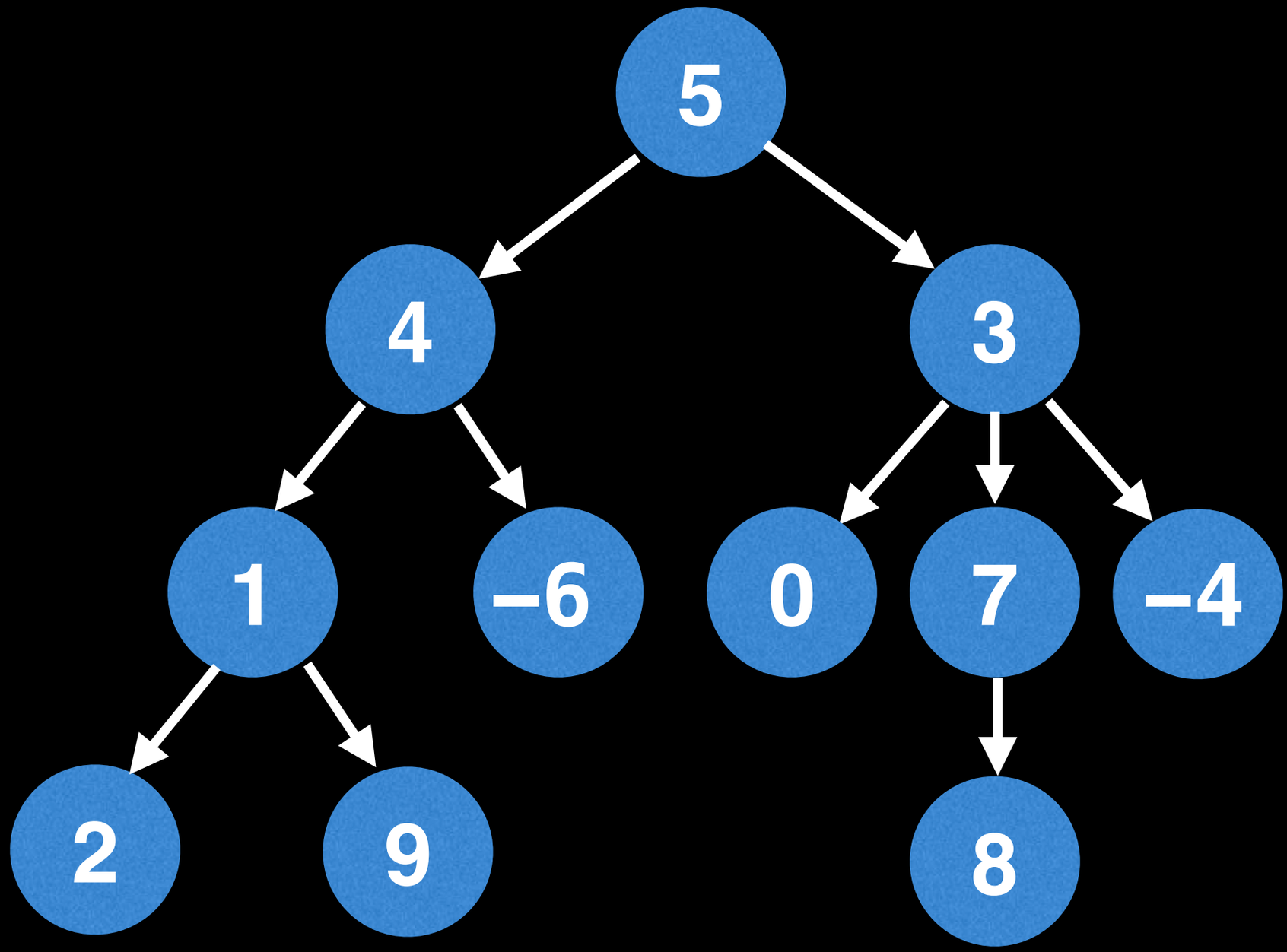
Beginner tree algorithms

William Fiset

Problem 1: leaf node sum

What is the sum of all the leaf node values in a tree?


5
4
3
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−6
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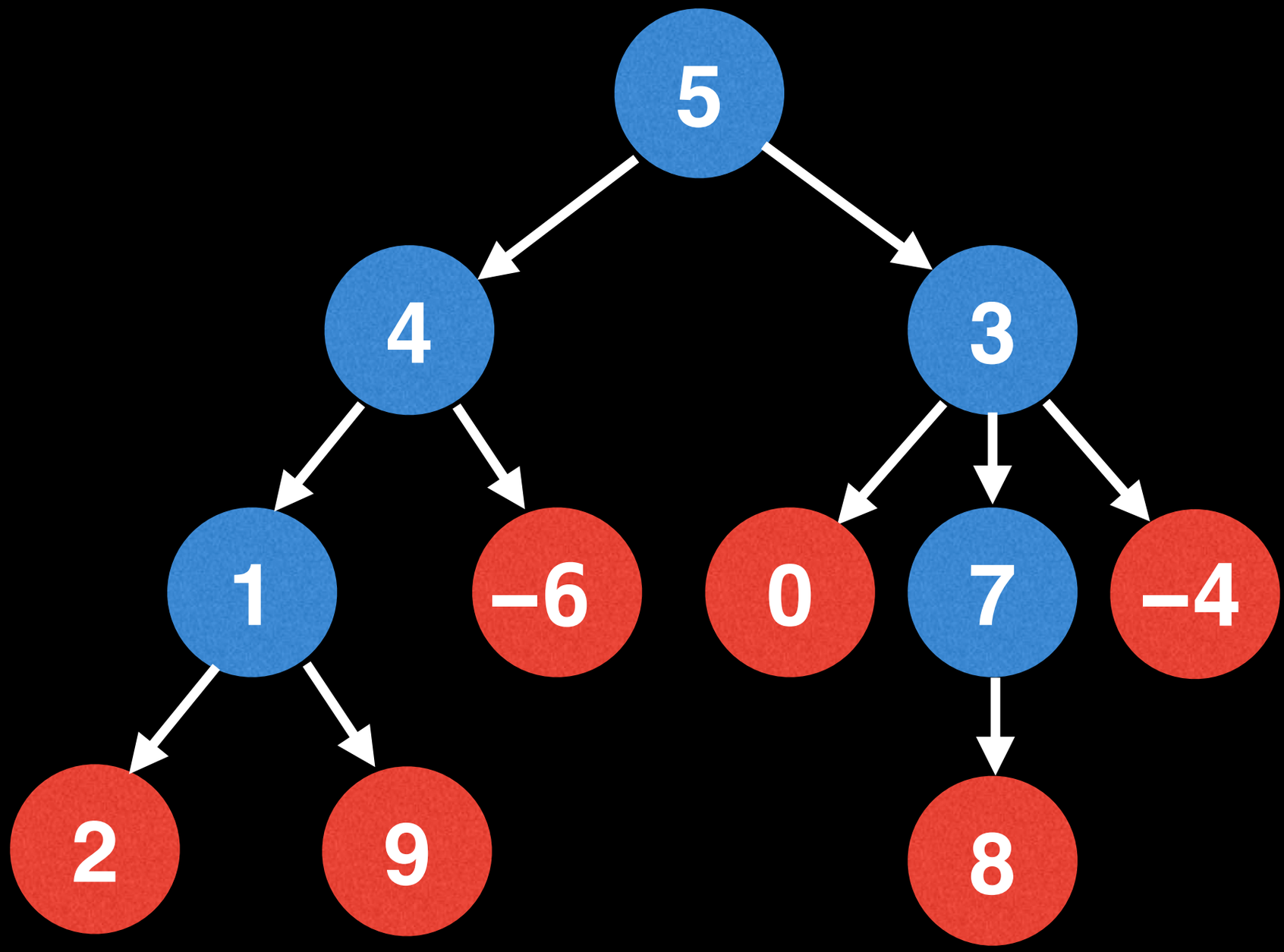
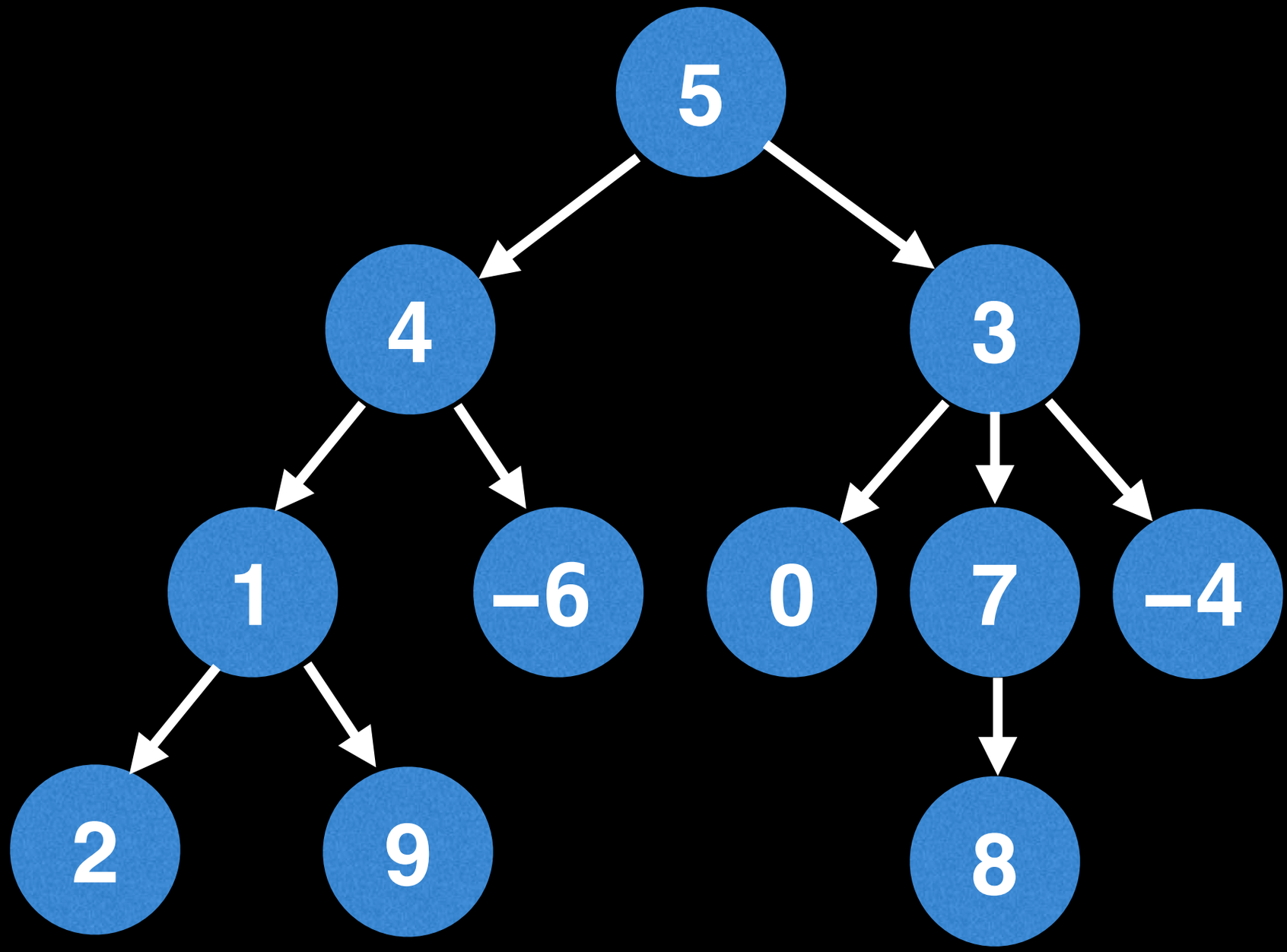
8



