricks

IMPORTING DATA IN EXCEL


Importing data into Excel is relatively easy using the Open command under the File menu. Excel can take a tab-delimited file and quickly convert it into a spreadsheet for you. It uses a Wizard to step you through the process of identifying the rows and fields in your data and even lets you specify the data format for each field.

Unfortunately, importing data into an already existing spreadsheet is not nearly so easy. That's because Excel doesn't let you do it. In fact, there is no Import command! The only way to accomplish this task is to first import the data into a new spreadsheet using the Open command. You can then Cut and Paste the data into your existing spreadsheet. It's not an elegant solution, but it does work.

HIDING COLUMNS IN EXCEL

Sometimes it's useful to hide columns in Excel. It's an easy way to get them out of the way and make your spreadsheet smaller and easier to navigate. It's also a way to keep sensitive data out of sight while you're working on a spreadsheet.

To hide a column simply the select the column by clicking on a cell in the column you want to hide. Then select Column/Hide from the Format menu. Similarly, if you would like to hide a row, click on a cell in the row you would like to hide and then select Row/Hide from the Format menu.

To unhide a row or column you first need to select cells to the left and right of the hidden column (or above and below the hidden row) and then select Column/Unhide from the Format menu (or Row/Unhide). 

QUESTIONS *and* ANSWERS

Q: How do I access Stolleworks?

A: Stolleworks is the online system for reporting problems to the Facilities and Maintenance Department. To use it you'll need a Telnet program such as Ewan on the PC or NCSA Telnet on the Macintosh. Open a connection to `hmcadm.admin.hmc.edu` and use the login name "Stolleworks." This will put you directly into the Stolleworks program. Just follow the directions for entering your contact information and a description of the problem and then press Return to submit your problem. You'll receive an email confirmation that your request has been received and another email message when your request has been completed.

Q: How do I create a new mailing list?

A: The easiest way is to use the online form, located on the Web at <http://www.internal.hmc.edu/comp/list/list-request.html>. Just fill out the form and submit it. Your request will be sent to `listmaster@hmc.edu` who will contact you when the list is ready. Just remember that listmaster is a person, not an automated program like `listkeeper@hmc.edu`, so it might take a couple of days for the list to be created.

Creating and maintaining a mailing list does require the use of HMC resources so we ask that new lists have a purpose connected in some way to HMC.

Q: How do I register for a workshop?

A: Just visit our workshop Web site at <http://www.hmc.edu/comp/workshops/>. You'll find the current

schedule of workshops, descriptions of each workshop and be able to register for the workshops of your choice. The current schedule for October and November is now available.

Q: How do I configure Microsoft Word to automatically save my documents while I am working?

A: Saving frequently while you are working on the computer is an absolute must. No matter how stable your system is you should always be prepared for that unexpected crash. In particular you should always save before printing or before switching to another application since these actions have a higher than normal incidence of crashes.

Some programs make it easy for you by providing an automatic save feature. Microsoft Office has this feature for Word, Excel and Powerpoint. If you have trouble remembering to save often, you can configure these applications to remember for you.

To turn on this feature go to the Tools menu and select Options on the PC or Preferences on the Macintosh and click on the Save tab. Click the checkbox labeled "Save Autorecover info every ___ Minutes." Saving automatically every 10 minutes is a good choice.

The Autorecover feature creates and updates a copy of your file. It doesn't save your original file so you still need to save your original file when you quit the application. But if your computer crashes, Word (or Excel or Powerpoint) will automatically open any saved temporary files as recovered files. 🐾