

One Pass Sort

Dutch National Flag [Sort Colors]

This algorithm works only for sorting 3 different data



Understand the Problem

2	0	2	1	1	0
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Questions to ask yourself

- Can it have more than 3 variant? No
- Can it have less than 3 variant? No
- Can it have duplicates? Yes

Test Conditions / Data Set

2	0	2	1	1	0
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- Duplicated numbers
- Unique numbers
- Sorted numbers and unsorted numbers

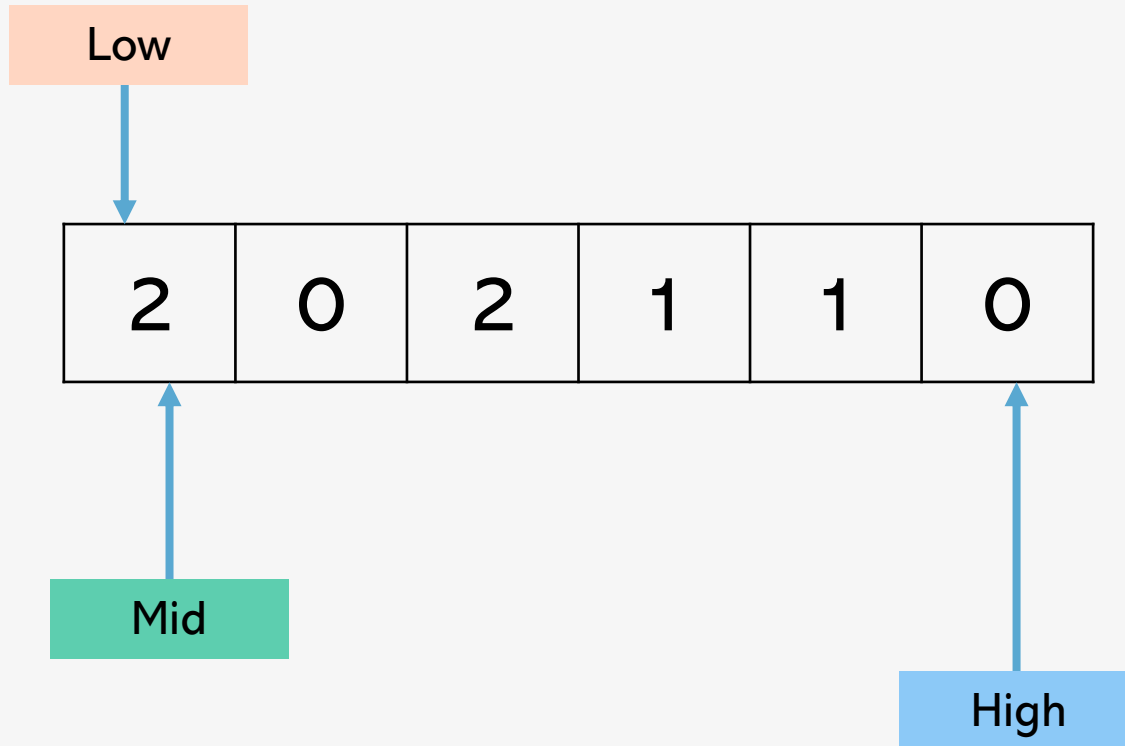
Rules

- You should have only 3 Pointers [Low, Mid, High]
- You need traverse the array from left to right and STOP when your mid crosses High

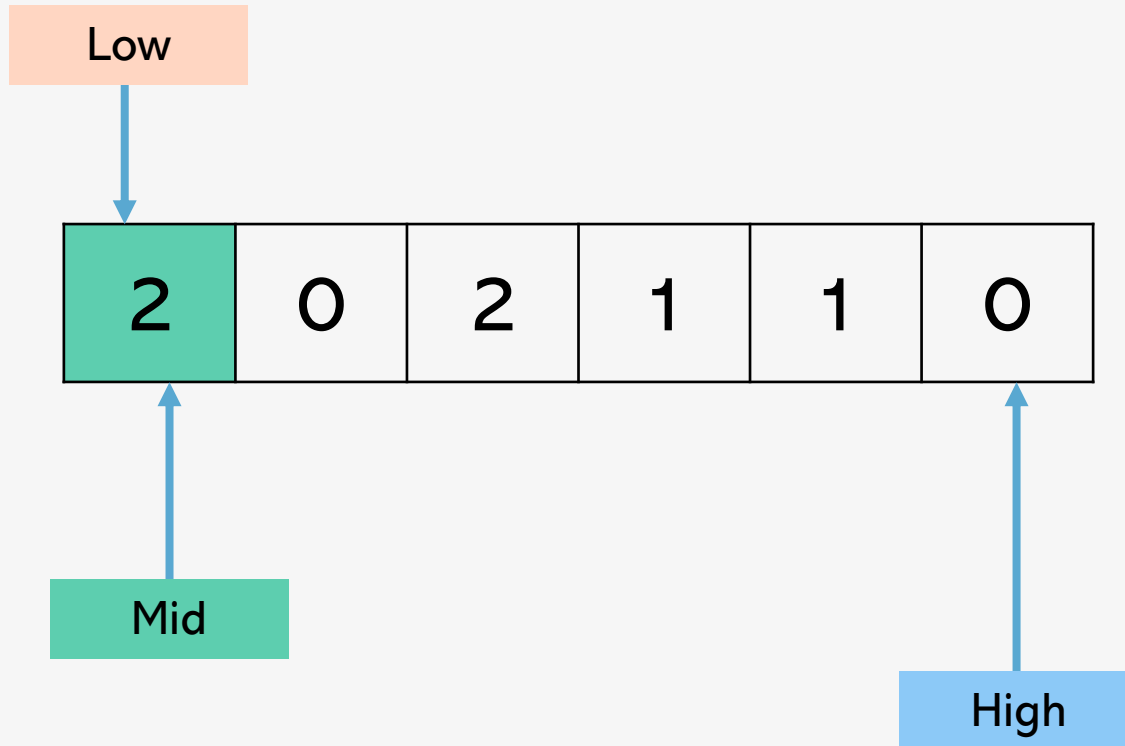
If the value of the current index

- ✓ 0 \Rightarrow swap(low, mid) and increment low(++) and mid(++)
- ✓ 1 \Rightarrow no swap and just increment mid(++)
- ✓ 2 \Rightarrow swap(mid, high) and decrement high(--)