$$2 + 9 - 6 + 0 + 8 - 4 = 9$$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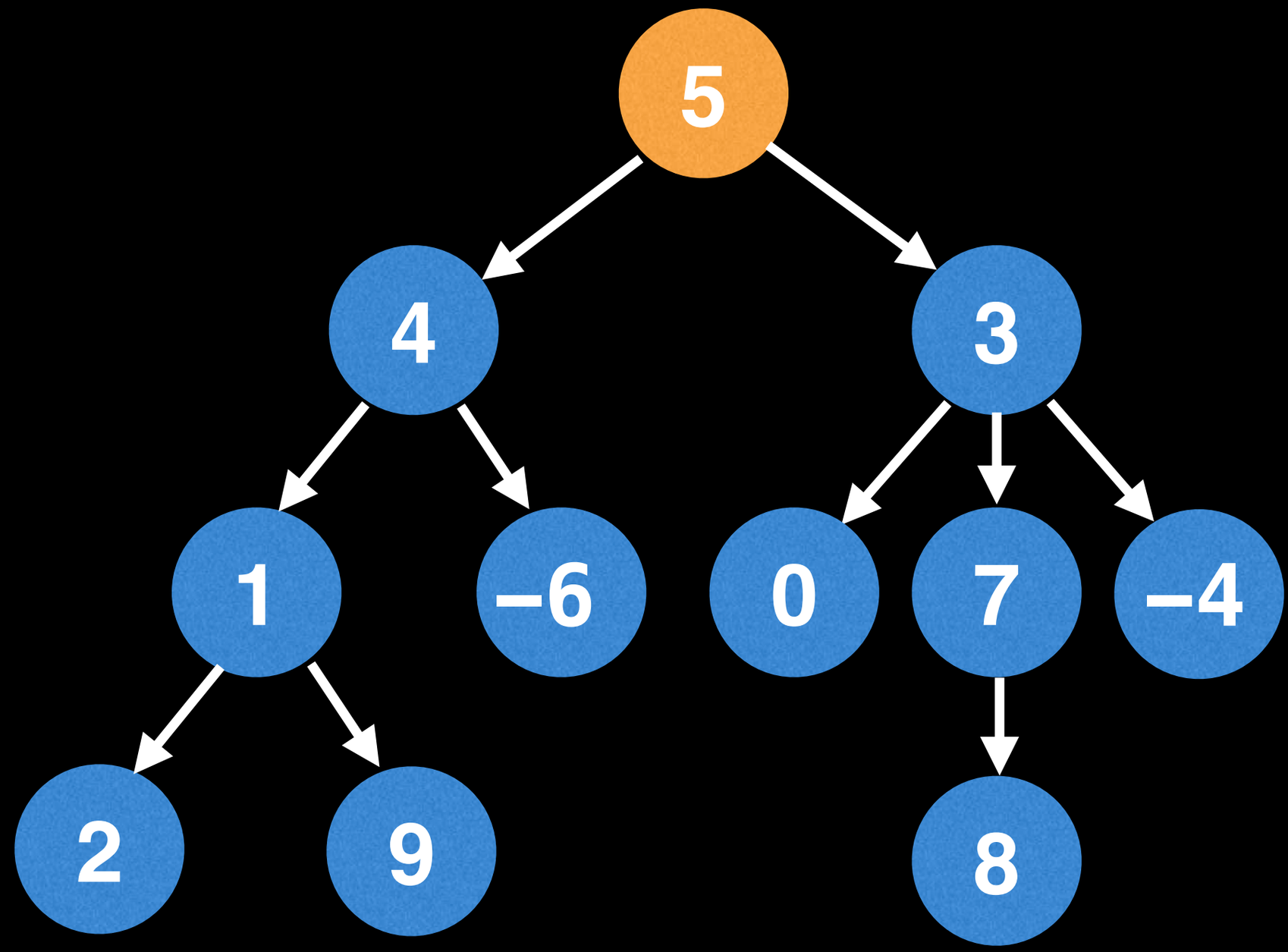
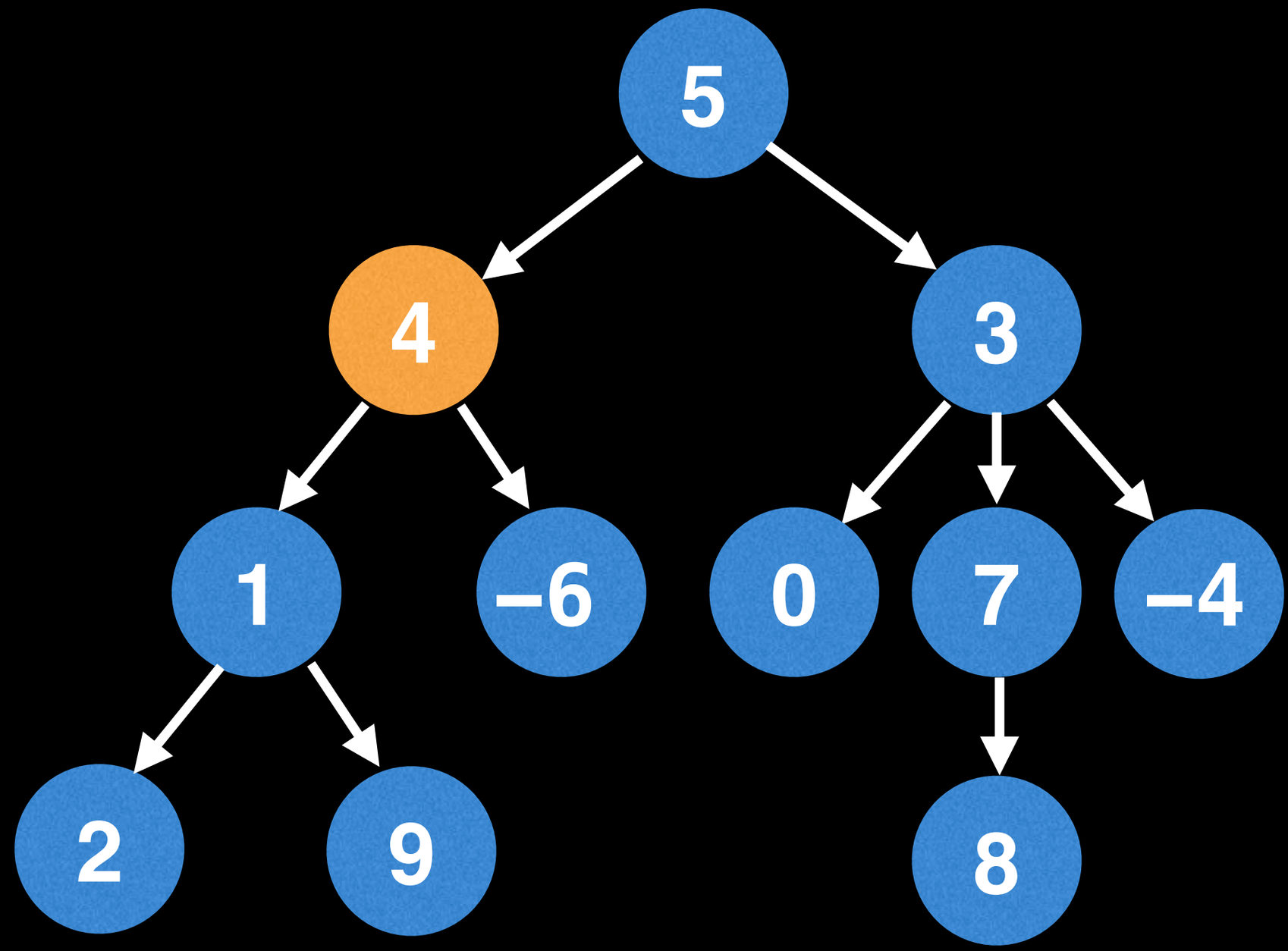


