BinarySearch Method

Searches a one-dimensional sorted [Array](https://docs.microsoft.com/en-us/dotnet/api/system.array?view=net-6.0) for a value, using a binary search algorithm.

BinarySearch(Array, Object)

Searches an entire one-dimensional sorted array for a specific element

**Parameters**

Array The sorted one-dimensional Array to search.

Value Object The object to search for.

**Returns Int32**

**Element Found:**

The index of the specified value in the specified array, if value is found;

**Element Not Found**

otherwise, a negative number.

If value is not found and value is less than one or more elements in array, the negative number returned is the bitwise complement of the index of the first element that is larger than value.

If value is not found and value is greater than all elements in array, the negative number returned is the bitwise complement of (the index of the last element plus 1).

If this method is called with a non-sorted array, the return value can be incorrect and a negative number could be returned, even if value is present in array.

**Exceptions**

**ArgumentNullException** array is null.

**RankException** array is multidimensional.

**ArgumentException** value is of a type that is not compatible with the elements of array.

**InvalidOperationException**  value does not implement comparison mechanism.

Example Experiments:

1. Input Array = [1,2,3,4,5,6], Element to Search 2 – Expected Result 1

|  |  |  |
| --- | --- | --- |
| Input Array | Element To Search | Expected Result |
| 1,2,3,4,5 | 2 | 1 |
| 1,2,3,4,5 | 6 | <0 (neagtive) |
|  |  |  |