CS443 – Lab 5

Shane Dyrdahl

29/30

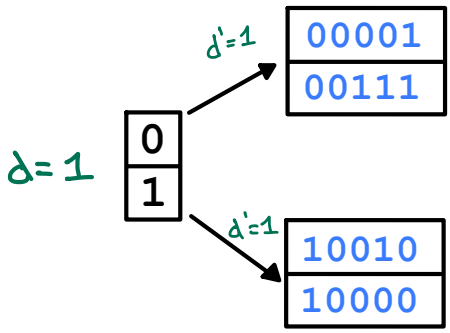
Q3: last step is incorrect.
55 goes to the right of 51 (-1)

Question 1:

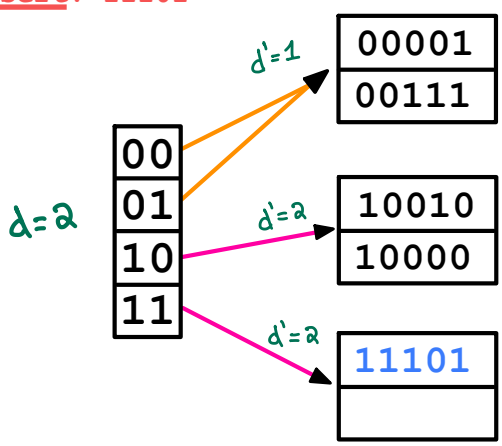
Use extended hashing technique to insert the employees in which their corresponding binary Empl_IDs are shown below. Assume you can have two employees per block. Show the depth of both global and local directories. The bits should be considered from left to right.

10010, 00001,10000, 00111, 11101, 10100, 11011, 10101, 01111

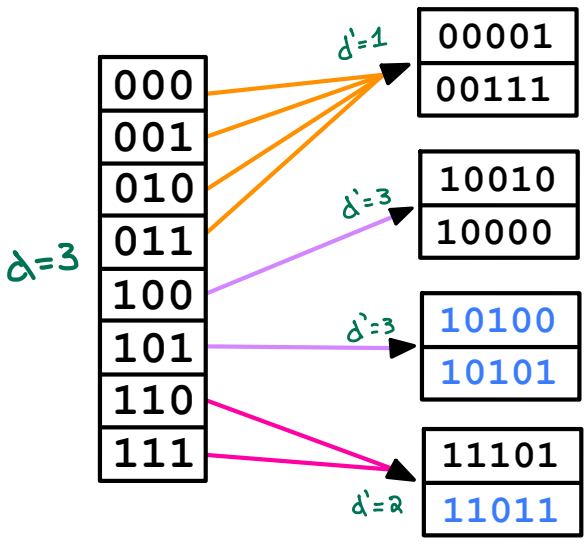
Insert: 10010,00001,10000,00111



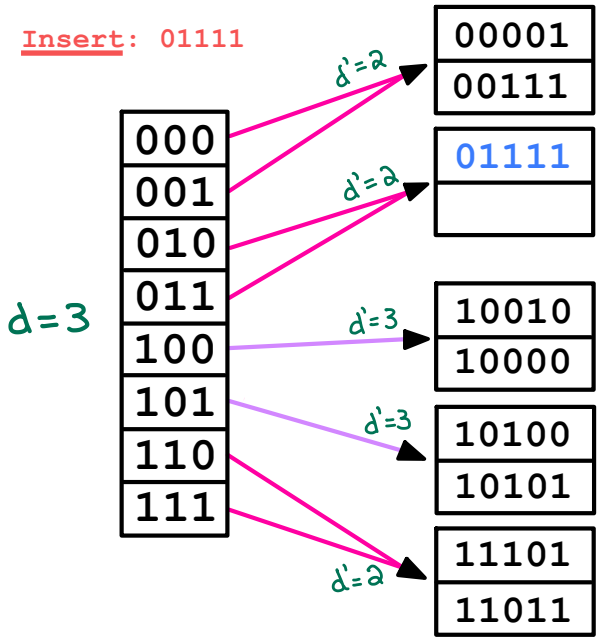
Insert: 11101



Insert: 10100,11011,10101



Insert: 01111



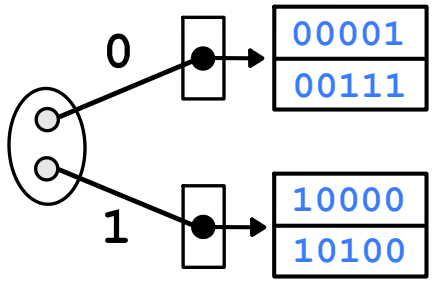
Question 2:

Consider the following records: (Again Digits should be considered from left to right)

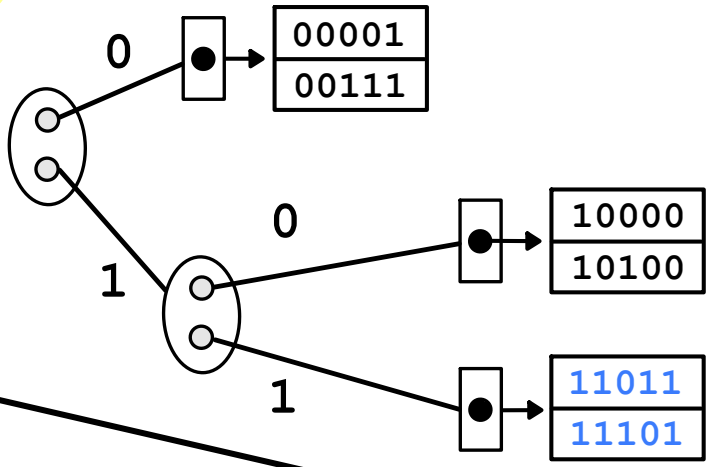
00001, 10000, 10100, 00111, 11011, 11101, 10010, 01111, 10101

Load the records into files using Dynamic Hashing Scheme. You can put two records per block. Show the directory at each step, and the global and local depths.

