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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'qsort.3p' command

\$ man qsort.3p

QSORT(3P) POSIX Programmer's Manual QSORT(3P)

PROLOG

This manual page is part of the POSIX Programmer's Manual. The Linux implementation of this interface may differ (consult the corresponding Linux manual page for details of Linux behavior), or the interface may not be implemented on Linux.

NAME

qsort ? sort a table of data

SYNOPSIS

```
#include <stdlib.h>

void qsort(void *base, size_t nel, size_t width,
           int (*compar)(const void *, const void *));
```

DESCRIPTION

The functionality described on this reference page is aligned with the ISO C standard. Any conflict between the requirements described here and the ISO C standard is unintentional. This volume of POSIX.1?2017 defers to the ISO C standard.

The `qsort()` function shall sort an array of `nel` objects, the initial element of which is pointed to by `base`. The size of each object, in bytes, is specified by the `width` argument. If the `nel` argument has the value zero, the comparison function pointed to by `compar` shall not be called and no rearrangement shall take place.

The application shall ensure that the comparison function pointed to by

compar does not alter the contents of the array. The implementation may reorder elements of the array between calls to the comparison function, but shall not alter the contents of any individual element.

When the same objects (consisting of width bytes, irrespective of their current positions in the array) are passed more than once to the comparison function, the results shall be consistent with one another.

That is, they shall define a total ordering on the array.

The contents of the array shall be sorted in ascending order according to a comparison function. The compar argument is a pointer to the comparison function, which is called with two arguments that point to the elements being compared. The application shall ensure that the function returns an integer less than, equal to, or greater than 0, if the first argument is considered respectively less than, equal to, or greater than the second. If two members compare as equal, their order in the sorted array is unspecified.

RETURN VALUE

The qsort() function shall not return a value.

ERRORS

No errors are defined.

The following sections are informative.

EXAMPLES

None.

APPLICATION USAGE

The comparison function need not compare every byte, so arbitrary data may be contained in the elements in addition to the values being compared.

RATIONALE

The requirement that each argument (hereafter referred to as p) to the comparison function is a pointer to elements of the array implies that for every call, for each argument separately, all of the following expressions are non-zero:

$((\text{char } *)p - (\text{char } *)\text{base}) \% \text{width} == 0$

$(\text{char } *)p \geq (\text{char } *)\text{base}$

(char *)p < (char *)base + nel * width

FUTURE DIRECTIONS

None.

SEE ALSO

alphasort()

The Base Definitions volume of POSIX.1-2017, <stdlib.h>

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