

Efficiency of List operations

Given for first;
middle; last
positions
when
givenPosition
is a
parameter

Operation	Array Implementation	Singly-Linked Chain Implementation with Head Reference	Singly-Linked Chain Implementation with Head and Tail Reference
add(newEntry)	O(1)	O(n)	O(1)
add(newPosition, newEntry)	O(n);O(1)	O(1);O(n)	O(1);O(n)
toArray()	O(n)	O(n)	O(n)
remove(givenPosition)	O(n);O(1)	O(1); O(n)	O(1); O(n)
replace(givenPosition, newEntry)	O(1)	O(1); O(n)	O(1); O(n);O(1)
getEntry(givenPosition)	O(1)	O(1); O(n)	O(1); O(n);O(1)
contains(anEntry)	O(n)	O(n)	O(n)
clear(), getLength(), isEmpty()	O(1)	O(1)	O(1)