

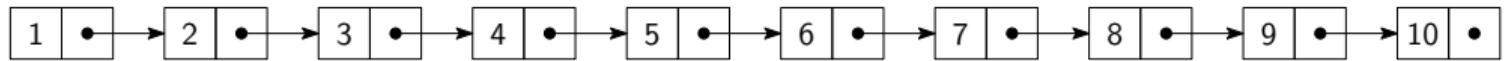
Skiplists

Open Data Structures



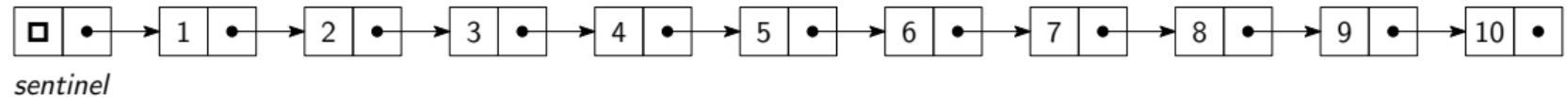
SkipList

A Randomized Random-Access List



SkipList

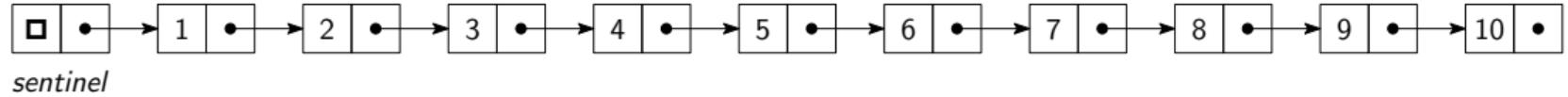
A Randomized Random-Access List



Skiplist

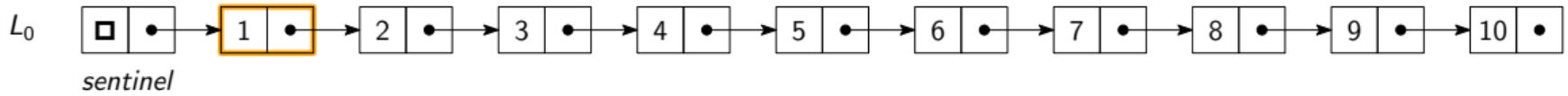
A Randomized Random-Access List

L_0



Skiplist

A Randomized Random-Access List



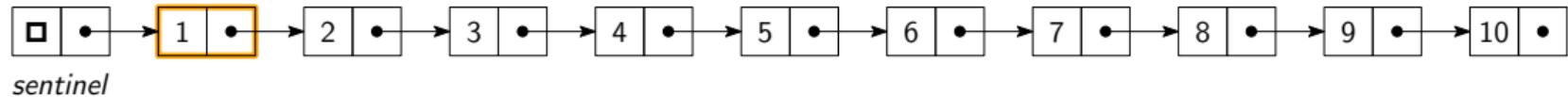
Skiplist

A Randomized Random-Access List



L_1

L_0



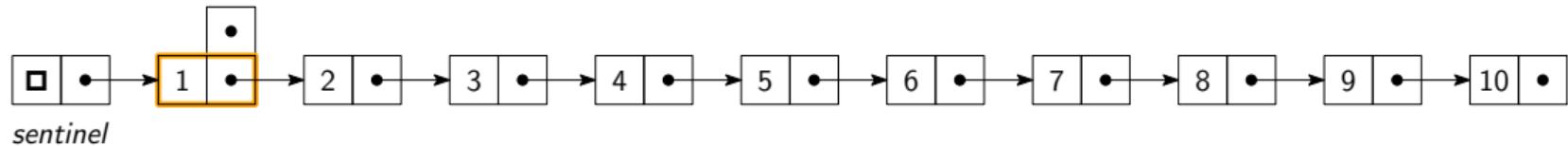
Skiplist

A Randomized Random-Access List



L_1

L_0

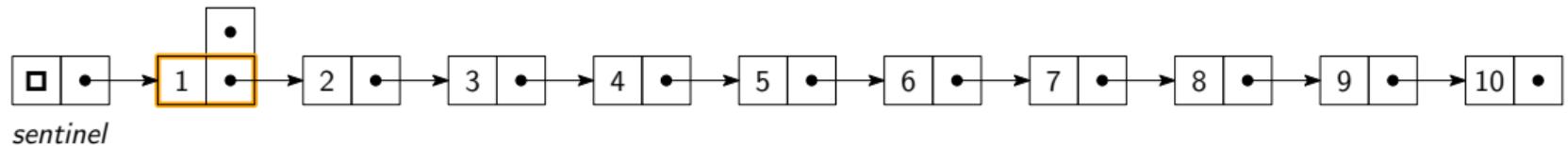


Skiplist

A Randomized Random-Access List

L_1

L_0



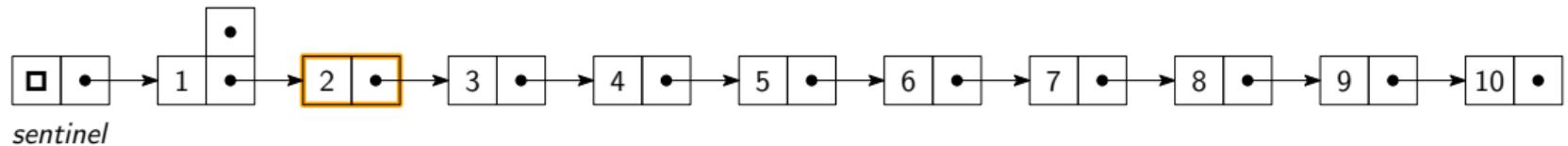
sentinel

Skiplist

A Randomized Random-Access List

L_1

L_0



sentinel

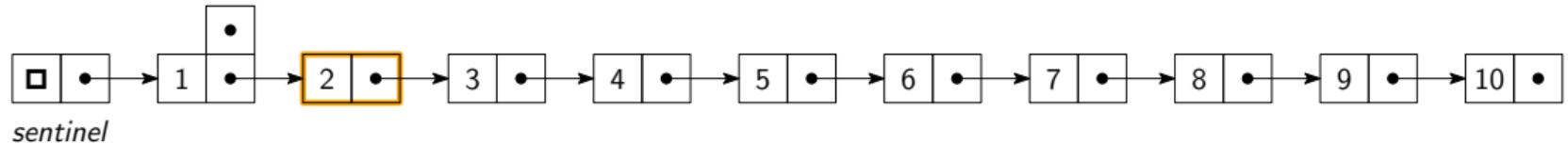
Skiplist

A Randomized Random-Access List



L_1

L_0

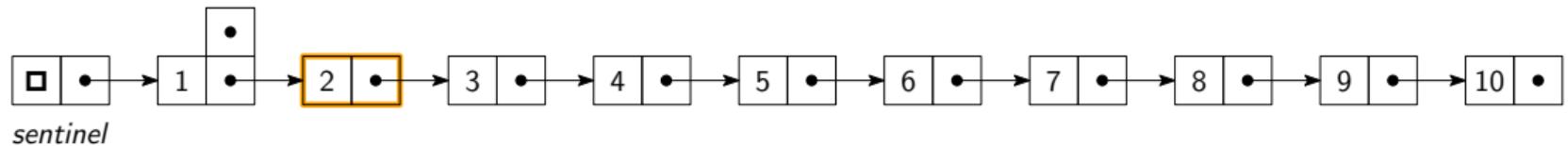


Skiplist

A Randomized Random-Access List

L_1

L_0

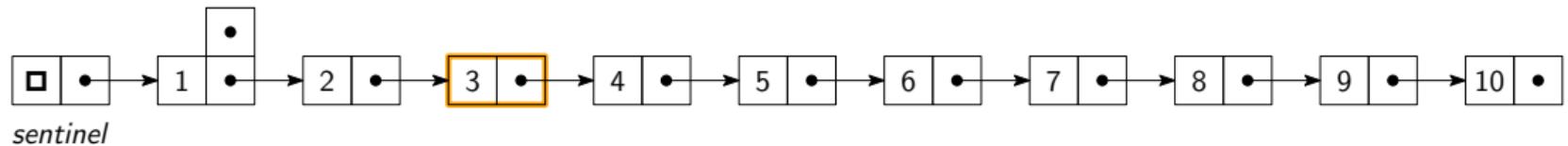


Skiplist

A Randomized Random-Access List

L_1

L_0



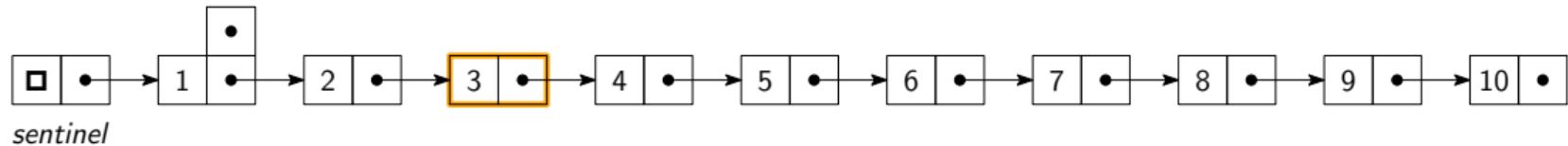
SkipList

A Randomized Random-Access List



L_1

L_0



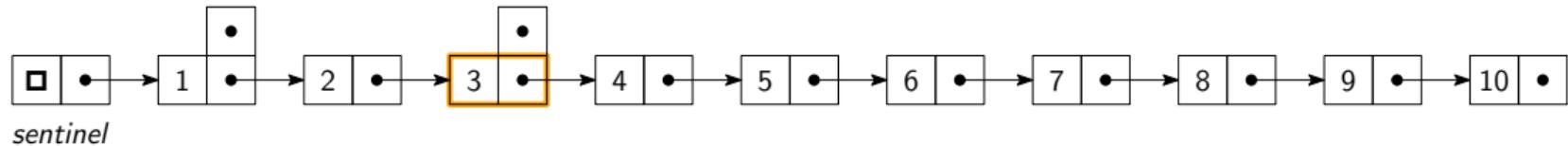
SkipList

A Randomized Random-Access List



L_1

L_0



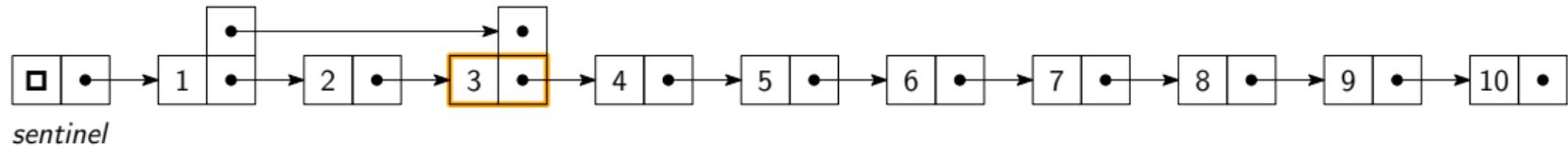
SkipList

A Randomized Random-Access List



L_1

L_0



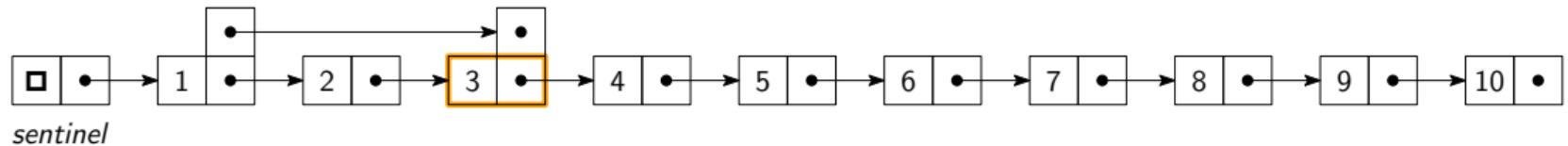
sentinel

SkipList

A Randomized Random-Access List

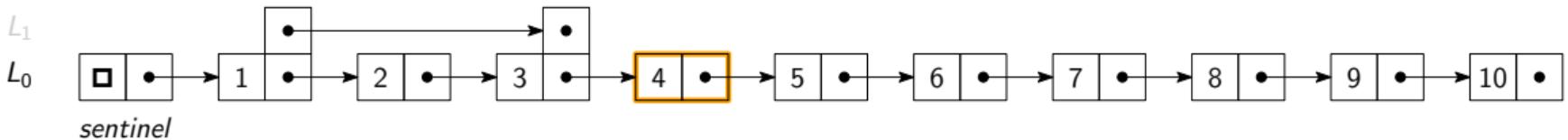
L_1

L_0



Skiplist

A Randomized Random-Access List



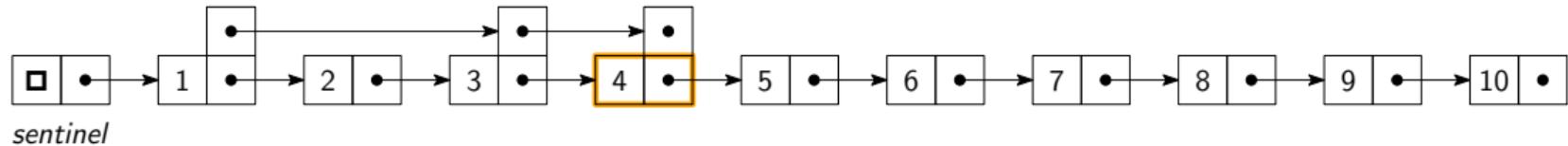