When dealing with rooted trees you begin with having a reference to the root node as a starting point for most algorithms.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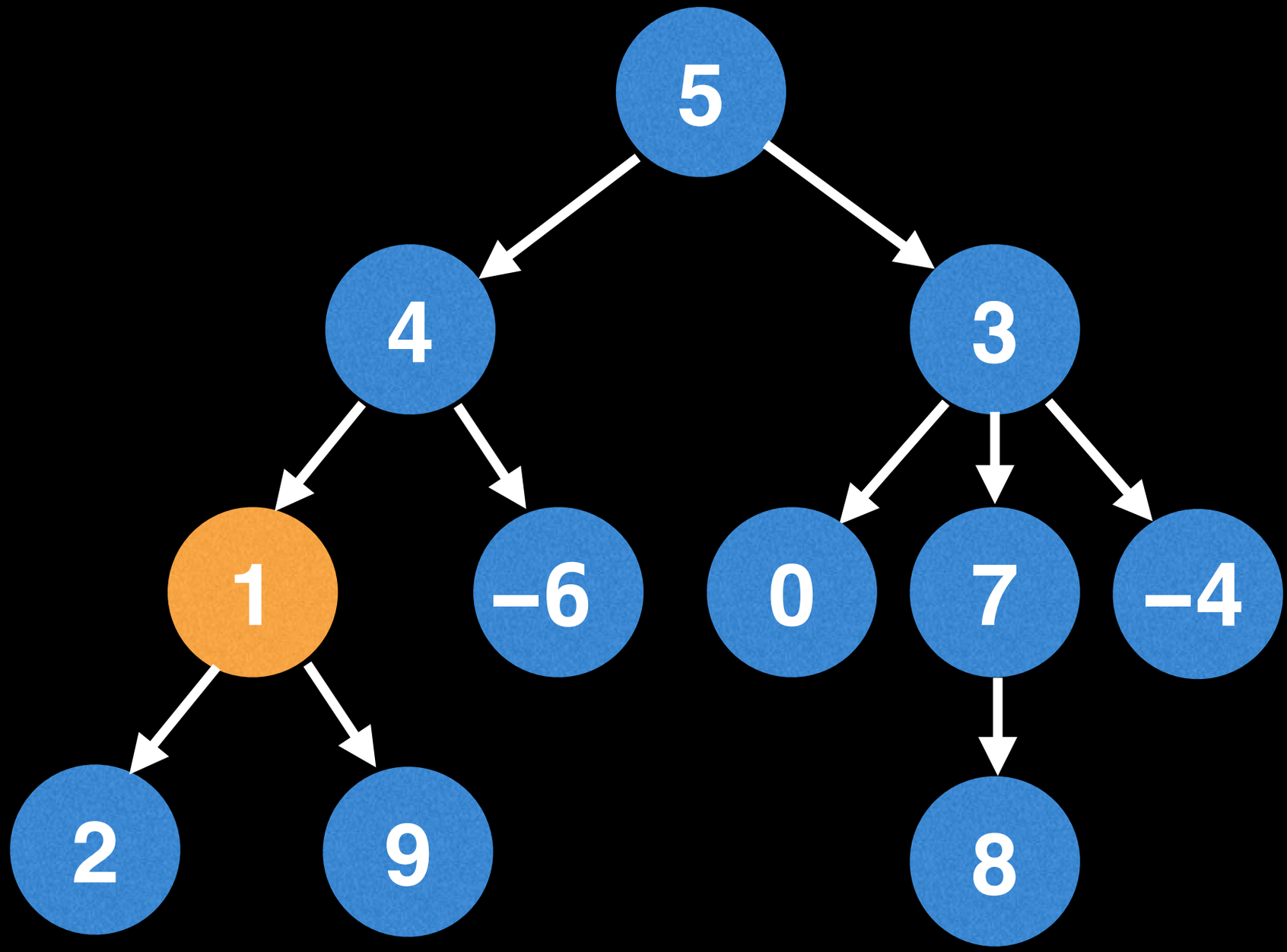
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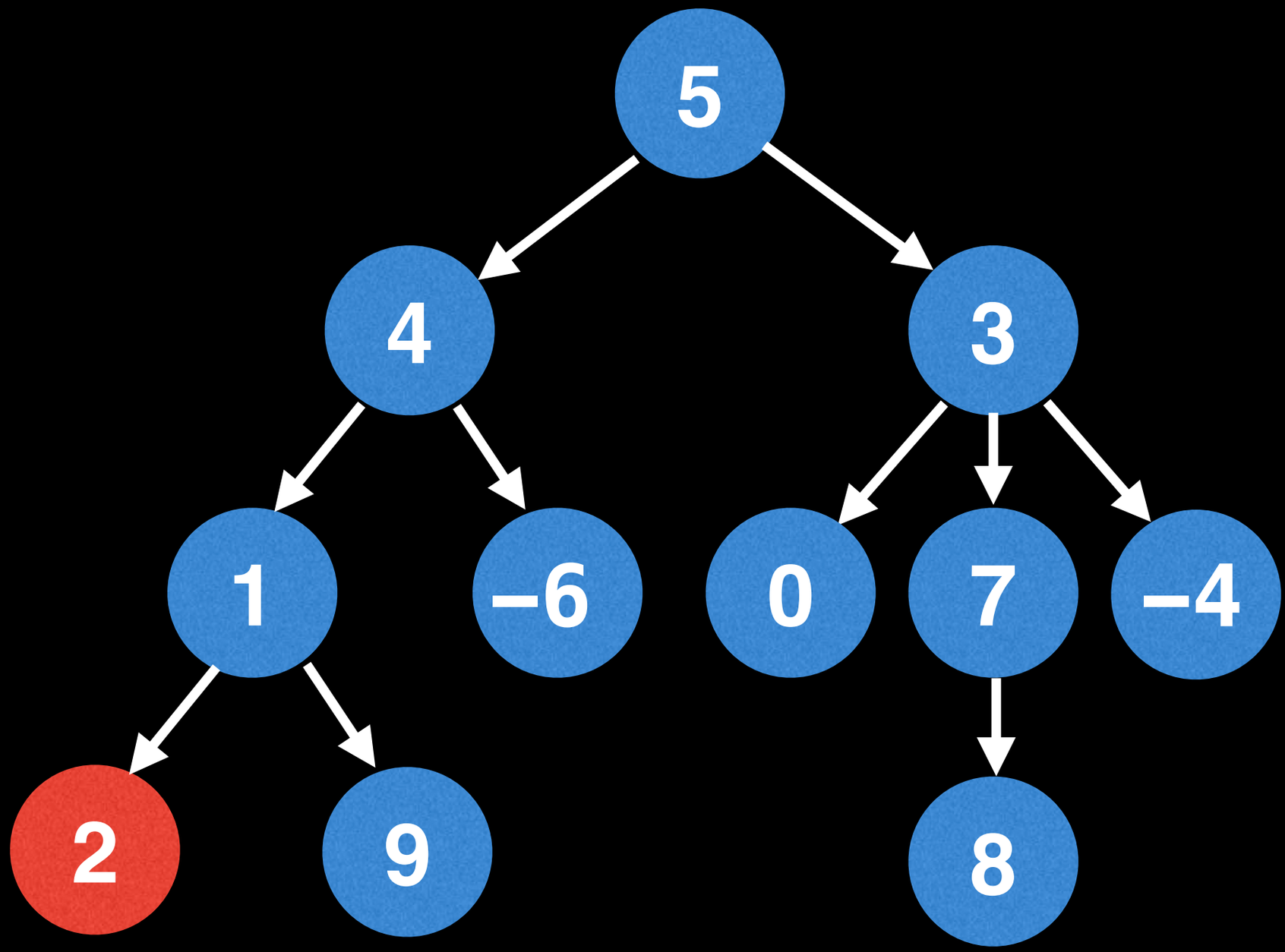
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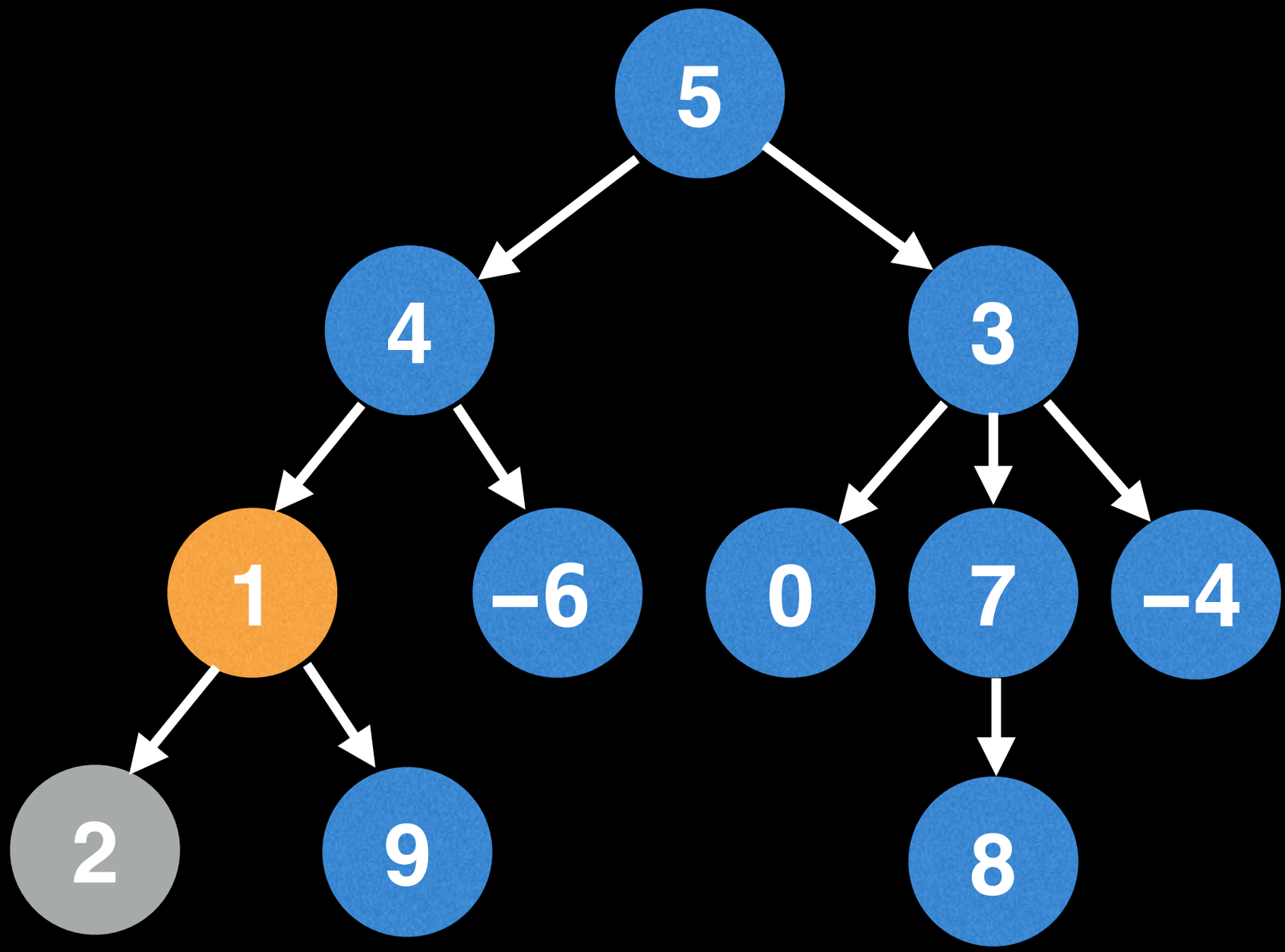

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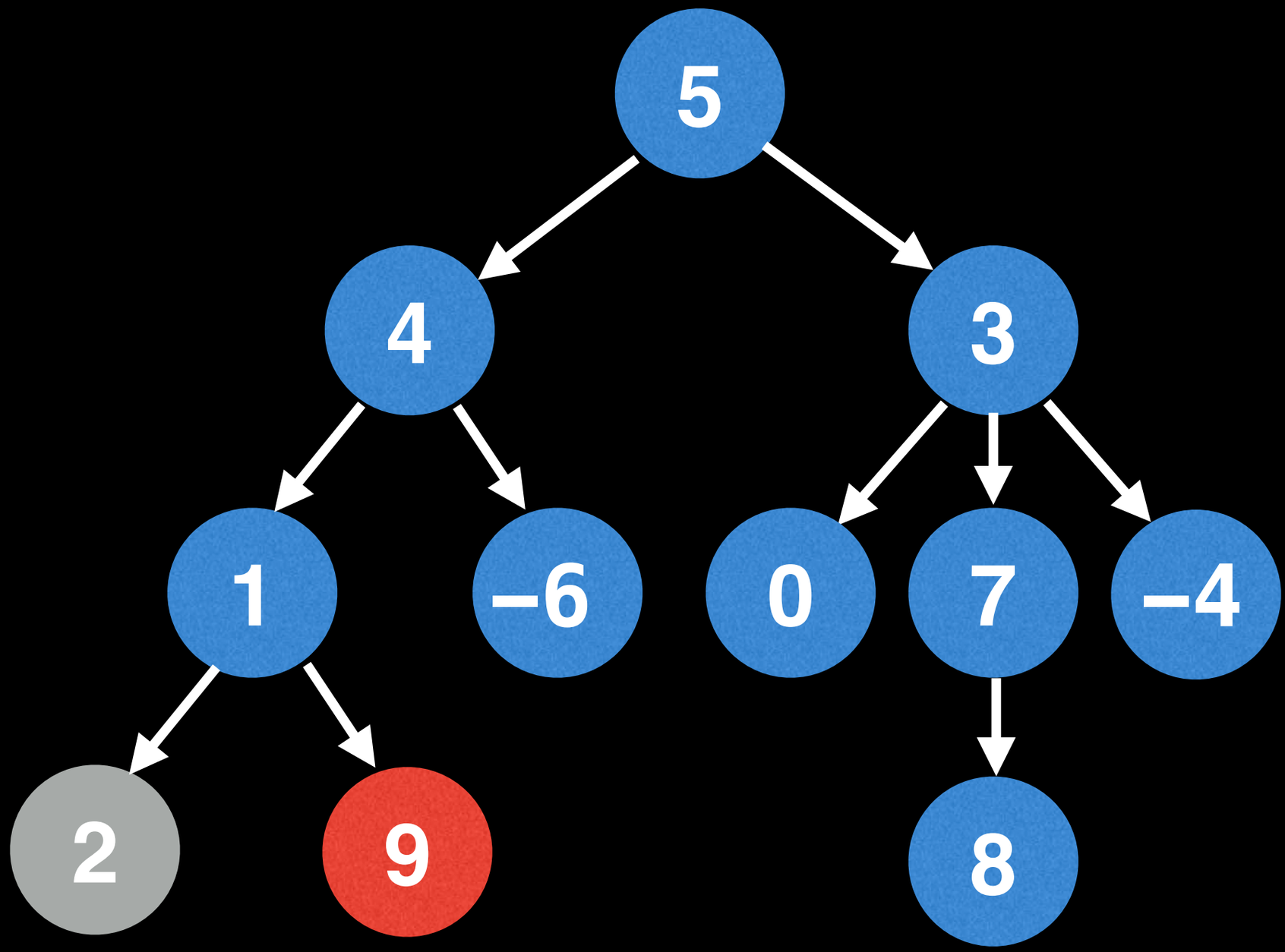
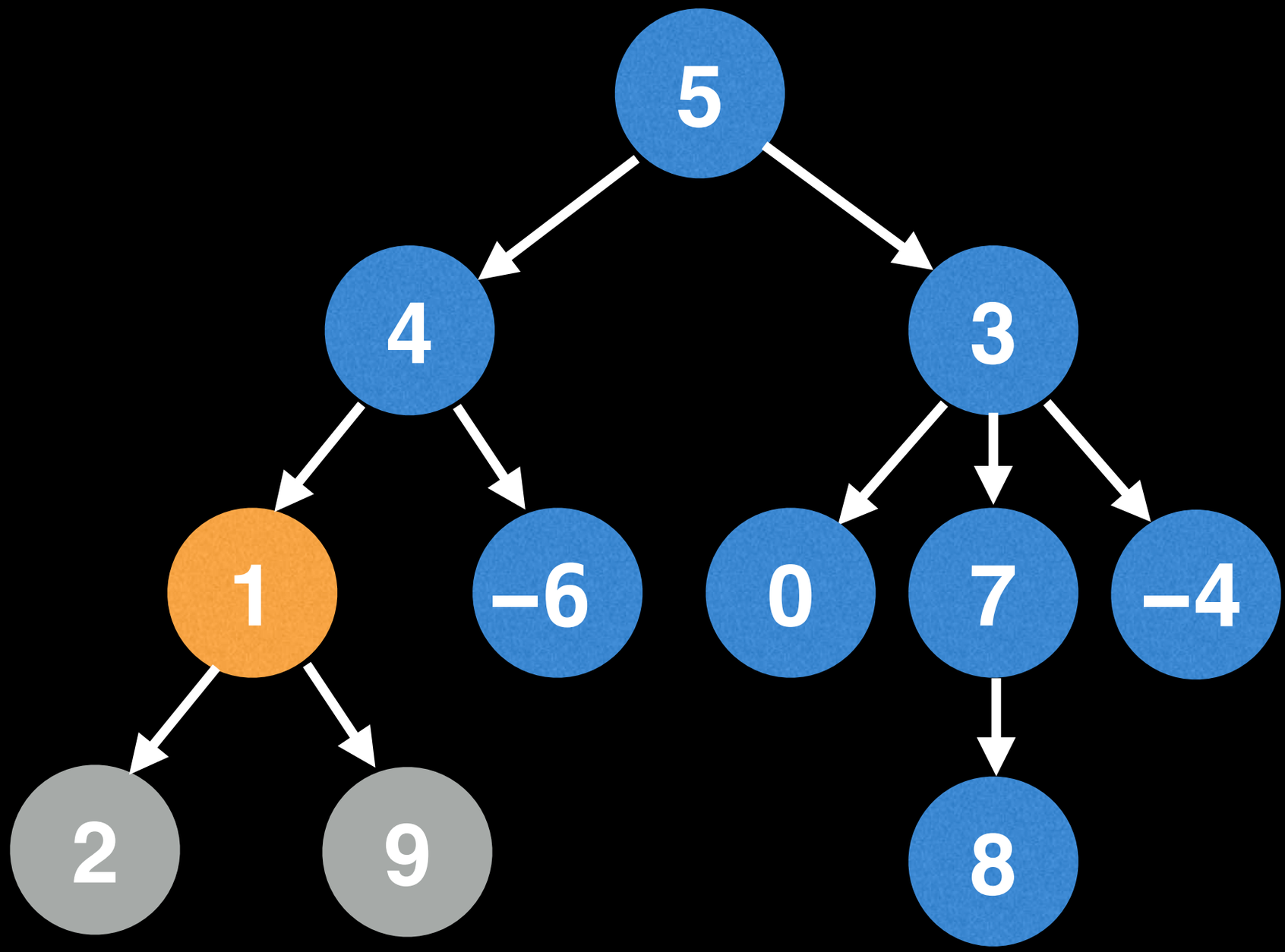
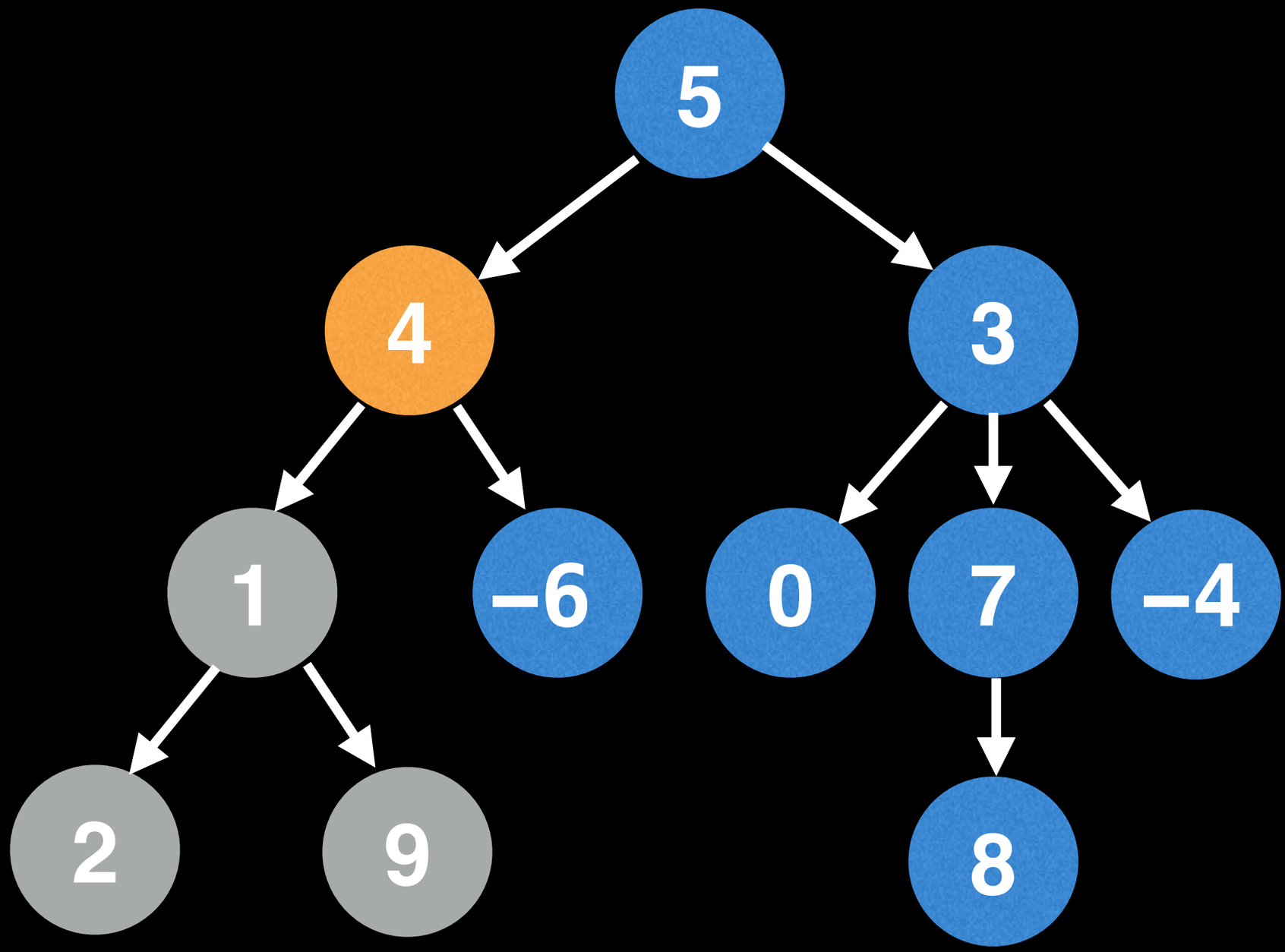


