

# In-place Insertion Sort

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General strategy:

- Repeat for  $i = 0$  to  $N - 1$ :
  - Designate item  $i$  as the traveling item.
  - Swap item backwards until traveller is in the right place among all previously examined items.

Input:

32	15	2	17	19	26	41	17	17
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In example above: Use  $j$  pointer to track current spot of traveling item.

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Input:

32	15	2	17	19	26	41	17	17
----	----	---	----	----	----	----	----	----

$i$

$j$

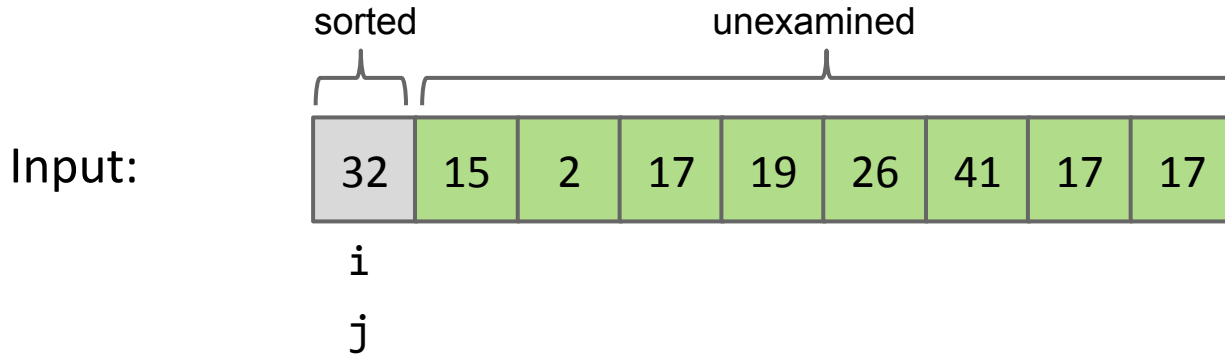
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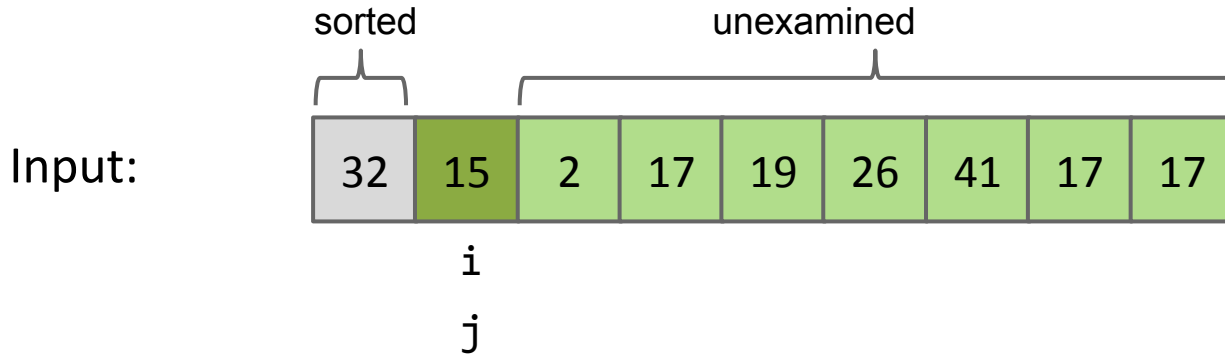
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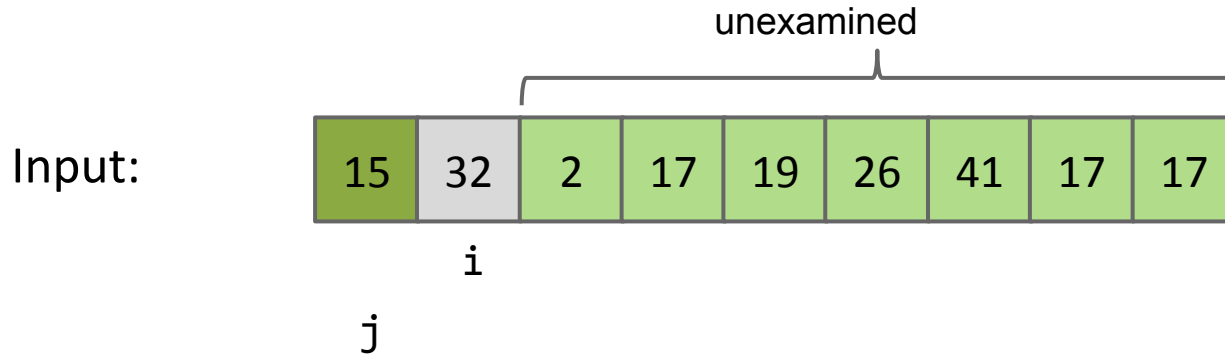
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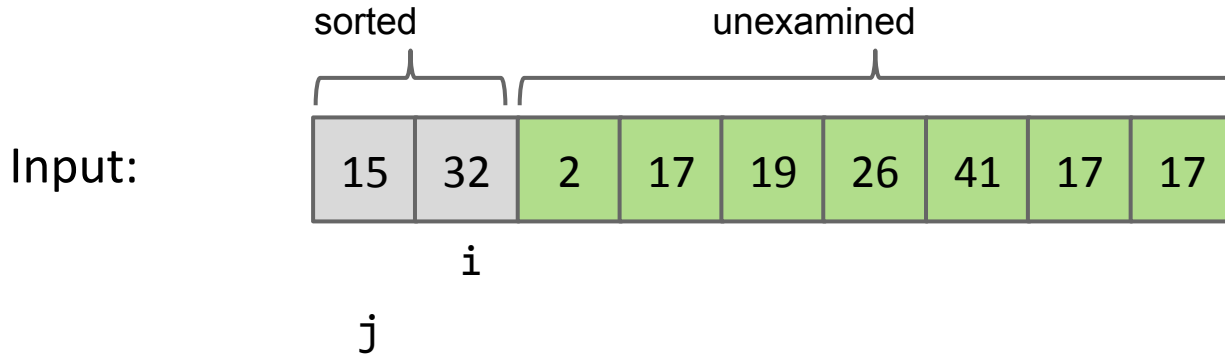
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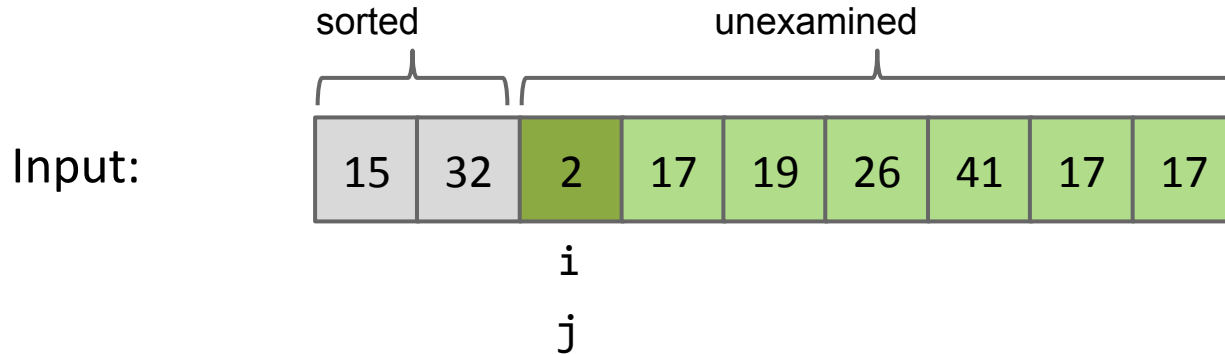
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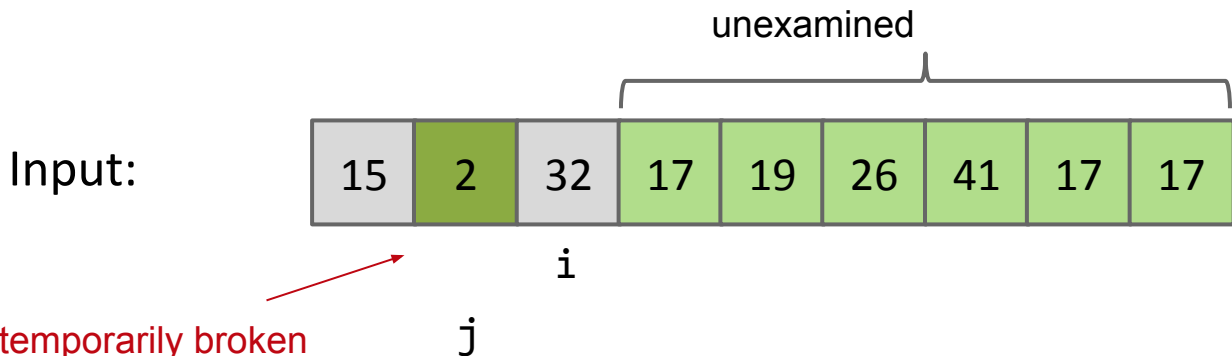