SkipList

A Randomized Random-Access List



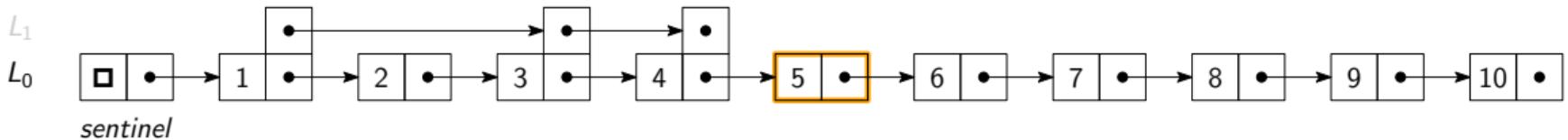
L_1

L_0



Skiplist

A Randomized Random-Access List



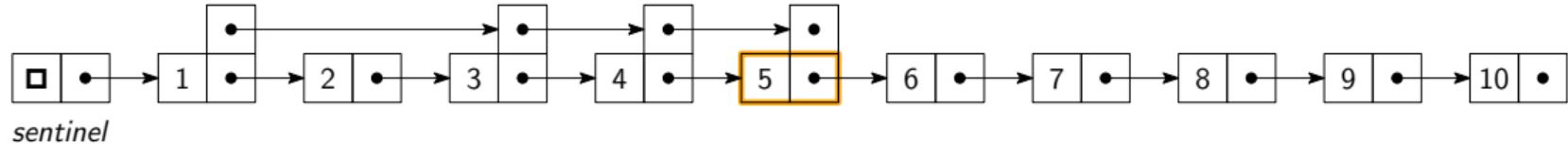
Skiplist

A Randomized Random-Access List



L_1

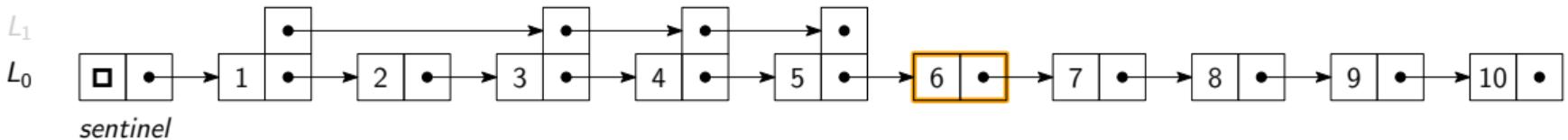
L_0



sentinel

Skiplist

A Randomized Random-Access List



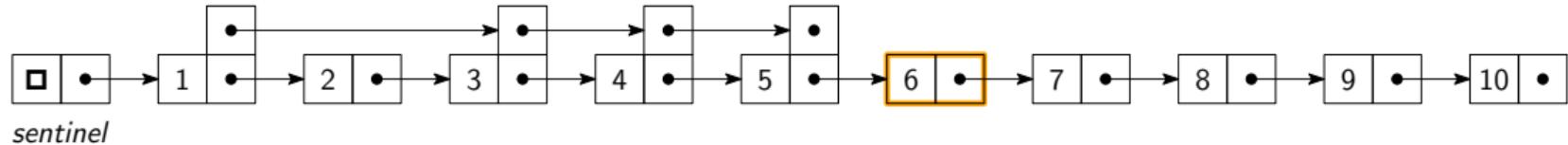
Skiplist

A Randomized Random-Access List



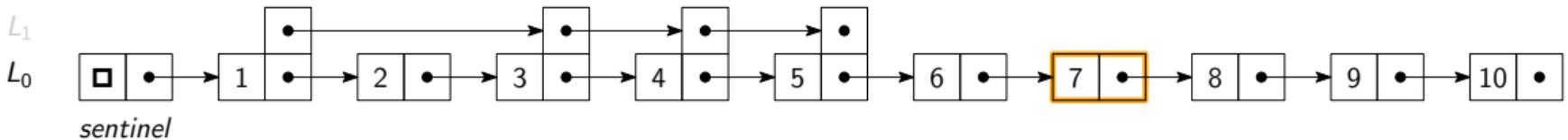
L_1

L_0



Skiplist

A Randomized Random-Access List



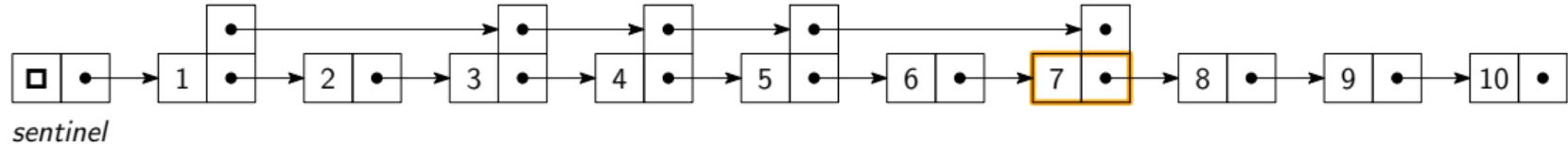
Skiplist

A Randomized Random-Access List



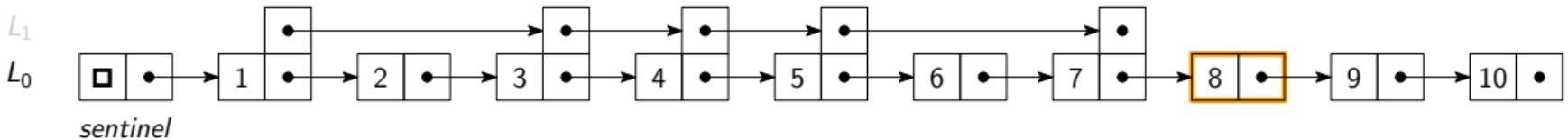
L_1

L_0



Skiplist

A Randomized Random-Access List



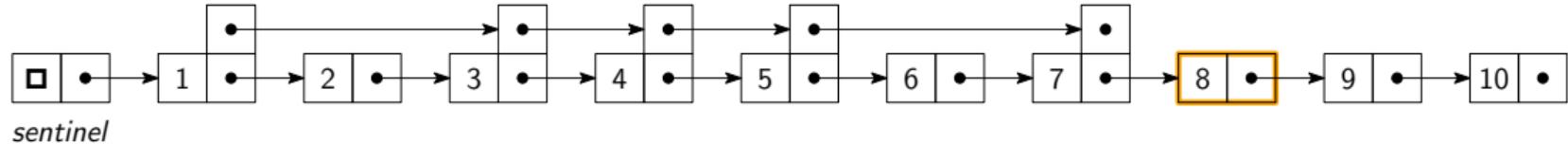
Skiplist

A Randomized Random-Access List



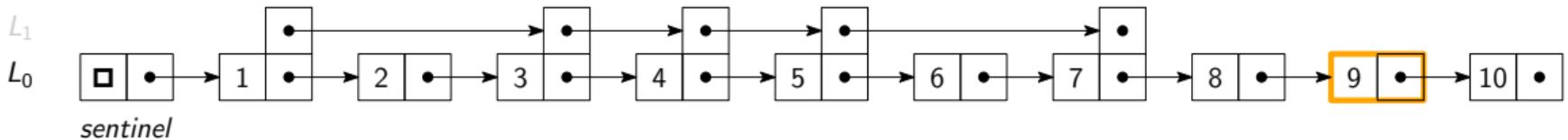
L_1

L_0



Skiplist

A Randomized Random-Access List



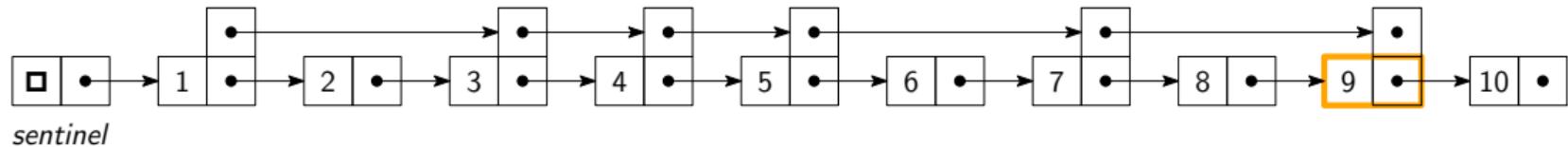
Skiplist

A Randomized Random-Access List



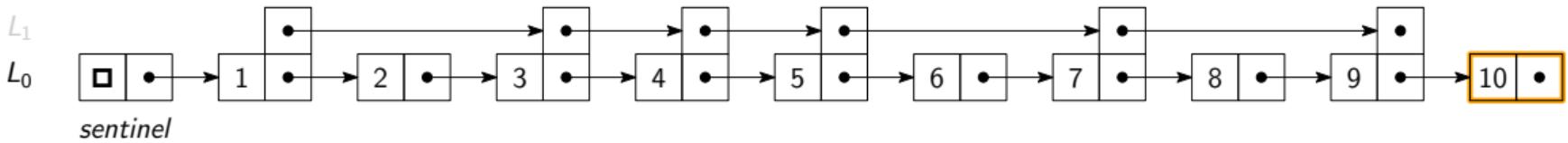
L_1

L_0



Skiplist

A Randomized Random-Access List



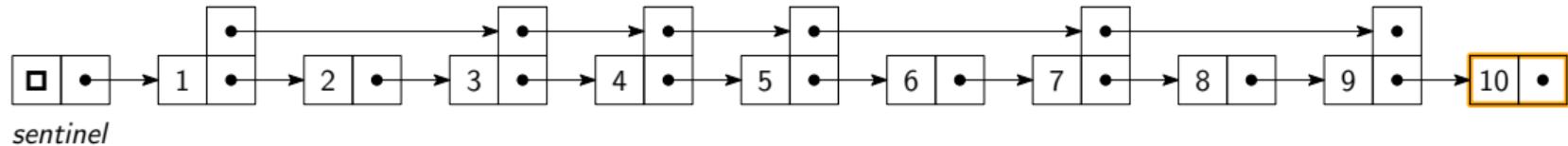
Skiplist

A Randomized Random-Access List



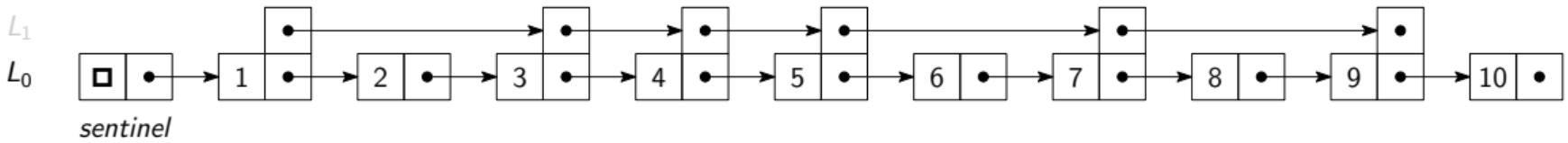
L_1

L_0



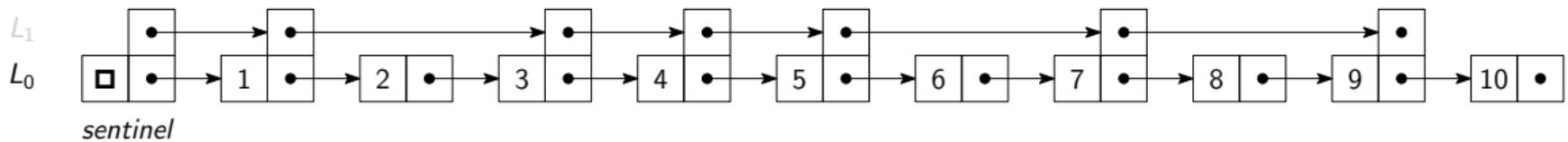
Skiplist

A Randomized Random-Access List



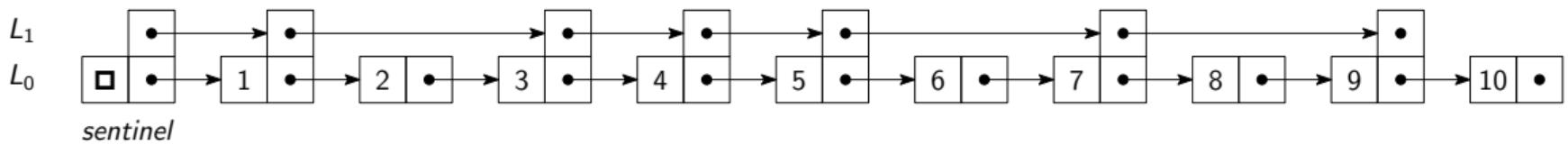
Skiplist

A Randomized Random-Access List



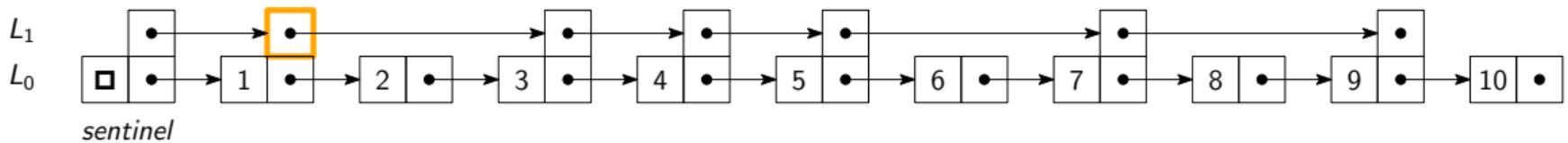
Skiplist

A Randomized Random-Access List



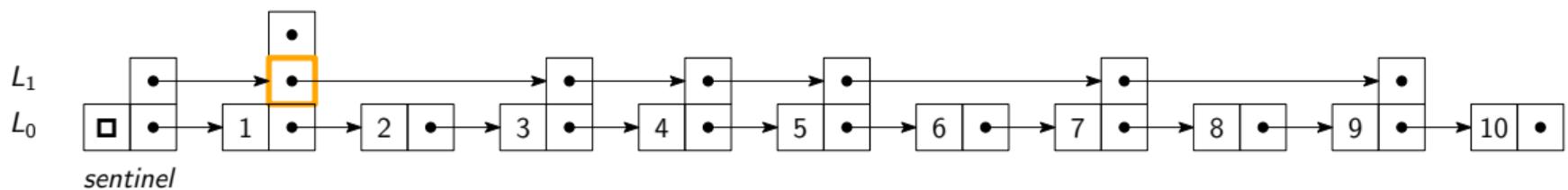
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A Randomized Random-Access List