2



2 + 9



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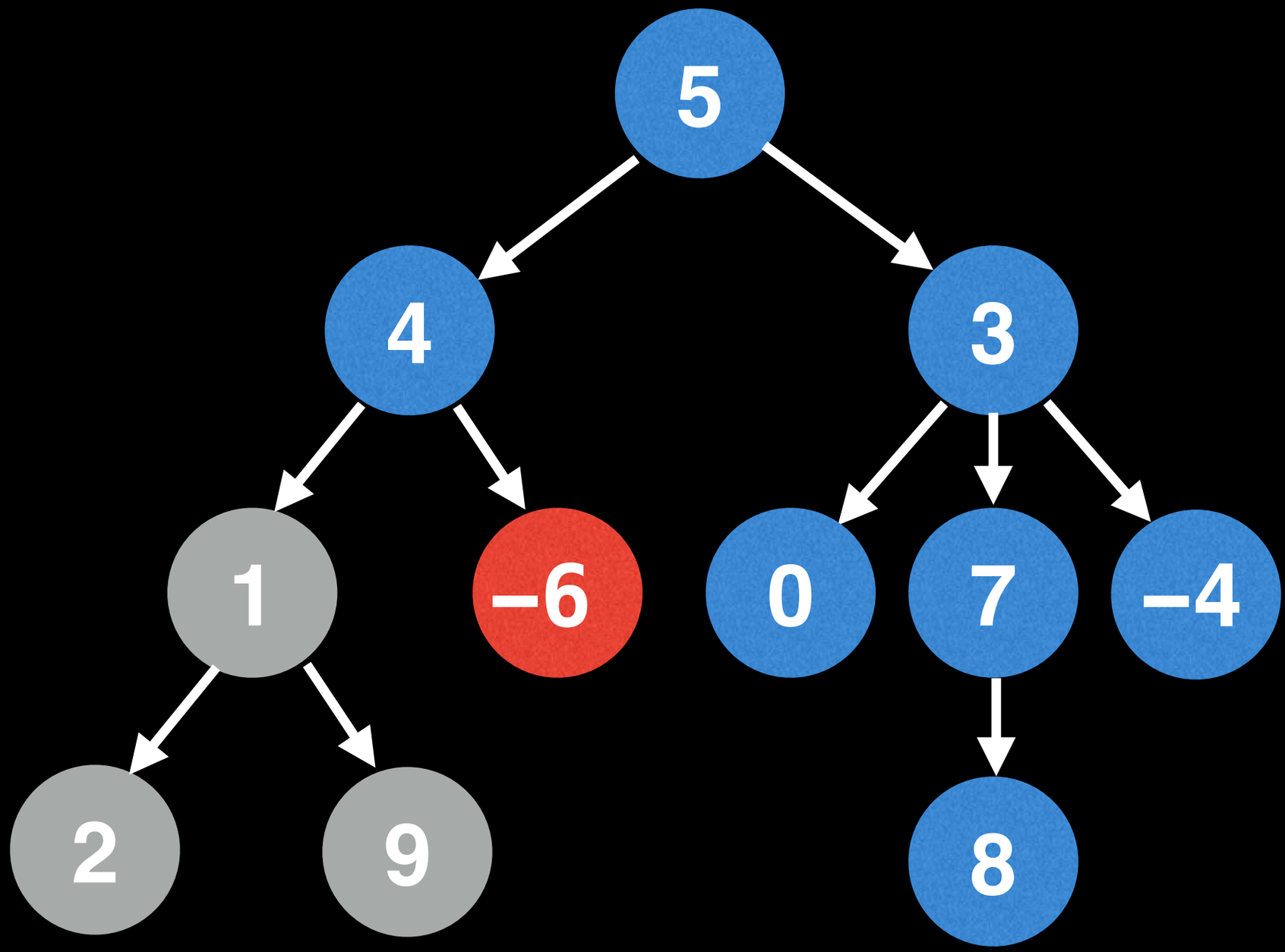

