User's Manual for the ARJ archiver program,　　　　April 1993

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ARJ version 2.41 release

** IMPORTANT NEWS ***

Users of ARJ should read the WHATSNEW.DOC and UPDATE.DOC files
which contain information about the latest improvements to ARJ.

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TOPICS COVERED IN THIS DOCUMENT

DEDICATION:

The ARJ program is dedicated to God and to my family.

INTRODUCTION:

ARJ is the result of a desire to use my interest in compression
technology to produce an archiver for personal use on PCs and on
minicomputers that provides power and excellent flexibility.

I expect to continue to improve ARJ in speed, compression, and
features.

There are plans to port versions of ARJ to other platforms in the
future pending sufficient time and funding.

TERMINOLOGY:

The following terms are used through this manual.

ARCHIVE - This is a file containing one or more files in a
compressed or non-compressed state and containing file related
information such as filename and date-time last modified, etc.

ARJ FILE - This is an archive created by ARJ, sometimes called an
arjive in slang terminology.

BACKUP TYPE ARCHIVE - This is an ARJ archive which has the internal
backup flag turned on.   This causes all current and future updates
to the archive NOT to overwrite internal files in the archive when
adding files with the same names as ones already in the archive.
The older duplicate files in the archive will be marked as backups.

COMPRESSION - The process of encoding redundant information into
data requiring less storage space.

COMPRESSION PERCENTAGE/RATIO - The percentage compression reported
by ARJ is a variation of one of the TWO standard methods of
expressing compression ratio in the technical literature. ARJ uses

the compressed size / original size ratio. The other method is the
inverse ratio.   When ARJ reports 96% as the compression ratio, that
means that the compressed file is 96 percent of the original size
(very little compression). Other archivers use their own methods.
LHARC uses the same ratio as ARJ.

EXTRACTION or UNCOMPRESSION - The processing of recreating the
exact information that was previously compressed.

SELF-EXTRACTION MODULE (SFX) - This is an archive that is an
executable file that is capable of extracting self-contained files.

TEXT MODE - In text mode, ARJ inputs the file using the C library
text mode which translates the carriage return, linefeed control
characters of MS-DOS to a single linefeed character. This saves
space and provides the option for cross platform file extraction.
On another platform, the host C library would change the single
linefeed to the host text newline separator sequence. In addition,
for platforms such as PRIMOS which set bit 8 in ASCII text
characters, ARJ sets/resets bit 8 according to the platform
extracted to. When extracting a text mode file to the same type
of platform archived from, ARJ will NOT strip the 8-bit text to
7-bit text.

VOLUMES - These are ARJ archives that are in sequence and have been
created by a single ARJ command. Files in the volumes may span
volumes in a split format. These volumes are usable archives.

MAJOR FEATURES OF ARJ:

Currently ranks as one of the best in compression in terms of size
reduction of the currently available archivers including PKZIP
1.10, PKZIP 2.04, PAK 2.51, ARC 7.0 (ARC PLUS), LHARC 1.13c, LHA
2.13 and the new ZOO 2.10. ARJ is particularly effective with
database files and documents.

Archive and individual file comments with the option of
inputting comments from a file.

ARJ has MS-DOS 3.x international language support for the proper
casing of filenames and text.

32 bit CRC file integrity check.

DOS volume label support.

Default storing of specified pathnames to allow recovery of a
directory structure.

Empty directory support.

File generation archive support where ARJ will allow the user to
keep several versions of the same file in an archive.

Test new archive before overwriting the original archive option.

Archives that can span diskettes. This allows the user to backup
a full hard disk drive to multiple floppies. Recovery of
individual files is convenient because each diskette archive is an
individual archive except for the split file portion. No need to
use SLICE with ARJ. In addition, ARJ in disk spanning mode can
support the use of 3.5 HD diskettes formatted at higher capacities
than 1.44 MBytes. Moreover, ARJ can build these disk spanning
archives on the hard disk drive for later transfer to diskettes.

Archive file re-ordering facility with the option of sorting by
file size, file extension, CRC value, date-time modified, filename,
pathname, compression ratio, file attribute and more.

String searching with context display within archive files.

Built-in facility to recover files from broken archives.

Self-extraction feature that is internal to the ARJ runfile. The
SFX module is full-featured with a built-in help screen. ARJ also
includes a smaller SFXJR module with few features.

Internal string data integrity check in ARJ to resist hacking a la
LHARC to ICE.

Archive security envelope feature to resist tampering with secured
archives. This feature disallows ANY changes to a secured archive.
Even the archive comments can NOT be changed.

Password option to encrypt archived files.

Text mode data compression option to enable movement of text files
from one host machine to another. Text mode also results in
slightly greater file size reduction on MS-DOS machines.

File extraction to screen in a paged mode to permit browsing
through an archive.

Specification of the files to be added to or exclude from an
archive via one or more list files. In addition, ARJ can generate
a list file.

Specification of files to be excluded from processing by ARJ.

Sub-directory recursion during compression and extraction.

ARCHIVER BENCHMARKING:

This is information for those who plan to publish benchmark test
results comparing ARJ with other file archivers.

The ARJ -jm compression is intended to demonstrate the best that
ARJ can do in terms of size reduction.   However, the ARJ -jm1
compression is almost as good in terms of size reduction. The ARJ
-m2 compression is intended to compete with LHA 2.12. The ARJ -m3

compression is intended to compete with PKZIP 1.10.

The ARJ -e option is necessary during size benchmarks because ARJ by default stores the entire specified pathname in the archive as opposed to other archivers which strip path specs.

The very size of the ARJ runfile adds significantly to the compression and extraction times when testing smaller archives.

RELEASE NOTES:

The use of ARJ in a business, commercial, institutional, or government environment requires a license. However, business, commercial, institutional and government users may use ARJ for evaluation purposes for a period of 30 days. See the LICENSE.DOC for full details.

The inclusion of any of the ARJ software (ARJ, ARJR, DEARJ, ARJSFX, ARJSFXJR, REARJ) with software and/or hardware for distribution requires a license.

While evaluating ARJ, you should use the "-jt" (test archive) option to verify new ARJ archives of your data.

This version has been tested under DOS 2.11, 3.3, 4.01, 5.0, and DOS 6.0. It also runs under the DOS windows of Windows 3.x and OS/2 2.0.

Here is a suggested command that will test ARJ on all of your files:

ARJ a testvol c:\ "-v360sdel testvol.*" -xtestvol.* -y -jf -jt1 -r

TECHNICAL NOTES:

A detailed technical description of the ARJ archive format is available in the UNARJ distribution archive. This archive contains a description of the archive header formats as well as C source code for an ARJ archive extractor and lister program. This source code has been made portable to several platforms including UNIX, NEXT, DOS, and AMIGA.

ARJR, DEARJ, and REARJ PROGRAMS:

The new programs ARJR and DEARJ are available to registered and licensed users of ARJ.   ARJR is the ARJ program without the help screen and SFX modules. DEARJ is the ARJR program without the archive creation/modification functions, the "w" command, and the "-jt1" and "-jt2" switches.

There are two versions of REARJ, the shareware version and the registered version. The registered version contains a number of additional enhancements including environment variable usage, !listfile capability and selection by file date-time.

See the LICENSE.DOC and ORDERFRM.DOC for more information.

UNARJ and DEARJ are NOT the same program.

INSTALLATION:

I assume that you have a copy of the self-extracting ARJ module
named ARJ###.EXE where "###" represents the ARJ version number.
Typing ARJ### [RETURN] at the DOS command prompt will initiate the
self-extraction feature. ARJ### will by default extract its files
to the current directory. When ARJ### starts, you will see
several lines of text describing ARJ and then a line asking if you
wish to continue extraction. Entering "yes" or "y" will continue
the extraction. If there are any duplicate filenames in the
current directory, the program will prompt you for overwriting.
You can enter "yes", "no", or "quit".

To install the ARJ software, simply copy ARJ.EXE, REARJ.EXE,
REARJ.CFG, and ARJSORT.COM to one of the directories named in the
DOS PATH statement found in your AUTOEXEC.BAT.   On many PCs, this
directory may be C:\DOS or C:\BIN. With MS-DOS 3.0 and above, you
can use path notation "\BIN\ARJ e archive" to use ARJ.

You may, of course, prefer to use ARJ 1.00 or higher to extract
the contents of ARJ###.EXE file manually.

Example: ARJ e ARJ###.EXE \temp\

QUICK START TO USING ARJ:

See the document INTRO.DOC.

HOW TO CREATE AN EXECUTABLE SELF-EXTRACTING ARJ ARCHIVE

The command "ARJ y -je archive" will create a full featured
self-extracting archive from an already built archive.

The command "ARJ y -je1 archive" will create a smaller
self-extracting archive.

Syntax: ARJ y -je archive   produces archive.exe

Under DOS systems other than 2.11, 3.2, 3.3, 4.0, 5.0 and 6.0
you may have to rename the self-extract module to ARJSFX.EXE to
do the extraction.

See the "-je" option for more information.

CONVERTING OTHER ARCHIVE FILES TO ARJ FORMAT

Included with this software is the program REARJ. This program can

be used to individually or collectively convert archive files from other formats to the ARJ format.

REARJ *.ZIP *.ARC *.LZH will convert all ZIP, ARC, and LZH archives in the current directory to the ARJ format. See the REARJ.DOC for more information about REARJ.

HOW TO USE ARJ:

If you type ARJ [return], you will see a simple help screen.

If you type ARJ -? [return], you will see more detailed help information.

ARJ LIMITATIONS:

ARJ will accept up to: 64 filenames/wildnames on command line
                         16000 filenames resulting from wildnames
                          8000 filenames/wildnames to exclude
                          8000 ARJ filenames resulting from wildnames
                          2048 character comments
                             (up to 25 lines or 1 file)

For compressing, ARJ requires approximately 300,000 bytes plus the memory necessary to store all of the pathnames to be archived when using the default compression method (-m1).

For extracting, ARJ requires approximately 175,000 bytes plus. The program DEARJ (available to registered users) requires approximately 125,000 bytes plus.

There is no limitation on the number of files that can be stored in one archive. However, each add command can only add a maximum of 16000 files at a time depending upon memory availability. I expect that a normal maximum of 5,000 to 10,000 filenames can be handled without running out of memory during the compress phase.

If you do not have enough memory, you should use the "-l" switch to dump the filenames to a list file. You can then break the list file into smaller files and use multiple ARJ commands to archive all of the files.

Example:

  ARJ a -r -lname.lst archive *.*

  If the above command fails due to lack of memory, split the name.lst file into smaller pieces named name1.lst, name2.lst, etc. Then execute:

  ARJ a archive !name1.lst
  ARJ a archive !name2.lst
  .
  .

ARJ currently does not see that wildnames like "C:*.*" and "C:*.*"
can actually represent the same thing.   ARJ would expand each of
those two wildnames into a list that could be up to twice as long
as necessary.

When updating an archive, ARJ creates a temporary file named
ARJTEMP.$nn in the current directory or work directory.

While ARJ is scanning a wildcard filespec, ARJ will change the name
of the target archive to ARJTEMP.$nn while the scan is proceeding
to avoid including the archive itself in an add or move command.
Also, as a result, you cannot add a file named ARJTEMP.$nn to an
ARJ archive. Please note that the name of this temporary file may
change at a future revision of ARJ.

IMPORTANT DIFFERENCES BETWEEN ARJ AND LHARC:

ARJ by default stores the full specified pathname of files
archived minus any drive letter and root symbol.

The "e" and "x" commands will by default extract all of the files
in the archive without using date time stamps to select files.   You
should specify "-u -y" to duplicate LHARC functionality.

The "f" command in ARJ requires the -r switch to be functionally
identical to the LHARC f command if the original archive were
created using the -r switch.

ARJ uses the "!" symbol as a prefix character to indicate list
files.

IMPORTANT NOTES:

When using the "-w" working directory switch, ARJ does not check on
space availability before overwriting the original archive if it
exists. Be sure that you have enough disk space for the new
archive before using the "-w" switch. If ARJ aborts in this
situation because of disk space, ARJ will keep the temporary
archive.

By default, ARJ does not see hidden or system files. ARJ will
process system and hidden files when you either specify the "-a"
switch.

Like LHARC and PKZIP, ARJ requires extra disk space to UPDATE an
archive file. ARJ will backup the original archive while it
creates the new archive, so enough room must be available for both
archives at the same time.

Unlike PKZIP, ARJ does not require additional work space when
CREATING a new archive.

Currently, ARJ will not extract overwriting a readonly file unless

the "-ha" option is specified.

TIPS TO USING ARJ EFFICIENTLY

You should use a software or hardware disk cache to speed up ARJ
access. Diskette drives should NOT be write-delay enabled.
Write-delay would prevent ARJ from verifying diskette writes.

When archiving to diskettes, you should use the "-w" option to set
a working directory on your RAMDRIVE or hard disk drive to speed up
building the archive.

You should use the "-jt" option when archiving to diskettes or when
you really want to be sure that ARJ will be able to extract what
you have archived. There are cases where your hardware or memory
resident software will corrupt your work, so the "-jt" option is
excellent insurance. If you have bad sectors on your diskettes and
verify is turned off, DOS will not tell you about diskette errors
until it is too late. These errors are NOT RECOVERABLE.

Using the "-js" option saves time by not compressing archives.

You should use the "-e" option whenever you do not need to store
pathnames in an archive that you are creating.   This will save
space.

Convert an ARJ archive into a self-extracting archive with a
command like the following: ARJ y archive -je

To capture a comment from an ARJ archive, use the following
command: ARJ e archive ... -zcomment.txt (the "..." is
significant).

ARJ has several compression methods that provide size/time
tradeoffs. Method 4 "-m4" is about twice as fast as method 1.   The
"-jm1" and "-jm" options modify the "-m1" and "-m2" options to
provide even greater compression at a cost in time.

USING ARJ WITHIN OTHER PROGRAMS

Since ARJ uses over 300,000 bytes of memory during compression, it
is difficult to use ARJ in a large application program unless that
program swaps itself out of memory when it executes DOS commands
like ARJ. However, there is at least one shareware program
available that will automatically swap your large application
program out of memory whenever it shells out to DOS to execute a
command. The program SHROOM by Davis Augustine should be able to
solve this memory problem for you. The latest version as of
03/11/92 is named SHROM19C.ZIP on Channel One BBS. According to
the SHROOM documentation, you can reach the author at:

    CompuServe id 72230,3053

    Davis Augustine

P.O. Box 390178
Cambridge, MA 02139

This is not an endorsement of the product SHROOM.

The easiest way I have found to use this product is to type:
SHROOM COMMAND.COM

SHROOM -v COMMAND.COM will let you see SHROOM in action when you
shell out to execute a DOS command.

