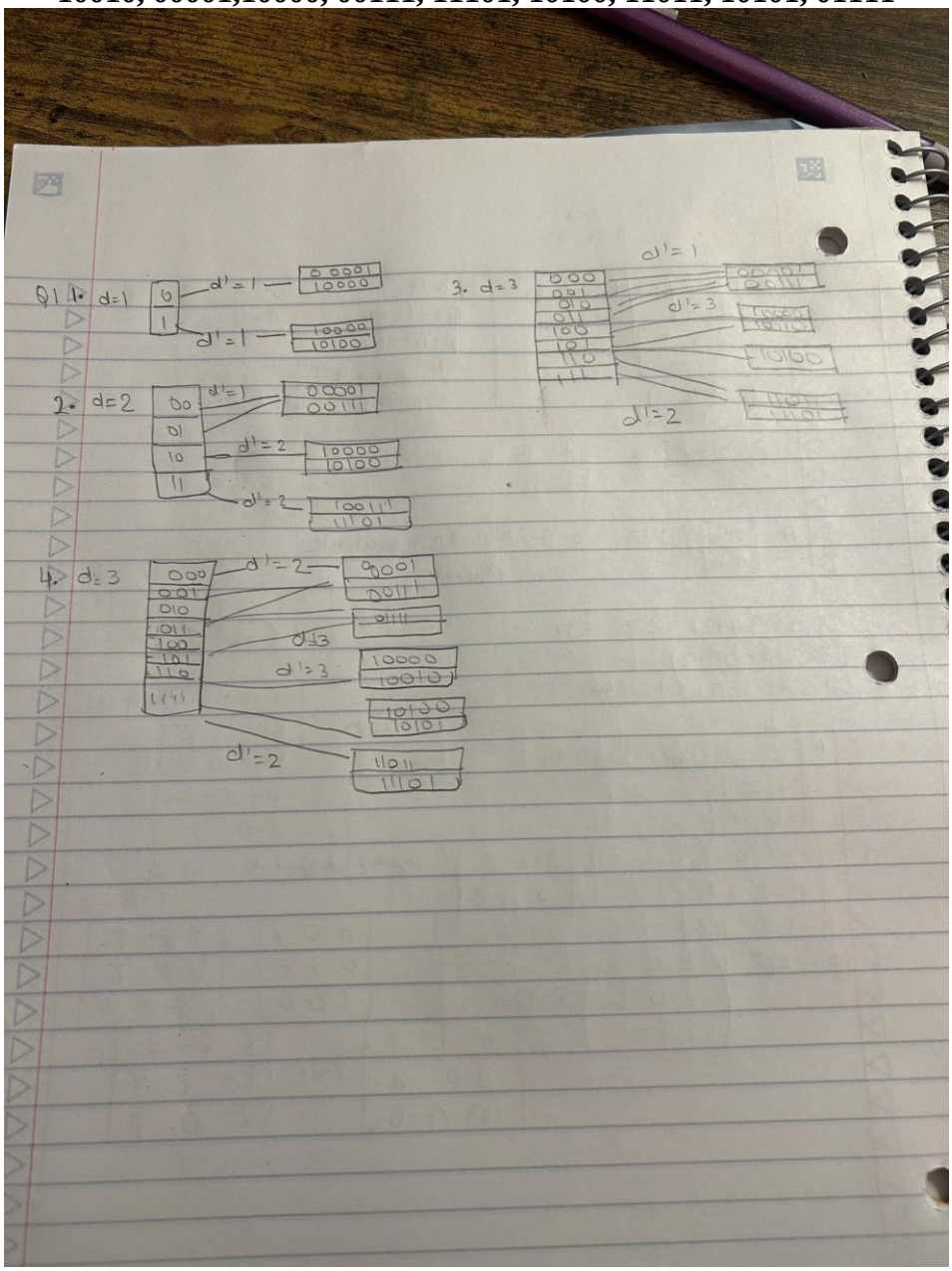
CS443 – Lab 5

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

