Directory Compare

Version 3.44
May 2013

Juan M. Aguirregabiria
E-mail: juanmari.aguirregabiria@ehu.es
WWW: http://tp.lc.ehu.es/jma.html

Index

Directory Compare 1
Version history 4
Introduction 12
Installing Directory Compare 13
Running Directory Compare from a portable device 13
Uninstalling Directory Compare 13
Running Directory Compare 14
Directory lists in Source/Target 16
Automatic Backups 18
Scan vs. Refresh 18
Command Line Options 19
Main Menu 21
File Menu 22
Edit Menu (popup menu) 22
Options Menu 26
Help Menu 26
Options dialog box 26
Error dialog box 31
Multiple Source/Target dialog box 32
File filters dialog box 32
Clean up history lists dialog box 34
Updater dialog box 34
Saving your settings (`.dcp` files) 35
FAT vs. NTFS 35
Explorer context menu 37
Date and time format 38
Invalid argument to data encode dialog box 40
File attributes that cannot be copied 40
Suggestions, bugs and help 41

Copyright

The program `DirCmp.exe`, the help file `DirCmp.chm` and the documentation file `DirCmp.pdf`, are copyrighted:

Copyright © Juan M. Aguirregabiria 1997-2013

All rights reserved

Other brand and product names are trademarks or registered trademarks of their repective holders.

Directory Compare is FreeWare; there is no charge for using it and it may be distributed freely so long as the files are kept together and unaltered. You may neither sell nor profit from distribution of **Directory Compare** in any way.

Disclaimer

In no event will the Author be liable to users for any damages, including but not limited to any lost profits, lost savings or other incidental or consequential damages arising out of the use or the inability to use this program, even if the Author has been advised of the possibility of such damages, or for any claim by other party.

Directory Compare runs at least under Microsoft Windows XP, Vista and 7.

Acknowledgments

I am deeply indebted to Jeff Wilkinson who has been reporting bugs and suggesting improvements since the first release of the program, when it was only available from my web site. Thanks Jeff!

On the other hand, Daniel Schloemp reported a problem with time stamps under NT and helped me fix it.

Gerry Hickman and Scott Dixon reported some problems and helped me fix them.

Jack Horsfield fixed the grammar and style of the documentation files and improved their overall look. I only hope that the changes I have done since then (due to program changes) are not too bad.

Gerhard Schreiber told me the **Sizes are different** and **Attributes are different** options weren't working. (See **File attributes that cannot be copied**.)

BradyYeh helped me debugging Unicode and ANSI files and reported a bug with missing `.dcp` files.

Last but not least, I want to thank Chris Vleghert for its excellent **DelZip** package which made possible the (discontinued) support of zip files.

Other free programs by the same author

To get the last version of **Directory Compare** and of all my free programs contact the author.

Version history

New in version 3.44

- Fixes for bugs introduced by the upgraded compiler.

New in version 3.43

- Minor bug fixes.

New in version 3.42.2

- New menu entries in **Edit** and popup menu: **Open/source and target directories**, **Open/source directory/directories**, **Open/target directory/directories**.

New in version 3.42

- New options in **Options/Unattended mode**: **Check drive ready status** and **Check folders exist**.
- New menus (in **Edit** and the popup): **Exclude directories** and **Exclude file type**.
- Optionally the setup program will install several styles (skins) which change the program appearance. You can also find more in internet: see, for instance, http://theroadtodelphi.wordpress.com/2011/09/01/exploring-delphi-xe2-vcl-styles-part-i/ or http://code.google.com/p/vcl-styles-utils/wiki/VclStylesCollection.The current style (as well as the use of animations in lengthy operations) is selected from the **Options dialog box**.

New in version 3.41

- New **File attributes that cannot be copied** section in the help file and documentation.
- If the program is launched with any command line option the **Allow a single program instance** option is ignored.
- By using the command line (for automatic backups, for instance) a command may be executed after the synchronization (for instance to shut down or hibernate the computer).

New in version 3.40

- Check for updates from a menu or automatically at prescribed times.

New in version 3.39.1

- Fixed bug when reading file attributes.

New in version 3.39

- User defined date and time format.
- Friendlier selection of the external compare program.

New in version 3.38

- New option, **Use Explorer view**, to provide an alternative way to select directories.
- New option, **Show grid lines**, to separate entries in the main list.
- Now wildcards can be used in excluded source and target directories.

New in version 3.37

- Warning on changed `.dcp` files is now optional.

New in version 3.36

- **New** menu.
- Warning when a `.dcp` file has changed.
- Fixed bug in the `/e` command line option.

New in version 3.35

- **Refresh** works also from the context menu.
- The **Multiple** dialog box is now resizable.
- A warning is issued if a source/target/excluded directory is not found.
- The settings **Display icons**, **List, Copy and Delete directories** and **Automatically update...** are also written to and read from `.dcp` files.
- New menu: **Mirror selected**.

New in version 3.34

- **Export** fixed.

New in version 3.33

- Minor improvements in user interface.

New in version 3.32

- Columns may be rearranged.
- New **Refresh** menu.

New in version 3.31

- Bug fixes.

New in version 3.30

- Windows 95, 98, Me and NT are no longer supported.
- Source and target directories can be dragged from **Explorer** (and other programs) and dropped over **Directory Compare**.
- New command line options `/h` to run **Directory Compare** hidden for automatic backups.
- Full Unicode support.
- Improved detection of empty drives or unplugged USB discs.
- Options are no longer stored in the registry.
- Options can be saved in a portable device

New in version 3.26

- Minor bug fixes

New in version 3.25

- Fixed bug after cancelling a scan with multiple **Source**/**Target** directories

New in version 3.24

- Fixed memory bug when comparing equal files
- Stable sort: sorting by a new column doesn't mix up other columns ordering

- Minor bug fixes

New in version 3.23

- Fixed bug with selected items are sorted

New in version 3.22

- Fixed bug with 0 length files
- Fixed bug with file names starting with a space

New in version 3.21

- Much faster sorting of very long lists

New in version 3.20

- Much faster handling of very long lists
- Fixed handling of very large files

New in version 3.13

- Implemented some Vista features: large icons...
- Workaround for bug in Windows XP update

New in version 3.12

- New `Change in selected` menus.

New in version 3.11

- Improved Vista compatibility

New in version 3.10

- New help system (hopefully compatible with Vista).
- Compiled with old compiler to avoid bug in files starting or ending with spaces.

New in version 3.09

- You can be informed of the copy process (especially useful for large files).
- Read-only files can (optionally) be deleted/overwritten in unattended mode.

New in version 3.06

- `/D` command line options.

New in version 3.05

- Minor bug fixes.

New in version 3.04

- Minor bug fixes.

New in version 3.03

- New option, **Ignore differences of 2 hours when comparing FAT and NTFS volumes**, deal with some nasty cases due to the different ways daylight saving time is managed.
- Fixed bug in **Guess**.

New in version 3.02

- New menu entry, **Options/History list**, to clean up the lists of most recently used **.dcp files**, source directories, file filters and target directories.

- Minor bug fixes.

New in version 3.01

- Improved **Multiple Source/Target pairs** dialog. You can now exclude directories from the source and the target trees.
- The progress dialog displayed when scanning directories is much more informative now.
- Workaround for a bug in C++ Builder 6, which led to scrambled main list when one column width was changed.
- Miscellaneous minor bug fixes.

New in version 3.00

- Multiple **Source/Target** pairs.
- You may specify which directories (and files) will be excluded form the scan.
- Greatly improved unattended automatic backups: no message box, log facilities, etc.
- New command line options.
- Minor user interface improvements.
- Miscellaneous bug fixes.

However, some features are no longer supported:

- No zip file support (it was provided by a third-party component, but it no longer works with my current compiler).
- No drag and drop from the program support (for the same reason).
- Only WinHelp is supported in the help system (I personally prefer this format and do not have the time to update two sets of help files)
- The program will now always use long file names (it was about time to forget about 8.3 format).

New in version 2.54

- **Scan** is started if `<Enter>` is pressed in the text boxes of **Source**, **Filter** or **Target**.
- **File/Swap** now works even if no newer or no older file exists.

