

# AVL Tree

a.

1. 80

2. 80



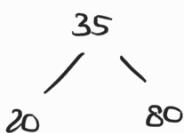
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3. 80

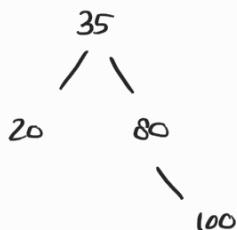
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20

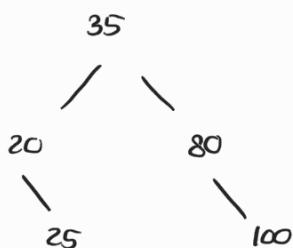
→ rotation



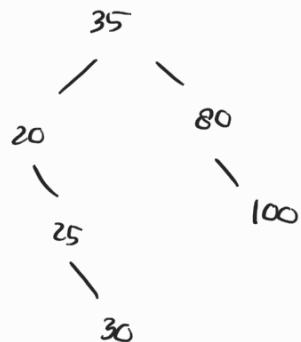
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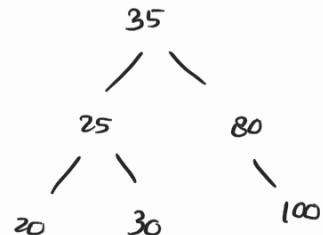
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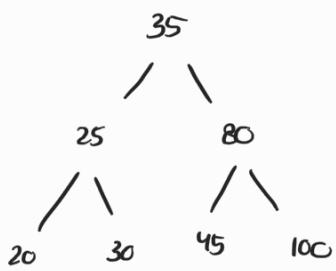
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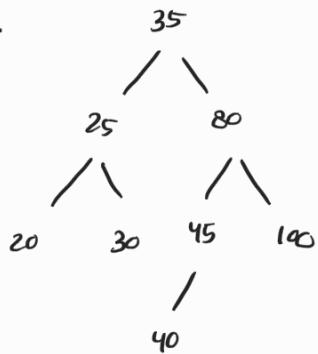
→ rotation



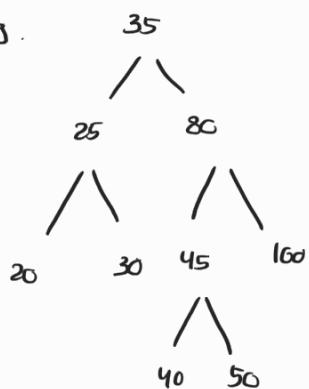
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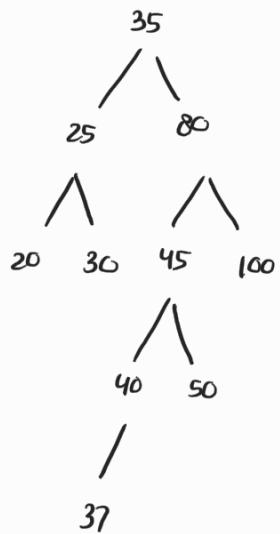
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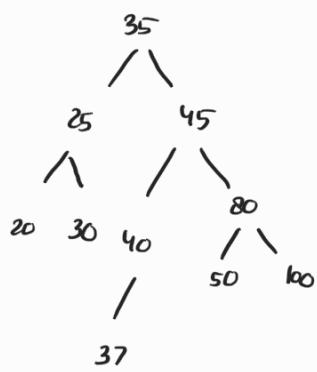
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10.



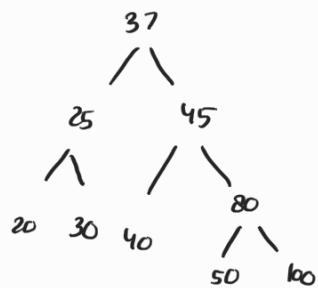
rotation



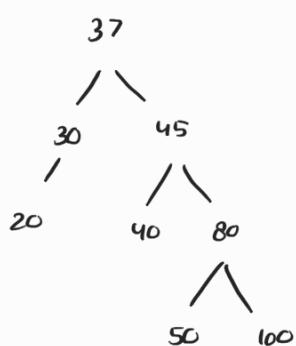
37

Delete 35

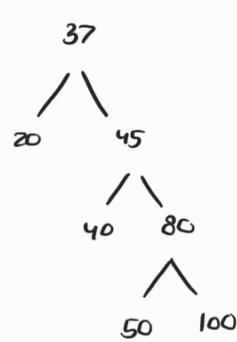
Cari successor = 37



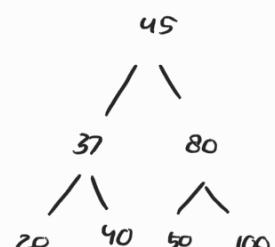
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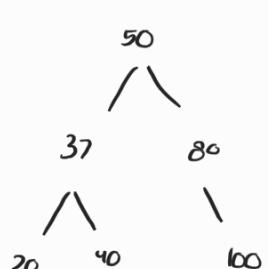
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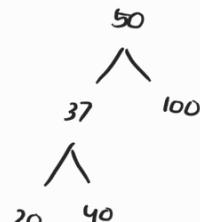
rotation  
→