ARJ FOR MS WINDOWS

There is one program that fully supports the ARJ archive format
with native Windows code. That program is D'COMPRESS originally
by Moon Valley Software. D'COMPRESS is a Windows file manager
program with support for archivers. It is available from computer
software vendors such as COMPUSA.

ARJMENU PROGRAM

A new program called ARJMENU by Michael McCombs will be released
shortly. As far as I know, it is the only menu-driven interface
program that supports ALL of the features of ARJ. This program is
aimed at users who hate command line interfaces. ARJMENU allows
the user to pick and choose ARJ options. The user does not have to
remember the ARJ switch syntax. The newest version of the program
supports ARJ version 2.30. You can reach the author at:

Internet/ARPANet: mccombs@sumax.seattleu.edu

Michael McCombs
517 Ninth Ave. #310
Seattle, WA 98104

ARJ HELP HYPERTEXT PROGRAM

ARJ-Help is an electronic book (brand named Window Book (TM)) that
allows the user to discover easily how to use ARJ. It runs under
DOS. It is very fast and has a rich set of features which include
full-text search, hypertext links, a table of contents that can be
reorganized to your needs, a complete index, and much more. The
current version can be found on some BBSes as ARJHLP24.EXE.

Window Book, Inc.
P.O. Box 390697
Cambridge MA 02139
USA

TEL: 617-661-9515 or 800-524-0380.
FAX: 617-354-3961

ARCHIVER UTILITIES THAT SUPPORT THE ARJ FORMAT

The following are some other utilities that facilitate the use of
ARJ. This list is not all inclusive or is it meant as a personal
recommendation.

ARJMENU 1.x   - ARJ shell
SHEZ 8.x   - Archiver shell
ARCMASTER 6.x   - Archiver shell
ZGEN 1.x   - Archiver shell
ACZAR 1.x   - Archiver shell
ARJVIEW   - ARJ shell
AVIEW   - BBS archive viewer

USING ARJ AS A BACKUP PROGRAM

ARJ can be used as a substitute for a backup program. However, it
does not have the diskette critical error handling or data recovery
facilities of a FASTBACK, etc.   So you should be sure of the
reliability of your diskettes.   The most common cause of failure
is bad diskettes. You should let ARJ test the archives ON the
diskettes. Testing the archives before copying them to diskettes
is not enough.   Critical data should always be backed up two or
more times. Please keep in mind that damage to compressed data
is many times more serious than damage to uncompressed data.

WARNING: You should never update multiple volume ARJ archives
especially backup archives. Use a separate set of diskettes to
an incremental backup.

The following partial command lines illustrate a full backup
command, an incremental backup command, and a restore command.   The
only parts missing are the names of the files to backup/restore.

ARJ a A:backup -r -vvas -a1 -b2 -js -jt -jiC:\backup.inx -wC:\ -m3

ARJ a A:backup -r -vvas -a1 -b1 -js -jt -jiC:\backup.inx -wC:\ -m3

ARJ x A:backup -vv -y

You should familiarize yourself with the above switches so that you
can modify the above command lines as needed.

If you have a RAMDRIVE large enough, you should change the "-w"
option to point to the RAMDRIVE.

If you have enough free hard disk space, you can build all of the
diskette volumes on the hard disk for later copying to diskette.
In this case, you will need to change the name of the archive to
"C:backup" or similar.   The "-vvas" option should be changed to
"-v360", "-v720" or whatever is appropriate for your diskette size.
Please note that 360, 720, 1200, and 1440 are abbreviations for the
standard diskette sizes. Other sizes will require your entering
the entire number. Another change is to add the option "-y" which
will turn off the "Ok to proceed ..." prompt. Lastly, if the "-w"

option is pointing to the hard disk, you should remove the "-w"
option entirely.

ARJ a C:backup -r -v360 <other options>   -m3 -y

IMPORTANT Only a maximum of 100 volumes can be built on disk
at one time because of the volume suffix rolling over at *.A99 to
*.A00 when using default archive naming. However, if you specify
the starting archive name with a suffix of ".000" or ".001", ARJ
will create up to 1000 or 999 uniquely named volumes.

ARJ a C:backup.000 -r ....

Both backup commands will pause for a "system command". You can
execute DOS commands at this point. This is a suitable place to do
a "dir a:" to make sure that your disk is formatted and has enough
free space on it. You may need to execute "format a:" or
"del a:\". A very useful command might be "QDR A:". QDR is a
utility from Vernon Buerg. You will need to type "exit" to allow
ARJ to continue.

If the backup fails after completing one or diskettes, you can
restart at the next archive after the last successful volume.

There are two methods to do this restart. If you have specified an
index file with the "-ji" option during the failed backup, you can
restart by retyping the EXACT SAME command line as before and
adding the "-jn" option. This will cause ARJ to scan the
previously written index file for the proper restart information.
ARJ will automatically set the correct volume name.

Example: ARJ a a:backup c:\ -r -vvas -jiINDEX.FIL
          ARJ a a:backup c:\ -r -vvas -jiINDEX.FIL -jn

The second method is more complicated.   Refer to the "-jn" and
"-jx" descriptions for more details. For example, if the above
full backup command failed during diskette two, on filename
"DOS\MODE.COM" which was started at byte 125. This would be the
correct command:

ARJ a A:backup.A01 -r -vvas -a1 <other> -m4 -jx125 -jnDOS\MODE.COM

The most error prone step is determining the correct "-jn" option.
A common error concerns the use of the root directory symbol "\"
with the "-jn" option.   Verify the presence or absence of the root
symbol "\" in the backup index file.

If the restore fails after one or more diskettes, simply retype the
same command as before but add the right ".Ann" suffix to the
archive name. If ARJ has aborted because of a disk full on a file
split between volumes, you will have to restart at the first volume
that contains that file.

BACKUP TYPE ARCHIVES AND BACKUP FILES

New to ARJ 2.30 and ARJ archives is the concept of "backup" type
archives. Normally, when adding duplicate files to an ARJ archive,
ARJ will overwrite the existing file. However, at ARJ 2.30 with a
backup type archive, ARJ will keep the existing file by marking it
as a backup and inserting the new file. This will make ARJ
archives larger than normal. It is possible to have more than one
duplicate backup file.   You can make an archive a backup type by
using the "-jb" option during the add or by typing "ARJ y archive
-jb". Any further additions of already existing files will result
in more files marked as backups. You may reset that backup flag by
specifying the "-jb1" option as in "ARJ y archive -jb1".

This feature is useful when backing up frequently modified files.
One archive can have several days worth of backups.

The existence of backup files or the backup archive flag is
indicated when executing the "l" or "v" commands. There will be a
message at the end of the display. The backup files themselves can
be displayed by using the "-jg" or "-jg1" options with the "l" or
"v" commands.

To extract a specific backup file, you have several options. You
can execute "ARJ e archive filename -jg -q" and enter "yes" on the
specific instance that you wanted extracted. You can specify the
exact modification date-time that you want as in "ARJ e archive
filename -jg -o910101120000 -ob910101130000". You can specify the
sequence number of the file in the archive. To extract the fifth
file in the archive, type "ARJ e archive 5 -jg -#". The sequence
number is available in the "v" command display. Or you can extract
all occurrences of the file with "ARJ e archive filename -jg -jo".
Duplicates will be renamed with numeric file extensions (.000).

The "ARJ k archive *.*" command can be used to purge an archive of
all backup files.

You can unmark backup files with "ARJ y archive -jb2".   You can
unmark specific files such as the fifth file in the archive with
"ARJ y archive -# -jb2 5".

You should not use the "-e" option when adding files to a backup
type archive because ARJ will not have the ability to distinguish
between files with the same filespec and different pathspecs. You
could end up with duplicate files in the archive as opposed to one
recent file and several backup files.

THE FILESPEC "..."

Several times in this document and the UPDATE.DOC file, there is
mention of the filespec "...".   This filespec is chosen so as not
to match any existing filename. ARJ will NOT generate an error
or warning for not matching "..." specifically.

ARJ ERROR SITUATIONS:

ADD:

If a user specified file is not found during an add, ARJ will
continue processing, and will keep the archive and terminate with
an error condition. Note that files specified within an ARJ
listfile that are not found during an add will NOT trigger an
error unless the "-hl" option is also specified.

In a disk full condition or any other file i/o error, ARJ will
promptly terminate with an error condition and delete the temporary
archive file unless the user has specified the "-jk" switch.

MOVE:

ARJ will only delete files that have been successfully added to the
archive. If you have specified the "-jt" (test) switch, ARJ will
abort on any error. If you specify the "-jk" switch, ARJ will not
delete the temporary archive upon an abort.

EXTRACT:

In a disk full condition or any other file i/o error, ARJ will
promptly terminate with an error condition and delete the current
output file.

CRC ERRORS OR BAD FILE DATA:

In the case where an ARJ archive has been corrupted, ARJ will
report a CRC error or a Bad file data error. These corruptions
can be the result of an unreliable diskette, a computer memory
problem, a file transfer glitch, or incompatible CACHING software.
Most of these errors are the result of file transfer glitches and
bad diskettes.   A few are the result of an incompatible
interaction with SUPER PCKWIK 3.3 advanced diskette support or
Windows 3.x.

CRITICAL ERROR HANDLER:

ARJ sets up an interactive critical error handler to handle DOS
critical errors like "sector not found" and "drive not ready".
When a critical error occurs, ARJ will prompt the user with the
message "Retry Y/N?". The user may retry the failed operation by
pressing "Y". Pressing "N" will fail the operation or abort to DOS
depending upon the version of DOS. The user can press Control
BREAK to abort to DOS.

ARJ DOS ERRORLEVELS:

ARJ returns a number of DOS errorlevels for different situations.

0 -> success

1 ->   warning (specified file to add to archive not found,
                       specified file to list, extract, etc., not found,
                       or answering negatively to "OK to proceed to next
                       volume..." prompt)
        2 ->   fatal error
        3 ->   CRC error (header or file CRC error)
        4 ->   ARJ-SECURITY error or attempt to update an ARJ-SECURED archive
        5 ->   disk full or write error
        6 ->   can't open archive or file
        7 ->   simple user error (bad parameters)
        8 ->   not enough memory
        9 ->   not an ARJ archive

        Please note that DOS batchfiles have a unique method of testing
        for a DOS errorlevel. The batch statement IF ERRORLEVEL 0 ...
        means if the errorlevel is EQUAL TO or GREATER THAN 0.   Generally,
        one should test for the highest possible errorlevels first and
        proceed lower as in:

        ARJ a archive *.*
        if errorlevel 9 goto not_arj
        if errorlevel 8 goto no_memory
        .
        .
        .
        if errorlevel 1 goto minor_error
        type ARJ command successful

ARJ USER ACTION PROMPTS:

        ARJ prompts the user for action at certain times. There are
        several types of prompts. One is for yes/no permission, another is
        for a new filename, another is for archive comments, and one other
        is for search strings.

        The ARJ yes/no user prompts provide a lot of flexibility. In
        addition to the normal yes and no responses, ARJ also accepts the
        following responses: quit, always, skip, global, and command.

        "Global" sets ARJ to inhibit all subsequent user prompts by assuming
        YES for all queries as if "-y" were specified.

        "Always" sets ARJ to assume YES for subsequent queries of the same
        class.   For example, answering YES to the overwrite query will
        assume YES for ALL subsequent overwrite queries.

        "Skip" sets ARJ to assume NO for ALL subsequent queries of the same
        class.

        After "always" or "skip" responses, subsequent user prompt
        messages will still be output to the screen but no user response
        will be accepted.

        "Command" prompts for one DOS command and then executes it. ARJ
        then returns to expect an answer to the current yes/no query. You

should keep the query in mind as ARJ does NOT always redisplay the full query message.

Since ARJ uses STDIN for user input, be careful about typing ahead anticipating prompts. ARJ may prompt you for an unexpected action and use your earlier input.

The "-jy" option lets you change the prompting modes to single character query mode. See the section on "-jy" for more information.

ARJ ENVIRONMENT VARIABLE:

ARJ will first look for an environment variable named ARJ_SW and use its value as switch options for ARJ. If ARJ finds such an environment variable, it will display a message to that effect.

You can inhibit ARJ from using this environment variable by using the "-+" option. You can also set the name of the environment variable with the "-+" option as in ARJ a -+ARJ_SW2 archive.

SET ARJ_SW=<switches>

Example: SET ARJ_SW=-w\temp -k -e

Do NOT add any blanks after the variable name ARJ_SW. As in LHARC, command line switches can be selected to override ARJ_SW settings.

ARJ will allow you to use a different switch character "-" or "/" in ARJ_SW and in the command line except when using the "-ju" (unix) option.

If the ARJ_SW environment variable specifies a filename (text not beginning with a switch character), ARJ will open that filename and scan it looking for a line of text that begins in column 1 with the same letter as the ARJ command being executed.   The following text is processed as the ARJ_SW switches. This allows each ARJ command to have its own switch settings. In addition, ARJ will also look for the "+" (plus) symbol in column 1 to use as a miscellaneous switch string.   This string will be added to any command switch string found if any. If no command switch string is found, ARJ will use the miscellaneous switch string as the ARJ_SW switch settings. NOTE that the "+" switch settings will NOT be used if the "+" string occurs below the command switch string.

SET ARJ_SW=C:\ARJ\ARJ.CFG

C:\ARJ\ARJ.CFG contains:
a -jm1 -jt -i1
c -zcomment.txt
+ -jv
l -jp
e -i1

AND is equivalent to:

```
a -jm1 -jt -i1
c -zcomment.txt
l -jp -jv
e -i1 -jv
f -jv
v -jv
all other commands
.
.
.
```

In the above example, any ARJ "a" commands will use "-jm1 -jt -i1"
as the ARJ_SW switch options.

The ARJ_SW variable or the ARJ_SW configuration file switch
settings may NOT have quoted switches such as "-vasformat a:".

ARJ COMMAND LINE SYNTAX:

ARJ <command> [-<switch>[-|+|<option>]...] <archive_name>[.ARJ]
[<base_directory_name>\] [<!list_name>|<path_name>|<wild_name>...]

Commands and switches can be entered in upper or lower case.
Switches can be placed anywhere after the command ARJ.

ARJ supports the use of either "-" or "/" as the switch option
character. The first occurrence of either "-" or "/" that ARJ
encounters in the ARJ_SW variable will determine the switch symbol
for processing ARJ_SW.The first occurrence of either "-" or "/"
that ARJ encounters in the command line will determine the switch
symbol for processing the command line except when the "-ju" (unix)
option has been specified in ARJ_SW. You may NOT mix and match
switch symbols. Throughout this document, the symbol "/" may be
substituted for "-" in switch usage.

Examples: ARJ a A:archive *.* /va /r   is correct
           ARJ a A:archive *.* /va -r   IS INCORRECT USAGE!

Switches specified on the command line will either toggle or
override switches specified with the ARJ_SW environment variable.
Switch usage is identical to that of LHARC.