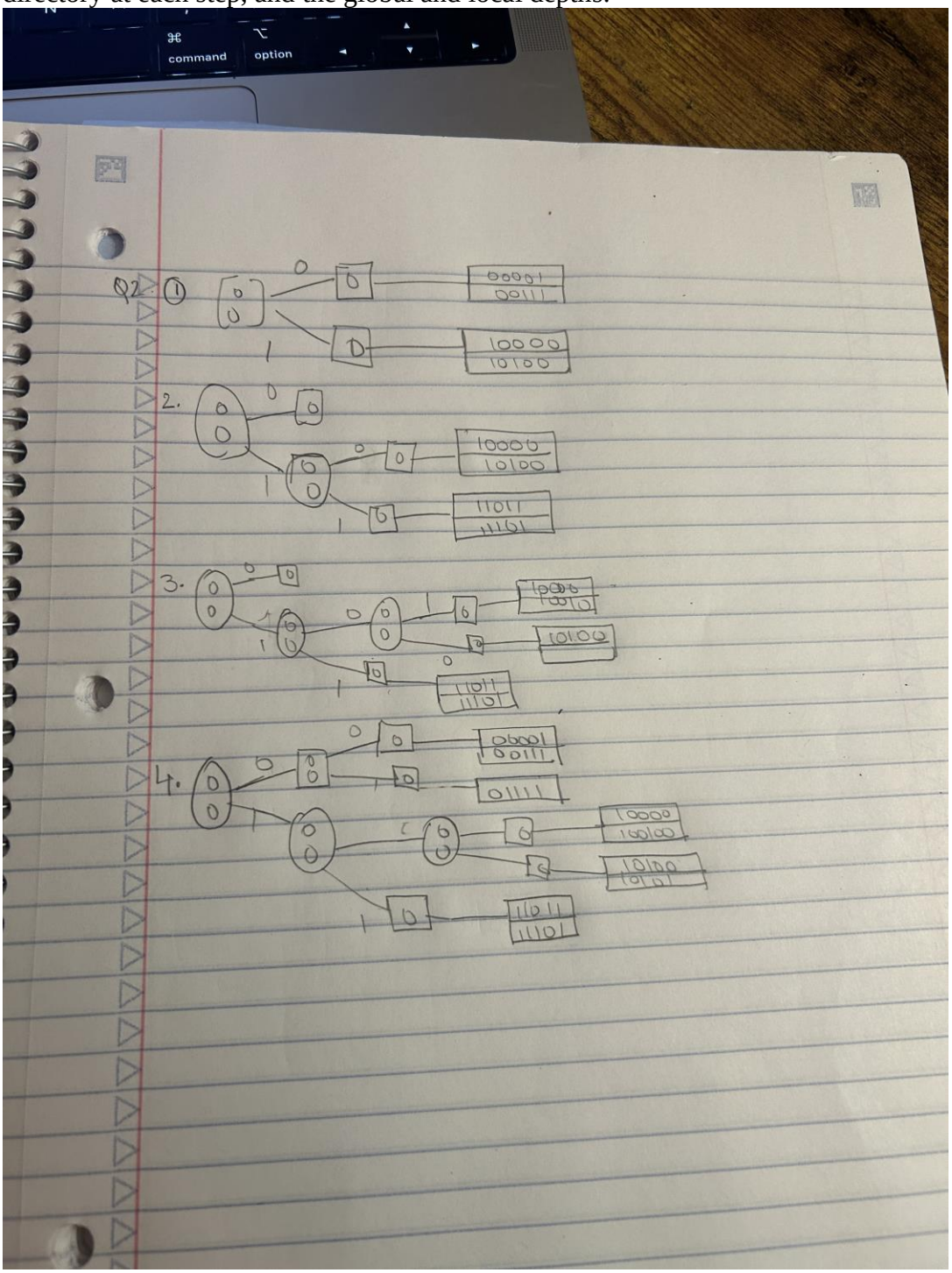


Question 2:

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

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

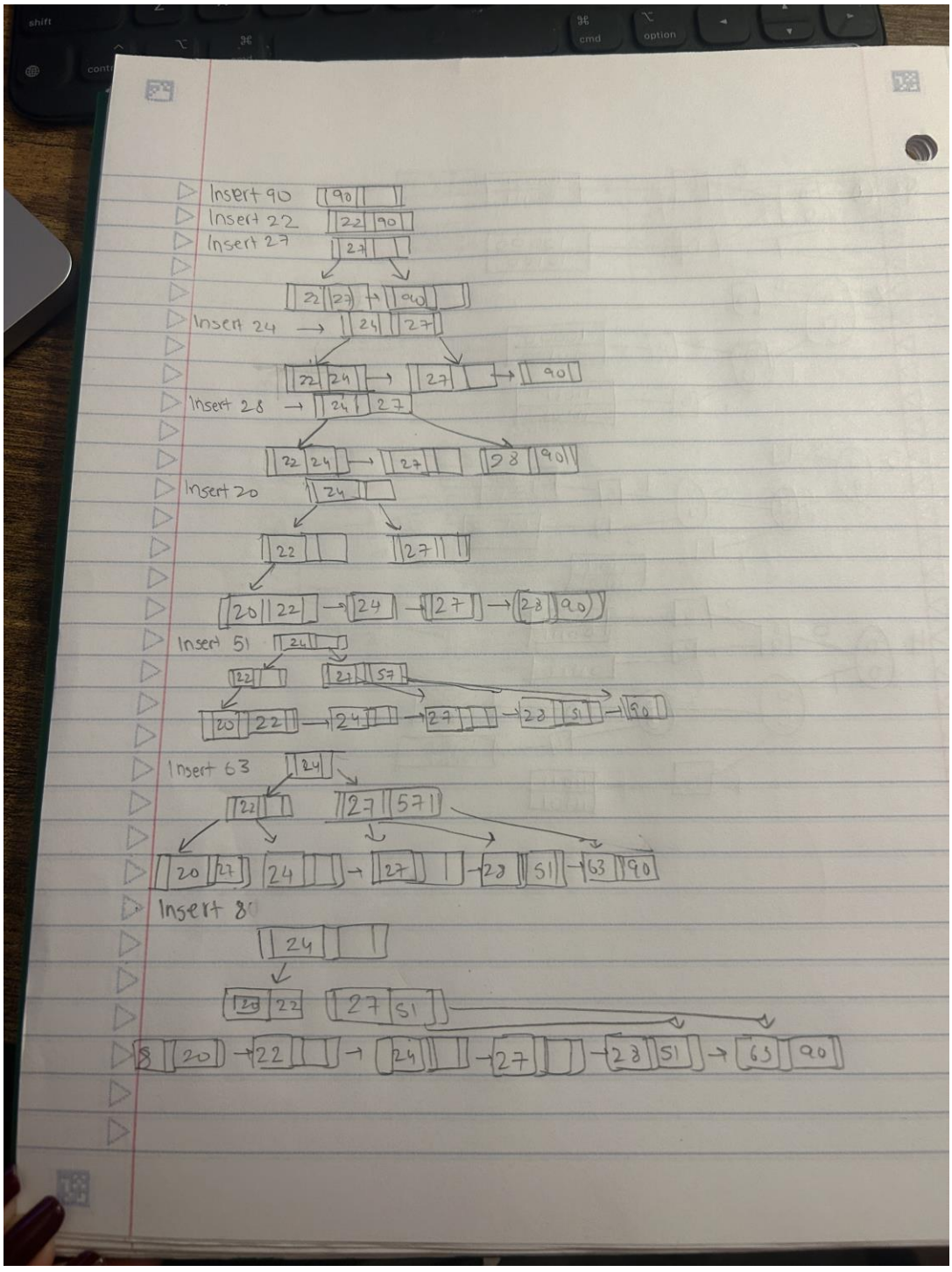
Load the records into files using Dynamic Hashing Scheme. You can put two records per block. Show the directory at each step, and the global and local depths.

