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

$ man alloca.3

ALLOCA(3) Linux Programmer's Manual ALLOCA(3)

NAME

alloca - allocate memory that is automatically freed

SYNOPSIS

#include <alloca.h>

void *alloca(size_t size);

DESCRIPTION

The alloca() function allocates size bytes of space in the stack frame of the caller. This temporary space is automatically freed when the function that called alloca() returns to its caller.

RETURN VALUE

The alloca() function returns a pointer to the beginning of the allo? cated space. If the allocation causes stack overflow, program behavior is undefined.

ATTRIBUTES

For an explanation of the terms used in this section, see at? tributes(7).

??????????????????????????????????????

?Interface ? Attribute ? Value ?

??????????????????????????????????????

?alloca() ? Thread safety ? MT-Safe ?

??????????????????????????????????????

CONFORMING TO

This function is not in POSIX.1.

There is evidence that the alloca() function appeared in 32V, PWB, PWB.2, 3BSD, and 4BSD. There is a man page for it in 4.3BSD. Linux uses the GNU version.

NOTES

The alloca() function is machine- and compiler-dependent. For certain applications, its use can improve efficiency compared to the use of malloc(3) plus free(3). In certain cases, it can also simplify memory deallocation in applications that use longjmp(3) or siglongjmp(3). Otherwise, its use is discouraged.

Because the space allocated by alloca() is allocated within the stack frame, that space is automatically freed if the function return is jumped over by a call to longjmp(3) or siglongjmp(3).

The space allocated by alloca() is not automatically deallocated if the pointer that refers to it simply goes out of scope.

Do not attempt to free(3) space allocated by alloca()!

Notes on the GNU version

Normally, gcc(1) translates calls to alloca() with inlined code. This is not done when either the -ansi, -std=c89, -std=c99, or the -std=c11 option is given and the header <alloca.h> is not included. Otherwise, (without an -ansi or -std=c* option) the glibc version of <stdlib.h> includes <alloca.h> and that contains the lines:

```
#ifdef __GNUC__
#define alloca(size)   __builtin_alloca (size)
#endif
```

with messy consequences if one has a private version of this function.

The fact that the code is inlined means that it is impossible to take the address of this function, or to change its behavior by linking with a different library.

The inlined code often consists of a single instruction adjusting the stack pointer, and does not check for stack overflow. Thus, there is no NULL error return.

BUGS

There is no error indication if the stack frame cannot be extended. (However, after a failed allocation, the program is likely to receive a SIGSEGV signal if it attempts to access the unallocated space.)

On many systems alloca() cannot be used inside the list of arguments of a function call, because the stack space reserved by alloca() would appear on the stack in the middle of the space for the function arguments.

SEE ALSO

brk(2), longjmp(3), malloc(3)

COLOPHON

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