Algorithm performance

Faster sorting

By the end of this video you will be able to…

- Describe the merge sort algorithm
- Explain the use of recursion in merge sort
- Use asymptotic analysis to compare merge sort with selection sort and with insertion sort

Merge Sort: Basic Algorithm

If list has one element, return.

Divide list in half

Sort first half
Sort second half

Merge sorted lists

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HOW?

Merge sorted lists

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HOW? Recursion!!!

Merge sorted lists

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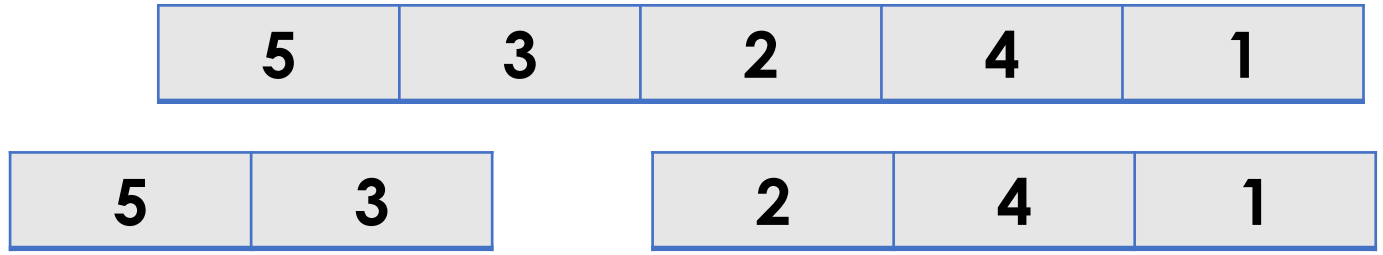

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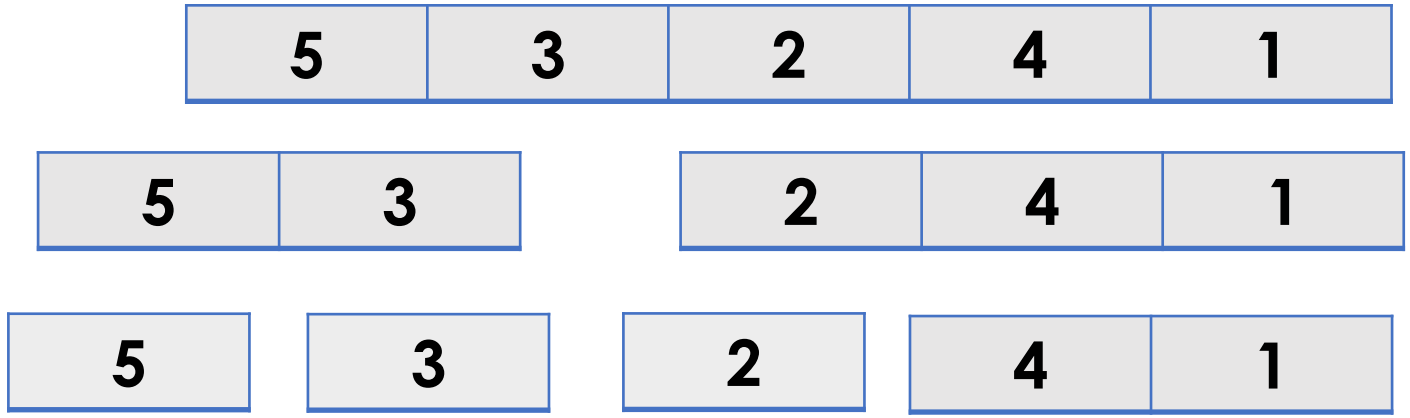

