CSE-19
ID: 0692220005101009

1. Insert an item into an index.

Sample input: Enter number of elements: 5 Enter the index: 3 Enter the value to insert: 15 Enter Array: 3 28 5 11 17	Output: Array is: A[1] =3 A[2] =28 **A[3] =15** A[4] =5 A[5] =11 A[6] =17

```
#include<stdio.h>
void main(){
int i, num,pos,size;
printf("Enter number of elements :");
   scanf("%d", &size);
   int array[size+1];
   for(i=1; i<=size; i++)
{printf("Enter the %d element:\n",i);
   scanf("%d",&array[i]);}
printf("Enter the number you want to insert in the array");
   scanf("%d", &num);
printf("Enter the position of the element");
   scanf("%d", &pos);
   for(i=size; i>=pos; i--){
   array[i+1]=array[i];}
   array[pos]=num;
   size++;
   for(i=1; i<=size; i++){
printf("A[%d]=%d\n",i,array[i]);}}
```

Output:

```
Enter number of elements :5
Enter the 1 element:    3
Enter the 2 element:    28
Enter the 3 element:    5
Enter the 4 element:    11
Enter the 5 element:    17
Enter the number you want to insert in the array 15
Enter the position of the element 3
```

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Simulation:

(1)

1	2	3	4	5
3	28	5	11	17

Insert 15 at index 3.

S-1

N = 5, k = 3, item = 15

∴ k ≤ N

S-2

(a) J = N = 5

⇒ A[5+1] = A[5]

⇒ A[6] = 17

J = J-1 = 5-1 = 4

1	2	3	4	5	6
3	28	5	11	17	17

(b) J = 4 ≥ k (3)

∴ A[J+1] = A[J]

⇒ A[4+1] = A[4]

⇒ A[5] = 11

J = 4-1 = 3

1	2	3	4	5	6
3	28	5	11	11	17

(c) J = 3 ≥ k (3)

∴ A[J+1] = A[J]

⇒ A[3+1] = A[3]

⇒ A[4] = 5

⇒ J = 3-1 = 2

1	2	3	4	5	6
3	28	15	5	11	17

(End of loop) N = N+1

A[1]=3
A[2]=28
A[3]=15
A[4]=5
A[5]=11
A[6]=17
Process returned 6 (0x6) execution time : 44.508 s
Press any key to continue.

2. Delete an item from an index.

Sample input: Enter number of elements: 5 Enter the index: 4 Enter Array: 3 28 5 11 17	Output: Array is: A[1] =3 A[2] =28 A[3] =5 A[4] =17

```
#include<stdio.h>
void main(){
   int index, i, size;
printf("Enter number of elements: ");
   scanf("%d",&size);
   int a[size+1];
   for ( i = 1; i <=size; i++)
{printf("Enter the %d element :",i);
   scanf("%d",&a[i]);   }
printf("Enter the index you want to delete :");
   scanf("%d",&index);
   if (index<size)
{  for ( i = index; i <= size; i++)
   {a[i]=a[i+1]; }
   size--;
   for ( i = 1; i <= size; i++)
{printf("A[%d]=%d\n",i,a[i]); }}}
```

Output:

Enter number of elements: 5
Enter the 1 element :3

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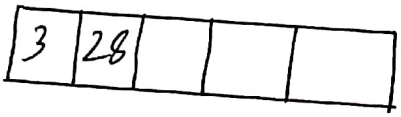
(2)

3	28	5	11	17

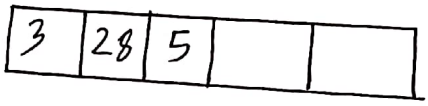
Se-1

a) Set $i = 1$; $i \leq 5$
a[1] = 3
i++

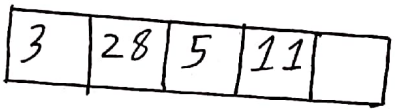
b) $i = 2$; $i \leq 5$
a[2] = 28. i++



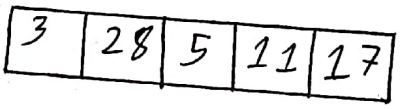
c) $i = 3$; $i \leq 5$
a[3] = 5. i++



d) $i = 4$; $i \leq 5$
a[4] = 11. i++



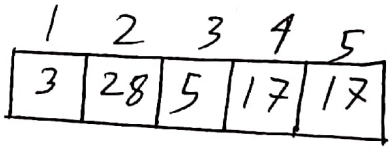
e) $i = 5$; $i \leq 5$
a[5] = 17, i++



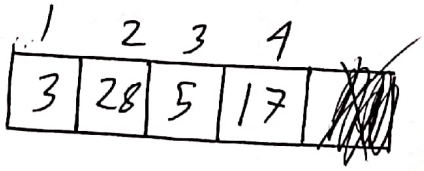
f) $i = 6$; $i \leq 5$ [False]

