

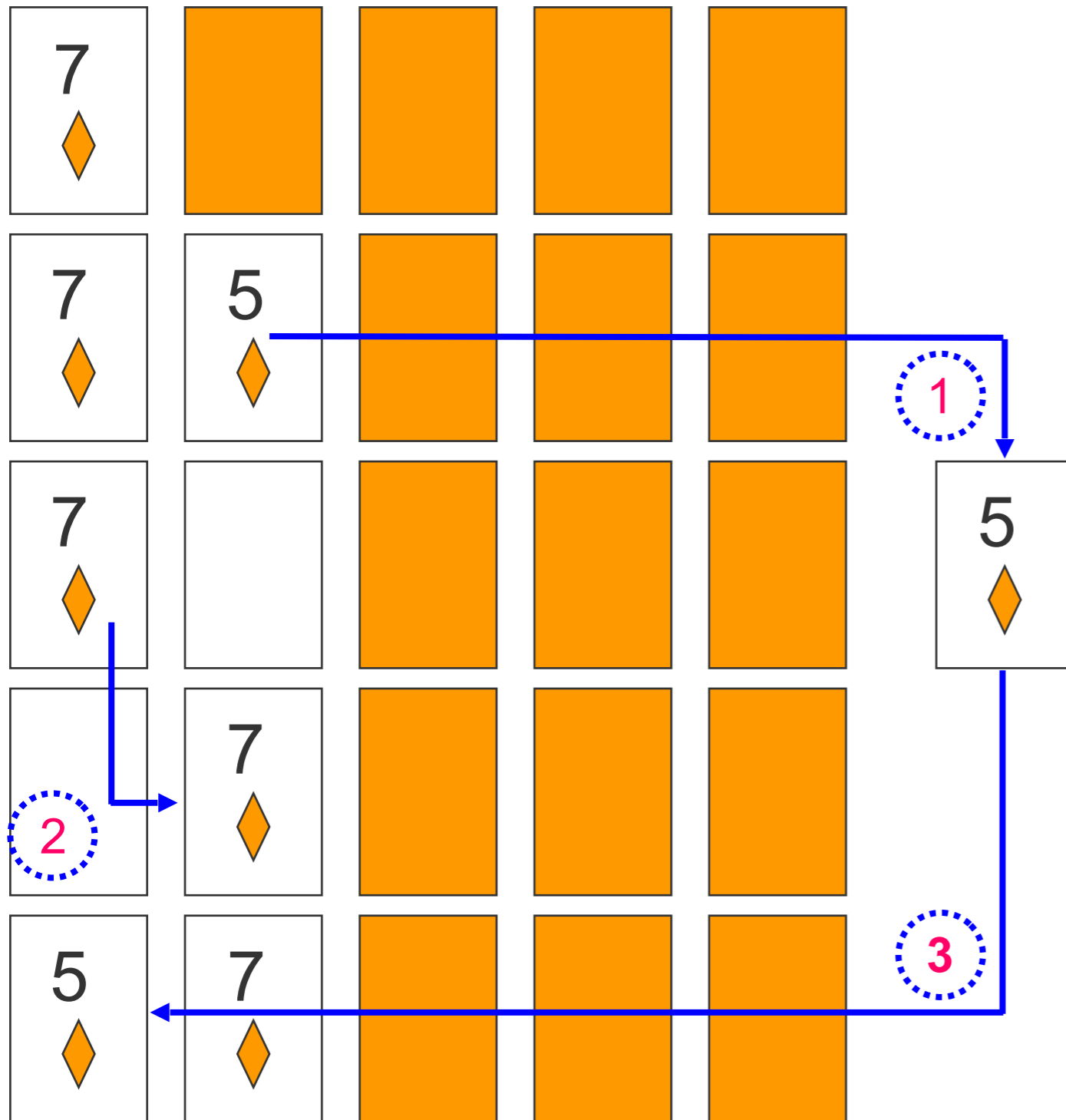
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# Insertion sort