Get Started with 3 Pointers



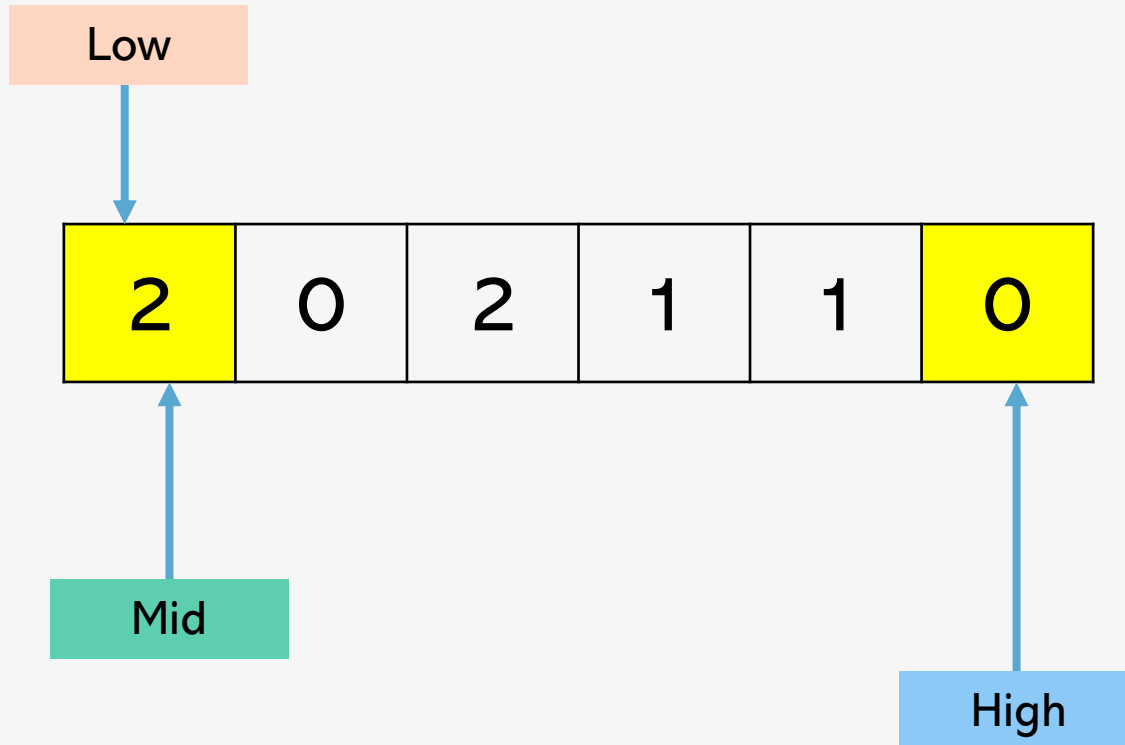
Iteration 1



If the value of the current index

- ✓ 0 => swap(low, mid) and increment low(++) and mid(++)