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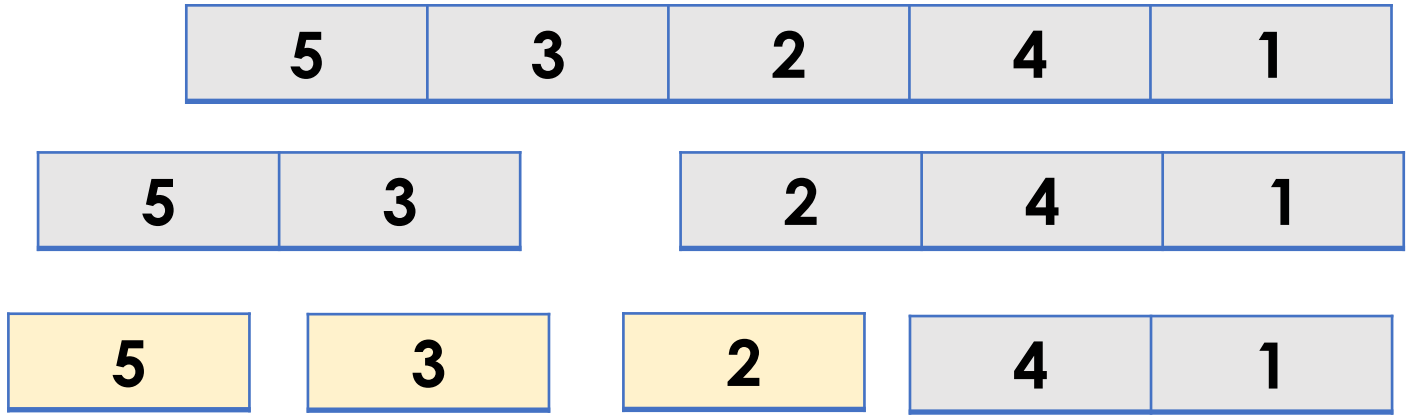

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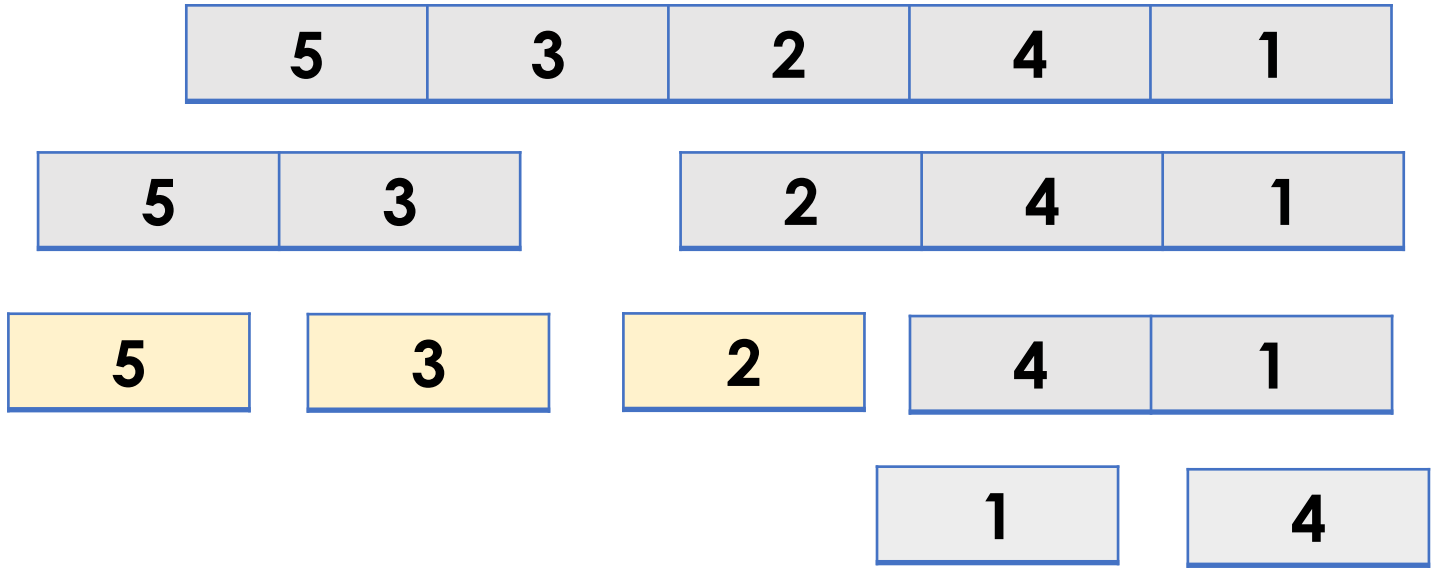

