



# Unit 1: Problem Solving

## Part 7: Bubble Sort

### Topic 3: Sorting and Searching Algorithms



# Lecture Contents

- Bubble Sort Algorithm
- Reading: *Sorting Algorithms: Bubble Sort*, page 15-17



# Bubble Sort Algorithm

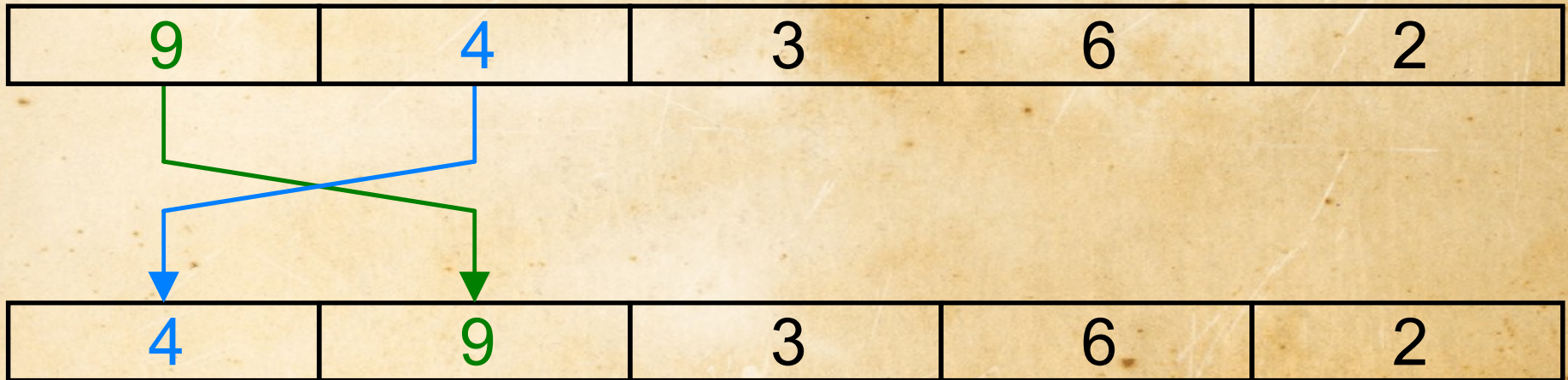
- Look at the first two elements of the array





# Bubble Sort Algorithm

- Look at the first two elements of the array
  - Swap them if the first is greater than the second.





# Bubble Sort Algorithm

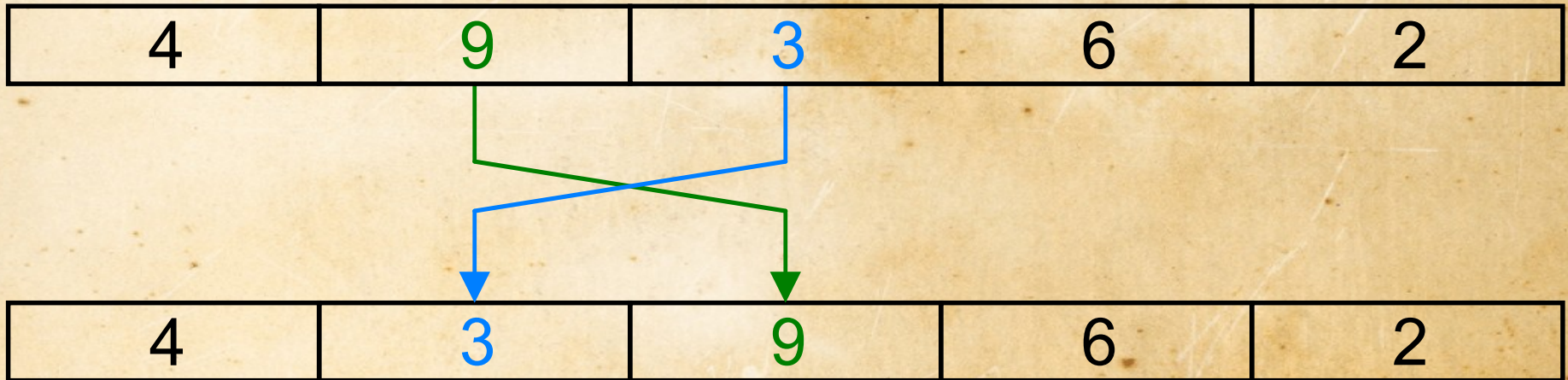
- Move one step along the array and look at those two elements.





