



▸ Interfaces

▸ File Systems

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File Systems

Component Files

Dyalog includes a very high performance component file system that is implemented by a set of system functions `□FCREATE`, `□FTIE`, `□FREAD`, `□FREPLACE` and so forth. These are fully compatible with the equivalent functions in APL*PLUS.

The component file system allows you to write APL arrays to indexed components on a file and to retrieve them afterwards. Full multi-user access controls are provided. You may read and write any APL data types including nested arrays.

You may even read and write an array containing the object representation (`□OR` form) of entire namespaces and GUI objects, making it possible to implement your own object libraries.

The component file system employs a sophisticated indexing technique that delivers unrivalled performance, particularly with respect to component replacement.

When you create a component file using `□FCREATE`, you may specify the *address size* which is either 32 or 64.

A value of 32 (the default) causes the internal component addresses to be represented by 32-bit values which allow a maximum file size of 4GB.

A value of 64 causes the internal component addresses to be represented by 64-bit values which allows file sizes up to operating system limits.

Native Files

Dyalog includes a native file system that permits you to read and write standard files in text and binary format. The system is implemented by a set of system functions `□NCREATE`, `□NTIE`, `□NREAD`, `□NREPLACE` and so forth. These are fully compatible with the equivalent functions in APL*PLUS. The function `□DR` is also provided to enable data type conversion. In addition, the function `□NXLATE` allows you to define your own translation for character data and provides extra flexibility.

Dyalog allows you to access native files whose size is larger than 4GB, up to operating system limits.



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External Variables

External Variables is a unique Dyalog feature implemented by the system function `□XT`. This allows you to associate the name of a variable with the name of a file. Having made this association, assigning a value to the variable causes the data to be written to the file. Similarly, referencing the variable causes data to be read from the file. When you disassociate the variable, the file is simply closed and the data retained.

Large nested arrays are stored so that indexed assignment and references only read and write particular elements of the data. This allows you to handle a large multi-dimensional data structure as a single nested array without the physical memory that would be needed to hold the array entirely in your workspace.

Mapped Files

Dyalog includes a system function `□MAP` that allows you to map a file to an APL array. Mapped files are managed by the Windows paging system and provide very fast and convenient access to uniform data.

Two types of mapped files are supported; APL and raw. An APL mapped file contains the binary representation of a Dyalog APL array, including its header. A file of this type must be created using the supplied utility function `△MPUT`. When you map an APL file, the rank, shape and data type of the array is obtained from the information on the file.

A raw mapped file is an arbitrary collection of bytes. When you map a raw file, you must specify the characteristics of the APL array to be associated with this data. In particular, the data type and its shape.

The type of mapping is determined by the presence (raw) or absence (APL) of the left argument to `□MAP`.

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