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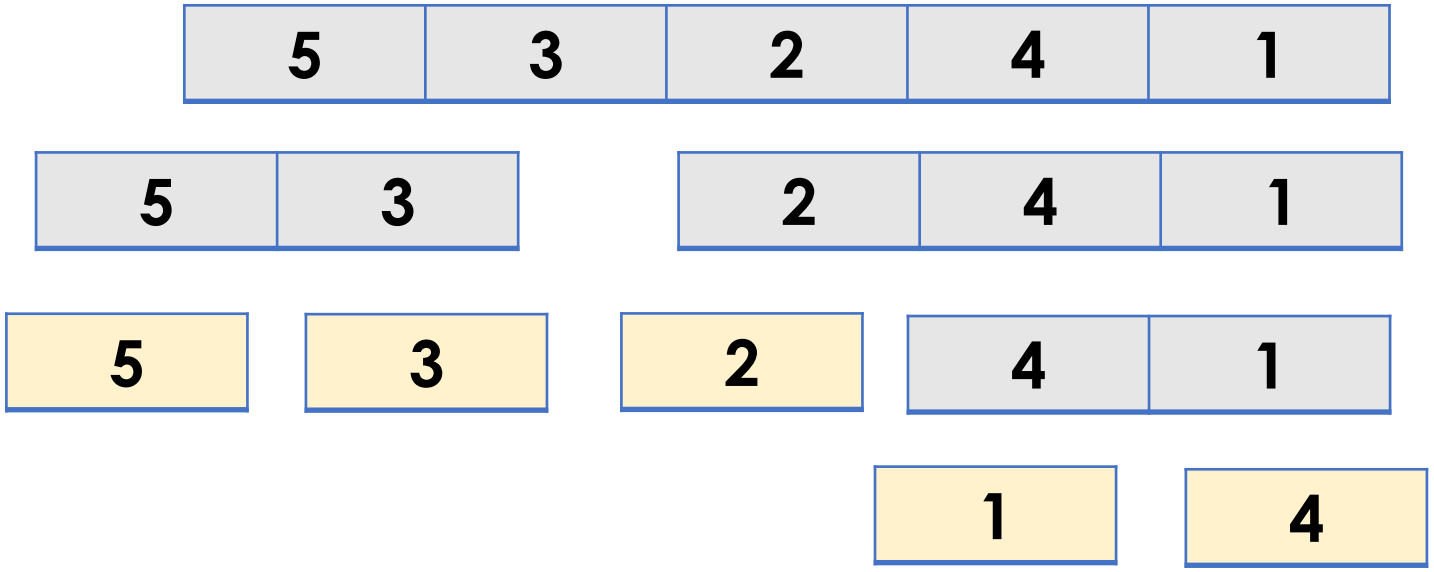

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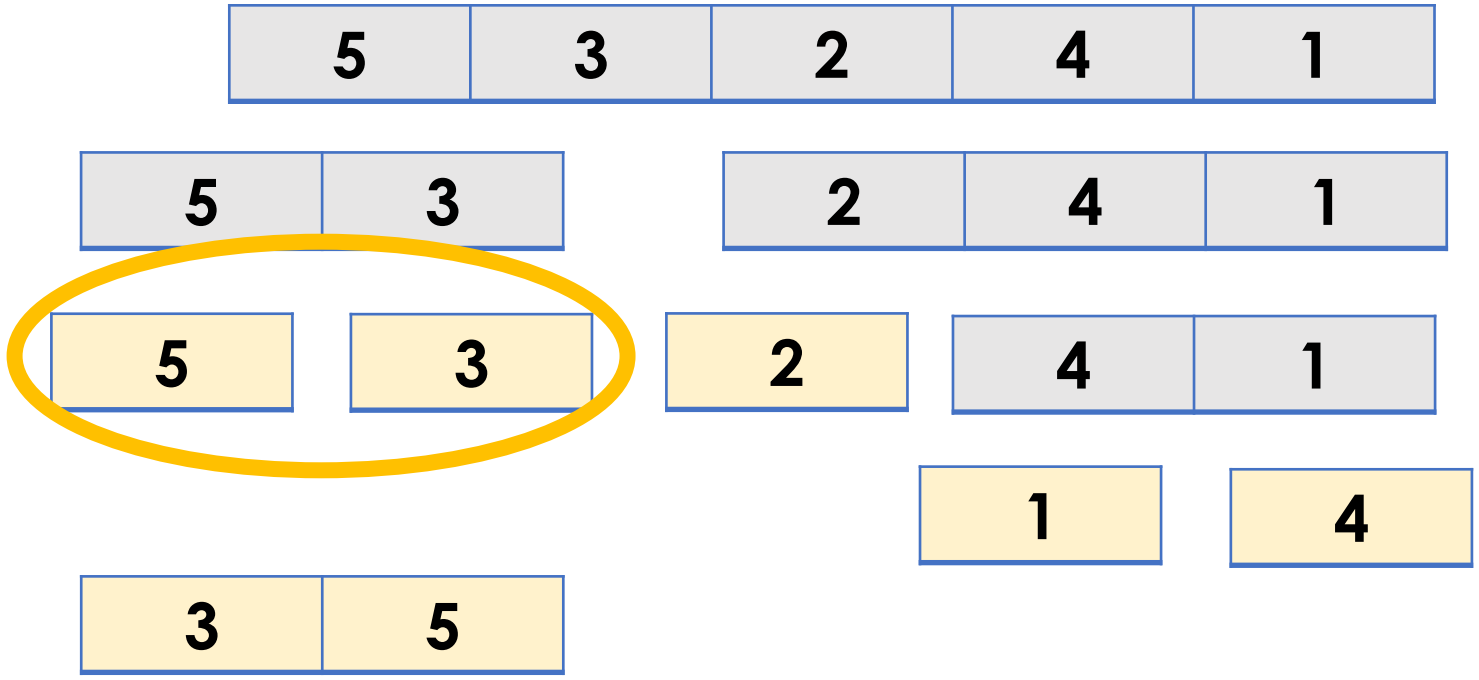