# Bubble Sort Algorithm

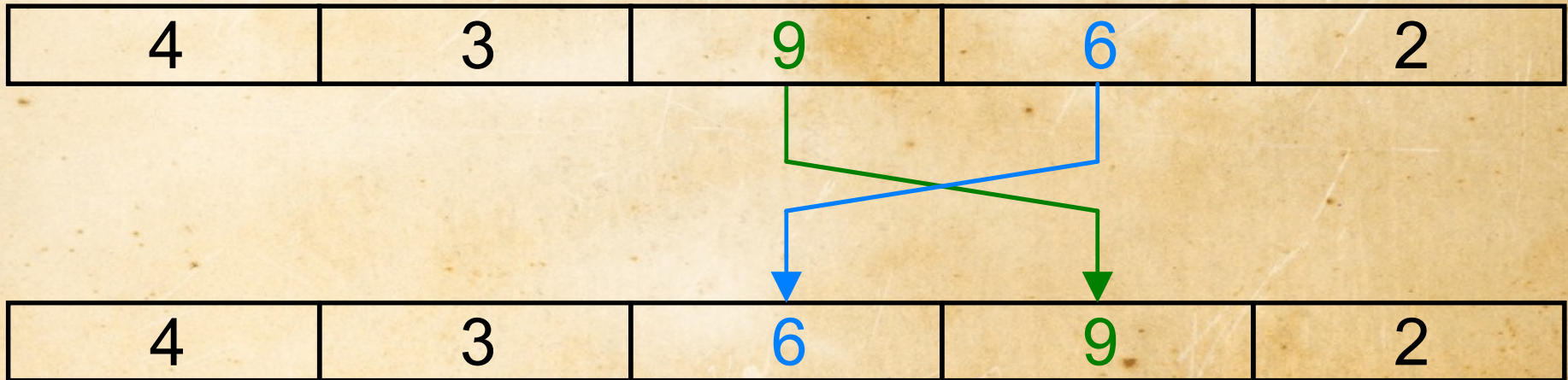
- Move one step along the array and look at those two elements.
  - Swap them if the first is greater than the second.





# Bubble Sort Algorithm

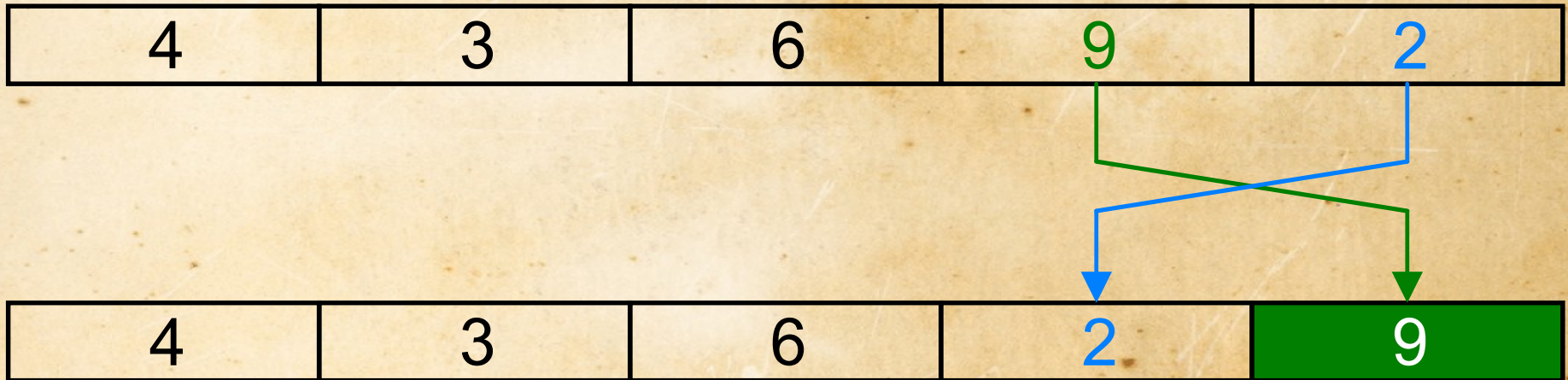
- Continue to move one step along...
  - Swapping the elements if the first is greater than the second.