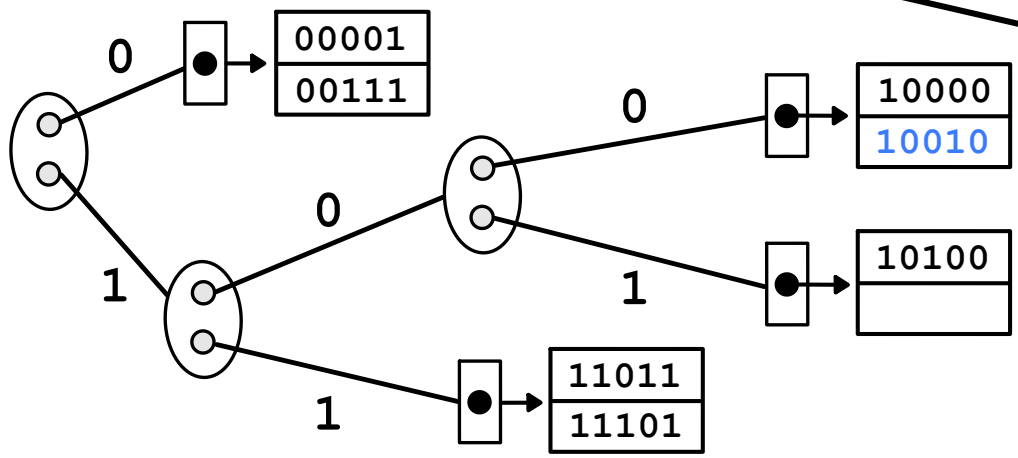
I Insert: 00001,10000,10100,00111



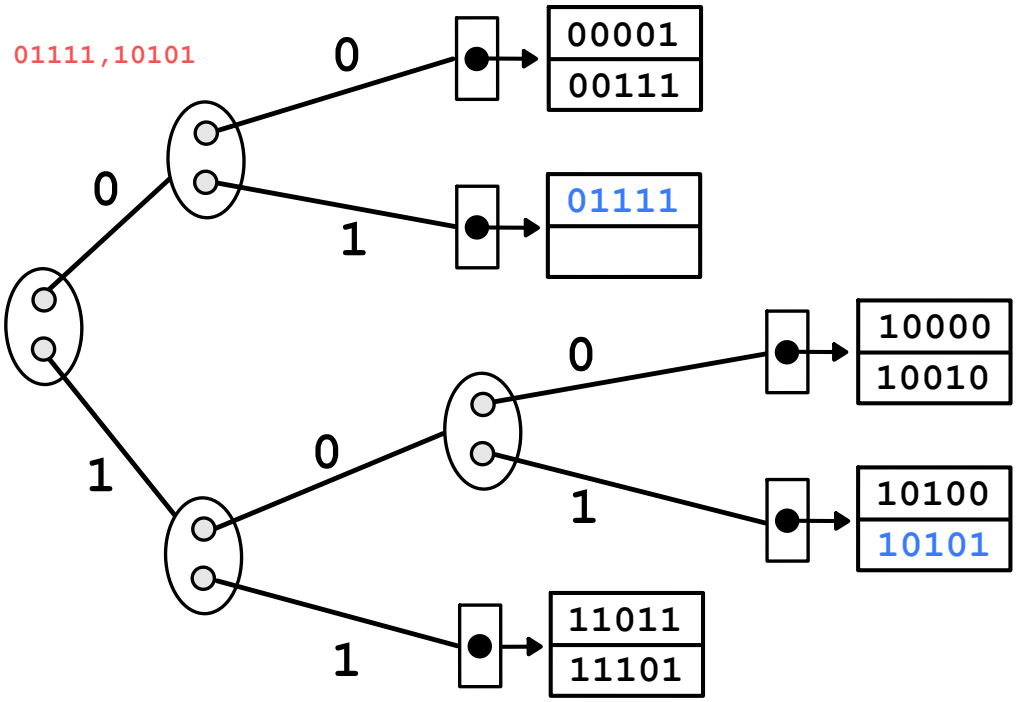
II Insert: 11011,11101



III Insert: 10010



IV Insert: 01111,10101



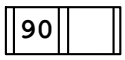
-1

Question 3:

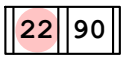
Insert the following into B+ tree of order **3**. Show your work step by step with proper illustration of pointers as shown in pages 47-54 in multi-way trees lecture