New in version 2.53

- The sort order of the main list is now saved from scan to scan and, optionally, from session to session.

New in version 2.52

- Zip files were not correctly handled if they were the Source (rather than the Target).

New in version 2.51

- The new Export entry of the File menu can be used to save the main list contents to a text file from where it can be read into Word table, Excel or any other data processor.

New in version 2.5

- Files and directories can be dragged from **Directory Compare** to any window accepting dropped files (such as the desktop, or `My Computer` and `Explorer` views) where they are copied, moved or referenced by a new shortcut.

New in version 2.45

- Fixed bug when comparing directories.

New in version 2.44

- Improved Explorer context menus.

New in version 2.43

- Fixed bug when copying/deleting directories.

New in version 2.42

- Fixed bug when comparing directories.

New in version 2.40 – 2.41

- Two new menu items provide most of the features in the context menu that displays when right clicking on items in a `My Computer` or `Explorer` view.
- You can now open (and compare with an external program) zipped files.
- Settings are now saved when the Windows session ends.
- More consistent menu activation.

New in version 2.31

- Fixed bug in the handling of most recently used files.

New in version 2.30

- Now file patterns may also be excluded in **Filter**.
- You can specify the **Filter** in the command line.

New in version 2.24

- Added **File/Print**.

New in version 2.23

- Fixed bug in the Copying Files dialog box design.

New in version 2.22

- New speed button and short-cut key for **Mirror**.
- More informative message when a NT user without administrative privileges tries to change the context menu settings in **Options/Configure/Miscellaneous**.
- Entering a path in a non-existing drive in **Source** or **Target** does not produce garbage.

New in version 2.21

- Left and right scrolling did not work.

New in version 2.20

- New features:
    - A new **Options** sheet (**Color**) let you use colors to mark (with user-defined colors) entries with newer **Source** or **Target**.
- Fixed bugs:

    - The HTML help should now run with all library versions supporting it.
    - The HTML help does not appear always over the current window.

New in version 2.10

- A new menu entry (**Mirror**) and a new command line option (**/M**) make easier getting exact copies of **Source**.

New in version 2.00

- A zip file may be used instead of the **Source** or the **Target** directory.
- With the enhanced **command line options** it may be used in unattended mode for **automatic backups**.
- Relative paths are now handled in the right way.

New in version 1.53

- The ability to allow running only one copy of the program.
- A (partial) solution for the problem with daylight savings under NT.
- The **Ignore differences under** setting is only used when **Source** and **Target** are under different file systems.
- When comparing files, the update was not always possible.

New in version 1.52

- All different style bits are reported when comparing files.
- It is possible to control from which directory will start the search for the source or target directory when using the **Source** and **Target** buttons.

New in version 1.51

- Ask the user before launching (comparing) more than one pairs of items from the main list.

New in version 1.50

- Fixed bug in Windows API shell functions when writing to CD-RWs.
- Optional entries in the context menus of folders to select them as source or target directory.
- Directories may be listed along with files. In that way they can be copied (even if they are empty) or deleted.
- Richer command line syntax.
- Attributes (as well as sizes, time stamps, contents and even file existence) can be ignored when comparing files (useful when the source/target is a CD-ROM).
- Minor changes in menus, tool tips, options. . .

New in version 1.48

- Fixed handling of time stamps.
- Optional Windows98-style HTML help system.

New in version 1.47

- Fixed handling of **Filter**s containing paths (a legal practice that may have unexpected results).

- **Ignore time differences under** should now work correctly.

New in version 1.46

- Incorrect directories were created when the source or target was in the form `d:\`.
- Now only the options in the first sheet of **Options** are stored in a `.dcp` file.
- Now it is possible to erase/eliminate separately the source and target items
- It is possible to instruct the program to forget its current position and dimensions
- Old DOS/Win3+ short file names are now supported

New in version 1.43

- New compiler version and some cosmetic changes: AVIs and colorful buttons.

New in version 1.42

- The first time the program was used **Scan** was not activated until something was typed.

New in version 1.41

- The most-recently-used list now works.
- The **Swap** menu entry also swaps labels and the contents of the main list.

New in version 1.40

- A new option on the **File** menu allows swapping source and target directories.
- New options on the **Edit** and shortcut menus to open/view source and/or target files and to send them to an external compare program.
- A new sheet in the **Options** dialog allows selecting the meaning of a double click on an item in the main list.
- A new option on the **Options** dialog allows comparing files exclusively by their name.

New in version 1.32

- A stupid message issued when a `.dcp` file was directly open has been removed.
- A new entry in the **Options** dialog allows ignoring small differences between time stamps that are generated by the different precision NT and Win95/98 use to save them.
- A single click on the right spot of the **About** dialog is enough to e-mail me or browse my home page.

New in version 1.31

- It tried to delete some no existing Target files when using **Delete** or **Eliminate**.
- The **Synchronize** operations did not update the Target if Source had been updated.

New in version 1.30

- It was possible to select commands while the main list was being built.
- The main list will optionally display the icons corresponding to each item. It is also possible to disable continuous updating of its contents.
- The **Filter** may contain several file masks separated by **;**

New in version 1.20

- New **Options** menu and dialog.
- The sorting order by the **?** field is now user configurable in the new **Options** dialog box.
- Files with the same time stamps but different sizes or attributes can be optionally considered as newer source files.
- Errors comparing file contents are now more explicit and the possibility to update the target is now offered. It is also possible to invoke an external program to compare in more detail the files.

New in version 1.10

- Correct handling of blank string in combo boxes.
- The **Filter** specification history is now correctly handled.
- The relative path of files is shown in a separate field.
- One can reorder the items by clicking columns headers.
- More information is saved from session to session, including main window position and dimension, the width of columns in the list of files and their sort mode.

New in version 1.01

- The keyboard short-cut to delete items has been changed form `Del` to `Ctrl+D` to avoid inadvertently deleting files when editing the target, filter or source specifications. Other short-cuts have also been changed.
- The main window is now resizable.

Introduction

Directory Compare is a utility to help you keeping copies of your important directories (documents, programs under development and so on) in a backup hard disk or any other storage system (like USB drives or CD-RW disks). The copy may be made (semi)automatically or in an interactive way.

I always have two or more copies of my important documents and I refresh them very often. I prefer to save exact copies of my working directories (rather than using some backup program), because it is faster and makes easier to open the old copy to recover some element or part that was better in the previous version. To make this process easier I wrote, many years ago, the first version of the program **cpy** which is included with my **Console Utilities**. **Cpy** is a command line program, which makes it very convenient to use from a desktop shortcut that after a single click copies to my backup hard disk all modified elements in my working directories. Users who do not want to remember command lines options may use **Cmd Line Shell** to have a more user-friendly interface.

Directory Compare is a kind or GUI version of **cpy**: it has more options and its visual interface makes it easier to do selective copies. For instance, modern compilers generate an incredible amount of auxiliary data, which speeds up compilation, but takes a lot of storage space. (For instance, the source files of **Directory Compare** are less than100 Kb, but the auxiliary files generated by the compiler occupy 7,500 Kb!) Usually you do not want such files in your backup disk: they are very large and can be easily recreated by running the compiler.

Cpy may be instructed to ask you for confirmation before copying each file, but this is a boring and error prone process. My strategy is to use **cpy** to copy everything during program development and then, when I release the software, I delete auxiliary files from my main and backup disks. To improve this approach I wrote **Directory Compare**: it shows you, side by side, the source and backup directories so that you can easily select the files to by copied (from the source to the target or in both directories) and even delete from both directories auxiliary files.

Installing Directory Compare

To install the program in your hard drive run the setup program and follow the ompare tions. It will copy to the directory you select the executable file, `DirCmp.exe`, the help files, `DirCmp.chm`, and the documentation file, `DirCmp.pdf`.

The first time the program is run you are invited to check the **Options dialog box** that opens from the **Options/Configure** menu.

Running Directory Compare from a portable device

The program can be also run from a portable device (such as a USB drive) or an account with limited privileges.

1. Copy (from your hard disk or the portable distribution `dslvr???.zip`) the files `dircmp.exe`, `dircmp0.ini`, `dircmp.chm` and optionally `dircmp.pdf` to any folder in the device (or computer).

