Y2K and Excel Data

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This document was prepared to help you understand how Excel handles dates, and to help you check your dates for Year 2000 compliance.

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Understanding Dates in Excel 97, 98, 2000

Did You Know…

- If you type 00 through 29 for the year, it is entered as 2000 through 2029 .
- If you type 30 through 99 for the year, it is entered as 1930 through 1999.

Examples

If you type 5/28/18 in Excel, is this stored as

a) May 28, 1918
b) May 28, 2018

If you type 5/28/91 in Excel, is this stored as

a) May 28, 2091
b) May 28, 1991

The answer to both these questions is (b). Again review the rules in the "Did You Know" section above, and note that these rules apply to Excel 97, Excel 98, and Excel 2000.

Dates in Excel 95 and Earlier

Did You Know…

- If you type 00 through 19 for the year, it is entered as 2000 through 2019
- If you type 20 through 99 for the year, it is entered as 1920 through 1999.

It is important to note that the cutoff year is 19 in Excel 95 and earlier, and not 29 as it is in Excel 97, 98 and 2000.

Guidelines that Help Prevent Problems

Before we start discussing the Excel date systems and and how to fix existing data, here are some hints for entering dates:

- When possible, enter dates more fully. Instead of typing "Dec 31", type "Dec 31, 1999", "Dec 31,98", "12/31/1998", or "31-Dec-1998". This prevents Excel from misinterpreting the dates.
- Format cells that contain dates so that they display not only the month and day, but also the year in 4 digits.
- If you are importing a text file that contains dates, you can use the Text Import Wizard to apply date formatting before you import them into Excel. Note that you should check dates after you import them to make sure they appear correctly.
- Change system short date to "yyyy" format. From the Windows 95 "Start" button, choose "Settings" then "Regional Settings" and then "Date". Please note that this may affect other applications (e.g. Eudora mail printouts).

Dates Systems in Excel

This section of the document will help you understand how dates are stored in Excel, and not necessarily information you need to know about year 2000 data. Knowing this information will

help you understand calculations involving dates, and may be useful to know if you are moving Excel data between systems (Macs and Windows).

- Excel stores dates as sequential numbers as serial values. For example, "September 22, 1999" is stored as 36425. How it comes up with this number will be explained later. The date "January 1, 1900" is stored as value 1. This helps to explain how calculations are performed on dates (e.g. how many days are there between two dates).
- Excel supports two date systems: the 1900 and 1904 date systems. The default for Excel on Windows machines is the 1900 date system. The default for Excel on a Macintosh is the 1904 date system.

Why Two Date Systems

As mentioned above, Excel supports two date systems: the 1900 and 1904 date systems. When Lotus 1-2-3 was first released, the program mistakenly assumed that 1900 was a leap year. This was done to make it easier to handle leap years, and almost no calculations were affected. When Excel was released, Microsoft also assumed 1900 was a leap year. This provided greater compatibility with Lotus 1-2-3. Microsoft correctly handles all other leap years.

Correcting this problem is more trouble than it is worth. Almost all the dates in current Excel worksheets would be decreased by one day. Some functions like WEEKDAY would return different values. In other words, Excel users could be very confused. Leaving the problem as it is means that the WEEKDAY function returns incorrect dates before March 1, 1900. This we can live with.

The following table summarizes the date systems:

Date System	First Date	Last Date
1900	January 1, 1900 Serial value 1	December 1, 9999 Serial value 2958525
1904	January 2, 1904 Serial value 1	December 31, 9999 Serial value 2957063

Windows machines use the 1900 date system, although you can set it to use the 1904 date system. Macintoshes use the 1904 date system.

Exchanging Macintosh and Windows Excel Files

Because Macintoshes use the 1904 date system and Windows uses the 1900 date system you should be aware of the following:

- If you bring a Macintosh Excel file containing dates to Windows Excel you will notice that the worksheet will maintain the 1904 date system in Windows Excel (look under Tools=>Options). This means that the date will still be correct, but the serial numbers will be changed. If you change the date system for this worksheet to 1900, your dates will be wrong.

Also, if you try to do calculations on the dates using dates out of the 1904 date system range (i.e. January 1, 1900 through January 1, 1904) you will get #VALUE! Errors.

