
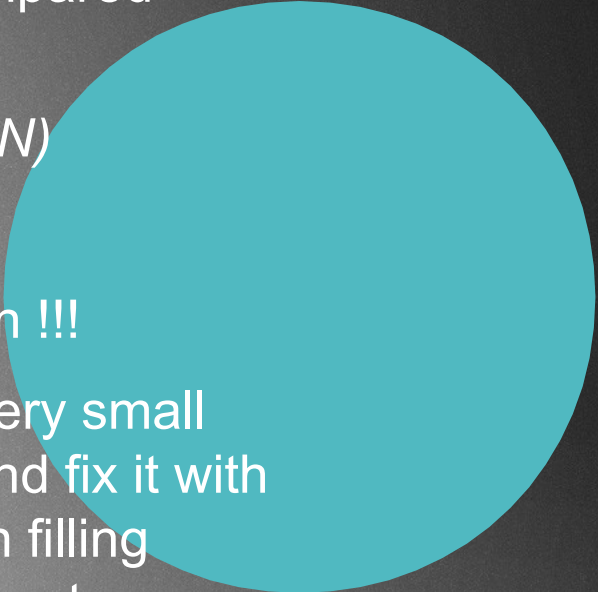


Chapter 12

BUBBLE SORT



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- ▶ Repeatedly steps through the list to be sorted, compares each pair of adjacent items and swaps them if they are in the wrong order
 - ▶ It is too slow and impractical for most problems even when compared to insertion sort
 - ▶ Bubble sort has worst-case and average complexity both $O(N^2)$
 - ▶ Bubble sort is not a practical sorting algorithm
 - ▶ It will not be efficient in the case of a reverse-ordered collection !!!
