Code Academy

Written by : Khaloud Hamed Almamari

Array in C# (.Net)

What is Array?

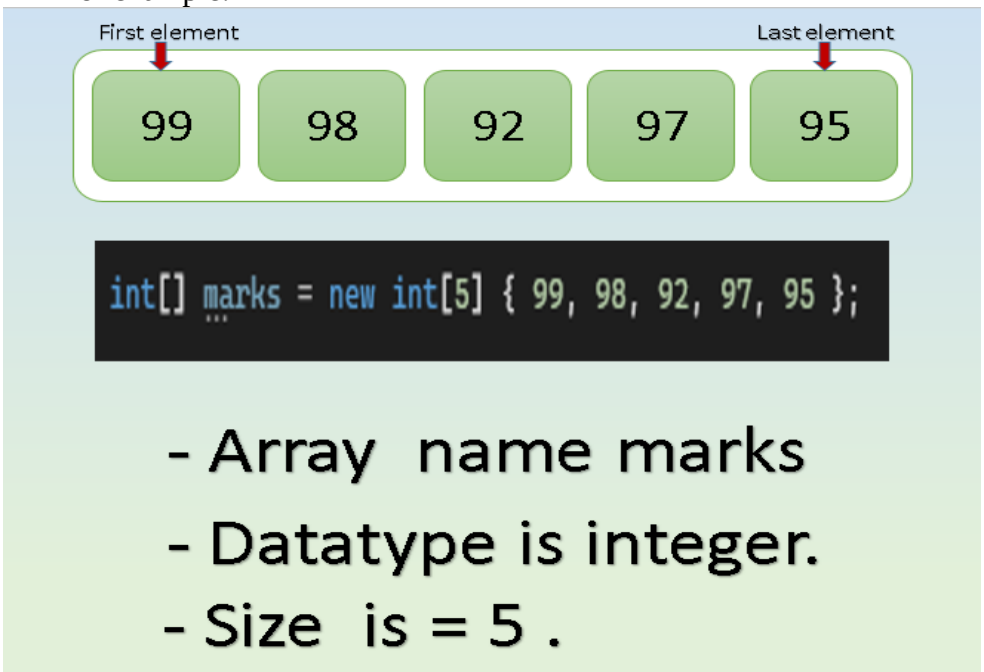
Is set of value from the same datatype.

Is Non primitive datatype (Reference type).

Array must have fixed- size.

The data of the element must be in same data type.

for example:



What is need for Array?

-used to store a collection of data have same datatype together.

How to write Array?

➢ Declaring and Initializing Arrays:

- To declare and initialize an array in C#:

<datatype>[ ] <arrayName> = new <datatype> [size];

```
string[] array1 = new string[3];
```

array1➔ is the name of this array.

string➔ is specifies the datatype of this array.

[3]➔ is specifies the size of this array

➢ Declaring and Initializing and Assigning Values to an Arrays:

- To declare and initialize and assigning values to an array in C#:

a) In one line:

```
string[] name = new string[3] { "khaloud", "Hamed", "Almamri" };
```

name➔ is the name of this array.

string➔ is specifies the datatype of this array.