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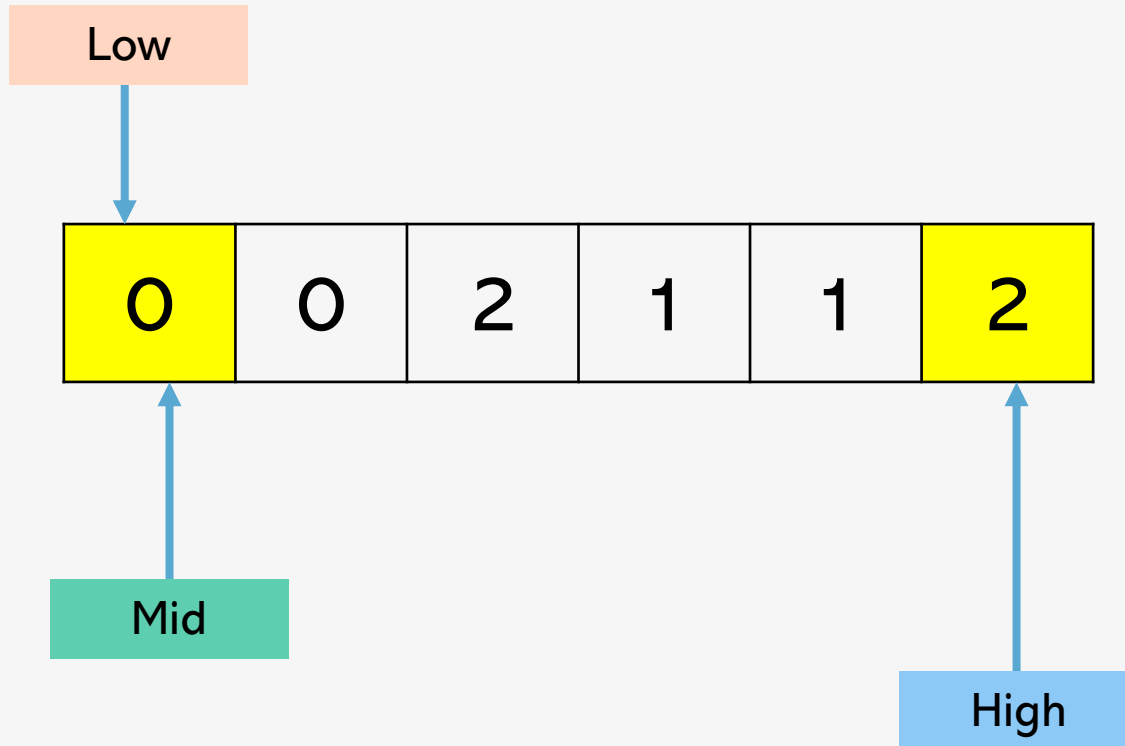
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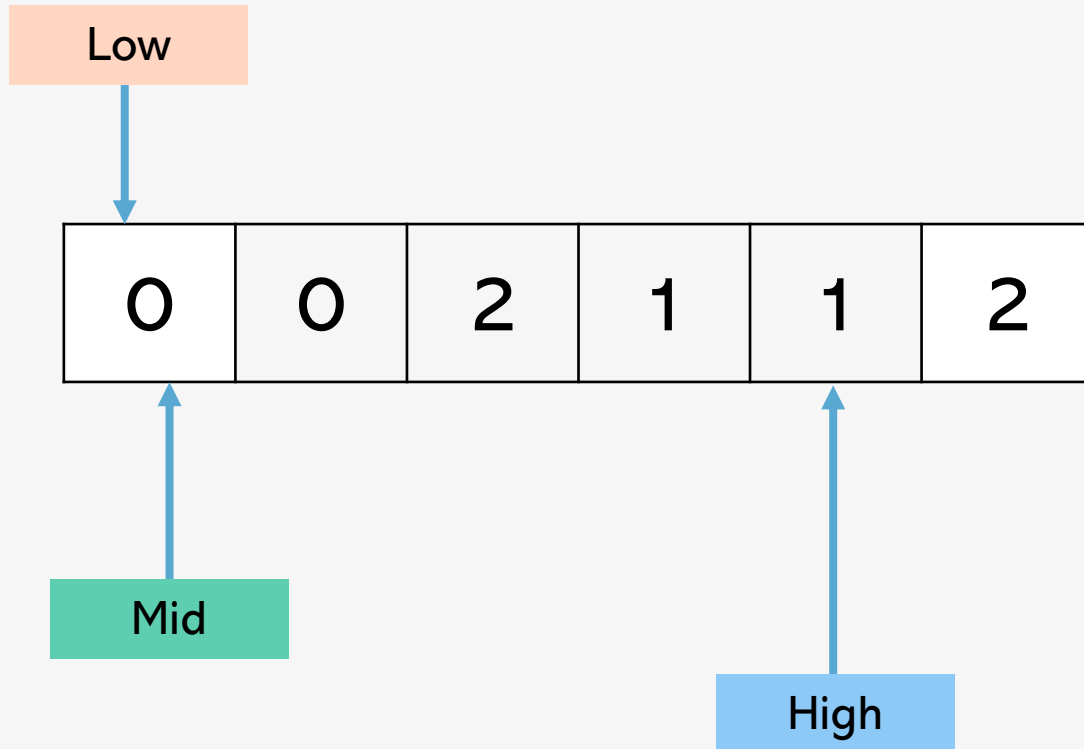
