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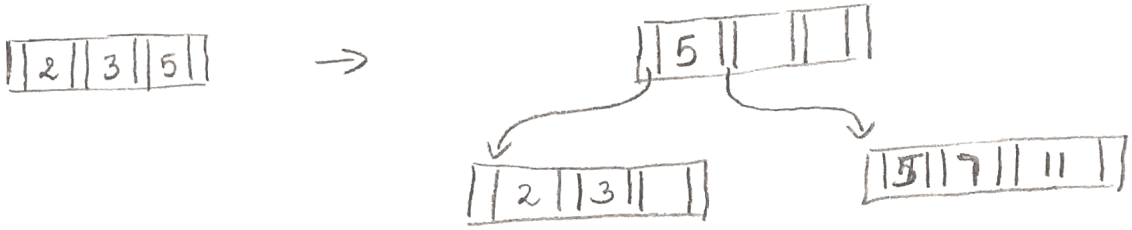
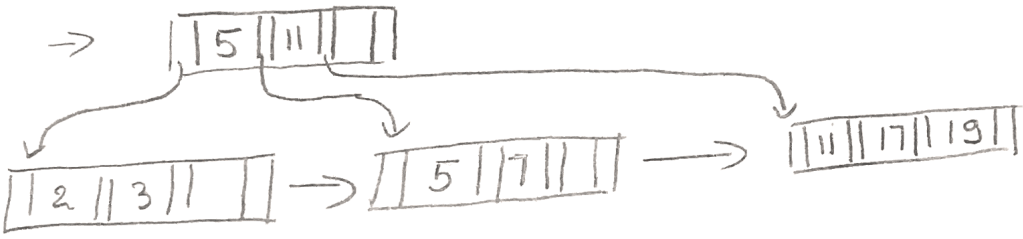
11 .3 Construct a B+-tree for the following set of key values: (2, 3, 5, 7, 11, 17, 19, 23, 29, 31) Assume that the tree is initially empty and values are added in ascending order. Construct B+-trees for the cases where the number of pointers that will fit in one node is as follows:

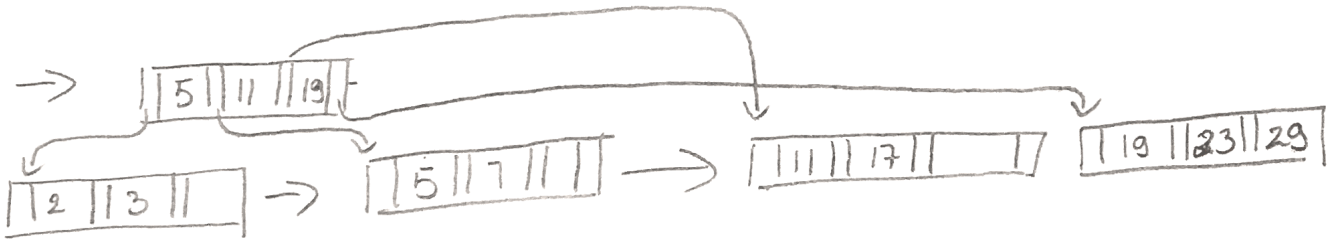
a. Four

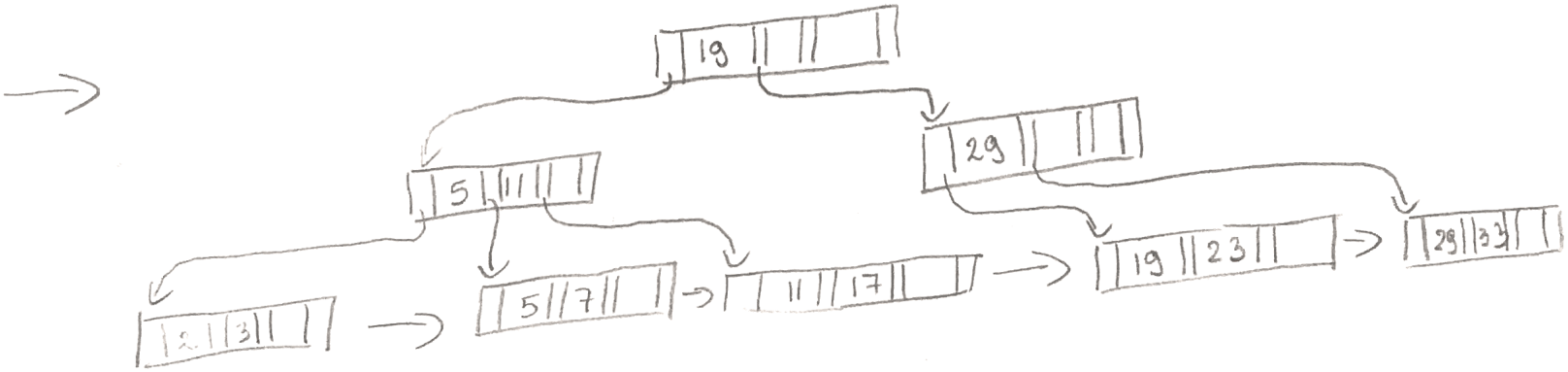
b. Six

a)









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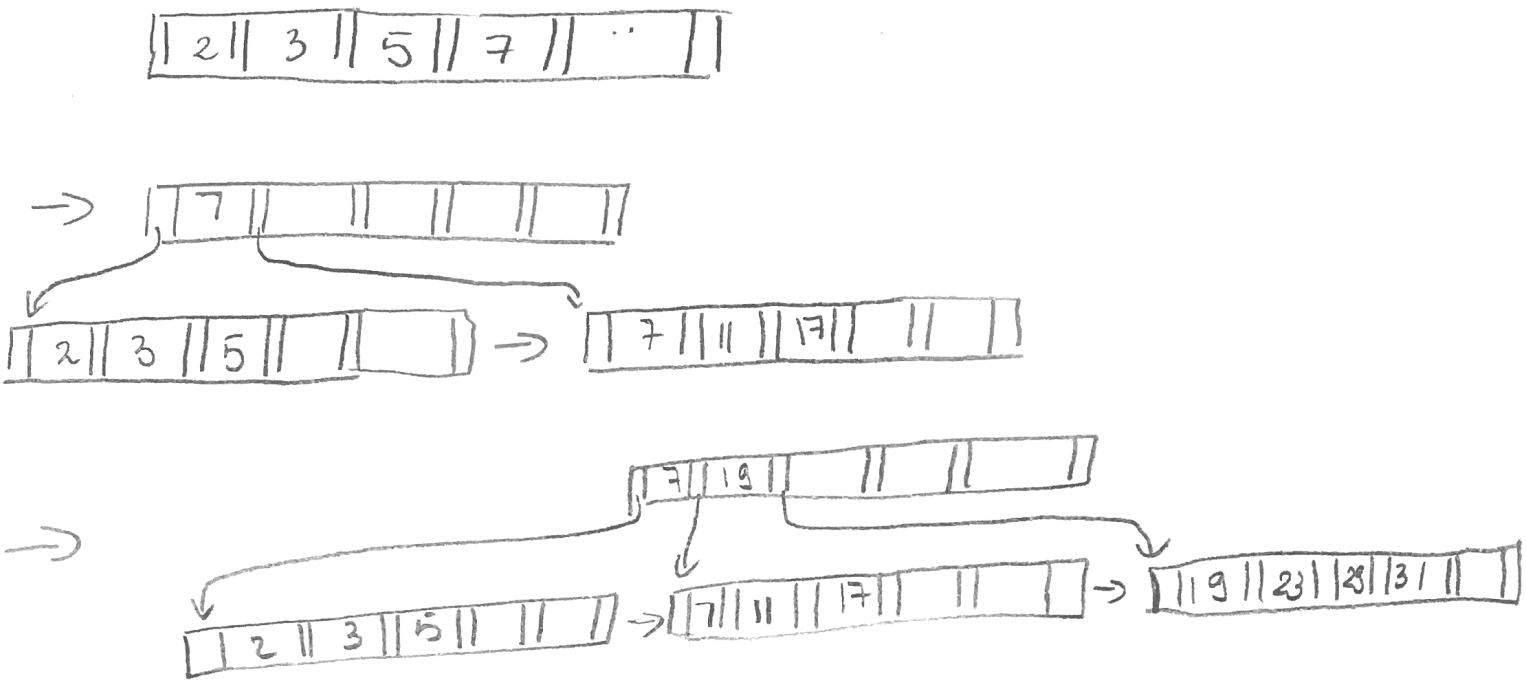
b)



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11.4 For each B+-tree of Practice Exercise 11.3, show the form of the tree after each of the following series of operations:

a. Insert 9.