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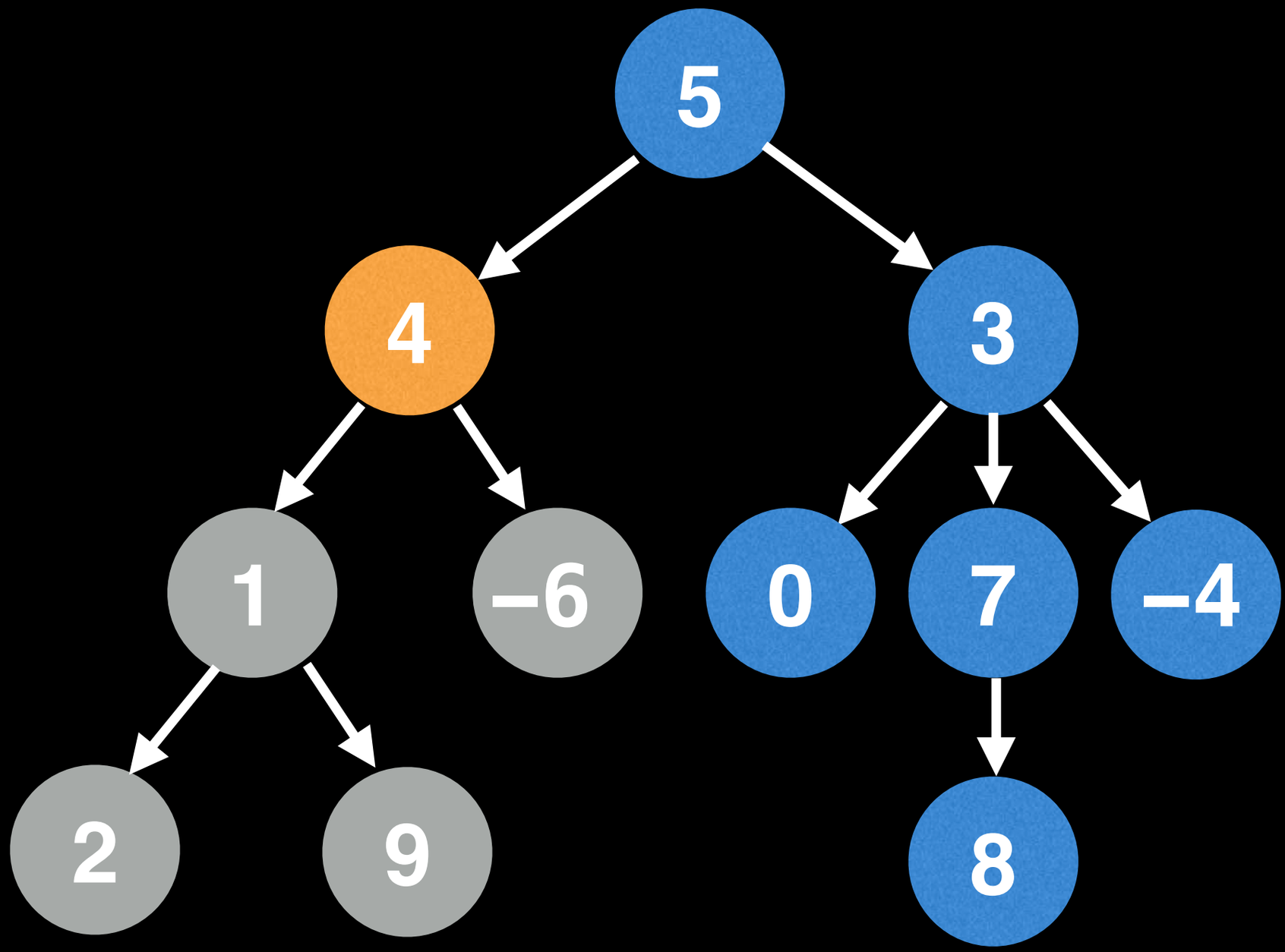
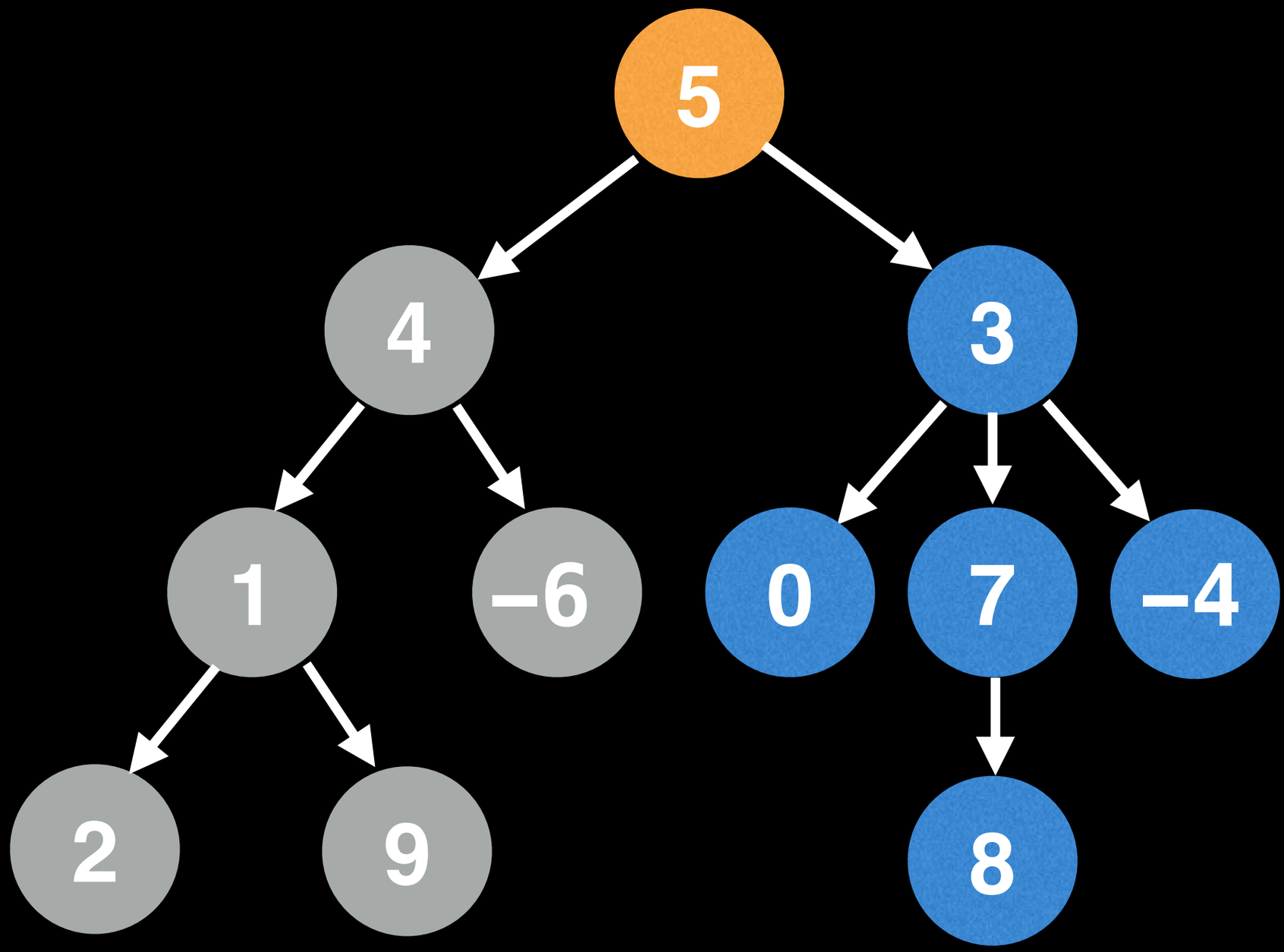
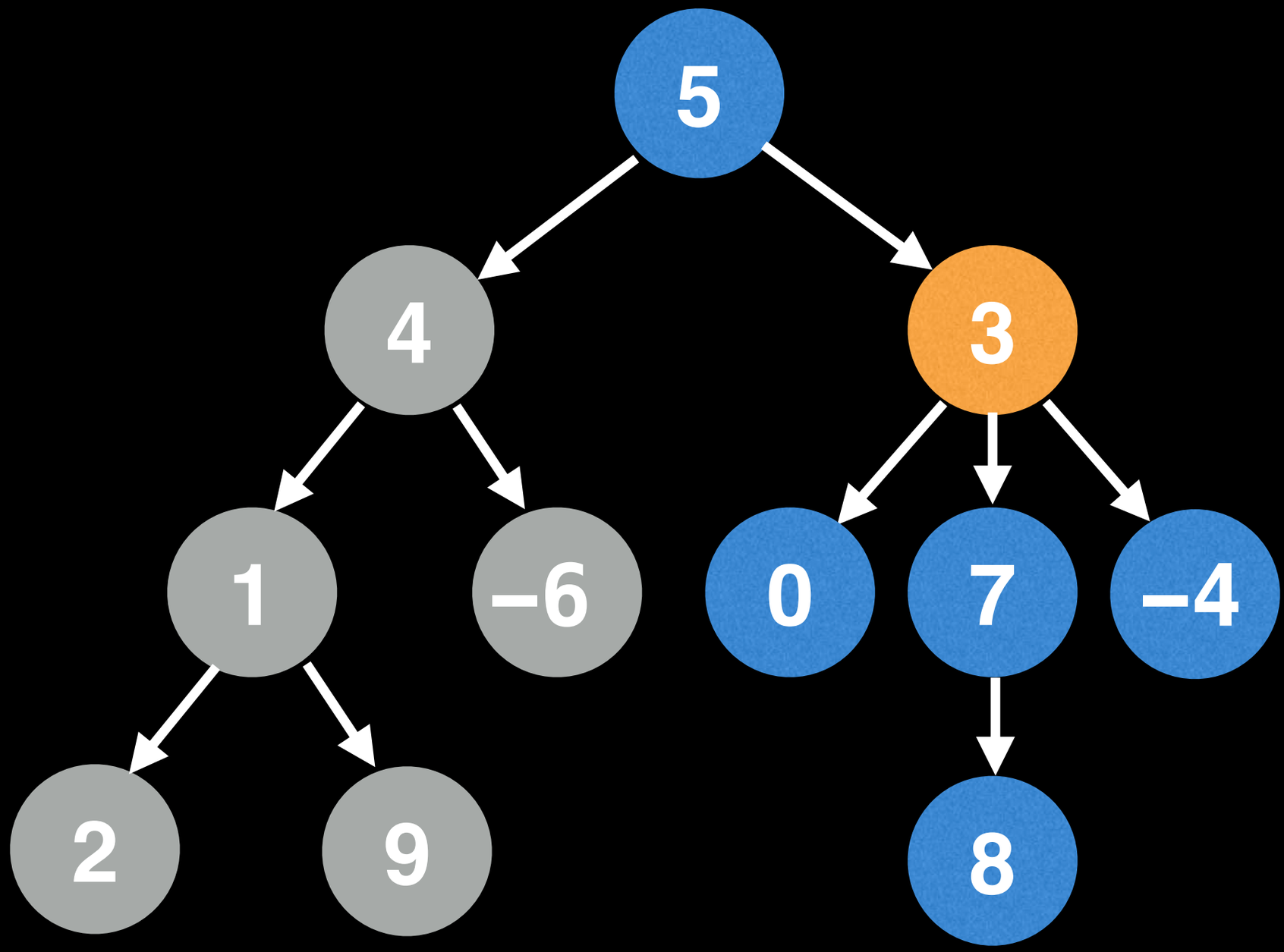


2 + 9 − 6



2 + 9 − 6



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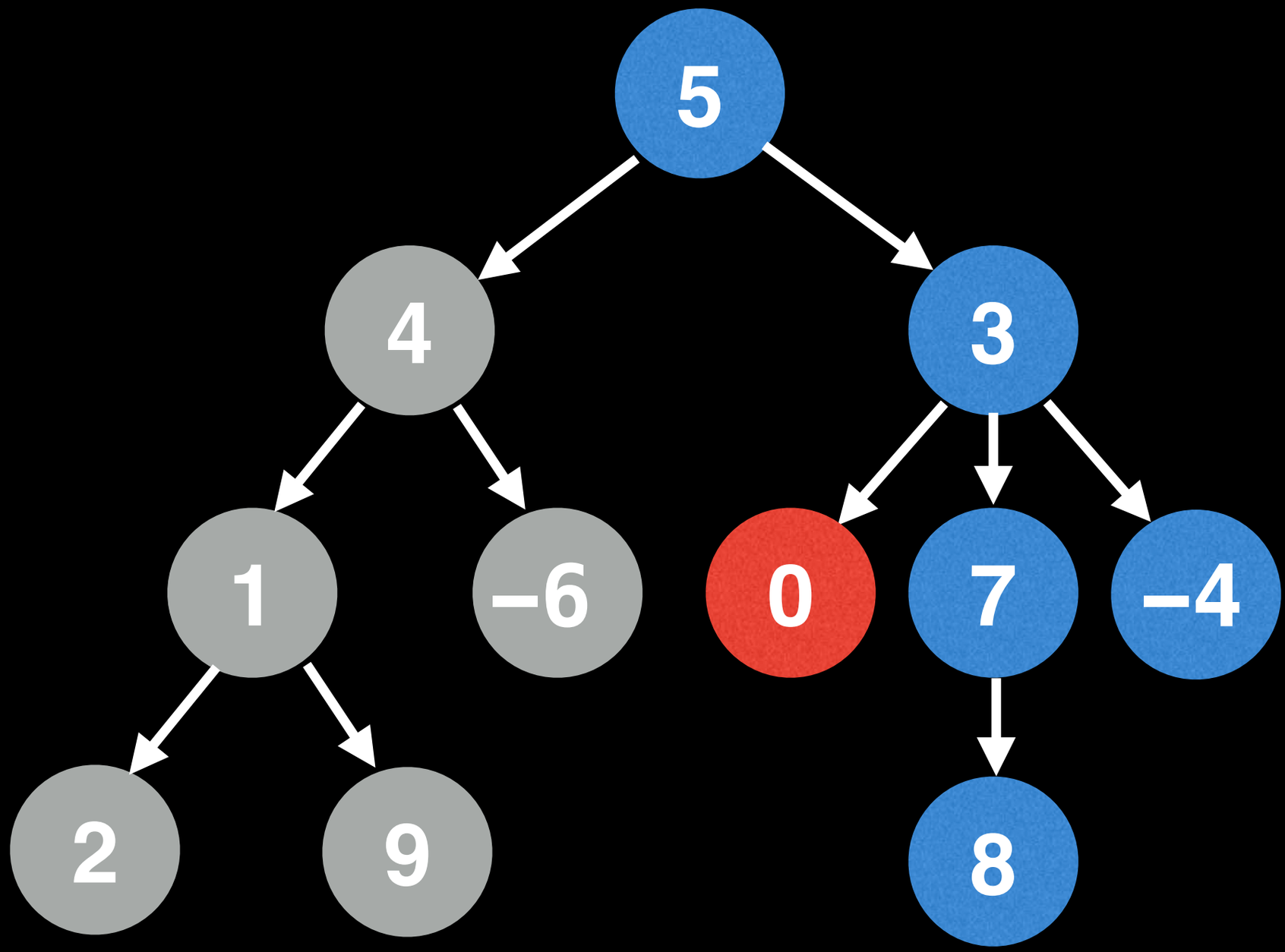

