

Kyle Hanson

CS 221

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Initial Test Plan for an IndexedUnsortedList

Define tests for at least 21 change scenarios, in addition to the 3 given as examples. (Total of 24 or more.)

1) no list -> constructor -> []

Tests:

- addToFront(A) throws no Exception
- addToRear(A) throws no Exception
- addAfter(A, B) throws NoSuchElementException
- add(A) throws no Exception
- add(-1, A) throws IndexOutOfBoundsException
- add(0, A) throws no Exception
- add(1, A) throws IndexOutOfBoundsException
- removeFirst() throws NoSuchElementException
- removeLast() throws NoSuchElementException
- remove(A) throws NoSuchElementException
- remove(-1) throws IndexOutOfBoundsException
- remove(0) throws IndexOutOfBoundsException
- set(-1, A) throws IndexOutOfBoundsException
- set(0, A) throws IndexOutOfBoundsException
- get(-1) throws IndexOutOfBoundsException
- get(0) throws IndexOutOfBoundsException
- indexOf(A) returns -1
- first() throws NoSuchElementException
- last() throws NoSuchElementException
- contains(A) returns false
- isEmpty() returns true
- size() returns 0
- iterator() returns an Iterator reference
- listIterator() throws UnsupportedOperationException
- listIterator(0) throws UnsupportedOperationException
- toString returns "[]"

2) [] -> addToFront(A) -> [A]

- addToFront(B) throws no Exception
- addToRear(B) throws no Exception
- addAfter(B, A) throws No Exception
- add(B) throws no Exception
- add(-1, B) throws IndexOutOfBoundsException
- add(0, B) throws no Exception
- add(1, B) throws no Exception
- removeFirst() throws no Exception
- removeLast() throws no Exception
- remove(A) throws no Exception
- remove(-1) throws IndexOutOfBoundsException
- remove(0) throws no Exception
- set(-1, A) throws IndexOutOfBoundsException
- set(0, A) throws no Exception
- get(-1) throws IndexOutOfBoundsException
- get(0) returns A
- indexOf(A) returns 0
- first() returns A

last() returns A
contains(A) returns true
isEmpty() returns false
size() returns 1
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString returns "[A]"

3) [] -> addToRear(A) -> [A]

addToFront(B) throws no Exception
addToRear(B) throws no Exception
addAfter(B, A) throws No Exception
add(B) throws no Exception
add(-1, B) throws IndexOutOfBoundsException
add(0, B) throws no Exception
add(1, B) throws no Exception
removeFirst() throws no Exception
removeLast() throws no Exception
remove(A) throws no Exception
remove(-1) throws IndexOutOfBoundsException
remove(0) throws no Exception
set(-1, A) throws IndexOutOfBoundsException
set(0, A) throws no Exception
get(-1) throws IndexOutOfBoundsException
get(0) returns A
indexOf(A) returns 0
first() returns A
last() returns A
contains(A) returns true
isEmpty() returns false
size() returns 1
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString returns "[A]"

4) [] -> add(A) -> [A]

addToFront(B) throws no Exception
addToRear(B) throws no Exception
addAfter(B, A) throws No Exception
add(B) throws no Exception
add(-1, B) throws IndexOutOfBoundsException
add(0, B) throws no Exception
add(1, B) throws no Exception
removeFirst() throws no Exception
removeLast() throws no Exception
remove(A) throws no Exception
remove(-1) throws IndexOutOfBoundsException
remove(0) throws no Exception
set(-1, A) throws IndexOutOfBoundsException
set(0, A) throws no Exception
get(-1) throws IndexOutOfBoundsException
get(0) returns A
indexOf(A) returns 0
first() returns A
last() returns A
contains(A) returns true
isEmpty() returns false
size() returns 1
iterator() returns an Iterator reference

listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString returns "[A]"

