

# Component Files

General	
<code>R ← □FAVAIL</code>	Checks the file system availability (returns 1 if available, 0 otherwise)
<code>R ← □FNUMS</code>	Lists the tie numbers of all tied files
<code>R ← □FNAMES</code>	Lists the names of all tied files
<code>R ← □FLIB Y</code>	Lists the names of the component files in directory Y
File operations	
<code>{R} ← X □FCREATE Y</code> <i>Variants can be specified</i>	Creates a new file with name (and, optionally, file size limit in bytes) X and file tie number (and, optionally, address size – 64) Y; a tie number of 0 allocates the next available tie number to the file
<code>{R} ← X □FTIE Y</code>	Exclusively-ties the file that has name X using file tie number* Y
<code>{R} ← X □FSTIE Y</code>	Share-ties the file that has name X using file tie number* Y
<code>{R} ← □FUNTIE Y</code>	Unties all files that have a tie number in vector Y
<code>R ← X □FCOPY Y</code> <i>Variants can be specified</i>	Copies the file that has tie number* Y to the new name X – this can be used to convert small-span files to large-span files without altering component access timestamps
<code>{R} ← X □FERASE Y</code>	Erases the tied file that has name X and file tie number* Y
<code>{R} ← X □FRENAME Y</code>	Renames the exclusively-tied file that has file tie number* Y to have name X
<code>R ← □FHIST Y</code>	Returns the history of the file that has file tie number* Y
<code>R ← □FSIZE Y</code>	Returns information on the number of the first component within the file that has file tie number* Y, the number of the next component to be appended, the current file size and the file size limit
<code>{R} ← {X} □FRESIZE Y</code>	Relocates components within the file that has file tie number* Y to eliminate any redundant space between them and reduces the file size to a maximum size X – if X is not specified then the maximum possible size is allocated to the file
<code>R ← X □FPROPS Y</code>	Reports and sets the properties of the file that has file tie number* Y according to the identifiers specified in X
<code>R ← □FCHK Y</code> <i>Variants can be specified</i>	Checks untied file Y – variants can be specified to indicate the action to take if this validation fails, for example <code>R ← □FCHK 1 1 Y</code> attempts to repair file Y if a problem is found
Component operations	
<code>{R} ← X □FAPPEND Y</code>	Appends array X as a component to the file that has tie number* Y
<code>{R} ← X □FREPLACE Y</code>	Replaces a component in the file identified by file tie number and component number* Y with X
<code>R ← □FREAD Y</code>	Reads the content of a component in the file identified by file tie number and component number* Y
<code>R ← □FRDCI Y</code>	Returns information on the size of the component file that has file tie number* Y, the user number of the user who last updated it and the time since it was last updated in sixtieths of a second since 1 January 1970
<code>{R} ← □FDROP Y</code>	Drops a block of components from the file as identified by Y – this comprises the file tie number* and the number of components to be dropped (a positive number indicates they are to be dropped from the beginning of the file, a negative number indicates they are to be dropped from the end of the file)
Manipulating access to a file	
<code>{R} ← X □FSTAC Y</code>	Sets the access permissions of the file with file tie number* Y according to access matrix X
<code>R ← □FRDAC Y</code>	Returns the access matrix for the file that has file tie number* Y
<code>{R} ← □FHOLD Y</code>	Holds the files that have file tie numbers* Y

\* indicates that Y can, optionally, also include a passnumber

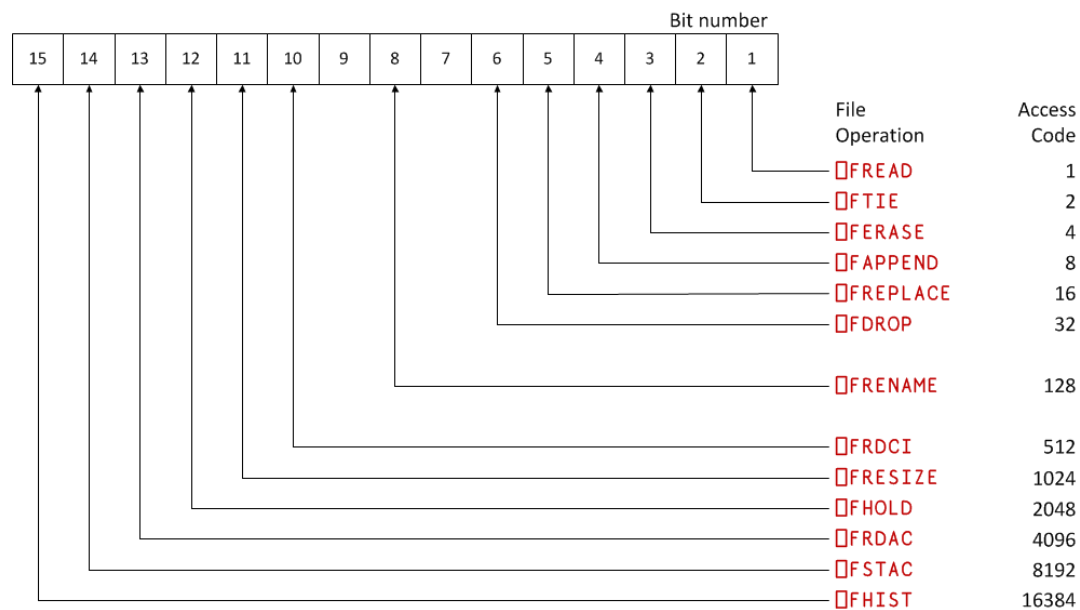
If no file extension is specified with a filename, then an extension of **.dws** is assumed (Microsoft Windows version only).  
See the Dyalog documentation set for full details of these system functions, including variant options

## Access Control

Dyalog's access matrix is an integer matrix with 3 columns and any number of rows.

- column 1 contains user numbers (as defined by the APLNID environment variable)
- column 2 contains an encoding of permitted file operations
- column 3 contains passnumbers

Each row specifies the file operations that can be performed by that row's user number/passnumber combination. The pertinent file operations and their associated access codes are shown in the following integer representation of a Boolean mask (where each bit in the mask indicates whether or not a particular file operation is permitted):



To determine the appropriate access code for a user, sum the access codes for that user's permitted file operations. A value of `-1` (all bits set) permits all operations; this means that an alternative way of determining the appropriate access code for a user is to subtract the access codes of any file operations that are forbidden to that user from `-1`. Note that:

- Any non-zero permission code allows `□FSTIE` and `□FSIZE`
- `□FCREATE`, `□FUNTIE`, `□FLIB`, `□FNAMES` and `□FNUMS` are not subject to access control
- Passnumbers can be used to establish different levels of access for the same user

## Component File Properties (`□FPROPS`)

Identifier	Property	Valid Values	Default
S	File Size (read-only)	32 = small-span component files (maximum file size < 4 GB)	64
		64 = large-span component files	
E	Endianness (read-only)	0 = little-endian	depends on computer architecture
		1 = big-endian	
U	Unicode	0 = characters are written as type 82 arrays	1 for Unicode edition and large-span file, 0 otherwise
		1 = characters can be written as Unicode arrays	
J	Journaling	0 = disable journaling	1 (can be changed using the <code>APL_FCREATE_PROPS_J</code> environment variable)
		1 = enable <i>APL crash proof</i> journaling	
		2 = enable <i>System crash proof</i> journaling; repair needed on recovery	
		3 = enable full <i>System crash proof</i> journaling	
C	Checksum	0 = disable checksum	1 (can be changed using the <code>APL_FCREATE_PROPS_C</code> environment variable)
		1 = enable checksum	