# Bubble Sort Algorithm

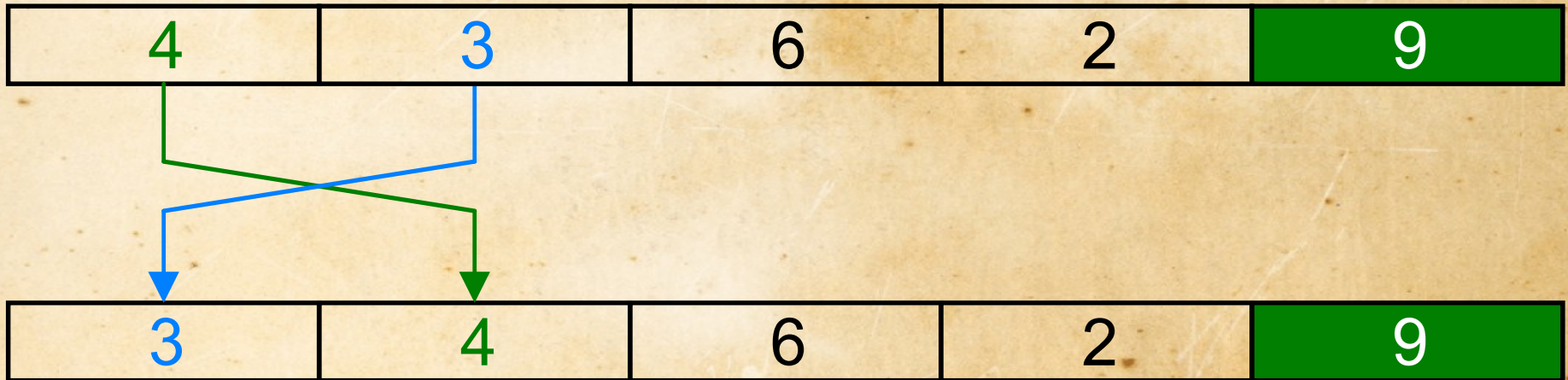
- Continue to move one step along... until the end of the array
  - The greatest element should now be at the end of the array.





# Bubble Sort Algorithm

- Start back at the beginning
  - Swap the elements if the first is greater than the second.





# Bubble Sort Algorithm

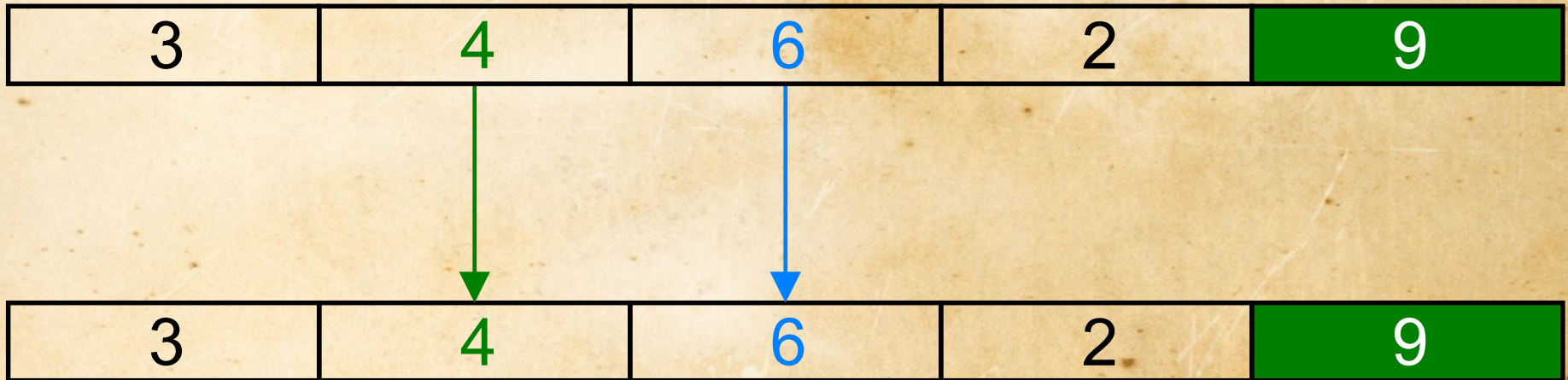
- Moving along...
  - In this case, the first is not greater, so...





