

Homework 5 - Lists

Q2. For each of the methods of ListADT, fill in the run time in the worst case on each implementation (Constant Or linear)

Method Name	AList	LList
Clear	O(1)	O(1)
insert	O(n)	O(1)
append	O(1)	O(1)
remove	O(n)	O(1)
moveToStart	O(1)	O(1)
moveToEnd	O(1)	O(1)
prev	O(1)	O(1)
next	O(1)	O(1)
Length	O(1)	O(1)
currPos	O(1)	O(1)
moveToPos	O(1)	O(n)
isAtEnd	O(1)	O(1)
getValue	O(1)	O(1)
isEmpty	O(1)	O(1)

Q3. Write the resulting list L after the following code was executed. What are the Return values of L.curr Pos() , L. length() after the code Executes? (Hint: use the printList function to verify your answer).

a. Code Execution:

```
java
L.clear();
L.insert(1);
L.insert(2);
L.next();
L.insert(3);
```

```
L.insert(4);  
L.insert(5);  
L.moveToEnd();
```

- Resulting List: < 1 3 4 5 2 | >
- Return Values: L.currPos() = 5, L.length() = 5

b. Code Execution:

```
java  
L.clear();  
L.append(4);  
L.append(5);  
L.next();  
L.insert(6);  
L.append(7);
```

- Resulting List: < 4 6 | 5 7 >
- Return Values: L.currPos() = 2, L.length() = 4

c. Code Execution:

```
java  
L.clear();  
L.insert(3);  
L.insert(4);  
L.moveToEnd();  
L.insert(6);  
L.moveToStart();  
L.insert(7);  
L.append(8);  
L.getValue();
```

- Resulting List: < 7 3 4 6 | 8 >
- Return Values: L.currPos() = 4, L.length() = 5

d. Code Execution:

```
java
L.clear();
L.append(4);
L.append(5);
L.next();
L.remove();
L.append(6);
L.append(7);
```

- Resulting List: < 4 | 6 7 >
- Return Values: L.currPos() = 1, L.length() = 3

e. Code Execution:

```
java
L.clear();
L.append(4);
L.append(5);
L.append(6);
L.next();
L.remove();
L.remove();
```

- Resulting List: < 4 | >
- Return Values: L.currPos() = 1, L.length() = 1