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Note: We've temporarily broken our invariant that the items up through item  $i$  should be sorted!

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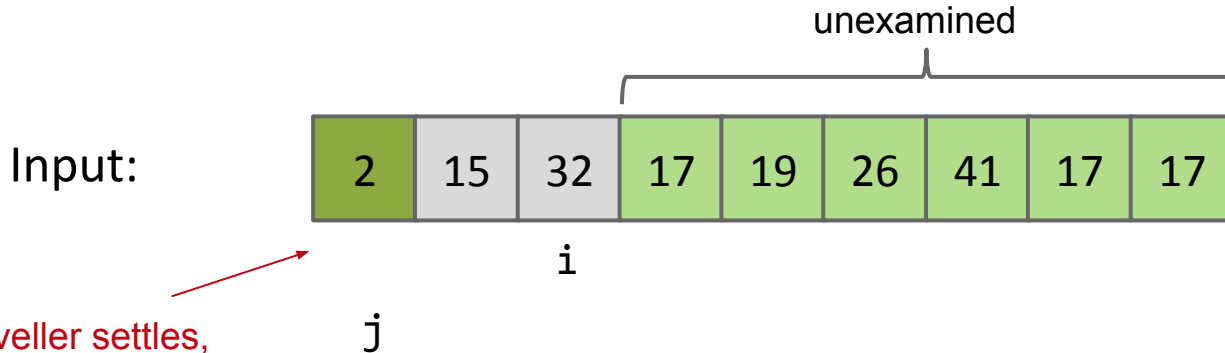


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Once the traveller settles,  
the invariant is restored.