"-s+"   turns on switch "s".
"-s-"   turns off switch "s".
"-s"   toggles the state of switch "s".
"-sname"   provides the name argument for switch "-s".
"--"   skip processing of any more switch options.

Switch options CAN be combined to save command line length.
However, some switch options take optional string arguments and
therefore, must be the last option in a combined argument token
string because ARJ accepts the rest of the argument token as the
optional argument. You can combine "-r" and "-i" to make "-ri".
You can combine "-wd:\" and "-i" with "-iwd:\", because the switch
option taking the string argument is last. Please note that

switches that ONLY accept the "+", "-", "0", "1", "2" modifiers can be combined in any order. The following switches must be last in a combined switch argument: -g, -l, -m, -o, -t, -v, -w, -x, -z, -!, -$, -hc, -hx, -jc, -jd, -jh, -ji, -jn, -jp, -js, -jw, -jx, -jy, -jz.

WARNING: The "j" in "-jX" option switches is a SHIFT symbol. Therefore, a combined "-jatv" is a combination of "-ja", "-jt", and "-jv", since the "j" shifts the meaning of subsequent symbols in the argument token string. The use of more than ONE "j" shift symbol per argument token string is NOT supported for future versions.

Examples: -rijvta   <=> -r -i -jv -jt -ja
           -i1kwd:\ <=> -i1 -k -wd:\

ARJ will accept an ending "-" on most switches such as "-w-". The "-x" switch option is one exception. The one caveat is that for switches that support an optional argument such as "-wd:\" or "-t1", that switch option must NOT be followed by a concatenated switch option such as "-w-r". An argument token string such is "-rikw-" is acceptable because the "-w" option is the last one. One special switch combination is the "-jyyr" combination. You can turn off the "y" and "r" modifiers with "-jyyr-".

The switch option "--" tells ARJ that there are no more switch options to process in the current command line. This is useful when you need to enter filenames beginning with "-".

Example: ARJ a archive -- -testfile

The standard ARJ file suffix is ".ARJ". Subsequent multiple volume archives end in ".A01", ".A02", etc, up to .A99, .A00, .A01. It is possible to have multiple volumes start at ".001" and go up to ".999".

The ARJ command must be the first non-switch argument after "ARJ". The ARJ archive name must be the first filename on the command line. The base directory, if any, must be the second filename argument. The switches and other filenames can be in any order. The base directory name should end with "\" (backslash) or ":" (colon). However, ARJ will still accept directory names without the "\" character if the directory already exists. This feature is limited to the add type and extract type commands.

Wild_names follow MS-DOS convention. "*.*" means all files. "*.DOC" means all files with an extension of ".DOC". "?B*.*" means all files with a second character of "B".

The default for <wild_name> for all commands except for "d" is "*.*".

For the add, move, freshen and update commands, filename matching in the archive requires an exact path match depending upon the "-e" option. For non-update commands, specified filenames with paths will force a full pathname match.

You can supply one or more filenames for files containing lists of files to be added to an archive. The filenames must be listed one per line with no leading or trailing blanks. The list filename(s) must be prefixed with "!". If you want to archive a filename beginning with !, you must use the "-!" option to set a new list file character.

You can exclude filenames/wildnames from the list of filenames to be processed by ARJ.

Example: ARJ a software *.* -x*.exe -x*.obj   adds all files in the current directory except .EXE and .OBJ files.

ARCHIVE NAME WILDCARDING:

You can specify a wildcard for the archive name such as "*.ARJ" for all ARJ commands except for the add commands (a, f, j, m, u). If you also specify the "-r" switch, ARJ will search subdirectories for ARJ archives (*.ARJ) also.

Example: ARJ l -r *   will list all of your *.ARJ files.
          ARJ c *.arj -zbbs.cmt will comment all of your archives.

ARJ COMMANDS:

a: Add files to archive

This is the basic command to add disk files to an ARJ archive. You can specify 0 to 64 filename arguments (one can be a destination directory). The arguments can be wildnames. If you specify the "-r" switch (recurse subdirectories), ARJ will add all of the files in all of the subdirectories that match the specified wildname.

Example: ARJ a archive subdir*.*
          Archive all files in directory "subdir".

For maximum compression, use the "-jm" switch option.

b: execute Batch or DOS command

The ARJ b command allows a user to execute a DOS command on selected files in an archive. The ARJ b command will prompt for a DOS command string to execute per selected file. By default ARJ will extract the selected files to the filename ARJTEMP.$$$. This filename can be changed with the "-jw" option. The base directory option is ignored by the ARJ b command. The output file will be deleted by ARJ after the DOS command is executed.

Examples: ARJ b archive
           ARJ b archive file.exe -jwtemp\tempfile

This option can substitute for a simple extract and run command where the file to be extracted is an executable. You would specify

a temporary executable name as the output name and use that name as
the DOS command to be executed.

    Example: ARJ b archive file.exe -jwTEMP.EXE
              TEMP arguments

You can supply the DOS command string on the command line with
the "-jq" option. Switch options which have embedded blanks
must be enclosed by double quote marks.

    Examples: ARJ b archive file.exe -jwTEMP.EXE -jqTEMP
               ARJ b archive *.c "-jqgrep text ARJTEMP.$$$"

c: Comment archive files

  This command allows you to comment the header and individual
  files. ARJ will prompt you for each comment. The user will be
  prompted for up to 25 lines for each comment. A line containing
  only a [return] will terminate the comment.

  The user can choose to input comment data from a file by entering
  the comment filename preceded by an "!" as in "!archive.txt"
  starting in column 1 of the first comment line. This file is
  read as a text file. The lines in the text can be up to 2048
  bytes long.   Only the first 2048 bytes of the file will be
  accepted by ARJ.

  To erase a comment from an archive, type [space] [return] on the
  first comment line and [return] on the second comment line.

  To strip archive or file comments from an archive, you can use
  the NUL file feature of MS-DOS.

    Examples: ARJ c archive -zNUL   strips archive comment
               ARJ c archive name -jzNUL   strips comment for "name"
               ARJ c archive -jzNUL   strips all file comments
               ARJ c archive -zNUL -jzNUL   strips all comments

  To add only the archive comment and not file comments, use the
  following command:

  ARJ c archive -z

  To add only the archive comment at the command line, use the
  following command:

  ARJ c archive -zcomment.txt

  You may also comment an archive with the "a", "f", "m", "u"
  commands.

  ARJ a -zcomment.txt archive *.txt

d: Delete files from archive

  This command allows you to delete files from the archive. When

wildcard selection is not suitable, you can use the "-q" switch
to set ARJ to prompt you for deletion for each file selected.
These deleted files are physically removed from the archive.

Example: ARJ d archive *.c
          Delete all files in archive ending in ".c".

          ARJ d -q archive *.c
          Prompt before deleting each file ending in ".c".

Currently, ARJ never deletes the archive even when it is empty.

e: Extract files from archive

This command will extract one or more files from the archive to
the current directory or base directory if specified. ARJ will
prompt the user before overwriting existing files unless the
user specifies the "-y" switch. If the user gives a "no"
answer, ARJ will prompt for a new filename.   If the user enters
a single [return] instead of a filename, ARJ will skip the
current file extraction.

Example: ARJ e archive soft\ *.c
          Extract all files ending in ".c" to subdirectory
          "soft".

When extracting a file located on multiple volumes, ARJ may
prompt the user with an "Append? " prompt. This will usually
occur with files split across volumes. You will also need to
specify the "-v" switch to set ARJ to continue to the next
volume of a series of volumes. When extracting from one of a
series of multiple volumes on a diskette, it is easier to use
the wildcard "*.*" to specify the archive as in:

ARJ e archive A:*.* filespecs

If you wish to extract only a portion of an archive and that
portion is a directory containing directories, you should use
the "-p1" switch. See the "-p" switch for more information.

The ARJ e and ARJ x commands now accept the "-d" option to
provide an extract and delete option. This feature requires
that you specify the files to extract and delete. ARJ will NOT
default to "*.*" for this option. This option actually uses
more disk space than a simple extraction because of the
temporary archive that is created during the extraction process.

ARJ e archive -d file1 file2

If ARJ encounters a disk full during extraction, ARJ will abort
with an error. You can bypass the abort by using the "-jd"
option. Refer to the description of "-jd" for more information.

If ARJ encounters a CRC or Bad file data error during
extraction, ARJ will delete the corrupted extracted file unless
the "-jr" option is used.

f: Freshen files in archive

Update matching files in the archive that are OLDER than the
selected disk files.

Example: arj f archive *.c *.h

In freshening archives, you should use the same filename
specifications that you used to create the archive.

Example: arj a archive \temp\ *.* -r
          arj f archive \temp\ *.* -r

If no files or comments have been added to the archive, ARJ
will not rewrite the archive at ARJ 2.20 and above.

g: Garble files in archive

The ARJ "g" command allows a user to garble an already built ARJ
archive. Please note that only ungarbled files will be garbled
by the ARJ "g" command.

Example: ARJ g archive -gdinosaur

i: check Integrity of ARJ.EXE

The "i" command allows the user to check the integrity of the
ARJ.EXE program. ARJ will report "CRC ERROR!" if the tested ARJ
program does not pass its integrity check. This indicates that
the program is probably corrupted. Please note that the "i"
command should not be used on a compressed ARJ executable
(DIETed, LZEXEd, etc.), since the "i" command will then ALWAYS
report a CRC error.   If the program name is not specified, then
ARJ will check the current program being executed.

Syntax: ARJ i ARJ.EXE
         ARJ i   at DOS 3.0 and up

j: Join archives to archive

The "j" command allows the user to merge several ARJ archives.

Syntax: ARJ j archive archive1.arj archive2.arj
         ARJ j archive *.arj -r

Some switches NOT supported by the "j" command are: -o, -ob,
-f, -u, -c, -v. Note that there is no error message displayed
by ARJ when using an unsupported switch with the "j" command.

The "-d" option IS supported by the "j" command.

Note that switches that do work like "-x" select the archives to
be merged and NOT the contents of the archives.

This command can be used to convert an SFX module to a regular

ARJ archive.

   Example: ARJ j new_name arjsfx.exe

k: pacK bacKup files in archive

   The ARJ k command works similar to the ARJ d command except that
   the ARJ k command only deletes files marked as backups. The ARJ
   k command requires a wildname or filespec as a selection option.

   Examples: ARJ k archive *.*
              ARJ k archive *.doc -q

l: List contents of archive

   List contents of archive to standard output. The display can be
   paused after each screenful with the "-jp" switch. The files
   are listed in stored order.   There are no sort options
   currently.

   The last field on the display BTPMGVX stands for:
      B -> file has been marked as a backup
      T -> text/binary/directory type
      P -> path information available in "V" listing
      M -> compression method used
      G -> file has been garbled (encrypted)
      V -> archive has been continued to another volume
      X -> this file is an extended portion of a larger file

   Example: arj l archive *.c *.h

   A "+" sign preceding the date-time field indicates that the date
   is a 21st century date (20nn).

   For text mode compression, the original file size reported by
   the "l" and "v" commands is the actual number of bytes input.
   This is usually the MS-DOS file size minus the number of
   carriage returns in the file, since C text mode strips a file of
   carriage returns.

   When ARJ has detected a set backup flag in an archive, there
   will be a message "[Backups ON]". When ARJ has detected any
   backup files in an archive, there will be a message
   "[Backups found]".

   To indicate that files are marked as backups, ARJ will display
   a "*" in the column right after the file attributes.

   The "-jg" option is needed to set the "l" and "v" commands to
   display the names of backup files.

   Example: ARJ l archive -jg

m: Move files to archive

   This command is similar to specifying the "a" command with the

"-d" switch. The "m" commands adds the selected files to the
archive. If the adds are successful, then the added files are
deleted. The move command does not ask permission before
deleting the files.   Use the "ARJ a -d" command for that
feature.

Example: ARJ m archive soft*.*

The "m" command when used with "-f" and "-u" will delete any
successfully added files as well as any files that are already
up to date in the archive. It is STRONGLY suggested that you
always use the "-jt" option with move commands to set ARJ to
verify the archive before deleting the input files.

At ARJ 2.30, ARJ will also attempt to delete any directories
that are added to the archive. Directories can ONLY be selected
by using the "-a1" option. Directories with UNSELECTED files
will not be deleted.

Example: ARJ m archive -a1 soft*.* soft   deletes soft
          ARJ m archive -a1 soft*.*   doesn't delete soft

n: reName files in archive

This command allows you to change the names of the files stored
in an ARJ archive. ARJ will prompt for the new name of each
selected file. You can skip changing the name of a particular
file by entering a blank line.

Example: ARJ n archive *.c

In the above example, ARJ prompts for new names for all *.c
files.

o: Order files in archive

This command allows you to re-order the files within the
archive. You may specify the order of files on the command line
or you can use one or more list files. Any files in the archive
that are not specified on the command line or in a list file
will be placed at the end of the archive in the same relative
order that they were originally. No wildcard names can be used
as order specifications. The filenames in the list file must be
entered one per line.

Example: ARJ o archive file1 file2 file3

In the above example, the files "file1", "file2", and "file3"
will be ordered first in the archive. Any remaining files will
follow those.

Example: ARJ o archive !list

In the above example, the archive will be ordered according to
the order of the names in the file "list".

IMPORTANT: For the "o"rder command, the list file option has one special feature. If the list file is named ARJSORT.$$$, ARJ will expect the file to have been built with the ARJ v -jv1 command. This ARJSORT.$$$ list file may be specified with a pathspec. See the ARJSORT.BAT batch file for an example of this special feature.

To facilitate building list files, the "v" command in ARJ will produce special outputs with the "-jv" switch and the "-jv1" switch.

The "-jv" switch will display only the pathnames stored within the archive. No other listing data is displayed. This output can be re-directed to a file for manual sorting into a list file.

The "-jv1" switch will display the standard verbose display with a few modifications. No sequential number field will be displayed. No comment field will be displayed. The pathname is appended to the archive file description data instead of being on a separate line.   Displayed just before the pathname field are the file extension and filename. These fields are available so that the user can sort the text lines by date-time, file extension, CRC value, etc. Text editors like Qedit and SLED allow the user to sort text lines via an embedded text field.

At ARJ 2.20 and above, you cannot "o"rder a multiple volume archive and should not.

p: Print files to standard output

Output files to standard output. This function works such that the output file will contain only the file data extracted. This is important for UNIX-like usage.

Example: ARJ p archive manual.doc > output.fil

In the above example, output.fil will be an exact copy of manual.doc.   There will be no extraneous header information in output.fil.   All extraction phase information is written to the STDERR device, which is normally the display screen.

Example: ARJ p archive manual.doc > LPT1

In the above example, the standard output is redirected to the printer device. This does not involve any intermediate disk files. However, when redirecting to the printer, ARJ will translate binary files to text, causing possible loss of data. The ARJ command "ARJ e archive manual.doc -jwLPT1" will output a binary file to the printer without loss of data.

