

第七章

集合





一、ArrayList



二、Dictionary



三、SortedList



四、练习



一、ArrayList



ArrayList表示可以单独索引的对象的有序集合。它基本上是一个数组的替代。但是，与数组不同，您可以使用索引在指定位置从列表中添加和删除项目，并且数组会自动调整大小。它还允许动态内存分配，添加，搜索和排序列表中的项目。

1.1 ArrayList类的属性和方法



下表列出了ArrayList类的一些常用属性：

属性	描述
Capacity	Gets or sets the number of elements that the ArrayList can contain. 获取或设置ArrayList可以包含的元素数。
Count	Gets the number of elements actually contained in the ArrayList. 获取ArrayList中实际包含的元素数。
IsFixedSize	Gets a value indicating whether the ArrayList has a fixed size. 获取指示ArrayList是否具有固定大小的值。
IsReadOnly	Gets a value indicating whether the ArrayList is read-only. 获取一个值，该值指示ArrayList是否为只读。
Item	Gets or sets the element at the specified index. 获取或设置指定索引处的元素。

1.2ArrayList类的常用方法



S.N.	方法名称和用途
1	Public Overridable Function Add (value As Object) As Integer 公共可覆盖函数Add (value As Object) As Integer Adds an object to the end of the ArrayList. 将一个对象添加到ArrayList的末尾。
2	Public Overridable Sub AddRange (c As ICollection) 公共可覆盖Sub AddRange (c As ICollection) Adds the elements of an ICollection to the end of the ArrayList. 将ICollection的元素添加到ArrayList的末尾。
3	Public Overridable Sub Clear 公共可覆盖Sub Clear Removes all elements from the ArrayList. 从ArrayList中删除所有元素。

1.2 ArrayList类的常用方法



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Public Overridable Function Contains (item As Object) As Boolean

公共可覆盖函数包含(item As Object) As Boolean

Determines whether an element is in the ArrayList.

确定元素是否在ArrayList中。

5

Public Overridable Function GetRange (index As Integer, count As Integer) As ArrayList

ArrayList 作为公共可重写函数 GetRange (指数为整数, 整数作为计数)

Returns an ArrayList, which represents a subset of the elements in the source ArrayList.

返回一个ArrayList, 它表示源ArrayList中的元素的子集。

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Public Overridable Function IndexOf (value As Object) As Integer

公共可覆盖函数IndexOf (value As Object) As Integer

Returns the zero-based index of the first occurrence of a value in the ArrayList or in a portion of it.

返回ArrayList中或其一部分中值的第一次出现的从零开始的索引。

1.2 ArrayList类的常用方法



7	<p>Public Overridable Sub Insert (index As Integer, value As Object)</p> <p>公共可覆盖Sub Insert (index As Integer , value As Object)</p> <p>Inserts an element into the ArrayList at the specified index.</p> <p>在指定的索引处插入一个元素到ArrayList中。</p>
8	<p>Public Overridable Sub InsertRange (index As Integer, c As ICollection)</p> <p>公共可覆盖ub InsertRange (指数为整数 , c 作为集合)</p> <p>Inserts the elements of a collection into the ArrayList at the specified index.</p> <p>在指定的索引处将集合的元素插入ArrayList。</p>
9	<p>Public Overridable Sub Remove (obj As Object)</p> <p>公共可覆盖Sub Remove (obj作为对象)</p> <p>Removes the first occurrence of a specific object from the ArrayList.</p> <p>从ArrayList中删除特定对象的第一次出现。</p>

1.2 ArrayList类的常用方法



10	<p>Public Overridable Sub RemoveAt (index As Integer)</p> <p>公共可覆盖Sub RemoveAt （指数为整数）</p> <p>Removes the element at the specified index of the ArrayList.</p> <p>删除ArrayList的指定索引处的元素。</p>
11	<p>Public Overridable Sub RemoveRange (index As Integer, count As Integer)</p> <p>公共可覆盖Sub RemoveRange （指数为整数，整数作为计数）</p> <p>Removes a range of elements from the ArrayList.</p> <p>从 ArrayList 中移除某个范围的元素。</p>
12	<p>Public Overridable Sub Reverse</p> <p>公共可覆盖Sub Reverse</p> <p>Reverses the order of the elements in the ArrayList.</p> <p>颠倒ArrayList中元素的顺序。</p>

1.2 ArrayList类的常用方法



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Public Overridable Sub SetRange (index As Integer, c As ICollection)

公共可覆盖Sub SetRange (指数为整数 , c 作为集合)

Copies the elements of a collection over a range of elements in the ArrayList.