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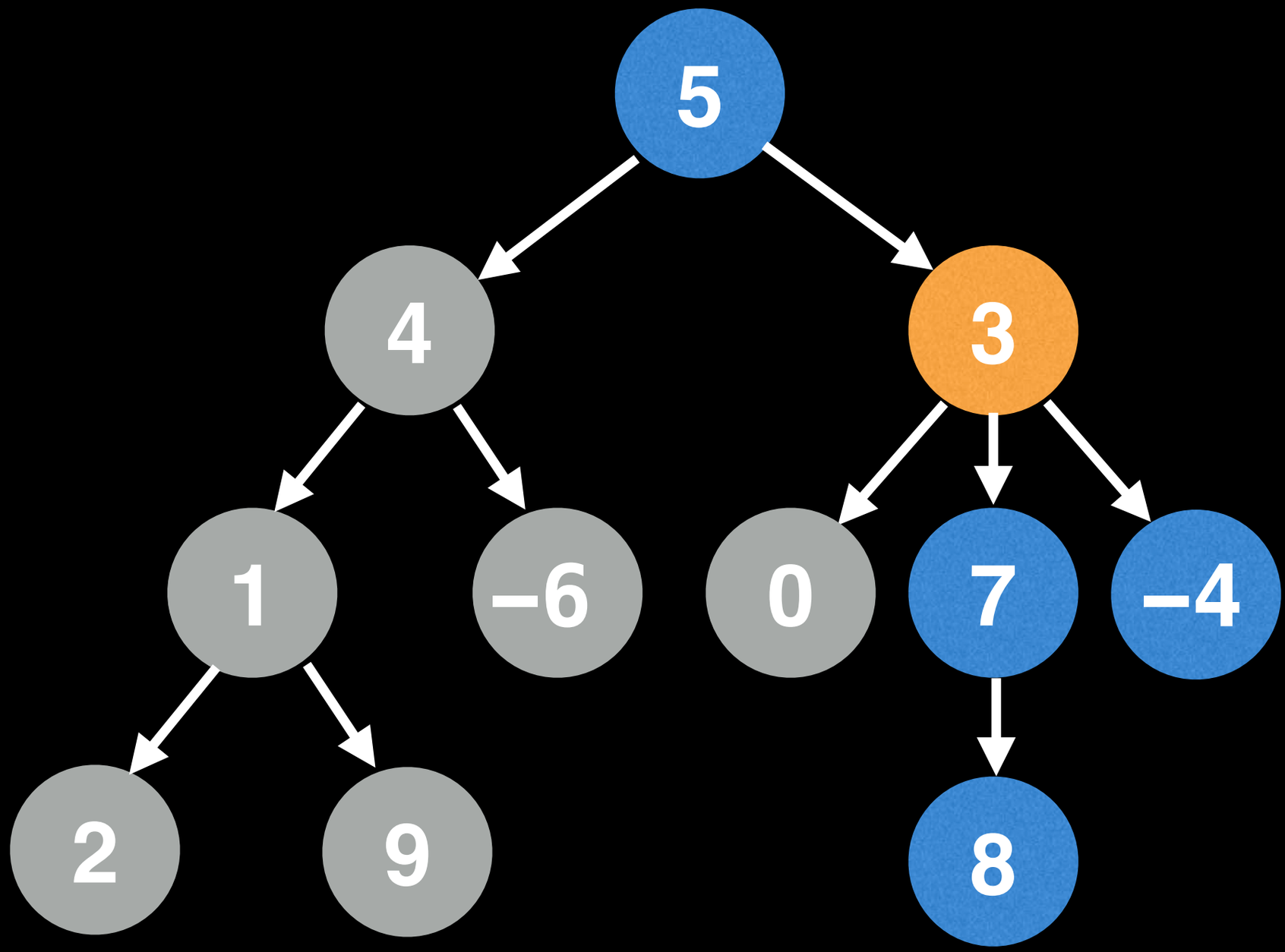
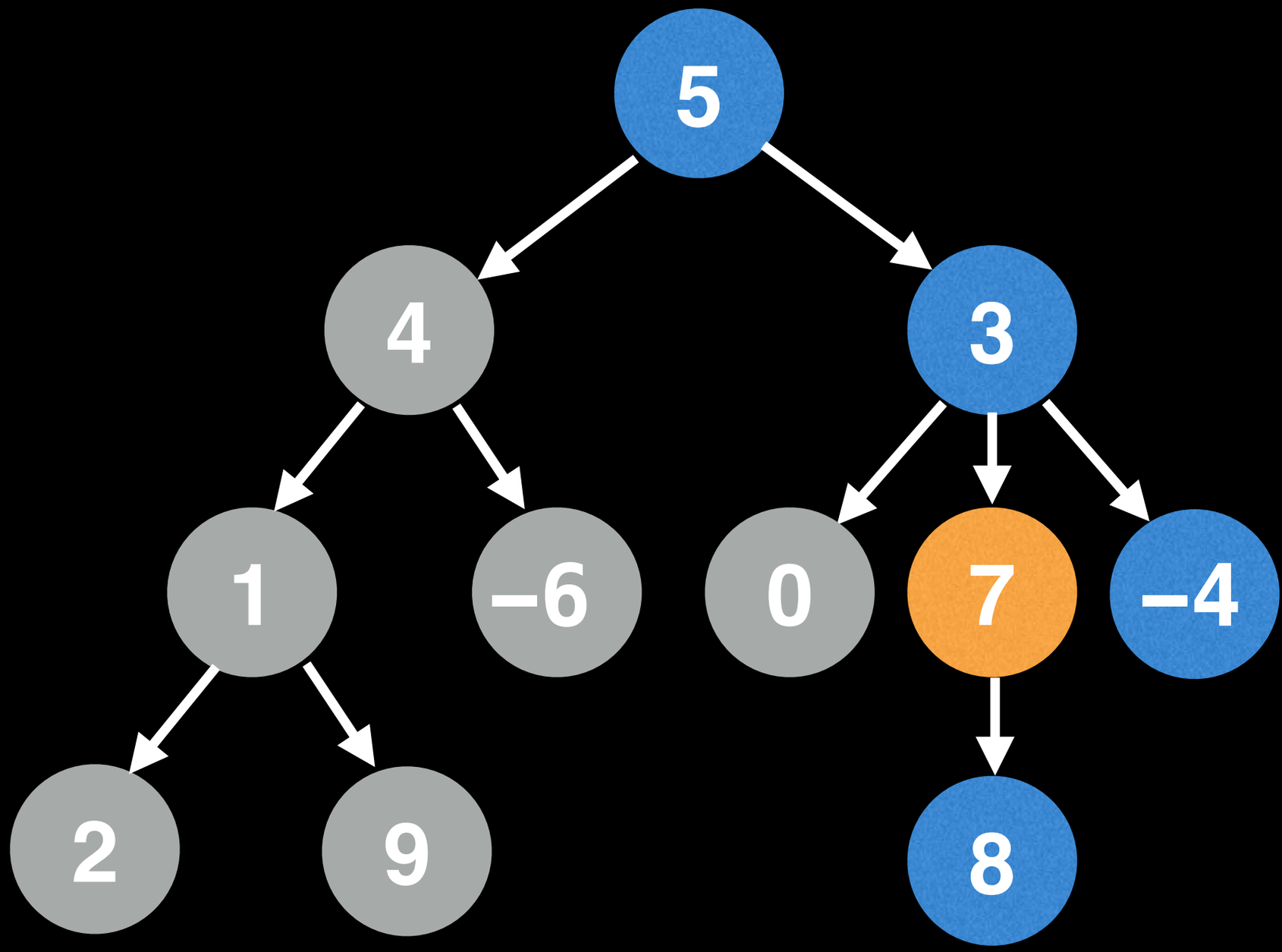
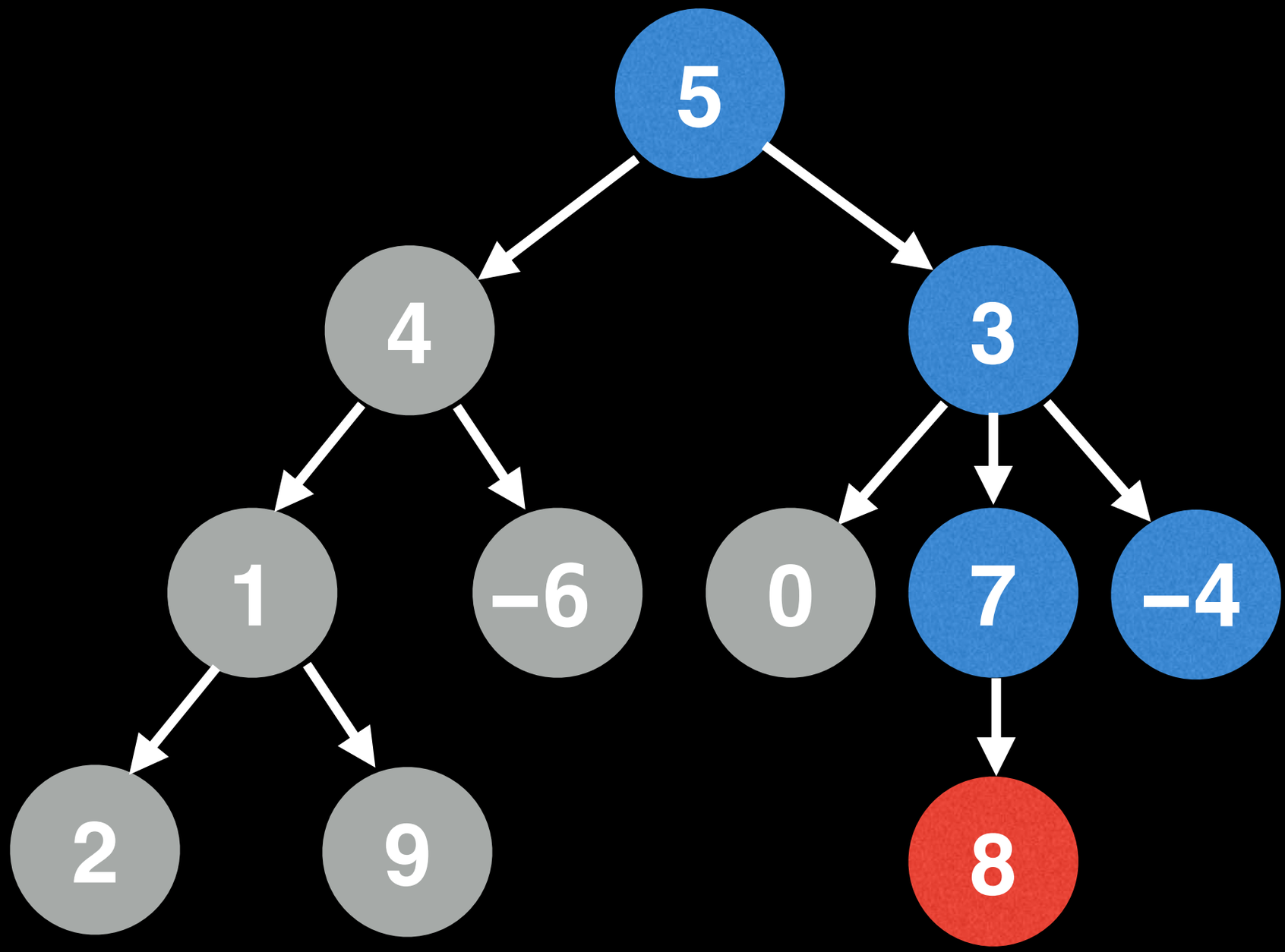


