## Classes

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|  | **Class** | **Description** |
|  | [List<T>](https://msdn.microsoft.com/en-us/library/6sh2ey19(v=vs.110).aspx) | Represents a strongly typed list of objects that can be accessed by index. Provides methods to search, sort, and manipulate lists.  To browse the .NET Framework source code for this type, see the [Reference Source](http://referencesource.microsoft.com/#mscorlib/system/collections/generic/list.cs#cf7f4095e4de7646). |
|  | [SortedList<TKey, TValue>](https://msdn.microsoft.com/en-us/library/ms132319(v=vs.110).aspx) | Represents a collection of key/value pairs that are sorted by key based on the associated [IComparer<T>](https://msdn.microsoft.com/en-us/library/8ehhxeaf(v=vs.110).aspx) implementation. |
|  | [Dictionary<TKey, TValue>](https://msdn.microsoft.com/en-us/library/xfhwa508(v=vs.110).aspx) | Represents a collection of keys and values.  To browse the .NET Framework source code for this type, see the [Reference Source](http://referencesource.microsoft.com/#mscorlib/system/collections/generic/dictionary.cs#d3599058f8d79be0). |
|  | [SortedDictionary<TKey, TValue>](https://msdn.microsoft.com/en-us/library/f7fta44c(v=vs.110).aspx) | Represents a collection of key/value pairs that are sorted on the key. |
|  | [HashSet<T>](https://msdn.microsoft.com/en-us/library/bb359438(v=vs.110).aspx) | Represents a set of values.  To browse the .NET Framework source code for this type, see the [Reference Source](http://referencesource.microsoft.com/#System.Core/System/Collections/Generic/HashSet.cs#2d265edc718b158b). |
|  | [SortedSet<T>](https://msdn.microsoft.com/en-us/library/dd412070(v=vs.110).aspx) | Represents a collection of objects that is maintained in sorted order. |
|  | [Stack<T>](https://msdn.microsoft.com/en-us/library/3278tedw(v=vs.110).aspx) | Represents a variable size last-in-first-out (LIFO) collection of instances of the same specified type. |
|  | [Queue<T>](https://msdn.microsoft.com/en-us/library/7977ey2c(v=vs.110).aspx) | Represents a first-in, first-out collection of objects. |
|  | [LinkedList<T>](https://msdn.microsoft.com/en-us/library/he2s3bh7(v=vs.110).aspx) | Represents a doubly linked list. |

**SortedList and SortedDictionary**

SortedDictionary<TKey, TValue>

Represents a collection of key/value pairs that are sorted on the key.

The SortedDictionary<TKey, TValue> generic class is a binary search tree with O(log n) retrieval, where n is the number of elements in the dictionary. In this respect, it is similar to the [SortedList<TKey, TValue>](https://msdn.microsoft.com/en-us/library/ms132319%28v=vs.110%29.aspx) generic class. The two classes have similar object models, and both have O(log n) retrieval. Where the two classes differ is in memory use and speed of insertion and removal:

[SortedList<TKey, TValue>](https://msdn.microsoft.com/en-us/library/ms132319%28v=vs.110%29.aspx) uses less memory than SortedDictionary<TKey, TValue>.

Every key in a SortedDictionary<TKey, TValue> must be unique. A key cannot be null, but a value can be, if the value type TValue is a reference type.

* SortedDictionary<TKey, TValue> has faster insertion and removal operations for unsorted data: O(log n) as opposed to O(n) for [SortedList<TKey, TValue>](https://msdn.microsoft.com/en-us/library/ms132319%28v=vs.110%29.aspx).
* If the list is populated all at once from sorted data, [SortedList<TKey, TValue>](https://msdn.microsoft.com/en-us/library/ms132319%28v=vs.110%29.aspx) is faster than SortedDictionary<TKey, TValue>.

The SortedList<TKey, TValue>

generic class is an array of key/value pairs with O(log n) retrieval, where n is the number of elements in the dictionary. In this, it is similar to the [SortedDictionary<TKey, TValue>](https://msdn.microsoft.com/en-us/library/f7fta44c%28v=vs.110%29.aspx) generic class. The two classes have similar object models, and both have O(log n) retrieval. Where the two classes differ is in memory use and speed of insertion and removal:

* SortedList<TKey, TValue> uses less memory than [SortedDictionary<TKey, TValue>](https://msdn.microsoft.com/en-us/library/f7fta44c%28v=vs.110%29.aspx).
* [SortedDictionary<TKey, TValue>](https://msdn.microsoft.com/en-us/library/f7fta44c%28v=vs.110%29.aspx) has faster insertion and removal operations for unsorted data, O(log n) as opposed to O(n) for SortedList<TKey, TValue>.
* If the list is populated all at once from sorted data, SortedList<TKey, TValue> is faster than [SortedDictionary<TKey, TValue>](https://msdn.microsoft.com/en-us/library/f7fta44c%28v=vs.110%29.aspx).

Another difference between the [SortedDictionary<TKey, TValue>](https://msdn.microsoft.com/en-us/library/f7fta44c%28v=vs.110%29.aspx) and SortedList<TKey, TValue> classes is that SortedList<TKey, TValue> supports efficient indexed retrieval of keys and values through the collections returned by the [Keys](https://msdn.microsoft.com/en-us/library/ms132379%28v=vs.110%29.aspx) and [Values](https://msdn.microsoft.com/en-us/library/ms132380%28v=vs.110%29.aspx) properties. It is not necessary to regenerate the lists when the properties are accessed, because the lists are just wrappers for the internal arrays of keys and values

The following table lists some of the differences between the two sorted list classes and the [SortedDictionary<TKey, TValue>](https://msdn.microsoft.com/en-us/library/f7fta44c.aspx) class.

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| [**SortedList**](https://msdn.microsoft.com/en-us/library/system.collections.sortedlist.aspx) **nongeneric class and** [**SortedList<TKey, TValue>**](https://msdn.microsoft.com/en-us/library/ms132319.aspx) **generic class** | [**SortedDictionary<TKey, TValue>**](https://msdn.microsoft.com/en-us/library/f7fta44c.aspx) **generic class** |
| The properties that return keys and values are indexed, allowing efficient indexed retrieval. | No indexed retrieval. |
| Retrieval is O(log n). | Retrieval is O(log n). |
| Insertion and removal are generally O(n); however, insertion is O(1) for data that are already in sort order, so that each element is added to the end of the list. (This assumes that a resize is not required.) | Insertion and removal are O(log n). |
| Uses less memory than a [SortedDictionary<TKey, TValue>](https://msdn.microsoft.com/en-us/library/f7fta44c.aspx). | Uses more memory than the [SortedList](https://msdn.microsoft.com/en-us/library/system.collections.sortedlist.aspx) nongeneric class and the [SortedList<TKey, TValue>](https://msdn.microsoft.com/en-us/library/ms132319.aspx) generic class. |

A SortedSet<T> object maintains a sorted order without affecting performance as elements are inserted and deleted. Duplicate elements are not allowed