ARJ sets the file date-time stamp of the output stream. File viewing as in ARJ p archive name | LIST /s will display the correct file date and time.

The "-jp" option can be used to pause the screen output as in the

"s" command. The "-jv" option will allow the display of IBM
graphics characters with the "-jp" option.

NOTE: Because of a problem using fwrite() and STDOUT, errors
occurring during redirection to serial and printer ports may not
be detected. Errors during redirection to disk files will be
detected.

r: Remove paths from filenames

This command sets ARJ to remove the path component from the
specified filenames stored in the archive. The default is all
filenames stored in the archive. This command is useful if you
forgot to specify "-e" to exclude paths.

s: Sample files to screen with pause

This command is similar to the "p" command except that one
screenful of data is displayed to the user and a user action is
then requested. The action prompt can be suppressed with the
"-y" switch.

The "s" command filters the text to output by truncating at 79
characters per line and displaying '?' for control characters.
The "-jv" option will allow the display of IBM graphics
characters.

t: Test integrity of archive

Test the contents of the selected files for the correct CRC
value. ARJ uses a 32 bit CRC to validate the contents of the
files. The use of 32 bit CRCs is many times better than the
use of 16 bit CRCs for the detection of errors.

u: Update files to archive

Update older files in the archive and add files that are new to
the archive.

Example: arj u software

v: Verbosely list contents of archive

This command lists the full pathname and comments of the archive
files as well as the same information as the "l" command.

The "v" command now displays a sequence number preceding the
pathname. This number can be used with the "-#" option to
access specific files within an archive.

Example: ARJ v archive -jg
          ARJ x archive -# 5 10

Use the "-jp" switch to pause the output after each screen.

The "-jv" switch will display only the pathnames to the screen.

The "-jv1" switch will display the archive data in a manner
suitable for sorting on various fields for use with the "o"
command.

w: Where are text strings in archive

This command allows the user to search for text strings within
archives.

ARJ will prompt the user whether to ignore case when searching.
This search option takes MS-DOS code pages into account so that
casing of accented/umlauted characters will be done correctly.

ARJ will also prompt the user for the number of lines of context
of a match to display. If a number greater than zero is chosen,
ARJ will display the matched string and the surrounding context
with all of the non-printable characters including newlines
replaced by question marks.   The context lines displayed will be
78 characters in length. When the display context option is
chosen, ARJ will inhibit the progress indicator. If the "-jv"
is set, IBM graphics characters (128 to 255) will be displayed.

Then, this command will prompt the user for up to 20 text strings
to search for within the archive. A count of all matches will be
displayed after each individual file is scanned.

Search strings are limited to 79 characters.

Matches that span archive volumes will not be detected by
this string search.

You can search multiple ARJ archives with a command like:

ARJ w \docs*.arj

You may page pause the display with the "-jp" option.

The "-jq" option can be used to supply the necessary parameters
to the ARJ w command.

The option string will be parsed as follows:
1) the first character must be either "+" or "-" representing
   yes or no,
2) the next character(s) represents the number of lines of
   context to display,
3) the next character represents a non-digit separator,
4) the next characters represent the search text.

Examples: ARJ w archive -jq+3+total   caseless search
                                          display 3 context lines
                                          search for "total"
           ARJ w archive "-jq-2-to be" case sensitive search
                                          display 2 context lines
                                          search for "to be"

You can use the "-hw" options to change the way ARJ displays
the filenames being searched.

x: eXtract files with full pathname

This command extracts one or more files from the archive to
their full paths in the current directory or to the base
directory if specified. ARJ normally stores pathnames as if
they were children of the target directory.   Any drive or root
directory specifications are stripped before extracting unless
the "-jf" switch is specified with the "x" command.

Example: arj x archive *.c

If you wish to extract only a portion of an archive and that
portion is a directory containing directories, you should use
the "-p1" switch. See the "-p" switch for more information.

The ARJ e and ARJ x commands now accept the "-d" option to
provide an extract and delete option. This feature requires
that you specify the files to extract and delete. ARJ will NOT
default to "*.*" for this option.

Refer to the description of the "e" command for more
information about extraction.

y: copY archive with new options

The ARJ y command provides an easy interface to the -je and
-je1 options as well as to the -jb, -jb1, and -jb2 options.

Examples: ARJ y archive -je1 convert an archive to an SFX
           ARJ y archive -jb   make an archive a backup type
           ARJ y archive -jb1 reset the backup flag
           ARJ y archive -jb2 unmark all backup files

ARJ SWITCH OPTIONS:

?: Display full help screens

The command "ARJ -?" displays several screens of help
information with page pauses. The command "ARJ -? -jp" displays
the help screens without page pauses. You can also redirect the
output to a file as in:

ARJ -? > help.txt

ARJ may not detect network file redirection and will pause per
screenful.

-: skip any more switch options

The switch option "--" will cause ARJ to stop looking for any
more switch options on the command line. This is useful for
entering filenames beginning with "-".

Example: ARJ a archive -- -file

+: inhibit ARJ_SW usage

  The switch option "-+" will inhibit ARJ from using the value of
  the ARJ_SW variable in ARJ switch processing.

  Example: ARJ a archive -+ *.*

  The "-+" option can now be used to specify an environment variable
  name to use in place of the default "ARJ_SW". This option can only
  be used on the command line.

  Example: ARJ a archive -+ARJ_SW2

&: install critical error handler

  By default, ARJ sets up a default interactive critical error
  handler to handle errors like "sector not found" and "drive not
  ready". The user has the option of retrying the failed
  operation. The user can press Control BREAK to abort to DOS.

  The "-&" option sets ARJ to install a non-interactive critical
  error handler. This is designed for unattended ARJ use. This
  handler will intercept errors that produce the "Abort, Retry ..."
  error messages like bad sector errors and file sharing
  violations.   It can be specified on the command line or via the
  environment variable. Please note that if you specify "-&" on
  the command line, the handler is installed immediately before any
  files are processed. If you specify "-&" in the environment, ARJ
  will not install the handler until all switches are processed.

!: set list char

  This option allows the user to set the character used for list
  files. The option "-!" with no specified character toggles
  (turns off) the current list file character (default "!").

  Syntax: ARJ a archive -!@ @list.fil
           ARJ a archive -! !.bat

  The first example above sets the list file character to the one
  used by LHA and PKZIP.

$: add/extract volume label

  This option allows the user to store or extract DOS volume
  labels in ARJ archives. It is possible to have multiple labels
  in one archive. At ARJ 2.10 and above, you can only add or
  extract volumes labels at DOS 2.0 and above. The "-$" option
  may be specified with or without a drive specification. The
  drive can be specified by appending the letter and optionally
  the ":" to "-$". If none is specified, ARJ assumes the current
  drive unless a specified target base directory has a drive
  specification.

WARNING: Currently, ARJ allows more than one volume label and
duplicate volume labels in the same archive. You can delete one
or more duplicate labels with the "ARJ d -q archive label"
command. ARJ will query you on each occurrence of "label".
This "faulty" mechanism allows a file and label of the same name
to be added to an archive. The capability of having duplicate
labels in the same archive MAY NOT be present in future versions
of ARJ.

The SFX and SFXJR modules DO NOT support volume label extraction!

On the list screen, volume labels will be indicated by the "V"
under the "T" column.

Syntax: ARJ a archive -$ add all files and the label
                                   of the current drive.
         ARJ a archive ... -$B   add only the label of drive B
         ARJ a archive ... -$B: add only the label of drive B
         ARJ u archive ... -$B: add only the label of drive B

To extract volume labels, you must select the label by setting
"-$" and specifying a matching wildname/filename.

Syntax: ARJ e archive doslabel -$ extract the label named
                                    doslabel to the current drive.
         ARJ e archive -$D: extract all files to the
                                    current drive and extract the
                                    label to drive D:.
         ARJ e archive label B:\ -$ extract all files to B:\ and
                                    the label to drive B.

ARJ will display all labels over 8 characters with a "." in it
like a normal DOS filename.   However, ARJ will not restore this
extra "." when extracting. ARJ will only create standard
uppercase DOS volume labels.

Volume labels created by utilities other than standard DOS
commands like LABEL and FORMAT may cause label access problems
for ARJ. For example, Norton's VL.EXE can create labels with
lowercase letters. You will need to use LABEL.COM to delete
these labels in order to let ARJ set a new label. Programs that
delete unusual labels must do absolute writes to disk or use a
wildcard ("*.*") delete of files with the label attribute in the
root directory. A single bit corruption in the program can
result in the deletion of ALL files in the root. ARJ currently
chooses not to take that risk.

#: select files by order number

The "-#" option allows the user to select files from an archive
by their order number in the archive. For example, the number 1
selects the first file in the archive. This option is useful in
selecting files where there are duplicates in the archive. It
is also useful for batch type utilities that need to extract
files sequentially from an archive for processing. Archive menu

programs should find this option very useful in processing
archives with duplicate filenames.

You can specify a series of files with the n1-n8 type syntax.
No embedded spaces are allowed.

ARJ e archive -# 1 4 12-25 40-100

NOTE that the order number starts from 1 for each individual
archive including multiple volume archives.   In other words, the
first file in archive.a04 is number 1.

Do NOT mix filenames with the numbers other than the base
directory.

Example: ARJ e -# archive basedir\ 1 3 5 20 21

a: allow any file Attribute

By default ARJ will not select system or hidden files via
wildcarding unless the "-a" option is specified.

The "-a1" switch sets ARJ to add any directories in the selected
set of matching filespecs to the archive being built. This
switch also selects hidden and system files as in the "-a"
switch. Even empty directories will be added. The "l" command
will display such directories with a "D" under the "T" (file
type) header.

Older releases of ARJ will skip over empty directory entries.
The ARJSFX and ARJSFXJR modules CAN process empty directory
entries.

This option is useful for saving software directories with
needed empty directories.

b: Backup changed files

The "-b" switch will select only files that have the archive bit
set.

If you specify the "-b1" option, files with the archive bit set
will be selected and the archive bits of all archived files will
be reset after a successful archive has been built.

Example: arj a a:backup1 c:*.* -b1 -r -va   simulates BACKUP
command.

The "-b2" switch does NOT select files. It causes ARJ to reset
the archive bits of added files. If the "-f" or "-u" option has
been selected, ARJ will reset the archive bits of files that are
already duplicated in the archive.

Example: arj a e:archive c:*.* -b2 -r   archives all files on
the C drive and resets all archive bits.

The "-b3" switch is used to reset the archive bits of files being extracted. It is useful for setting the archive state so that a subsequent incremental backup will not backup these extracted files.

c: skip time-stamp Check

Normally with the "u" and "f" commands, ARJ will only update newer files to an archiver. The "-c" switch will set ARJ to update the archive regardless of the date-time modified time stamps.

When extracting files from an archive with the "-y" and "-f" switches set, ARJ would normally skip extracting older files. The "-c" switch will set ARJ to extract these older files.

d: with Delete (move)

This switch provides the standard MOVE command. Successfully added files will be deleted. When used with the "-f" or "-u" option, ARJ will also delete files that are already duplicated in the archive. ARJ will prompt the user before deleting the files unless the "-y" switch is specified. Also, you can use the "m" command which does not prompt before deleting the files. At ARJ 2.30, when using the "-a1" to specify the selection of directories, ARJ will also delete the selected directories.

ARJ a archive filename -d -y   is equivalent to

ARJ m archive filename   and

ARJ a archive filename
delete filename

The ARJ e and ARJ x commands now accept the "-d" option to provide an extract and delete option. This feature requires that you specify the files to extract and delete.

ARJ e archive -d file1 file2

e: Exclude paths from filenames

By default ARJ always stores the pathname of the archived file. This switch will set ARJ to store only the filename component.

The "-e1" switch option sets ARJ to NOT store the base directory name with the filenames in the archive.

Example: ARJ a archive C:\SOFTWARE\ARJ\ *.* -r -e1

In the above example, ARJ will NOT store the C:\SOFTWARE\ARJ\ as part of the filenames.

When updating files within an archive, ARJ uses the full pathname to match against the full name of the selected files. The "-e" and "-e1" option affect this exact matching. If "-e"

is specified, only the filespecs of the selected files will be
matched against the full pathname of the files in the archive.
If "-e1" is specified, the full pathname minus the base
directory of the selected files is used to match against the
full pathname of the files in the archive.

In other words, ARJ will only update a file within an archive if
the name of the new file as stored in the archive would be
identical to the name of the original file stored in the
archive.

f: Freshen existing files

This switch used with the "e" or "x" commands sets ARJ to only
extract newer files from the archive.

This switch used with the "m" command sets ARJ to update only
input files with newer dates than the ones in the archive.
After the archive has been updated, all updated selected files
and all up to date selected files will be deleted.

The ARJ m -f command is very similar to the LHARC m command.

g: Garble with password

This switch followed by a password "-gpassword" will encrypt or
decrypt an archived file. During a "l" or "v" command, a
garbled file will display a "G" after the method number.

Example: ARJ e archive -gpassword

If the "-g" option is followed by a question mark "?", ARJ will
prompt the user for the password without displaying the password
input. The backspace key can be used to erase characters.

Example: ARJ a archive -g?

Using the wrong password during extraction will result in a
"Bad file data" or "CRC error" error message.

i: with no progress Indicator

Do not display the percentage progress indicator. The progress
indicator appears during the add, extract, search, and test
operations.

The "-i1" option provides a bar type graphical progress
indicator for the compression, extraction, and testing type
commands of ARJ. This provides an alternative to the simple
numeric increasing percentage progress indicator.

The "-i2" option provides a combined percentage and bar progress
display.

j: selects alternate set of switch characters.

This switch toggles the set of switch characters. The toggle is
reset at end at of each separate switch sequence back to the
main set of switch characters.

For example, "-ja" is not the same function as "-a". However,
"-jja" is the same as "-a" because of the double toggle. Also,
"-jaje" is NOT the same as "-ja -je". The switch sequence
"-jae" is the same as "-ja -je".

k: Keep a .BAK of ARJ archive

Create a ".BAK" of the original archive file during an update.
The original archive will be suffixed with ".BAK". Any existing
".BAK" file will be overwritten.

This has no relation to "backup type" ARJ archives.

l: create List_name file

This switch will set ARJ to dump to the filename specified after
the "-l" switch all of the filenames to be processed by this ARJ
command. For add type commands, this list contains all files
that matched the file wildnames given on the command line. For
other commands, the file will contain only the original
filenames and/or wildcard names. Other options do NOT affect
the output of filenames to this list file. To get an index file
for backup purposes, use the "-ji" option.

This list file can be used as a listfile on the command line.