2 + 9 − 6 + 0



2 + 9 − 6 + 0



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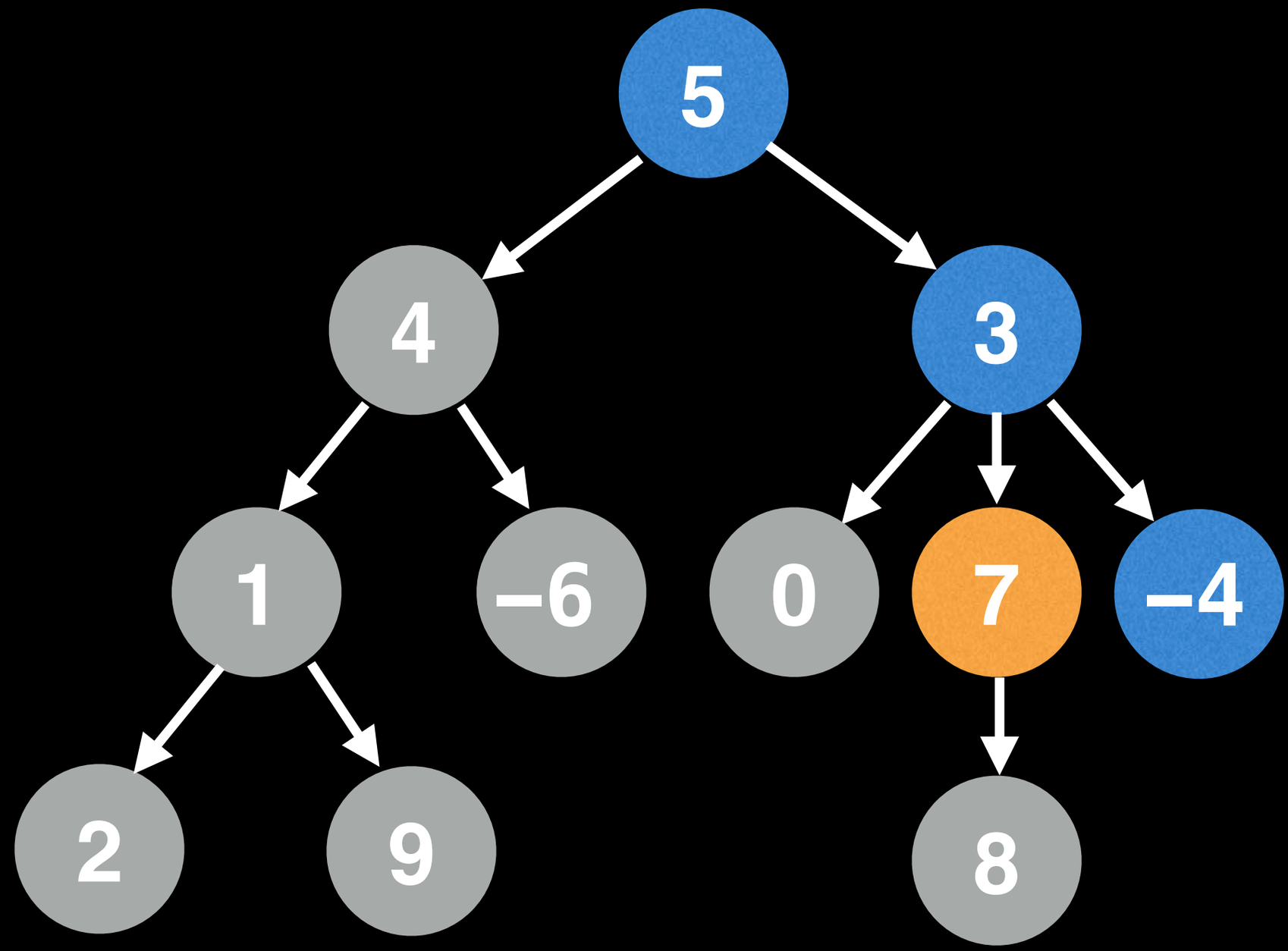
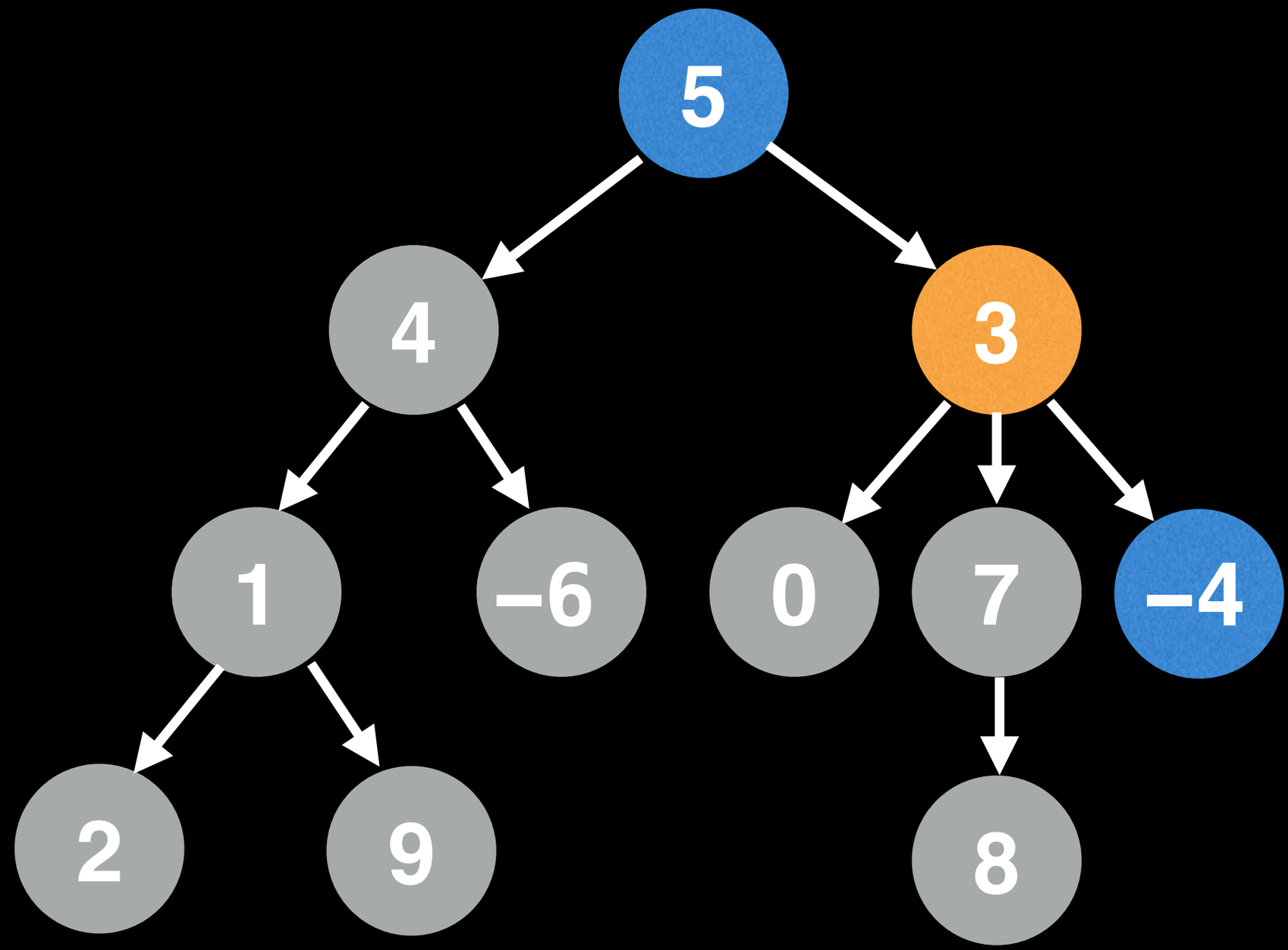
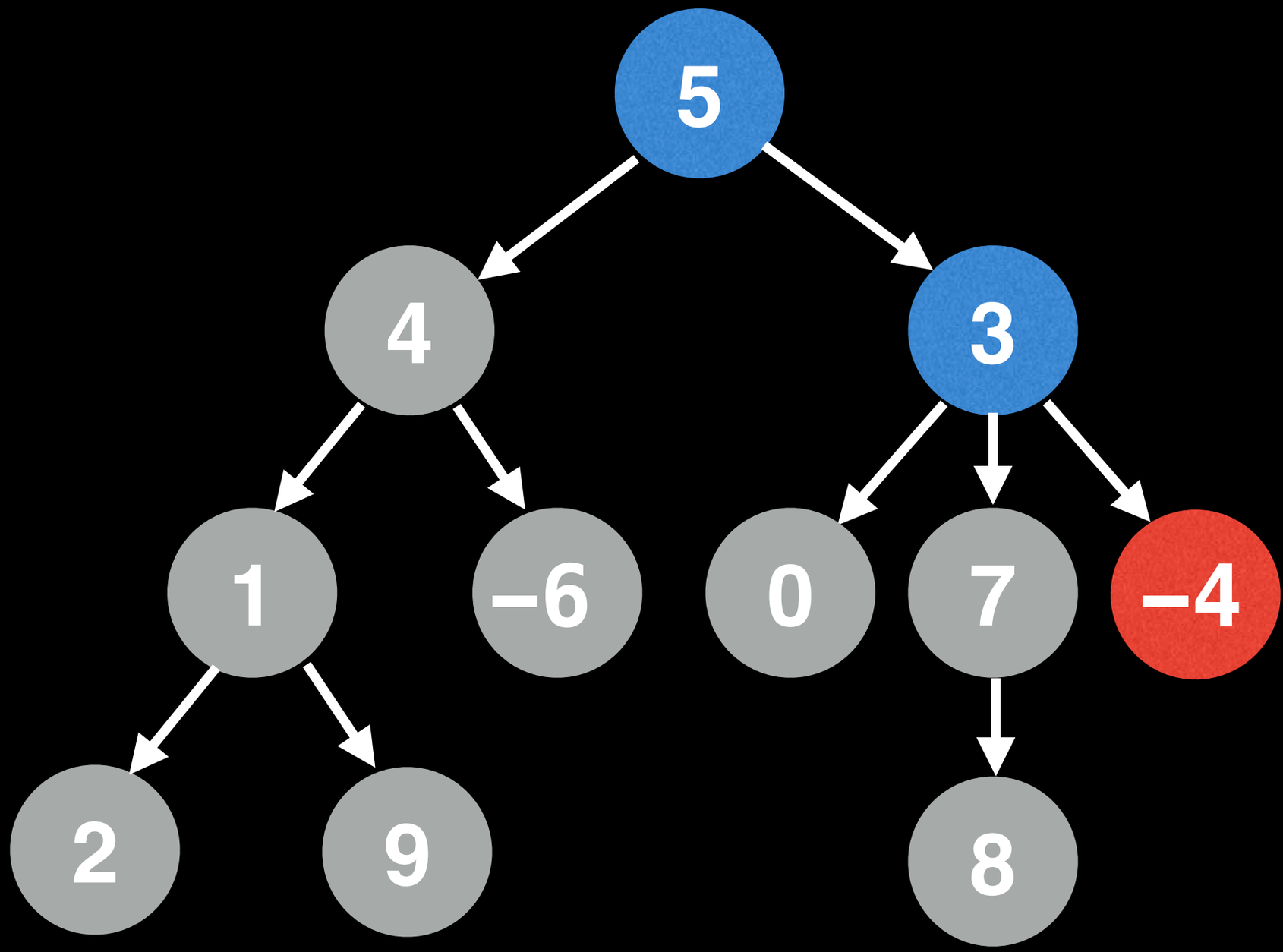