90, 22, 27, 24, 28, 20, 51, 63, 8, 80, 15, 71, 35, 55

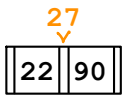
Insert: 90

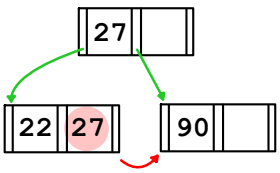


Insert: 22

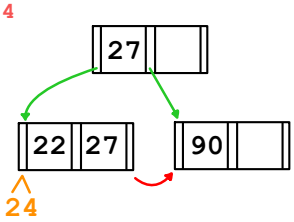


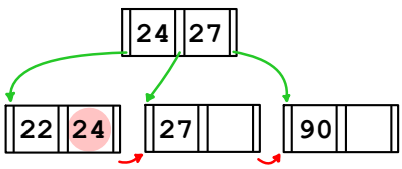
Insert: 27



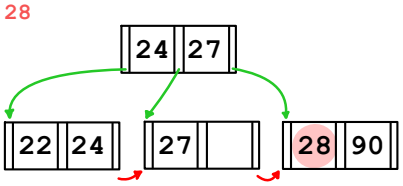


Insert: 24

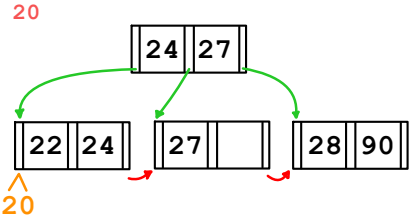