Delete 45

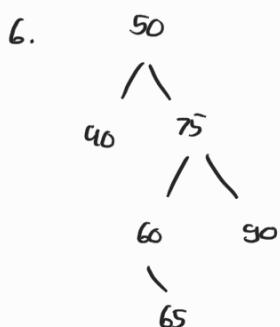
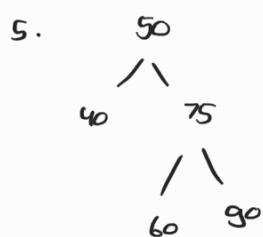
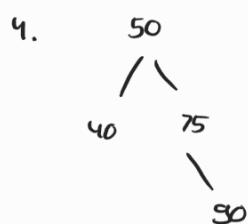
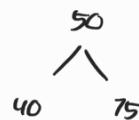
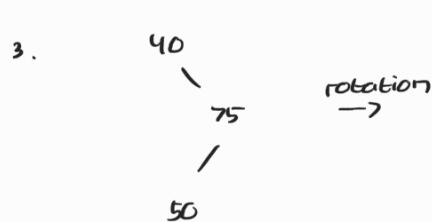


Delete 80

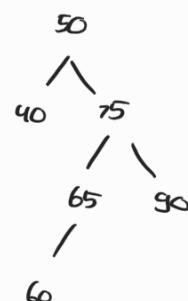


b.

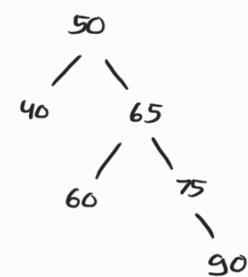
1. 40



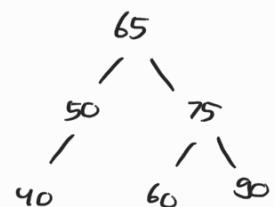
rotation →

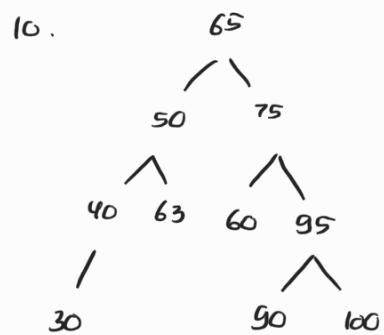
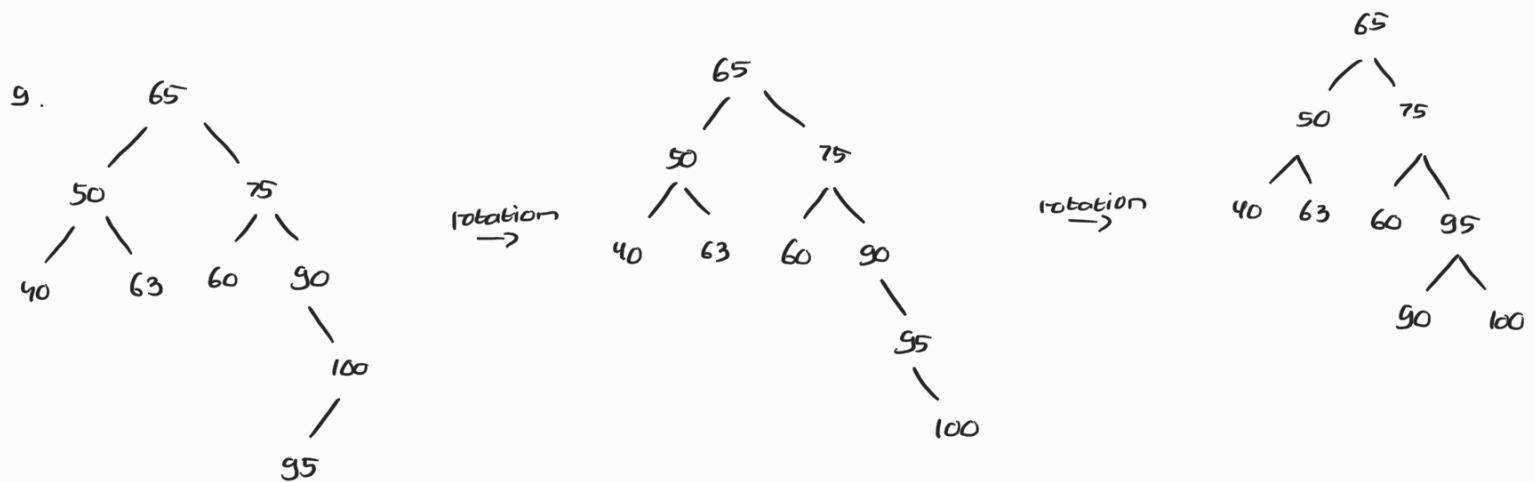
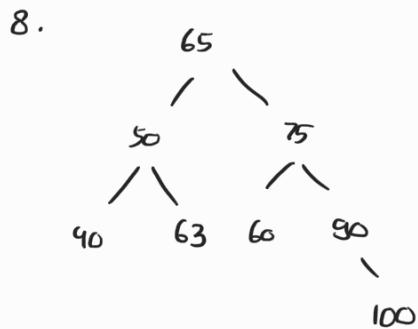
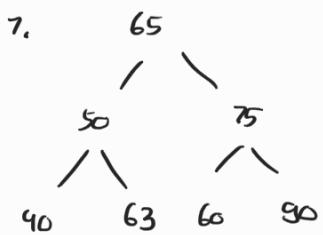