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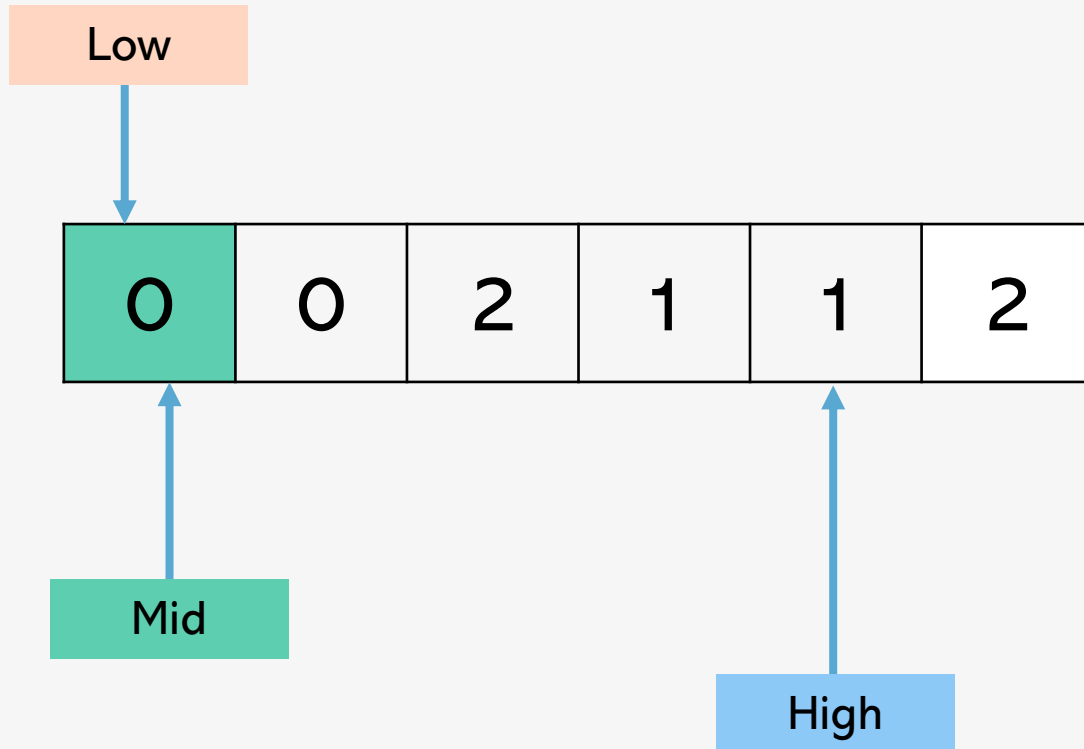
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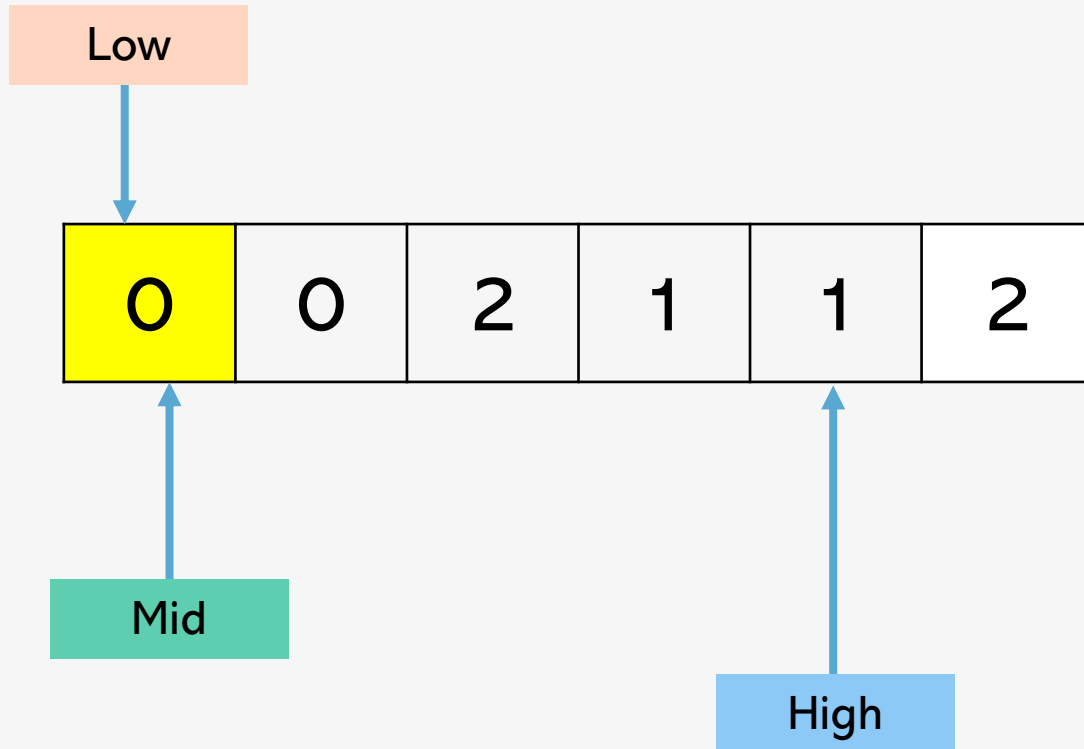
Iteration 2