Example: ARJ a -lname.lst archive *.exe

This example will create a file named "name.lst" with all *.exe
files.

m: with Method 0, 1, 2, 3, 4

Method 0 = storing   (no compression)
Method 1 = best compression for general use
                       (default compression method)
                       (requires 300,000 plus bytes memory)
Method 2 = slightly less compression and faster
                       (requires 282,000 plus bytes memory)
Method 3 = less compression and less memory and faster
                       (requires 250,000 plus bytes memory)
Method 4 = fastest compression
                       (requires 235,000 plus bytes memory)

Example: ARJ a archive *.exe -m2

The "-jm" option will usually improve the size reduction of
methods 1 and 2 at the cost of speed and memory. The behavior
of "-jm" with -m3 and -m4 is UNDEFINED.

Method 4 uses a different decoder than 1 to 3. Method 4 is
almost twice as fast as method 1.

During extraction, ARJ uses less memory than during compression.
See the section on ARJ LIMITATIONS for more memory usage
information.

n: only New files (not exist)

  With the "e" or "x" commands, extract files that do not exist in
  the target directory.

  With the "a" or "m" commands, archive files that do not exist in
  the target archive.

o: On or after date YYMMDDHHMMSS

  The switch "-o" by itself means select files modified today. If
  "-o" is followed by a date and optionally a time, ARJ will only
  select files modified on or after that date-time.

  Example: ARJ a test -o9001021700   means select files modified
  on or after Jan 2, 1990, 5:00 PM.

  Years less than "80" will be considered as 21st century years.

  There is no option for using other date-time formats.

  The switch "-ob" selects files modified before today. If "-ob"
  is followed by a date and optionally a time, ARJ will only
  select files modified before that date-time.

  ARJ now accepts the use of "-o" and "-ob" options simultaneously
  to specify a range of selected dates. This is useful for
  selecting files on a specific date.

  Example: ARJ a archive *.* -o910101 -ob910102

  The "-o" option and/or the "-ob" option will default to today's
  date at midnight (0000 hrs) when specified without dates.

  The "-od" switch sets ARJ to select files no older than the
  specified number of days. The days are calculated from
  midnight.

  Examples: ARJ a archive -od0   select files modified today
             ARJ a archive -od1   select files modified yesterday
                                   and today

p: match using full Pathnames

  When "-p" is specified, ARJ looks for an exact pathname match.
  This can be modified by the "-e" option.

  For non-update commands and specified filenames with paths, ARJ
  will match the full path with or without the "-p" switch.

  To match directory paths that contain subdirectories, you should

use the "-p1" switch. This switch sets ARJ to match only the
initial portion of the pathnames against the wildnames
specified. For example, if your archive contains the TURBOC++
directory named TC and you wish to extract the INCLUDE
subdirectory along with the subdirectory INCLUDE\SYS, you can
use the following command:

ARJ e archive TC\INCLUDE*.* -p1

If you wanted to extract all of the INCLUDE\S*.* files including
the contents of the SYS subdirectory, you can use the following
command:

ARJ e archive TC\INCLUDE\S*.* -p1

q: Query on each file

   This switch causes ARJ to prompt the user prior to acting upon
   each archived file for all but the "j", "l", "t", "v", and "w"
   commands. This allows you selectively to delete, add, etc.

r: Recurse subdirectories

   This switch will set ARJ to recurse any wildcards specified on
   the command line including ARJ archive filenames by traversing
   all subdirectories scanning for matches.

   ARJ will also recurse non-wildcard filenames as in:
   ARJ a archive FILE.BBS -r

s: set archive time-Stamp

   This switch causes ARJ to set the date-time stamp of the archive
   to that of the newest file in the archive.

   This option will also work with non-update commands as in:
   ARJ l archive -s ...

   The "-s1" switch is used to keep the old archive date-time
   stamp. The new archive will have the same timestamp as the
   original archive.

   The "-s2" switch is like the "-s" switch except that it only
   works for archive modification commands. This makes it more
   suitable for use in the ARJ_SW environment variable.

t: set file Type

   This switch causes ARJ to open and read the file to be archived
   in binary or text mode. The default is binary mode (-t0). To
   archive in text mode, use the -t1 switch. The "-t" switch is
   equivalent to "-t0".

   If you specify the switch "-t0", ARJ will always use the binary
   mode even for freshening text mode files already in the archive.

The file type "text" is only needed for future cross platform transfers of ARJ archives. It enables ARJ to extract text files to the host file system with the text newline sequence that is correct for that operating system.

However, this mode may produce slightly better size reduction. The "-t1" option combined with "-jh65000" can produce some of the best size reduction numbers. Extraction of files compressed in text mode is slower than the extraction of binary files.

You should NOT use the "-t1" switch while archiving in multiple volume mode.

DO NOT use the text mode on non-text files!!! On non-text files ARJ will prematurely stop input if it finds an embedded EOF character (CTL Z). This will produce a LOSS of data on binary files. As of ARJ 2.30 and UNARJ 2.30, ARJ will extract text mode data in 8-bit format when extracted to the original type of platform. Only when the text file is extracted to a different type of platform will the 8-bit text be stripped to 7-bit text.

In "-t1" text mode, ARJ will look at the first 4096 bytes of the input file looking for non-text characters.   In "-t1g" text with graphics mode, ARJ will look at the first 4096 bytes of the input file looking for too many byte values over hex 7F. If ARJ finds either condition it will automatically backtrack and switch to "-t0" (default) binary mode for that particular file. In addition at the end of compressing the input file, if ARJ finds that the input file size is not greater than 80 percent of the binary file size (size on disk), ARJ will backtrack and re-archive that file in binary mode. This should help to avoid the problem of accidentally compressing executable files with the "-t1" option which results in lost data. These tests are not foolproof.

The original file size reported by the "l" and "v" commands is the actual number of bytes input during text mode compression. This is usually the MS-DOS file size minus the number of carriage returns in the file, since C text mode strips a file of carriage returns. There can be problems with the file size because compressing in TEXT mode can be LOSSY (unnecessary characters may be lost). This can cause problems for some archive conversion programs that check file sizes.

The "-t" option has been modified to allow setting file type by suffix similar to "-js" option. If you want to set the file type to text mode for .ASM and .C files, you would specify the option "-t1.asm.c".

ARJ a archive *.* -t1.asm.c.h.doc
ARJ a archive *.* -t1g.txt.doc

Note that in the switch sequence "-t1f -t1f.doc.asm", the second switch does not override the first switch which specifies that all files are to archived in text mode.

If you want to specify the binary file type by suffix, you must specify the default file type to text and then specify the type by suffix, because the default file type is normally binary.

ARJ a archive *.* -t1 -t0.com.exe.obj

Because of the way ARJ checks all files to be archived in text mode, some true text files will not pass the test. In this case, you can specify the "f" modifier to force text mode. This modifier can be combined with the "-t1." suffix option. The "f" modifier must follow the "g" modifier if any.

ARJ a archive *.bat -t1f
ARJ a archive *.txt -t1gf
ARJ a archive *.* -t1f.bat.asm.doc

One trick that you can do with the -t1 option is to convert UNIX text files to MS-DOS text files. If you have extracted the files out of the ZOO 2.10 archive and need to convert the linefeeds to carriage return/linefeed, you can use the following commands:

ARJ a archive *.* -m0 -t1
ARJ e archive *.* -y

u: Update files (new and newer)

This switch used with the "e" and "x" commands causes ARJ to extract newer and non-existing files.

This switch used with the "m" command causes ARJ to update only input files with newer dates than the ones in the archive and add new files to the archive. After the archive has been updated, all added files and updated selected files and all up to date selected files will be deleted.

v: enable multiple Volumes

This switch is required to put ARJ into multiple volume mode.

This switch allows the creation of multiple volumes in the ADD mode. The command "arj a a:arjvol *.* -b -r -v360000" allows a user to backup up all files changed since the last backup to multiple floppy disks. ARJ will pause between volumes to allow changing disks. Subsequent volumes will be suffixed .A01, .A02, .A03, ... , .A99, .A00, .A01, etc. You can start the volume series at .A01 by specifying the full name of the starting archive as "name.A01".

After the pause to change diskettes, ARJ will check to make sure that the diskette has been changed.   However, this check is limited to 3 retries for the same volume.

ARJ normally only creates volumes numbered up to .A99 for one hundred uniquely named volumes. Then the numbers roll over to .A00. When the archive name ends in .000, ARJ will create

volumes numbered up to .999 for one thousand uniquely named volumes. You can also start the series at .001.

Example: ARJ a -v720 -y -r archive.000 d:\

Archived files can be split across volumes.   ARJ will try to fill each volume to within 200 to 1000 bytes of specified maximum size.

The modifier "w" specifies to ARJ that files are NOT to be split across volumes except for one case.   That case is where the archived file would not fit in ONE whole volume. This feature does not optimize the use of space in these type of volumes. With this feature, it is possible to have a volume of only 100 or less bytes.

An advantage to "w" type volumes is that updating of these volumes is supported for the "f"reshen command and other commands that do not add new files to the archive. You can add files to these volumes only if you do NOT limit the volume size.

The command "arj x a:arjvol -v" would restore files starting from arjvol.arj. You must specify the entire ARJ volume name including the .Ann suffix when starting from the middle of a series of volumes or when the series starts with ".A01" or ".000", etc.

You can suppress the next volume prompt with the "-jyv" option. When the multiple volume ARJ files to be used are located on drives with removable media (diskette drives, etc.), ARJ will ALWAYS PROMPT for the next diskette even with the "-y" option specified. At DOS versions before 3.0, only drives A and B are considered removable.

ARJ x a:arjvol -v -jyco

The above example extracts in multiple volume mode and suppresses prompting for permission to create directories and to overwrite existing files. ARJ will assume yes in these cases.

Because of the splitting process, archived split files with a size of zero bytes are possible. This is not an error.

If you comment your archives with long comments, you should take that into account when specifying volume size. You should specify a smaller volume size during the "a" command before adding the comments.

The "-v" switch will accept the abbreviations 360, 720, 1200, and 1440. These will be translated to 362,000, 730,000, 1,213,000, and 1,457,000 bytes, respectively. Please note that if the available disk space is less than the requested amount, ARJ will prompt the user for permission to continue.

You can use the "K" modifier as a shortcut for "000". For example, 100K means 100000.   "K" does NOT mean 1024.

The "-vv" switch turns on the next volume beep option. When you
select this option, ARJ will sound a beep prior to the next
volume.

The "-va" switch sets the disk space auto-detect option. ARJ
will check for the disk space available on the target directory
and try to use all or most of it. This option is aimed at
diskette usage. Please note that this switch option detects
free disk space. It does not detect formatted disk space.
If the space available is less than 10,000 bytes, ARJ will
prompt the user for permission to continue.   Please note that
ARJ can support the use of diskettes formatted at higher than
normal capacities such as 3.5 inch HD diskettes formatted at
1.6 MB.

Examples: ARJ a A:backup -b -va
           ARJ a backup -v360

The "r" modifier allows the reservation of disk space on the
first volume. The number after the "r" specifies the space to
reserve. This is useful for software installation volumes.

Example: ARJ a install -v360r50K   make first volume 50000
                                         bytes smaller than 360K.

The switch modifier "s" can be used to make ARJ execute one
specified system command prior to each volume or make ARJ pause
for manual execution of system commands. This is useful for
purging target diskettes before ARJ writes to them.

The switch modifier "z" is identical to the "s" modifier except
that the system command is NOT echoed to the screen.

Optionally, after the "s" modifier, you can specify a system
command or batch filename. ARJ will automatically execute the
command or batch file before each volume. If the command has
embedded blanks, then the entire switch option must be
surrounded by double quotes. The system command is executed
before ARJ executes the auto-detect space option.

Examples: ARJ a A:backup -vas
           ARJ a A:backup -vvas
           ARJ a A:backup -v360s
           ARJ a A:backup -vvw360s
           ARJ a A:backup -vaspurge.bat
           ARJ a A:backup -v360sdelete.bat
           ARJ a A:backup "-vasFORMAT A:"
           ARJ a A:backup "-vasDIR C:\ "

Note that the last example has a space before the last double
quote mark.   If the last space is missing, the internal command
line parser will make the double quote mark part of the DIR
command.

The "-v" switch now accepts its modifiers in any order. The "s"

and "z" modifiers must be last because any succeeding text is
considered the system command to execute.

Examples: ARJ a volume -vavw   beep, autosize, whole files
           ARJ a volume -vavsDIR   beep, autosize, execute DIR

Volume archives can be used as stand-alone archives for non-update
commands except for the files that are split across volumes.

It is recommended that the "-jt" (test archive) option be used
with the "-v" switch to ensure perfectly built volumes as it is
tedious to retest volumes after they are built.

During ARJ operation in non-update commands, ARJ will not abort
when it cannot open the correct sequential ARJ volume archive.
It will report the open error and proceed to the "Ok to process
the next volume?" prompt. At this point it is possible to swap
diskettes to put the correct volume in place. This feature is
disabled if the "next volume" prompt has been disabled.

For those who have enough free hard disk space, the -v option
can be used to make backing up the hard disk fairly easy. ARJ
can be set to create multiple floppy sized volumes on the hard
disk for later copy to diskettes. So even if ARJ is slow, you
can fire up an ARJ backup and some time later, you can quickly
copy the volumes to floppies. Below are sample backup commands:

arj a backup *.* -b2 -r -v360 -y -jt -js   full backup
arj a backup *.* -b1 -r -v360 -y -jt -js   incremental backup

See the "-jn" and "-jx" options to see how to recover from an
abort in the middle of a backup type operation.

****

WARNING: Updating multiple volume archives with the "-v" switch
set is NOT supported or recommended. By default, ARJ will not
allow the updating of multiple volume archives. You can specify
the "-hu" option to bypass this protection.

Example: ARJ c archive -hu -zcomment.txt

****

TIP:

To pre-determine the number of diskettes required to archive a
set of data, you can take advantage of the "s" option of the
"-v" switch. The "s" option lets you execute a DOS command
prior to each volume. You can specify a command that deletes
the previously created archive volume. This lets you use the
same floppy diskette/hard disk space to build the multiple
volumes.

Example: ARJ a -r "-vasdel a:volume.a??" -y a:volume c:*.*

w: assign Work directory

This switch option is HIGHLY recommended if you are archiving
directly to diskettes or if you have a sufficient RAMDISK space.

By default, ARJ builds a new ARJ archive file in the same
directory as the old archive file. By specifying the "-w"
switch, you can specify the working directory where the
temporary archive file will be built. After the temporary
archive file is built, it is copied over the original one and
deleted.

Normally ARJ requires enough disk space for the original archive
and the new temporary archive. Specifying the "-w" switch
allows you to move some of that disk space requirement to
another directory.

When using the "-w" switch while archiving to multiple volumes,
ARJ will check the available disk space in the work directory.
If there is not enough space, ARJ will prompt for permission to
continue. This prompt can be suppressed with the "-y" and
"-jyk" switches.