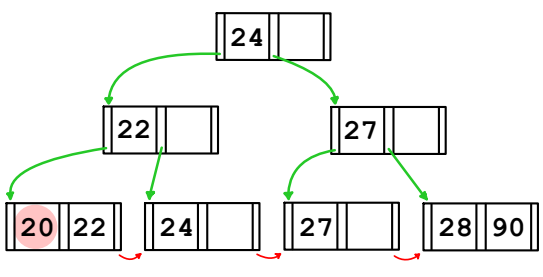


Insert: 28

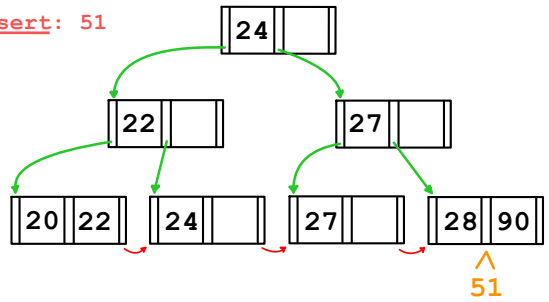


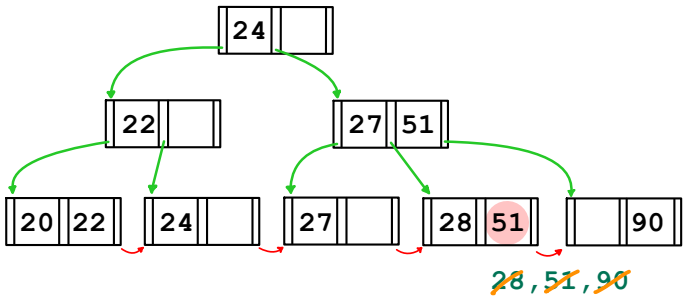
Insert: 20



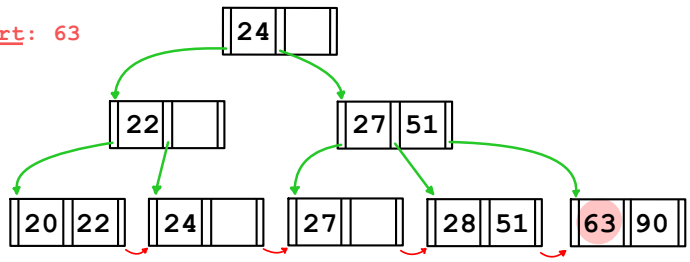


Insert: 51

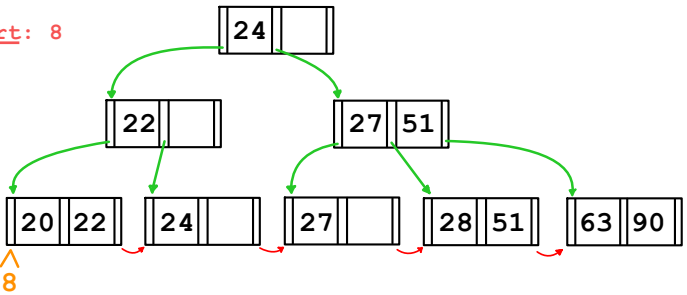


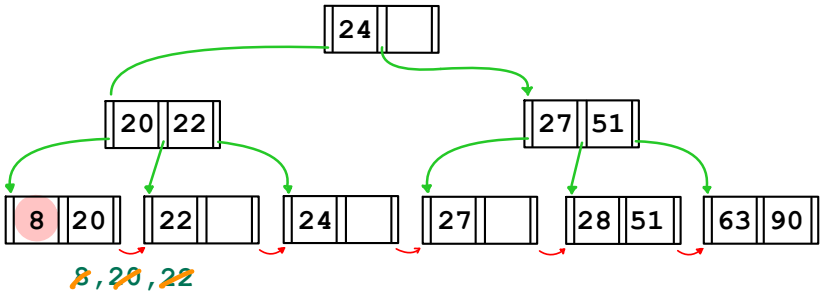


Insert: 63

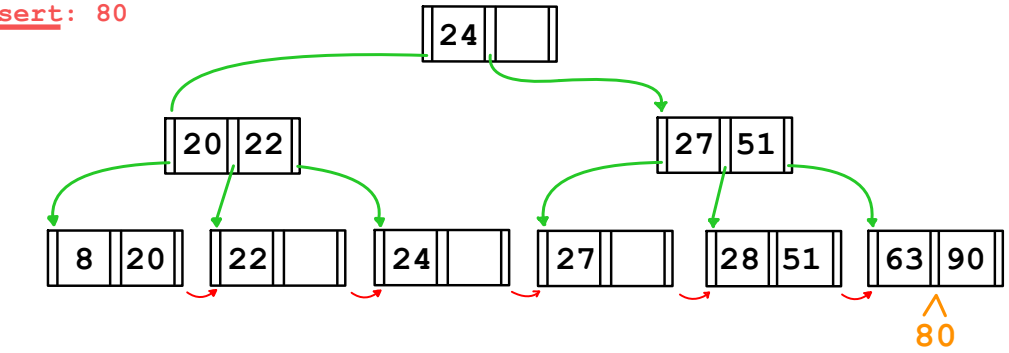


