

kadai13

1X22B138 131

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131

source131.c

```
#include <stdio.h>
#include "LibPrg131.h"

#define cA 200
const int NOTFOUND = -1;

int main(void){
    int a[cA] = {0, 2, 3, 4, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38};
    int nA = 20; //要素数
    int key; //検索キー
    int p; //探索結果

    aOut(a, 0, nA);
    printf("key>");
    scanf("%d", &key);
    p = aBinarySearch(a, 0, nA, key);
    if(p==NOTFOUND){
        printf("%d: not found\n", key);
    }else{
        printf("%d: found at %d\n", key, p);
    }

    return 0;
}
```

LibPrg131.c

```
#include <stdio.h>
#include "LibPrg131.h"

int aBinarySearch(int t[], int left, int right, int key){
    const int NOTFOUND = -1;
    int z;
    int c; //中点

    z=NOTFOUND;
    while(left<right){
        c=left+(right-left)/2;
```

```
    if(key<t[c]){
        right=c;
    }else if(key>t[c]){
        left=c+1;
    }else{
        z=c;
        break;
    }
}

return z;
}

void aOut(int t[],int left,int right){
    int i;

    printf("[");
    for(i=left;i<right;++i){
        if(i != left){
            printf(",");
        }
        printf("%d",t[i]);
    }
    printf("]\n");
}
```

LibPrg131.h

```
int aBinarySearch(int t[],int left,int right,int key);
void aOut(int t[],int left,int right);
```

□□

```
masuda@DESKTOP-JOV4TPA:~/work/C_intermediate/src/_13$ ./program131.exe
[0, 2, 3, 4, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38]
key>10
10: found at 5
masuda@DESKTOP-JOV4TPA:~/work/C_intermediate/src/_13$ ./program131.exe
[0, 2, 3, 4, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38]
key>21
21: not found
```