If the value of the current index

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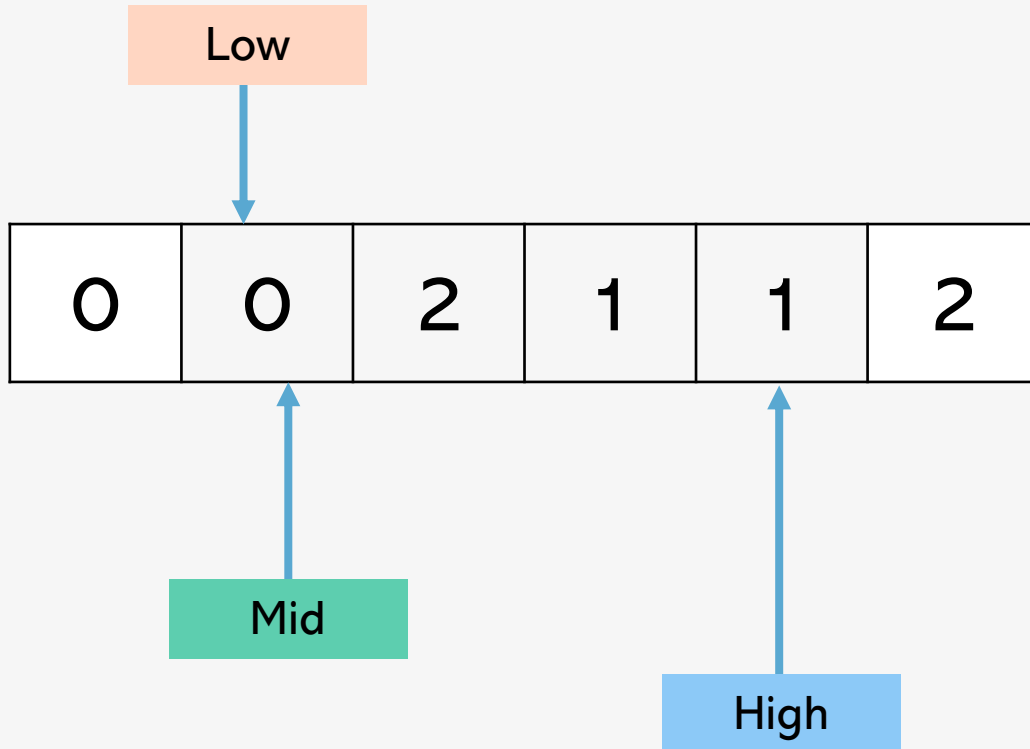
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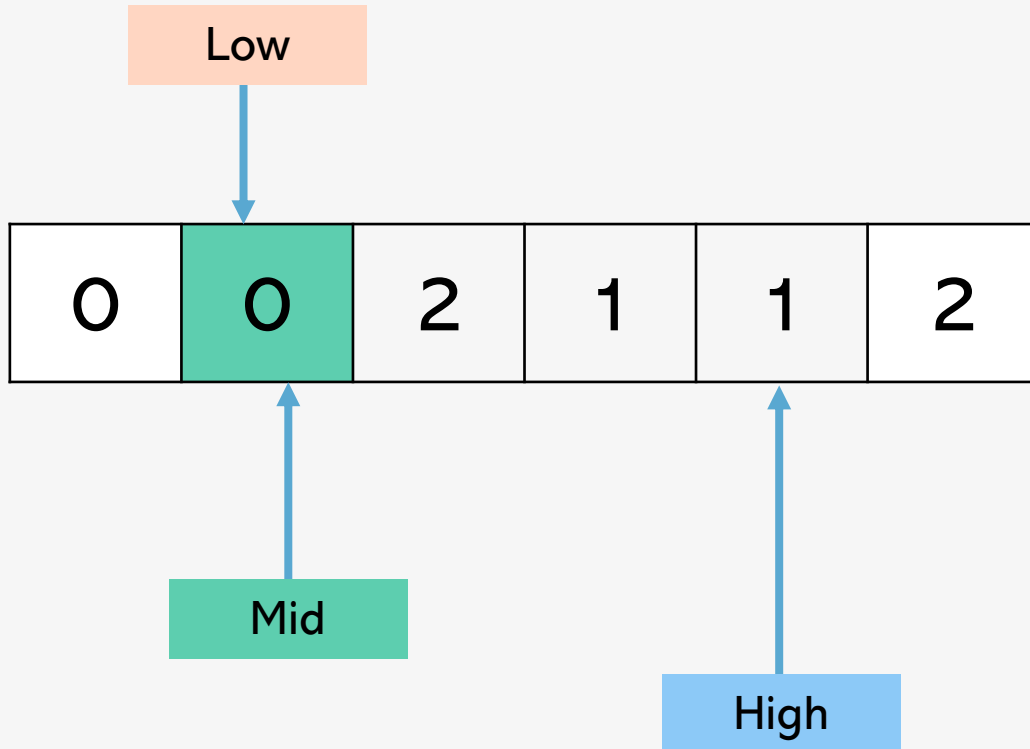
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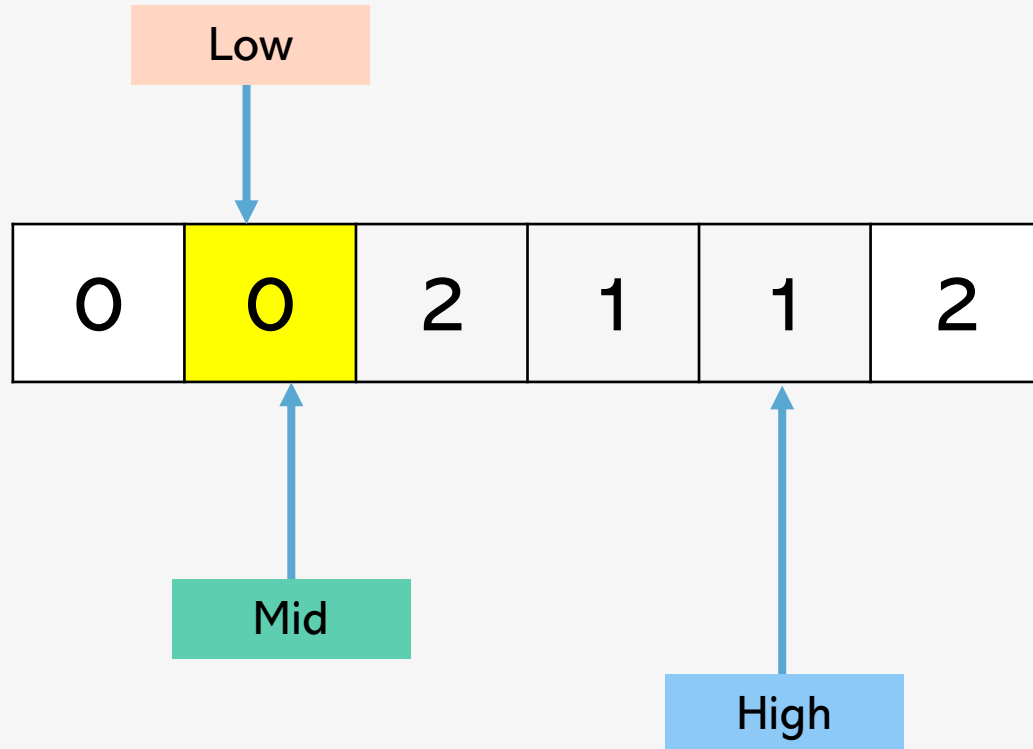
Iteration 3



