NAME

bsearch – binary search of a sorted array

SYNOPSIS

#include <stdlib.h>

void *bsearch(const void *__key__, const void *__base__,
        size_t __nmemb__**, size_t** __size__**,**
        int (*__compar__)(const void *, const void *));

DESCRIPTION

The **bsearch**() function searches an array of _nmemb_ objects, the initial member of which is pointed to by _base_, for a member that matches the object pointed to by _key_. The size of each member of the array is specified by _size_.

The contents of the array should be in ascending sorted order according to the comparison function referenced by _compar_. The _compar_ routine is expected to have two arguments which point to the _key_ object and to an array member, in that order, and should return an integer less than, equal to, or greater than zero if the _key_ object is found, respectively, to be less than, to match, or be greater than the array member.

RETURN VALUE

The **bsearch**() function returns a pointer to a matching member of the array, or NULL if no match is found. If there are multiple elements that match the key, the element returned is unspecified.

ATTRIBUTES

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

Interface	Attribute	Value
bsearch()	Thread safety	MT-Safe

CONFORMING TO

POSIX.1-2001, POSIX.1-2008, C89, C99, SVr4, 4.3BSD.

EXAMPLE

The example below first sorts an array of structures using **qsort**(3), then retrieves desired elements using **bsearch**().

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

struct mi {
    int nr;
    char *name;
} months[] = {
    { 1, "jan" }, { 2, "feb" }, { 3, "mar" }, { 4, "apr" },
    { 5, "may" }, { 6, "jun" }, { 7, "jul" }, { 8, "aug" },
    { 9, "sep" }, {10, "oct" }, {11, "nov" }, {12, "dec" }
};

#define nr_of_months (sizeof(months)/sizeof(months[0]))

static int
compmi(const void *m1, const void *m2)
{
    struct mi *mi1 = (struct mi *) m1;
    struct mi *mi2 = (struct mi *) m2;
    return strcmp(mi1->name, mi2->name);
}
```

```
int
main(int argc, char **argv)
{
    int i;

    qsort(months, nr_of_months, sizeof(struct mi), compmi);
    for (i = 1; i < argc; i++) {
        struct mi key, *res;
        key.name = argv[i];
        res = bsearch(&key, months, nr_of_months,
                      sizeof(struct mi), compmi);
        if (res == NULL)
            printf("'%s': unknown month\n", argv[i]);
        else
            printf("%s: month #%d\n", res->name, res->nr);
    }
    exit(EXIT_SUCCESS);
}
```

SEE ALSO

hsearch(3), **lsearch**(3), **qsort**(3), **tsearch**(3)

COLOPHON

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