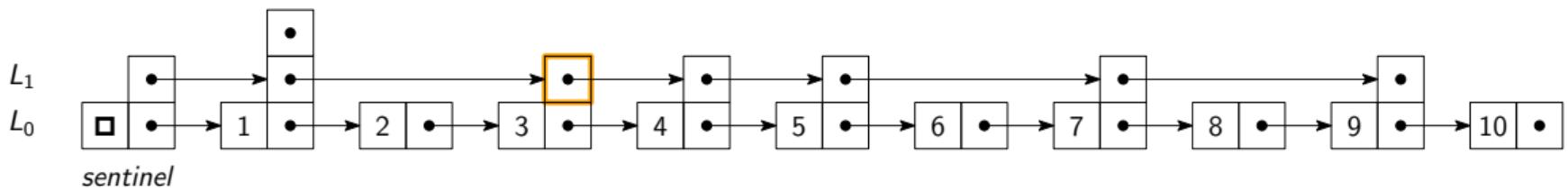
Skiplist

A Randomized Random-Access List



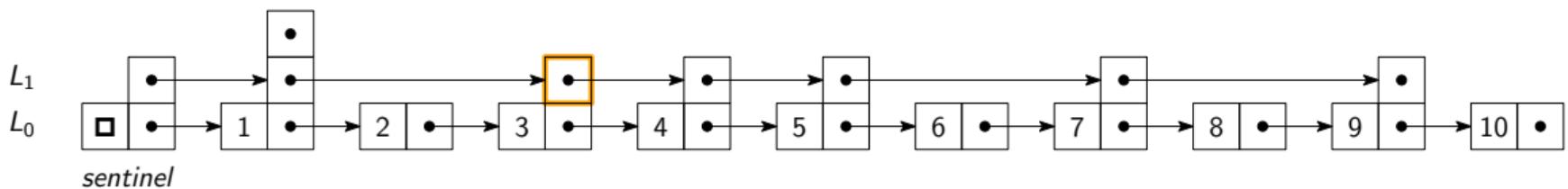
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A Randomized Random-Access List



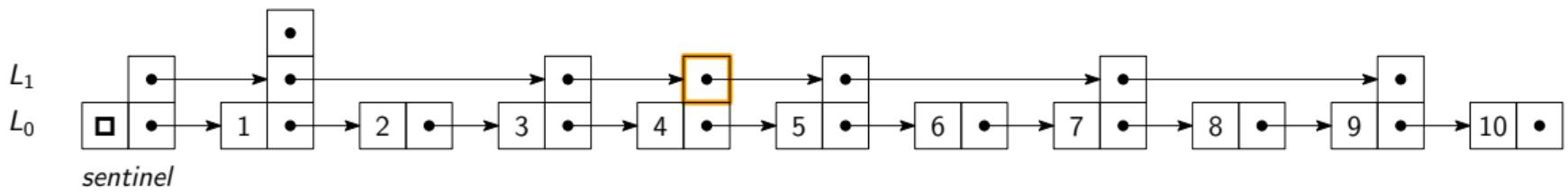
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A Randomized Random-Access List



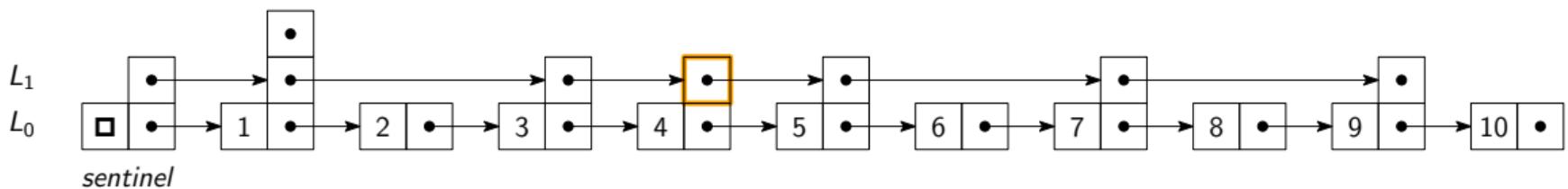
Skiplist

A Randomized Random-Access List



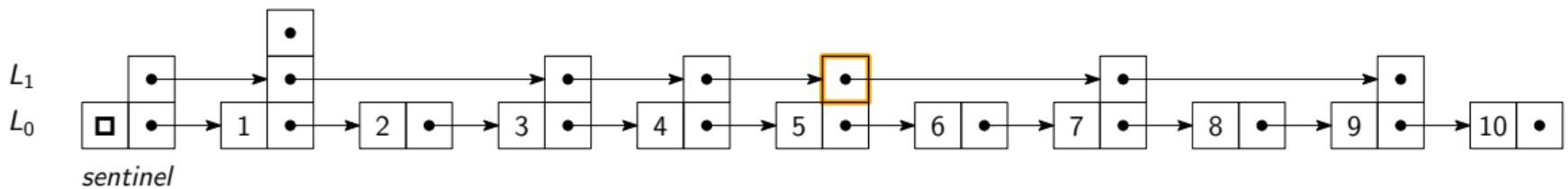
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A Randomized Random-Access List



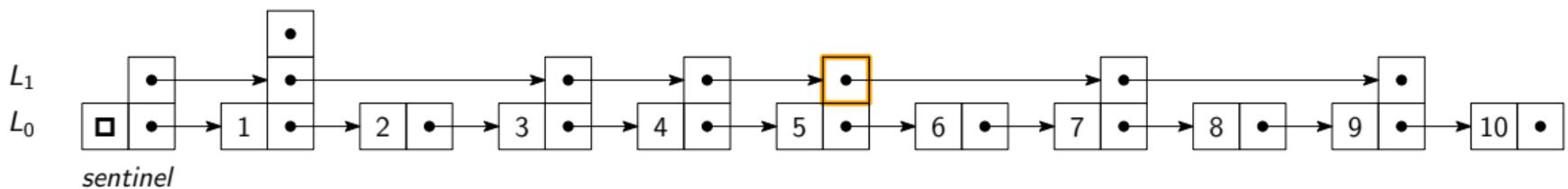
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A Randomized Random-Access List



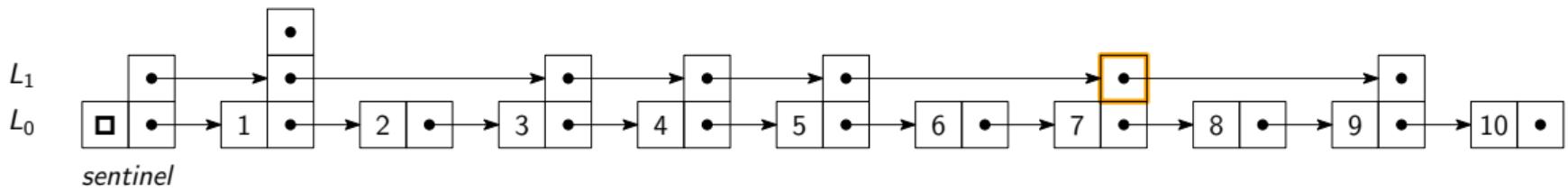
Skiplist

A Randomized Random-Access List



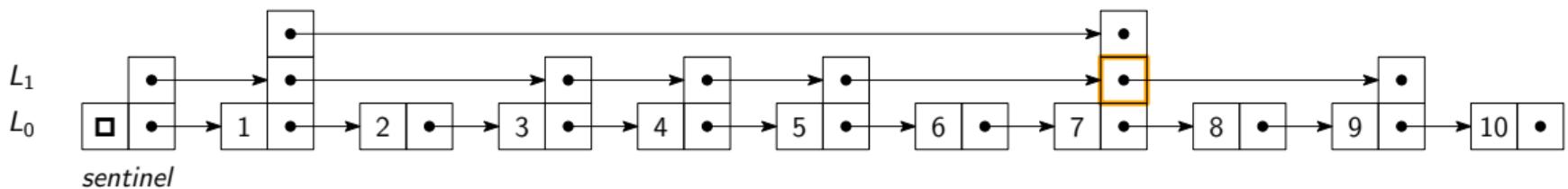
Skiplist

A Randomized Random-Access List



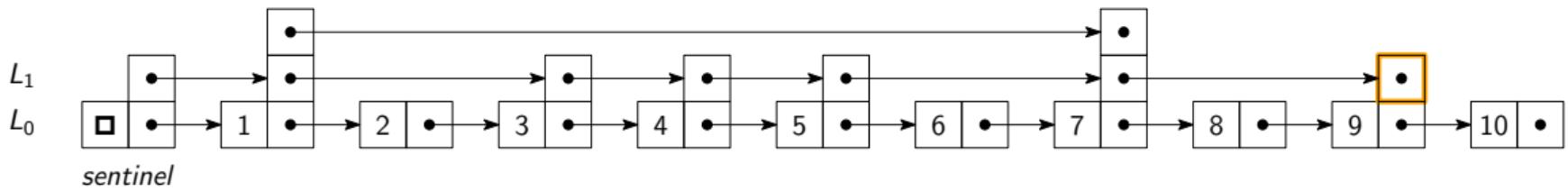
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A Randomized Random-Access List



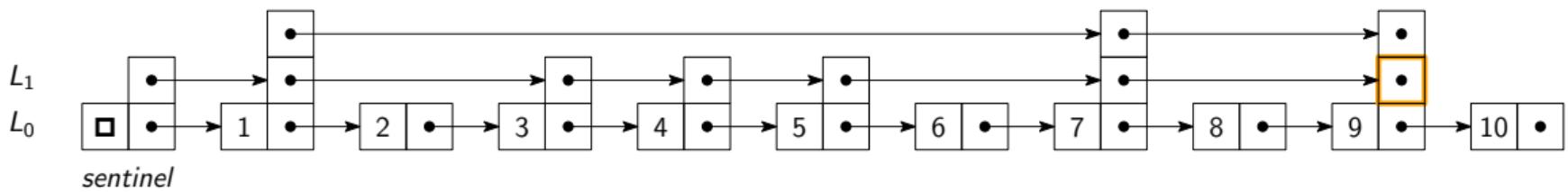
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A Randomized Random-Access List



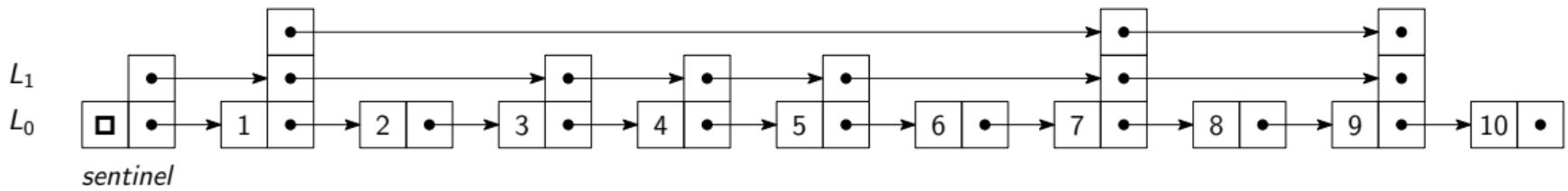
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A Randomized Random-Access List



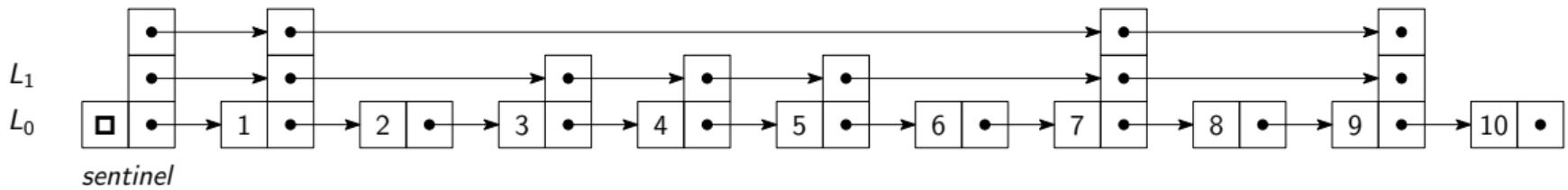
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A Randomized Random-Access List



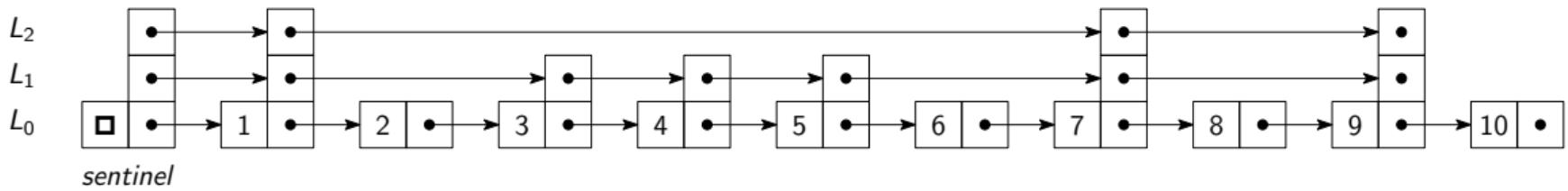
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A Randomized Random-Access List