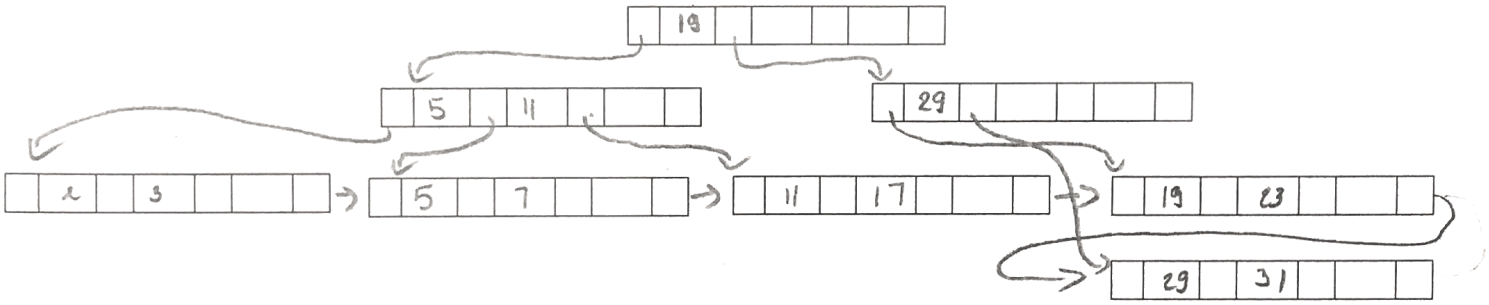
b. Insert 10.

c. Insert 8.

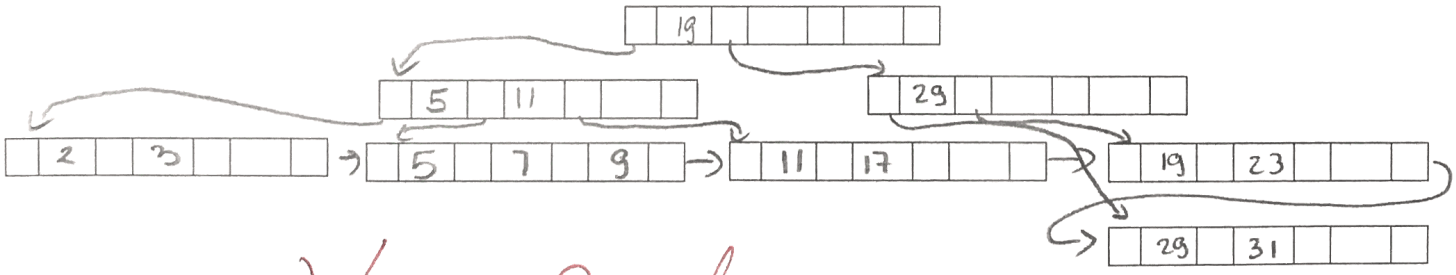
d. Delete 23.

e. Delete 19.

11.3 a



Insert 9



Very Good.