Se-2

a) Set $j = pos + 1$ $j \leq 5$
a[i] = a[pos+1]
=> a[i] = 17. j++



b) $j = 5$; $j < 5$ [False]
N = N - 1



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```
Enter the 2 element :28
Enter the 3 element :5
Enter the 4 element :11
Enter the 5 element :17
Enter the index you want to delete :4
A[1]=3
A[2]=28
A[3]=5
A[4]=17
Process returned 4 (0x4)   execution time : 31.982 s
Press any key to continue.
```

3. *Suppose you are attending P.E class in school. You made a line randomly of n* numbers of students. The teacher then instructed you to stand in a line according to your height in ascending order. Here input will be the height of the students and output will be the sorted height of the students.

   Sample Input:

   Number of students **5**

   Heights: 4.8, 5.1, 6, 5.5, 4.9

   Output:

   4.8, 4.9, 5.1, 5.5, 6

```
#include <stdio.h>
void main()
{   int i, j, num;
    float array[100];
printf("Enter the number of elements for the array:\n");
    scanf("%d", &num);
    for (i = 0; i < num; i++)
    {   printf("Enter the element for index %d:\n", i + 1);
        scanf("%f", &array[i]);    }
    for (i = 0; i < num - 1; i++)
   {for (j = 0; j < num - i - 1; j++)
  {if (array[j] > array[j + 1])
  {float temp = array[j];
      array[j] = array[j + 1];
      array[j + 1] = temp; } } }
    printf("Output: Sorted Array is:\n");
    for (i = 0; i < num; i++)
{printf("A[%d] = %.1f\n", i + 1, array[i]); }}
```

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(3) 4.8, 5.1, 6, 5.5, 4.9

K-1

(a) (4.8), (5.1), 6, 5.5, 4.9

(b) (4.8), (5.1), (6), 5.5, 4.9

(c) 4.8, 5.1, (6), (5.5), 4.9

4.8, 5.1, 5.5, 6, 4.9

(d) 4.8, 5.1, 5.5, (6), (4.9)

4.8, 5.1, 5.5, 4.9, [6]

K=2

(a) (4.8), (5.1), 5.5, 4.9, [6]

(b) 4.8, (5.1), (5.5), 4.9, [6]

(c) 4.8, 5.1, (5.5), (4.9), [6]

4.8, 5.1, 4.9, [5.5, 6]

K=3

(a) (4.8), (5.1), 4.9, [5.5, 6]

(b) 4.8, (5.1), (4.9), [5.5, 6]

4.8, 4.9, [5.1, 5.5, 6]

K=4

(a) (4.8), (4.9), [5.1, 5.5, 6]

4.8, [4.9, 5.1, 5.5, 6]

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Output:

Enter the number of elements for the array: 5
Enter the element for index 1: 4.8
Enter the element for index 2: 5.1
Enter the element for index 3: 6
Enter the element for index 4: 5.5
Enter the element for index 5: 4.9
Output: Sorted Array is: A[1] = 4.8
A[2] = 4.9
A[3] = 5.1
A[4] = 5.5
A[5] = 6.0
Process returned 5 (0x5) execution time : 15.725 s
Press any key to continue.

4. **Find the mth even value of an array and delete it.**

Sample input: Enter Value of m: 2 Enter the values of array: 3 28 36 11 17	Output: The index of the 2nd even value is 36 Array is: A[1] = 3 A[2] =28 A[3] =11 A[4] =17

```
#include <stdio.h>
void main() {
  int i, n, element, j, b = 1;
  int array[100];
printf("Enter the number of elements for array:\n");
  scanf("%d", &n);
  for (i = 1; i <= n; i++) {
printf("Enter the element for %dth index:\n", i);
    scanf("%d", &array[i]); }
  for (i = 1; i <= n; i++) {
    if (array[i] % 2 == 0) {
    if (b == 2) {
  for (j = i; j < n; j++) {
   array[j] = array[j + 1]; }
 n--; } else { b++; }}}
```

```
for (i = 1; i <= n; i++) {
printf("A[%d]=%d\n", i, array[i]); }}
```

Output:

```
Enter the number of elements in the array: 5
Enter the value of m: 2
Enter the values of the array:
3
28
36
11
17
The index of the 2th even value is 36
Array is:
A[1] = 3
A[2] = 28
A[3] = 11
A[4] = 17

Process returned 0 (0x0)   execution time : 22.993 s
Press any key to continue.
```

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④

3	28	36	11	17

S-1

a) Set, $i = 1$; $i \leq n = 5$

⇒ if (a[1] % 2 == 0) [False]

i++

b) $i = 2$; $i \leq n = 5$

if (a[2] % == 0) [True]

if (b == 2) [False]

b++.

i++

c) $i = 3$; $i \leq n = 5$

if (a[3] % 2 == 0) [True]

if (b == 2) True

break (loop ended)

∴ a[3] = 36.

S-2

a) Set, $j = i = 3$; $j \leq n = 5$

a[3] = a[3+1]

a[3] = a[4] = 11

j++

1	2	3	4	5
3	28	11	11	17

b) $j = 4$; $j \leq n = 5$

a[4] = a[4+1]

a[4] = a[5] = 17

j++

1	2	3	4	5
3	28	11	17	17

c) $j = 5$; $j < n = 5$ [False]

(loop ended)

n--

1	2	3	4
3	28	11	17