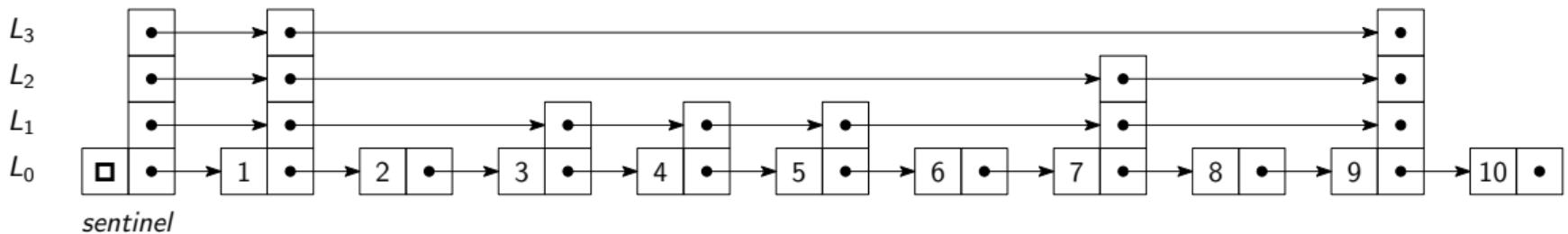
Skiplist

A Randomized Random-Access List



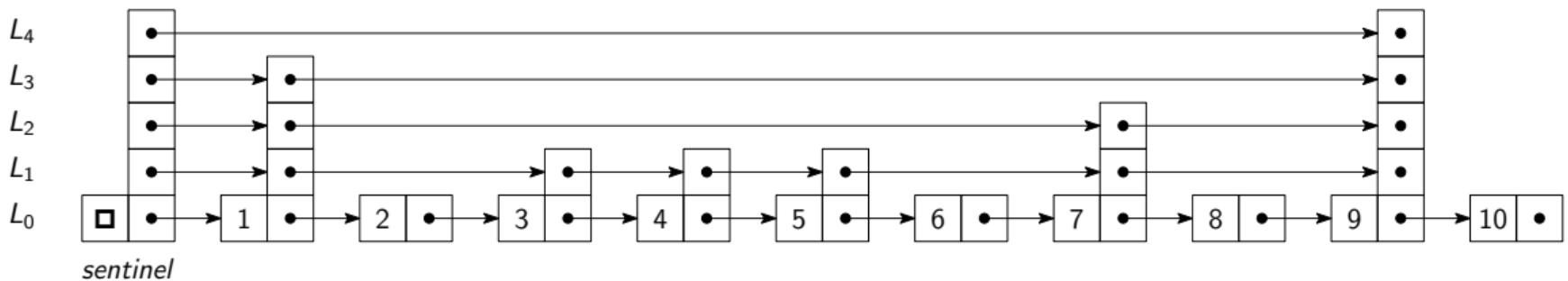
Skiplist

A Randomized Random-Access List



Skiplist

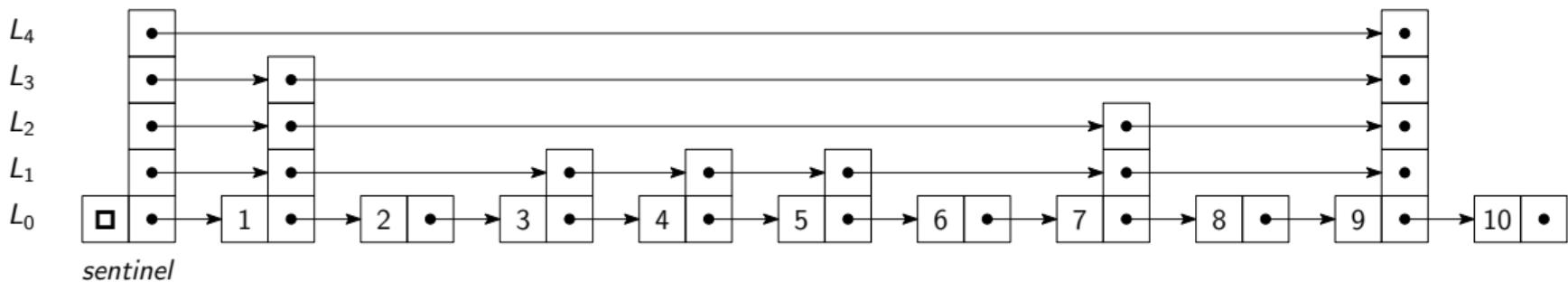
A Randomized Random-Access List



Skiplist

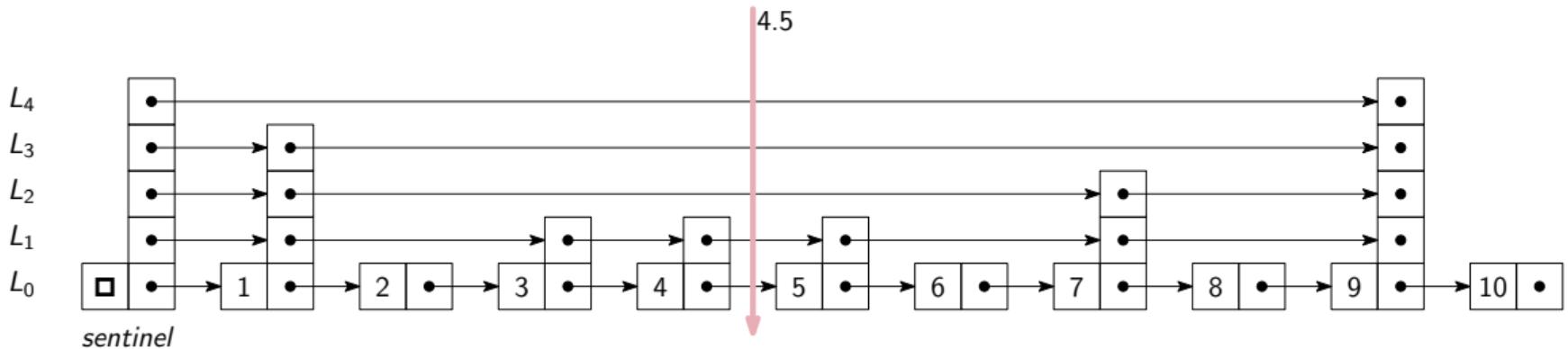
A Randomized Random-Access List

4.5



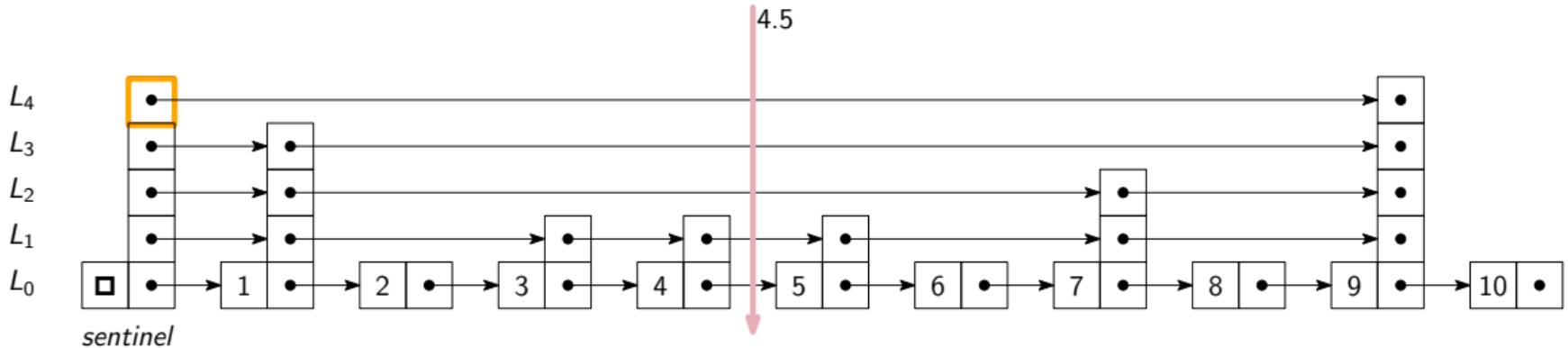
SkipList

A Randomized Random-Access List



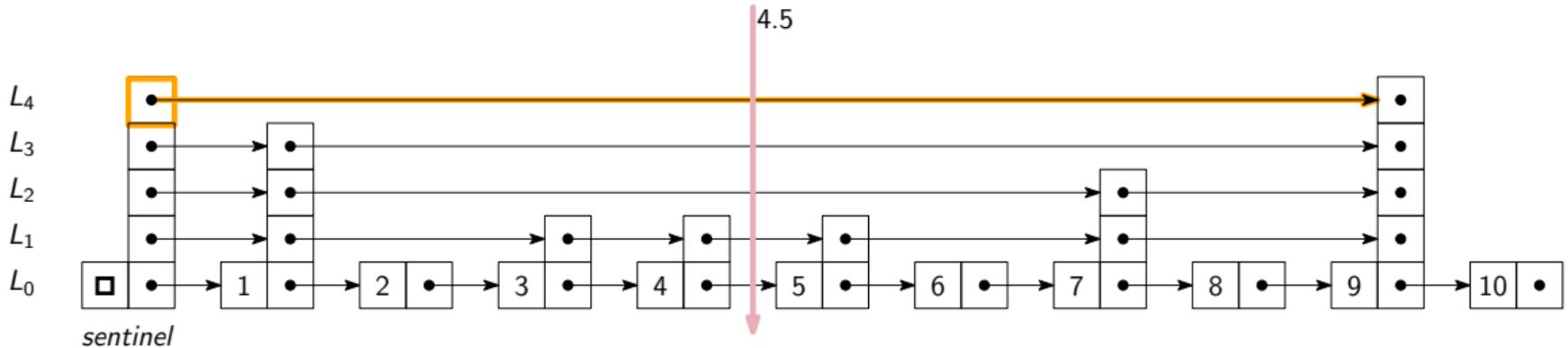
SkipList

A Randomized Random-Access List



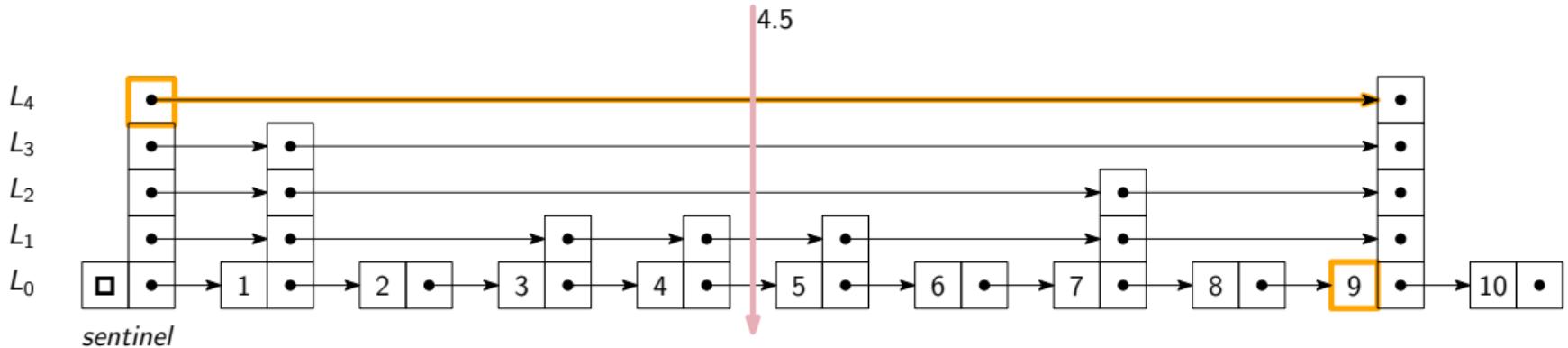
SkipList

A Randomized Random-Access List



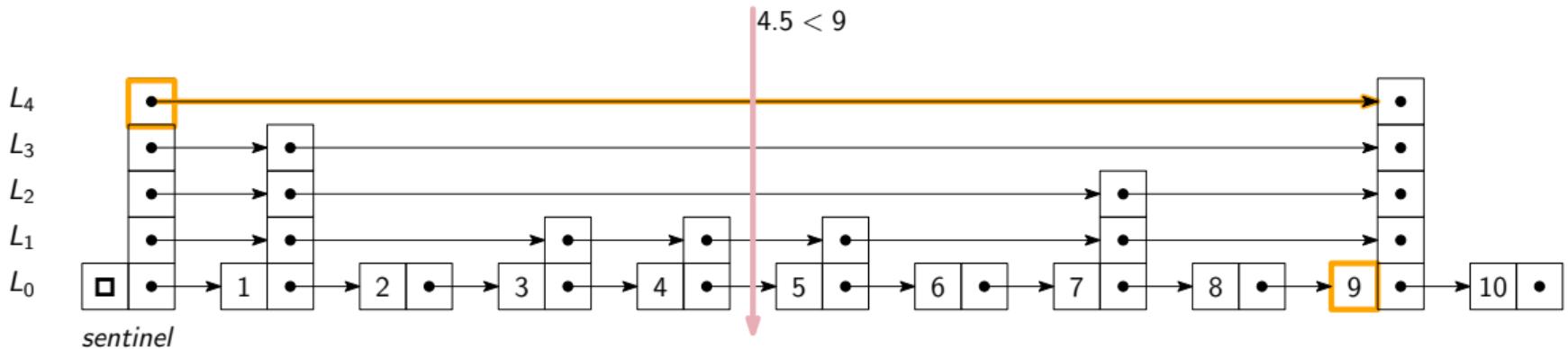
SkipList

A Randomized Random-Access List