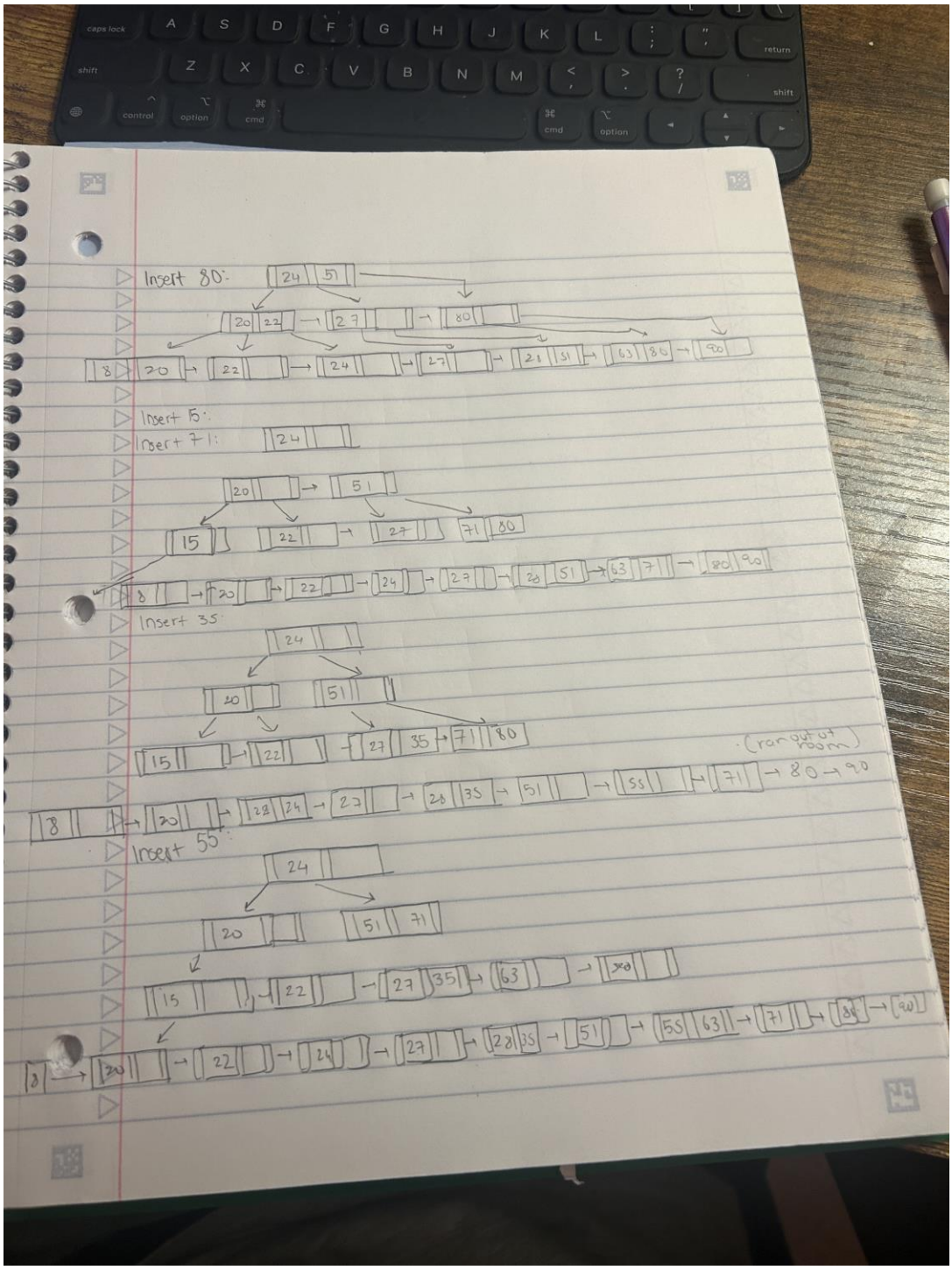


Question 3:

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

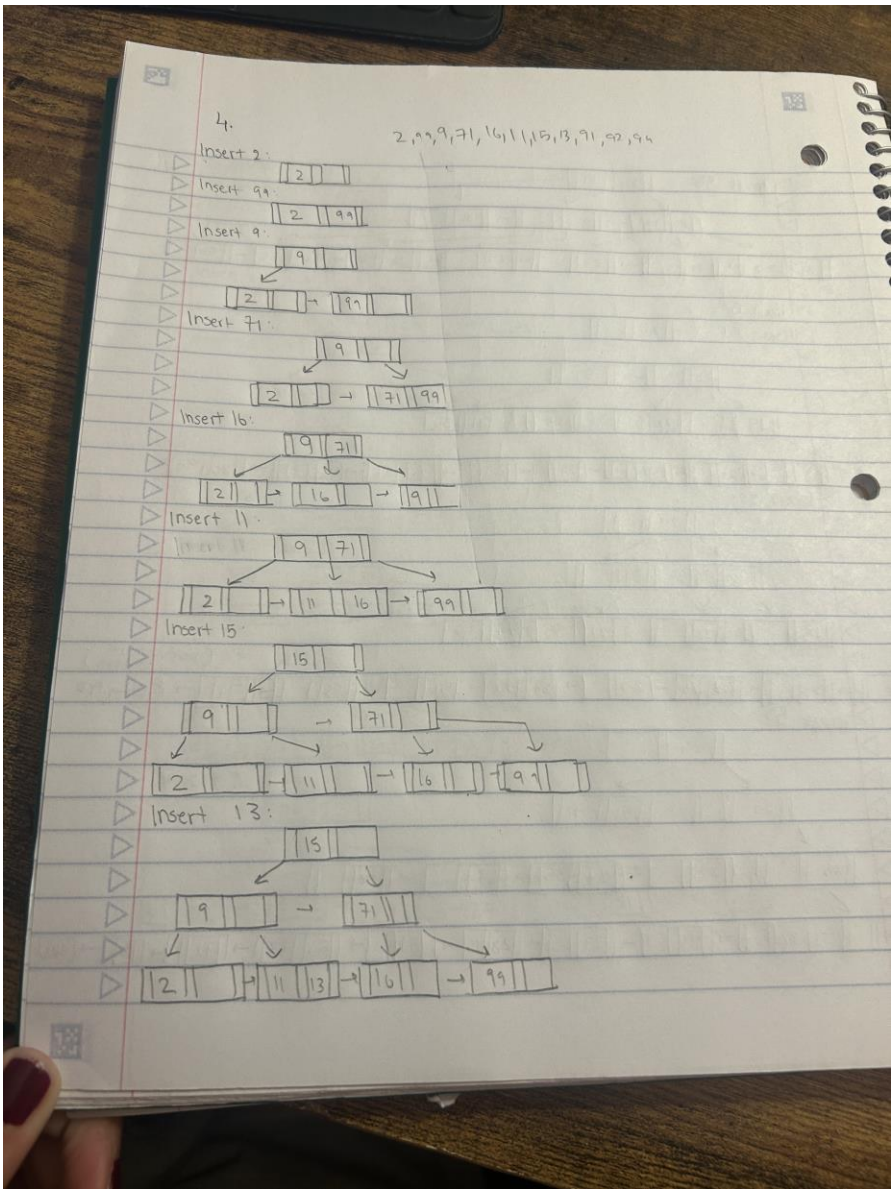

Insert 90
Insert 22
Insert 27
Insert 24
Insert 28
Insert 20
Insert 51
Insert 63
Insert 8