5) [] -> add(0,A) -> [A]

addToFront(B) throws no Exception
addToRear(B) throws no Exception
addAfter(B, A) throws No Exception
add(B) throws no Exception
add(-1, B) throws IndexOutOfBoundsException
add(0, B) throws no Exception
add(1, B) throws no Exception
removeFirst() throws no Exception
removeLast() throws no Exception
remove(A) throws no Exception
remove(-1) throws IndexOutOfBoundsException
remove(0) throws no Exception
set(-1, A) throws IndexOutOfBoundsException
set(0, A) throws no Exception
get(-1) throws IndexOutOfBoundsException
get(0) returns A
indexOf(A) returns 0
first() returns A
last() returns A
contains(A) returns true
isEmpty() returns false
size() returns 1
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString returns "[A]"

6) [A] -> addToFront(B) -> [B,A]

Tests:

addToFront(C) throws no Exceptions
addToRear(C) throws no Exceptions
addAfter(C, B) throws no Exceptions
addAfter(C, A) throws no Exceptions
addAfter(C, D) throws NoSuchElementException
add(C) throws no Exception
add(-1,C) throws IndexOutOfBoundsException
add(0,C) throws no Exception
add(1,C) throws no Exception
add(2,C) throws no Exception
add(3,C) throws IndexOutOfBoundsException
removeFirst() returns B
removeLast() returns A
remove(A) returns A
remove(B) returns B
remove(C) throws NoSuchElementException
remove(-1) throws IndexOutOfBoundsException
remove(0) returns B
remove(1) returns A
remove(2) throws IndexOutOfBoundsException
set(-1,C) throws IndexOutOfBoundsException
set(0,C) throws no Exception
set(1,C) throws no Exception
set(2,C) throws IndexOutOfBoundsException
get(-1) throws IndexOutOfBoundsException
get(0) returns B
get(1) returns A

get(2) throws IndexOutOfBoundsException
indexOf(A) returns 1
indexOf(B) returns 0
indexOf(C) returns -1
first() returns B
last() returns A
contains(A) returns true
contains(B) returns true
contains(C) returns false
isEmpty() returns false
size() returns 2
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString() returns "[B, A]"

7) [A] -> addToRear(B) -> [A,B]

Tests:

addToFront(C) throws no Exceptions
addToRear(C) throws no Exceptions
addAfter(C, B) throws no Exceptions
addAfter(C, A) throws no Exceptions
addAfter(C, D) throws NoSuchElementException
add(C) throws no Exception
add(-1,C) throws IndexOutOfBoundsException
add(0,C) throws no Exception
add(1,C) throws no Exception
add(2,C) throws no Exception
add(3,C) throws IndexOutOfBoundsException
removeFirst() returns A
removeLast() returns B
remove(A) returns A
remove(B) returns B
remove(C) throws NoSuchElementException
remove(-1) throws IndexOutOfBoundsException
remove(0) returns A
remove(1) returns B
remove(2) throws IndexOutOfBoundsException
set(-1,C) throws IndexOutOfBoundsException
set(0,C) throws no Exception
set(1,C) throws no Exception
set(2,C) throws IndexOutOfBoundsException
get(-1) throws IndexOutOfBoundsException
get(0) returns A
get(1) returns B
get(2) throws IndexOutOfBoundsException
indexOf(A) returns 0
indexOf(B) returns 1
indexOf(C) returns -1
first() returns A
last() returns B
contains(A) returns true
contains(B) returns true
contains(C) returns false
isEmpty() returns false
size() returns 2
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString() returns "[A, B]"

8) [A] -> addAfter(B,A) -> [A,B]

Tests:

```
addToFront(C) throws no Exceptions
addToRear(C) throws no Exceptions
addAfter(C, B) throws no Exceptions
addAfter(C, A) throws no Exceptions
addAfter(C, D) throws NoSuchElementException
add(C) throws no Exception
add(-1,C) throws IndexOutOfBoundsException
add(0,C) throws no Exception
add(1,C) throws no Exception
add(2,C) throws no Exception
add(3,C) throws IndexOutOfBoundsException
removeFirst() returns A
removeLast() returns B
remove(A) returns A
remove(B) returns B
remove(C) throws NoSuchElementException
remove(-1) throws IndexOutOfBoundsException
remove(0) returns A
remove(1) returns B
remove(2) throws IndexOutOfBoundsException
set(-1,C) throws IndexOutOfBoundsException
set(0,C) throws no Exception
set(1,C) throws no Exception
set(2,C) throws IndexOutOfBoundsException
get(-1) throws IndexOutOfBoundsException
get(0) returns A
get(1) returns B
get(2) throws IndexOutOfBoundsException
indexOf(A) returns 0
indexOf(B) returns 1
indexOf(C) returns -1
first() returns A
last() returns B
contains(A) returns true
contains(B) returns true
contains(C) returns false
isEmpty() returns false
size() returns 2
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString() returns "[A, B]"
```