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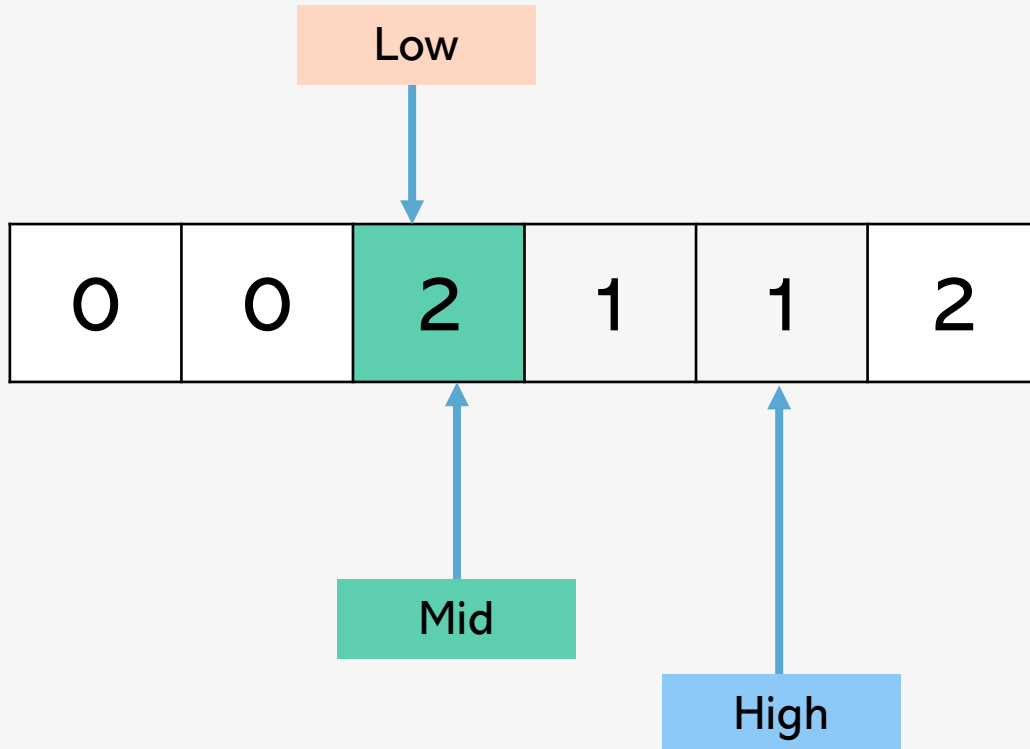
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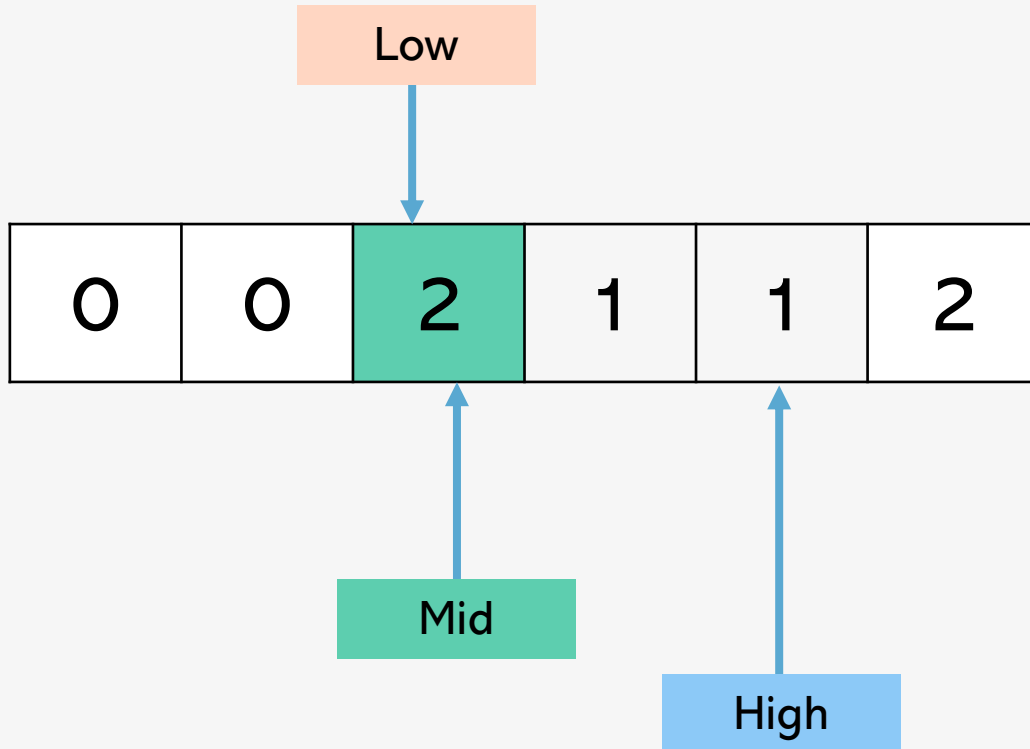
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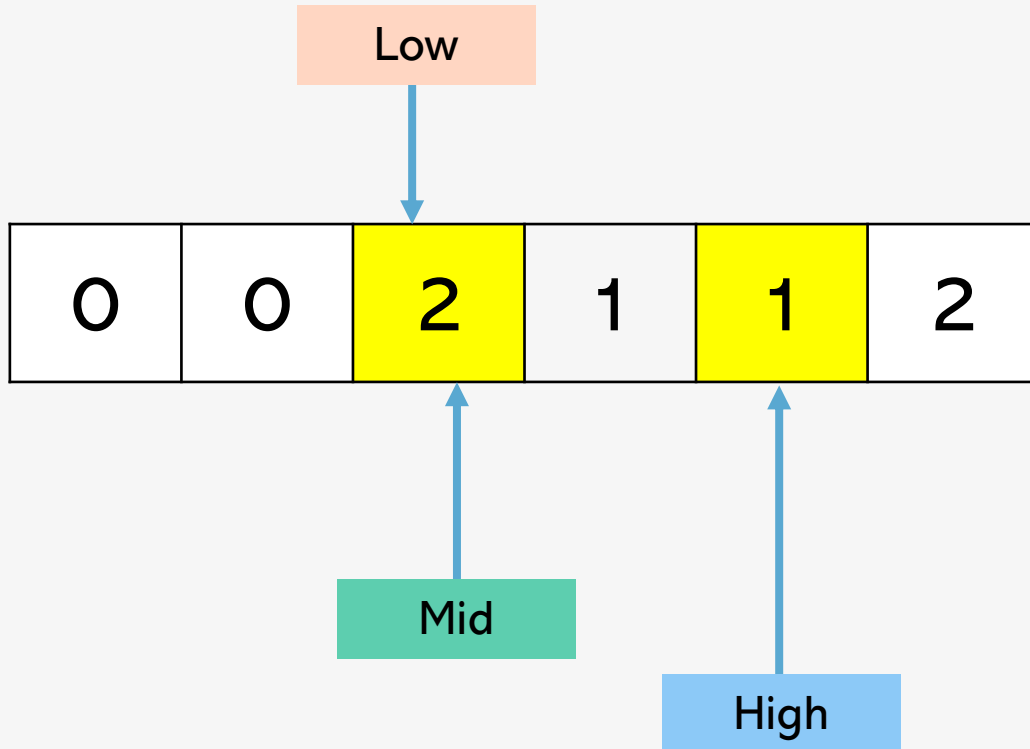
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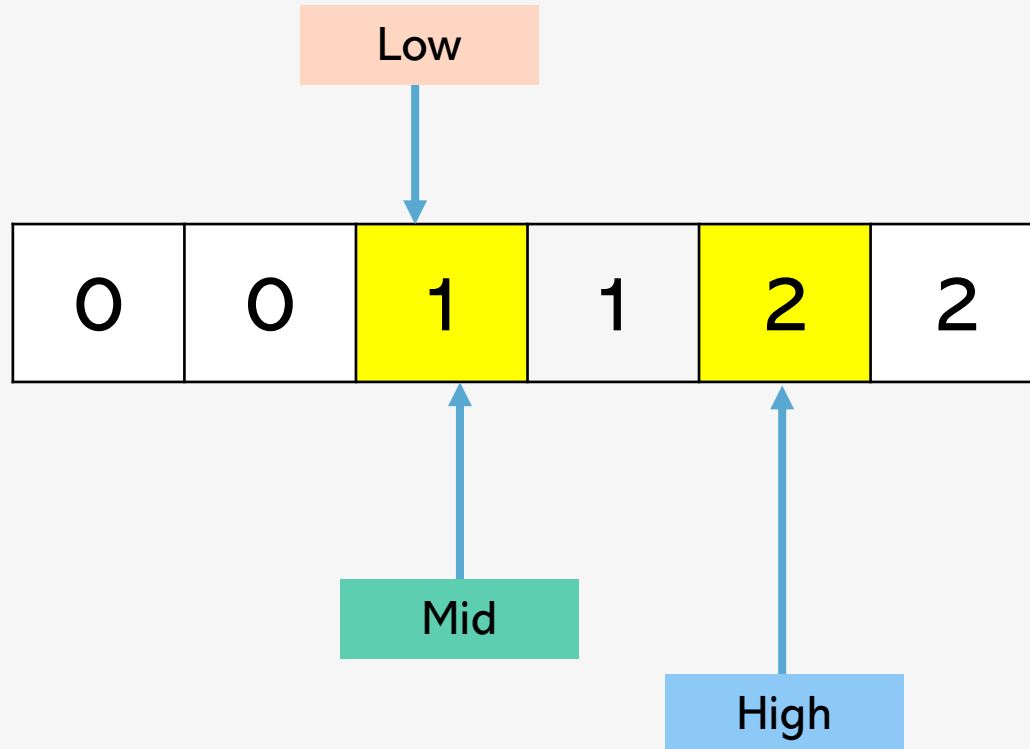