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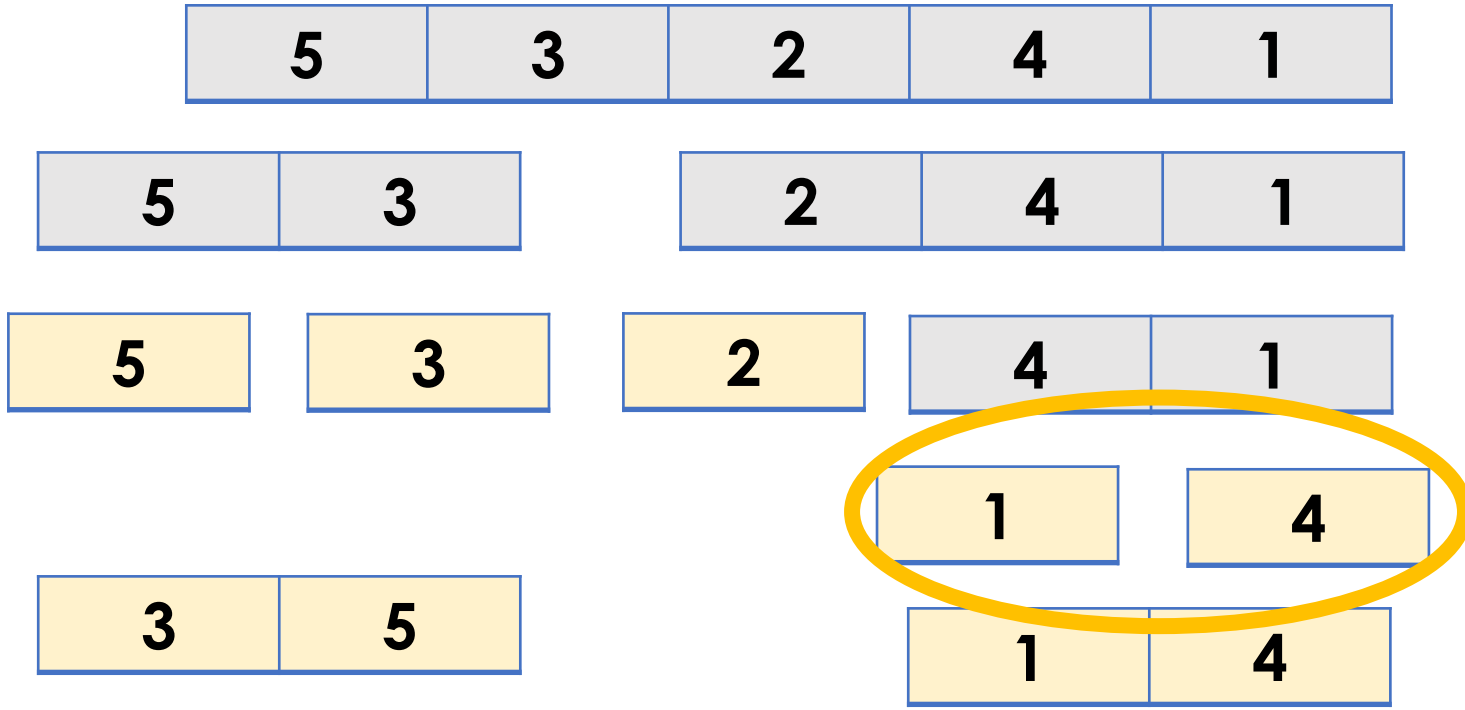