2 + 9 − 6 + 0 + 8



2 + 9 − 6 + 0 + 8

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2 + 9 − 6 + 0 + 8
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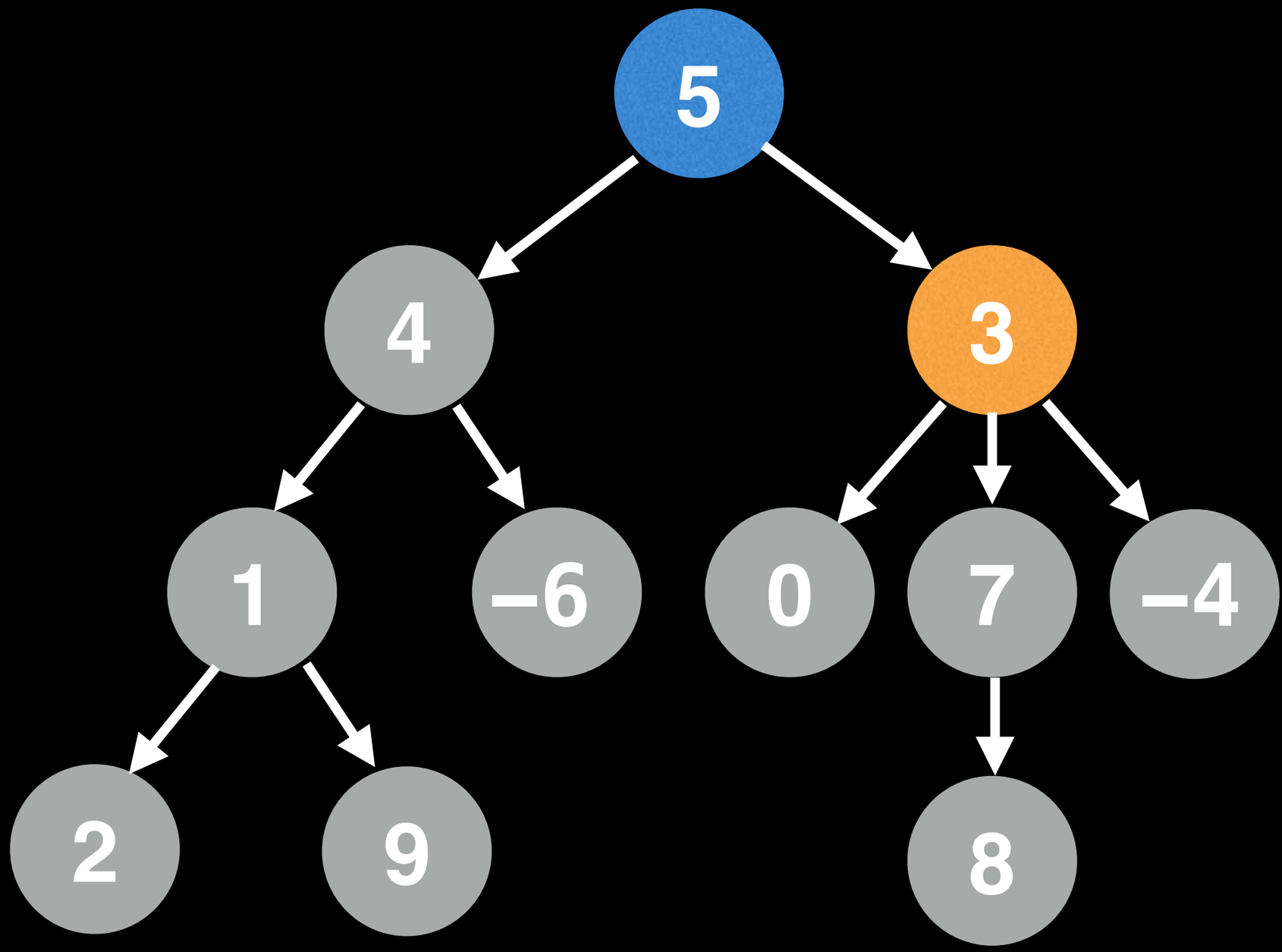
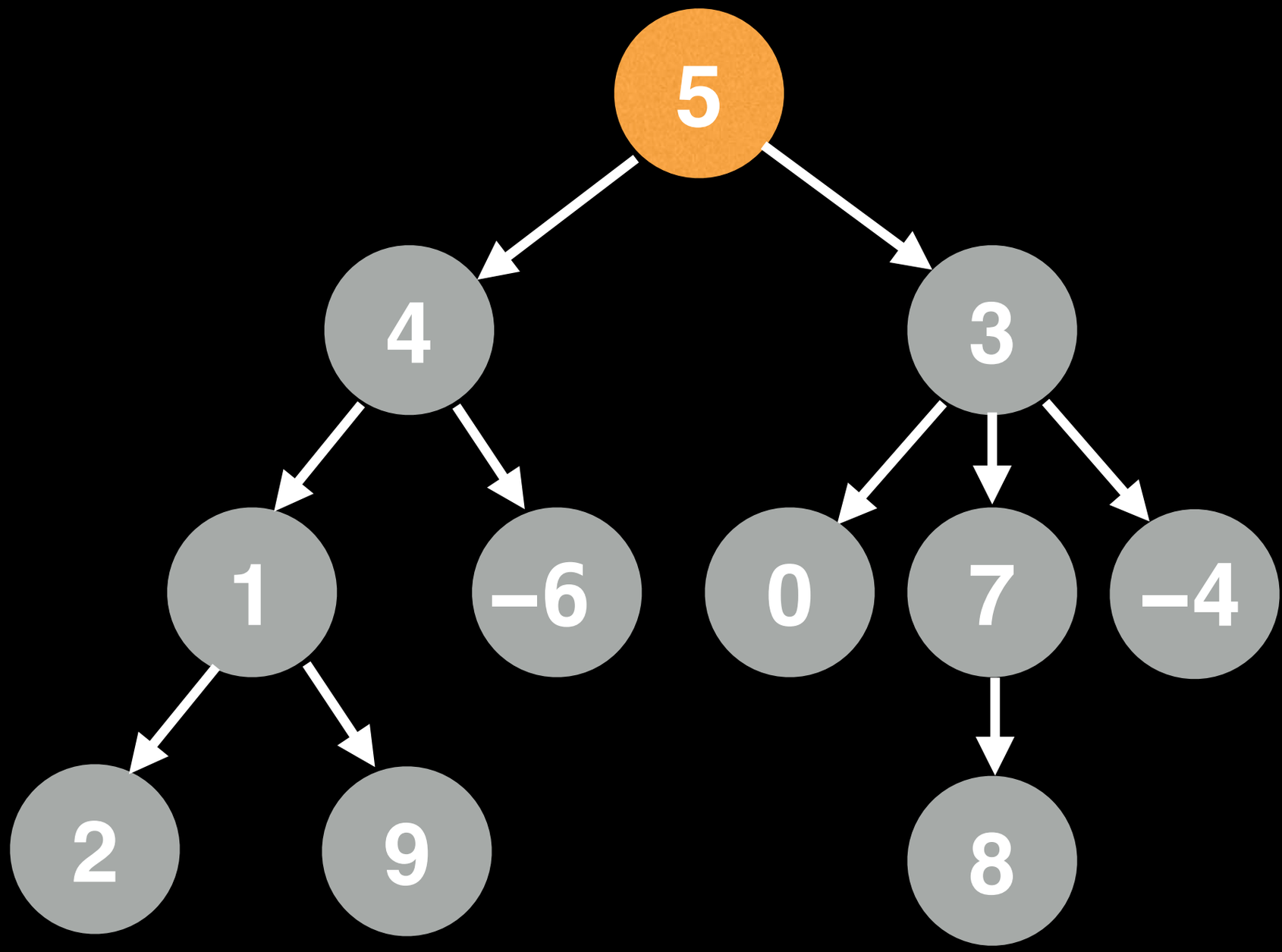


2 + 9 − 6 + 0 + 8 − 4



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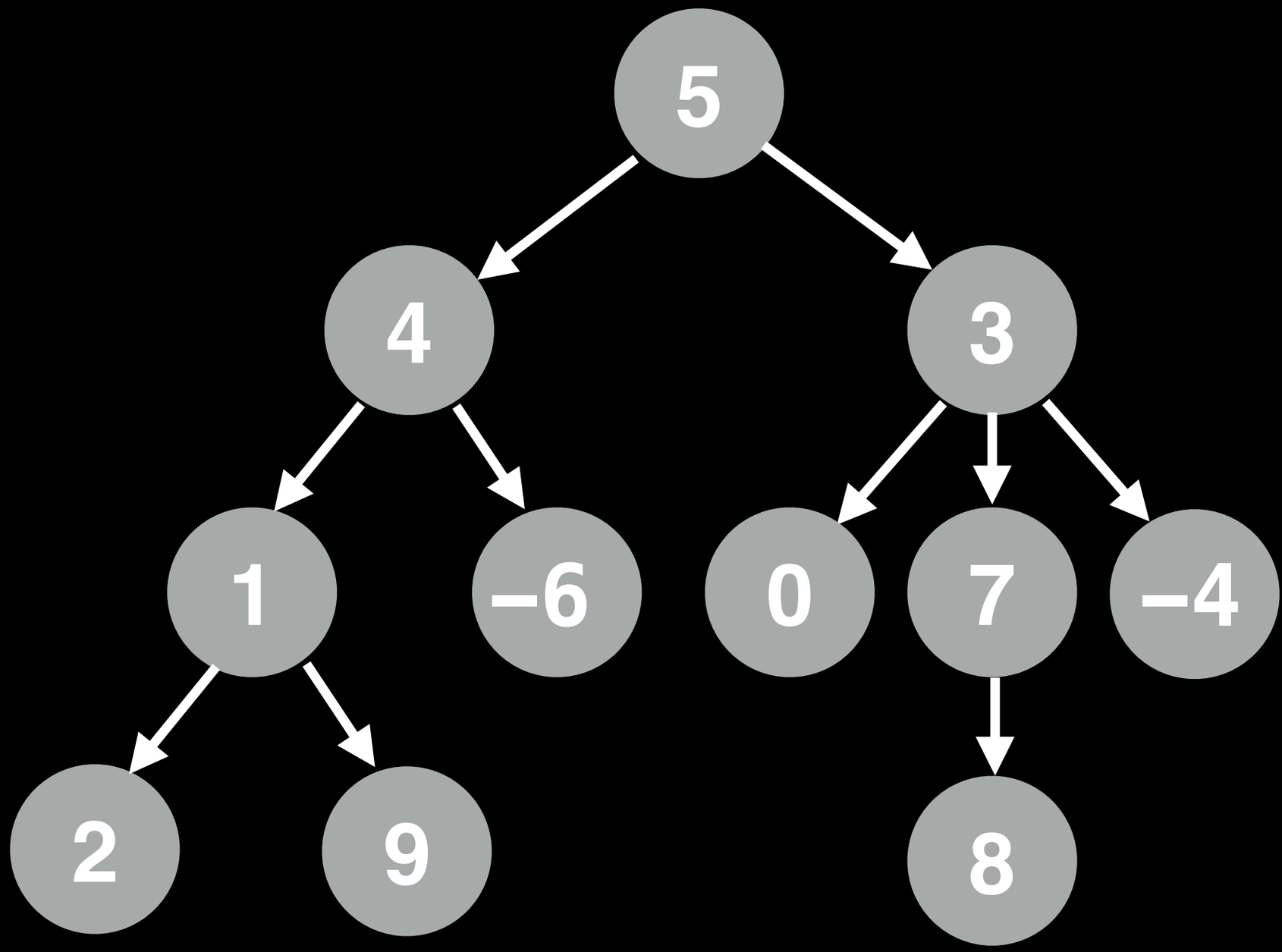

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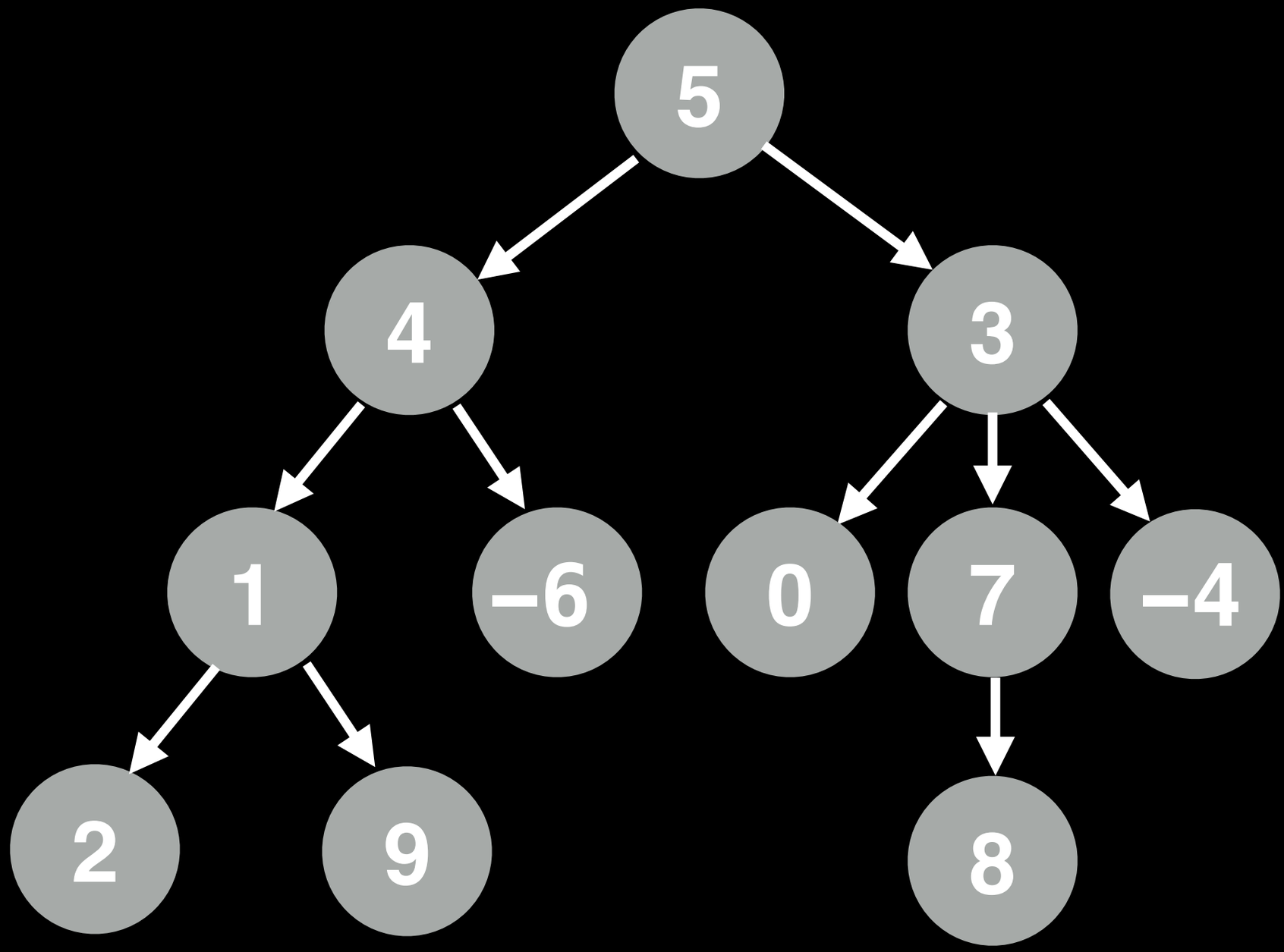

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```
# Sums up leaf node values in a tree.
# Call function like: leafSum(root)
function leafSum(node):
  # Handle empty tree case
  if node == null:
    return 0
  if isLeaf(node):
    return node.getValue()
  total = 0
  for child in node.getChildNodes():
    total += leafSum(child)
  return total

function isLeaf(node):
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