2. Rename `dircmp0.ini` to `dircmp.ini` (depending on your **Explorer** settings) you may not see the `.ini` extension).

The options will be stored from session to session in `dircmp.ini`, instead of using, on a per user basis, a file like `C:\Users\`*`user`*`\AppData\Roaming\Juan M. Aguirregabiria\dircmp.ini`).

This is convenient when the program is used from the portable device in a computer where the program has not been installed or from an account with limited privileges that won't allow installing the program; but some things will be still missing: mainly the ability to store settings and preferences on a per user basis, the links in the **StartUp** menu, the icon of `.dcp` files and the ability to launch the latter by double clicking on them (you can easily recover the last three features by creating the appropriate menu entries and right clicking on a problem file to change the associated program).

Uninstalling Directory Compare

To uninstall **Directory Compare** from your hard drive

1. Use `Add or remove programs` from the Control panel.

2. If necessary, remove any remaining files in the installation directory (`DirCmp.gid` and `DirCmp.fst`, if you have used the help system), as well as any `.dcp` files you might have created.

3. *Advanced users* may want to remove the options file:

- Windows XP:

`C:\Documents and Settings\`*`user`*`\Program data\Juan M. Aguirregabiria\RenJPEG.ini`

- Windows Vista/7:

`C:\Users\user\AppData\Roaming\Juan M. Aguirregabiria\RenJPEG.ini`

Of course, you have to use the right *user* name.

To remove **Directory Compare**, from a portable device delete the files `dircmp.exe`, `dircmp0.ini`, `dircmp.chm` and `dircmp.pdf`.

Running Directory Compare

You can run Directory Compare as a normal program, from any of the following:

- The **Start** menu
- A shortcut on the desktop
- A folder
- **Execute** dialog box
- A DOS window (see **Command Line Options**).

You can also double-click any file containing saved settings (a `.dcp` file), which starts **Directory Compare** and loads the settings.

Once **Directory Compare** starts:

- Select the source directories by doing one of the following:
  - Click **Source** (or **Multiple**) and then select the appropriate directory (or directories, including those you do not want to be scanned: see **Directory lists in Source/Target**).
  - Enter the directory path in the edit box under the **Source** button. You may specify multiple directories separated by `;` and directories after `/` will be excluded from the scan (you can use the `*` and `?` wildcards in the latter). You may use the **Multiple** buttons to simplify this task and you can also drag directories (and files) files from **Explorer** (and other programs) and drop them over **Directory Compare**. The **Directories dropped** dialog box will open.
  - Click the down arrow at the end of the edit box and select a source specification from the list.
- Select the source file mask (or masks separated by `;`) under **Filter** (the default `*` will use all files in the selected directories; patterns after `/` will be excluded: see **File Patterns in Filter**),
- Select the target (backup) directory (directories) by doing one of the following:
  - Click **Target** (or **Multiple**) and then select the appropriate directory (or directories: see **Directory lists in Source/Target**).
  - Enter the directory path in the edit box under the **Target** button. You may specify multiple directories separated by `;` and directories after `/` will be excluded from the scan (you can use the `*` and `?` wildcards in the latter). You may use the **Multiple** buttons to simplify this task and you can also drag directories (and

files) files from **Explorer** (and other programs) and drop them over **Directory Compare**. The **Directories dropped** dialog box will open.

- Clicking the down arrow at the end of the edit box and select a target specification from the list.

- Select the items you want included in the list:
  - **Subdirectories** if you want to scan also directories under the selected ones,
  - **Newer source files** to list files that are older or missing in **Target**,
  - **Newer target files** to list files that are older or missing in **Source**,
  - **Equal files** to list files that have the same time stamp in **Source** and **Target**,
- Press **Scan** to make **Directory Compare** search both directories and compare the time stamps of files. The results are displayed in a list which shows in each line the file name, the relative path and the size and date of the copies existing in both directories. Data corresponding to **Source** and **Target** is separated by one of the following:

Character	**Meaning**
>	the source file is newer than the target file or the latter is missing,
<	the source file is missing or older than the target
?	both files have the same time stamps but different sizes (they will be treated as the > files if the **Sizes are different** option in the **Options dialog** is selected),
–	both files have the same time stamps and sizes but different attributes (they will be treated as the > files if the **Attributes are different** option in the **Options dialog** is selected). But see **File attributes that cannot be copied**.
!	files are different but have the same name and the **Ignore everything…** option is selected.
#	for one FAT file and one NTFS file differing just by one hour. See **FAT vs. NTFS**.
=	both files have the same time stamp, sizes and attributes (although not very probable, they could have some different bits: use the **Compare** function to check this).

The different files will appear selected and the status line will inform you on the number of files that are newer in each directory, as well as the equal files and the number of selected files (initially, those with different time stamps).

When a single **Source**/**Target** pair is being used the relative path displayed in the second column (if any) must be appended to the source and target directories displayed just above the list to get the full path of the files in each line. If multiple source/target pairs are being used, no directories is shown above the list, but the directories displayed in the second column will start by the number of the corresponding pair followed by a slash (and the relative path, if any). For example the second column will display `2/` if the file is in the second source/target pair and `10/data\peter` if it is in the subdirectory `da-`

`ta\peter` of the 10th pair. Notice the normal slash is used between the pair number and the relative path and a backslash to separate directories.

- After changing some settings (as those mentioned above: **Subdirectories**, **Newer source files**, etc.) you can use the entry **Refresh** on the **Edit** menu (or the popup menu) to quickly compare again the items stored in memory in the previous scan, without reading again the information on the disk(s). See **Scan vs. Refresh**.
- Now, you can select or deselect files as usual (remember holding down the `Ctrl` key if you want to keep other selections when changing the status of a single line) and use the **Edit menu**, the **shortcut menu** that you get when using the right mouse button or, in some cases, the equivalent keyboard shortcuts to update and compare files in both directories as well as to perform other tasks on them: erasing, opening, viewing, using an external compare program. The usual way of arranging the order of entries by clicking on column headers works as expected. The columns may also be rearranged.

Since you may have different sets of working directories (say, your documents and your programs) you may find yourself repeatedly using the same sets of directories, filter and options. The history lists under Source and Target will help you, and **Directory Compare** always starts with the settings you used the last time. Furthermore, by using the **File menu** you can save the settings in a **.dcp file** and then use them again later. You can then recover the settings in the file, or by simply clicking on the file icon (you may also define a shortcut to this icon in any convenient location, such as your desktop). In that case the program will start with the corresponding settings and an automatic **Scan** will by performed on start-up.

See also **Automatic Backups** and **Command Line Options**.

Directory lists in Source/Target

You can enter multiple directories separated by a semicolon in Source and Target. This is useful to synchronize different directory trees in a single operation.

In **Source** and **Target**, the directories separated by semicolons that follow a slash will not be scanned (and the same will happen with the corresponding directories in Target). This may be used to avoid synchronizing unimportant data (such as intermediary files generated by a compiler) or to excluded system directories. Any subdirectory will also be excluded. You can specify either full directory specifications like `"C:\WINDOWS\SYSTEM32\Restore files"` which will exclude just the corresponding directory, or only the directory name as `"Restore files"` which will exclude `"C:\WINDOWS\SYSTEM32\Restore files"` but also `"C:\WINDOWS\SYSTEM32\My Apps\Restore files"`. Something like `"SYSTEM32\Restore files"` will not work.

Remember: you can use the `*` and `?` wildcards in excluded directories.

For instance, to compare the trees of two programs but excluded the `*.obj` files in subdirectories called `obj` you can enter

```
c:\prog\app1;c:\prog\app2/obj
```

in Source and the following in Target:
`d:\prog\app1;d:\prog\app2`

To exclude subdirectories like `Debug` or `Debug_build` you may enter

`c:\prog\app1;c:\prog\app2/debug*`

in **Source** and the following in **Target**:

`d:\prog\app1;d:\prog\app2`

An easier way to choose multiple directories and/or excluded subdirectories is to press any of the **Multiple** buttons: see **Multiple Source/Target dialog box**.

You can also drag directories (and files) files from **Explorer** (and other programs) and drop them over **Directory Compare**. The **Directories dropped** dialog box will open.