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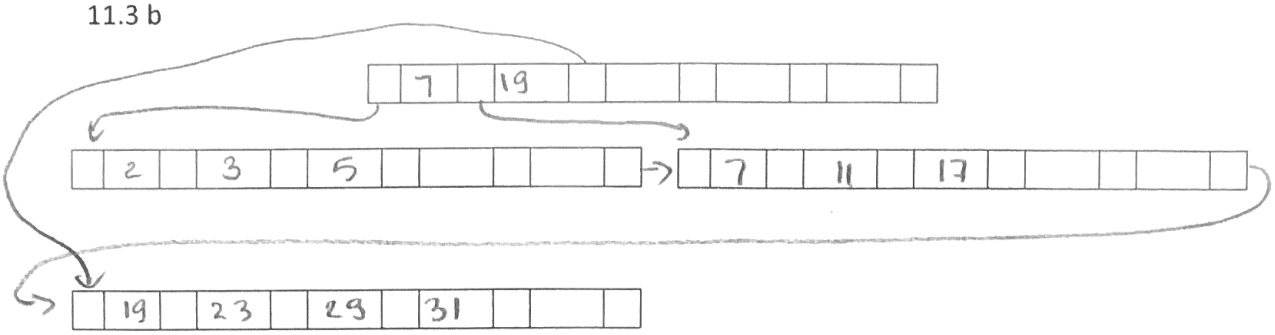
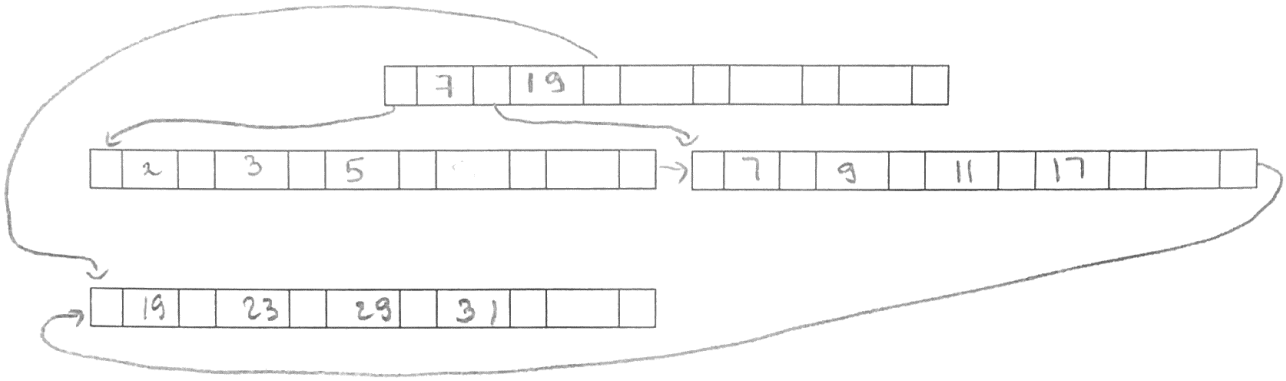
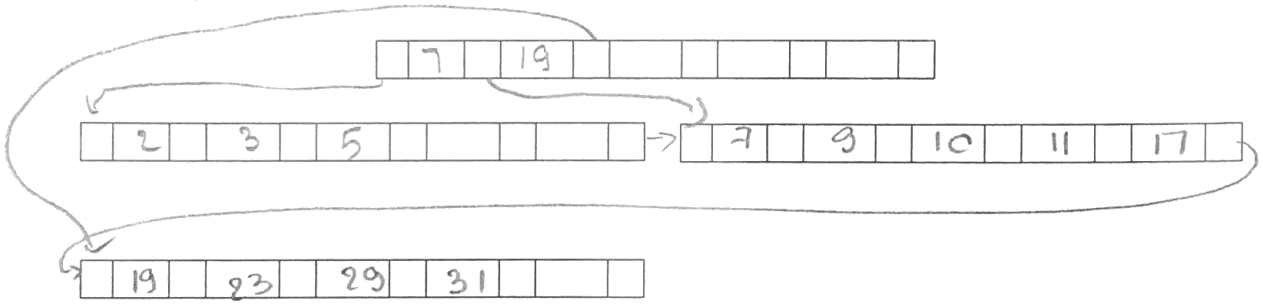
11.3 b