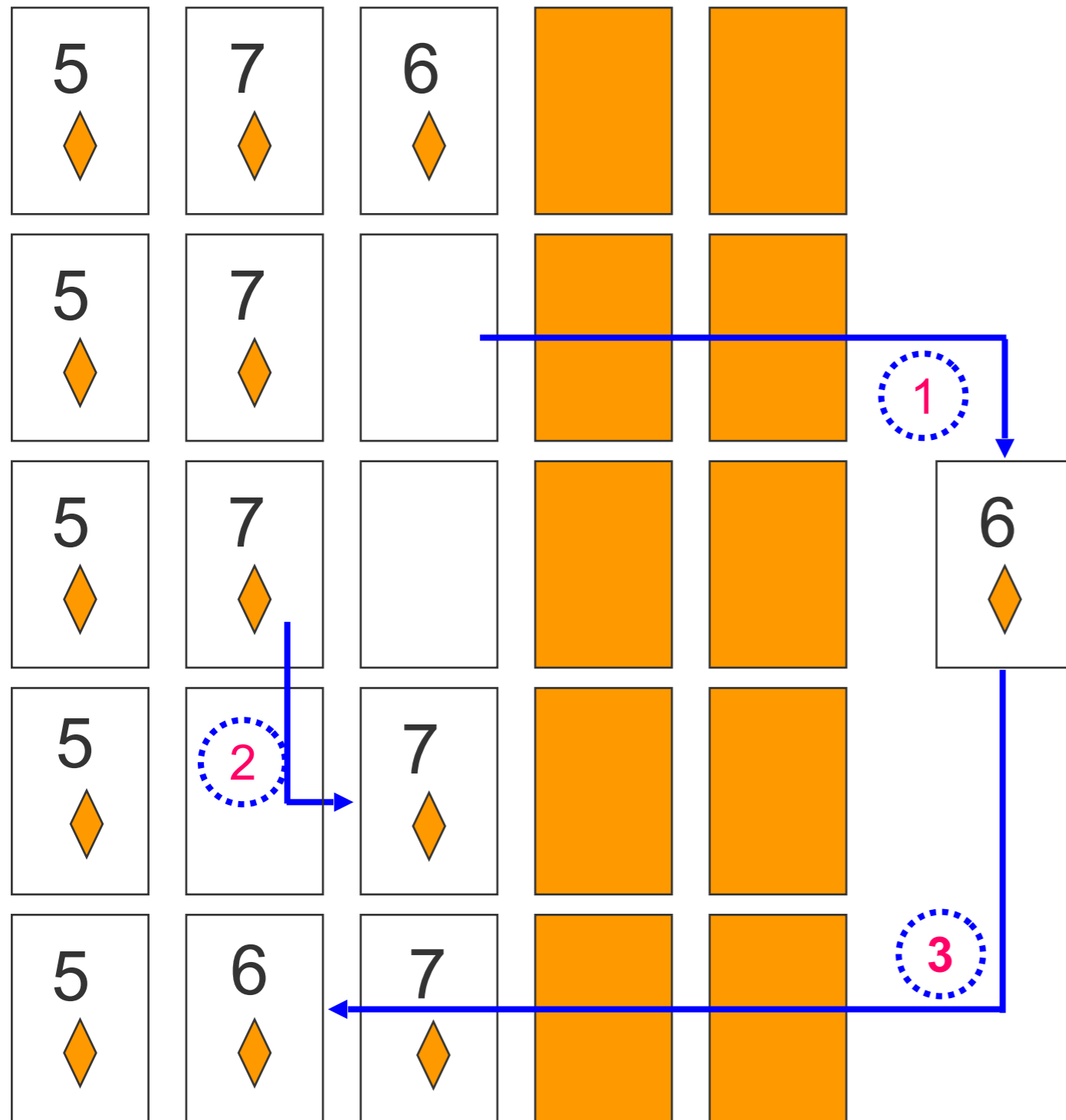
- Works the same way you arrange your hand when playing cards.
  - Pick up a card and place it in your hand in the correct position relative to the cards you're already holding.



