# Object-Oriented Programming (CS F213)

## Module V: Collections in Java

### CS F213 RL 12.3 : LinkedList Class in Java

**BITS** Pilani

**Dr. Pankaj Vyas**
Department of Computer Science, BITS-Pilani, Pilani Campus

# CS F213 RL 12.3 : Topics

- LinkedList Class in Java

# LinkedList Class in Java

- Extends *AbstractSequentialList*, implements *List* and *Queue* interfaces
- Arranges the elements of a collection as Linked List where each element knows about the location of successor elements.
- Generic Declaration:

  *class          LinkedList<E>     extends               AbstractSequentialList* implements                           List<E>,          Queue<E>

  Where <E> Type of objects that it will hold.

- Constructors :
  1. LinkedList() /LinkedList<T>(); → Creates an Empty Linked List
  2. LinkedList(Collection <? Extends E> c) → Creates a Linked List that is initialized with the elements of collection c.

# Important Methods

1. *void addFirst(E obj) / void addLast(E obj)*
   *Adds element E to first and last of this linked list*

2. *E getFirst() / E getLast()*
   *Gets the First/Last Element from the list*

3. *E removeFirst() / E removeLast()*
   *Removes and returns the first/last element from the list*

# LinkedList Example 1

```
import java.util.*;          ⟶ To Use LinkedList
class LinkedListDemo1
{
        public static void main(String args[])
        {
                LinkedList<String> l1 = new LinkedList<String>();

                //l1.removeFirst();    java.util.NoSuchElementException
                //l1.removeLast();

                l1.add("F");                    // Element Added at index 0
                l1.add("B");                    // Element Added at index 1
                l1.add("D");                    // Element Added at index 2
                l1.add("E");                    // Element Added at index 3
                l1.add("C");                    // Element Added at index 4
                l1.add("Z");                    // Element Added at index 5
                l1.addFirst("A");               // Adds at index 0 [l1.add(0,"A");]
                l1.add("A");                    // Element Added at index 7
                l1.add(10,"A1");                // IndexOutofBoundsException
        }// End of Method
}// End of class
```

# LinkedList Example 2

```java
import java.util.*;
class LinkedListDemo1
{
        public static void main(String args[])
        {
                LinkedList<String> l1 = new LinkedList<String>();

        l1.add("F");                    // index 0
        l1.add("B");                    // index 1
        l1.add("D");                    // index 2
        l1.add("D");                    // index 3
        l1.add("B");                    // index 4
        l1.add("F");                    // index 5
        l1.addFirst("A");    // Adds at index 0 [l1.add(0,"A");]
        l1.add("A");         // index 7
        l1.remove("B");      // Removes First "B" from the List
        l1.remove(3);        // Removes Element From Index 3
        l1.remove("Z");      // Removes "Z" if exists Otherwise List Unchanged
        }// End of Method
}// End of class
```

# *Thank You*

**Object-Oriented Programming (CS F213)**