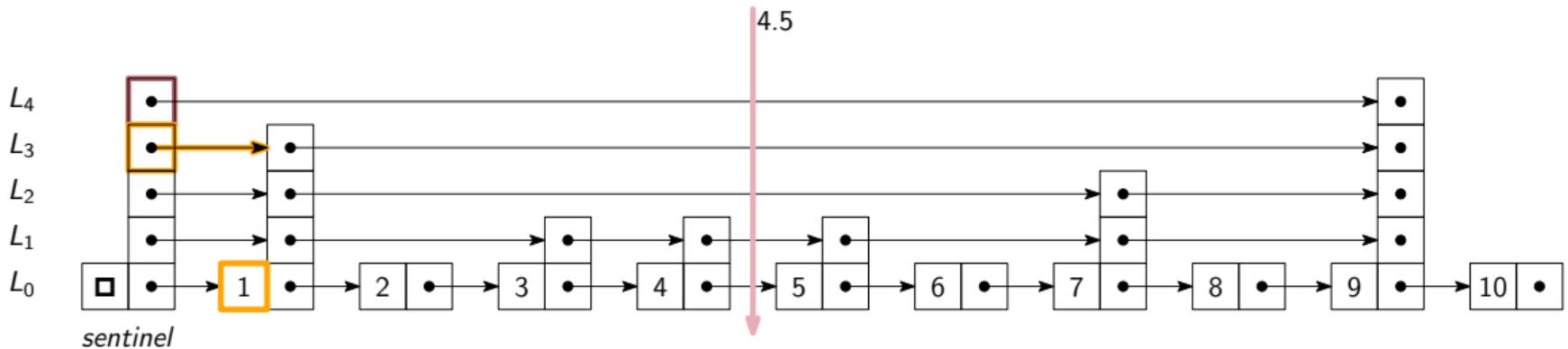
SkipList

A Randomized Random-Access List



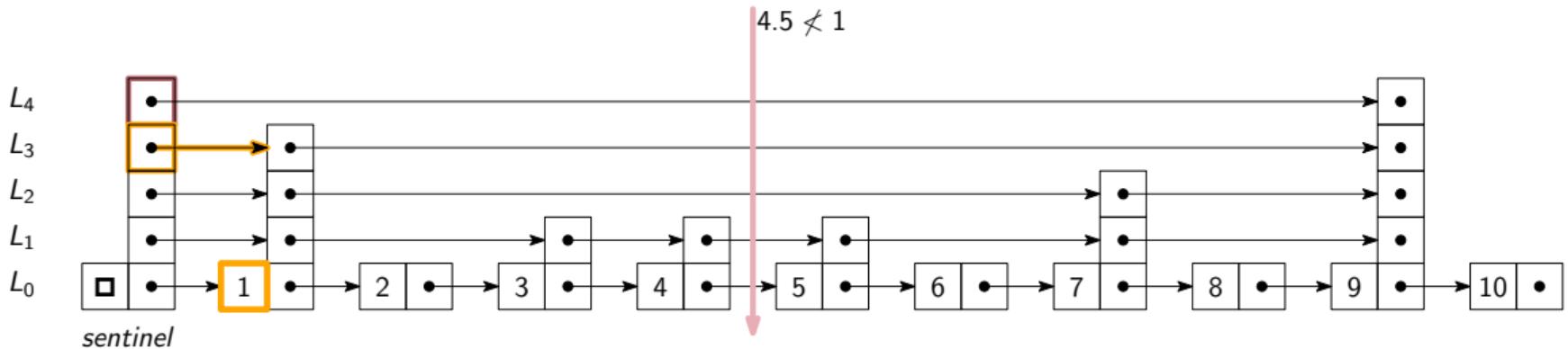
SkipList

A Randomized Random-Access List



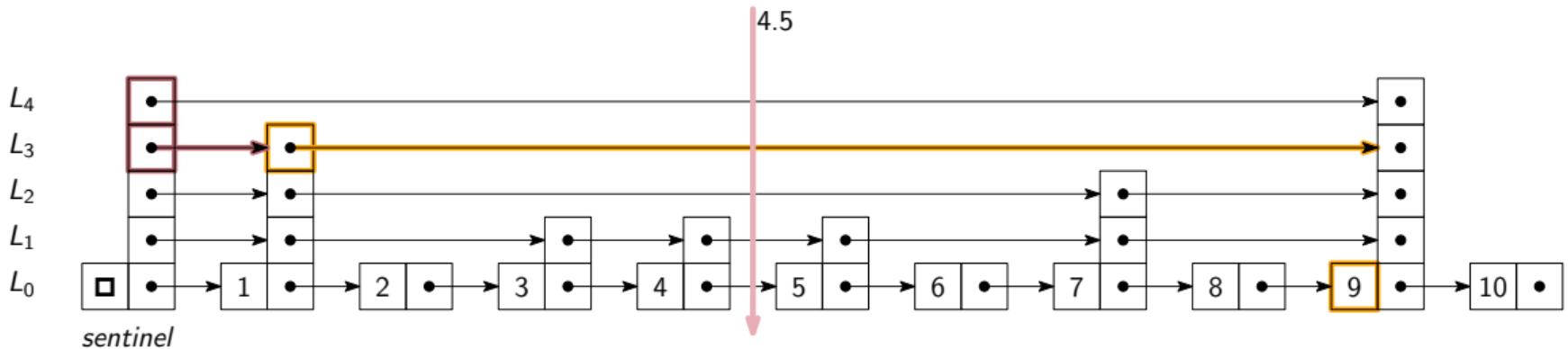
SkipList

A Randomized Random-Access List



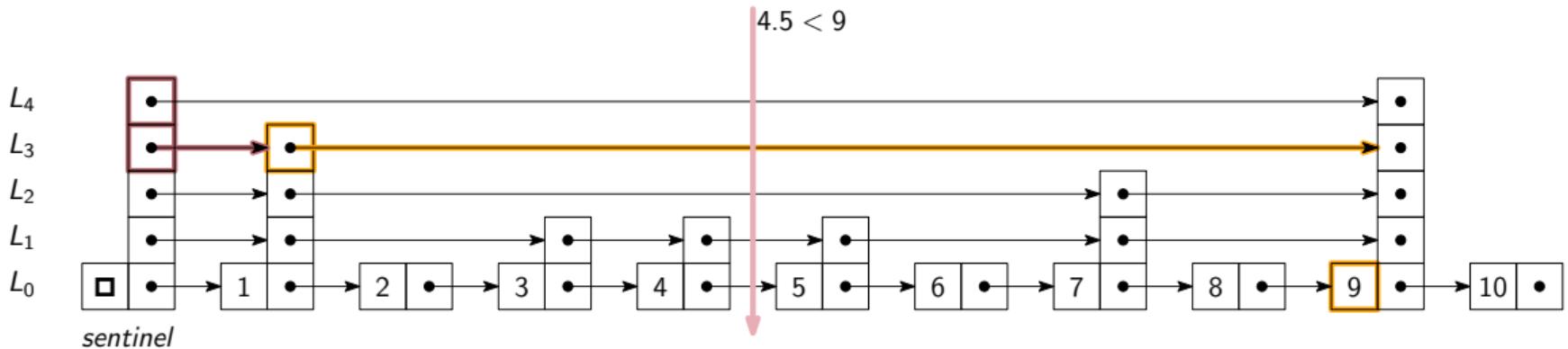
SkipList

A Randomized Random-Access List



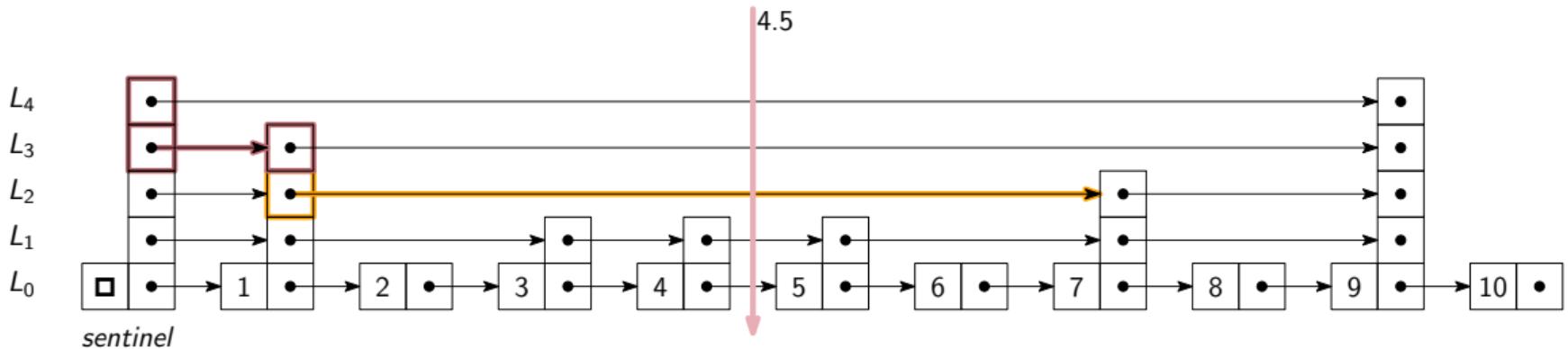
SkipList

A Randomized Random-Access List



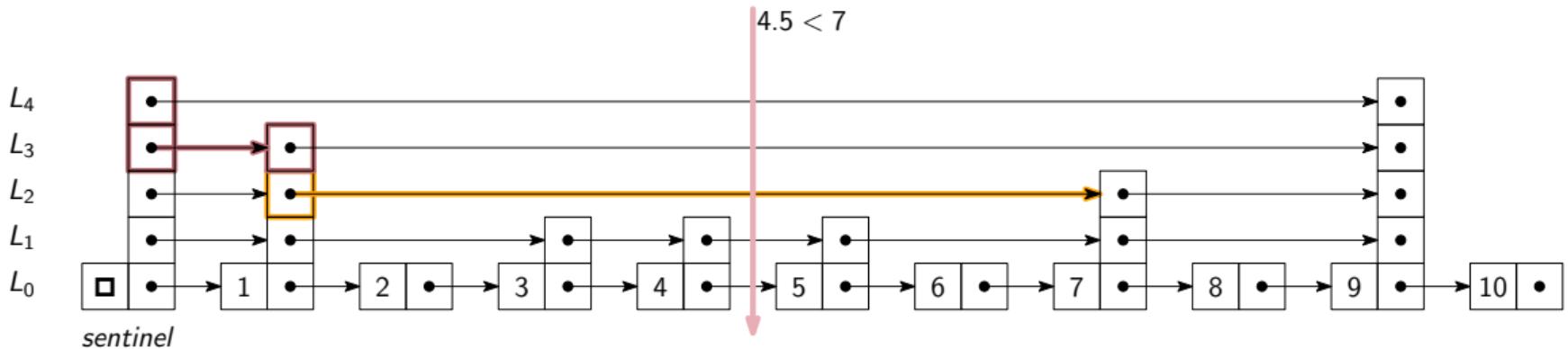
SkipList

A Randomized Random-Access List



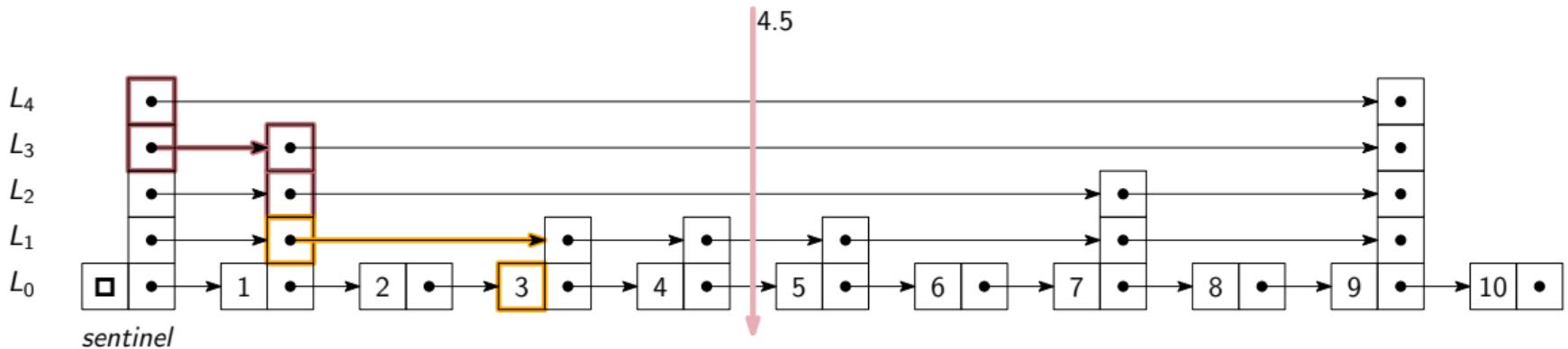
SkipList

A Randomized Random-Access List



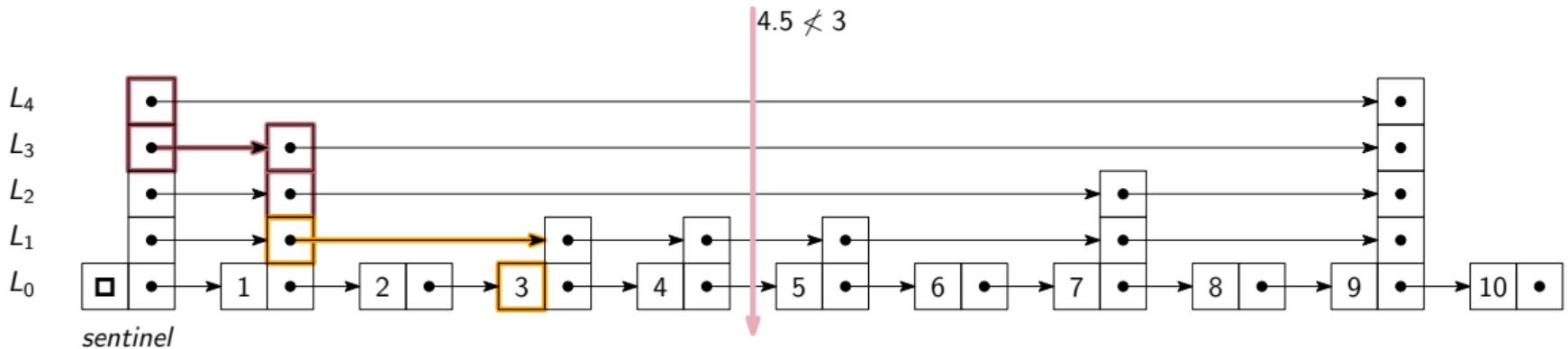
SkipList

A Randomized Random-Access List



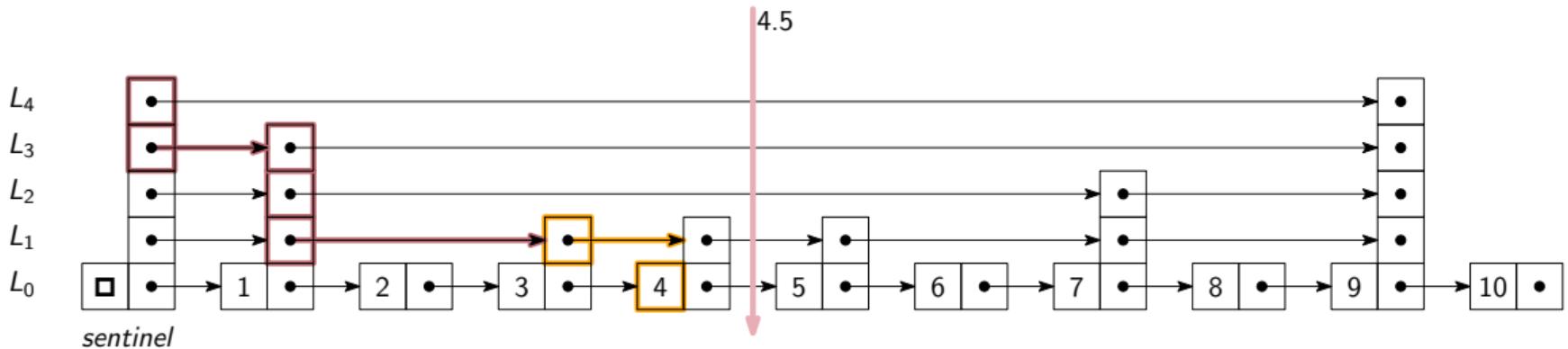
