$10\hbox{-}1.\ Comparisons\ among\ lists$

For each of the four types of lists in the following table, what is the asymptotic worst-case running rime for each dynamic-set operation listed?

	unsorted, singly linked	sorted, singly linked	unsorted, doubly linked	sorted, doubly linked
Search(L, k)				
Insert(L, x)				
Delete(L, x)				
Successor(L, x)				
$\overline{PREDECESSOR(L,x)}$				
MINIMUM(L)				
MAXIMUM(L)				

Solution.

	unsorted,	sorted,	unsorted,	sorted,
	singly	singly	doubly	doubly
	linked	linked	linked	linked
Search(L, k)	$O\left(n\right)$	$O\left(n\right)$	$O\left(n\right)$	$O\left(n\right)$
INSERT(L, x)	O(1)	$O\left(n\right)$	O(1)	$O\left(n\right)$
Delete(L, x)	$O\left(n\right)$	$O\left(n\right)$	O(1)	O(1)
Successor(L, x)	$O\left(n\right)$	$O\left(1\right)$	$O\left(n\right)$	O(1)
PREDECESSOR(L, x)	$O\left(n\right)$	$O\left(n\right)$	$O\left(n\right)$	O(1)
MINIMUM(L)	$O\left(n\right)$	O(1) or $O(n)$	$O\left(n\right)$	O(1)
Maximum(L)	$O\left(n\right)$	O(n) or $O(1)$	$O\left(n\right)$	O(1)

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