rotation →

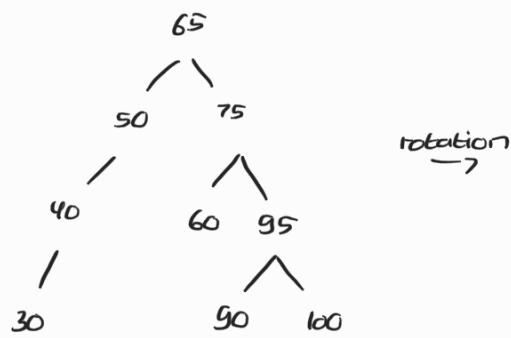


↓ rotation

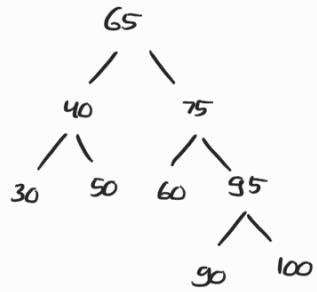




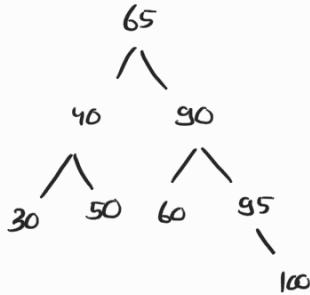
Delete 63



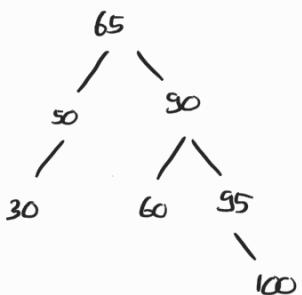
rotation →



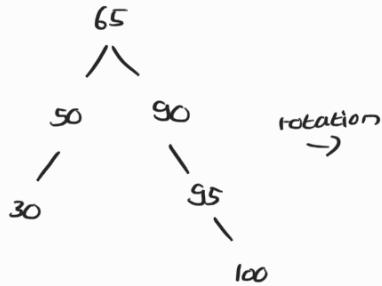
Delete 75 Successor 90



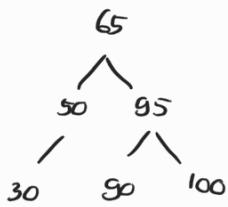
Delete 40



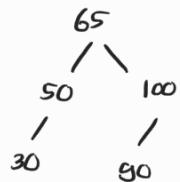
Delete 60



rotation →



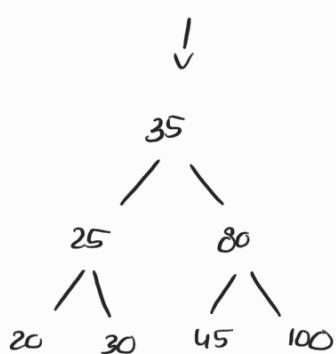
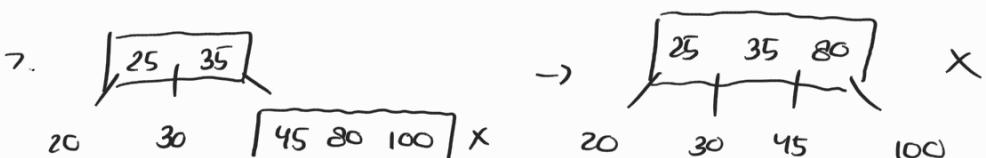
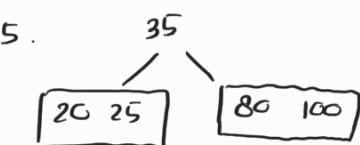
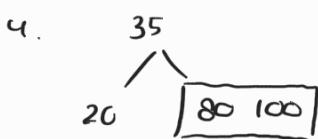
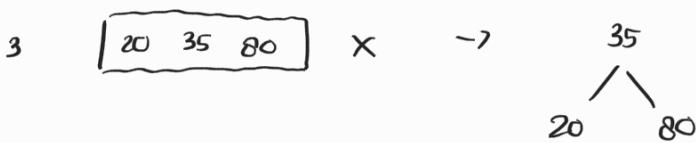
Delete 95