- If you bring a PC Excel file containing dates to Macintosh Excel you will notice that the worksheet will maintain the 1900 date system.
- If you merge Excel files from a Macintosh using the 1904 date system with Excel files from Windows using the 1900 date system, your dates will be wrong. You will need to save the Excel file on the Macintosh as a comma-delimited file (csv) and import the file on your PC.

Help for Solving the Y2K Excel Data Problem

The Excel Y2K data problem can be handled quite simply by using 4 digits to represent years in spreadsheets that you create in the future. Perhaps a tougher task, depending on the number of spreadsheets that you have, is to convert existing 2 digit years to 4-digit years. There is help from Microsoft to do this.

Wizards to Help With the Y2K Excel Data Problem

There are three wizards available from Microsoft that will help you with your Y2K Excel data problems. These wizards are:

- The Date Fix Wizard
- The Date Migration Wizard
- The Date Watch Wizard

These date wizards are available for Excel 97 Service Release 2 (SR-2) and Excel 2000 from the following Web site:

http://www.microsoft.com/technet/year2k/tools/data.htm

The first three wizards are also available for Excel 98 (Macintosh) from the Web site:

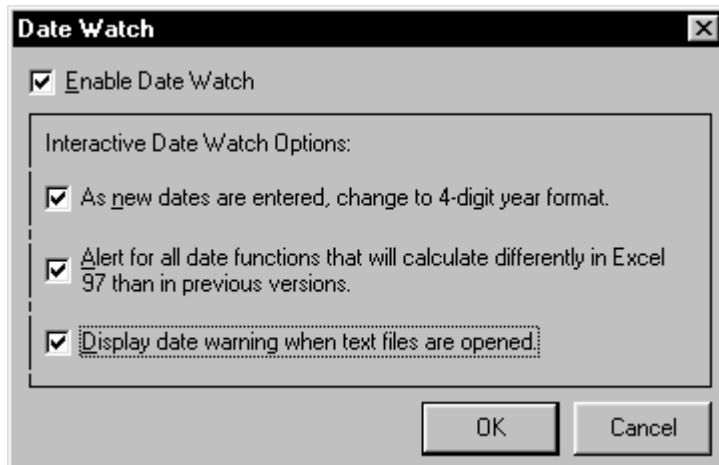http://www.microsoft.com/technet/year2k/product/product.asp
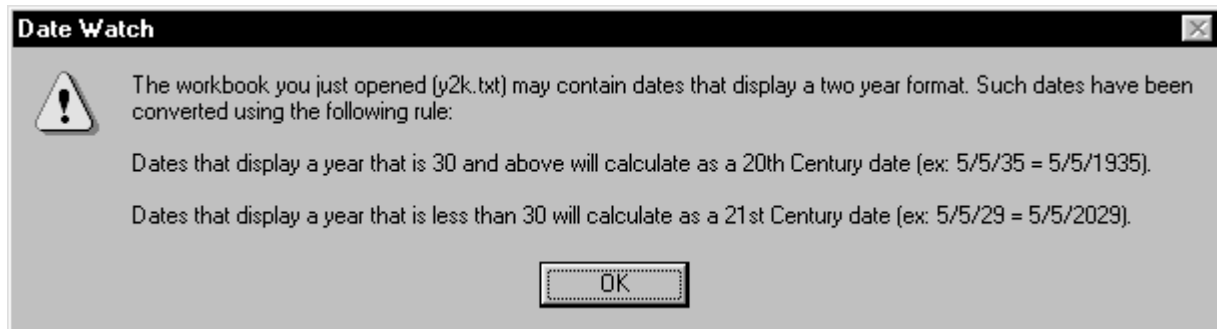
and doing a product search on Excel (Macintosh).

The wizards are easy to install and will appear under the "Tools" menu.