# Bubble Sort Algorithm

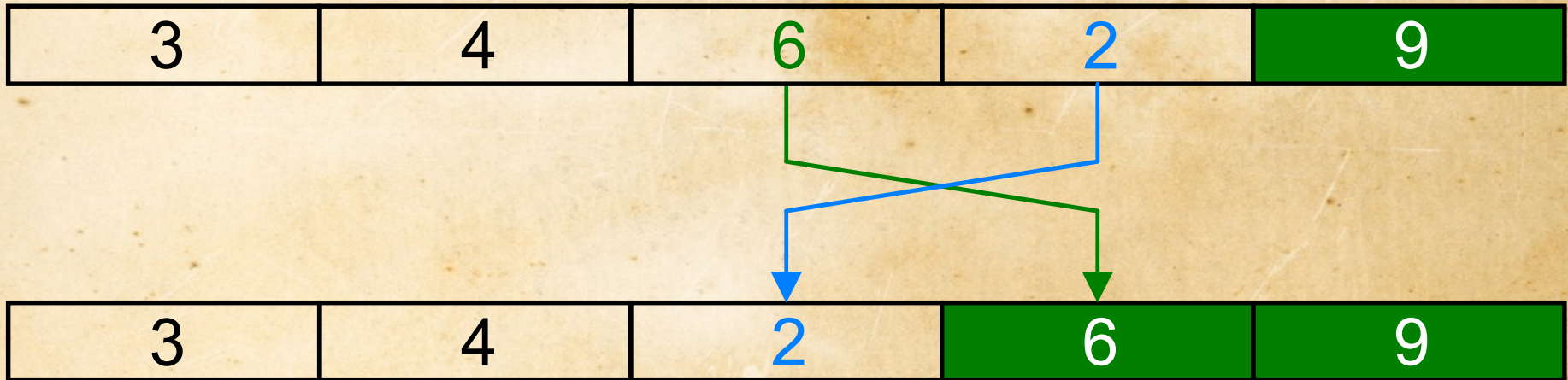
- Moving along...
  - In this case, the first is not greater, so we do not swap.





# Bubble Sort Algorithm

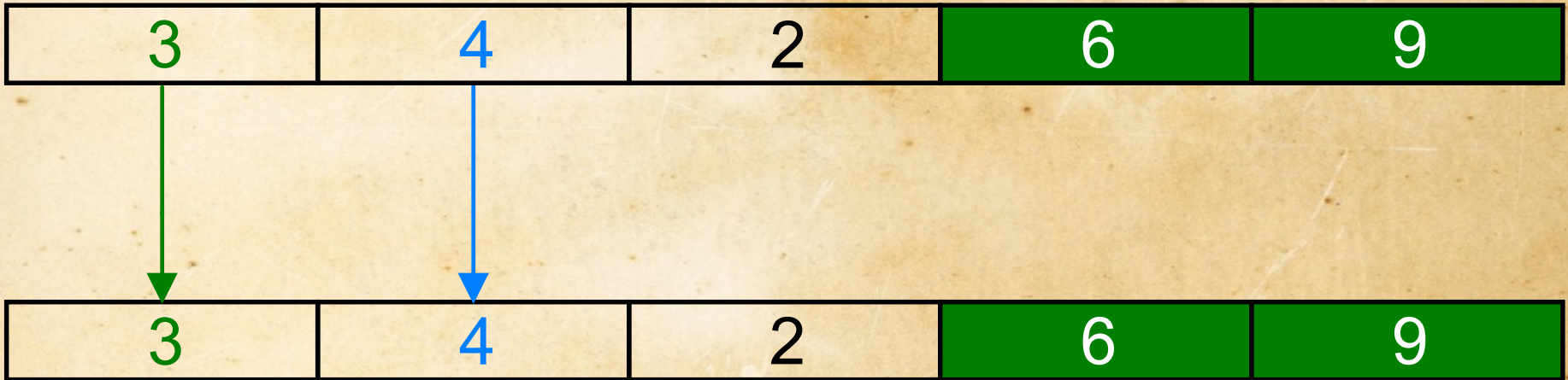
- Moving along...
  - We don't need to continue past here, since the last element is already sorted.