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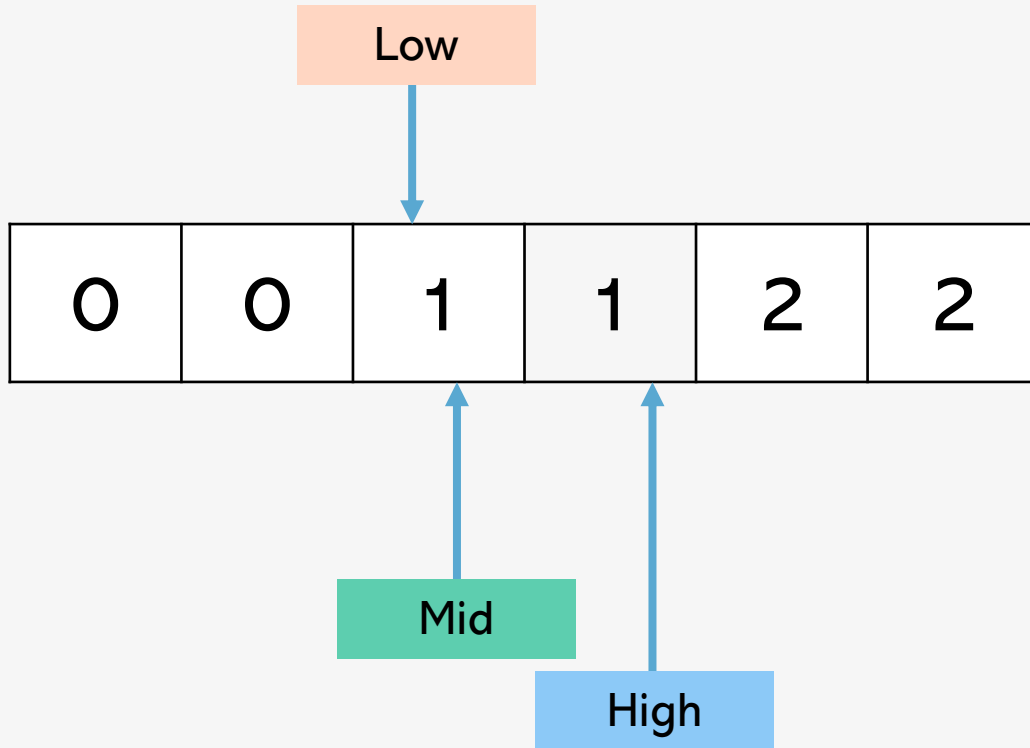
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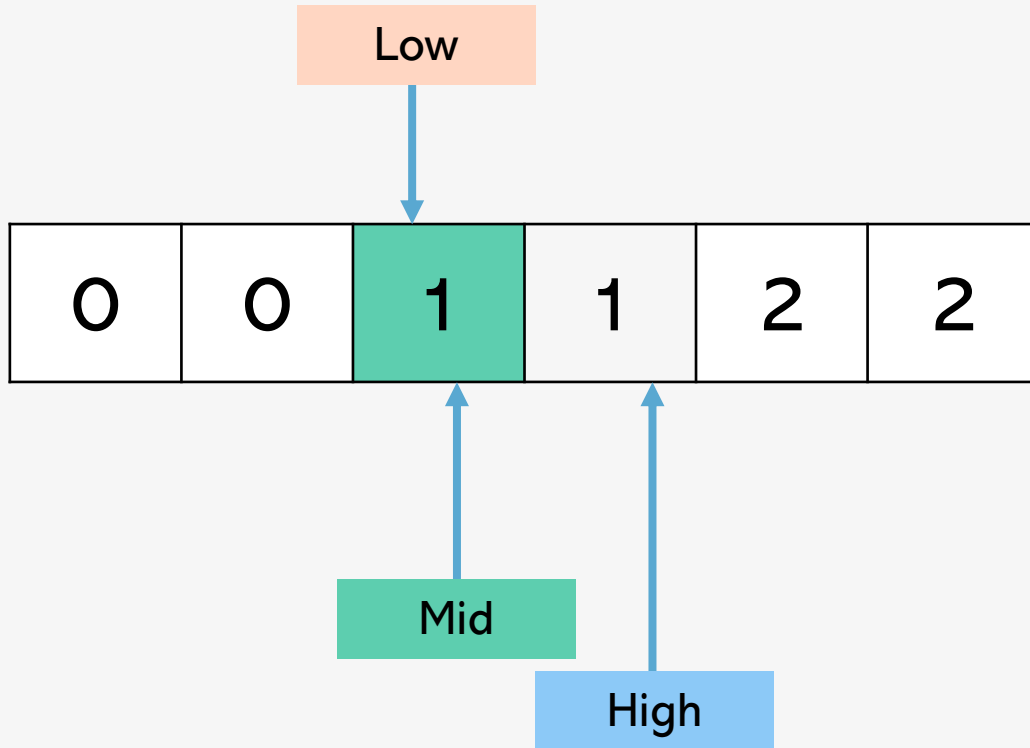
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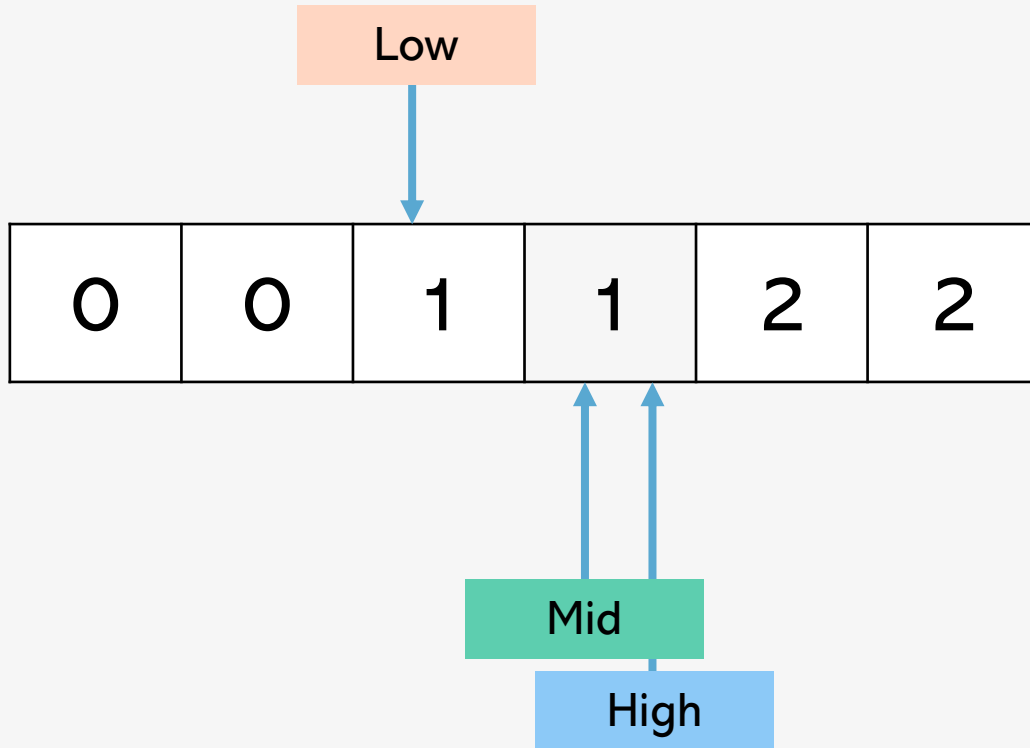
Iteration 4



If the value of the current index

- ✓ 0 => swap(low, mid) and increment low(++) and mid(++)
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- ✓ 2 => swap(mid, high) and decrement high(--)

Iteration 4



If the value of the current index

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- ✓ 1 => no swap and just increment mid(++)
- ✓ 2 => swap(mid, high) and decrement high(--)