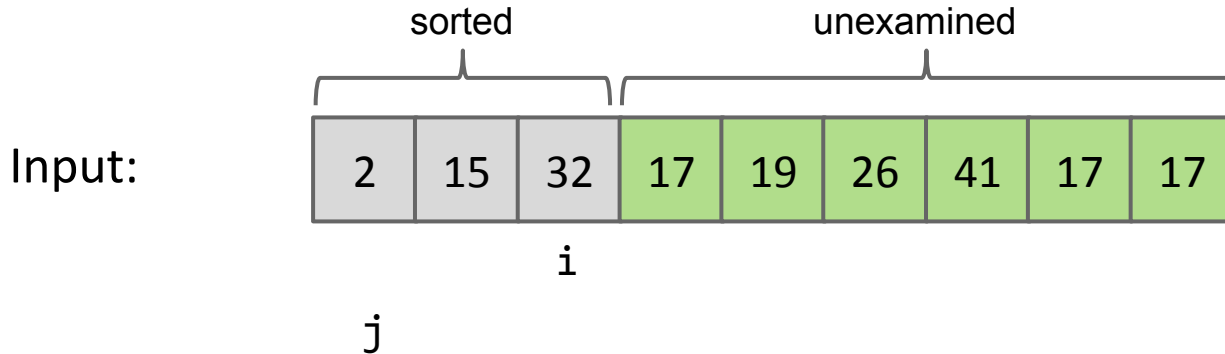
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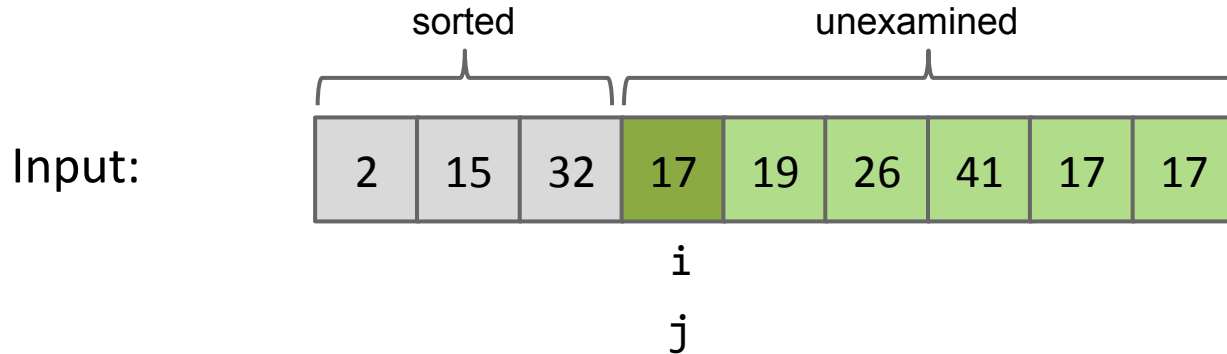
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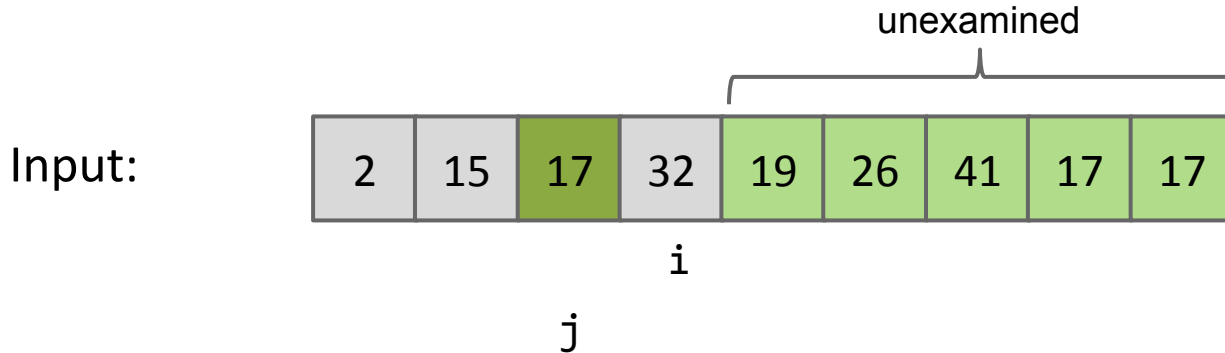
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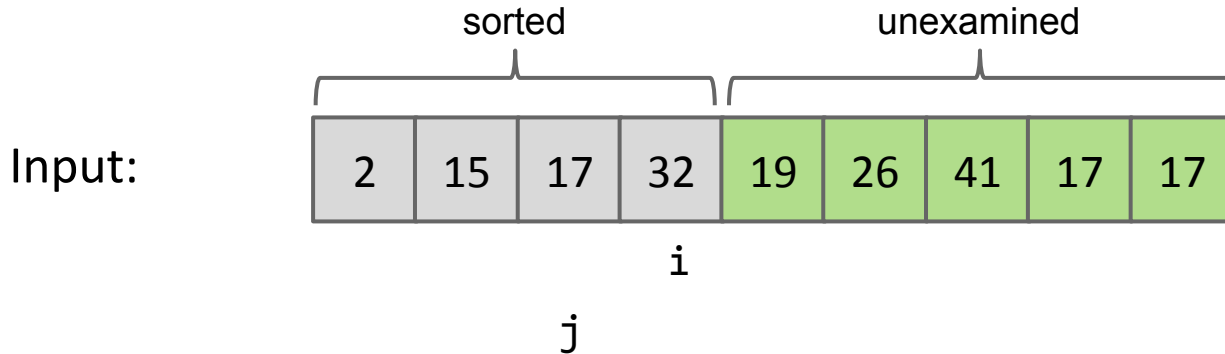