9) [A] -> add(B) -> [A,B]

Tests:

```
addToFront(C) throws no Exceptions
addToRear(C) throws no Exceptions
addAfter(C, B) throws no Exceptions
addAfter(C, A) throws no Exceptions
addAfter(C, D) throws NoSuchElementException
add(C) throws no Exception
add(-1,C) throws IndexOutOfBoundsException
add(0,C) throws no Exception
add(1,C) throws no Exception
add(2,C) throws no Exception
add(3,C) throws IndexOutOfBoundsException
removeFirst() returns A
removeLast() returns B
```

remove(A) returns A
 remove(B) returns B
 remove(C) throws NoSuchElementException
 remove(-1) throws IndexOutOfBoundsException
 remove(0) returns A
 remove(1) returns B
 remove(2) throws IndexOutOfBoundsException
 set(-1,C) throws IndexOutOfBoundsException
 set(0,C) throws no Exception
 set(1,C) throws no Exception
 set(2,C) throws IndexOutOfBoundsException
 get(-1) throws IndexOutOfBoundsException
 get(0) returns A
 get(1) returns B
 get(2) throws IndexOutOfBoundsException
 indexOf(A) returns 0
 indexOf(B) returns 1
 indexOf(C) returns -1
 first() returns A
 last() returns B
 contains(A) returns true
 contains(B) returns true
 contains(C) returns false
 isEmpty() returns false
 size() returns 2
 iterator() returns an Iterator reference
 listIterator() throws UnsupportedOperationException
 listIterator(0) throws UnsupportedOperationException
 toString() returns "[A, B]"

10) [A] -> add(0,B) -> [B,A]

Tests:

addToFront(C) throws no Exceptions
 addToRear(C) throws no Exceptions
 addAfter(C, B) throws no Exceptions
 addAfter(C, A) throws no Exceptions
 addAfter(C, D) throws NoSuchElementException
 add(C) throws no Exception
 add(-1,C) throws IndexOutOfBoundsException
 add(0,C) throws no Exception
 add(1,C) throws no Exception
 add(2,C) throws no Exception
 add(3,C) throws IndexOutOfBoundsException
 removeFirst() returns B
 removeLast() returns A
 remove(A) returns A
 remove(B) returns B
 remove(C) throws NoSuchElementException
 remove(-1) throws IndexOutOfBoundsException
 remove(0) returns B
 remove(1) returns A
 remove(2) throws IndexOutOfBoundsException
 set(-1,C) throws IndexOutOfBoundsException
 set(0,C) throws no Exception
 set(1,C) throws no Exception
 set(2,C) throws IndexOutOfBoundsException
 get(-1) throws IndexOutOfBoundsException
 get(0) returns B
 get(1) returns A
 get(2) throws IndexOutOfBoundsException

indexOf(A) returns 1
indexOf(B) returns 0
indexOf(C) returns -1
first() returns B
last() returns A
contains(A) returns true
contains(B) returns true
contains(C) returns false
isEmpty() returns false
size() returns 2
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString() returns "[B, A]"

11) [A] -> add(1,B) -> [A,B]