File Patterns in Filter

Patterns are used in the **Filter** edit box to select the files you want included and/or excluded when comparing directories. A pattern is one or more file masks separated by semicolons or a slash.

A mask is a file name optionally followed by an extension (paths are not allowed, so you cannot include \) which may contain any number of copies (including none) of the following wildcards:

- `?` will match any character, but there must be exactly one character.
- `*` will match any sequence of characters, including the void one.
- So, `choice?.*` will match `choices.doc` and `choice1.dat`, but not `choice.doc`. On the other hand, `choice*.*` will match the previously mentioned three files, as well as, `choices are good.rtf`.
- `*` will match any file and `*.` any file without extension.
- Spaces at the beginning and the end of a mask will be removed, but you can avoid it be putting the mask inside a pair of double quotes, which will be removed. So, to match `*help.me ` , with a trailing space, you have to enter it between double quotes.
- A pattern is a single mask or a sequence of masks separated by semicolons. For instance, to match all documents you could use something like `*.doc;*.txt;*.rtf`.
- If the pattern includes a slash, any file matched by the masks after it will be excluded. So, to match all documents except the ones containing the letter w, you can use `*.doc;*.txt;*.rtf/*w*`.
- If the pattern starts with a slash, a default `*` is added in front of it, i.e., all files will be included except the ones matched by the mask(s) after the slash. For example, to match all files except the backup files produced by some editors, you might want to use `/*.bak`. To exclude temporary files you may try `/*.tmp;*.*~*`.

An easier way to set a complex mask is to press the **Filter** button: see **File filters dialog box**.

Automatic Backups

Directory Compare if often used in a friendly interactive way, but it can be also a tool for automatic backups to be started

- by clicking in a shortcut in your desktop,
- using a menu,
- when the Windows session starts (by putting a shortcut in the **StartUp** submenu),
- by means of the `at` command under,
- as a scheduled task,
- etc.

In all cases you will have to enter a **command line** with the program file specification and some options. The easiest way is as follows:

- Prepare in the usual interactive way the kind of copy you want to repeat later once and again (including the desired **Source** and **Target**, as well as all the remaining options).
- Check that the settings work as expected.
- Save the settings to a .dcp file.Say its file specification is `c:\backups\saveprog.dcp`.
- Select the way to start the automatic task and enter the appropriate **command line**. For instance,

```
"c:\Program Files\Directory Compare\DirCmp.exe"
c:\backups\saveprog.dcp /u /q
```

- You can even run the program hidden (at your own risk) by using the `/h` **option**.
- It is also possible to shut down (or hibernate) the computer after the backup by using **Command line options**. For instance you could create a shortcut in your desktop with the following command:
  path`\dircmp.exe` *path*`\exit.dcp /m /x "shutdown -s -f"`
  with appropriate *path*s. In `exit.dcp` you specify the source and target directories, as well as other settings. Then clicking the shortcut will synchronize your directories (using the **Mirror** command in the example) and shut down the computer. (Refer to the `shutdown` command in your system help.)

You should probably use the features described in **Unattended mode** in **Options dialog** to avoid the program halting until the user closes a warning or error box. These features can also be used to get updates on the process of copying files (useful with vary large files).

Scan vs. Refresh

When you click **Scan** (or press `Ctrl+S`, or use the menu **Edit/Scan**) a two step process begin:

1. The directories specified in **Source** and **Target** (as well as its subdirectories if **Subdirectories** is checked and excluding the directories in **Exclude from source** and **Exclude from Target...**) are scanned for files that match the file pattern(s) in **Filter**. The file names and the corresponding information on date, size and attributes are stored in memory.

2. The lists of source and target files are compared, according to the criteria in **New source files**, **New target files**, **Equal files**, **Options/Configure/Different files** and **Options/Configure/Main list**.

When you use the menu **Edit/Refresh** (or press `Shift+Ctrl+R`), the second step is repeated, with the current settings and the file data stored in memory in the last **Scan**. This is a fast way to compare again the lists of files with different criteria, without having to scan again the disk(s), but any change in **Source**, **Target**, **Subdirectories** and **Filter** will be ignored (until you use **Scan** again) , since the data stored in memory is only updated in the first step of **Scan**.

If **Options/Refresh after changing the files (Source/Target/Equal) to be shown** is checked a **Refresh** will be automatically executed every time **New source files**, **New target files** or **Equal files** are changed.

Command Line Options

Directory Compare may be run with optional items in the command line:

Options	**Meaning**
dcp_file_name	Read the settings in the .**dcp file** called *dcp_file_name*
`/d`	Do not remember current settings the next time the program starts. Useful when using it unattended (maybe through the Windows Task Scheduler)
`/e` *file*	Used with `/u`, `/y` or `/m`, exports the main list contents to *file*, after comparing **Source and Target**. Command line switch equivalent to **File/Export**.
`/f` *pattern*	Use *pattern* as **Filter** (see **File patterns in Filter**). If this is not included, `*` is assumed.
`/h`	Run hidden. You should probably use the features described in **Unattended mode** in **Options dialog** to avoid the hidden program halting if a warning or error happens. See **Automatic backups**.
`/m`	Make **Target** a mirror (exact copy except for newer items in **Target**) of **Source**
`/q`	Quit after performing other actions in command line

/s *directory*	Use *directory* as **Source**
/t *directory*	Use *directory* as **Target**
/u	Update all newer files in **Source**
/x "*command*"	Run *command* after performing other actions in command line (see below).
/y	Update all newer files in **Source** and **Target**
/w	Use direct API calls (instead of the shell) to copy and delete files: no warning will be issued before deleting files and directories and no error message will be displayed. Necessary for unattended backups. See **Unattended mode** in **Options dialog**.

(/D, /E, /F, /H, /M, /S, /T, /U, /X, /Y, /Q and /W are also OK.)
If *directory* or *pattern* contain spaces, you must enclose them between double quotes. If *pattern* already contains double quotes they have to be preceded by \ (see below).

Examples (of course, you may need to include the program path explicitly):

Command line	**Meaning**
dircmp *name.dcp*	Read the settings in the **.dcp file** and automatically start a **Scan**.
Dircmp *name.dcp* /u	Read the settings in the **.dcp file**, automatically start a **Scan** and update all newer files in **Source**.
Dircmp *name.dcp* /u /q /w	Read the settings in the **.dcp file**, automatically start a **Scan**, update all newer files in **Source**, and then quit. Issue no error/warning message.
Dircmp *name.dcp* /y	Read the settings in the **.dcp file**, automatically start a **Scan** and update all newer files in **Source** and **Target**.
Dircmp *name.dcp* /m /q	Read the settings in the **.dcp file**, automatically start a **Scan**, update all newer files in **Source**, erase items of **Target** missing in **Source**, and then quit.
Dircmp /s "dir 1"	Use dir 1 as **Source**. (Notice the space.)
dircmp /t dir /f "\" a*\"/*.bak"	Use dir as **Target** and " a*"/*.bak as **Filter**.
Dircmp /s dir1 /t dir2	Use dir1 as **Source**, dir2 as **Target**, and automatically start a **Scan**.

`Dircmp /s dir1 /t dir2 /u /w`	Use `dir1` as **Source**, `dir2` as **Target**, automatically start a **Scan** and update all newer files in **Source** with no warning/error message.
`Dircmp /s dir1 /t dir2 /u /q`	Use `dir1` as **Source**, `dir2` as **Target**, automatically start a **Scan**, update all newer files in **Source**, then quit.
`Dircmp /s dir1 /t dir2 /y`	Use `dir1` as **Source**, `dir2` as **Target**, automatically start a **Scan** and update all newer files in **Source** and **Target**.
`Dircmp /s dir1 /t dir2 /m /q`	Use `dir1` as **Source**, `dir2` as **Target**, automatically start a **Scan**, update all newer files in **Source**, erase from **Target** items missing in **Source**, then quit.

