

## C# - ARRAYLIST CLASS

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It represents an ordered collection of an object that can be indexed individually. It is basically an alternative to an array. However, unlike array you can add and remove items from a list at a specified position using an **index** and the array resizes itself automatically. It also allows dynamic memory allocation, adding, searching and sorting items in the list.

### Methods and Properties of ArrayList Class

The following table lists some of the commonly used **properties** of the **ArrayList** class –

Sr.No.	Property & Description
1	<b>Capacity</b> Gets or sets the number of elements that the ArrayList can contain.
2	<b>Count</b> Gets the number of elements actually contained in the ArrayList.
3	<b>IsFixedSize</b> Gets a value indicating whether the ArrayList has a fixed size.
4	<b>IsReadOnly</b> Gets a value indicating whether the ArrayList is read-only.
5	<b>Item</b> Gets or sets the element at the specified index.

The following table lists some of the commonly used **methods** of the **ArrayList** class –

Sr.No.	Method & Description
1	

	<b>public virtual int Add</b> <i>objectvalue</i> ; Adds an object to the end of the ArrayList.
2	<b>public virtual void AddRange</b> <i>ICollectionnc</i> ; Adds the elements of an ICollection to the end of the ArrayList.
3	<b>public virtual void Clear</b> ; Removes all elements from the ArrayList.
4	<b>public virtual bool Contains</b> <i>objectitem</i> ; Determines whether an element is in the ArrayList.
5	<b>public virtual ArrayList GetRange</b> <i>intindex,intcount</i> ; Returns an ArrayList which represents a subset of the elements in the source ArrayList.
6	<b>public virtual int IndexOf</b> <i>object</i> ; Returns the zero-based index of the first occurrence of a value in the ArrayList or in a portion of it.
7	<b>public virtual void Insert</b> <i>intindex,objectvalue</i> ; Inserts an element into the ArrayList at the specified index.
8	<b>public virtual void InsertRange</b> <i>intindex,ICollectionnc</i> ; Inserts the elements of a collection into the ArrayList at the specified index.
9	<b>public virtual void Remove</b> <i>objectobj</i> ; Removes the first occurrence of a specific object from the ArrayList.
10	<b>public virtual void RemoveAt</b> <i>intindex</i> ; 

	Removes the element at the specified index of the ArrayList.
11	<b>public virtual void RemoveRange</b> <i>intindex, intcount</i> ;  Removes a range of elements from the ArrayList.
12	<b>public virtual void Reverse</b> ;  Reverses the order of the elements in the ArrayList.
13	<b>public virtual void SetRange</b> <i>intindex, ICollectionc</i> ;  Copies the elements of a collection over a range of elements in the ArrayList.
14	<b>public virtual void Sort</b> ;  Sorts the elements in the ArrayList.
15	<b>public virtual void TrimToSize</b> ;  Sets the capacity to the actual number of elements in the ArrayList.

## Example

The following example demonstrates the concept –

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```
using System;
using System.Collections;

namespace CollectionApplication {
    class Program {
        static void Main(string[] args) {
            ArrayList al = new ArrayList();

            Console.WriteLine("Adding some numbers:");
            al.Add(45);
            al.Add(78);
            al.Add(33);
            al.Add(56);
            al.Add(12);
            al.Add(23);
            al.Add(9);

            Console.WriteLine("Capacity: {0} ", al.Capacity);
            Console.WriteLine("Count: {0}", al.Count);
        }
    }
}
```

```
        Console.Write("Content: ");
        foreach (int i in al) {
            Console.Write(i + " ");
        }

        Console.WriteLine();
        Console.Write("Sorted Content: ");
        al.Sort();
        foreach (int i in al) {
            Console.Write(i + " ");
        }
        Console.WriteLine();
        Console.ReadKey();
    }
}
```

When the above code is compiled and executed, it produces the following result –

```
Adding some numbers:
Capacity: 8
Count: 7
Content: 45 78 33 56 12 23 9
Content: 9 12 23 33 45 56 78
```