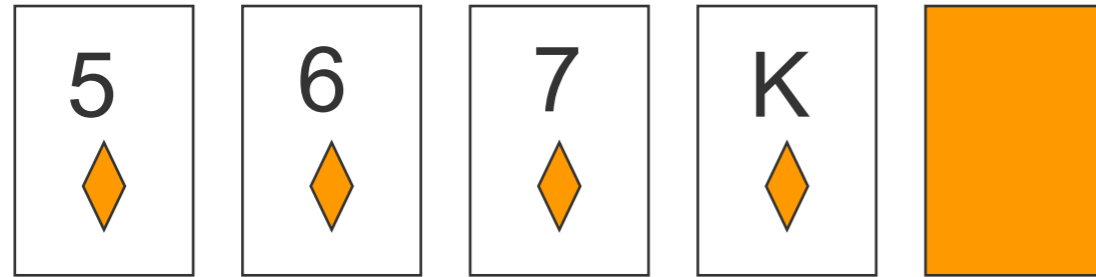
# Insertion Sort



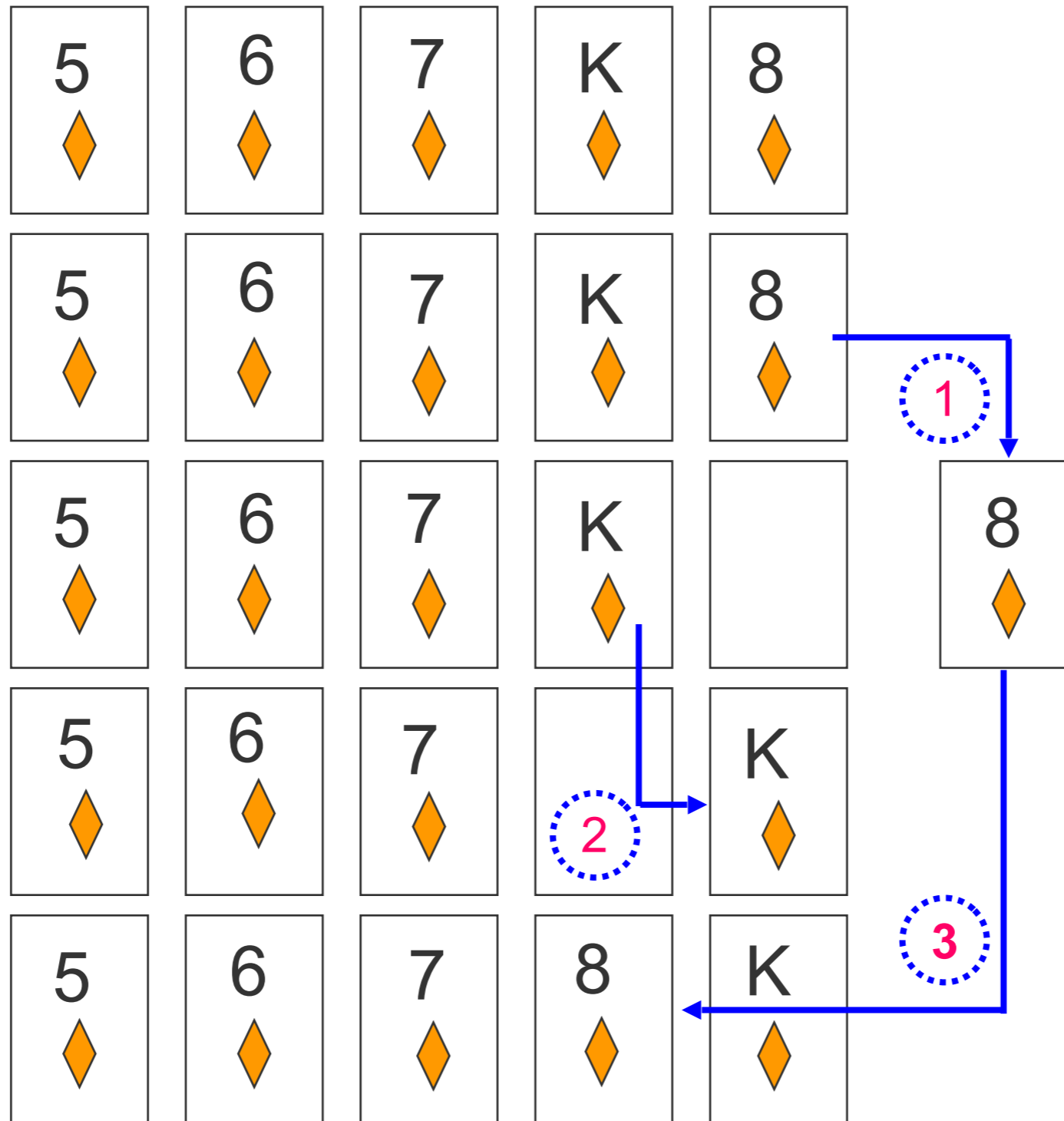
# Insertion Sort (cont.)