 - ▶ In computer graphics it is popular for its capability to detect a very small error (like swap of just two elements) in almost-sorted arrays and fix it with just linear complexity $O(N)$. For example, it is used in a polygon filling algorithm, where bounding lines are sorted by their x coordinate at a specific scan line (a line parallel to x axis) and with incrementing y their order changes (two elements are swapped) only at intersections of two lines
 - ▶ Stable algorithm like insertion sort

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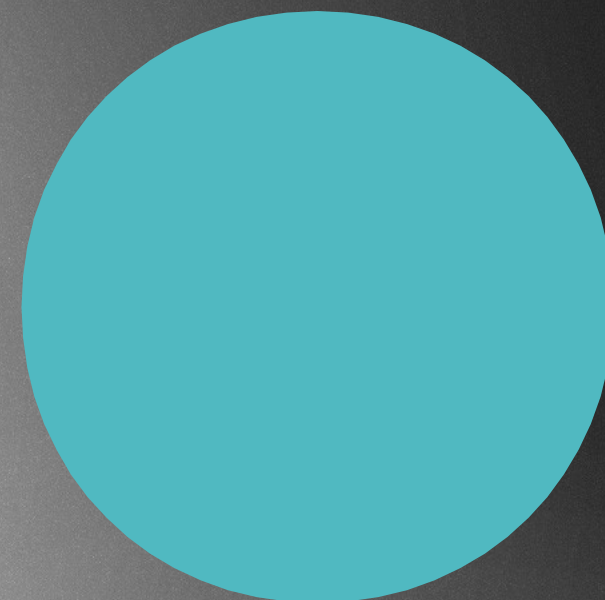
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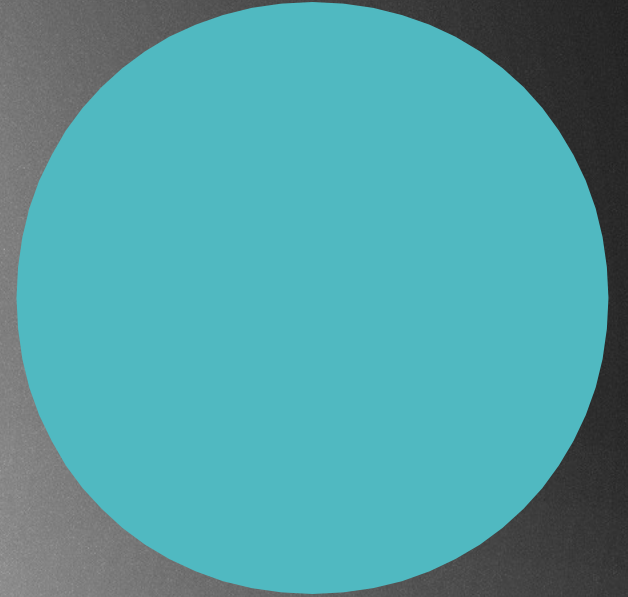
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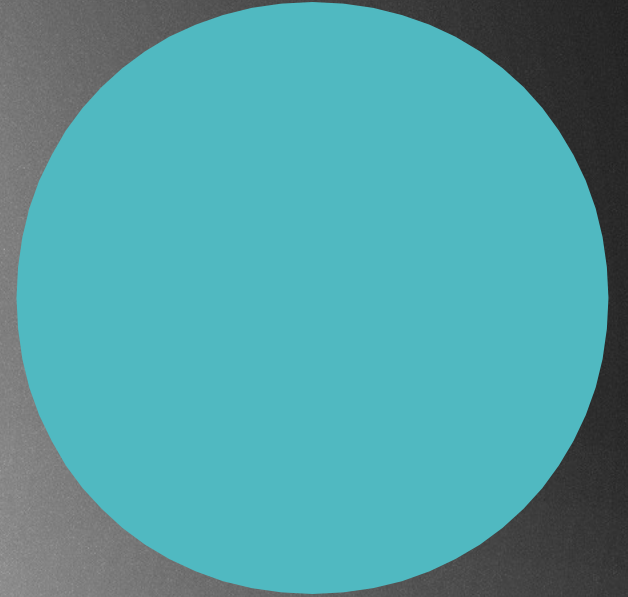
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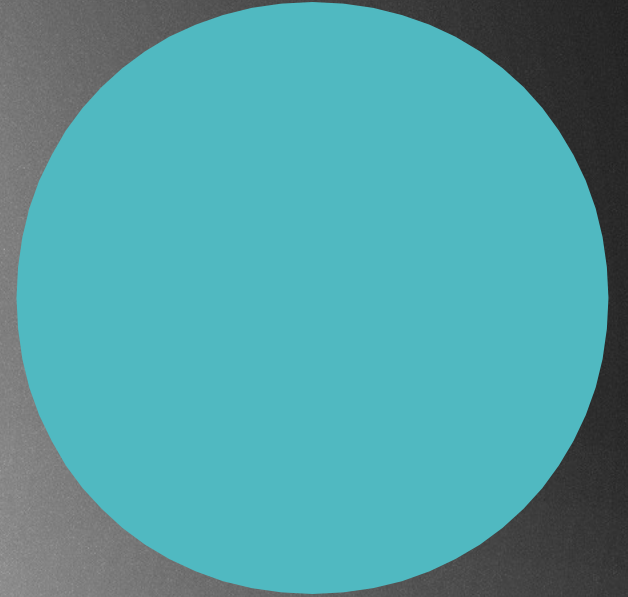
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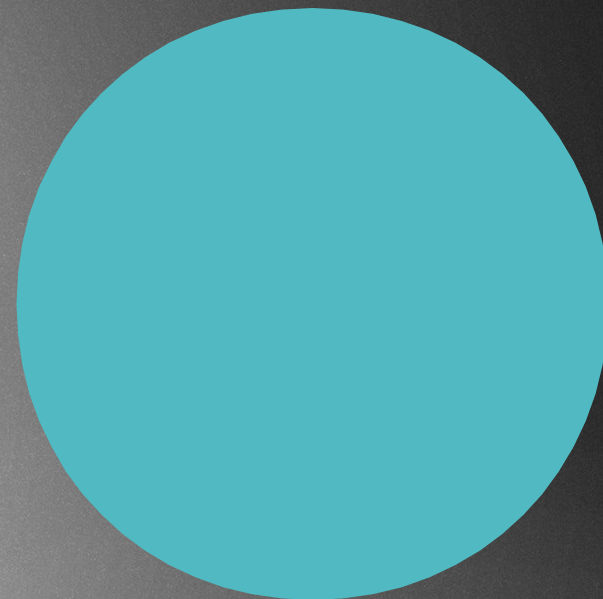
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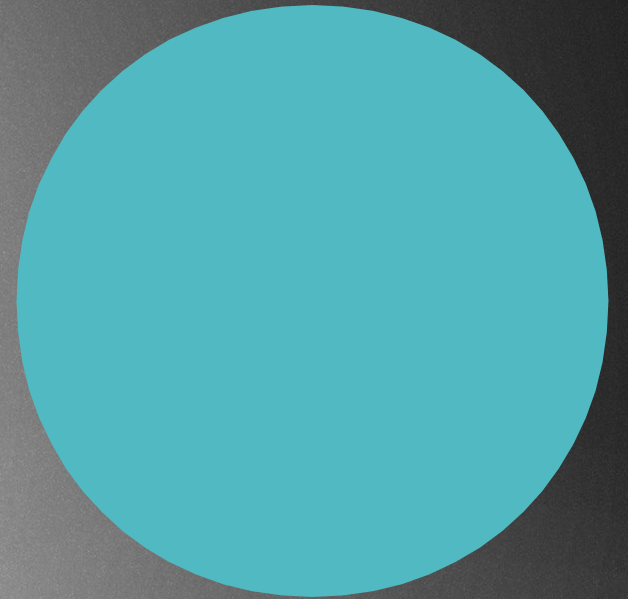