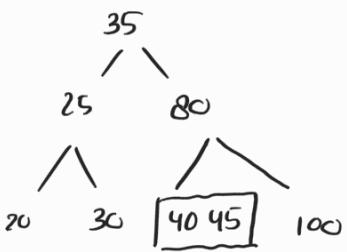
# B - Tree

1.  $m = 3$

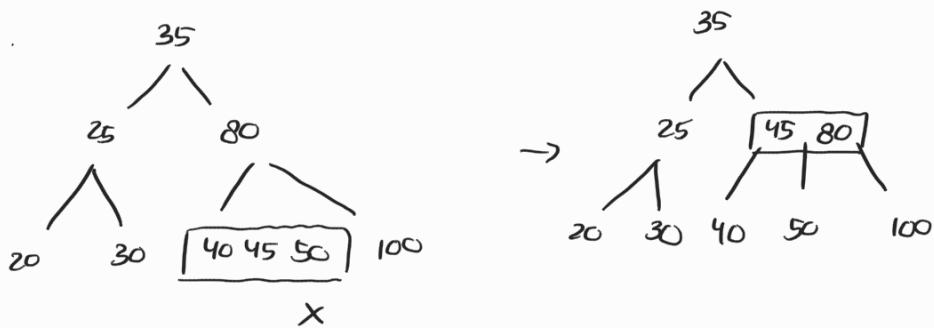
1. 80



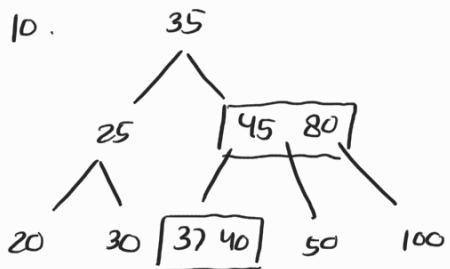
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9.



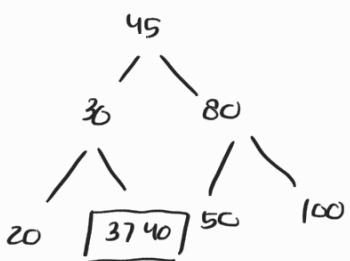
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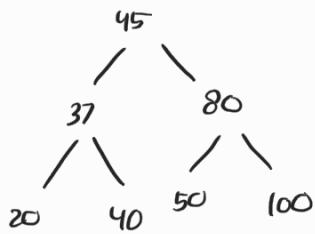
Delete 35      Predecessor