- You can get **automatic backups** in unattended mode by using a command lines in the form `dircmp /s dir1 /t dir2 /y /q /w`
  or, if extra items in **Target** must be deleted, `dircmp /s dir1 /t dir2 /m /q /w`
  or, if many options have to be selected, `dircmp mybackup.dcp /m /q` in a shortcut in the desktop, or in a batch file (that, for instance, will be executed automatically from the startup menu, or as a scheduled task, or by means of the `at` command).
- Path specifications containing spaces must be written between double quotes, such as in `dircmp /s "c:\my programs" /t "d:\backup\my programs"`
  But `\"` is interpreted as a true double quote; so to specify `c:\my programs\` as source directory you can either omit the last backslash, as in the previous example, or you can add it *after* the closing double quote:
  `dircmp /s "c:\my programs"\ /t "d:\backup\my programs"`
- The `/x "`*`command`*`"` options can be used to run a program specified (along with its parameters) in "*command*", after completing the other task. It is especially useful to shut down (or hibernate) the computer after **automatic backups**. You could use, for instance, from the command line or through a shortcut
  `dircmp `*`name.dcp`*` /u /x "shutdown -s -f"`
  to force a shutdown after updating your files (according to the settings in *name.dcp*). Refer to the `shutdown` command in your system help. See **Automatic backups**.
- There are also logging facilities for **automatic backups**.

Main Menu

Entry	**Meaning**
File	Open the **File Menu** to manage `.dcp` files
Edit	Open the **Edit Menu** to update and compare files in both directo-

	ries
Options	Open the **Options Menu** to view and edit options
Help	Open the **Help Menu**

File Menu

Use the options on the File Menu to save the current settings to a **.dcp file** and to restore settings that you have previously saved.

Entry	Key	Button	Meaning
New			Start a new `.dcp` file to store settings
Open			Load previously settings saved to a `.dcp` file
Save			Save the current settings. These are saved in a file with a `.dcp` file extension
Save as			Save to the disk the current settings under a new name
Swap	`Ctrl+W`		Swap **Source** and **Target** directories
Print	`Ctrl+P`		Print contents of main list
Export			Save to a text file the main list contents. Each line is stored in a text line with elements separated by tabulators. The file can be easily imported in Word, Excel or any data file processor.
Exit			Quit from **Directory Compare**
. . .			List of most recently-saved settings files

Edit Menu (popup menu)

This menu is both an entry of the **Main Menu** and the popup menu which opens when you use the right mouse button. It enables you to carry out the main file maintenance operations:

Entry	Key	Button	Meaning
Scan	`Ctrl+S`	**Scan**	Scan **Target** and **Source** and compare item stamps.
Refresh	`Shift+Ctrl+R`		Quickly compare again with current settings without reading the information on the disks. See **Scan vs. Refresh.**
Update selected	`Ctrl+U`		Copy, to **Target,** the selected files that have a more recent date

			in **Source**. Files with the same time stamps but different size/attributes will also be updated if the **Sizes are different**/**Attributes are different** option in the **Options dialog** dialog is selected. But see **File attributes that cannot be copied**.
Synchronize selected	Ctrl+Y		Copy, to each of the **Target** and **Source** directories, the selected files that have a more recent date in the other folder.
Compare selected	Ctrl+C		Compare the entire contents of those selected files that have the same time stamp in both directories. Only errors are displayed by means of an **Error dialog box**. No news is good news! For the same reason, when the source and target files have different attributes, those that are different are reported.
Update all			Copy to **Target** all files that have a more recent date in **Source**. Files with the same time stamps but different sizes/attributes will also be updated if the **Sizes are different**/**Attributes are different** option in the **Options dialog** dialog is selected. But see **File attributes that cannot be copied**.
Synchronize all			Copy to each of the **Target** and **Source** directories all the files that have a more recent date in the other folder.
Compare all			Compare the entire contents of all the files that have the same time stamp in both directories. Only errors are displayed by means of an **Error dialog box** dialog will open. No news is good news! For the same reason, when the source and target files have dif-

			ferent attributes, those that are different are reported.
Mirror	Ctrl+I		Like **Update** all, but items missing from **Source** will be ompare eed from **Target**. Useful to make sure that the target directory is completely equal to the source and does not contain files that are no longer present in the source. However, it does nothing about files that are newer in target.
Mirror selected	Shift+Ctrl+I		Like **Mirror**, but applies only to selected items.
Change in selected			Change in selected items the action to be performed by an **Update**, **Synchronize** or **Mirror** command to force copying over newer items. These are dangerous commands and you will have to confirm the action. There are five commands:
< to >			Force copying over newer files
? to >			Force copying over files with the same time stamp but different file sizes
- to >			Force copying over files with the same time stamp but different file attributes
! to >			Force copying over different files if only names and extensions are compared
# to >			Force copying over the target in FAT/NTFS pairs differing just by 1 hour (or differences of integer number of hours)
Select different	Ctrl+F		Select all files with different time stamps or that do not appear in both directories.
Select all	Ctrl+A		Select all the files in the list.
Exclude directories			Add the selected directories and the directories of the selected files to the list of excluded source and/or target directories. **Scan** again to use the new lists.

Exclude file type			Add to the list of excluded file filters the pattern `*.ext` for the extension `.ext` of each selected file in the main list. **Scan** again to use the new list.
Delete from source and target	Ctrl+D		Remove the selected files from both directories. The files go to the Recycle Bin if available.
Delete from source			Remove the selected files from the **Source** directory. The files go to the Recycle Bin if available.
Delete from target			Remove the selected files from the **Target** directory. The files go to the Recycle Bin if available.
Eliminate from source and target			Remove the selected files from both directories. The files do not go to the Recycle Bin.
Eliminate from source			Remove the selected files from the **Source** directory. The files do not go to the Recycle Bin.
Eliminate from target			Remove the selected files from the **Target** directory. The files do not go to the Recycle Bin.
Open/both source and target	Ctrl+B		Launch/View the selected source and target file(s). (See **Options dialog box**).
Open/source file(s)	Ctrl+L		Launch/View the selected source file(s).
Open/target file(s)	Ctrl+R		Launch/View the selected source file(s).
Open/context menu for source	F10		Open the **Explorer context menu** for selected source files
Open/context menu for target	F11		Open the **Explorer context menu** for selected target files
Open/source and target directories			Open **Explorer** windows for the directories of selected source and target files
Open/source directory/directories			Open **Explorer** windows for the directories of selected source files
Open/target directo-			Open **Explorer** windows for the directories of selected target files

ry/directories			
Send to another folder source file(s)			Copy the selected source file(s) to any directory.
Send to another folder target file(s)			Copy the selected target file(s) to any directory.
External compare	`Ctrl+X`		Send source and target files to the external (compare) program specified in the **Options dialog box**.

Options Menu

In this entry of the **Main Menu** you find

Entry	Key	Meaning
Configure	`Ctrl+K`	Open the **Options** dialog box to view and edit preferences
Forget position and size		Do not use the current position and dimensions the next time the program starts
History lists		Open the **Clean up history lists** dialog

Help Menu

In this entry of the **Main Menu** you may find

Entry	Meaning
Contents	Contents of the help system
Search for Help On	Search for keywords in the help system
Check for updates	Check if any newer version is available from the program home. If an update is available the **Updater dialog box** will open
About	The *ego* box

Options dialog box

This configuration dialog opens when using the **Configure** entry on the **Options menu** or by pressing `Ctrl+K` and lets you see and change some program preferences. The following options may be edited from its pages:

