

Array:- An array is a data structure that contains a group of elements. Typically these elements are all of the same data type, such as an integer or string. Arrays are commonly used in computer programs to organize data so that a related set of values can be easily sorted or searched .

Arrays can of following types:

1. One dimensional (1-D) arrays or Linear arrays
2. Multi dimensional arrays
 - (a) Two dimensional (2-D) arrays or Matrix arrays
 - (b) Three dimensional arrays

1. One dimensional (1-D) arrays or Linear arrays:

In it each element is represented by a single subscript. The elements are stored in consecutive memory locations. E.g. A [1], A [2],, A [N].

2. Multi dimensional arrays:

(a) Two dimensional (2-D) arrays or Matrix arrays:

In it each element is represented by two subscripts. Thus a two dimensional $m \times n$ array A has m rows and n columns and contains $m \times n$ elements. It is also called matrix array because in it the elements form a matrix. E.g. $A[2][3]$ has 2 rows and 3 columns and $2 \times 3 = 6$ elements.

(b) Three dimensional arrays:

In it each element is represented by three subscripts. Thus a three dimensional $m \times n \times l$ array A contains $m \times n \times l$ element

Difference between Arrays and pointers

1. An array is a collection of elements of similar data type whereas the pointer is a variable that stores the address of another variable.
2. An array size decides the number of variables it can store whereas; a pointer variable can store the address of only one variable in it.
3. Arrays can be initialized at the definition, while pointers cannot be initialized at the definition.

4. Arrays are static in nature which means once the size of the array is declared, it cannot be resized according to users requirement. Whereas pointers are dynamic in nature,

which means the memory allocated can be resized later at any point in time.

5. Arrays are allocated at compile time while pointers are allocated at runtime.s. E.g. A [2] [3] [2] has $2*3*2 = 12$ elements.