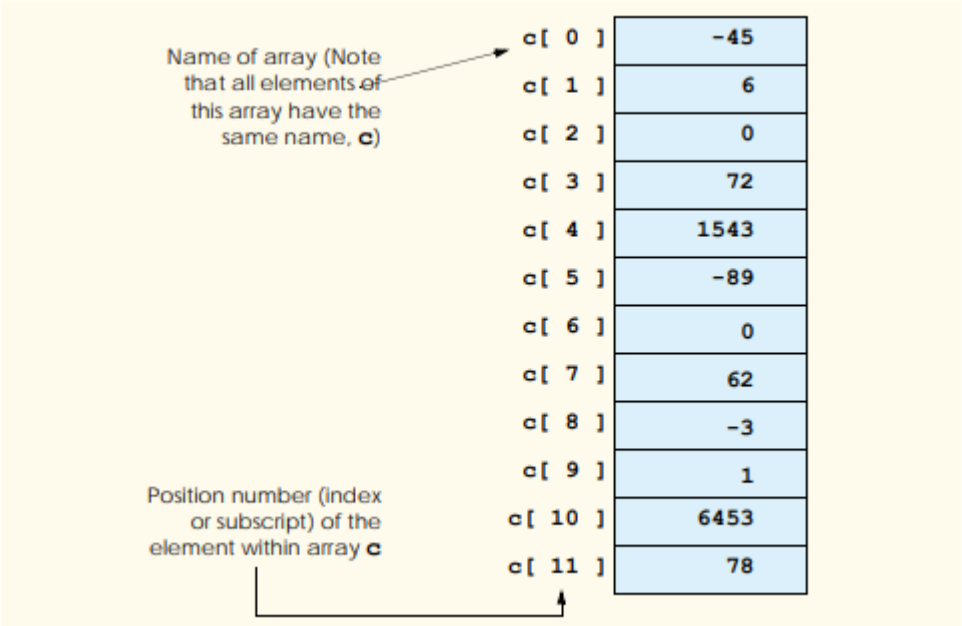
1-D Array

Definition:

An array is a group of contiguous memory locations that all have the same name and type. To refer to a particular location or element in the array, we specify the name of the array and the position number (a value that indicates a specific location within the array) of the element to which we refer.

See the figure below which represents a 12 integers array named c.



Declaring Arrays

To declare an array in C, a programmer specifies the type of the elements and the number of elements required by an array as follows:

type arrayName [arraySize];

ex: float balance[10];

Initializing Arrays

You can initialize array in C either one by one or using a single statement as follows:

```
float balance[5] = {100.0, 2.0, 3.4, 7.0, 50.0};
```

or as follows :

```
#include <stdio.h>

int main()
{
      float balance[5];
   int i;
   // To read 5 floats elements of the array balance
   for(i=0;i<5;i++)
   {
      scanf("%f", &balance[i]);
   }
   // To display 5 floats elements of the array balance
   for(i=0;i<5;i++)
   {
      printf("The array : \n ");
      printf("%f\n", balance[i]);
   }
   return 0;
}
```

EXERCISE 1:

Write a C program that declares a float array of size (10), asks the user to enter the array elements, and then finds the average of the array elements.

EXERCISE 2:

Write a C program that count the number of even and odd numbers in an integer array of size 10.

EXERCISE 3:

Write a C program that declares an integer array of size (10), asks the user to enter the array elements, and then sorts the array in ascending order.

EXERCISE 4:

Write a c program that does the following:

1. Declare two integer arrays each of size 5.

2. Input the elements of the arrays from the keyboard.

3. Swap the two arrays (swap the value of the first element in the first array (array1[0]) with the last element of the second array (array2[4]) and so on.

EXERCISE 5:

Write a c program that find the occurrences of integer x in an array of size n.

EXERCISE 6:

Write a c program to merge 2 arrays of size n and m into third array.