将集合的元素复制到ArrayList中的一系列元素。

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Public Overridable Sub Sort

公共可覆盖Sub 排序

Sorts the elements in the ArrayList.

在 ArrayList 中的元素进行排序。

15

Public Overridable Sub TrimToSize

公共可覆盖Sub TrimToSize

Sets the capacity to the actual number of elements in the ArrayList.

将容量设置为ArrayList中的实际元素数。

1.2 ArrayList类的常用方法



```
Sub Main()  
    Dim al As ArrayList = New ArrayList()  
    Dim i As Integer  
    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.WriteLine("Content: ")  
    For Each i In al  
        Console.WriteLine("{0} ", i)  
    Next i  
    Console.WriteLine("Sorted Content: ")  
    al.Sort()  
    For Each i In al  
        Console.WriteLine("{0} ", i)  
    Next i  
End Sub
```

2.1 Dictionary类的属性和方法



属性	描述
Count	Gets the number of key-and-value pairs contained in the Hashtable. 获取Hashtable中包含的键 - 值对的数量。
IsFixedSize	Gets a value indicating whether the Hashtable has a fixed size. 获取指示散列表是否具有固定大小的值。
IsReadOnly	Gets a value indicating whether the Hashtable is read-only. 获取一个值，指示Hashtable是否为只读。
Item	Gets or sets the value associated with the specified key. 获取或设置与指定键相关联的值。
Keys	Gets an ICollection containing the keys in the Hashtable. 获取包含该Hashtable中的键的集合。
Values	Gets an ICollection containing the values in the Hashtable. 获取包含在Hashtable中的值的集合。

2.1 Dictionary常用的方法



S.N	方法名称和用途
1	Public Overridable Sub Add (key As Object, value As Object) Adds an element with the specified key and value into the Hashtable. 将具有指定键和值的元素添加到Hashtable中。
2	Public Overridable Sub Clear Removes all elements from the Hashtable. 从哈希表中移除所有元素。
3	Public Overridable Function ContainsKey (key As Object) As Boolean Determines whether the Hashtable contains a specific key. 确定哈希表是否包含特定键。
4	Public Overridable Function ContainsValue (value As Object) As Boolean Determines whether the Hashtable contains a specific value. 确定哈希表是否包含特定值。
5	Public Overridable Sub Remove (key As Object) Removes the element with the specified key from the Hashtable. 使用指定的键从哈希表中删除元素。

2.1 Dictionary常用的方法



```
Sub Main()  
    Dim ht As Hashtable = New Hashtable()  
    Dim k As String  
    ht.Add("001", "Zara Ali")  
    ht.Add("002", "Abida Rehman")  
    ht.Add("003", "Joe Holzner")  
    ht.Add("004", "Mausam Benazir Nur")  
    ht.Add("005", "M. Amlan")  
    ht.Add("006", "M. Arif")  
    ht.Add("007", "Ritesh Saikia")  
    If (ht.ContainsValue("Nuha Ali")) Then  
        Console.WriteLine("This student name is already in the list")  
    Else  
        ht.Add("008", "Nuha Ali")  
    End If  
    ' Get a collection of the keys.  
    Dim key As ICollection = ht.Keys  
    For Each k In key  
        Console.WriteLine(" {0} : {1}", k, ht(k))  
    Next k  
    Console.ReadKey()  
End Sub
```