If the copy of the temporary archive on top of the original
archive fails because of an I/O error, you will have to do the
copy manually. ARJ will not delete the temporary archive in this
error situation. If you press CTL BREAK during the copy
process, ARJ will delete both the temporary archive and the
original archive files.

Example: ARJ a -we:\temp\ archive *.c

For speed reasons, you should always use the "-w" option when
creating or modifying archives on diskettes. You should specify
a work directory on your hard disk or ramdrive.

Example: ARJ a -we:\ b:archive *.c

x: Exclude filenames

This switch is used to exclude filenames or wildnames from the
list of filenames to be processed.

Example: ARJ a archive soft*.* -r -x*.exe -x*.obj -xtest

This example will archive all files in the soft directory and
subdirectories with the exception of any files named "test"
or ending in ".exe" and ".obj".

You can also specify an exclude file list by preceding the
filename with the list character "!". The exclude file list
must contain a list of filenames/wildnames one per line with no
leading or trailing blanks.

Example: ARJ a archive soft*.* -r -x!exclude.lst

You can specify a pathname to exclude as in:

ARJ a archive \dir*.* -r -x\dir*.*

In the above example, ARJ will exclude all files in \dir
but not the subdirectories in \dir.

The "-x" option also allows you to exclude an entire path
including subdirectories from being selected for processing.

Syntax: ARJ a archive C:*.* -xC:\TEMP\

The "\" after C:\TEMP indicates to ARJ that everything below
C:\TEMP\ is to be excluded.

Note that the exclude directory option requires that the
directory be specified in the same relative path that the
selected files use.

Example:

arj a archive \temp*.* -x\temp\firstdir   is correct usage
arj a archive \temp*.* -xC:\temp\firstdir   is NOT correct because
                                                    of the C:

The "-x" switch also works for non-update commands like
"e"xtract and "l"ist.

Examples:

arj e archive -x*.exe   extract all files except *.exe files
arj l archive -x*.exe -x*.obj   list all files except *.exe and *.obj

A maximum of 8000 filenames or wildnames can be excluded.

Note that the "-x" option is unaffected by the "-p" option.

y: assume Yes on all queries

Use this switch for batch type uses of ARJ.   This switch
disables most of the normal user queries during ARJ execution.
Use this switch to suppress overwrite queries in the "e" and "x"
commands, to suppress the make new directory query in the "e"
and "x" commands, to suppress the new filename prompt when an
open file operation fails in the "e" and "x" commands, to
suppress the pause during the "s" command and to suppress the
next volume pause using the "-v" option to create volumes on the
hard disk.

The "-y" switch will NOT suppress the "-v" next volume prompt
when the archive is located on a drive with removable media
such as a diskette drive.

Use this option with due caution, especially during extraction
as this sets ARJ to overwrite files. However, the "-n" option
can be used to avoid any overwriting.

As an alternative, you can use the "-jy" option which lets you
suppress individual types of user queries.

z: supply file for archive comment

The "-z" switch has been provided to facilitate batch commenting
of ARJ archives with the "c" command. When the "-z" option has
been specified with or without a comment file, ARJ will only
process the archive header comment and will skip any file
commenting unless the "-jz" switch has been specified.

A comment file containing only a single blank can be used to
erase comments from ARJ archives.

Syntax: arj c archive -z
         arj c archive -zcomment.txt
         arj a archive -zcomment.txt

The "-z" option also allows one to dump the ARJ archive header
comment to a file. This will only extract the main archive
comment and not the individual file comments.

Syntax: arj e archive ... -zcomment.txt dumps only the comment
         arj x archive -zcomment.txt   dumps comment and files

ja: show ANSI comments

Display any ANSI escape sequences unaltered. By default, escape
characters in comments are not displayed. Not displaying ANSI
command is the default because of ANSI BOMBS. Using ANSI
commands, it is possible to redefine the keyboard of users using
certain ANSI drivers. For example, a key could be redefined to
"echo y | del *.*".

ja1: inhibit the display of the archive comment

The "-ja1" switch will suppress the display of the archive
comment.

jb: set archive Backup type

If you modify an archive with the "-jb", ARJ sets the backup
flag in the archive. On adding, updating, or moving files to a
backup type archive where a duplicate filename exist, ARJ marks
the original file as a backup and inserts a copy of the
duplicate filename.   The backup flag will stay set until reset
with the "-jb1" option.

These backup files take up space in the archive. They can be
purged with the ARJ k command.

Examples: ARJ a -jb archive dir\file1
           ARJ e -jb archive dir\file2
           ARJ k archive *.c
           ARJ y -jb archive   just sets the backup flag

Normally, backup files will not be selected by ARJ commands. In
other words, an ARJ l archive command will not display backup
files. However, the "-jg" option will include backup files in
the selection process. For example, ARJ l archive -jg will
display all files including backup files.

This option is especially useful for backing up files. You can
maintain several generations of the same file in the same
archive.

jb1: reset Backup type archive

This switch allows you to reset the backup flag in a backup type
archive. Addition of files to such an archive will no longer
result in files being marked as backups. However, this option
does not remove already existing backup files.

Example: ARJ y archive -jb1
          ARJ a archive filename -jb1

jb2: unmark backup file

The "-jb2" option is used with the "y" command to unmark files
marked as backups. Note that this may produce duplicate files
in the archive.

Example: ARJ y archive -jb2   unmark all backup files
          ARJ y archive *.doc -jb2 unmark all *.doc files
          ARJ y archive -# -jb2 5   unmark the 5th file

jb3: mark as backup file

The "-jb3" option is used with the "y" command to mark files as
backups.

Example: ARJ y archive -jb3   mark all files as backups
          ARJ y archive *.doc -jb3 mark all *.doc files
          ARJ y archive -# -jb3 5   mark the 5th file

jc: exit after Count of files

The "-jc" option sets ARJ to exit early from an archive scan
when the specified number of files have been extracted, listed,
printed, etc. If no number has been specified, ARJ will set
that number to the number of filename arguments.

Examples: ARJ e -jc archive file1 file2 file3
           ARJ e -jc5 archive *.bat

Note that "*.*" is considered a count of ONE argument.

This option does NOT WORK when modifying an archive.

jd: ensure free Disk space

In extraction mode, this option causes ARJ always to ensure that
it will leave the user specified amount of disk space available.
ARJ will skip files that would exceed the disk space available
limit. Each file that is skipped will count as an error. The
default free space is zero bytes.

Example: ARJ e archive basedir\ *.doc -jd100K

In the above example, ARJ will not extract any files that will
cause the disk free space to be less than 100,000 bytes. The
"K" is a synonym for "000".   For example, 100K means 100000.

In "l"ist or "v"erbose list mode, this option sets an error
check at the end of the listing screen based upon the total of
the original sizes of the files selected. If the total size
would exceed the user specified free space limit, ARJ will
report an error at the end of the listing screen.

Example: ARJ l archive *.doc -jd10000

In this example, ARJ will report an error if the current
available disk space minus the total of the *.doc files is less
than the specified minimum of 10,000 bytes.

Example: ARJ e archive *.* -jd0

In this example, ARJ will skip extraction of any files that
would result in a disk full error.

je: create self-Extracting archive

This option causes ARJ to create a self-extracting .EXE file
instead of an .ARJ file. This ARJSFX self-extractor is about
15,000 bytes in size and supports full pathname extraction.
The "-je1" switch creates a smaller self-extracting .EXE file.
The ARJSFXJR module is about 5,800 bytes in size. Both modules
support display of the archive comment. The ARJSFX module also
provides a query to continue the extraction.

The SFX modules do NOT support multiple volume archives. That
would serve little purpose because you would have to distribute
multiple files anyway. In this case, DEARJ (available to
registered users) would serve adequately. DEARJ supports all of
ARJ extraction functionality including multiple volume archives.

Please note that including the SFX modules, DEARJ, or ARJ as
part of a hardware and/or software package ALWAYS REQUIRES an
ARJ distribution license.

At ARJ 2.10, the SFX executable modules are pre-compressed using
LZEXE. This may cause false indications with EXE scanning
programs showing that an ARJ SFX archive is a LZEXE compressed
file. Only the executable header module is LZEXE compressed.
The actual archive is ARJ compressed, of course. The LZEXE
header is modified to avoid extraction by UNLZEXE type programs.
UNLZEXE may truncate an ARJ self-extractor of its archive.

Both SFX modules have an identification string located in the
first 1000 characters of the executable. The identification
string is "aRJsfX" without the quotes and in the exact case.

The current commands ARJSFX supports are:

Usage: ARJSFX [-command] [-switch(s)] [directory\] [file(s)]

Commands:
e: Extract files   v: Verbosely list contents
l: List contents   x: eXtract files with pathname (default)
t: Test contents

Switches:
a: show ANSI comments   n: only New files
c: skip time stamp Check   p: match with Pathname
f: Freshen existing files   s: Skip security check
g: unGarble with password   u: Update files
i: no progress Indicator   y: assume Yes on queries

NOTE!!! ARJSFX uses the "-" character before all commands and
switches. This is to allow extraction of files named e, l, etc.

The default ARJSFX command is "-x" extract files with pathnames.
At ARJSFX startup, the self-extracting archive will display any
archive header comment followed by a query to "Continue
extraction?". This query can be suppressed by specifying the
"-e", "-x" or "-y" options on the command line.

When extracting pathnames, ARJSFX will prompt for permission to
create new directories unless the "-y" option is specified.
ARJSFX will create absolute or relative directories depending
upon whether the root directory has been stored in the pathname
in the archive. Saving the root is done using the "-jf" option.

To avoid extracting to paths, the archive creator should use the
"-e" option to exclude path specs. The user extracting the SFX
module can specify the "-e" command to extract to the current
directory.

ARJSFX does not support compression method 4.

The ARJSFX module supports the ARJ-SECURITY envelope feature by
itself. The ARJ-SECURITY feature is only available as a
licensed option. It is intended as a feature for software
developers.   The "-s" option allows the user to skip the testing
of the ARJ-SECURITY envelope.

ARJ will create a self-extracting module without an intermediate
archive file.

Example: ARJ a software *.* -je

If you want to make a self-extracting module from an ARJ
archive, use the "y" command.

Example: ARJ y software -je

IMPORTANT: When executing an ARJSFX module on a system with the
CONSOLE device set to RAW mode, the ARJSFX module will abort on
user input to avoid hanging the system. Use of the "-y" switch
on the command line will avoid the problem.

Example: ARJ230 -y

The ARJSFXJR module created with the "-je1" switch is a
stripped-down version of ARJSFX. ARJSFXJR does not support method
4 or text mode "-t1" or garbled "-g" archives. An ARJSFXJR
module containing files with pathnames will extract to the paths.
ARJSFXJR will automatically create directories as needed to build
the paths.

Example: ARJ y software -je1

The current commands ARJSFXJR supports are:

Usage: ARJSFXJR [-switch(es)] [drive:][directory\]

Switches:
n: set ARJSFXJR to NOT count as an error the skipping of files
o: set ARJSFXJR to overwrite existing files

You can specify a target_directory or drive or both. However,
you must specify the ending "\" or ":" symbol.

ARJSFXJR -o C:\SOFT\ -> self-extract into directory "C:\SOFT\"
                            in overwrite mode.

Both the ARJSFX and ARJSFXJR modules will by default extract to
relative/absolute path specs if the archive contains
relative/absolute path specs.

More examples:

Build an SFX module with absolute pathnames for extraction to
the absolute pathnames:

ARJ a -r -je -jf DISTRIB \product*.*

The user need only type "DISTRIB -y" to recreate automatically
the "product" directory on the current drive.

Build an SFX module with relative pathnames for extraction to
relative pathnames:

ARJ a -r -je DISTRIB \product*.*

The user need only type "DISTRIB -y" to recreate automatically
the "product" subdirectory in the current directory. The user
can recreate the "product" subdirectory in another directory by
typing the command "DISTRIB -y directory_name\".

Build an SFX module with relative pathnames for extraction to relative pathnames excluding the base directory:

ARJ a -r -e1 -je DISTRIB \product\   *.*

The user need only type "DISTRIB -y" to recreate automatically the files and subdirectories of the "product" directory in the current directory.

Build an SFXJR module with filenames (no path specs).

ARJ a -e -je1 DISTRIB \product*.*

The user need only type "DISTRIB" to extract automatically the entire contents of "DISTRIB.EXE" to the current directory.

jf: store/use Full specified path

Normally, ARJ will strip all pathnames of drive letter and root symbol. This switch disables this action. When extracting with the "x" command from an archive that was built with this switch, ARJ will normally strip any drive letter and root symbol, unless the "-jf" option is specified again.

The "-jf1" option will strip only the drive spec and NOT the root symbol. You can use either the "-jf" or "-jf1" option during extraction to force use of the root directory.

jg: select backup files

The "-jg" switch allows the user to include the selection of archive files that are marked as backups by the "-jb" option. Normally, backup files will not be processed by any commands except for the "k" and "y" commands.

Examples: ARJ l -jg archive
           ARJ e -jg -q archive name.c
           ARJ d -jg archive *.*

jh: set Huffman buffer size

ARJ has a default static Huffman buffer size of 16,384 bytes. This buffer size is better for compressing executable files.

The buffer size in ARJ 0.15 and earlier was set to 65,500 bytes. That size is better for large text files. You may specify a buffer size from 2,048 to 65,535 bytes.

Example: ARJ a archive *.txt -jh65500

If you specify a Huffman buffer size, ARJ will use that size for all types of files specified by the archive command.

ji: set Index filename

The "-ji" switch is used to create an index file containing the filenames archived or meeting certain criteria. This is especially helpful when using ARJ to do multiple floppy type archives. This file SHOULD NOT be created on the floppy diskette if the floppy diskette is changed during the archival process.

If the index file already exists, ARJ will append data to it.

The index file contains three types of text lines. The first type is the volume name record. It contains the date, time, starting file position, and the archive name. The second type is the filename record. It contains only the filename. The third type only occurs during archival with testing "-jt". It is a line containing "Testing " and the archive name.

This information is also useful for restarting "-v" multiple volume archives. You need the filename and the starting file position.

The "-ji" switch will log the following events:

a, f, m, u - Log actual filenames added to archive and if testing
                    is enabled, the actual filenames that failed testing.
d   - Log archived filenames deleted.
e, x   - Log archived filenames successfully extracted.
                    Extracted files with CRC errors are NOT logged.
j   - Log archived filenames added to archive.
l, v   - Log archived filenames listed.
t   - Log archived filenames that failed testing.
w   - Log archived filenames that contain string matches.

This logging function is especially helpful when testing and searching archives.

The "-hi" option will set ARJ to write more details to the index file.

jk: Keep temp archive on error

When the "-jk" switch has been specified, ARJ will keep the temporary archive during an aborted archive build/update. During a failed build, ARJ will modify the temporary archive to make it usable by removing the broken portion.

jl: display only filespecs

The "-jl" option sets ARJ to display only the filespec of a filename during the progress displays. This will simplify the display output.

jm: set Maximum compression

The "-jm" switch sets the maximum compression mode.   This mode is used with method 1 "-m1" to increase its compression. This may increase compression time significantly.

