libheap Overview

PlayStation®Vita Programmer Tool Runtime Library Release 3.50

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1 Library Overview

Overview

libheap is a library for managing the memory allocated in advance using the memory block API of the kernel in even smaller units with the `mspace` function of libc.

libheap is useful when you want to perform `malloc()`/`free()`-like memory management. It can also be used when you want to allocate multiple independent heaps. The `mspace` function of libc manages the memory block specified when the `mspace_create()` function was called in advance, but libheap can automatically extend the block using the memory block API of the kernel if the heap memory size is insufficient.

Files

The following files are required to use libheap.

File	Description
libheap.h	Header file
libSceHeap.a	Static link library file
libSceHeap_stub.a	Stub library file
libSceHeap_stub_weak.a	weak import stub library file
libheap.suprx	PRX module file

2 Using the Library

Basic Usage Procedure

(1) Create heap memory

First, create a heap memory.

```
void *pHeap;

pHeap = sceHeapCreateHeap(“heap1”, 1048576, SCE_HEAP_AUTO_EXTEND, NULL);
```

A heap memory named "heap1" is created here with an initial size of 1 MiB and heap automatic extension mode in effect. libheap uses the specified name and initial size to allocate memory with a memory block. SCE_KERNEL_MEMBLOCK_TYPE_USER_RW type Memory is used.

(2) Allocate memory from the heap

To allocate memory from the heap that was created, call the sceHeapAllocHeapMemory() function, and specify the heap that was returned by sceHeapCreateHeap() as an argument.

```
void *buf;

buf = sceHeapAllocHeapMemory(pHeap, 1024);
```

In this example, 1024 bytes of memory are allocated from the heap. When the heap is created with the SCE_HEAP_AUTO_EXTEND flag, an attempt will be made to extend the heap if the remaining heap size is insufficient.

(3) Return memory to the heap

Call sceHeapFreeHeapMemory() to return the memory to the heap that was previously allocated with the sceHeapAllocHeapMemory() function. When memory is returned to the heap, it must be returned to the same heap from which it was originally allocated.

```
sceHeapFreeHeapMemory(pHeap, buf);
```

If a heap allocated from a heap extended area is returned, whether the extended heap can be returned to the memory manager of the kernel is judged. If the heap can be returned, it is returned to the kernel as the need arises.

(4) Delete heap memory

A heap that was created with the sceHeapCreateHeap() function can be deleted by calling sceHeapDeleteHeap().

```
sceHeapDeleteHeap(pHeap);
```

When a heap is deleted, the memory that was being used by the heap is returned to the kernel's memory manager so that it is available for other uses.