

1.3.1 Time ComplexityInsert

& we have to insert next to current element, so just changing pointers.

$$\Rightarrow O(1)$$

Delete

in worst case element would not be present i.e. we would search whole list.

So, $O(n)$

Find

element would not be present (worst case). We would search whole linked list.

$$\Rightarrow \underline{O(n)}$$

getFirst

$$O(n)$$

{ Worst case when k "this" is the last element }

getNext

$$O(1)$$

Sanity ()

$O(n)$ for checking for cycle

$O(n)$ for traversing whole list to check ($h \cdot \text{prev} \cdot \text{next} = h$)

$$\Rightarrow 2n$$

i.e. $O(n)$

1.3.2 Worst case time complexity

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Allocate

find function takes $O(n)$ time

Delete takes $O(n)$ time

Insert takes $O(1)$

So, $O(n)$ time complexity

Free

find takes $O(n)$ time.

Insert is $O(1)$

Delete is $O(n)$
& so $c_1n + c_2$ type.

So, $O(n)$ time complexity