

NAME

alloca – allocate memory that is automatically freed

LIBRARY

Standard C library (*libc*, *-lc*)

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 allocated space. If the allocation causes stack overflow, program behavior is undefined.

ATTRIBUTES

For an explanation of the terms used in this section, see **attributes(7)**.

Interface	Attribute	Value
alloca()	Thread safety	MT-Safe

STANDARDS

None.

HISTORY

PWB, 32V.

NOTES

The **alloca()** function is machine- and compiler-dependent. Because it allocates from the stack, it's faster than **malloc(3)** and **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; it is automatically deallocated when the caller function returns.

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

By necessity, **alloca()** is a compiler built-in, also known as **__builtin_alloca()**. By default, modern compilers automatically translate all uses of **alloca()** into the built-in, but this is forbidden if standards conformance is requested (*-ansi*, *-std=c**), in which case *<alloca.h>* is required, lest a symbol dependency be emitted.

The fact that **alloca()** is a built-in means it is impossible to take its address or to change its behavior by linking with a different library.

Variable length arrays (VLAs) are part of the C99 standard, optional since C11, and can be used for a similar purpose. However, they do not port to standard C++, and, being variables, live in their block scope and don't have an allocator-like interface, making them unfit for implementing functionality like **strdupa(3)**.

BUGS

alloca() does not query the system for available stack memory, and does not fall back to using heap if stack storage is unavailable. It therefore cannot indicate an error if the allocation fails. If the allocation fails, the program is likely to receive a **SIGSEGV** signal.

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)**