You can get a 1 to 5 percent improvement in compression with
ARJ -m1 -jm.

The "-jm1" option provides slightly less compression than "-jm"
at a faster speed. This can range from slightly faster to much
faster.

Use of "-jm" with "-m2", "-m3", or "-m4" is NOT SUPPORTED.

jn: set restart Name

The "-jn" switch is used to restart interrupted multiple volume
archives in conjunction with the "-jx" switch. All selected
files are skipped up to but not including the named file.

Example: ARJ a volume -v360 -r -jn\BIN\TREE.COM -jx1230

In the above example, all files scanned up to \BIN\TREE.COM are
skipped. Archiving will start at file position 1230 of file
\BIN\TREE.COM.

IMPORTANT!!! The exact name of the starting file must be
specified according to the wildnames/filespecs specified. This
name is the same as displayed by the Adding filename display and
the same as written to the "-ji" index file. Please note that
\DOS\TREE.COM is not considered the same as DOS\TREE.COM with
this option.

New at ARJ 2.39 is the feature where ARJ will automatically
scan the previously written index file ("-ji") to get the
necessary restart information. You only need append "-jn" to
the previous backup command line. This option will not work
without the index file. ARJ will automatically set the correct
volume name.

Example: ARJ a a:backup c:*.* -r -vvas -jiINDEX.FIL
          ARJ a a:backup c:*.* -r -vvas -jiINDEX.FIL -jn

jo: query when updating an archive file

The "-jo" option has two flavors.

The "-jo" switch is used to query the user when using the ARJ
"a" or "m" commands to add files to an archive. Before ARJ
overwrites an existing internal archive file when using "-jo",
ARJ will query the user with "Update <filename>? ".   Without
this option, ARJ will overwrite the internal archive file
without querying.

jo: extract to unique Output names

The "-jo" switch during extraction allows automated handling of
duplicate filenames.

On extraction with the "-jo" switch where the output file

already exists in the target directory, ARJ will attempt to generate a unique filename by changing the file extension to a 3 digit number from .000 to .999. If ARJ cannot generate a unique name, it will skip extracting the file.

jp: Pause after each screenful

This switch will cause ARJ to pause after listing each screenful of data for the "l", "p", "v", "w" commands. Press the ENTER key to continue the listing. You can also enter "quit" to exit ARJ.

In one special case, "ARJ -? -jp", the use of the -jp switch toggles page pauses off, because by default in help mode, pausing is on.

You can specify the page size with the "-jp" option as in "-jp50". This also turns on the pause mode. If you wish to use this in ARJ_SW, it is suggested that you use "-jp50 -jp-" to set the page size and to turn off the pause mode.

jq: set string parameter

The "-jq" option is used to supply additional parameters to the ARJ w and ARJ b commands. If the parameters contain blanks, then the entire "-jq" option must be enclosed by two double quote marks.

See the "w" and "b" commands for the correct "-jq" syntax.

jr: Recover broken archive files

This switch is used to access headers and files in an archive that has been corrupted either with bad data or missing data. This switch lets ARJ find the next valid header for listing, extraction or testing. ARJ will continue to look for headers until it finds the end of archive marker. If the archive is damaged, ARJ may display a message stating that it encountered the end of file unexpectedly.

This switch also will allow extraction of files with CRC or Bad file data errors. Normally, ARJ will delete such extracted files.

If file header data has been corrupted, ARJ will be unable to recover any file data associated with that header. As of ARJ 2.30, "Bad file data" errors will not abort the recovery process.

Example: ARJ e archive -jr

The "-jr1" version of this switch allows processing of damaged ARJ archives that have an end of archive mark in the middle of the archive. However, the use of this switch will always cause ARJ to display an "unexpected end of file" error message and to return a non-zero errorlevel.

js: Store archives by suffix

This switch is used to set ARJ to store and not compress files
with the following extensions: .ARJ, .ZIP, .LZH, .PAK, .ARC.

The file extensions can be specified as follows:

ARJ a archive -js.zoo.ice.gif

The above command will store files with extensions ending in
.ZOO, .ICE, and .GIF. This overrides the defaults.

You can use the environment variable ARJ_SW to set up your own
defaults as follows:

set arj_sw = -js.arj.zip.lzh -js-

The "-js-" turns off the option by default so that when you
specify the "-js" switch on the command line, ARJ will already
know what extensions you want to store.

jt: Test temporary archive

The "-jt" switch can used to set ARJ to execute an archive
integrity check on an intermediate temporary archive before
overwriting any pre-existing original archive. If any error
occurs, ARJ will not overwrite the original archive. When used
with the "-w" switch option, ARJ will also test the final
archive file as well as the temporary archive before deleting
any input files.

Example: ARJ m archive *.c -jt

The "-jt" switch can be used with extract type commands to set
ARJ to verify the archive before doing any extraction of files.
If the archive fails verification, the extraction is NOT
attempted. This is useful for handling MAIL packets where
archive corruption due to a bad file transfer is a fairly
frequent event.

Example: ARJ e archive -jt

The "-jt1" switch allows an actual file contents comparison in
addition to the normal file CRC calculation check. This option
can also be used with the ARJ t (test) command.

When used with the ARJ t command, ARJ "-jt1" will use the
base_directory option and the filename stored in the archive to
locate the original file.

When used with the ARJ add/move/update type commands, ARJ will
use only the filename stored in the archive to locate the
original file. Therefore, the "-jt1" option does NOT work with
the "-e" option or when the original filename has a drive letter
or root directory in it and you did not specify "-jf".

Examples: ARJ t -jt1 archive dir\
           ARJ a -jt1 archive e:\temp*.* -jf

The "-jt2" switch allows the same features as "-jt1" except that
the file compares are only done for the newly added/updated
files. This avoids the situation where the some of original
input files are missing or have changed. NOTE that a problem
can occur with the "f" and "u" commands when files in the
archive are NEWER than the files being added. ARJ will
considered the file up-to-date and added and will do a file
compare.

Example: ARJ u -jt2 archive dir\

ju: translate UNIX style paths

This switch causes ARJ to translate any subsequently encountered
pathnames to MS-DOS style from UNIX style. This switch also
causes translation of filenames entered as a result of ARJ
prompts such as in comment filenames.

Example: ARJ a archive -ju /soft/*.c

jv: set Verbose display

This switch sets ARJ to display more information during the
"t"est, "l"ist, and "ex"tract commands.

Example: ARJ t archive -jv

The "-jv" switch causes the "v" command to display only the
pathnames to the screen.

The "-jv1" switch causes the "v" command to display the archive
data in manner suitable for sorting on various fields.

The "-jv" switch will set the "p", "s", and "w" commands to
display IBM graphics characters (128 to 255).

jw: set extract output filename

The "-jw" option allows you to specify the name of the
extraction output file. You should only select one file to
extract when using this option.

This is similar but not exactly the same as using the "p"
command with DOS output redirection. Using DOS redirection would
cause all of the output of the extraction to be put into the
output file. Using "-jw" would set ARJ to prompt for
overwrite permission per each file extracted to the output file.

This option may be needed when trying to output binary data to
a printer.

Example: ARJ e archive printer.dat -jwLPT1

jx: start at eXtended position

> This switch is used to continue a file onto a new archive
> manually. This switch is normally for use when a multiple
> volume "a" command has aborted.

> Example: ARJ a arjvol.a01 manual.doc -jx100000

> This example archives manual.doc starting from file byte
> position 100,000 and on.

> In extraction mode, this sets ARJ to extract a file to an output
> file at a specified starting position.

> Example: ARJ e -jx2000000 archive file1

> This example extracts the file "file1" to file1 starting at
> position 2,000,000 or at the end of the file.

> This is similar to using the command "ARJ p archive >> output".
> To duplicate this redirection with ARJ would require the following:

> ARJ e -jx2000K -jwoutput archive

> NOTE that the -jx option is NOT functional when adding a file to
> an archive that already contains one or more files.

jy: suppress queries assuming YES

> This switch is used to suppress individual ARJ user prompts.

> Syntax: ARJ e archive -jy<flags>

> where <flags> is one or more of the following characters: a, c,
> d, k, n, o, s, v. For each flag selected, ARJ will act as if
> you had answered YES to the suppressed question.

> A - skip append query during a multi-volume extraction
> C - skip create directory query
> D - skip delete files query
> K - skip disk space availability query
> N - skip new filename prompt
> O - skip overwriting existing file query
> R - erase all typeahead before prompting
> S - skip scanned enough text query
> V - skip ok to proceed to next volume query
> Y - accept single character Y/N/A/Q inputs

> Example: ARJ x volume -v -jyaco
>   suppress append, create, and overwrite prompts.

> ARJ will allow you to specify individual "jy" options in
> separate switch strings as in "-jyy -jyr". You may inhibit a
> switch as in "-jyr-". As with other switches, the "jy" switches
> toggle as in "-jyr -jyr".

jz: supply file for file comment

The "-jz" switch has been provided to facilitate batch
commenting of one or more files within an ARJ archive. Only one
comment file can be specified. That file will be used to
comment each file specified on the command line.

A comment file containing only a single blank can be used to
erase comments from ARJ archives.

Syntax: ARJ c archive file1 -jzcomment.txt
        ARJ c archive file1 -zheader.cmt -jzfile.cmt

ha: ignore readonly Attribute

The "-ha" switch sets ARJ to reset the attributes of a file to be
overwritten or a file to be deleted. This allows the overwrite or
delete operation to proceed.

A slight performance degradation may result from using this option.

Examples: ARJ e archive -ha
          ARJ m archive -ha dir*.*

hc: execute DOS Command at ARJ start

The "-hc" switch sets ARJ to execute a DOS command at the start
of the execution of ARJ immediately after the command line
switch options have been processed, but before the wildcard
search is started. This can be used to clear the screen to hide
the command line or to provide a pause option to allow swapping
diskettes.

Examples: ARJ a -hcCLS archive -gpassword
          ARJ a -hcPAUSE archive *.*

he: skip test of security Envelope

The "-he" switch sets ARJ to skip the verification step when
accessing an ARJ-SECURED ARJ archive. If an ARJ archive has
a damaged ARJ-SECURITY envelope, you will have to use the "-he"
option to extract the archive.

he1: set error on security Envelopes

The "-he1" switch sets ARJ to abort with an error code of 4 when
processing a possibly ARJ-SECURED archive. This is useful as a
REARJ.CFG option for ARJ. This will prevent REARJ from
converting an ARJ-SECURED archive to the same or another format.

Examples: ARJ l secured.arj -he1

hi: full detail display in Index files

The "-hi" switch when used with the "-ji" switch sets ARJ to
include the file date-time stamp, the original file size, the

compressed file size, the compression ratio, and the filename in the index file.

Example: ARJ a a:backup c:*.* -r -va -jiINDEX -hi

hl: return error for Listfile error

The "-hl" switch sets ARJ to report the "file not found" type of errors when processing the filenames in an ARJ listfile during an "add" type command (a, f, m, u). ARJ will subsequently return a non-zero DOS errorlevel when such an error has been found. Previous versions of ARJ ignored these types of errors.

Example: ARJ a a:backup !listfile -va -hl

hs: disable file Sharing

The "-hs" switch sets ARJ to disable its file sharing feature. This may be necessary for some unusual applications.

hu: allow the Updating of multiple volume archives

The "-hu" switch sets ARJ to allow the updating of multiple volume archives. At this version, by default, ARJ does not allow updating of multiple volume archives because of the possibility of losing data.

Example: ARJ c archive -hu -zcomment.txt

hw: modify search filename display

The "-hw" switch sets the ARJ w command to display the "Searching ..." filenames messages in a scroll saving format. Filenames of files that do not contain string matches will be overwritten on the screen.

The "-hw1" switch sets the ARJ w command to display ONLY the "Searching ..." filenames messages for files that contain string messages.

hx: specify archive file extensions

The "-hx" switch allows the user to specify what the default file extension or extensions that are to be used by ARJ to access archive names that are not specified with file extensions.   ARJ will assume that the first extension specified will be the main default extension.

Examples: ARJ a archive *.* -hx.SDN   assumes default .SDN
                                                          file extension
                   ARJ l archive -hx.SDN.ARJ   looks for archive.SDN and
                                                          if not found, then looks
                                                          for archive.ARJ

ARJ COMMAND OPTIONS:

Some of the following options have variations such as -s as in
-s, -s1, -s2.

The following options work for ALL ARJ commands.

!names.lst
-o
-ob
-od
--
-+
-&
-!
-i
-l
-r   this affects wildcarded archive names, too.
-s
-x
-y
-ja
-jl
-jt
-ju
-jy
-hc
-he
-he1
-hs
-hx

The following options work for all ARJ commands that modify
ARJ archives.

-k
-s
-w
-z
-jb
-je
-jk
-jz
-hu

In addition the following options work for ARJ a, f, m, u commands.

-a
-b
-m
-r
-t
-jh
-ji
-jm

-jn
-js
-hi
-hl

The following options work for ARJ y command.

-jb
-je

The following options work for ALL but the ARJ a, f, m, u commands.

The name of the archive can be a wildspec.
-#
-d
-e
-p
-jg
-jr

The following options work for the ARJ a, f, m, u, e, x
commands.

-$
-c
-f
-g
-n
-u
-jf
-ji
-jx
-hi

The following options work for the ARJ e, x commands.

-d
-jc
-jw

The following options work for the ARJ l, v commands

-n
-jp

The following options have limited use.

