**5C#W**

**SESSION 16 – Linked Lists**

**Research**

**Author:** Alessandro Ferro

Examine the .NET API documentation of the LinkedList class and document the following:

1. **How is it implemented? Single or Doubly LinkedList?**

The .NET Linked List is implemented as a Doubly LinkedList

1. **List what methods are available to call and does it differ from your implementations of the list.**

* AddAfter (LinkedListNode<T>, LinkedListNode<T>)
* [AddAfter (LinkedListNode<T>, T)](https://docs.microsoft.com/en-us/dotnet/api/system.collections.generic.linkedlist-1.addafter?view=netframework-4.8#System_Collections_Generic_LinkedList_1_AddAfter_System_Collections_Generic_LinkedListNode__0___0_)
* AddBefore (LinkedListNode<T>, LinkedListNode<T>)
* [AddBefore (LinkedListNode<T>, T)](https://docs.microsoft.com/en-us/dotnet/api/system.collections.generic.linkedlist-1.addbefore?view=netframework-4.8#System_Collections_Generic_LinkedList_1_AddBefore_System_Collections_Generic_LinkedListNode__0___0_)
* AddFirst (LinkedListNode<T>)
* [AddFirst (T)](https://docs.microsoft.com/en-us/dotnet/api/system.collections.generic.linkedlist-1.addfirst?view=netframework-4.8#System_Collections_Generic_LinkedList_1_AddFirst__0_)
* AddLast (LinkedListNode<T>)
* [AddLast(T)](https://docs.microsoft.com/en-us/dotnet/api/system.collections.generic.linkedlist-1.addlast?view=netframework-4.8#System_Collections_Generic_LinkedList_1_AddLast__0_)
* Clear ()
* Contains (T)
* CopyTo (T[], Int32)
* Equals (Object)
* Find (T)
* FindLast (T)
* GetEnumerator ()
* GetHashCode ()
* GetObjectData (SerializationInfo, StreamingContext)
* GetType ()
* MemberwiseClone ()
* OnDeserialization (Object)
* Remove (LinkedListNode<T>)
* [Remove (T)](https://docs.microsoft.com/en-us/dotnet/api/system.collections.generic.linkedlist-1.remove?view=netframework-4.8#System_Collections_Generic_LinkedList_1_Remove__0_)
* RemoveFirst ()
* RemoveLast ()
* ToString ()

The .NET implementation of the LinkedList has more methods than the one I created for the labs.

Method such as AddAfter(), AddBefore(), Equals(), Find(), FindLast(), GetType and so on, offer more versatility, making working with collection much easier and faster.

1. **What is the main advantage of using a Doubly Linked List over its Single link option?**

The main advantage of a Doubly LinkedList is the fact that it has two pointers. It can be traversed both from beginning to end and vice versa.

By sacrificing just a little bit in performance, due to the two pointers, it gains much more versatility compared to the Single Link.