三、SortedList



SortedList类表示按键排序并可通过键和索引访问的键 - 值对的集合。

排序列表是数组和散列表的组合。它包含可以使用键或索引访问的项目列表。如果您使用索引访问项目，它是一个ArrayList，如果您使用键访问项目，它是一个Hashtable。项目的集合始终按键值排序。

3.1 SortedList类的属性和方法



属性	描述
Capacity	Gets or sets the capacity of the SortedList. 获取或设置SortedList的容量。
Count	Gets the number of elements contained in the SortedList. 获取SortedList中包含的元素数。
IsFixedSize	Gets a value indicating whether the SortedList has a fixed size. 获取指示SortedList是否具有固定大小的值。
IsReadOnly	Gets a value indicating whether the SortedList is read-only. 获取指示SortedList是否为只读的值。
Item	Gets and sets the value associated with a specific key in the SortedList. 获取并设置与SortedList中的特定键相关联的值。
Keys	Gets the keys in the SortedList. 获取SortedList中的键。
Values	Gets the values in the SortedList. 获取SortedList中的值。

3.1 SortedList类的属性和方法



S.N	方法名称和用途
1	Public Overridable Sub Add (key As Object, value As Object) Adds an element with the specified key and value into the SortedList. 将带有指定的键和值的元素添加到可排序列表。
2	Public Overridable Sub Clear Removes all elements from the SortedList. 从SortedList中删除所有元素。
3	Public Overridable Function ContainsKey (key As Object) As Boolean Determines whether the SortedList contains a specific key. 确定SortedList是否包含特定键。
4	Public Overridable Function ContainsValue (value As Object) As Boolean Determines whether the SortedList contains a specific value. 确定SortedList是否包含特定值。

3.1 SortedList 类的属性和方法



5	Public Overridable Function GetByIndex (index As Integer) As Object Gets the value at the specified index of the SortedList. 获取 SortedList 的指定索引处的值。
6	Public Overridable Function GetKey (index As Integer) As Object Gets the key at the specified index of the SortedList. 获取 SortedList 的指定索引处的键。
7	Public Overridable Function GetKeyList As IList Gets the keys in the SortedList. 获取 SortedList 中的键。
8	Public Overridable Function GetValueList As IList Gets the values in the SortedList. 获取 SortedList 中的值。

3.1 SortedList类的属性和方法



9	Public Overridable Function IndexOfKey (key As Object) As Integer Returns the zero-based index of the specified key in the SortedList. 返回SortedList中指定键的从零开始的索引。
10	Public Overridable Function IndexOfValue (value As Object) As Integer Returns the zero-based index of the first occurrence of the specified value in the SortedList. 返回SortedList中指定值的第一次出现的从零开始的索引。
11	Public Overridable Sub Remove (key As Object) Removes the element with the specified key from the SortedList. 从SortedList中删除具有指定键的元素。
12	Public Overridable Sub RemoveAt (index As Integer) Removes the element at the specified index of SortedList. 删除SortedList的指定索引处的元素。
13	Public Overridable Sub TrimToSize Sets the capacity to the actual number of elements in the SortedList. 将容量设置为SortedList中的实际元素数。

3.1 SortedList 类的属性和方法



```
Sub Main()  
    Dim sl As SortedList = New SortedList()  
    sl.Add("001", "Zara Ali")  
    sl.Add("002", "Abida Rehman")  
    sl.Add("003", "Joe Holzner")  
    sl.Add("004", "Mausam Benazir Nur")  
    sl.Add("005", "M. Amlan")  
    sl.Add("006", "M. Arif")  
    sl.Add("007", "Ritesh Saikia")  
    If (sl.ContainsValue("Nuha Ali")) Then  
        Console.WriteLine("This student name is already in the list")  
    Else  
        sl.Add("008", "Nuha Ali")  
    End If  
    ' Get a collection of the keys.  
    Dim key As ICollection = sl.Keys  
    Dim k As String  
    For Each k In key  
        Console.WriteLine(" {0} : {1}", k, sl(k))  
    Next k  
    Console.ReadKey()  
End Sub
```