Entry	Meaning
Different files	
Sizes are different	Treat as newer those source files that have the same time stamps but different sizes (**?** Files).
Attributes are different	Treat as newer those source files that have the same time stamps but different attributes (**–** files). But see **File attributes that cannot be copied**.
Copy only attributes	Do not copy files when only the attributes are different. Instead, copy just the attributes.
Ignore time differences under	Time stamps are stored with very high precision under NTFS, but are rounded to the nearest multiple of 2 seconds when saved to a FAT or FAT32 volume. If you keep the source and target files on volumes with different file systems, even after **Update** and the next **Scan** might report that files are different because they have (slightly) different time stamps. To avoid this problem, you have to set this option to a value of 2 seconds. See **FAT vs. NTFS** for details. The setting is used with all files if any source-target pair has different file systems.
Ignore always	Use the previous setting with all file systems.
Ignore differences of 1 hour when comparing FAT and NTFS volumes	Daylight savings are dealt in different ways under NTFS and FAT/FAT32 file systems. If you keep the original files under NTFS and their copies in a FAT drive, and the daylight savings changes is made automatically by the system, you should check this options. See **FAT vs. NTFS** for details. The setting is used with all files if any source-target pair has different file systems.
Ignore differences of 2 hours when comparing FAT and NTFS volumes	Same as above for some rare cases when FAT, NTFS and CDFS are involved.
Ignore everything except file name and extension	Compare only names and extensions. This may be useful in some very special cases and was added because some users asked for it.
Clear the read only attributes in copies of files from a CD-ROM	This is what the shell always do; so, at least when using the direct API calls described below, you should check this with read only CD-ROMs but not with CR-RWs. The setting is used with all files copied if any of the source directories is a CD-ROM (CD-R or CD-RW).
Unattended mode	
Use direct API calls to copy and	By default the program uses the shell to copy and delete files and directories. If an error happens (for instance trying to delete a file

delete files	being used by another application) a message box appears and the program waits until user press the **OK** button to close it. Moreover, depending of the settings **Ask the user before deleting files if they are at least** and **Ask before deleting directories**, the user will be prompted before deleting files and directories. All these messages and prompts should be avoided in **automatic backups** when the user is not there to close the popup window. This can be accomplished by checking this option (or using the /w switch in the **command line**): the operation will be silent, files and directories will be removed without warning and no error box will display (but see the description of **Log file** and **Show warnings and errors on screen** below). You loose the ability to delete to the recycle bin and read only files would not be deleted or overwritten unless the **Delete/overwrite read only files** option is checked.
Log file	If a file specification is provided here and the previous option has been selected, the information controlled by the remaining entries in this sheet is sent to the log file. If the file already exists the contents is not lost: the new information is appended at the end. If the log file does not exist and cannot be created (because the directory you specified does not exist, for instance), no error is issued and nothing is logged. Notice that **Mirror** operations are implemented as an **Eliminate** operation followed by **Update**: two entry series will be sent to the log file.
Log everything	Select this to send to the log file every file/directory operation, as well any error.
Log only errors	Select this to send to the log files only failed file/directory operations, with the corresponding error information.
Log start and end times	Send the date and time of the current log operation start and end.
Log statistics	Send to the log file the number of files/directories that have been copied/deleted, as well as the number of errors.
Show warning and errors on screen	Display warning and errors in message boxes when using API calls (the program then will wait until the user acknowledges the error or warning).
Show copy progress	Display the progress of every copy operation (especially useful for large files).
Delete/overwrite read only files	No warning will be used if this is checked
Check drive ready status	Check whether drives are ready and issue a warning if not. You may want to disable this for unattended backups.
Check folders exist	Check whether folders exist and issue a warning if not. You may want to disable this for unattended backups.
Main list	Specify the relative order to sort the symbols **> < ? - ! =**

	when listing files.
Display icons	Show the icon corresponding to each item as in Explorer or My Computer (it will slow down the display of the main list).
Show grid lines	Separate entries with fine lines
List, Copy and Delete directories	Treat directories as normal files and display them in the main list, so that they can be copied (even if they are empty) and deleted.
Automatically update main list after files are copied or deleted	The main list is automatically refreshed each time a file (or a group of files) is deleted or a synchronization is performed. If you find this annoying, deselect this option: the main list will be updated only when you explicitly ask for it by means of Scan.
Save sort order	Save the sort order of the main list from session to session
Refresh after changing the files (Source/Target/Equal) to be shown	Whether a **Refresh** will be automatically executed every time **Source**, **Target** or **Equal** are changed.
Date and time format	Optionally select a date and time format (see the **Date and time format** different from your system default. If the main list is not empty you may want to use **Edit/Refresh** to use the new format.
Colors	Customize the appearance
Use colors in main list	If this options is selected (user-defined) colors will be used in the main list (instead of a standard list view) to mark different types of entries (entries with newer **Source**, newer **Target** and so on). Changing this option will be taken into account only when a new session of **Directory Compare** starts.
Choose a line type	Select here a line type and then **Text color** or **Background color** to customize colors used when the previous option is selected.
Style	Select a style (skin) among the `*.vsf` files in the `styles` subdirectory located in the executable folder, if installed by the setup program and/or added by you, maybe in a subdirectory, after getting them from internet: see, for instance, http://theroadtodelphi.wordpress.com/2011/09/01/exploring-delphi-xe2-vcl-styles-part-i/ or http://code.google.com/p/vcl-styles-utils/wiki/VclStylesCollection.
Display animations in lengthy tasks (not nice with many styles)	Use the old animations when scanning directories, copying files, etc. They might not look nice in styles different from the default *Windows*.
Double click	
When you double click on an item from the main list	Select from the list below the action to be performed when you double click on an item in the main file list.
Execute associat-	Using any Open command form the **Edit menu** or the **shortcut**

ed program	**menu** starts the associated program to edit the file.
Quick view the file	Using any Open command starts the associated quick view filter to view the file.
External compare	
Select application	Use this if you want to specify an external program to use when performing a detailed comparison of files by using the **Edit/External compare** menu or the `Ctrl+X` shortcut. For example, you could use **FileComp** in my own **Console utilities**. The external program will also be called when using **Details** in an **Error dialog box** which displays an error while comparing file contents. The source and target full file specifications (or the equivalent Windows 3.1-DOS 6 short names) can be specified by means of the **`%s`** and **`%t`** (**`%S`** and **`%T`**) escape sequences. To insert a true percent sign (**`%`**) enter **`%%`**. Remember that often you have to use double quotes around file specifications with blanks. You may use the **Select application** button to search through the system the compare utility and the program will put them around the program specification and add the `"%s" "%t"` options, which will work with most programs.
Show command line before executing it	Select this to make **Directory Compare** show you the command line it is about to use when it needs to perform a detailed ompareson of files. You have the opportunity to modify the command line at that time.
Miscellaneous	
Source. . .in context. . .	Add the "Source for Directory Compare" entry on the context menu for folders. Selecting it, **Directory Compare** will start with that folder as Source. You need administrative privileges to change this setting; otherwise, a message suggesting you ask the system administrator to set this for you will be issued.
Target. . .in context. . .	Add the "Target for Directory Compare" entry on the context menu for folders. Selecting it, **Directory Compare** will start with that folder as **Target**. You need administrative privileges to change this setting; otherwise, a message suggesting you ask the system administrator to set this for you will be issued.
Ask the user before deleting files if they are at least	Before starting to delete or eliminate files, **Directory Compare** will issue a warning if the number of files is at least the value selected here. Use 0 to get no warning at all.
Ask before delet-	If this option is selected, **Directory Compare** will issue a warning

ing directories	before starting to delete or eliminate directories.
Start browsing folders from current directory	When using the **Source** and **Target** buttons the dialog box to search for the directory will open from the current directory. (If this is not selected it will start from **My PC**.)
Start browsing Target from current Source	When using the **Target** button the dialog box to search for the directory will open from the current **Source**. If this is not selected it will start from the current **Target**, but if the previous entry is not selected, **My PC** will be the starting point.
Use Explorer view	Use an Explorer view to select directories, rather than the usual tree view.
Allow a single program instance	If this option is selected and you try to launch it when another copy is already running, the latter will be brought to the foreground and no new copy will start. This option is ignored if the program is launched with any command line option.
Warning if .dcp file has changed	If the current **.dcp file** has changed a warning will be issued and the file can be saved.
Number of most recently used .dcp files in the File menu	Number of most recently used `.dcp` files to be added at the end of the **File** menu. The new value will be used the next time the program is used.
Number of items in the Source, Target and Filter history lists	Number of most recently used settings stored in the lists displayed when the down arrow is clicked in **Source**, **Target** or **Filter**. The new value will be used the next time the program is used.

Automatically check for updates	When should the program check whether a new version is available from the program home:
	`Never`
	`Once a year`
	`Once a month`
	`Once a week`
	`Once a day`
	`Every time the program starts`
	When an update is available the **Updater dialog box** will open.