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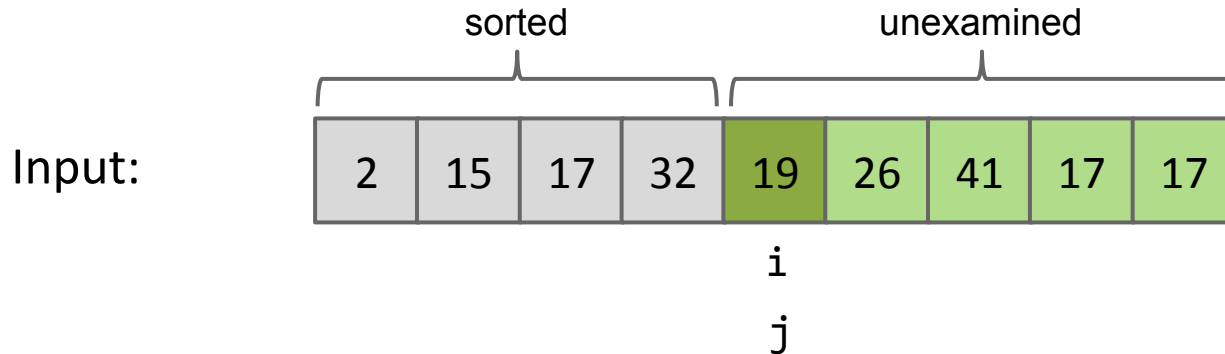
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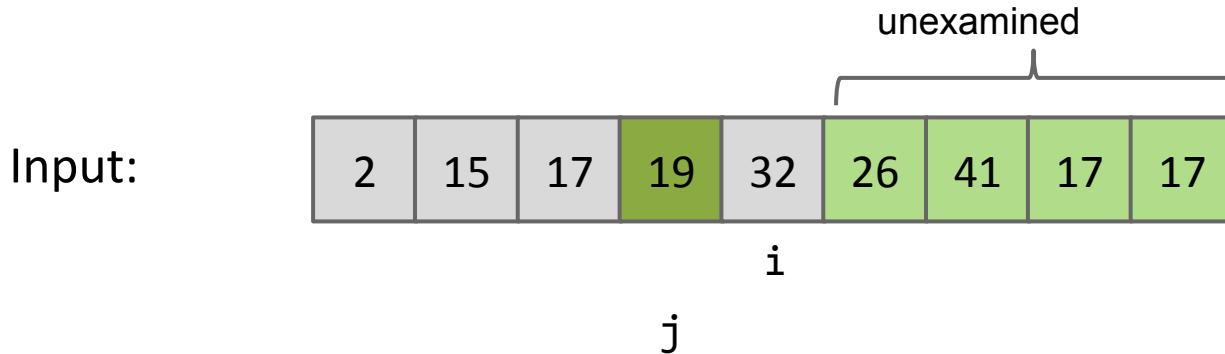
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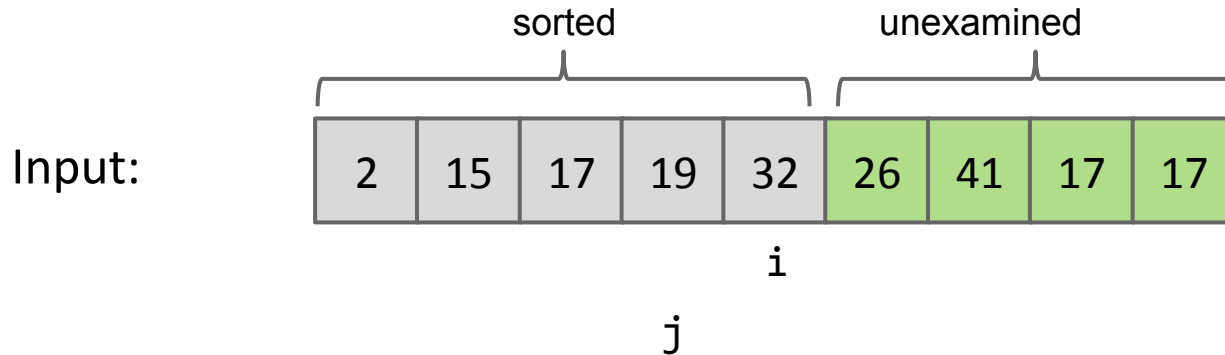
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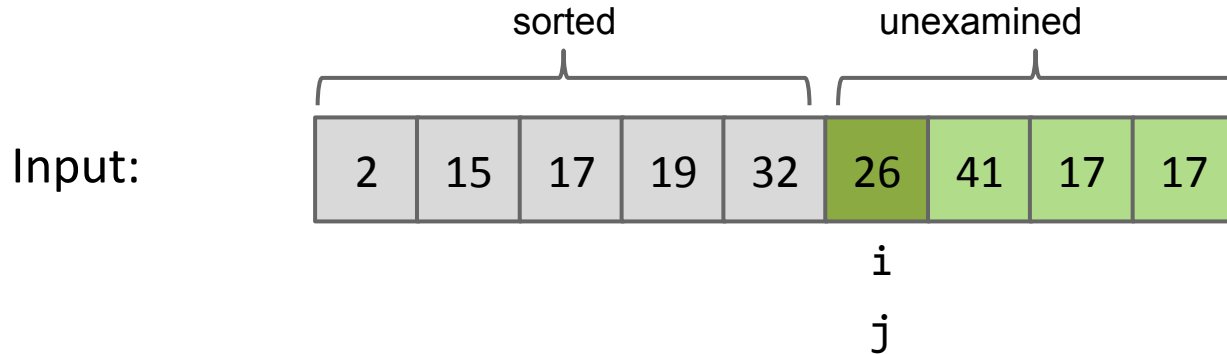