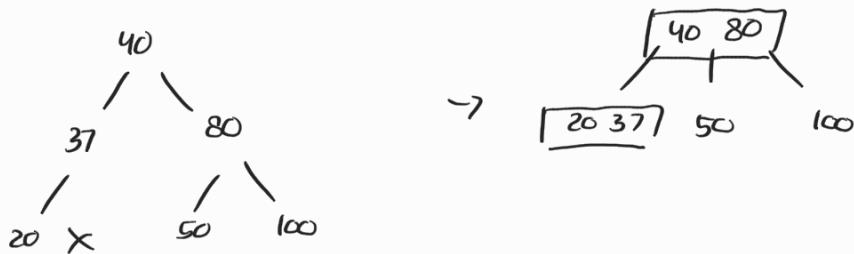
Delete 25



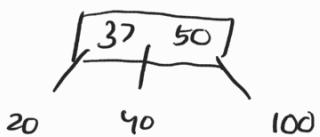
Delete 30



Delete 45



Delete 80

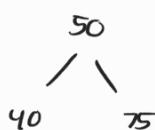


2. m = 3

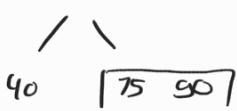
1. 40



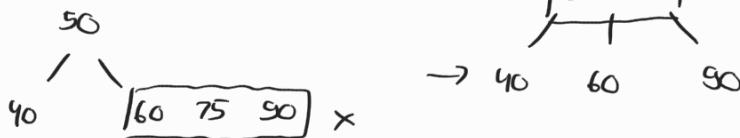
3. 40 50 75 X →

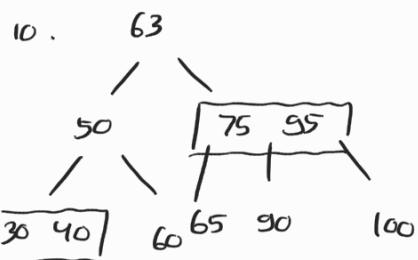
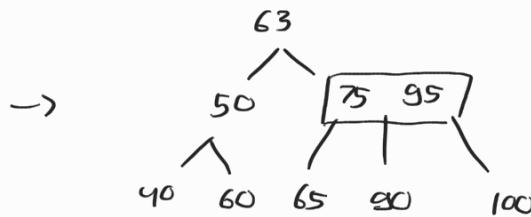
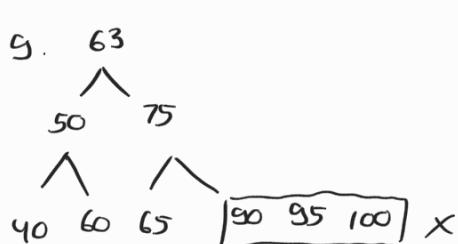
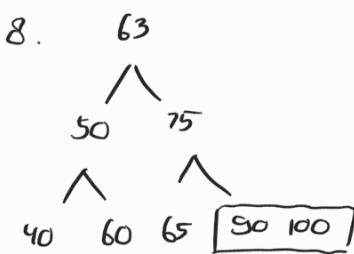
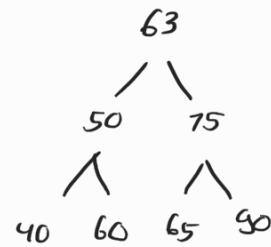
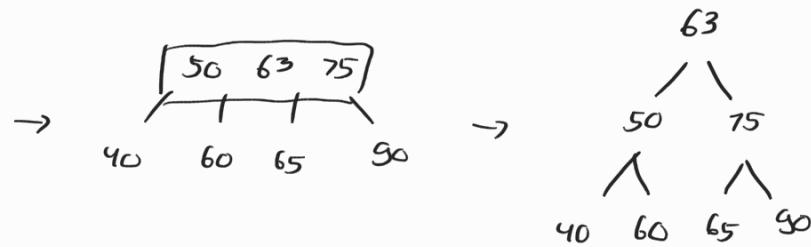
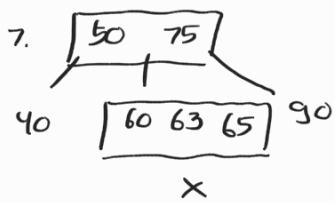
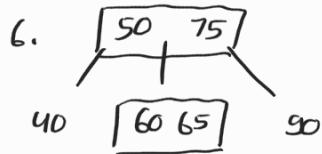


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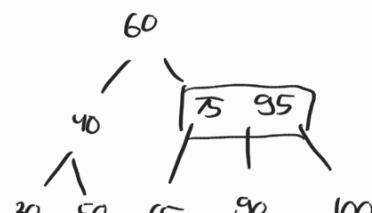
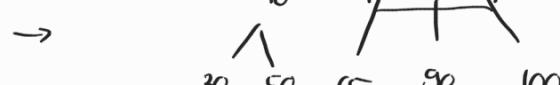
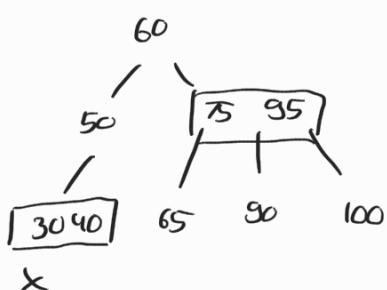


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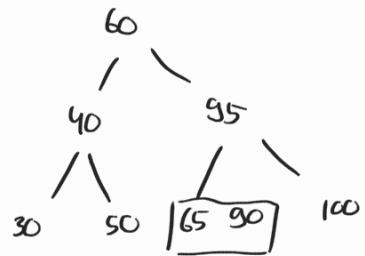




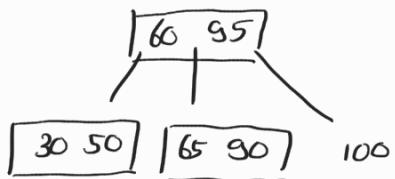
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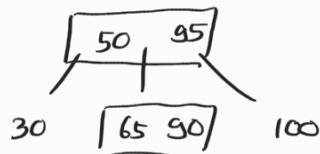
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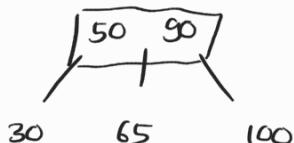
Delete 40



Delete 60



Delete 95



RB Tree

1. 80

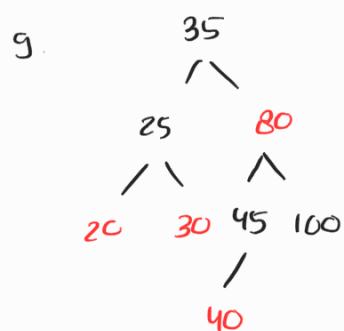
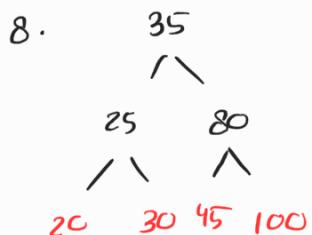
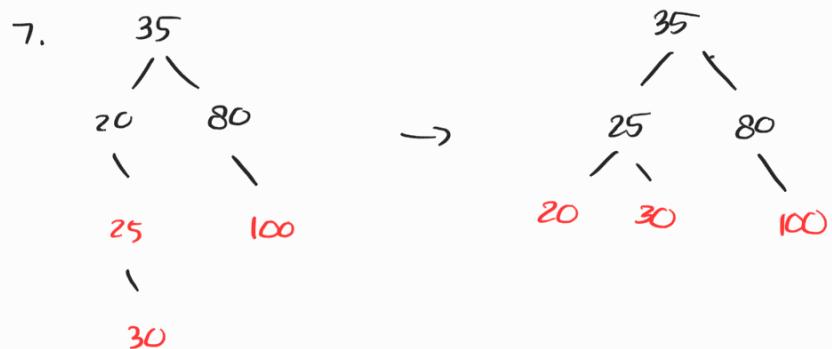
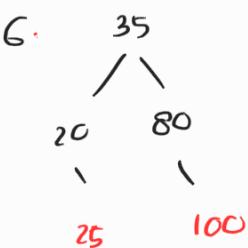
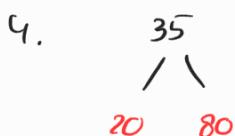
2. 80

