

## **Synchro2.exe** (instruction version 20111031)

*Synchro2* is a tool for a MS Windows user who does not like the MS program *SyncToy* for synchronizing the internal disk with an external memory (USB memory stick, external disk etc.). Several computers can be matched when synchronized with the same external memory. The file *Synchro2.exe* can be located in an arbitrary folder of an arbitrary disk, e.g. on a USB memory stick. Installation is not required. The actual location of the program is detected automatically.

The sole result of a double click on the program icon is a brief instruction on the computer screen. The way to launch the program is to drag the icon of a folder from the external memory (abbreviated as *extramemory* below) onto the program icon. The program will look for a folder of the same name from internal disks following the order: 1) the root folder of C, 2) *My Documents* of the user, 3) if D is an internal hard disk then the root folder of D. Two folders are decided the namesakes only if the paths beginning from the root folders fully coincide whereby *My Documents* is considered equivalent of a root folder. The dragged external folder and its internal namesake are called the associated folders. The first message on the screen notifies the user about the folders to be synchronized and how is possible to quit the program without any action. Thereafter it asks whether to include all subfolders or not. Next the contents of associated folders (and their subfolders depending on the request) are compared and the lists of unpaired and updated files in both folders are displayed (on the screen up to 32 files of every kind). Unpaired files are considered as new files in one of the associated folders.

If one or more new or updated files is found then the user is asked to choose:

- S)** save full list of unpaired and updated files into a new text file,
- MC)** copy new and updated files from the extramemory to the internal disk,
- CM)** copy new and updated files from the internal disk to the extramemory,
- CR)** delete unpaired files from the internal disk to the Recycle Bin,
- MR)** delete unpaired files from the extramemory to the Recycle Bin<sup>\*</sup>,
- C0)** delete unpaired files from the internal disk finally,
- M0)** delete unpaired files from the extramemory finally,
- X)** finish and close the program.

The user is asked to confirm the deletion of every single file or the full list. Copying of the files is a batch process. This process can be interrupted pressing the key **Esc**.

If the number of files exceeds 32 and user is not sure that all new and updated files should be copied then the first operation might be **S**.

Several folders can be selected and dragged together to the program icon. In this case all dragged folders will be processed. An alternative method is to drag a text file (extension .txt), which consists of a list of folders. Every line of such a file should consist of a path of one folder starting from the root folder of this extramemory where the dragged file is located. The letter of the disk and symbols : \ may be omitted. Text lines that do not consist of any number or letter are ignored.

By default a file is not listed and processed if it is attributed as Hidden or Sys, its name begins with ~\$ or ~WRL, its extension is .tmp or .lnk. A file with the extension .mp3 is considered as updated only if its size has changed. If copying or deleting fails (typical reasons: a file to be replaced is open by another process or has an attribute ReadOnly, a file to be deleted does not fit into the Recycle Bin, disk failure etc.) then a message will appear on the screen. Copying will be rejected if associated files have the same name and age but different sizes (this may be caused by a virus). The list of such files will be automatically saved into the root folder of the extramemory as a special file *synchro2problematic.txt*. If this file exists then new information will be appended

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<sup>\*</sup> The files located on a small memory stick are always finally deleted following the standard rule of MS Windows.

to the existing file.

*Warning:* if the extramemory is a network disk then the probability of technical failures may increase depending on the quality of network connection.

### ***Additional features***

- The set of exception specifiers (~\$, ~WRL, .tmp, .lnk, .mp3) can be modified including the file *synchro2taboo.txt* into the root folder of the extramemory. Every line in this file is an instruction to prohibit copying of certain kind of files. A line beginning with a colon excludes files with names beginning with the symbols following the colon. A line beginning with a period excludes files with the extension following the period. If the period is replaced by a slash then the files with the specified extension will be ruled out only if they have equal sizes. By default the prohibition lines are expected to be:

```
:~$  
:~WRL  
.tmp  
.lnk  
/mp3
```

- An arbitrary pair of folders can be synchronized by dragging a special control file onto the icon of *Synchro2.exe*. The control file should have the extension .txt and consist of three lines:

- 1) header with the first symbol being an asterisk \*,
- 2) full path of the first folder,
- 3) full path of the second folder,

The asterisk in the header may follow with a commentary. Additional commentary lines may be included after the third line. The disk where the control file is located is activated and considered as the control disk. When writing the full path of a folder the letter of the control disk can be written as Z. The program will automatically replace Z with the actual letter of the control disk.

*Example:* The files in the root folder of a memory stick may synchronized with the file in the folder documents in the root directory of the internal disk using a three-line control file *doc.txt*:

```
* Synchronize C:\DOCUMENTS  
Z:\  
C:\documents
```

### ***Technical remarks***

- The program will not copy empty subfolders and will not delete subfolders that are left empty.
- The program is not able to move the files. As a replacement, it proposes an uneconomic way to copy a file and afterwards delete the source.
- Two files are considered of equal age if the difference in ages is  $0\pm 7$ ,  $3600\pm 7$ , or  $7200\pm 7$  s. The second criterion is necessary considering the daylight saving clock jumps.
- The maximum number of files in one folder is 200000 and the number of files to copy 100000.
- The files are copied using the function *CopyFileEx* of MS Windows kernel32.dll that is copying extended attributes and supports encryption (flag 8), see <http://msdn2.microsoft.com/en-us/library/aa363852.aspx>.