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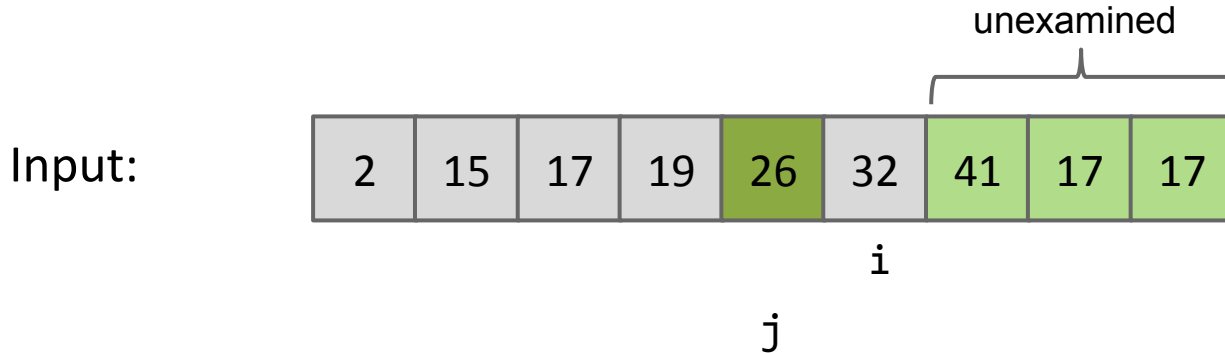
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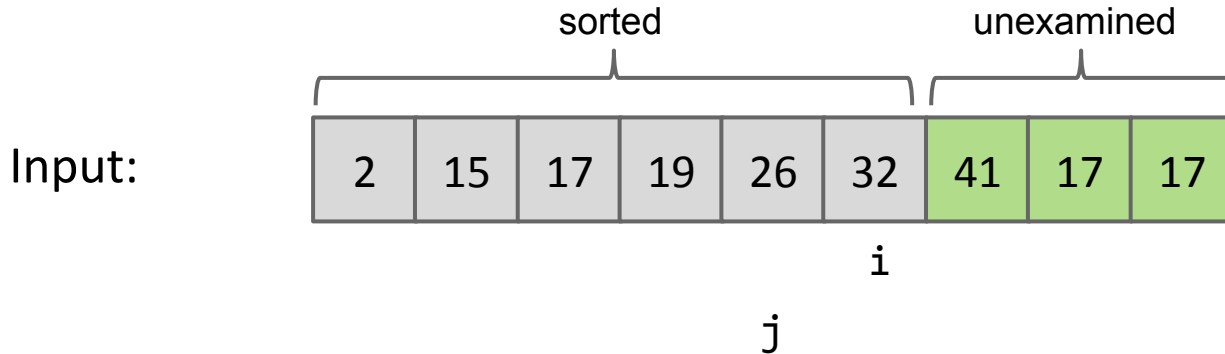
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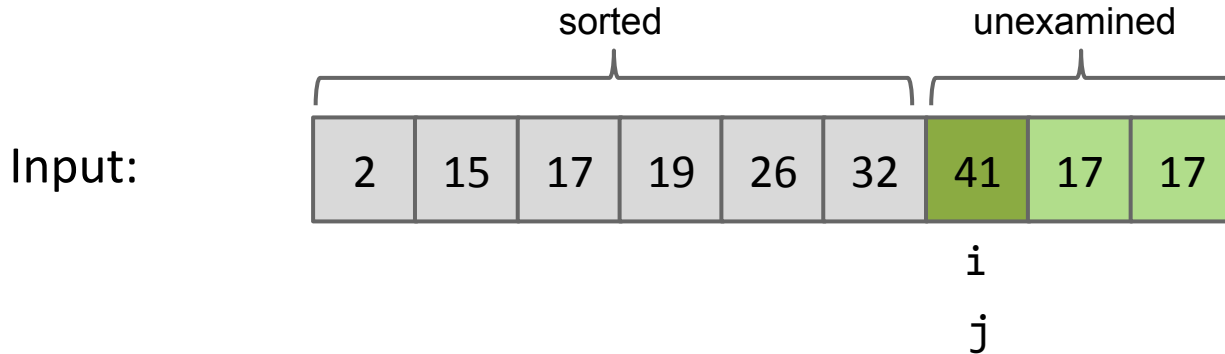
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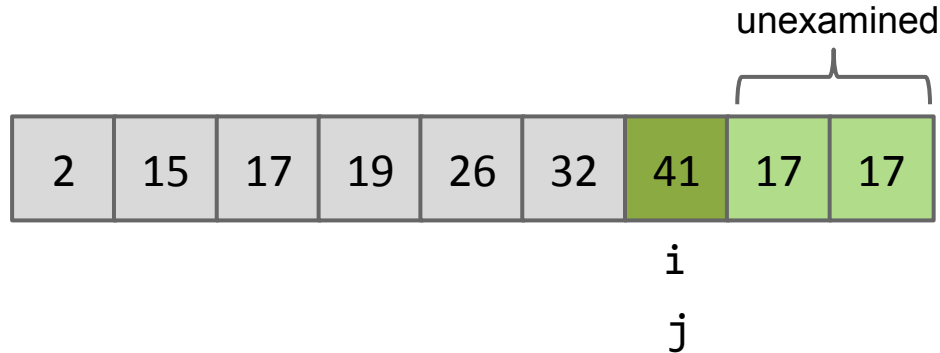