The Date Watch Wizard

This interactive wizard is useful for all **new** Excel worksheets that you create. It is interactive, and does the following:

- As new dates are entered, change to 4-digit year format.
- Suggests alternatives when you type certain worksheet functions and the text dates in the functions that are year ambiguous (e.g. DATEVALUE("01/01/25"). There are 41 functions that it looks for: accprint, coupdays, datevalue, edate, oddfprice, pricedisc, tbillyield, xnpv, amordegrc, yieldmat, accrintm, coupdaysnc, day, eomonth, oddfyield, pricemat, weekday, year, coupncd, days360, intrate, oddlprice, received, weeknum, yearfrac, amorlinc, coupnum, disc, mduration, oddlyield, tbilleq, workday, yield, couppcd, duration, networkdays, price, tbillprice, xirr, yielddisc.
- Displays a warning when you open text files that contain two-digit years, as shown below:

You can specify the things that you want Date Watch to look for (but it is suggested that you have it look for all possible problems):

The Date Fix Wizard

The Date Fix Wizard will perform 3 functions for **existing** Excel worksheets:
1. Change date formats that display years as 2-digit years to formats that display years as 4-digit years.
2. Modify date serial numbers (date values) so they fall within a specific century, as shown below:

Date Fix Wizard - Step 4 of 4

Specify the date adjustment to make:

○ Make all dates fall in the 20th century
○ Make all dates fall in the 21st century
● Specify a cutoff year

    [19] Dates with year greater than or equal to 19 will fall in the 20th century. Dates with year less than 19 will fall in the 21st century.

    Cancel   < Back   Next >   Finish

3. Create a report of previously saved workbooks that contain dates.

The Date Fix wizard will not change dates that have been entered as text dates (i.e. a date that has been entered within quotation marks).

The Date Migration Wizard

As you know, Excel 97 handles date functions that use text dates with two-digit years between 20 and 29 differently than previous versions. The Date Migration Wizard will display worksheet functions with date arguments that contain known or potential date migration issues (i.e. 2 digits dates in the range 20-29.

There are 39 functions that have date arguments, including: accprint, coupdays, datevalue, accrintm, coupdaysnc, day, amordegrc, coupncd, amordegrc, coupnum, disc, couppcd, duration, date, edate, oddfprice, pricedisc, tbillyield, yieldmat, eomonth, oddfyield, pricemat, weekday, year, intrate, received, weeknum, yearfrac, Mduration, oddlyield, yield, networkdays, price, tbillprice, xirr, and yielddisc. Four functions are not affected by the change in the date algorithm in Excel 97 and Excel 2000: date, day, month, now, today.

A special note is made here to alert you to the Date function. The Date function's format is

Date(year,month, day)

If you enter a 2-digit year, it is entered as the 1900s.

Conclusion: A Plan for Checking Your Excel Data for Y2K Compliance

The author of the worksheets is the best person to check for Y2K data compliance. The author should do the following:

1. Install the above wizards
2. Make sure the Date Watch Wizard options are all checked (as new dates are entered, change to four-digit year format, alert for all date functions that will calculate differently in Excel 97 than in previous versions, and display a warning when text fields are open).
3. Run the Date Fix wizard to find all the workbooks that contain dates.
4. Open each of the workbooks that contain dates and run Date Fix Wizard to change formats and values (if desired).
5. Run the Date Migration Wizard to find all workbooks that contain functions with date arguments with potential date migration issues.

Other Help with Excel Data Compliance

The wizards that we have examined do not check for Y2K data compliance in Excel macros. If you do have dates in Excel macros, a tool like Norton 2000 V2.0 may help you.

Office 97 Service Release 2 (SR-2) is required for Year 2000 compliance. SR-2 can be downloaded from

> http://officeupdate.microsoft.com/Articles/sr2fact.htm.

The changes in Office 97 that were made in SR 2, including Y2K updates, are listed in

> http://support.microsoft.com/support/kb/articles/q151/0/20.asp.

All Y2K issues reported as fixed in SR2 exist in SR1 and in the base Office 97 product. One problem that relates specifically to Excel is recording a date in a macro. The date will be recorded as 19xx, no matter what date you enter. Try it out on your Excel. You can tell what Service Release you have installed by looking under the "Help" menu and choosing "About Microsoft Excel". A window similar to the following will appear:

About Microsoft Excel

Microsoft® Excel 97 SR-2

Copyright© 1985-1997 Microsoft Corporation. All rights reserved.

International CorrectSpell™ spelling correction system
©1993 INSO Corporation. All rights reserved.

Microsoft Map Program. Copyright©
1995-1996 Mapinfo Corporation. All rights reserved.

This product is licensed to:

Unknown User
Uninstalled Version
Product ID: 53491-270-5677505-26592

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OK

System Info...

Tech Support