# Bubble Sort Algorithm

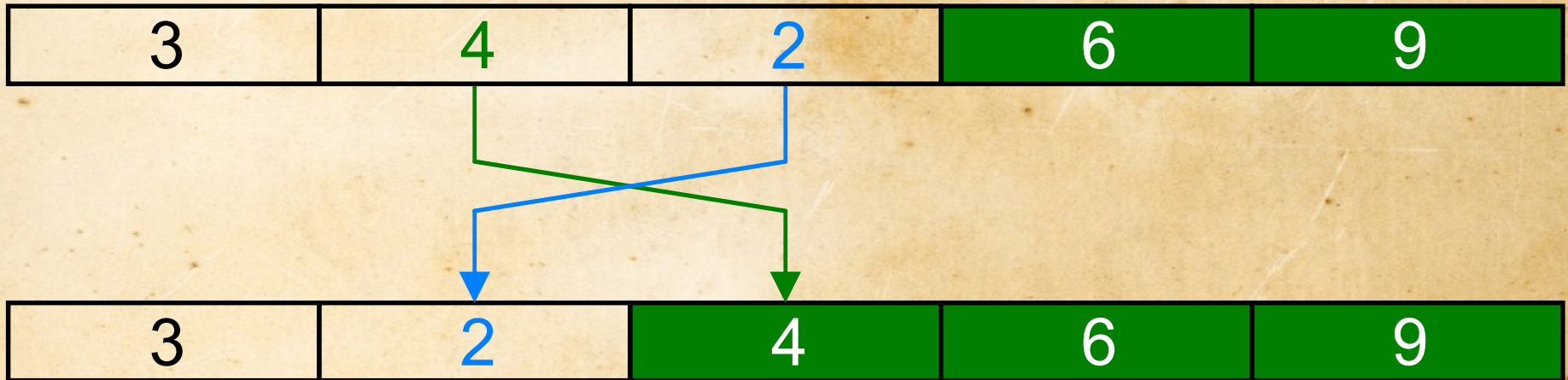
- Again from the beginning...
  - Not swapping if the second is greater.





# Bubble Sort Algorithm

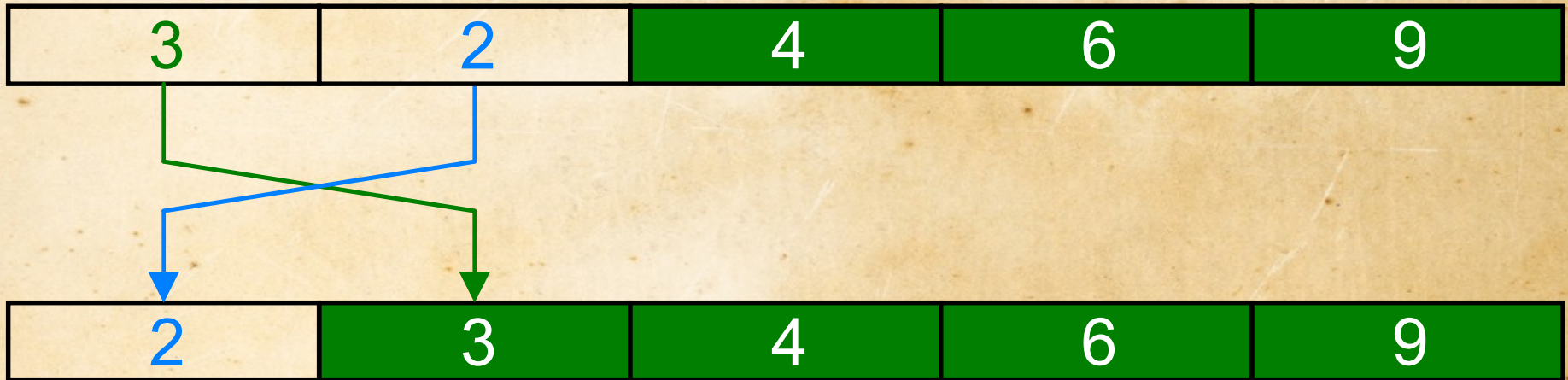
- Again from the beginning...
  - Swapping if the first is greater.





# Bubble Sort Algorithm

- Again from the beginning...
  - Swapping if the first is greater.





# Bubble Sort Algorithm

- And we're done.







# Unit 1: Problem Solving

## Part 7: Bubble Sort

### Topic 3: Sorting and Searching Algorithms