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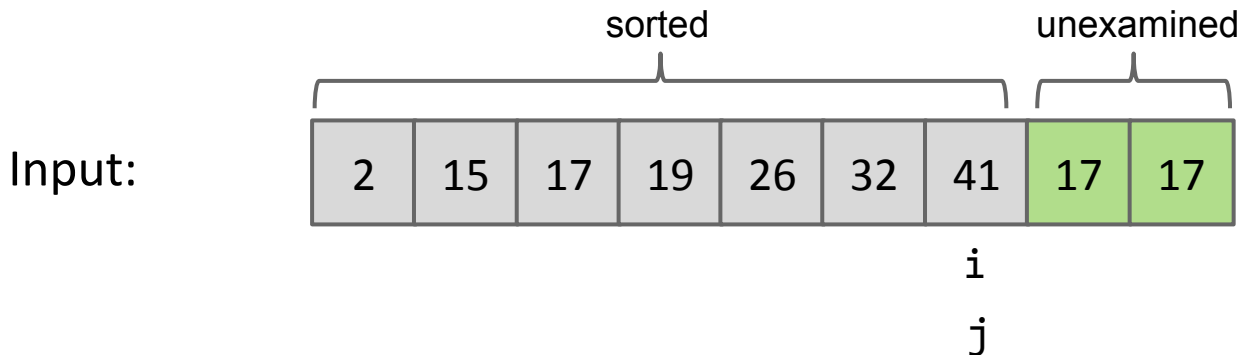
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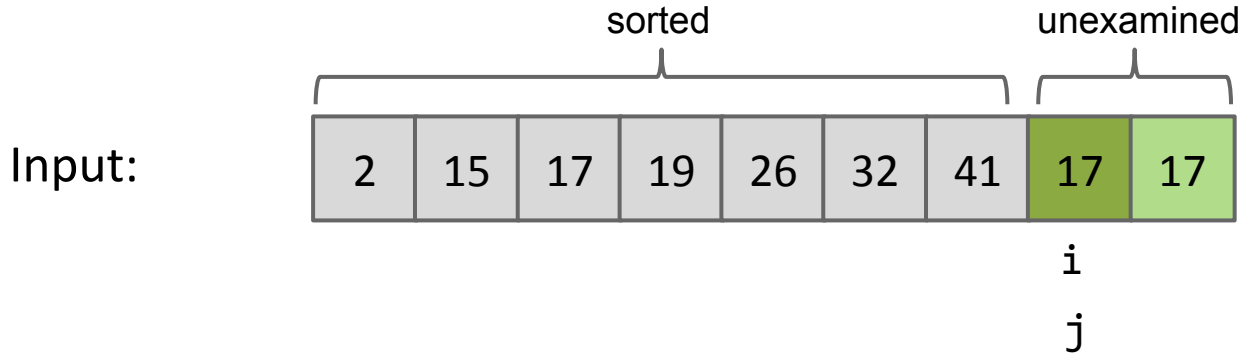
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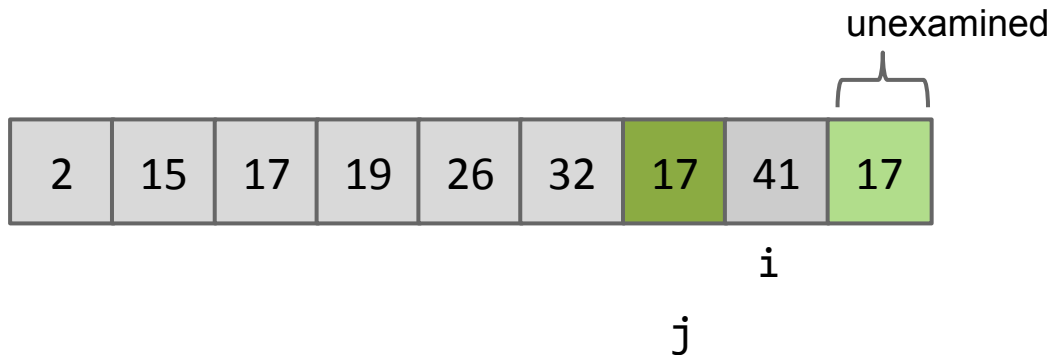
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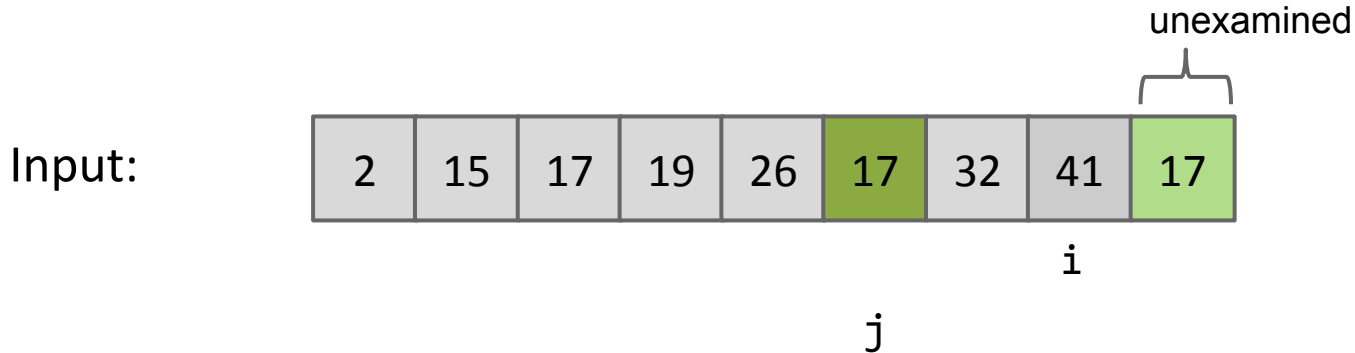


