

bsearch(3) — Linux manual page

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NAMEtop

bsearch - binary search of a sorted array

LIBRARYtop

Standard C library (libc, -lc)

SYNOPSIStop

```
#include <stdlib.h>

void *bsearch(const void key[.size], const void base[.size * .nmemb],
              size_t nmemb, size_t size,
              int (*compar)(const void [ .size], const void [ .size]));
```

DESCRIPTIONtop

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 VALUETop

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.

ATTRIBUTEStop

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

Interface	Attribute	Value		
bsearch()	Thread safety	MT-Safe		

STANDARDStop

C11, POSIX.1-2008.

HISTORYtop

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

EXAMPLEStop

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>

#define ARRAY_SIZE(arr) (sizeof((arr)) / sizeof((arr)[0]))

struct mi {
    int      nr;
    const char *name;
};

static struct mi 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" }
};

static int
compmi(const void *m1, const void *m2)
{
    const struct mi *mil = m1;
    const struct mi *mi2 = m2;

    return strcmp(mil->name, mi2->name);
}

int
main(int argc, char *argv[])
{
    qsort(months, ARRAY_SIZE(months), sizeof(months[0]), compmi);
    for (size_t i = 1; i < argc; i++) {
        struct mi key;
        struct mi *res;

        key.name = argv[i];
        res = bsearch(&key, months, ARRAY_SIZE(months),
                      sizeof(months[0]), 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 [top](#)

[hsearch\(3\)](#), [lsearch\(3\)](#), [qsort\(3\)](#), [tsearch\(3\)](#)

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