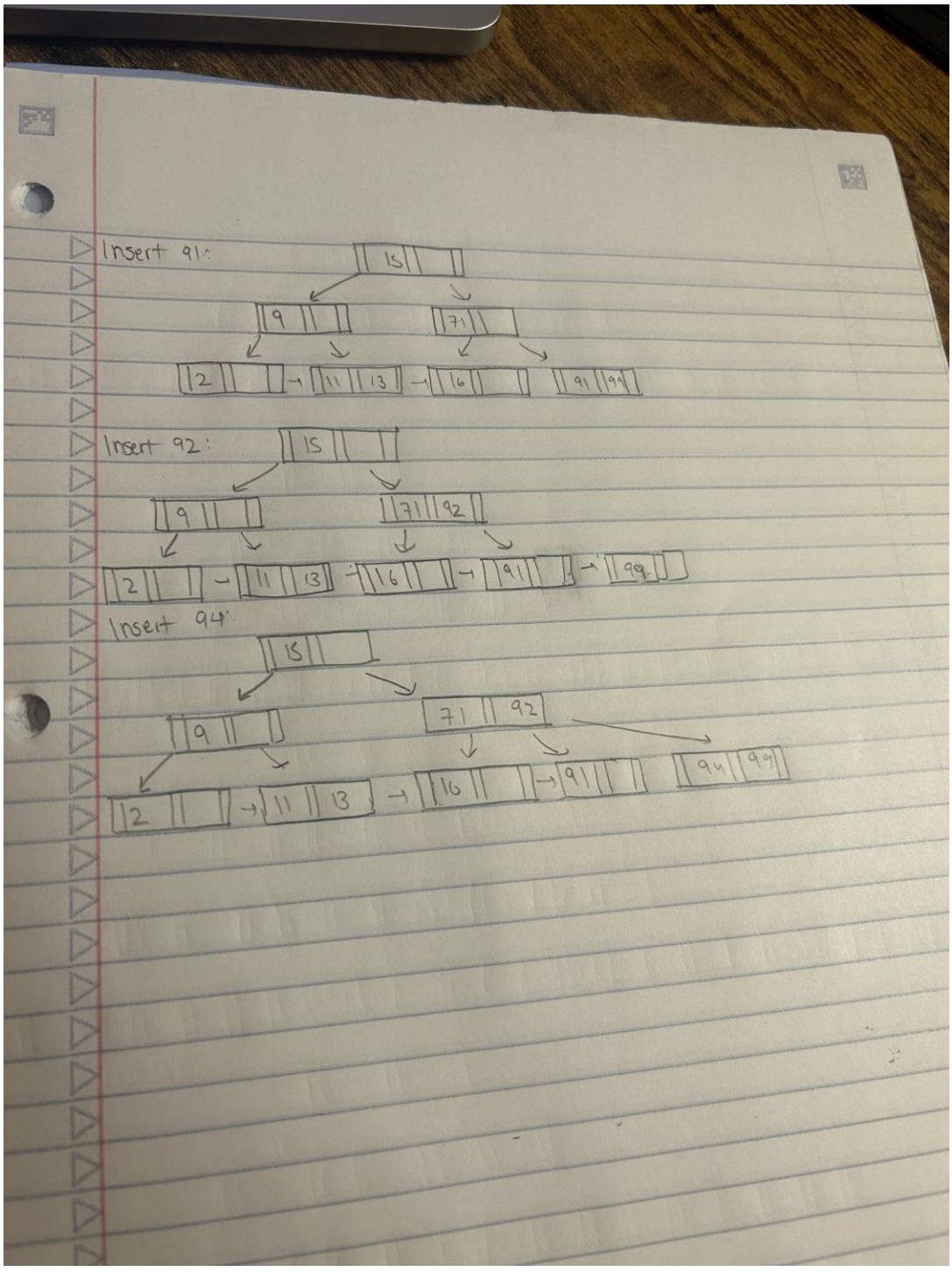


Question 4:

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

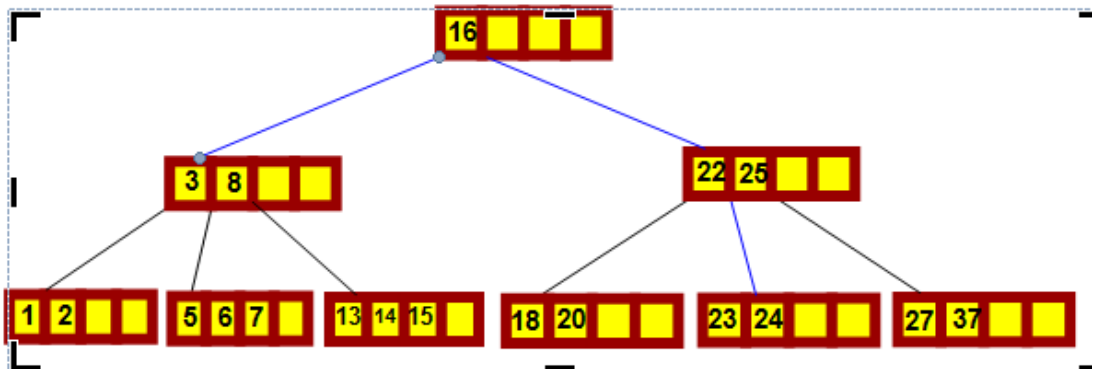

4.
2, 99, 9, 71, 16, 11, 15, 13, 91, 92, 94
Insert 2:
Insert 99:
Insert 9:
Insert 71:
Insert 16:
Insert 11:
Insert 15:
Insert 13:

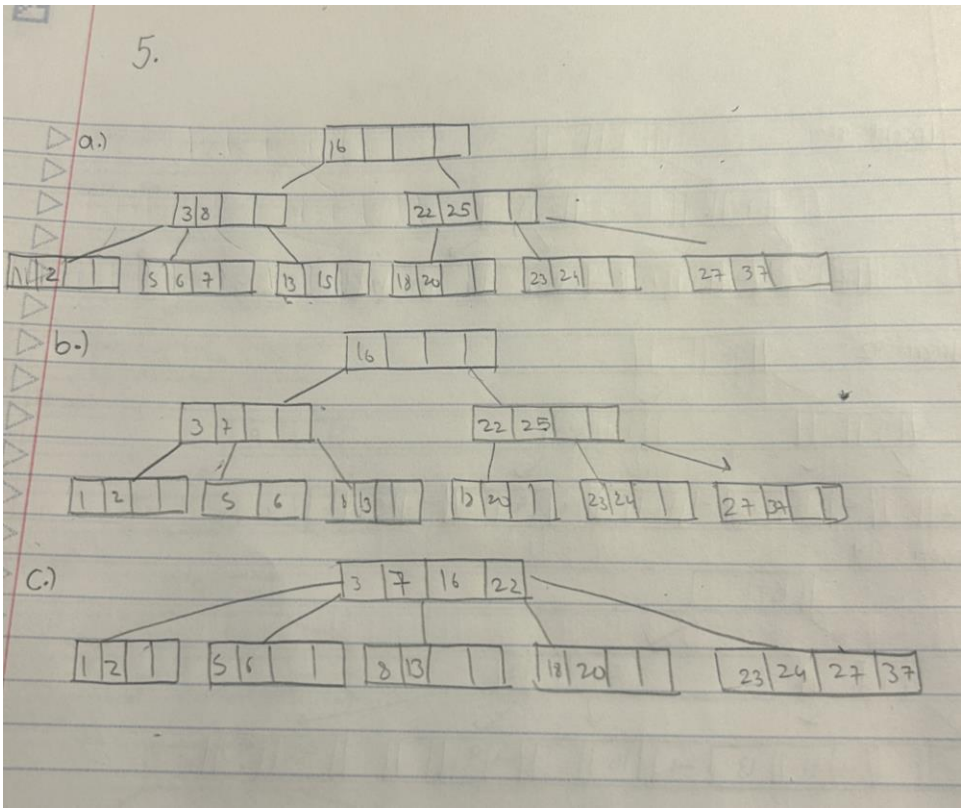

Insert 91:
15
9
71
2
11
13
16
91
99
Insert 92:
15
9
71
92
2
11
13
16
91
99
Insert 94:
15
9
71
92
2
11
13
16
91
94
99

Question 5:

Consider the following B-tree.