Error dialog box

If two files are different after using the **Compare selected** or **Compare all** options in the **Edit Menu**, this dialog opens. The caption shows the error type, as well as the source and target files and some details on the difference between files. The following options are available:

Entry	**Meaning**
OK	Ignore the error and continue with the next file to be compared
Cancel	Ignore the error and stop the comparison process

Update	Copy the source to the target
Details	Run the external program, as defined in the **Options dialog box**, to perform a detailed comparison of file contents when they are different.
Ignore all	Ignore this kind of difference (attributes, sizes, time stamps, contents and even file existence) with the remaining files (useful if the source or target is a CD-ROM).

Multiple Source/Target dialog box

This dialog opens when any of the **Multiple** buttons is used and provides an easier way to enter multiple Source/Target pairs as well as excluded directories: see **Directory lists in Source/Target**. The dialog box contains four lists where the Source, Target and Excluded directories can be directly entered (in separate lines) and edited (you can use the `Ctrl+C` to copy and `Ctrl+V` to paste, as well as other common editing shortcuts, and pressing the right mouse button a popup dialog with the common editing command will open). Remember: you can use the `*` and `?` wildcards in excluded directories.

The following options are also available:

Entry	**Meaning**
Source	Press this to select a source directory, which will be appended to the list below the button
Target	Press this to select a target directory, which will be appended to the list below the button
Guess	Fill empty target lines using the path of the first target and the filename of the corresponding source
Excluded from source	Press this to select an excluded directory, which will be appended to the list below the button
Excluded from target	Press this to select an excluded directory, which will be appended to the list below the button
OK	Accept and enter in **Source** and **Target** the new directory lists
Cancel	Abandon changes and exit the dialog
Help	Show help about the dialog

File filters dialog box

This dialog opens when the **Filter** button is used and provides an easier way to enter a complex mask in **Filter**: see **File Patterns in Filter**. The dialog box contains two lists where the masks to be included and excluded can be directly entered (in separate lines) and edited (you can use the `Ctrl+C` to copy and `Ctrl+V` to paste, as well as other

common editing shortcuts, and pressing the right mouse button a popup dialog with the common editing command will open).

The following buttons are also available:

Entry	Meaning
OK	Accept and enter in **Filter** the new masks
Cancel	Abandon changes and exit the dialog
Help	Show help about the dialog

Directories dropped dialog box

You can drag directories and files from **Explorer** (and other programs) and drop them over **Directory Compare.** They will be added to the list in this form (only the directory of dropped files will be added).

- By default all dropped directories are checked, but if you right click on the list a popup menu will open with the following entries:
    - **Check selected**
    - **Check all**
    - **Uncheck selected**
    - **Uncheck all**
- Of course, you can also check and uncheck individual items.
- The currently checked directories will be added to the desired location (and removed from the list of dropped items) when one of the following buttons is clicked:

Button
Source
Target
Excluded from source
Excluded from target

- If **Replace current value(s)** was checked, the corresponding list will be cleared before adding the checked directories. Otherwise, the latter will be appended to the list.
- The dialog box will be automatically closed when the list is empty, i.e., when all its items have been added to some list.
- The remaining buttons are as follows:

Button	Meaning
Close	Close the form
Help	Help on this form

Hint:

- For easy of use, if the directories are dropped in the left (right) half of the program window the **Source** (**Target**) button will be the default button, so that pressing `Enter` will add them and close the form.

Clean up history lists dialog box

This dialog opens when the **Options/History lists** menu item is used. and provides a way to remove entries that are no longer necessary from the history lists. You select the items to be removed and press the corresponding **Delete selected button:**

Entry	Meaning
.dcp files	Most recently used `.dcp` files
Filters	File filters (see **File Patterns in Filter**)
Sources	Most recently used source directories
Targets	Most recently used target directories
OK	Accept changes in history lists
Cancel	Abandon changes and exit the dialog
Help	Show help about the dialog

Updater dialog box

This dialog will open when an update is available from the program home (this will be checked only if the program is running and the **Help/Check for updates** menu entry is used or a periodic check has been scheduled in **Options/Miscellaneous/Automatically check for updates**).

Line/Button	Meaning
First line	Current and update versions
Second line	Internet link to the updated version setup program. Click to download it.
Third line	Internet link to the last version of portable distribution (see **Installing Directory Compare**). Click to download it.

Fourth line	Internet link to the program home page. Click to open it in your browser.
Fifth line	Displays the downloading progress and its success or failure
Help	Help on the dialog
Close/Cancel	Close the dialog/Cancel the downloading process

Saving your settings (.dcp files)

Since you may have different sets of working directories, perhaps for different projects that you are working on, you may find yourself frequently using different sets of directories, filter, and options. The history lists under **Source** and **Target** will help you, and Directory Compare will start always with the settings you used the last time.
Also, by using the **File menu**, you can save the current settings and then use them again later when needed. You save the settings in a file with a `.dcp` extension, which stores a set of directories and the options visible in the main window and in the first sheet of the **Options** dialog. You can then recover the settings by doing either of the following:

- Open the file from within Directory Compare.
- Click the file icon (you may also define a shortcut to this icon in any convenient location, such as your desktop). In this case the program loads the settings and performs an automatic **Scan** on start-up. You may the use the **Edit menu**, the **shortcut menu** that displays when using the right mouse button or, in some case, the equivalent keyboard shortcuts to update and compare files in both directories.

Starting with version 3.36, when the program loads a new settings file or is about to exit, it creates a temporary `.dcp` file and compares it when the current one. If they are different a warning is issued letting the user save the new file or cancelling the operation. Notice that the file may change when a new program version is installed (if new options have been added to the program). If you find this annoying, check off **Options/Miscellaneous/ Warning if .dcp file has changed**.

FAT vs. NTFS

Currently Windows computers use (mainly) two different file systems: FAT (I am including here the enhanced FAT32 used in most Windows 98/Me systems and many Windows 95 computers) which is supported by all Windows versions, and NTFS which is directly understood only by NT/2000/XP/Vista/7. Notice that each volume (say each physical or logical disk) has its own file system and even if you are running under Windows 9x you may be using a NTFS volume through a network and, on the other hand, you may have in your NT/2000/XP/Vista/7 workstation floppies and many USB drives, for instance, use FAT (not to speak of some networked drives, or even a local hard disk formatted under FAT for some reason).

The trouble is that FAT and NTFS save time stamps with different precision and deal in very different ways with daylight savings.

Time stamps are stored with very high precision under NTFS, but are rounded to the nearest multiple of 2 seconds when saved to a FAT volume. If you keep the source and target files on volumes with different file systems, even after and **Update**, the next **Scan** might report that files are different because they have slightly different time stamps.

To avoid this problem, if you keep original files and copies under different file systems, you should set the **Ignore time differences under** option in the **Options dialog box** to a value of 2 seconds. This value will be used only when comparing files under different file systems.

As for the daylight savings problem, this is Microsoft's official opinion (Article ID: Q129574):

When Windows NT automatically adjusts for daylight savings time, the times on files on Windows NT file system (NTFS) partitions and the events in the event logs are retroactively shifted by one hour, even though the files and event records were created before the daylight savings time change.

NOTE: To configure Windows NT to automatically adjust for daylight savings time, run Control Panel, choose Date/Time, and select "Automatically Adjust for Daylight Saving Time."

This behavior occurs because of the way that Windows NT stores time information. All times displayed in Windows NT for event log events and files on NTFS partitions are computed as offsets to Greenwich Mean Time (GMT). When you set the time on your system, you are setting the value for GMT. When you select your local time zone for the system, the appropriate number of hours are added or subtracted to the stored GMT value. This adjusted time is displayed. When "Automatically Adjust for Daylight Saving Time" is selected, an additional hour is added to GMT during daylight savings time (the first Sunday in April through the last Sunday in October).

If you are viewing another machine remotely across one or more time zones through Event Viewer, the times for events on the remote system appear relative to your local time. In other words, if you are viewing an event remotely that actually occurred at 8:00 PM Central Daylight Time, the time displayed for the event on your computer will be 6:00 PM when you view the event from the Pacific Daylight Time zone.

When Windows95 or Windows NT clients access network resources they are passed the GMT time of the file stored on the NTFS partition. When the client receives the time stamp in GMT they then adjust the time stamp (+) plus or (-) minus the time zone they are set for.