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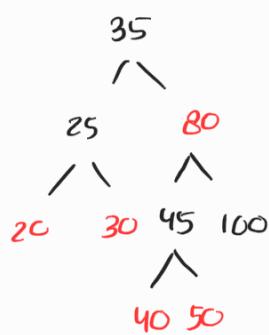
3. 80

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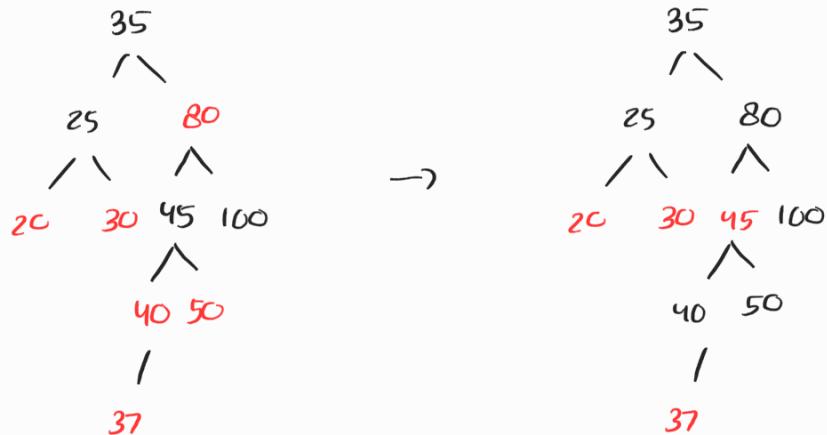
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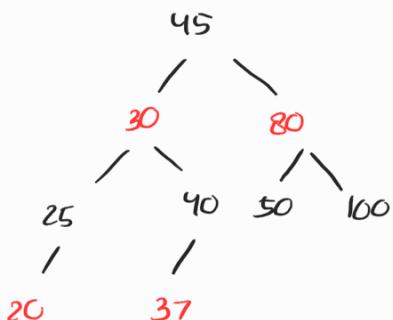
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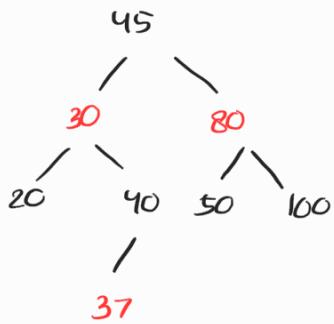
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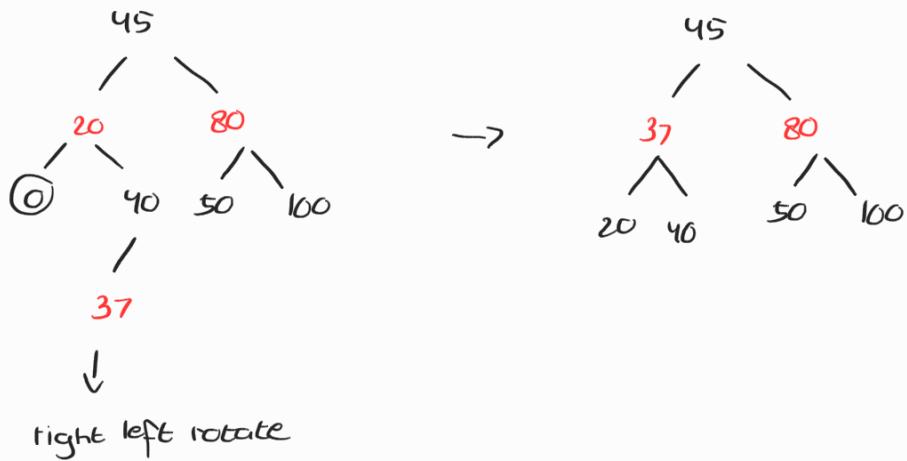
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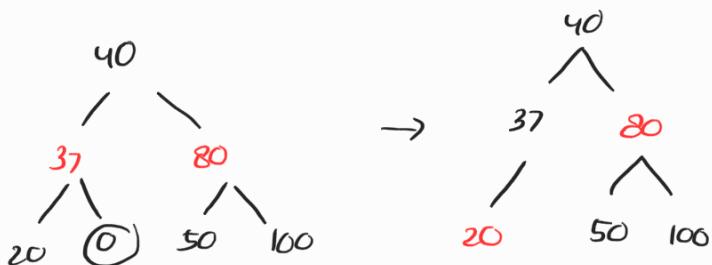
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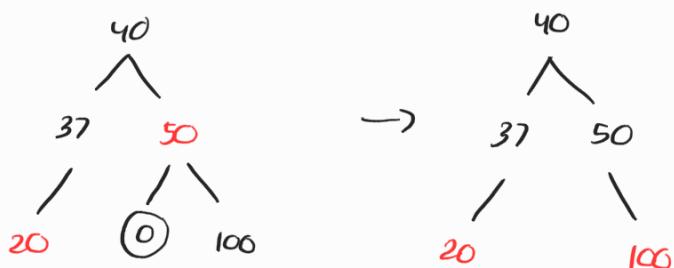
Delete 30