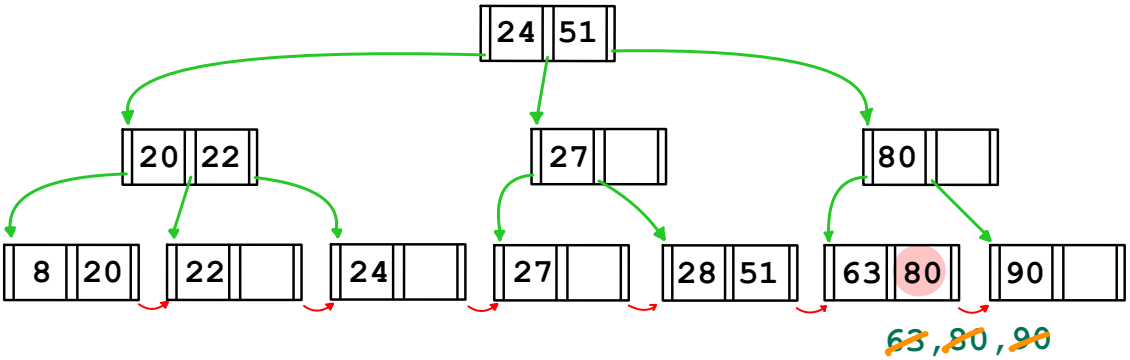
Insert: 8



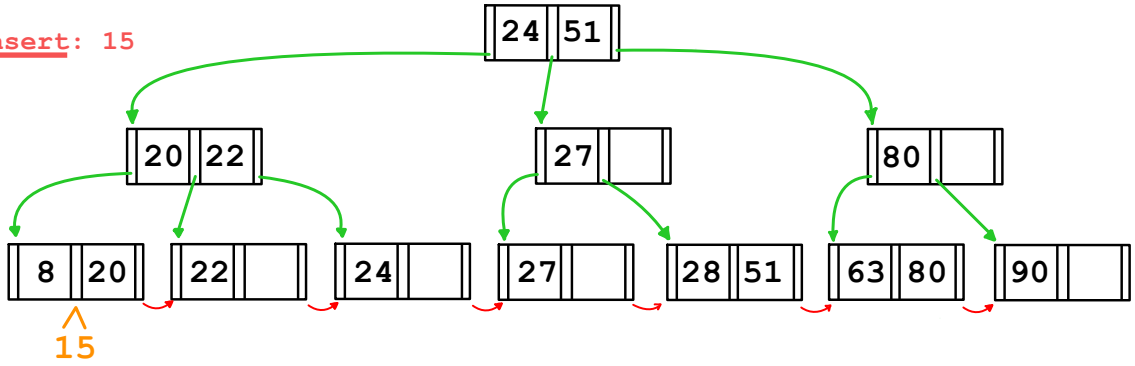


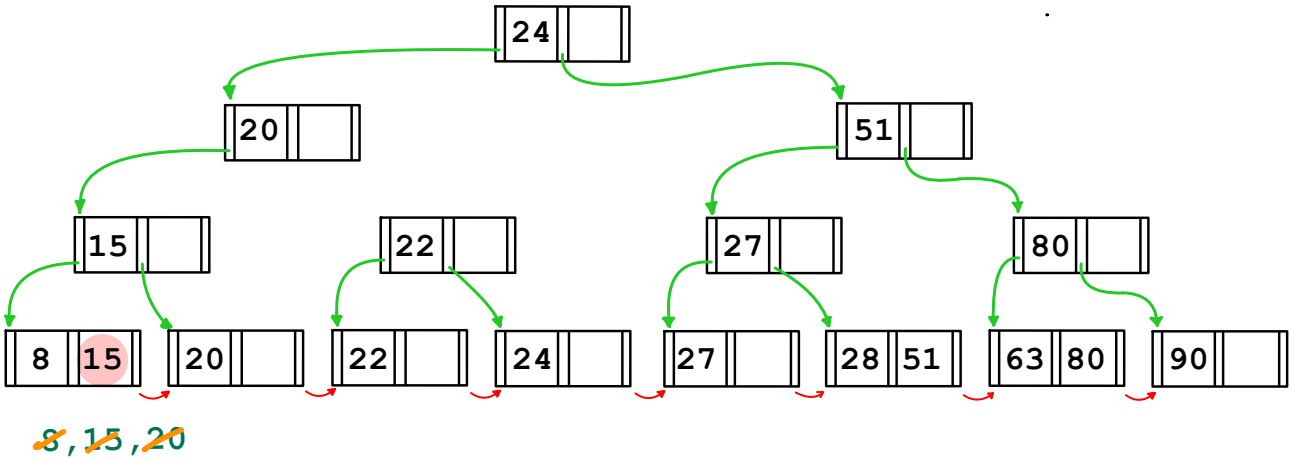
Insert: 80

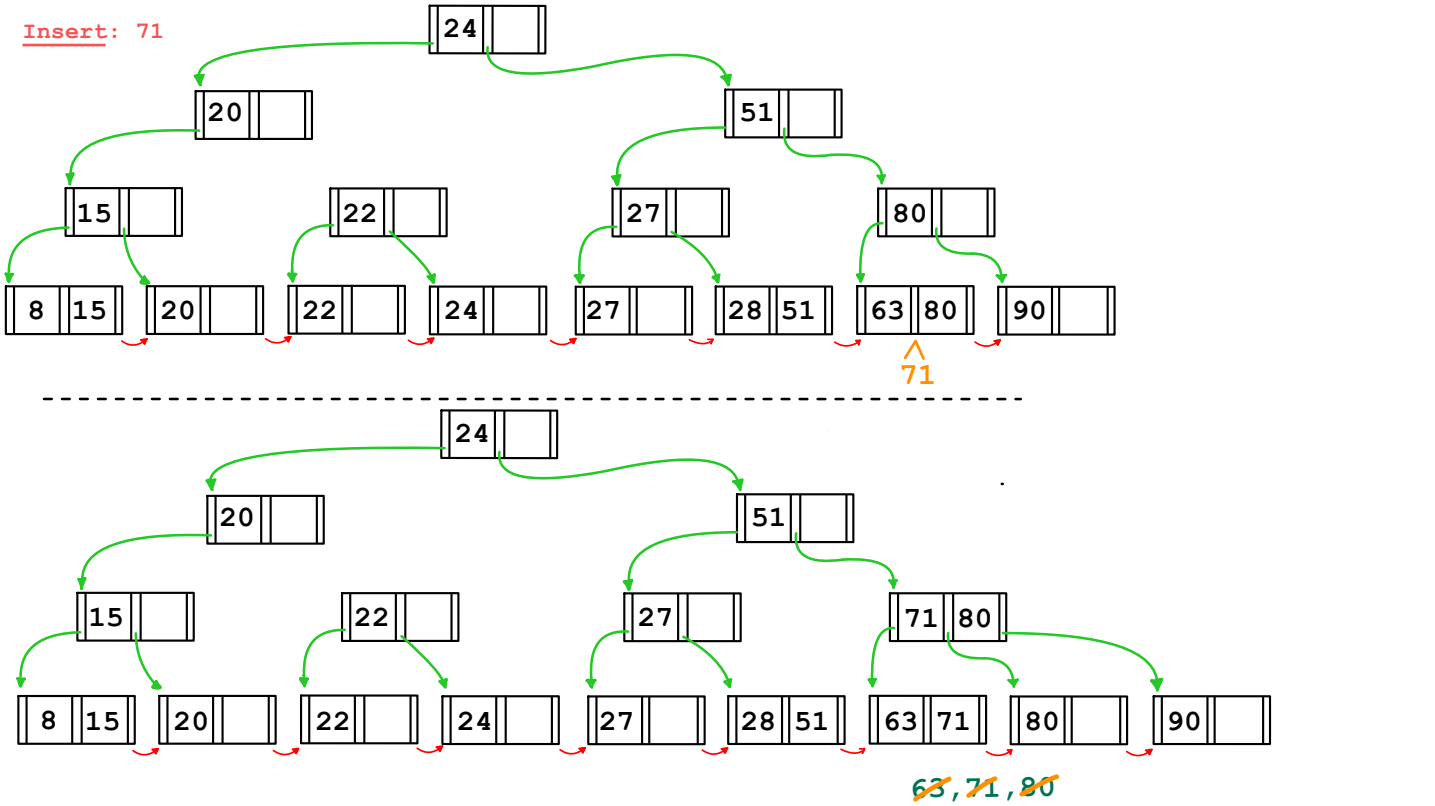




Insert: 15






Insert: 71
24
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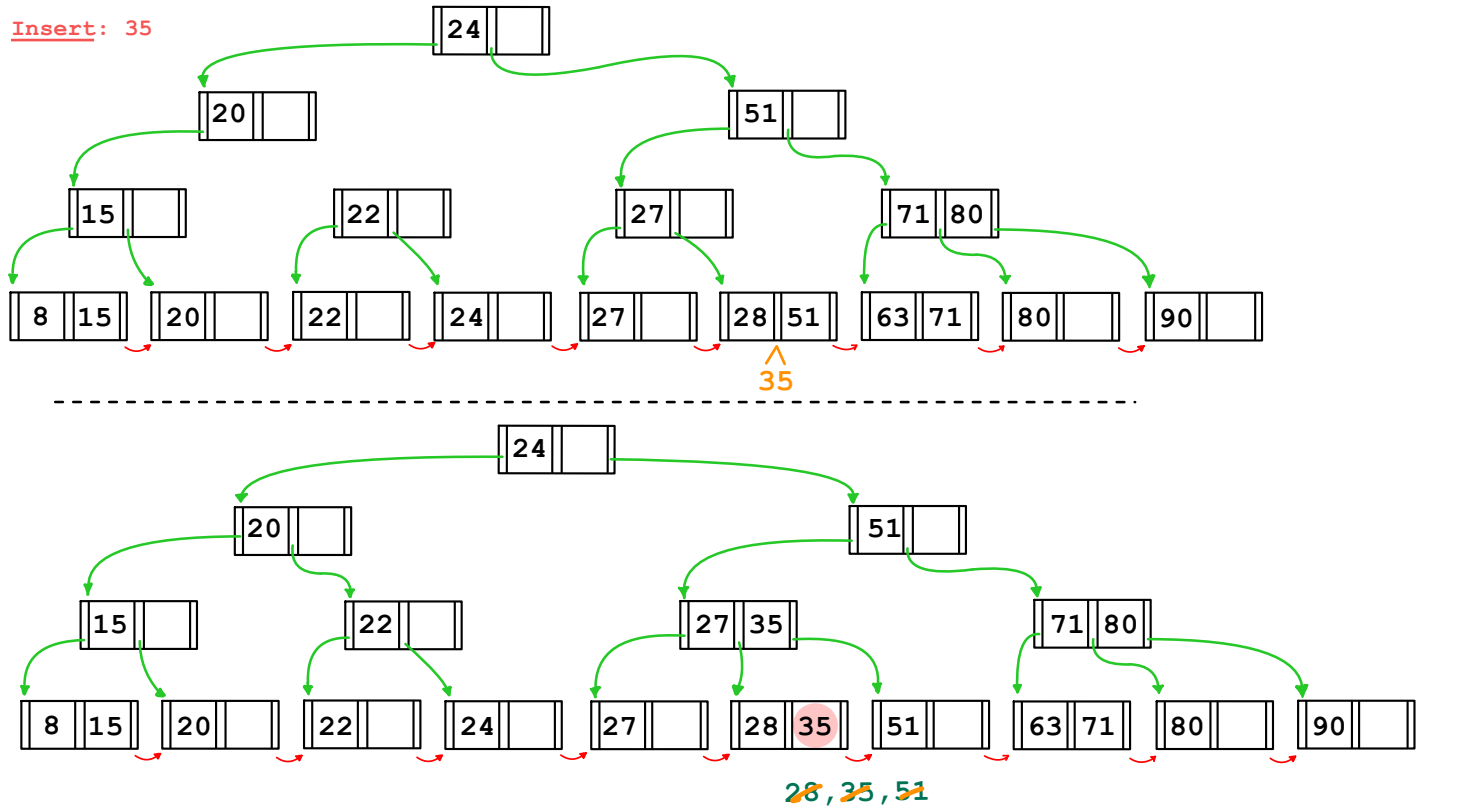
63, 71, 80


