

NAME

dlinfo - information about dynamically loaded object

LIBRARY

Standard C Library (libc, -lc)

SYNOPSIS

```
#include <link.h>
#include <dlfcn.h>
```

int

```
dlinfo(void * restrict handle, int request, void * restrict p);
```

DESCRIPTION

The **dlinfo()** function provides information about dynamically loaded object. The action taken by **dlinfo()** and exact meaning and type of *p* argument depend on value of the *request* argument provided by caller.

The *handle* argument is either the value returned from the `dlopen(3)` function call or special handle `RTLD_SELF`. If *handle* is the value returned from `dlopen(3)`, the information returned by the **dlinfo()** function pertains to the specified object. If *handle* is the special handle `RTLD_SELF`, the information returned pertains to the caller itself.

Possible values for the *request* argument are:

RTLD_DI_LINKMAP

Retrieve the *Link_map* (*struct link_map*) structure pointer for the specified *handle*. On successful return, the *p* argument is filled with the pointer to the *Link_map* structure (*Link_map **p*) describing a shared object specified by the *handle* argument. The *Link_map* structures are maintained as a doubly linked list by `ld.so(1)`, in the same order as `dlopen(3)` and `dlclose(3)` are called. See *EXAMPLES*, example 1.

The *Link_map* structure is defined in *<link.h>* and has the following members:

```
caddr_t    l_base; /* Base Address of library */
const char *l_name; /* Absolute Path to Library */
const void *l_ld; /* Pointer to .dynamic in memory */
struct link_map *l_next, /* linked list of mapped libs */
              *l_prev;
caddr_t    l_addr; /* Load Offset of library */
```

```
const char    *l_refname; /* Object this one filters for */
```

l_base The base address of the object loaded into memory.

l_name

The full name of the loaded shared object.

l_ld The address of the dynamic linking information segment (PT_DYNAMIC) loaded into memory.

l_next The next *Link_map* structure on the link-map list.

l_prev The previous *Link_map* structure on the link-map list.

l_addr The load offset of the object, that is, the difference between the actual load address and the base virtual address the object was linked at.

l_refname

A name of the object this object filters for, if any. If there are more than one filtee, a name from the first DT_FILTER dynamic entry is supplied.

RTLD_DI_SERINFO

Retrieve the library search paths associated with the given *handle* argument. The *p* argument should point to *Dl_serinfo* structure buffer (*Dl_serinfo *p*). The *Dl_serinfo* structure must be initialized first with the RTLD_DI_SERINFOSIZE request.

The returned *Dl_serinfo* structure contains *dls_cnt* *Dl_serpath* entries. Each entry's *dlp_name* field points to the search path. The corresponding *dlp_info* field contains one of more flags indicating the origin of the path (see the LA_SER_* flags defined in the *<link.h>* header file). See *EXAMPLES*, example 2, for a usage example.

RTLD_DI_SERINFOSIZE

Initialize a *Dl_serinfo* structure for use in a RTLD_DI_SERINFO request. Both the *dls_cnt* and *dls_size* fields are returned to indicate the number of search paths applicable to the handle, and the total size of a *Dl_serinfo* buffer required to hold *dls_cnt* *Dl_serpath* entries and the associated search path strings. See *EXAMPLES*, example 2, for a usage example.

RTLD_DI_ORIGIN

Retrieve the origin of the dynamic object associated with the handle. On successful return, *p* argument is filled with the *char* pointer (*char *p*).

RETURN VALUES

The **dlinfo()** function returns 0 on success, or -1 if an error occurred. Whenever an error has been detected, a message detailing it can be retrieved via a call to **dLError(3)**.

EXAMPLES

Example 1: Using **dlinfo()** to retrieve *Link_map* structure.

The following example shows how dynamic library can detect the list of shared libraries loaded after caller's one. For simplicity, error checking has been omitted.

```
Link_map *map;

dlinfo(RTLD_SELF, RTLD_DI_LINKMAP, &map);

while (map != NULL) {
    printf("%p: %s\n", map->l_addr, map->l_name);
    map = map->l_next;
}
```

Example 2: Using **dlinfo()** to retrieve the library search paths.

The following example shows how a dynamic object can inspect the library search paths that would be used to locate a simple filename with **dlopen(3)**. For simplicity, error checking has been omitted.

```
DI_serinfo      _info, *info = &_info;
DI_serpath      *path;
unsigned int     cnt;

/* determine search path count and required buffer size */
dlinfo(RTLD_SELF, RTLD_DI_SERINFO, (void *)info);

/* allocate new buffer and initialize */
info = malloc(_info.dls_size);
info->dls_size = _info.dls_size;
info->dls_cnt = _info.dls_cnt;

/* obtain search path information */
dlinfo(RTLD_SELF, RTLD_DI_SERINFO, (void *)info);

path = &info->dls_serpath[0];
```

```
for (cnt = 1; cnt <= info->dls_cnt; cnt++, path++) {  
    (void) printf("%2d: %s\n", cnt, path->dls_name);  
}
```

SEE ALSO

rtld(1), dladdr(3), dlopen(3), dlsym(3)

HISTORY

The **dlinfo()** function first appeared in the Solaris operating system. In FreeBSD, it first appeared in FreeBSD 4.8.

AUTHORS

The FreeBSD implementation of the **dlinfo()** function was originally written by Alexey Zelkin <*phantom@FreeBSD.org*> and later extended and improved by Alexander Kabaev <*kan@FreeBSD.org*>.

The manual page for this function was written by Alexey Zelkin <*phantom@FreeBSD.org*>.