Delete 45



Delete 80



2.

1. 40

2. 40

1

75

3.

40



75



50



50

40 75

4.

50



40

75



90



50



40

75



90

5.

50



40

75



60 90



50



40

75



60 90

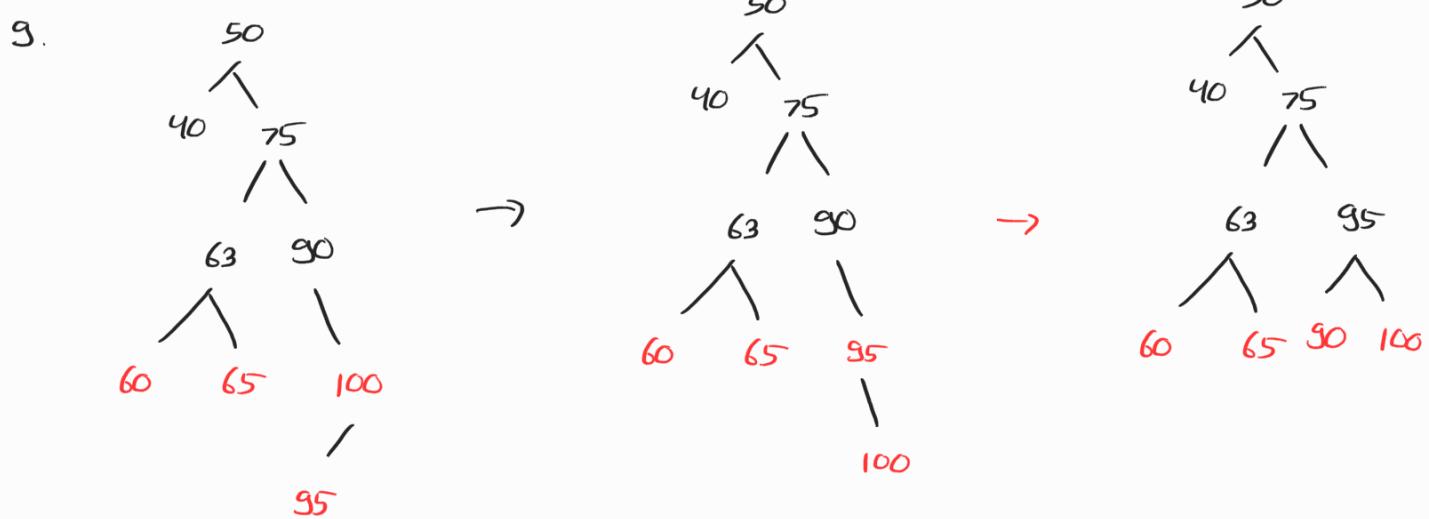
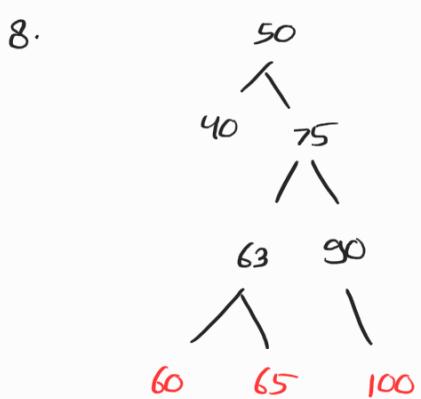
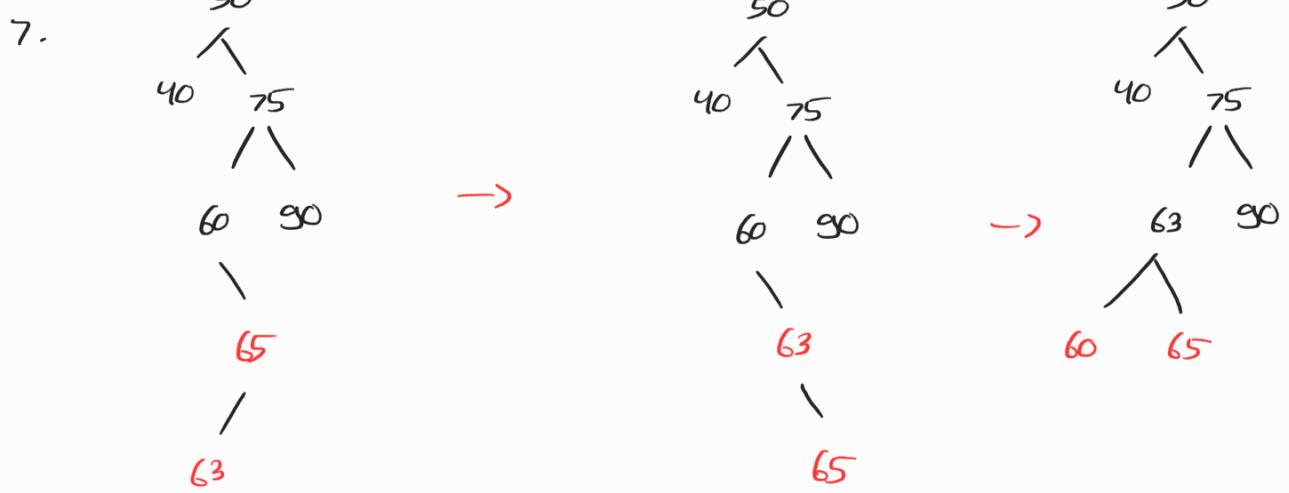