SkipList

A Randomized Random-Access List



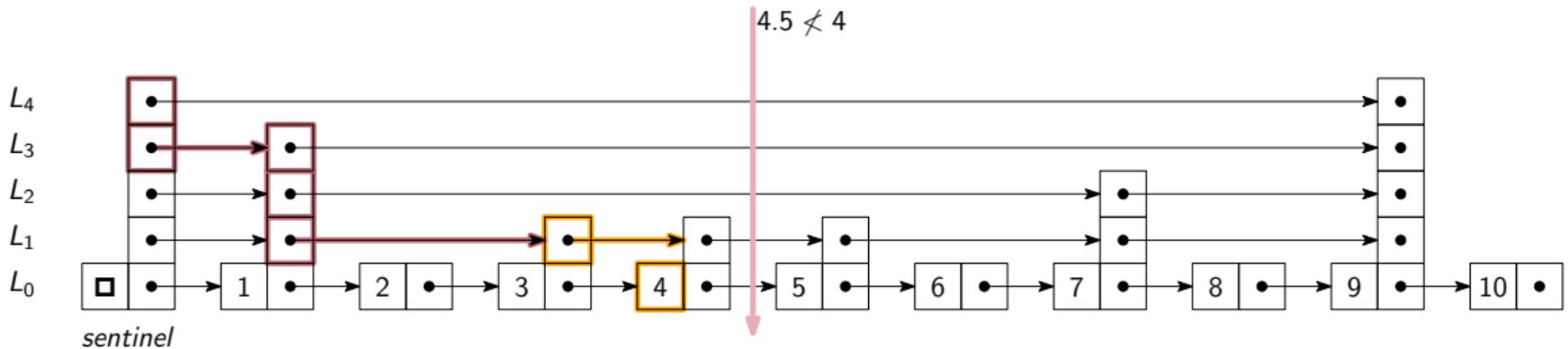
SkipList

A Randomized Random-Access List



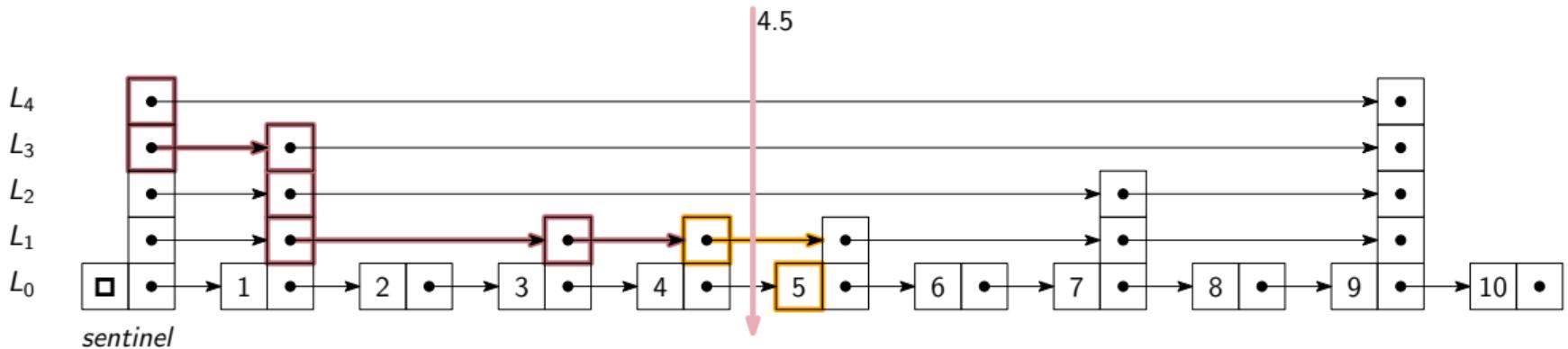
SkipList

A Randomized Random-Access List



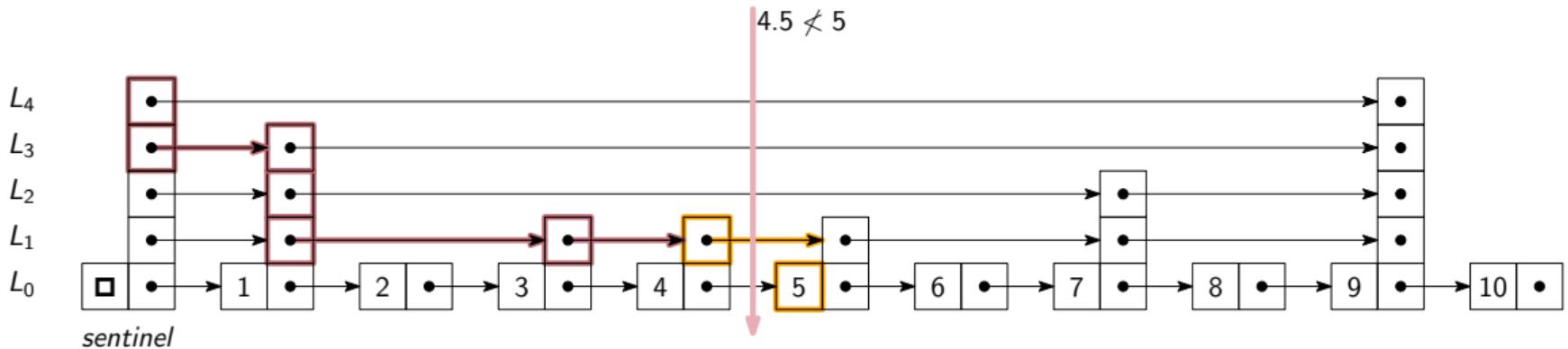
SkipList

A Randomized Random-Access List



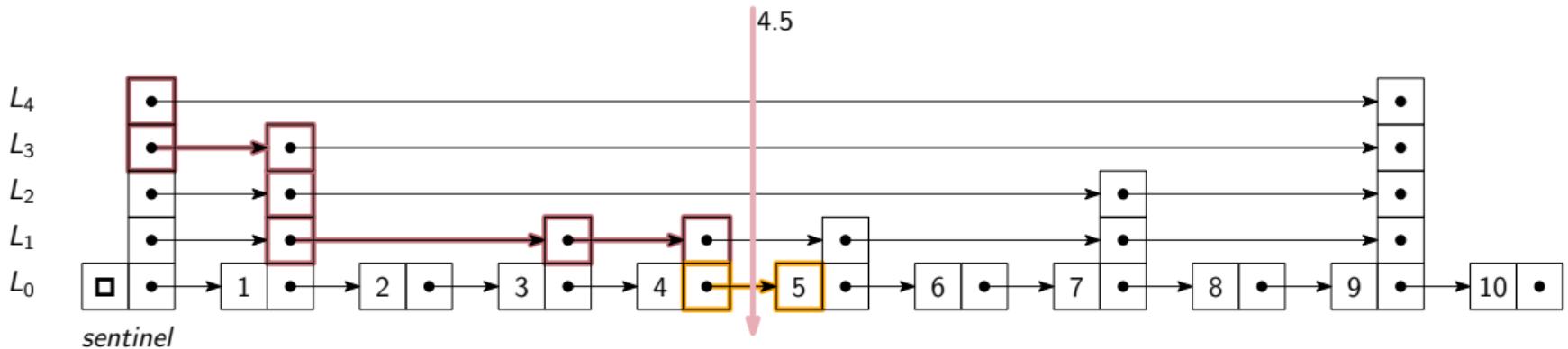
SkipList

A Randomized Random-Access List



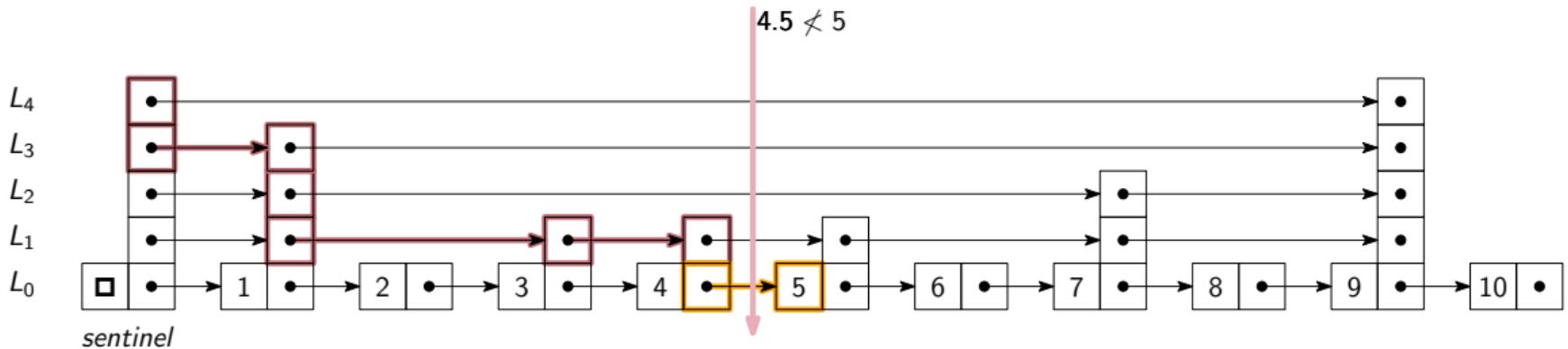
SkipList

A Randomized Random-Access List



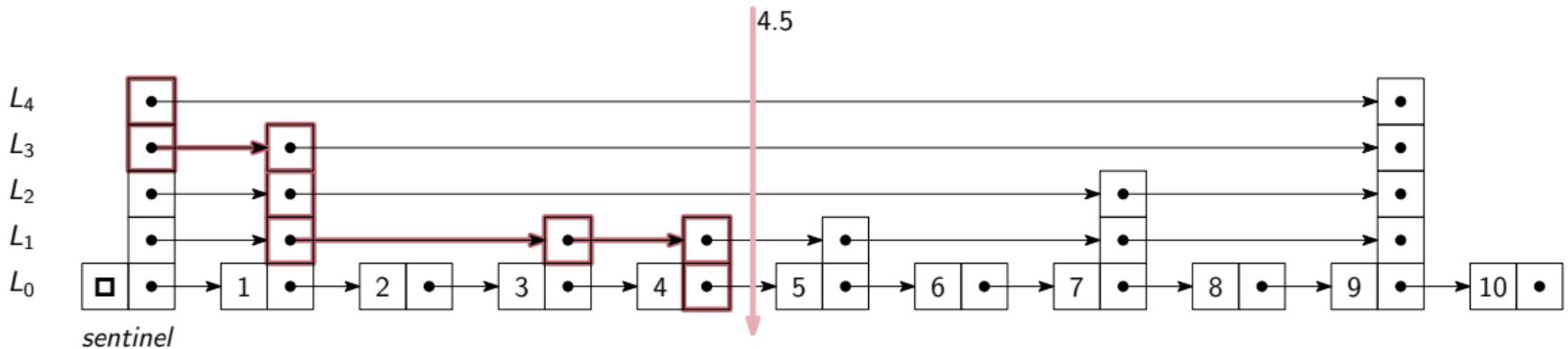
SkipList

A Randomized Random-Access List



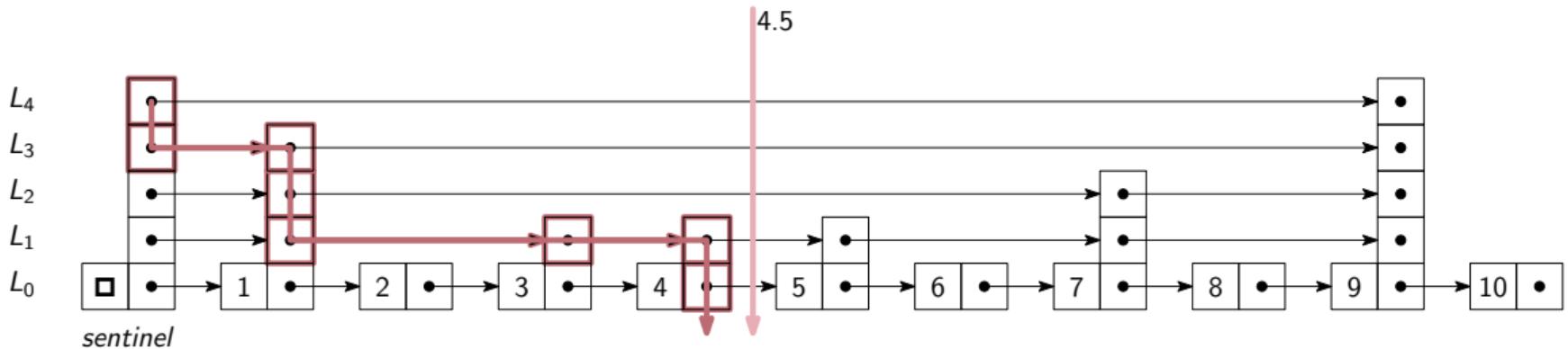
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A Randomized Random-Access List