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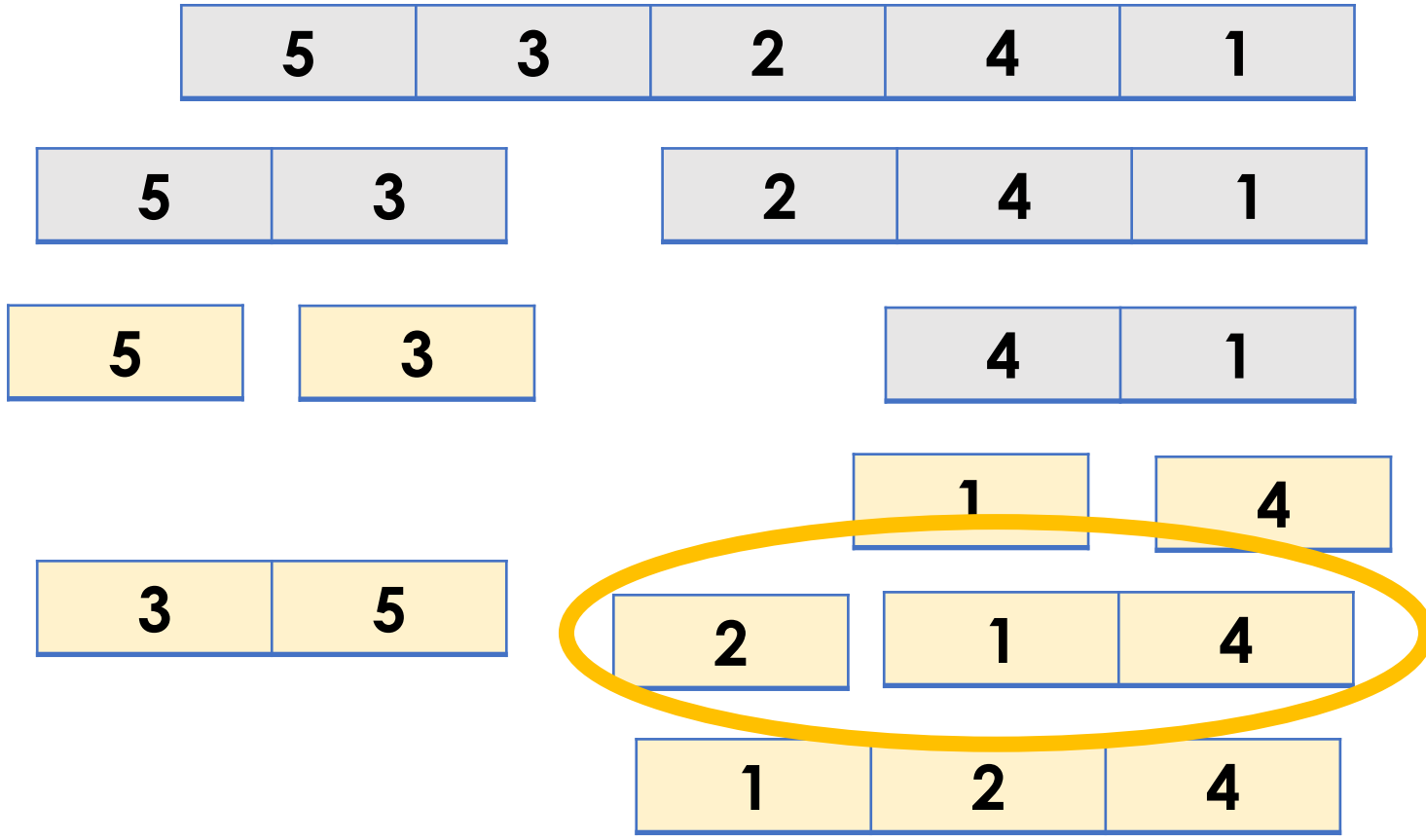