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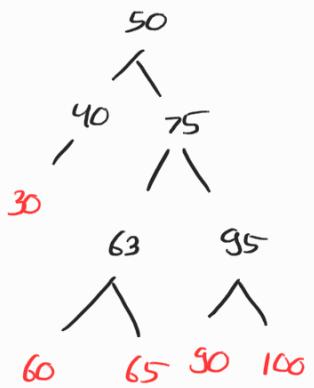


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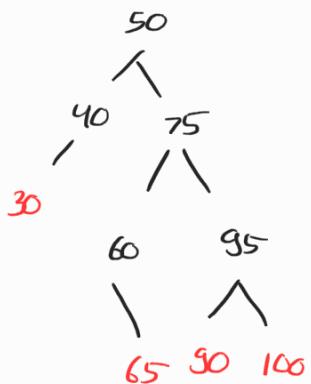
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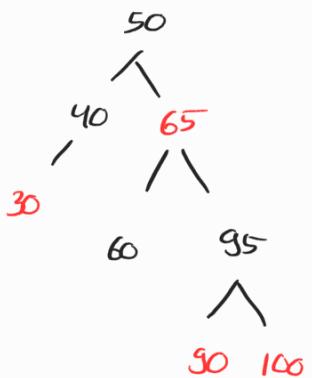
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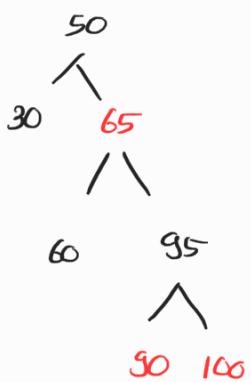
Delete 63



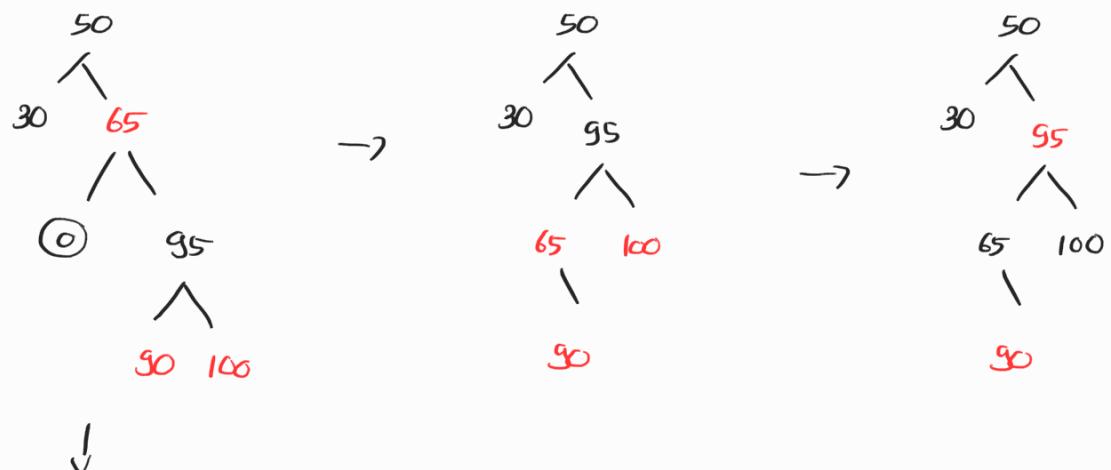
Delete 75    Predecessor 65



Delete 40



Delete 60



Delete 95 Predecessor 90

