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

$ man __free_hook.3

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

NAME

__malloc_hook, __malloc_initialize_hook, __memalign_hook, __free_hook,

__realloc_hook, __after_morecore_hook - malloc debugging variables

SYNOPSIS

```
#include <malloc.h>

void *(*__malloc_hook)(size_t size, const void *caller);

void *(*__realloc_hook)(void *ptr, size_t size, const void *caller);

void *(*__memalign_hook)(size_t alignment, size_t size,
                         const void *caller);

void (*__free_hook)(void *ptr, const void *caller);

void (*__malloc_initialize_hook)(void);

void (*__after_morecore_hook)(void);
```

DESCRIPTION

The GNU C library lets you modify the behavior of malloc(3), real?

loc(3), and free(3) by specifying appropriate hook functions. You can

use these hooks to help you debug programs that use dynamic memory al?

location, for example.

The variable __malloc_initialize_hook points at a function that is

called once when the malloc implementation is initialized. This is a

weak variable, so it can be overridden in the application with a defi?

nition like the following:

```
void (*__malloc_initialize_hook)(void) = my_init_hook;
```

Now the function my_init_hook() can do the initialization of all hooks.

The four functions pointed to by __malloc_hook, __realloc_hook, __mema?

lign_hook, __free_hook have a prototype like the functions malloc(3),

realloc(3), memalign(3), free(3), respectively, except that they have a

final argument caller that gives the address of the caller of mal?

loc(3), etc.

The variable __after_morecore_hook points at a function that is called

each time after sbrk(2) was asked for more memory.

CONFORMING TO

These functions are GNU extensions.

NOTES

The use of these hook functions is not safe in multithreaded programs,

and they are now deprecated. From glibc 2.24 onwards, the __mal?

loc_initialize_hook variable has been removed from the API. Program?

mers should instead preempt calls to the relevant functions by defining

and exporting functions such as "malloc" and "free".

EXAMPLES

Here is a short example of how to use these variables.

```
#include <stdio.h>
#include <malloc.h>
/* Prototypes for our hooks.  */
static void my_init_hook(void);
static void *my_malloc_hook(size_t, const void *);
/* Variables to save original hooks. */
static void *(*old_malloc_hook)(size_t, const void *);
/* Override initializing hook from the C library. */
void (*__malloc_initialize_hook) (void) = my_init_hook;
static void
my_init_hook(void)
{
   old_malloc_hook = __malloc_hook;
   __malloc_hook = my_malloc_hook;
}
```

```
static void *
my_malloc_hook(size_t size, const void *caller)
{
    void *result;
    /* Restore all old hooks */
    __malloc_hook = old_malloc_hook;
    /* Call recursively */
    result = malloc(size);
    /* Save underlying hooks */
    old_malloc_hook = __malloc_hook;
    /* printf() might call malloc(), so protect it too. */
    printf("malloc(%zu) called from %p returns %p\n",
            size, caller, result);
    /* Restore our own hooks */
    __malloc_hook = my_malloc_hook;
    return result;
}
```

SEE ALSO

mallinfo(3), malloc(3), mcheck(3), mtrace(3)

COLOPHON

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