Tests:

addToFront(C) throws no Exceptions
addToRear(C) throws no Exceptions
addAfter(C, B) throws no Exceptions
addAfter(C, A) throws no Exceptions
addAfter(C, D) throws NoSuchElementException
add(C) throws no Exception
add(-1,C) throws IndexOutOfBoundsException
add(0,C) throws no Exception
add(1,C) throws no Exception
add(2,C) throws no Exception
add(3,C) throws IndexOutOfBoundsException
removeFirst() returns A
removeLast() returns B
remove(A) returns A
remove(B) returns B
remove(C) throws NoSuchElementException
remove(-1) throws IndexOutOfBoundsException
remove(0) returns A
remove(1) returns B
remove(2) throws IndexOutOfBoundsException
set(-1,C) throws IndexOutOfBoundsException
set(0,C) throws no Exception
set(1,C) throws no Exception
set(2,C) throws IndexOutOfBoundsException
get(-1) throws IndexOutOfBoundsException
get(0) returns A
get(1) returns B
get(2) throws IndexOutOfBoundsException
indexOf(A) returns 0
indexOf(B) returns 1
indexOf(C) returns -1
first() returns A
last() returns B
contains(A) returns true
contains(B) returns true
contains(C) returns false
isEmpty() returns false
size() returns 2
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString() returns "[A, B]"

12) [A] -> removeFirst() -> []

Tests:

- addToFront(A) throws no Exception
- addToRear(A) throws no Exception
- addAfter(A, B) throws NoSuchElementException
- add(A) throws no Exception
- add(-1, A) throws IndexOutOfBoundsException
- add(0, A) throws no Exception
- add(1, A) throws IndexOutOfBoundsException
- removeFirst() throws NoSuchElementException
- removeLast() throws NoSuchElementException
- remove(A) throws NoSuchElementException
- remove(-1) throws IndexOutOfBoundsException
- remove(0) throws IndexOutOfBoundsException
- set(-1, A) throws IndexOutOfBoundsException
- set(0, A) throws IndexOutOfBoundsException
- get(-1) throws IndexOutOfBoundsException
- get(0) throws IndexOutOfBoundsException
- indexOf(A) returns -1
- first() throws NoSuchElementException
- last() throws NoSuchElementException
- contains(A) returns false
- isEmpty() returns true
- size() returns 0
- iterator() returns an Iterator reference
- listIterator() throws UnsupportedOperationException
- listIterator(0) throws UnsupportedOperationException
- toString returns "[]"

13) [A] -> removeLast() -> []

Tests:

- addToFront(A) throws no Exception
- addToRear(A) throws no Exception
- addAfter(A, B) throws NoSuchElementException
- add(A) throws no Exception
- add(-1, A) throws IndexOutOfBoundsException
- add(0, A) throws no Exception
- add(1, A) throws IndexOutOfBoundsException
- removeFirst() throws NoSuchElementException
- removeLast() throws NoSuchElementException
- remove(A) throws NoSuchElementException
- remove(-1) throws IndexOutOfBoundsException
- remove(0) throws IndexOutOfBoundsException
- set(-1, A) throws IndexOutOfBoundsException
- set(0, A) throws IndexOutOfBoundsException
- get(-1) throws IndexOutOfBoundsException
- get(0) throws IndexOutOfBoundsException
- indexOf(A) returns -1
- first() throws NoSuchElementException
- last() throws NoSuchElementException
- contains(A) returns false
- isEmpty() returns true
- size() returns 0
- iterator() returns an Iterator reference
- listIterator() throws UnsupportedOperationException
- listIterator(0) throws UnsupportedOperationException
- toString returns "[]"

14) [A] -> remove(A) -> []

Tests:

- addToFront(A) throws no Exception
- addToRear(A) throws no Exception

addAfter(A, B) throws NoSuchElementException
add(A) throws no Exception
add(-1, A) throws IndexOutOfBoundsException
add(0, A) throws no Exception
add(1, A) throws IndexOutOfBoundsException
removeFirst() throws NoSuchElementException
removeLast() throws NoSuchElementException
remove(A) throws NoSuchElementException
remove(-1) throws IndexOutOfBoundsException
remove(0) throws IndexOutOfBoundsException
set(-1, A) throws IndexOutOfBoundsException
set(0, A) throws IndexOutOfBoundsException
get(-1) throws IndexOutOfBoundsException
get(0) throws IndexOutOfBoundsException
indexOf(A) returns -1
first() throws NoSuchElementException
last() throws NoSuchElementException
contains(A) returns false
isEmpty() returns true
size() returns 0
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString returns "[]"