In the case of WINDOWS NT - it also adjusts for daylight savings time and displays the file's time stamp for the correct local time including Daylight Savings Time setting.

In the case of WINDOWS95 - The time returned by the file system is not adjusted for Daylight Savings Time. This feature is by design, and was implemented to work with servers such as NetWare that do not support the Daylight Savings time APIs and time functions in Windows 95. In this case the files will display off by one hour. this is BY DESIGN for WINDOWS95 clients.

In my opinion, the summary is that Windows 95/98/Me is flawed *by design* and Windows NT/2000/XP and later have a buggy implementation (because the one hour shift is made based on the current time and not on the time being adjusted).

It is not surprising that comparing files saved under file systems with different bugs is not an easy task.

In my opinion the best way to deal with this problem is to disable the "Automatically Adjust for Daylight Saving Time" option in **Control Panel/Date/Time** in your NT/2000/XP/Vista/7 computers. After all, changing the time twice in a year is not that difficult, and it may be automatically done if you use one of the many free programs that set you system clock by reading the time from Internet by using SNTP or another protocol.

I have not been able to devise a full fix for this problem for users that, for some reason, want the "Automatically Adjust for Daylight Saving Time" option selected. To fix it, the program would need to know if the one hour shift was included in the file stamp of the copy, and to do this it should know if the daylight savings were active when the last copy from one file system to the other was made. But how could the program do that? Win32 saves three time stamps for each file, but none can be used to know when the file was synchronized: the creation time tells us nothing about further copies, the last access time may be due to a read operation and the last modification time is automatically (and correctly) reset to that of the original file by most copy routines, including the shell functions used by **Directory Compare**.

However, I have implemented a partial cure for the problem: if the **Ignore differences of 1 hour when comparing FAT and NTFS volumes** (**Ignore differences of 2 hours when comparing FAT and NTFS volumes**)is selected, the program will flag as (nearly) equal two files under different file systems if their time stamps differ by just one hour (two hours), plus or minus the number of seconds, usually 2, in **Ignore time differences under**. To make clear that it is not completely sure that their time stamps are essentially equal (after all, there is a very small probability that one file was modified, without changing its length and attributes, exactly one hour after the last change in the other) instead of the = sign a `#` will be used in this case. Unfortunately this is not a perfect solution, because it is of no help for files whose true last modification times differ by less than one hour: due to the one hour shift of daylight savings, the program might decide that the more recent file is older than the other; but as explained above there is no way (to the best of my knowledge) for the program to know which one is really older.

Explorer context menu

If there is any file in the main list is selected and you use the **Edit/Open/context menu for source** or **Edit/Open/context menu for target** (or use the `F11` or `F12` keys), there will appear the same menu that opens when right clicking on items in `My Computer` or `Explorer` views, so that you can use the shell to display items properties, delete them, send them to utility programs and so on. Keep in mind, however that there are some limitations:

Only items in the same directory that the first one will be used, since the shell expects only files from a single directory (all file sin an `Explorer` view are in the same directory).
Some functionality is provided by `Explorer` (rather than by the shell) and will not be available in **Directory Compare**. So you may get less menu entries.

Date and time format

By default, date and time will be displayed using the format in your system localization, but you might prefer a different format in **Directory Compare**.

For instance, in my system they are displayed as `d/mm/yyyy h:mm:ss`, which is fine in Spain and when I write a letter in Spanish, but in **Directory Compare** I use the international standard ISO 8601 (which gives better alignment and happens to be also the standard in Basque;): `yyyy-mm-dd hh:mm:ss`.
You may use the **Options/Configure/Main List/Date and time format** entry to enter your format which is composed from specifiers that represent values to be inserted into the formatted string. Some specifiers (such as `d`) simply format numbers or strings. Other specifiers (such as `/`) refer to locale-specific strings from global variables.

In the following table, specifiers are given in lowercase. Case is ignored in formats, except for the `am/pm` and `a/p` specifiers.

Specifier	Displays
`c`	The date using the format given by the system short date format, followed by the time, using the format given by the system long time format. The time is not displayed if the date-time value indicates midnight precisely.
`d`	The day as a number without a leading zero (1-31).
`dd`	The day as a number with a leading zero (01-31).
`ddd`	The day as an abbreviation (Sun-Sat) using the strings given by the system short day names.
`dddd`	The day as a full name (Sunday-Saturday) using the strings given by the system long day names.
`ddddd`	The date using the format given by the system short date format.
`dddddd`	The date using the format given by the system short date format.
`e`	The year in the current period/era as a number without a leading zero (Jap-

	anese, Korean, and Taiwanese locales only).
ee	The year in the current period/era as a number with a leading zero (Japanese, Korean, and Taiwanese locales only).
g	The period/era as an abbreviation (Japanese and Taiwanese locales only).
gg	The period/era as a full name (Japanese and Taiwanese locales only).
m	The month as a number without a leading zero (1-12). If the m specifier immediately follows an h or hh specifier, the minute rather than the month is displayed.
mm	The month as a number with a leading zero (01-12). If the mm specifier immediately follows an h or hh specifier, the minute rather than the month is displayed.
mmm	The month as an abbreviation (Jan-Dec) using the strings given by the system short month names.
mmmm	The month as a full name (January-December) using the strings given by the system long month names.
yy	The year as a two-digit number (00-99).
yyyy	The year as a four-digit number (0000-9999).
h	The hour without a leading zero (0-23).
hh	The hour with a leading zero (00-23).
n	The minute without a leading zero (0-59).
nn	The minute with a leading zero (00-59).
s	The second without a leading zero (0-59).
ss	The second with a leading zero (00-59).
z	The millisecond without a leading zero (0-999).
zzz	The millisecond with a leading zero (000-999).
t	The time using the format given by the system short time format.

`tt`	The time using the format given by the system short date format.
`am/pm`	Uses the 12-hour clock for the preceding `h` or `hh` specifier, and displays 'am' for any hour before noon, and 'pm' for any hour after noon. The `am/pm` specifier can use lower, upper, or mixed case, and the result is displayed accordingly.
`a/p`	Uses the 12-hour clock for the preceding `h` or `hh` specifier, and displays 'a' for any hour before noon, and 'p' for any hour after noon. The `a/p` specifier can use lower, upper, or mixed case, and the result is displayed accordingly.
`ampm`	Uses the 12-hour clock for the preceding `h` or `hh` specifier, and system string for any hour before/after noon.
`/`	The date separator character given by the system date separator.
`:`	The time separator character given by the system time separator.
`'xx'/"xx"`	Characters enclosed in single or double quotation marks are displayed as such, and do not affect formatting.

Invalid argument to data encode dialog box

On rare occasions you might get the following error message: *Invalid argument to data encode*.

This will happen if the file somehow got an invalid date or time stamp, such as a year previous to 1900. Just press `OK` and the file will be processed (copied, deleted, etc.) as usual.

The message won't be issued if **Use direct API calls to copy and delete files** is checked and **Show warnings and errors on screen** is not checked.

(You might also use a program like my own freeware Touch to correct the bad stamp.)

File attributes that cannot be copied

- According to Microsoft documentation there are some file/directory attributes that cannot be copied with the API function SetFileAttributes by obvious reasons: FILE_ATTRIBUTE_COMPRESSED, FILE_ATTRIBUTE_DEVICE, FILE_ATTRIBUTE_DIRECTORY, FILE_ATTRIBUTE_ENCRYPTED,

FILE_ATTRIBUTE_REPARSE_POINT and FILE_ATTRIBUTE_SPARSE_FILE.

- We have found that, in some systems, the same happens with FILE_ATTRIBUTE_NOT_CONTENT_INDEXED and FILE_ATTRIBUTE_ARCHIVE, although the Microsoft documentation doesn't mention it.

- **Directory Compare** does not check attributes if the **Options/Configure/Different files/Attributes are different** option is not checked: the files will be assumed to be equal if their dates (and sizes if **Options/Configure/Different files/Sizes are different** is checked).

- However, the difference in attributes will be shown (but cannot always be eliminated) when **Edit/Compare selected** or **Edit/Compare all** is used.

Suggestions, bugs and help

The author would highly appreciate receiving information about any bug or problem found in the program. Suggestions to improve **Directory Compare** in future versions are also welcome.