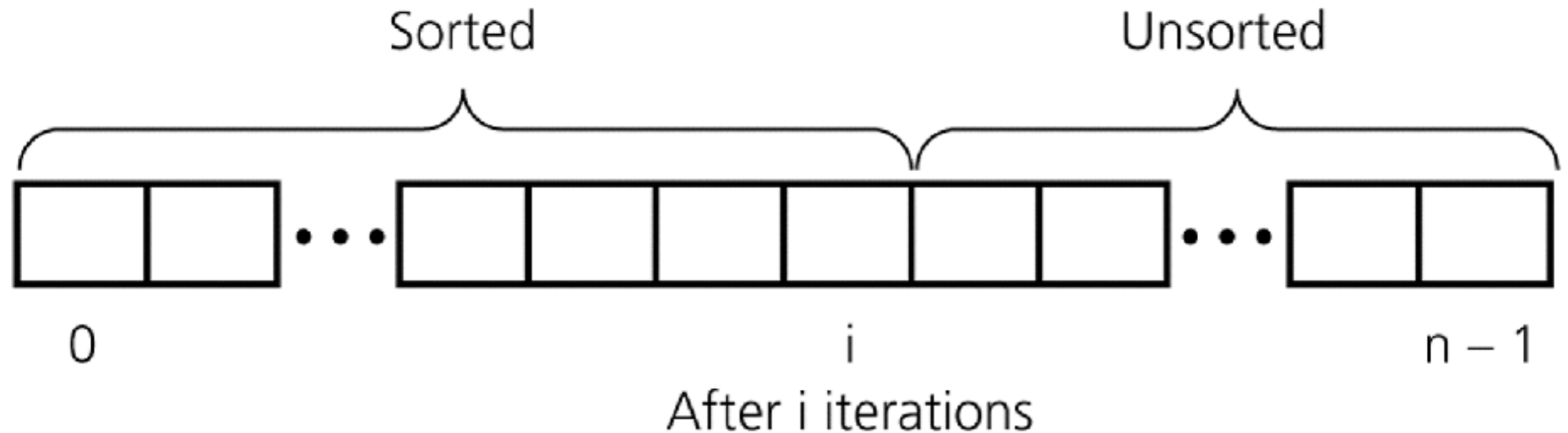
# Insertion Sort (cont.)



# Insertion Sort (cont.)



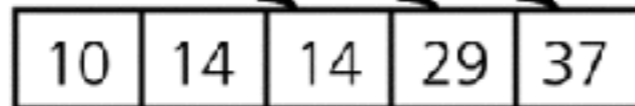
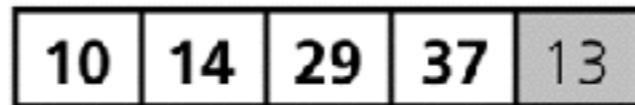
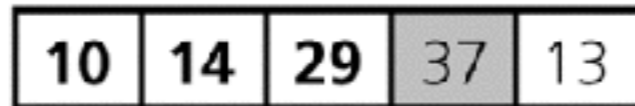
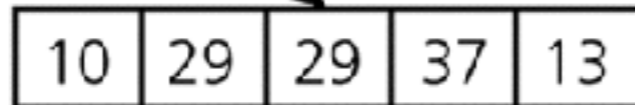
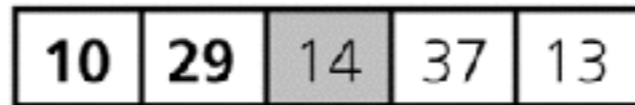
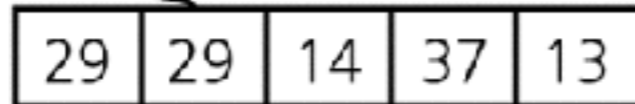
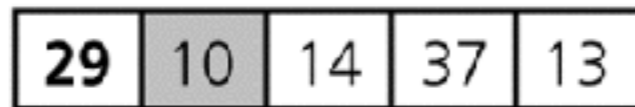
# Insertion sort – more formally



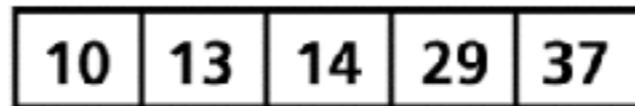
- insertion sort partitions the array into two regions: sorted, and unsorted
- *each iteration the sorted part grows by 1*

# Insertion sort – another example

Initial array:



Sorted array:



Copy 10

Shift 29

Insert 10; copy 14

Shift 29

Insert 14; copy 37, insert 37 on top of itself

Copy 13

Shift 37, 29, 14

Insert 13