15) [A] -> remove(0) -> []

Tests:

addToFront(A) throws no Exception
addToRear(A) throws no Exception
addAfter(A, B) throws NoSuchElementException
add(A) throws no Exception
add(-1, A) throws IndexOutOfBoundsException
add(0, A) throws no Exception
add(1, A) throws IndexOutOfBoundsException
removeFirst() throws NoSuchElementException
removeLast() throws NoSuchElementException
remove(A) throws NoSuchElementException
remove(-1) throws IndexOutOfBoundsException
remove(0) throws IndexOutOfBoundsException
set(-1, A) throws IndexOutOfBoundsException
set(0, A) throws IndexOutOfBoundsException
get(-1) throws IndexOutOfBoundsException
get(0) throws IndexOutOfBoundsException
indexOf(A) returns -1
first() throws NoSuchElementException
last() throws NoSuchElementException
contains(A) returns false
isEmpty() returns true
size() returns 0
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString returns "[]"

16) [A] -> set(0,B) -> [B]

Tests:

addToFront(B) throws no Exception
addToRear(A) throws no Exception
addAfter(A, B) throws No Exception
add(A) throws no Exception
add(-1, A) throws IndexOutOfBoundsException

add(0, A) throws no Exception
 add(1, A) throws no Exception
 removeFirst() throws no Exception
 removeLast() throws no Exception
 remove(B) throws no Exception
 remove(-1) throws IndexOutOfBoundsException
 remove(0) throws no Exception
 set(-1, A) throws IndexOutOfBoundsException
 set(0, A) throws no Exception
 get(-1) throws IndexOutOfBoundsException
 get(0) returns B
 indexOf(B) returns 0
 first() returns B
 last() returns B
 contains(A) returns false
 isEmpty() returns false
 size() returns 1
 iterator() returns an Iterator reference
 listIterator() throws UnsupportedOperationException
 listIterator(0) throws UnsupportedOperationException
 toString returns "[B]"

- 17) [A,B] -> addToFront(C) -> [C,A,B]
- 18) [A,B] -> addToRear(C) -> [A,B,C]
- 19) [A,B] -> addAfter(C,A) -> [A,C,B]
- 20) [A,B] -> addAfter(C,B) -> [A,B,C]
- 21) [A,B] -> add(C) -> [A,B,C]
- 22) [A,B] -> add(0,C) -> [C,A,B]
- 23) [A,B] -> add(1,C) -> [A,C,B]
- 24) [A,B] -> add (2,C) -> [A,B,C]
- 25) [A,B] -> removeFirst() -> [B]

Tests:

addToFront(B) throws no Exception
 addToRear(A) throws no Exception
 addAfter(A, B) throws No Exception
 add(A) throws no Exception
 add(-1, A) throws IndexOutOfBoundsException
 add(0, A) throws no Exception
 add(1, A) throws no Exception
 removeFirst() throws no Exception
 removeLast() throws no Exception
 remove(B) throws no Exception
 remove(-1) throws IndexOutOfBoundsException
 remove(0) throws no Exception
 set(-1, A) throws IndexOutOfBoundsException
 set(0, A) throws no Exception
 get(-1) throws IndexOutOfBoundsException
 get(0) returns B
 indexOf(B) returns 0
 first() returns B
 last() returns B
 contains(A) returns false
 isEmpty() returns false
 size() returns 1
 iterator() returns an Iterator reference
 listIterator() throws UnsupportedOperationException
 listIterator(0) throws UnsupportedOperationException
 toString returns "[B]"

- 26) [A,B] -> removeLast() -> [A]