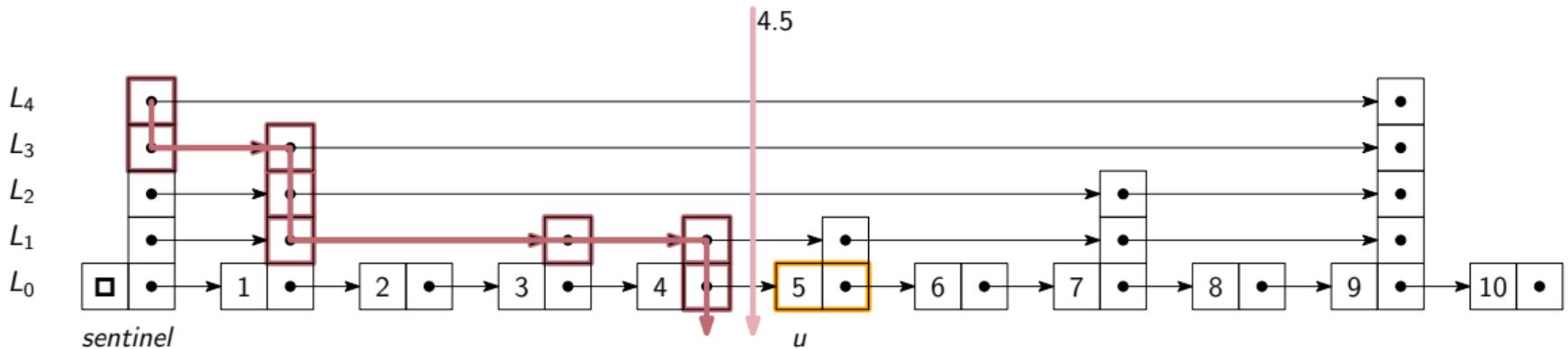
SkipList

A Randomized Random-Access List



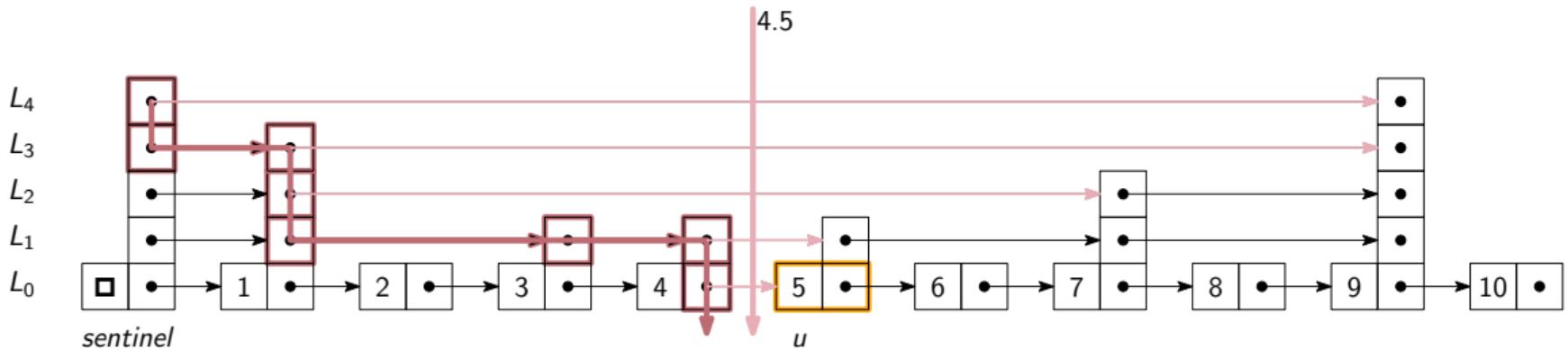
SkipList

A Randomized Random-Access List



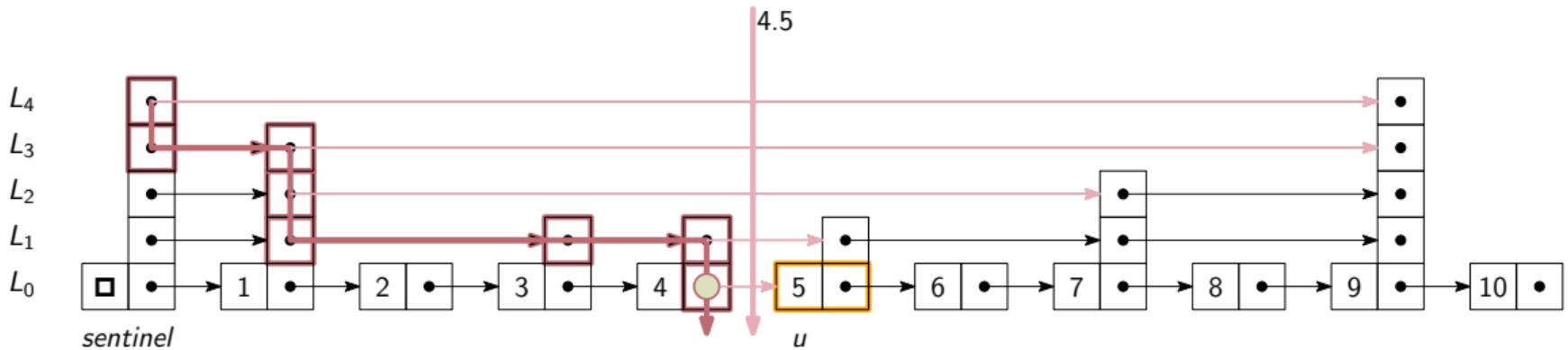
SkipList

A Randomized Random-Access List



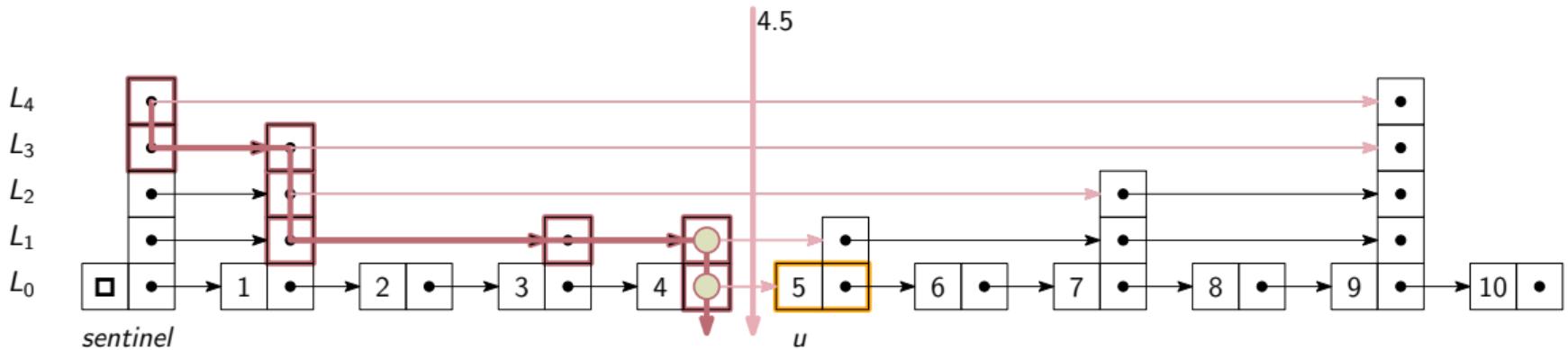
SkipList

A Randomized Random-Access List



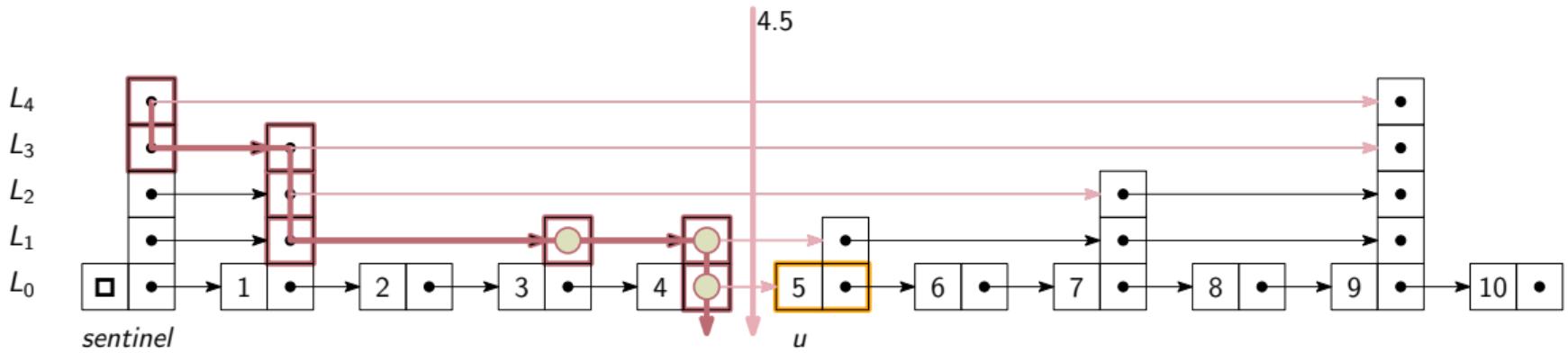
SkipList

A Randomized Random-Access List



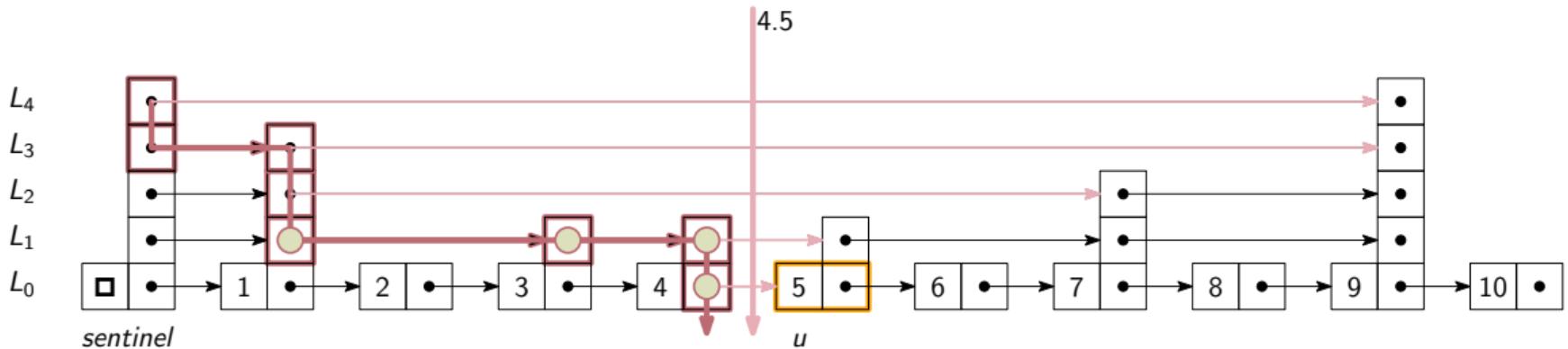
SkipList

A Randomized Random-Access List



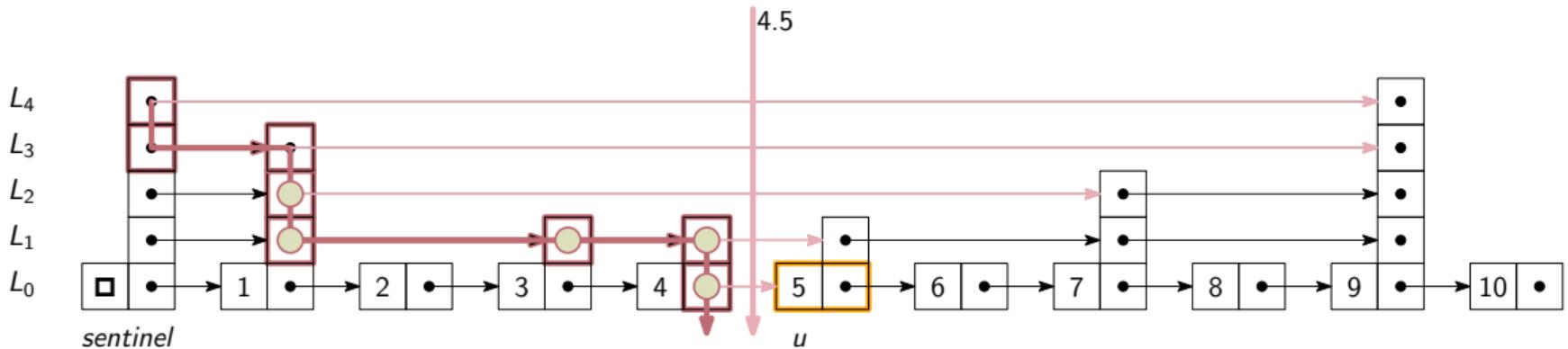
SkipList

A Randomized Random-Access List



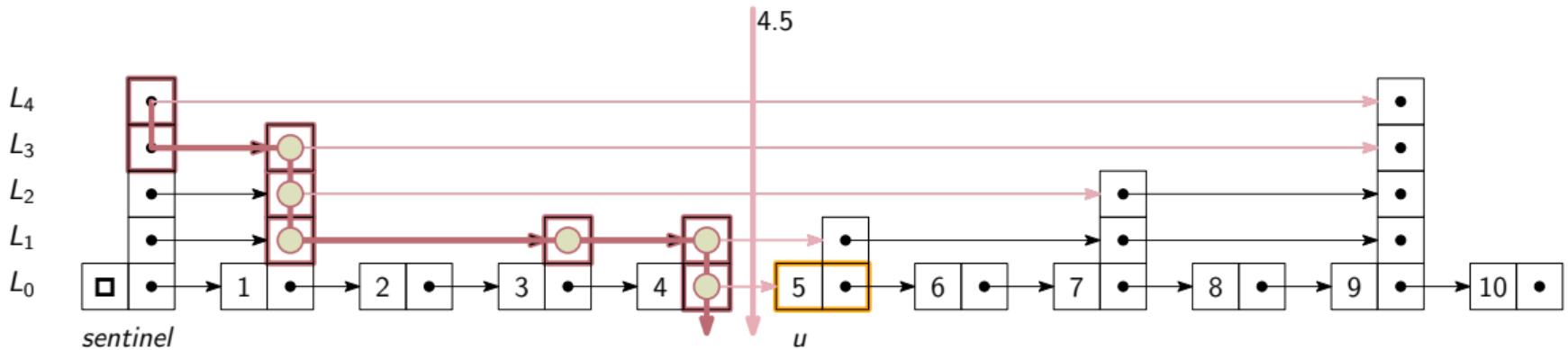
SkipList

A Randomized Random-Access List



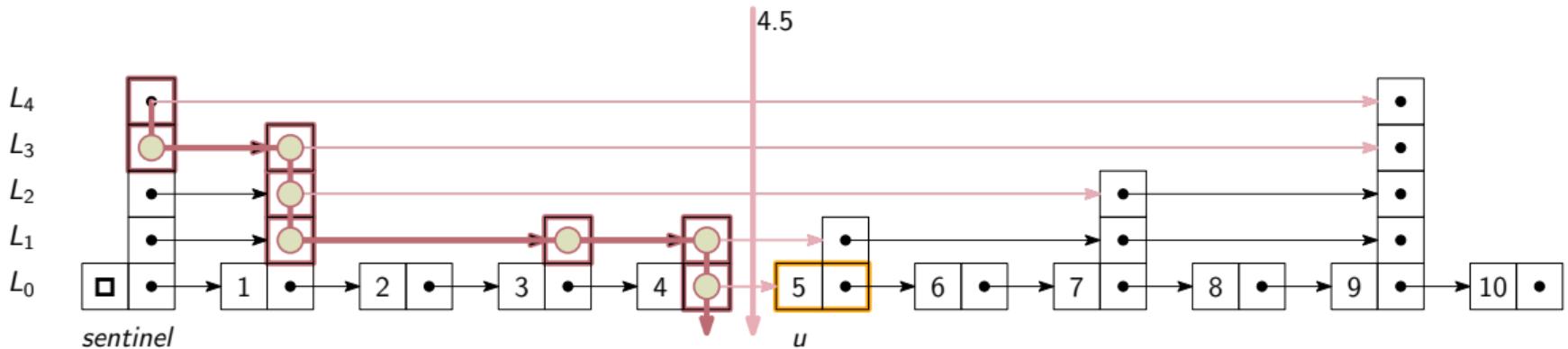
SkipList

A Randomized Random-Access List



