

NAME

backtrace - fill in the backtrace of the currently executing thread

LIBRARY

Backtrace Information Library (libexecinfo, -lexecinfo)

SYNOPSIS

#include <execinfo.h>

size_t

backtrace(*void **addrlist, size_t len*);

*char ***

backtrace_symbols(*void * const *addrlist, size_t len*);

int

backtrace_symbols_fd(*void * const *addrlist, size_t len, int fd*);

*char ***

backtrace_symbols_fmt(*void * const *addrlist, size_t len, const char *fmt*);

int

backtrace_symbols_fd_fmt(*void * const *addrlist, size_t len, int fd, const char *fmt*);

DESCRIPTION

The **backtrace()** function places into the array pointed by *addrlist* the array of the values of the program counter for each frame called up to *len* frames. The number of frames found (which can be fewer than *len*) is returned.

The **backtrace_symbols_fmt()** function takes an array of previously filled addresses from **backtrace()** in *addrlist* of *len* elements, and uses *fmt* to format them. The formatting characters available are:

a The numeric address of each element as would be printed using %p.

n

The name of the nearest function symbol (smaller than the address element) as determined by **dladdr(3)** if the symbol was dynamic, or looked up in the executable if static and the /proc filesystem is available to determine the executable path.

d

The difference of the symbol address and the address element printed using 0x%tx.

D

The difference of the symbol address and the address element printed using +0x%tx if non-zero, or nothing if zero.

f The filename of the symbol as determined by dladdr(3).

The array of formatted strings is returned as a contiguous memory address which can be freed by a single free(3).

The **backtrace_symbols()** function is equivalent of calling **backtrace_symbols_fmt()** with a format argument of %a <%n%D> at %f

The **backtrace_symbols_fd()** and **backtrace_symbols_fd_fmt()** are similar to the non _fd named functions, only instead of returning an array or strings, they print a new-line separated array of strings in fd, and return 0 on success and -1 on failure.

RETURN VALUES

The **backtrace()** function returns the number of elements that were filled in the backtrace. The **backtrace_symbols()** and **backtrace_symbols_fmt()** return a string array on success, and NULL on failure, setting *errno*. Diagnostic output may also be produced by the ELF symbol lookup functions.

SEE ALSO

dladdr(3), elf(3)

HISTORY

The **backtrace()** library of functions first appeared in NetBSD 7.0 and FreeBSD 10.0.

BUGS

1. Errors should not be printed but communicated to the caller differently.
2. Because these functions use elf(3) this is a separate library instead of being part of libc/libutil so that no library dependencies are introduced.
3. The Linux versions of the functions (there are no _fmt variants) use *int* instead of *size_t* arguments.