Tests:

addToFront(B) throws no Exception
 addToRear(B) throws no Exception
 addAfter(B, A) throws No Exception
 add(B) throws no Exception
 add(-1, B) throws IndexOutOfBoundsException
 add(0, B) throws no Exception
 add(1, B) throws no Exception
 removeFirst() throws no Exception
 removeLast() throws no Exception
 remove(A) throws no Exception
 remove(-1) throws IndexOutOfBoundsException
 remove(0) throws no Exception
 set(-1, A) throws IndexOutOfBoundsException
 set(0, A) throws no Exception
 get(-1) throws IndexOutOfBoundsException
 get(0) returns A
 indexOf(A) returns 0
 first() returns A
 last() returns A
 contains(A) returns true
 isEmpty() returns false
 size() returns 1
 iterator() returns an Iterator reference
 listIterator() throws UnsupportedOperationException
 listIterator(0) throws UnsupportedOperationException
 toString returns "[A]"

27) [A,B] -> remove(A) -> [B]

Tests:

addToFront(B) throws no Exception
 addToRear(A) throws no Exception
 addAfter(A, B) throws No Exception
 add(A) throws no Exception
 add(-1, A) throws IndexOutOfBoundsException
 add(0, A) throws no Exception
 add(1, A) throws no Exception
 removeFirst() throws no Exception
 removeLast() throws no Exception
 remove(B) throws no Exception
 remove(-1) throws IndexOutOfBoundsException
 remove(0) throws no Exception
 set(-1, A) throws IndexOutOfBoundsException
 set(0, A) throws no Exception
 get(-1) throws IndexOutOfBoundsException
 get(0) returns B
 indexOf(B) returns 0
 first() returns B
 last() returns B
 contains(A) returns false
 isEmpty() returns false
 size() returns 1
 iterator() returns an Iterator reference
 listIterator() throws UnsupportedOperationException
 listIterator(0) throws UnsupportedOperationException
 toString returns "[B]"

28) [A,B] -> remove(B) -> [A]

Tests:

addToFront(B) throws no Exception
 addToRear(B) throws no Exception

addAfter(B, A) throws No Exception
 add(B) throws no Exception
 add(-1, B) throws IndexOutOfBoundsException
 add(0, B) throws no Exception
 add(1, B) throws no Exception
 removeFirst() throws no Exception
 removeLast() throws no Exception
 remove(A) throws no Exception
 remove(-1) throws IndexOutOfBoundsException
 remove(0) throws no Exception
 set(-1, A) throws IndexOutOfBoundsException
 set(0, A) throws no Exception
 get(-1) throws IndexOutOfBoundsException
 get(0) returns A
 indexOf(A) returns 0
 first() returns A
 last() returns A
 contains(A) returns true
 isEmpty() returns false
 size() returns 1
 iterator() returns an Iterator reference
 listIterator() throws UnsupportedOperationException
 listIterator(0) throws UnsupportedOperationException
 toString returns "[A]"

29) [A,B] -> remove(0) -> [B]

Tests:

addToFront(B) throws no Exception
 addToRear(A) throws no Exception
 addAfter(A, B) throws No Exception
 add(A) throws no Exception
 add(-1, A) throws IndexOutOfBoundsException
 add(0, A) throws no Exception
 add(1, A) throws no Exception
 removeFirst() throws no Exception
 removeLast() throws no Exception
 remove(B) throws no Exception
 remove(-1) throws IndexOutOfBoundsException
 remove(0) throws no Exception
 set(-1, A) throws IndexOutOfBoundsException
 set(0, A) throws no Exception
 get(-1) throws IndexOutOfBoundsException
 get(0) returns B
 indexOf(B) returns 0
 first() returns B
 last() returns B
 contains(A) returns false
 isEmpty() returns false
 size() returns 1
 iterator() returns an Iterator reference
 listIterator() throws UnsupportedOperationException
 listIterator(0) throws UnsupportedOperationException
 toString returns "[B]"

30) [A,B] -> remove(1) -> [A]

Tests:

addToFront(B) throws no Exception
 addToRear(B) throws no Exception
 addAfter(B, A) throws No Exception
 add(B) throws no Exception

add(-1, B) throws IndexOutOfBoundsException
add(0, B) throws no Exception
add(1, B) throws no Exception
removeFirst() throws no Exception
removeLast() throws no Exception
remove(A) throws no Exception
remove(-1) throws IndexOutOfBoundsException
remove(0) throws no Exception
set(-1, A) throws IndexOutOfBoundsException
set(0, A) throws no Exception
get(-1) throws IndexOutOfBoundsException
get(0) returns A
indexOf(A) returns 0
first() returns A
last() returns A
contains(A) returns true
isEmpty() returns false
size() returns 1
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString returns "[A]"

