

Algorithm

Task 1 Insertion:

Initial Data:

```
size: curSize = 7;  
value to insert: n = 50;  
position: pos = 4;  
array: arr;  
counter: ctr = 1;
```

Steps:

[1st step: Initialize an array]:

1. malloc an integer array to sizeof "curSize"
2. while ctr < curSize do step 3, 4
3. Set an array at index of ctr-1 to ctr*11 ==> arr[ctr-1] =
ctr * 11
4. Increase the value of ctr by 1

```
// Current array = {11, 22, 33, 44, 55, 66, 77}
```

[2nd step: Resize an array]:

1. Increase the value of curSize by 1 and set value of "ctr" to the value of "curSize" - 1
2. realloc the array to the size of "curSize"

[3rd step: Shift the value of the array]

1. Shift the array start from the last element of the array

```
while ctr > pos do [Action]
[Action]:
    At ctr == 7
        set array at the 7th index to the value of the array
of the 6th index ==> arr[7] = arr[7-1]
        // The array should be {11, 22, 33, 44, 55, 66, 77, 77}
    At ctr == 6
        set array at the 6th index to the value of the array
of the 5th index ==> arr[6] = arr[6-1]
        // The array should be {11, 22, 33, 44, 55, 66, 66, 77}
    At ctr == 5
        set array at the 5th index to the value of the array
of the 4th index ==> arr[5] = arr[5-1]
        // The array should be {11, 22, 33, 44, 55, 55, 66, 77}
    Decrease the value of "ctr" by 1

[4th step: Set the value of the array at the position we want.]
    1. Set the value of the array at the "pos" index to the
value of "n" ==> arr[pos] = n

    // The array should be = {11, 22, 33, 44, 50, 55, 66, 77} :)
```

Task 2 Deletion:

****Suppose this action executed after the insertion****

Initial Data:

```
size: curSize = 8;  
position: pos = 6;  
array: arr;  
counter: ctr = 1;
```

Steps:

[1st step: Shift the value of the array to the left]

1. Shift the array start from the "pos" index to the last element of the array
2. set the value of "ctr" to the value of "pos" ==> ctr = pos

```
// Current array = {11, 22, 33, 44, 50, 55, 66, 77}
```

```
while ctr < curSize - 1 do [Action]
```

```
[Action]:
```

1. At ctr == pos
set array at the "pos" index to the value of the array of the "pos" + 1 th index ==> arr[6] = arr[7+1]
// The array should be {11, 22, 33, 44, 50, 55, 77, 77}
2. Increase the value of "ctr" by 1

[2nd step: Resize an array]:

1. Decrease the value of curSize by 1
2. realloc the array to the size of "curSize"

```
// The final array should be = {11, 22, 33, 44, 50, 55, 77} :)
```