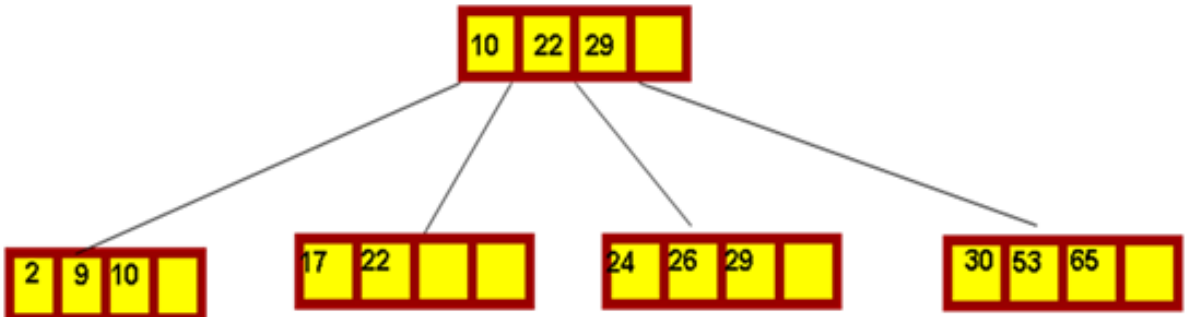
a) Redraw the tree after deleting 14.
b) Again, redraw the tree after deleting 15.
c) Again, redraw the tree after deleting 25.





Question 6:

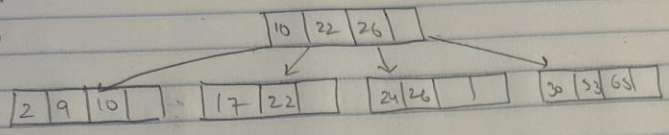
Consider the following B+ tree:



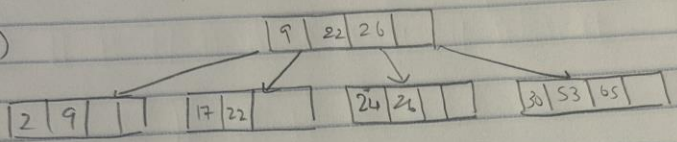
a) Delete 29 and redraw the tree after that
b) Next delete 10 and redraw the tree after that
c) Next delete 26 and redraw the tree after that
d) Next delete 24 and redraw the tree after that
e) Next delete 9 and redraw the tree after that

Q6.

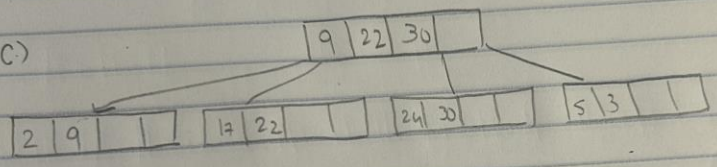
a.)


10 22 26
2 9 10
17 22
24 26
30 53 65

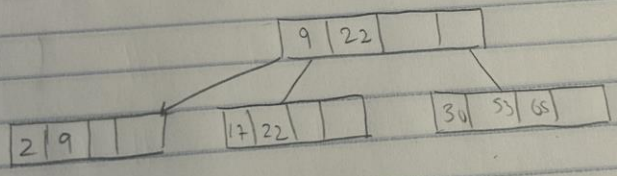
b.)


9 22 26
2 9
17 22
24 26
30 53 65

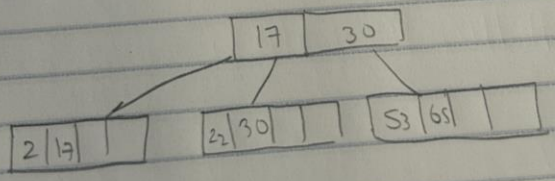
c.)


9 22 30
2 9
17 22
24 30
5 3

d.)


9 22
2 9
17 22
30 53 65

e.)


17 30
2 17
22 30
53 65