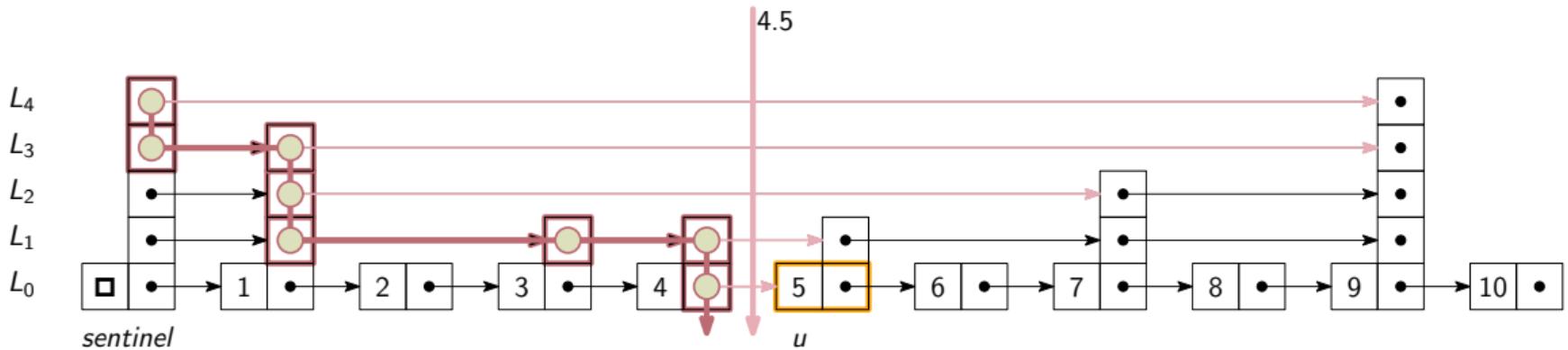
SkipList

A Randomized Random-Access List



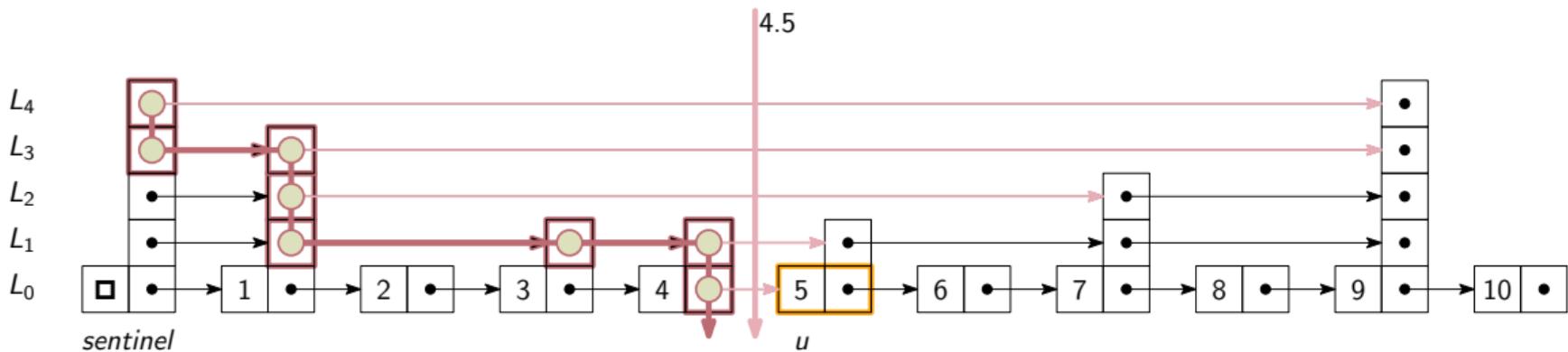
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Skiplist

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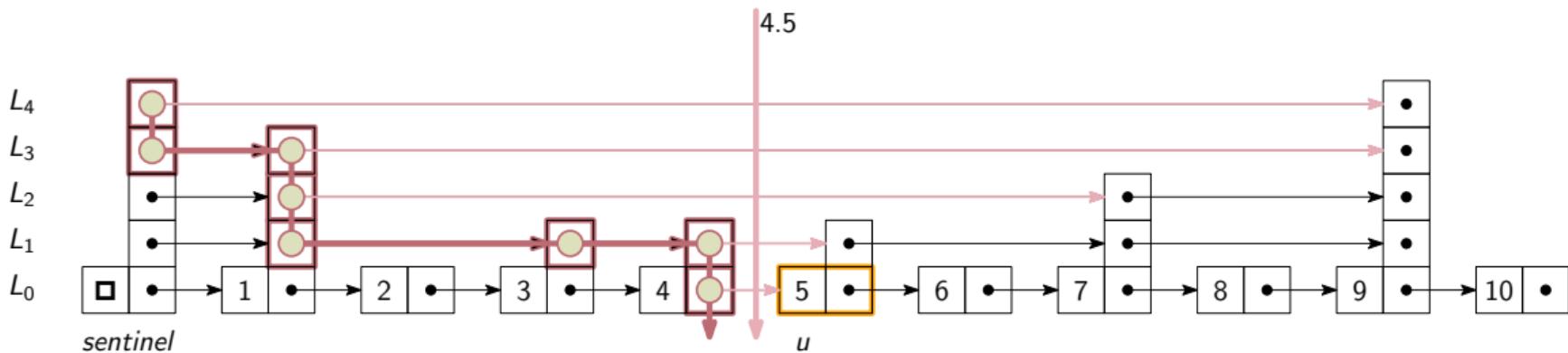


Lemma

In a skip list containing n values, the expected length of the search path for any node u in L_0 is at most $2 \log n + O(1)$.

Skiplist

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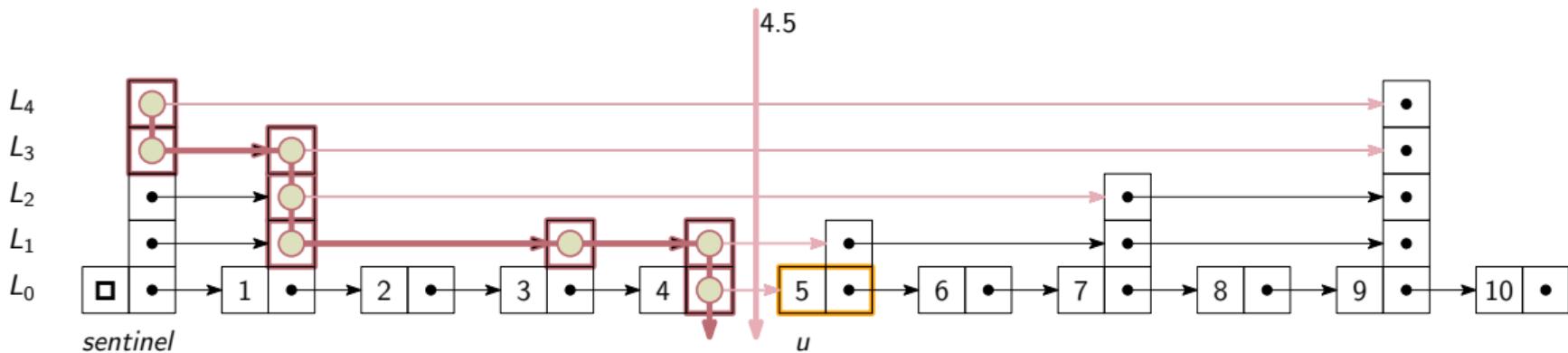


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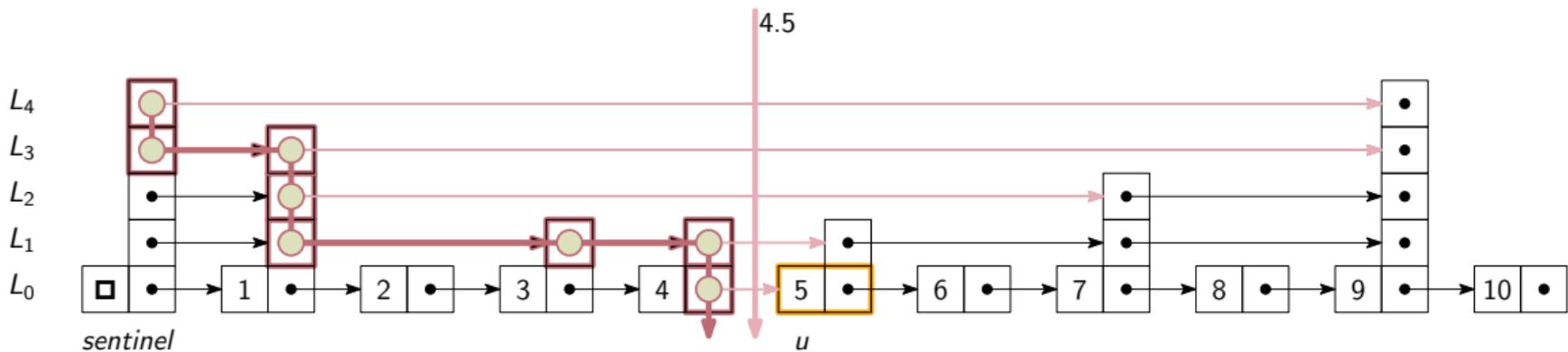


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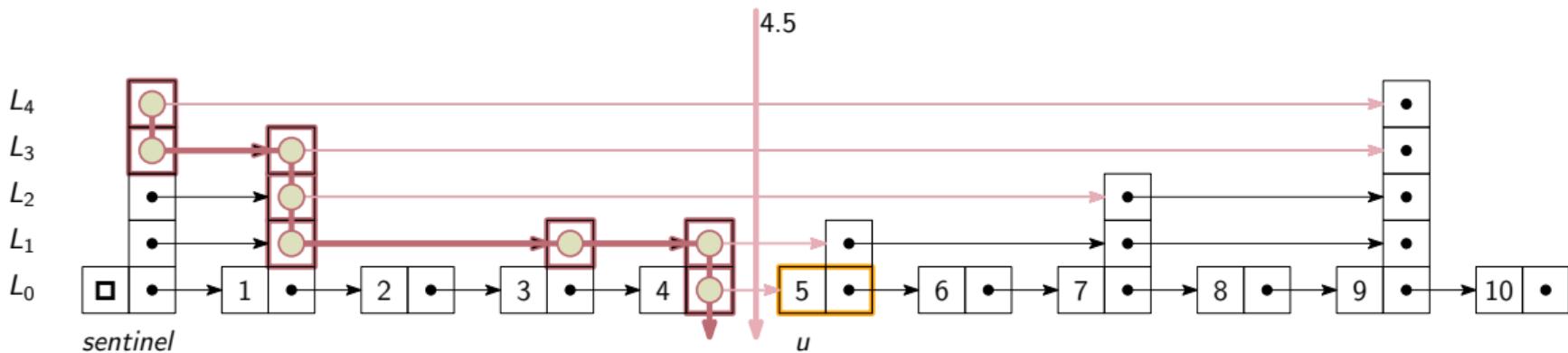


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End of Lesson