
5. ARRAYS

An Interlisp array is a one-dimensional vector of objects. Arrays are generally created by the function **ARRAY**. By contrast, Common Lisp arrays can be multi-dimensional.

Note: Interlisp arrays and Common Lisp arrays are *not* the same types. Interlisp functions only accept Interlisp arrays and vice versa. There are no functions to convert between the two types.

(ARRAY SIZE TYPE INIT ORIG -)

[Function]

Creates and returns a new array that holds *SIZE* objects of type *TYPE*. If *TYPE* is **NIL**, the array can contain any arbitrary Lisp datum. In general, *TYPE* may be any of the various field specifications that are legal in DATATYPE declarations (see Chapter 8): **POINTER**, **FIXP**, **FLOATP**, **(BITS N)**, etc. Medley will, if necessary, choose an “enclosing” type if the given one is not supported; for example, an array of **(BITS 3)** may be represented by an array of **(BITS 8)**.

INIT is the initial value for each element of the new array. If not specified, the array elements will be initialized with 0 (for number arrays) or **NIL** (all other types).

Arrays can have either 0-origin or 1-origin indexing, as specified by the *ORIG* argument; if *ORIG* is not specified, the default is 1.

Arrays of type **FLOATP** are stored unboxed. This increases the space and time efficiency of **FLOATP** arrays. If you want to use boxed floating point numbers, use an array of type **POINTER** instead of **FLOATP**.

(ARRAYP X)

[Function]

Returns *X* if *X* is an array, **NIL** otherwise.

(ELT ARRAY N)

[Function]

Returns the *N*th element of the array *ARRAY*.

Causes the error, **Arg not array**, if *ARRAY* is not an array. Causes the error, **Illegal Arg**, if *N* is out of bounds.

(SETA ARRAY N VAL)

[Function]

Sets the *N*th element of *ARRAY* to *VAL*, and returns *VAL*.

Causes the error, **Arg not array**, if *ARRAY* is not an array. the error, **Illegal Arg**, if *N* is out of bounds. Can cause the error, **Non-numeric arg**, if *ARRAY* is an array whose **ARRAYTYP** is **FIXP** or **FLOATP** and *VAL* is non-numeric.

(ARRAYTYP ARRAY)

[Function]

Returns the type of the elements in *ARRAY*, a value corresponding to the second argument to **ARRAY**.

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If *ARRAY* coerced the array type as described above, **ARRAYTYP** returns the *new* type. For example, (**ARRAYTYP** (*ARRAY* 10 ' (BITS 3))) returns **BYTE**.

(ARRAYSIZE *ARRAY*) [Function]

Returns the size of *ARRAY*. Generates the error, *Arg not array*, if *ARRAY* is not an array.

(ARRAYORIG *ARRAY*) [Function]

Returns the origin of *ARRAY*, which may be 0 or 1. Generates an error, *Arg not array*, if *ARRAY* is not an array.

(COPYARRAY *ARRAY*) [Function]

Returns a new array of the same size and type as *ARRAY*, and with the same contents as *ARRAY*. Generates an error, *Arg not array*, if *ARRAY* is not an array.

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