-q   - works for all commands except j, l, n, o, t, v, w, y
-v   - works for l, v, w commands
-jc - works for e, x, l, v commands

```
        -jp  - works for l, v, w commands
        -jq  - works for b, w, commands
        -jv  - works for most commands
        -hw  - works for w command


SAMPLE ARJ COMMANDS:

    a: Add files to archive

      ARJ a archive
      ARJ a archive -n
      ARJ a archive -f
      ARJ a archive -jt
      ARJ a archive -jt1
      ARJ a archive -jt2
      ARJ a archive -q
      ARJ a archive -r
      ARJ a archive dir\ -o
      ARJ a archive dir\
      ARJ a archive dir\ *.doc *.exe
      ARJ a archive !names.lst
      ARJ a archive -- -name-.txt
      ARJ a archive name1 name2 name3
      ARJ a a:archive -we:\ -vas c:\ -r -b2
      ARJ a a:archive.001 -we:\ -vvw360 c:\ -r -b1
      ARJ a archive -vw360 c:\ -r -y
      ARJ a archive c:\ *.* -r -jt1 -jf


    b: execute Batch or DOS command

      ARJ b archive name.txt
      ARJ b archive -jwOUT.NAM
      ARJ b archive SHEZ.EXE -jwSHEZ.EXE
      ARJ b archive *.exe -jwTEMP.EXE "-jqTEMP -help"


    c: Comment archive files

      ARJ c archive
      ARJ c archive -z
      ARJ c archive -zcomment.txt
      ARJ c archive -zNUL
      ARJ c archive file1 -jzcomment.txt
      ARJ c archive *.doc -jzNUL


    d: Delete files from archive

      ARJ d archive *.doc
      ARJ d archive *.* -jg
      ARJ d archive *.* -n
      ARJ d archive *.* -y
      ARJ d archive !names.lst
```

e: Extract files from archive

  ARJ e archive *.doc
  ARJ e archive *.doc -d
  ARJ e archive -jd50000
  ARJ e archive -jo
  ARJ e archive -c
  ARJ e archive dir\ *.doc -jt
  ARJ e archive *.doc -y
  ARJ e archive -# 10 15 20-40

f: Freshen files in archive

  ARJ f archive
  ARJ f archive -r
  ARJ f archive dir\ -r
  ARJ f archive dir\ *.doc -r
  ARJ f archive dir\ -r -jt2

g: Garble files in archive

  ARJ g archive -gpassword
  ARJ g archive *.doc -gpassword
  ARJ g archive -g?

i: check Integrity of ARJ.EXE

  ARJ i
  ARJ i c:\bin\arj.exe

j: Join archives to archive

  ARJ j archive name1.arj name2.arj name3.arj
  ARJ j archive *.arj
  ARJ j archive arjsfx.exe
  ARJ j archive *.arj -o911201
  ARJ j archive *.arj -r

k: pacK bacKup files in archive

  ARJ k archive *.*
  ARJ k archive *.* -y
  ARJ k archive *.doc -n

l: List contents of archive

  ARJ l archive
  ARJ l archive *.doc
  ARJ l archive -o911201

```
  ARJ l archive -o911201 -ob911231
  ARJ l archive -n
  ARJ l archive -jg
  ARJ l archive -jp
```

m: Move files to archive

```
  ARJ m archive
  ARJ m archive *.doc
  ARJ m archive dir\ *.doc
  ARJ m archive dir\ *.doc -o
  ARJ m a:archive.001 dir\ -r -vvwas -jt2
```

n: reName files in archive

```
  ARJ n archive
  ARJ n archive *.doc
  ARJ n archive !names.lst
  ARJ n archive -o911201
```

o: Order files in archive

```
  ARJ o archive !names.lst
  ARJ o archive *.bat *.exe *.doc
  ARJ o archive file1 file2 file3
```

p: Print files to standard output

```
  ARJ p archive
  ARJ p archive -jp
  ARJ p archive *.doc
  ARJ p archive -o911201
  ARJ p archive name.txt > PRN
```

r: Remove paths from filenames

```
  ARJ r archive
  ARJ r archive *.doc
  ARJ r archive -o911201 -ob911231
```

s: Sample files to screen with pause

```
  ARJ s archive
  ARJ s archive *.doc -y
  ARJ s *.arj -y -r
```

t: Test integrity of archive

```
  ARJ t archive
```

```
        ARJ t archive *.exe
        ARJ t archive !names.lst
        ARJ t archive -jt1


    u: Update files to archive

      ARJ u archive *.doc
      ARJ u archive *.doc -jo


    v: Verbosely list contents of archive

      ARJ v archive
      ARJ v archive *.doc
      ARJ v archive -jv
      ARJ v archive -jv1
      ARJ v archive -jp
      ARJ v archive -jg


    w: Where are text strings in archive

      ARJ w archive
      ARJ w archive -hw
      ARJ w archive -jp
      ARJ w *.arj -jp
      ARJ w *.arj *.doc
      ARJ w *.arj *.txt -jq+5+string
      ARJ w archive "-jq-3-to be or not"


    x: eXtract files with full pathname

      ARJ x archive *.doc
      ARJ x archive *.doc -d
      ARJ x archive -jd50000
      ARJ x archive -jo
      ARJ x archive -c
      ARJ x archive dir\ *.doc
      ARJ x archive -jf
      ARJ x archive *.doc -jyc


    y: copY archive with new options

      ARJ y archive -je
      ARJ y archive -je1
      ARJ y archive -jb
      ARJ y archive -jb1
      ARJ y archive -jb2
      ARJ y archive *.bat -jb2


ARJ_SECURITY ENVELOPE:
```

The ARJ-SECURITY ENVELOPE feature provides a facility similar to
other archivers. This feature disallows any type of modification,
even commenting, to an ARJ-SECURED archive by ARJ. Moreover, there
are additional internal checks to determine if the ARJ-SECURED
archive has been modified in any way. This EXTRA cost feature is
intended for use by software developers who distribute their
software in archived format and is only available for a special
fee. However, there can be no guarantee that this mechanism cannot
be defeated.

When accessing an ARJ-SECURED archive, ARJ will display a message
indicating that ARJ is verifying the security envelope. If the
envelope is damaged, a message will be displayed indicating so.
If the envelope is intact, then the ARJ-SECURITY signature of the
user locking the archive will be displayed.

If the security envelope has been tampered with or the archive has
suffered data corruption, ARJ will display a message stating that
the security envelope has been damaged. In addition, ARJ will not
abort processing the archive. The ARJ "-he" option and the ARJSFX
"-s" option will skip the envelope verification. The most likely
causes of an invalid envelope are that the file was corrupted in
transmission or that the archive was tampered with.

KNOWN ARJ ISSUES/PROBLEMS:

Under MS-DOS 4.01, ARJ may not extract LARGE (greater than 32MB)
files from multiple volume archives properly. The "dir" reported
size may be incorrect.   A simple "CHKDSK /f" will correct the size.
This problem is due to a BUG in MS-DOS 4.01. Microsoft Corp has
fixes available for several DOS 4.01 bugs including this one.

Due to the inner workings of Turbo C++, ARJ may run out of memory
if your computer is configured with thousands of bytes of
environment variables.

When using a working directory, ARJ does not check for disk space
before overwriting the original archive. Be sure you have enough
space before updating an archive using the "-w" switch.

Because of a bug with extended archive header processing, you
should convert to ARJ 2.10 and above as soon as practical. This
bug is NOT a current problem because no version of ARJ supports the
use of the extended header.

If you have garbled (-g) ARJ archives that were created by ARJ 2.21
and the garbled files were stored (-m0) by ARJ, you may need to
refer to ARJ 2.30 to extract those files without getting a CRC
error.

TSRs that activate via HOT KEYS may be inhibited by ARJ during
user keyboard input. This is a "feature" of the Turbo C++ getc()
function. A partial workaround is to use the ARJ "-jyry" option
to go to single key query mode.

A similar problem occurs with HYPERDISK and staged writes.
HYPERDISK's timer delay appears to be inhibited during ARJ user
keyboard input such as during "Ok to ... volume/diskette?". This
causes an error when you swap to the next diskette. The workaround
is to use the ARJ "-jyry" option to go to single key query mode.

There is a reported problem using ARJ and floppy disk drives when
using the disk cache program SUPER PCKWIK 3.30 with advanced
diskette support (/D+). The system may occasionally hang when ARJ
attempts to read/write the diskette. You may also get CRC or
Bad file data errors. Disabling the SUPER PCKWIK option with /D-
appears to remove this problem. Other programs have similar
problems with this feature of SUPER PCKWIK.

ARJ ERROR MESSAGES:

See the document ERRORS.DOC.

ARJ TECHNICAL SUPPORT:

I have received many useful suggestions from users all over the
world.   Many of those suggestions are in this version or will be
incorporated in later versions of ARJ.

I will try to resolve software problems with ARJ as they are made
known to me. Please notify me of any ARJ problems by mail, email
or via the ARJ support BBSes mentioned below. I will strive to
make ARJ a robust, stable and useful product.

I will try to support unregistered users during their evaluation
period, but I reserve the right to limit support to any
unregistered user if requests become excessive. Registered users
will be eligible to receive technical support by telephone.

****

To ensure a reply when using the postal system, UNREGISTERED users
should enclose a stamped self-addressed envelope with your
correspondence. Foreign UNREGISTERED corresponders should include
currency or postal coupons instead of stamps. Otherwise, your
correspondence may go unanswered. This does not apply to ARJ
business correspondence.

Your financial support is needed for the ARJ archiver and format to
succeed.

****

ARJ AVAILABILITY:

The latest version of ARJ can be obtained from the following
sources:

ARJ SUPPORT BBSes: See ARJ_BBS.DOC

ARJ is available from a number of other BBSes, but I can only vouch for the integrity of the archive if the ARJ###.EXE verifies its ARJ-SECURITY envelope as valid. If no security envelope exists, then the data has been re-archived and there is no assurance of data integrity.

If none of the above sources are suitable, you may order a copy of the latest version of ARJ directly from the author.

Send a check or money order for five dollars (US) to cover the costs of shipping and handling for U.S. delivery. For foreign delivery, send ten dollars (US) to cover shipping and handling. Please specify diskette size (3.5 or 5.25 inch); otherwise, a 3.5 inch diskette will be shipped.   Please allow a few weeks for delivery, longer for foreign deliveries.

Our address is at the end of this document.

SDN EXTENSION FILES

SDN International(sm) is a FidoNet hobby organization which makes available for distribution author-direct shareware files to FidoNet capable bulletin board systems world wide. ARJ has been chosen by SDN sysops' consensus as its official compression utility.

Program files distributed via SDN have a copyright ".SDN" extension. Files distributed by SDN after February 1993 can be decompressed by ARJ. Files dated earlier can be decompressed if the compression utility SDN previously used is on PATH.

SDN files are security sealed with their own exclusive security seal, FSecure, created by Pacesoft. This security may be verified using the FileTest utility available at the SDN Project AuthorLine BBS 203-634-0370 or at most SDN participating BBS sites.

Shareware authors wishing to distribute shareware by release through SDN may contact the same SDN Project AuthorLine BBS.

DISTRIBUTORS:

The following are authorized distributors for ARJ. They provide local registration and technical support for ARJ. Other distributors only provide the evaluation version of ARJ.

In Australia:

Christian Kraus   Work Phone: 61-2-564-2545
Online-Tronics   Fax: 61-2-560-5755
Postal Address: BBS Name: Ontron Australia BBS
P.O. Box 112   Data Phone: 61-2-564-2172
Westgate NSW 2048   (300-14400 V.32BIS)

Sydney, Australia

Real Address:
1st Floor
45-49 Crystal Street
Petersham NSW 2049

In Brazil:

Paulo Cesar Breim   Tel: 889-8366
CANAL VIP BBS   Fax: 889-8365
Av. Bernardino deCampos 48 Cj.21   BBS: 889-7222
Sao Paulo   SP   Brazil   X.25: 0724 111320430
CEP: 04004-050

In Denmark:

Jens Rex   Tel: (+45) 53 61 90 42
Prof. Shareware   Fax: (+45) 53 61 93 91
Benloese Skel 4 G   CompuServe: 100065,1744
DK 4100 Ringsted
Denmark

In Germany:

   C.A.T. Kommunikations-System   Tel: +49-6192-41360
Systemberatung A. Dunkel   Fax: +49-6192-46949
Koenigsberger Strasse 41   Internet: arj@cat.de
D 65830 Kriftel   SubNet: arj@cat.sub.org
Germany   FidoNet: 2:241/6010
                    Mailbox: +49-6192-42054 2400-19200
                        +49-6192-42055 V.32bis
                        +49-6192-42056 V.32 Fido
                        +49-6192-42057 PEP

In the Netherlands:

HaSa Software Applications   Tel: (+31) 50-183233
P.O. Box 1144   Fax: (+31) 50-188117
9701 BC Groningen   BBS: (+31) 50-125697
The Netherlands   (+31) 50-144783

In the United Kingdom:

Alan Stocker   Tel: 0223 208288
Precision Software Publishing   Fax: 0223 208089
3, Valley Court Offices,   BBS: 0223 208094
Lower Road, Croydon, Nr. Royston,
Hertfordshire SG8 0HF   CompuServe: 70007,5562
United Kingdom   100034,2353

In the United States:

ACKNOWLEDGEMENTS:

LHARC is the name of an archiver by Haruyasu Yoshizaki.
PKZIP and ZIP are trademarks of PKWare, Inc.
PAK is the trademark of NoGate Consulting.

I wish to express my gratitude to Haruyasu Yoshizaki (Yoshi) for
developing LHARC and distributing its source code. LHARC gave me
the impetus to start studying data compression. I also wish to
thank Haruhiko Okumura for providing additional ideas.   His AR001
and AR002 program provided the basic design for the early versions
of ARJ.

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I wish to thank those who have contributed significantly to the
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Ken Levitt
Eberhard Mattes
Mike McCombs
Alexander Pruss
Joseph Teller

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support, or provided financial support, THANKS!!! Because of
you, I am able to provide FULL-TIME support to ARJ!

I wish to thank my wife, Susan, and my son, Timothy, for putting
up with this ARJ obsession. Their encouragement and support have
been invaluable.

But my greatest thanks goes to Almighty God for His inspiration
and great salvation. For apart from Him, ARJ could not have been
done. John 15:5

USAGE AND DISTRIBUTION POLICY:

See LICENSE.DOC file for license policy.

BRIEF BIOGRAPHY OF THE AUTHOR OF ARJ:

Robert Jung grew up in Catonsville and Baltimore, Maryland. He
graduated from the University of Maryland in 1970. After a short
stint in the U.S. Army, he taught chemistry for six years. From
teaching he entered the computer programming profession where he
was employed as a programmer analyst, a network analyst, and a
senior software engineer. In late 1990, he developed the ARJ
archive format and program to meet a personal need in archiving.
In February of 1991, he released ARJ 1.00 as a shareware product.
The author currently supports ARJ full-time and resides in
Norwood, Massachusetts with his wife, Susan, and son, Timothy.

FINAL COMMENTS:

I do hope that you find this program as useful as I have. I would
appreciate any suggestions to improve this archiver.

You can reach me at:

Robert Jung at Channel One BBS   (617) 354-8873
Join the mailbox conference with "j mailbox" to send email to me.

Robert Jung at Bay State BBS   (617) 598-6646

Robert Jung at FIDONET address: 1:16/390.7

Robert Jung in the ARJ echo conference available from the Fidonet
echo backbone.

Robert Jung in the RIME/RELAYNET ARJ conference. The national
number of the ARJ conference is 275.

Robert Jung in the GT POWER ARJ echo conference.

ARJ users are encouraged to use the above echoes to submit
questions, problems, and new features requests.

Robert Jung in the COMPRESS (ILINK), LHARC (SMARTNET), or ARCHIVERS
(RIME/RELAYNET) echo conferences.

Internet address: robjung@world.std.com

CompuServe userid: 72077,445

***** LOOK FOR AN UPDATED ADDRESS IN 1994 *****

Robert and Susan Jung

2606 Village Road West
Norwood, Massachusetts 02062
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