Insert: 35
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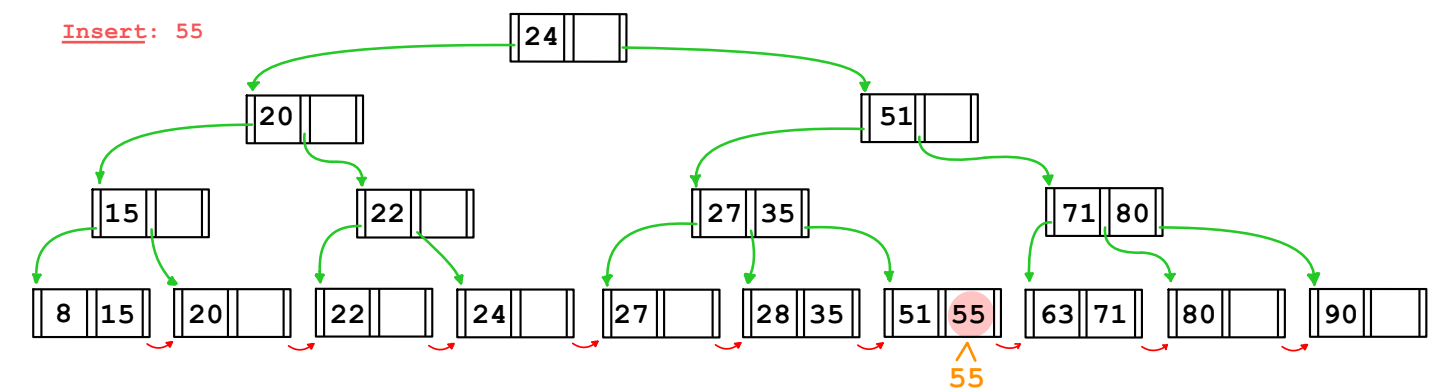
28, 35, 51


Insert: 55
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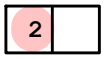
90
55

Question 4:

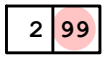
Insert the following into B_tree of order **3**. Show your work step by step with proper illustration of pointers as shown in pages 47-54 in multi-way trees lecture