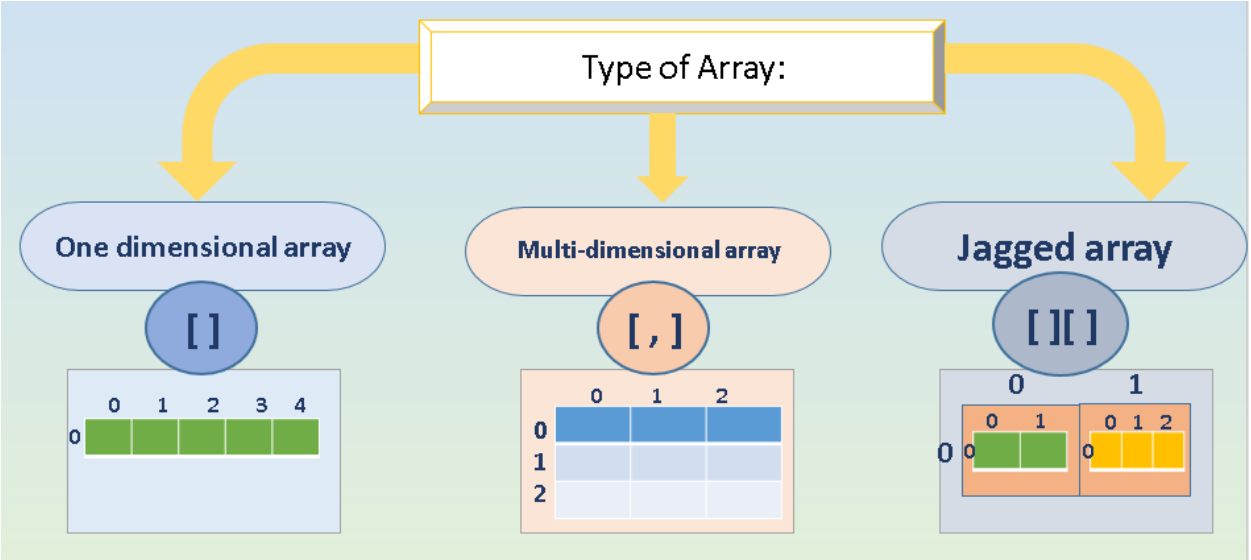
[3]➔ is specifies the size of this array

{ "khaloud", "Hamed", "Almamri" }➔ is specifies values to the array.

b) assign values to individual array elements, by using the index number, like:

```
string[] name = new string[3];
name[0] = "khaloud";
name[1] = "Hamed";
name[2] = "Almamri";
```

Type of the Array?



How do we differentiate between each type?

1) **single-dimensional arrays In C#:is the simplest type of array that contains only one row for storing data. It has single set of square bracket (“[]”). Other name of it is One dimensional array.**

```
//----------------------sigle Dimenstional Array---------------

int n = Convert.ToInt32 (Console.ReadLine());
int[] arr1= new int[n];

//The array is Accessed by Index
arr1[0] = 1;
arr1[1] = 2;
arr1[2] = 3;
arr1[3] = 4;
arr1[4] = 5;
// arr1[5] = 6; this is out of Bound width
```

2) **Multi-dimensional arrays:** **in C# is such type of array that contains more than one row to store data on it. The simplest form of the multidimensional array is the two-dimensional array. It can be a two-dimensional array or three-dimensional array or more. It contains more than one comma (,) within single rectangular brackets ("[, , ,]"). To storing and accessing the elements from a multidimensional array, you need to use a nested loop in the program.**

```
//----------------------Multi Dimenstional Array---------------

//1, 2, 3, 4,
//5, 6 ,8 ,7 ===> matrix
//4, 5, 6
int[,] Grades = new int[2,2];
Grades[0, 0] = 1;
Grades[1, 0] = 2;
Grades[1, 0] = 1;
Grades[1, 1] = 1;
```

3) **Jagged arrays:** **It's supports multidimensional arrays, which are arrays of arrays ,and each member array has the default value of null .**

```
//----------------------Jagged Array---------------

int[][] Employees = new int[2][];
Employees[0]= new int[3] { 1, 2, 3};
Employees[1]= new int[2] {1, 2 };
```

Example:

```
//.........................array example ..............

//sigle example:
int e = Convert.ToInt32(Console.ReadLine());
string[] name = new string[e];
name[0] = "khaloud";
name[1] = "Hamed";
name[2] = "Almamri";

//Multi example:
int[,] g = new int[2, 2];
g[0, 0] = 2;
g[1, 0] = 5;

//Jagged example:
int[][] salary = new int[2][];
salary[0] = new int[5] { 1, 2, 3, 4, 5 };
salary[1] = new int[2] { 1, 2 };
```