- 31) [A,B] -> set(0,C) -> [C,B]
- 32) [A,B] -> set(1,C) -> [A,C]
- 33) [A,B,C] -> removeFirst() -> [B,C]
- 34) [A,B,C] -> removeLast() -> [A,B]
- 35) [A,B,C] -> remove(A) -> [B,C]
- 36) [A,B,C] -> remove(B) -> [A,C]

Tests:

addToFront(D) throws no Exceptions
addToRear(D) throws no Exceptions
addAfter(D, A) throws no Exceptions
addAfter(D, C) throws no Exceptions
addAfter(D, B) throws NoSuchElementException
add(D) throws no Exception
add(-1, D) throws IndexOutOfBoundsException
add(0, D) throws no Exception
add(1, D) throws no Exception
add(2, D) throws no Exception
add(3, D) throws IndexOutOfBoundsException
removeFirst() returns A
removeLast() returns C
remove(A) returns A
remove(B) throws NoSuchElementException
remove(C) returns C
remove(-1) throws IndexOutOfBoundsException
remove(0) returns A
remove(1) returns C
remove(2) throws IndexOutOfBoundsException
set(-1, D) throws IndexOutOfBoundsException
set(0, D) throws no Exception
set(1, D) throws no Exception
set(2, D) throws IndexOutOfBoundsException
get(-1) throws IndexOutOfBoundsException
get(0) returns A
get(1) returns C
get(2) throws IndexOutOfBoundsException
indexOf(A) returns 0
indexOf(B) returns -1

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indexOf(C) returns 1
first() returns A
last() returns C
contains(A) returns true
contains(B) returns false
contains(C) returns true
isEmpty() returns false
size() returns 2
iterator() returns an Iterator reference
listIterator() throws UnsupportedOperationException
listIterator(0) throws UnsupportedOperationException
toString() returns "[A, C]"
37) [A,B,C] -> remove(C) -> [A,B]
38) [A,B,C] -> remove(0) -> [B,C]
39) [A,B,C] -> remove(1) -> [A,C]
Tests:
  addToFront(D) throws no Exceptions
  addToRear(D) throws no Exceptions
  addAfter(D, A) throws no Exceptions
  addAfter(D, C) throws no Exceptions
  addAfter(D, B) throws NoSuchElementException
  add(D) throws no Exception
  add(-1, D) throws IndexOutOfBoundsException
  add(0, D) throws no Exception
  add(1, D) throws no Exception
  add(2, D) throws no Exception
  add(3, D) throws IndexOutOfBoundsException
  removeFirst() returns A
  removeLast() returns C
  remove(A) returns A
  remove(B) throws NoSuchElementException
  remove(C) returns C
  remove(-1) throws IndexOutOfBoundsException
  remove(0) returns A
  remove(1) returns C
  remove(2) throws IndexOutOfBoundsException
  set(-1, D) throws IndexOutOfBoundsException
  set(0, D) throws no Exception
  set(1, D) throws no Exception
  set(2, D) throws IndexOutOfBoundsException
  get(-1) throws IndexOutOfBoundsException
  get(0) returns A
  get(1) returns C
  get(2) throws IndexOutOfBoundsException
  indexOf(A) returns 0
  indexOf(B) returns -1
  indexOf(C) returns 1
  first() returns A
  last() returns C
  contains(A) returns true
  contains(B) returns false
  contains(C) returns true
  isEmpty() returns false
  size() returns 2
  iterator() returns an Iterator reference
  listIterator() throws UnsupportedOperationException
  listIterator(0) throws UnsupportedOperationException
  toString() returns "[A, C]"
40) [A,B,C] -> remove(2) -> [A,B]

```

```
41) [A, B, C] -> set(0, D) -> [D, B, C]
42) [A, B, C] -> set(1, D) -> [A, D, C]
43) [A, B, C] -> set(2, D) -> [A, B, D]
```