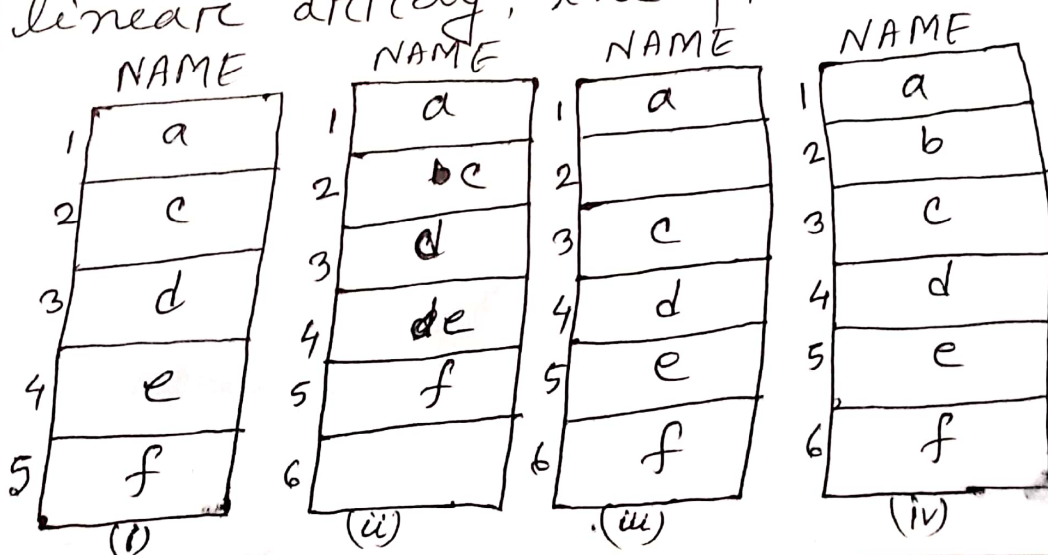


#01. Write a Program to insert an element into a linear array.

Theory: Insertion operation is to insert one or more data elements into an array. Based on the requirement, a new element can be added at the beginning, at the end or anywhere given index of array. In this process at first increase the array size. Then insert an empty array index then insert the element.

For example,
An array has five element. If you insert an element in second position of the linear array, the process is



At first increase the array size. If the size is $LA[N]$, it increase it $(N+1)$. Then insert increase the element from the insert positive. Then insert an item to the empty array cell.

Algorithm:

Insert an element into linear array

Insert($LA, N, k, ITEM$)

Here LA is a linear array with N elements and k is a positive integer such that $k \leq N$. The algorithm inserts an element $ITEM$ into the k^{th} position in LA .

1. Set $J = N$.
2. Repeat step 3 and 4 while $J \geq k$.
3. Set $LA[J+1] = LA[J]$.
4. Set $J = J - 1$.
[End step 2 loop]
5. [Insert element] Set $LA[k] = ITEM$.
6. Set $N = N + 1$.
7. Exit.

Source code in C++:

```
#include <iostream>
using namespace std;
int main()
```

```
{
    int LA[100] = {1, 2, 3, 4, 5, 6};
```

```
    int item = 10, k = 3, n = 6;
```

```
    int i = 0, j = n;
```

```
    cout << "The array element are" << endl;
```

```
    for (i = 0; i < n; i++)
```

```
    {
        cout << "LA[" << i << "] = " << LA[i] << endl;
```

```
    }
```

```
    n = n + 1;
```

```
    while (j >= k)
```

```
    {
        LA[j + 1] = LA[j];
```

```
        j = j - 1;
```

```
    }
```

```
    cout << "The array element after insertion" << endl;
```

```
    for (i = 0; i < n; i++)
```

```
    {
        cout << "LA[" << i << "] = " << LA[i] << endl;
```

```
    }
```

```
    return 0;
```

```
}
```

Input:

Input is not give from keyboard.

Output:

The array element are

$$LA[0] = 1$$

$$LA[1] = 2$$

$$LA[2] = 3$$

$$LA[3] = 4$$

$$LA[4] = 5$$

$$LA[5] = 6$$

The array element after insertion

$$LA[0] = 1$$

$$LA[1] = 2$$

$$LA[2] = 3$$

$$LA[3] = 10$$

$$LA[4] = 4$$

$$LA[5] = 5$$

$$LA[6] = 6$$