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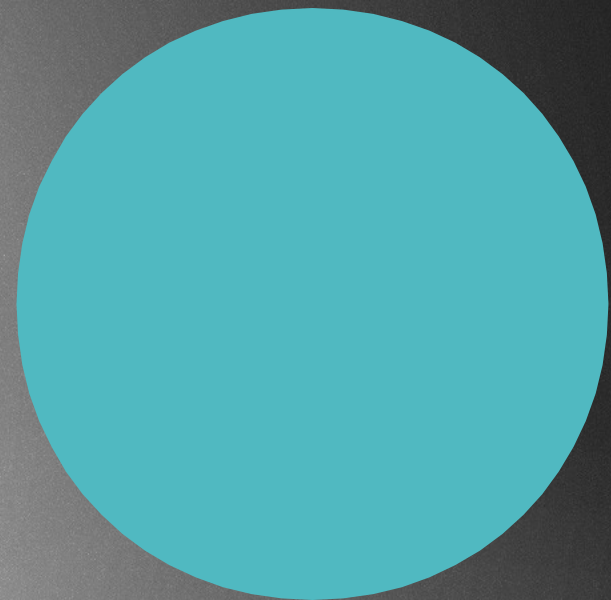
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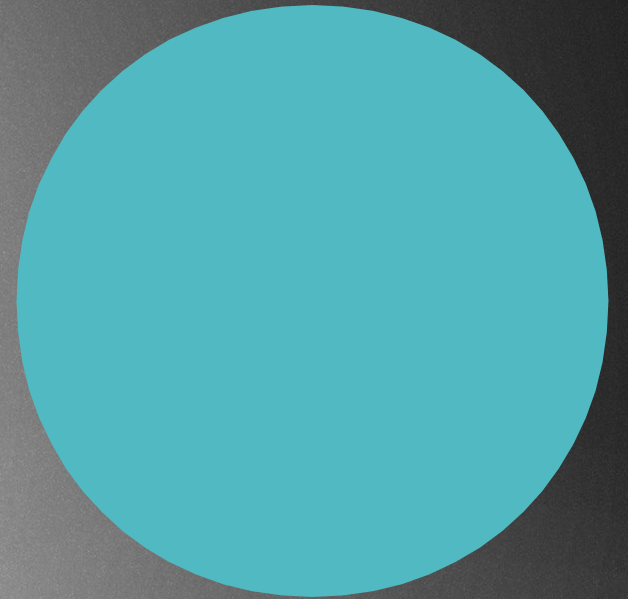
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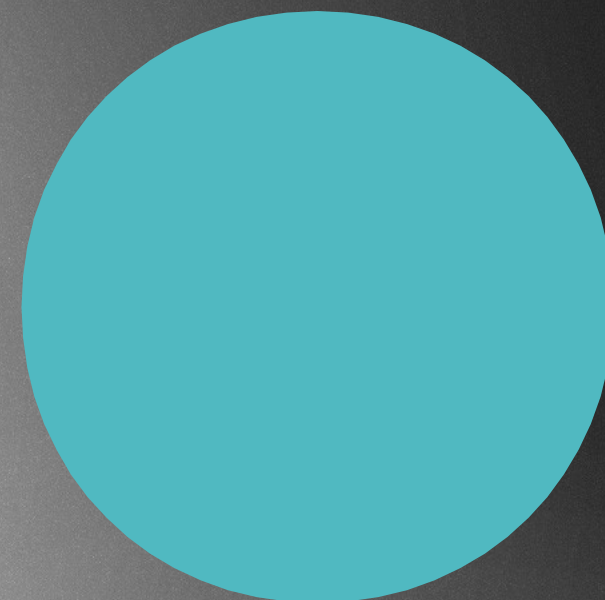
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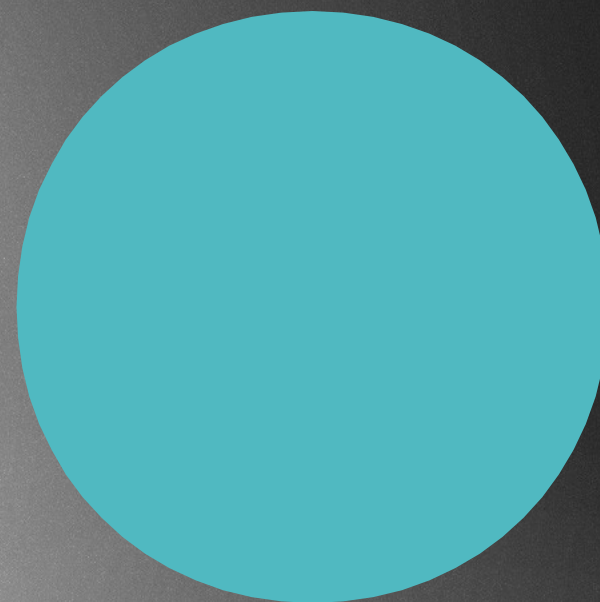
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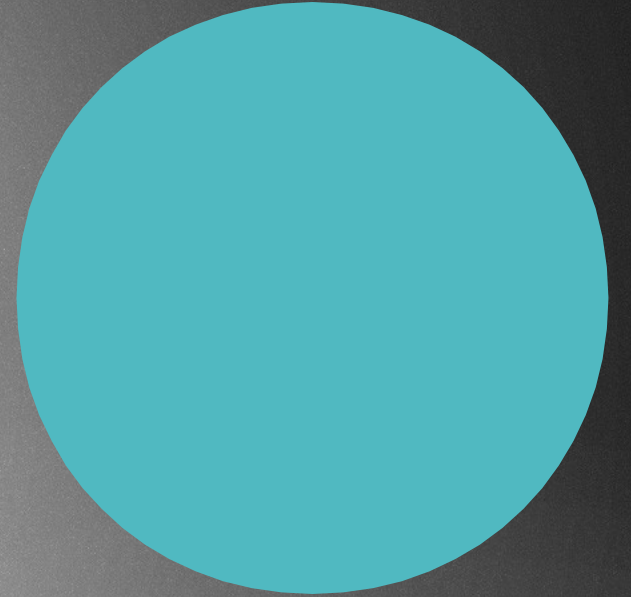
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