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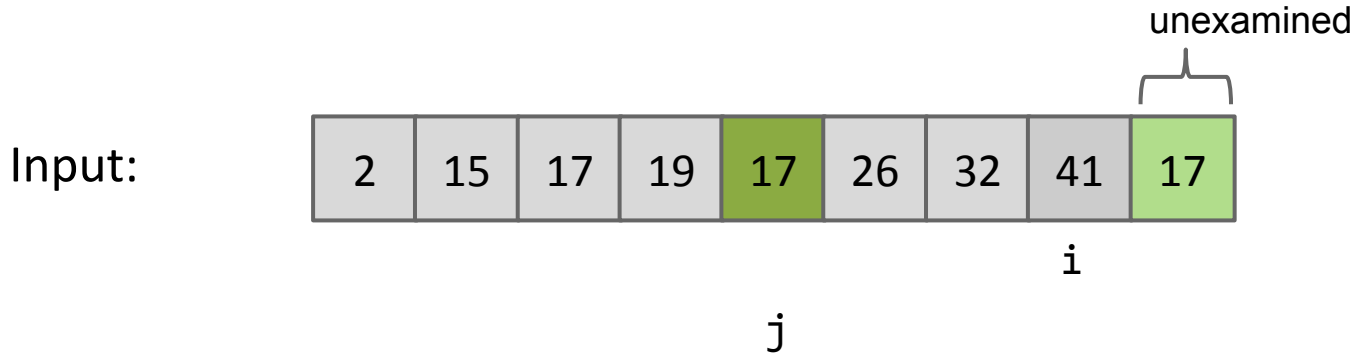
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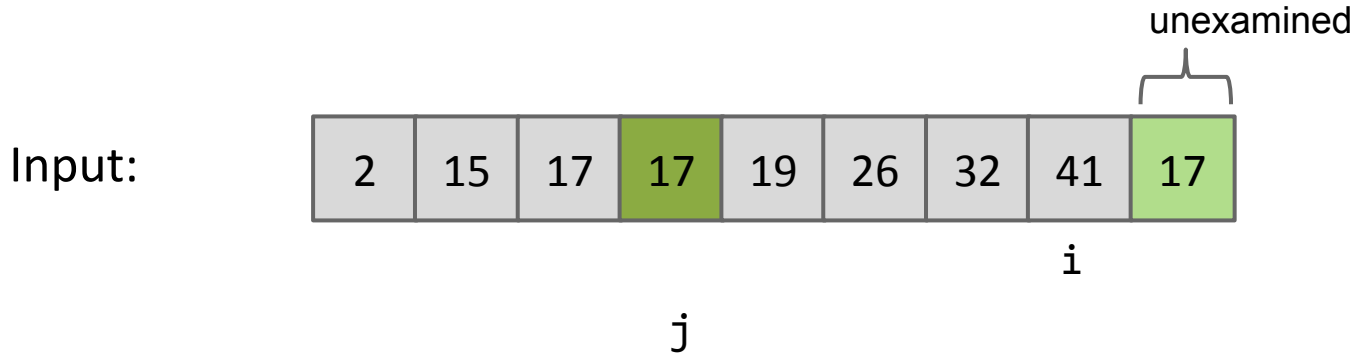
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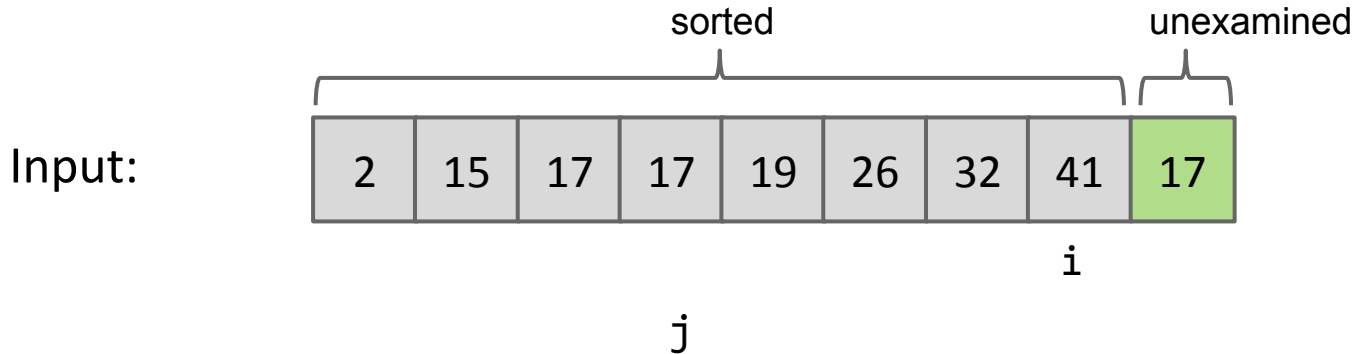
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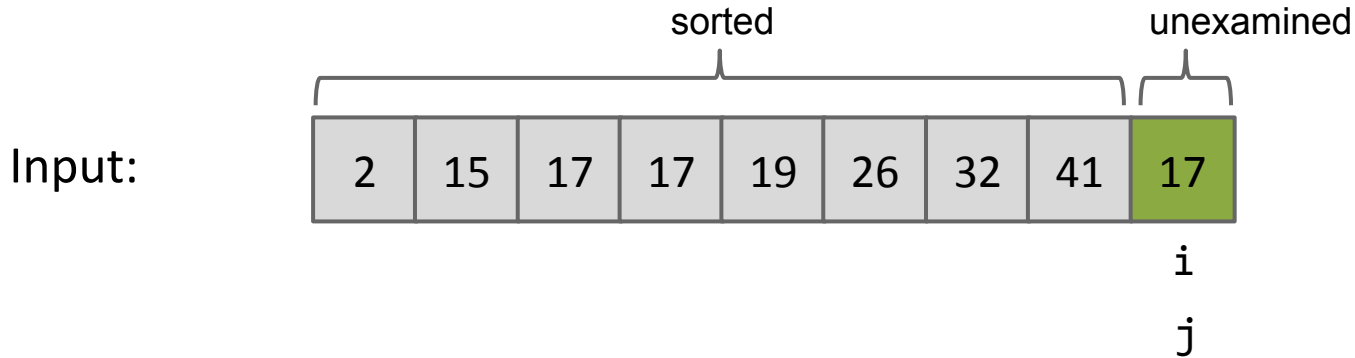
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# Insertion Sort W/Swaps