2, 99, 9, 71, 16, 11, 15, 13, 91, 92, 94

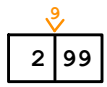
Insert: 2

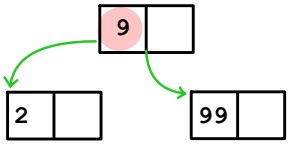


Insert: 99

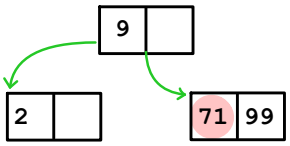


Insert: 9

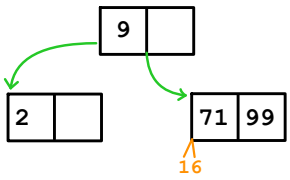


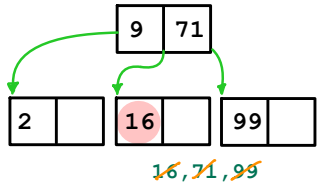


Insert: 71

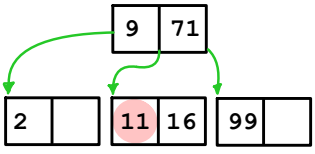


Insert: 16

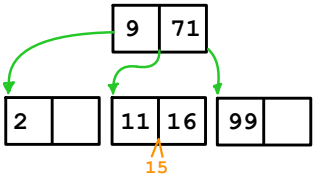


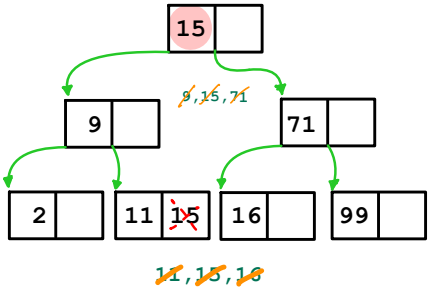


Insert: 11

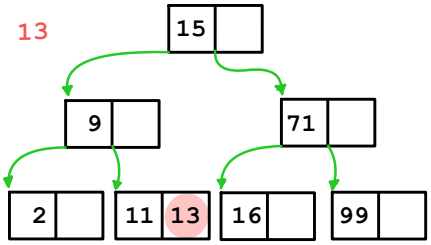


Insert: 15

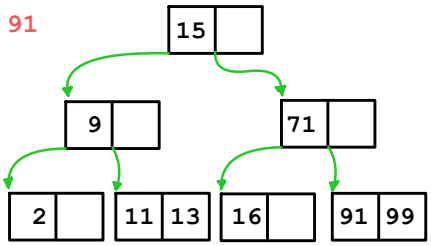




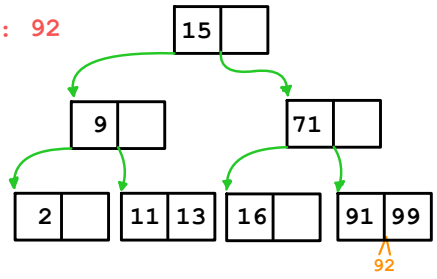
Insert: 13

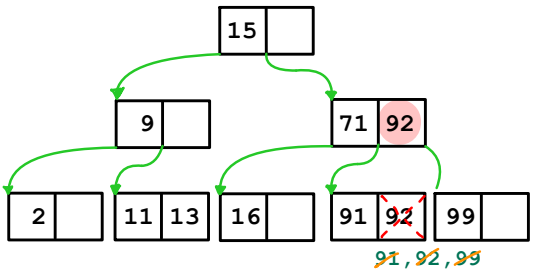


Insert: 91

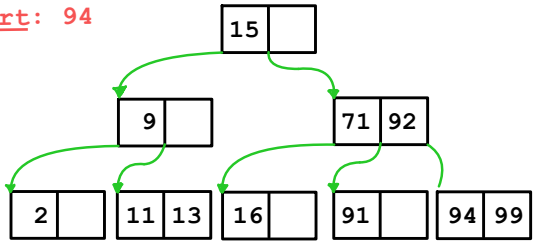


Insert: 92

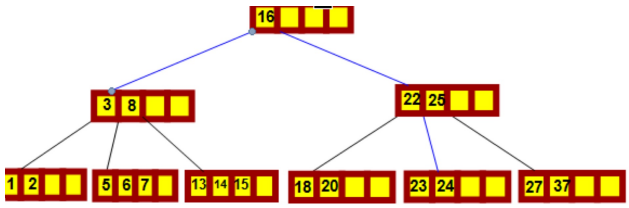




Insert: 94



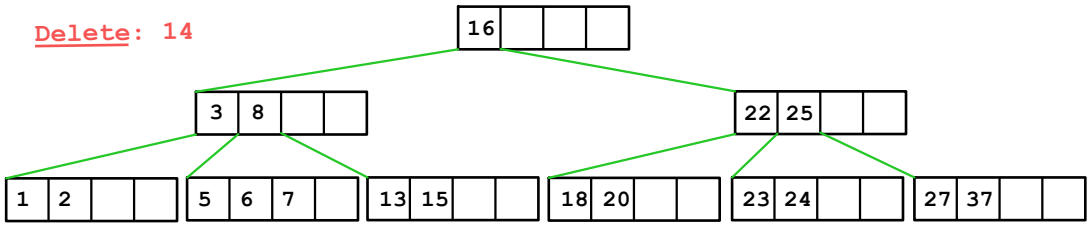
Question 5:



Consider the following B-tree.

a) Redraw the tree after deleting 14.
b) Again, redraw the tree after deleting 15.
c) Again, redraw the tree after deleting 25.

a) Delete: 14



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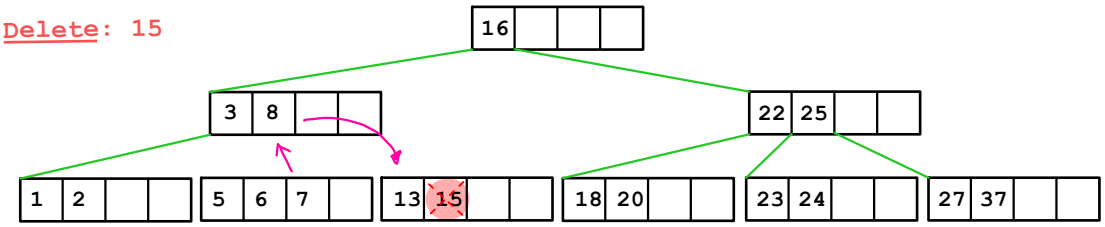
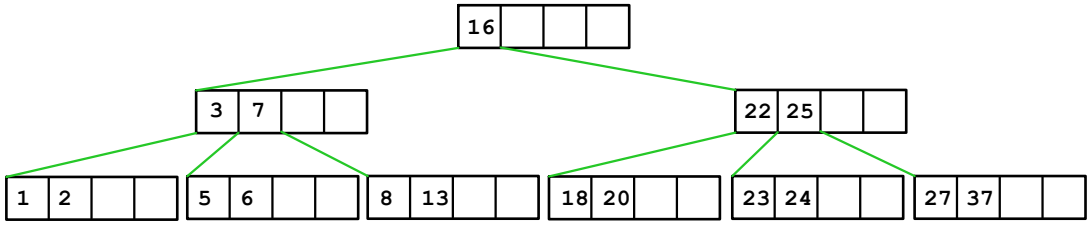
b) Delete: 15





