#02. Write a program to delete an element from a linear array.

Theory: Deletion refers to removing an existing element from the array and re-organizing all elements of an array. Deleting an element at the end of an array presents no difficulties but deleting an element somewhere in the middle of the array would require that each subsequent element be moved one location upward in order to "fill up" the array.

For example.

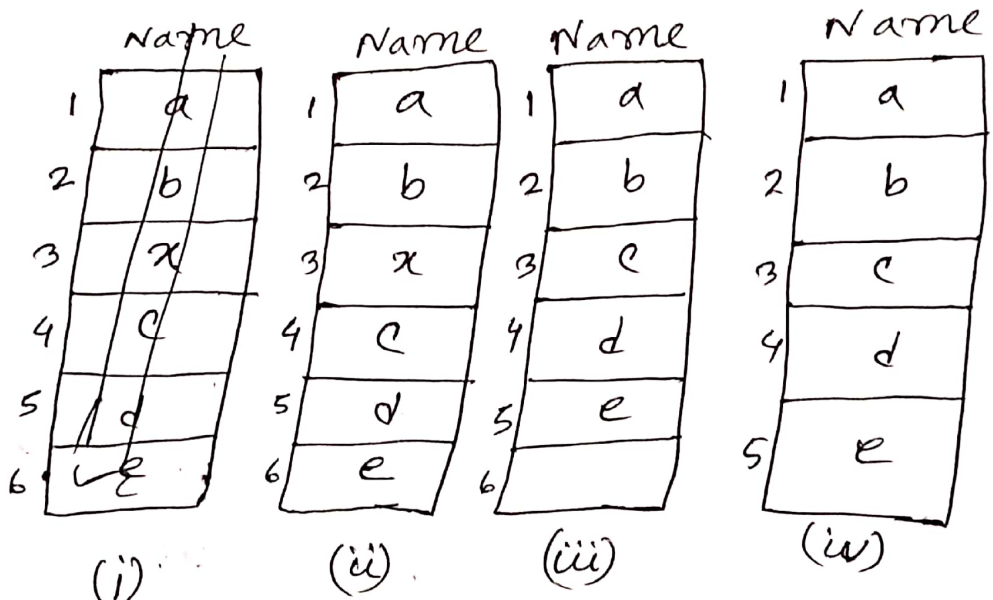

Figure: The process of removing elements from array.

Here we want to remove the 'x' element. Here the array[3] = x to array[6] all the element decreased by 1. Then x is replaced with e, e is d and d is e. array[6] is empty. After that the array[6] decrease 1 and size is array[5].

Algorithm:

DELETE(LA, N, k, ITEM)

Here LA is a linear Array with N elements and k is a positive integer such that $k \leq N$. This algorithm delete the k^{th} element from LA.

1. ITEM = LA[k].
2. Repeat for J = k to N-1;
3. set N = N-1.
4. Exit

Source code c++:

```
#include<iostream>
using namespace std;
int main()
{
    int LA[100] = {1,2,3,4,5,6}
    int k=2, n=6;
    int i, j; the orginal array elements are
    cout<<"LA[i] = "<<LA[i]<<endl;

    for(i=0; i<n; i++)
    {
       cout<<"LA["<<i<<"] = "<<LA[i]<<endl
    }
    cout<<"The array element after deletation"
                                    <<endl;
    for(j=k; j<n-1; j++)
    {
      LA[j] = LA[j+1];
    }
    n = n-1;
    for(i=0; i<n; i++)
    {
     cout<<"LA["<<i<<"] = "<<LA[i]<<endl;
    }
  return 0;
}
```

Output:

The orginal array elements are

LA[0] = 1
LA[1] = 2
LA[2] = 3
LA[3] = 4
LA[4] = 5
LA[5] = 6

The array elements after deletation

LA[0] = 1
LA[1] = 2
LA[2] = 4
LA[3] = 5
LA.[4] = 6