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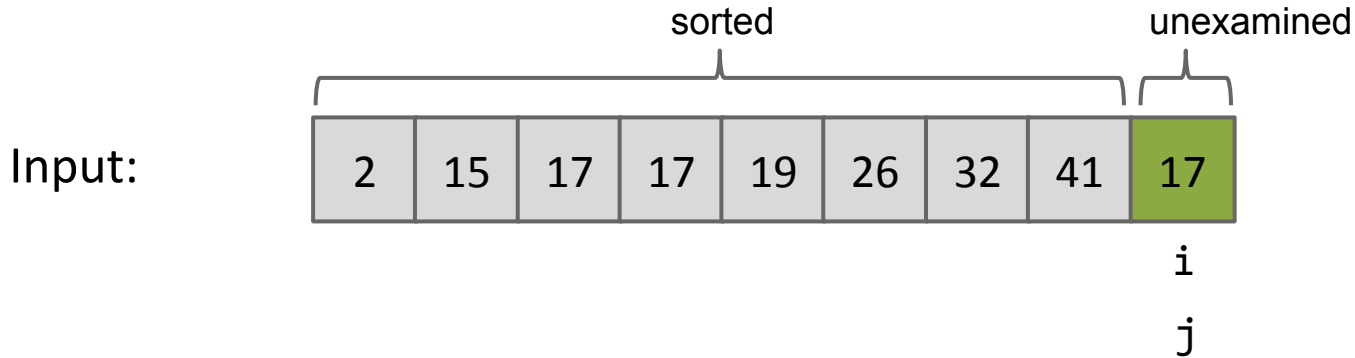
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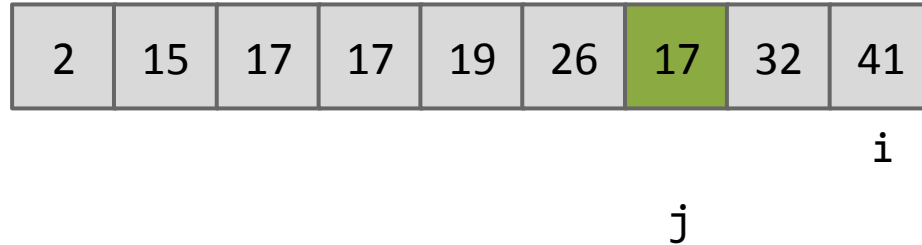
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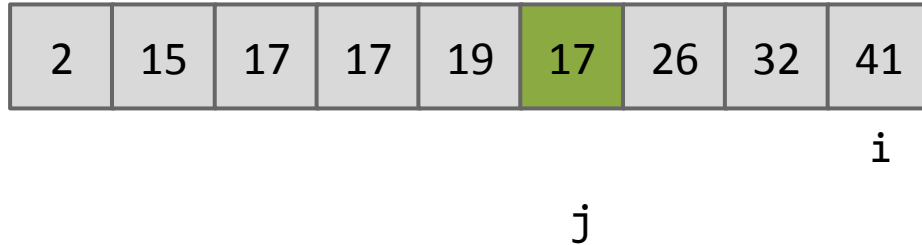
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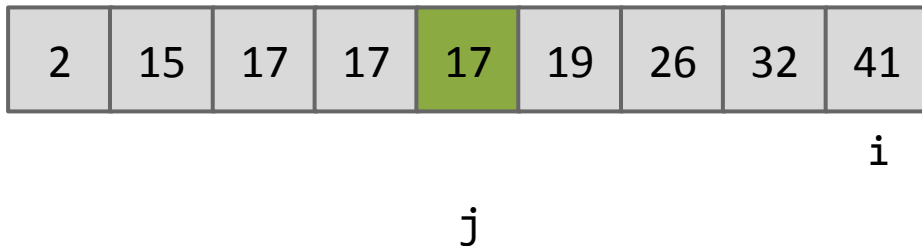
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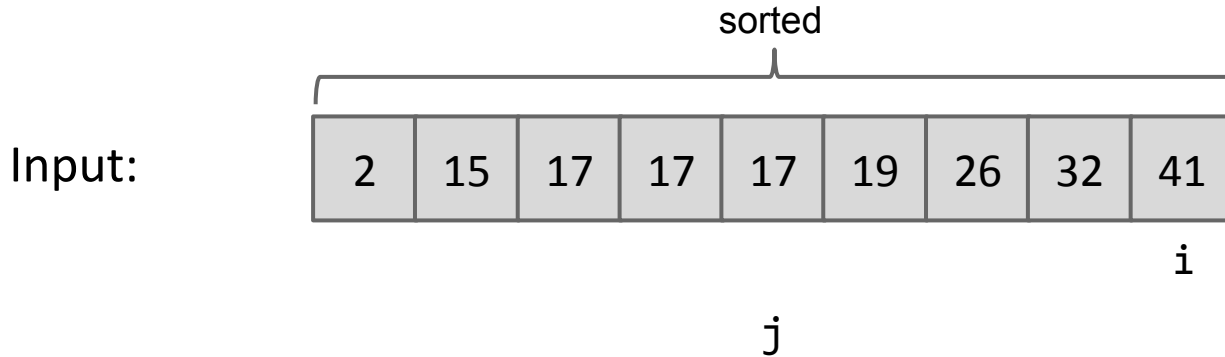
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