

04|

O

O(1) O(logn) O(n) O(nlogn)

average case time complexity

best case time complexity
amortized time complexity

worst case time complexity

```
// n      array
int find(int[] array, int n, int x) {
    int i = 0;
    int pos = -1;
    for (; i < n; ++i) {
        if (array[i] == x) pos = i;
    }
    return pos;
}
```

O(n) n

array x

-1

```
// n      array
int find(int[] array, int n, int x) {
    int i = 0;
    int pos = -1;
    for (; i < n; ++i) {
        if (array[i] == x) {
            pos = i;
            break;
        }
    }
    return pos;
}
```

O(n)

O(1) x x

x
O(n) n-1

\$(p

x

x

n+1

x

0 n-1

n+1

O

O(n)

n+1

x

1/2
1/(2n)

0 n-1 n

1/n

0 n-1

\$(p

$(3n+1)/4$

O

$O(n)$

```
// array          n
//          array.length          n
int[] array = new int[n];
int count = 0;

void insert(int val) {
    if (count == array.length) {
        int sum = 0;
        for (int i = 0; i < array.length; ++i) {
            sum = sum + array[i];
        }
        array[0] = sum;
        count = 1;
    }

    array[count] = val;
    ++count;
}
```

count == array.lengthfor

sum

count

O(n)

O(1)

O(1)

n

O(n)

n
n+1

O(1)
1/(n+1)

“ ”

insert()

find()

find()
find()

O(1) insert()

O(1)

O(n) insert()

O(n)

insert()
n-1 O(1)

O(1)

O(n)

O(n)
O(1)

n-1 O(1)

n-1

add()

```
//          10      array      len      i
int array[] = new int[10];
int len = 10;
int i = 0;

//
void add(int element) {
    if (i >= len) { //
        //          2
        int new_array[] = new int[len*2];
        //          array      copy      new_array
        for (int j = 0; j < len; ++j) {
            new_array[j] = array[j];
        }
        // new_array      array      array      2      len
        array = new_array;
        len = 2 * len;
    }
    //      element      i      i
    array[i] = element;
    ++i;
}
```

\$(p

- Alvin 2018-09-28 01:56:09

O(1) O(n), O(1)

:

0

[742]

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i < len , i = 0,1,2,...,n-1 for n O(1);
i >= len , i = n for copy 1 O(n);
:
(best case time complexity) O(1);
(worst case time complexity) O(n);
(average case time complexity),
: (1+1+...+1+n)/(n+1) = 2n/(n+1) : 1+1+...+1 n 1 , O(1);
(): 1*(1/n+1)+1*(1/n+1)+...+1*(1/n+1)+n*(1/(n+1))=1 O(1);
(): n O(1) n+1 O(n) n
O(1) [144]

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4

- 1.
- 2.
- 3.
- 4.

4

- 1.
- 2.

4

- 1.

2.

1

2

[124]

- 2018-09-28 16:10:14
O(1), O(n), O(1).

add insert

: O(1) O(n) O(1)
O(n) O(1) [101]

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- Stalary 2018-09-28 00:40:39
[54]

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- 2018-09-27 18:21:37
insert [36]

2018-09-28 00:28:10
count=1 count 1

- Silence 2018-09-28 01:18:38
1/2n 1/2n 2* 1/2n +3* 1/2n +.....n* 1/2n +n* 1/2
[28]

- jon 2018-10-01 06:08:34

1. O(1)
- 2.

$\$(p$

1	insert	n ,
2	insert	$2n$,
3	insert	$2^2 * n$
k	insert	$2^{(k-1)} * n$

 $O(n)$

3.

2

 $0 \sim \text{len}-1, \text{len} \sim ($ $2\text{len}-1), \dots$
$$\begin{array}{llll} \text{len}+1 & 0\sim\text{len}-1 & O(\text{len}) & p=1/\text{len}+1 \\ & 1*p+2*p+ & +\text{len}*p+\text{len}*p=O(1); & \end{array}$$

4. $O(1)$

$O(\text{len})$ len $O(1)$ $O(\text{len})$ len $O(1)$ [25]

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- 2018-09-29 09:38:13

$$1+2+3+...+n+n \quad n+1 = n(n+3)/2(n+1) \quad [17]$$

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$$\begin{array}{ccccccc} x & & x & & 1 & & 2 & & n \\ & & n & & n+1 & & & & \end{array}$$

- leo 2018-09-29 03:13:56

<https://share.weiyun.com/5D2VFqS> [14]

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