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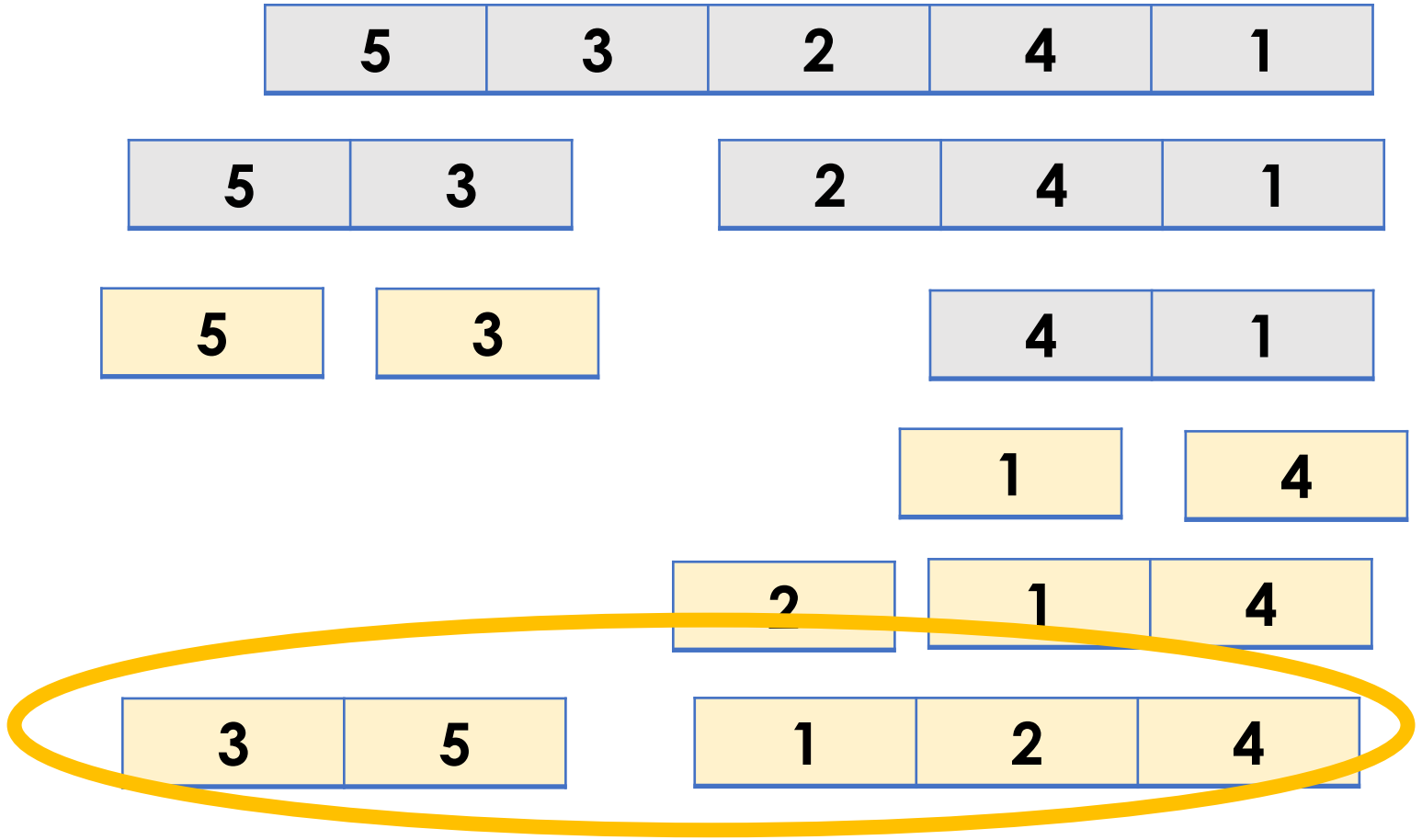

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Performance?

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O(n) work to merge all the lists on one level

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Merge sorted lists

Each time we divide, we call MergeSort on two (smaller) lists

Merge Sort: Basic Algorithm

Performance?

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Sort second half

Merge sorted lists

Keep dividing by two until lists have size 1

Merge Sort: Basic Algorithm

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Performance?

Keep dividing by two until lists have size 1

$\log_2(n)$

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O(n log n)