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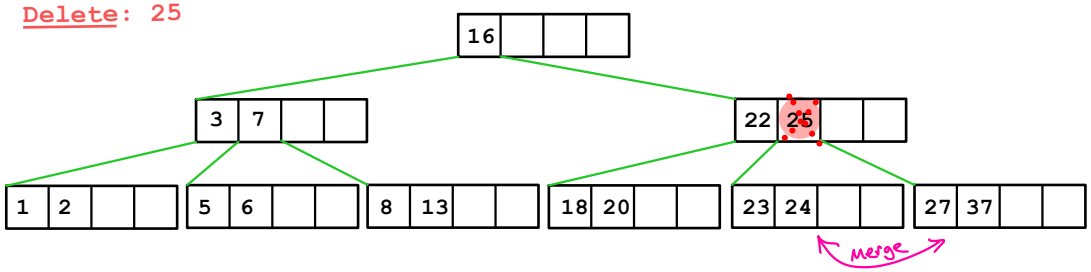
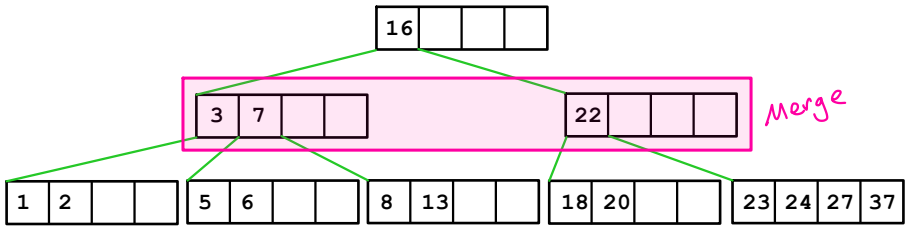
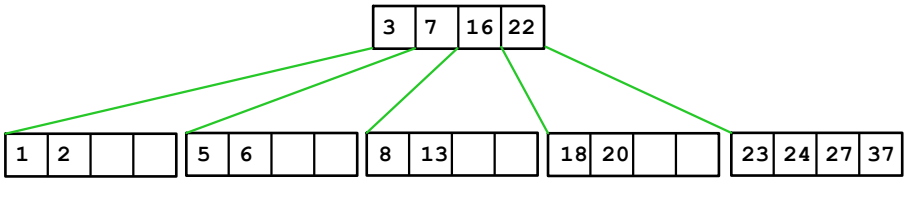
c) Delete: 25

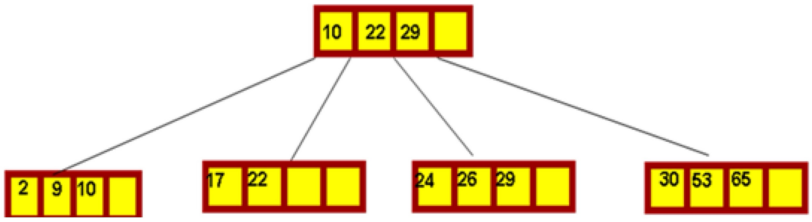




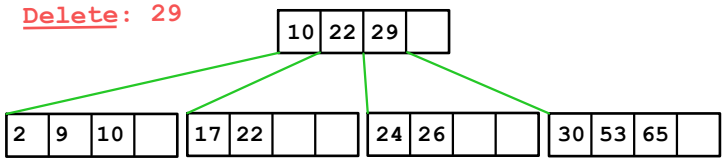


Question 6:

Consider the following B+ tree:



a) Delete: 29



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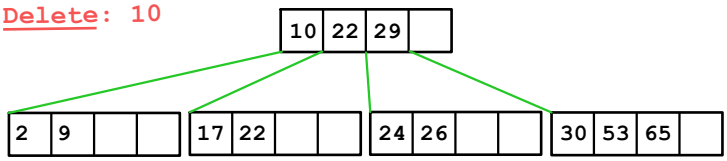
b) Delete: 10



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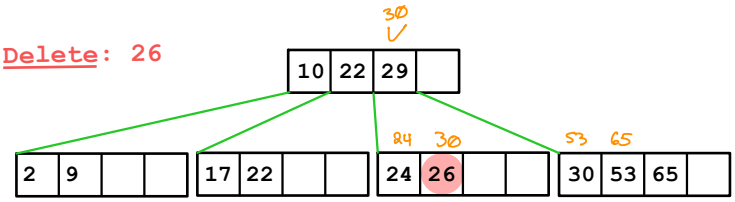
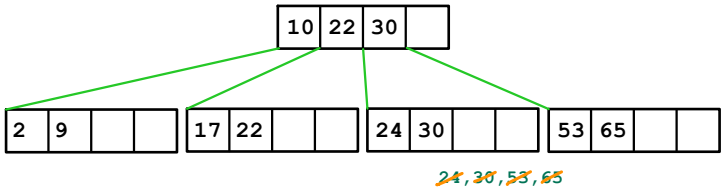
c) Delete: 26





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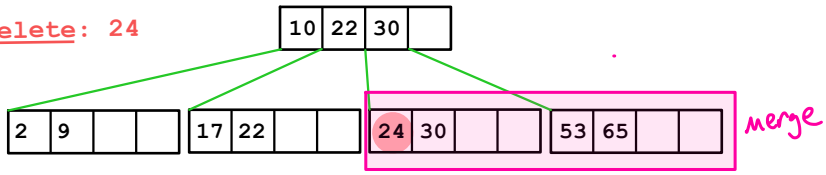
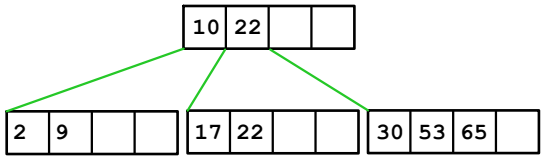
d) Delete: 24





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e) Delete: 9