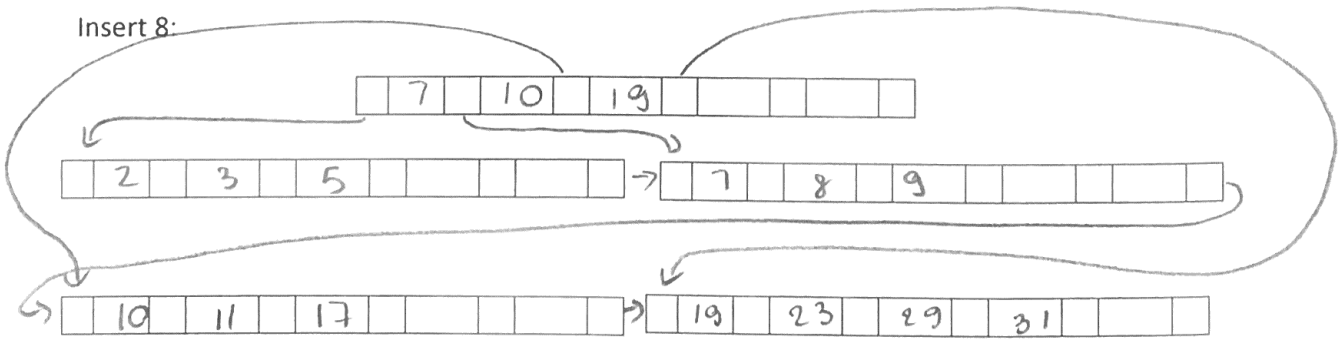
Insert 9:



Insert 10:



Insert 8:



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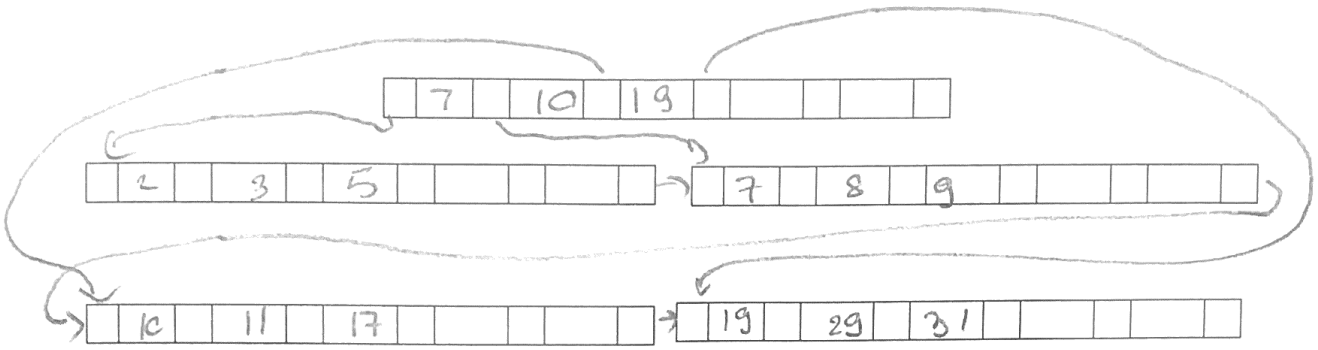
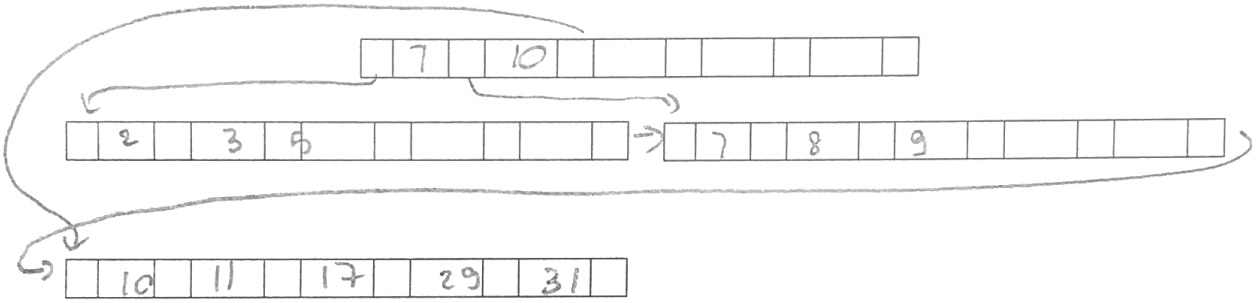
Delete 23:



Delete 19



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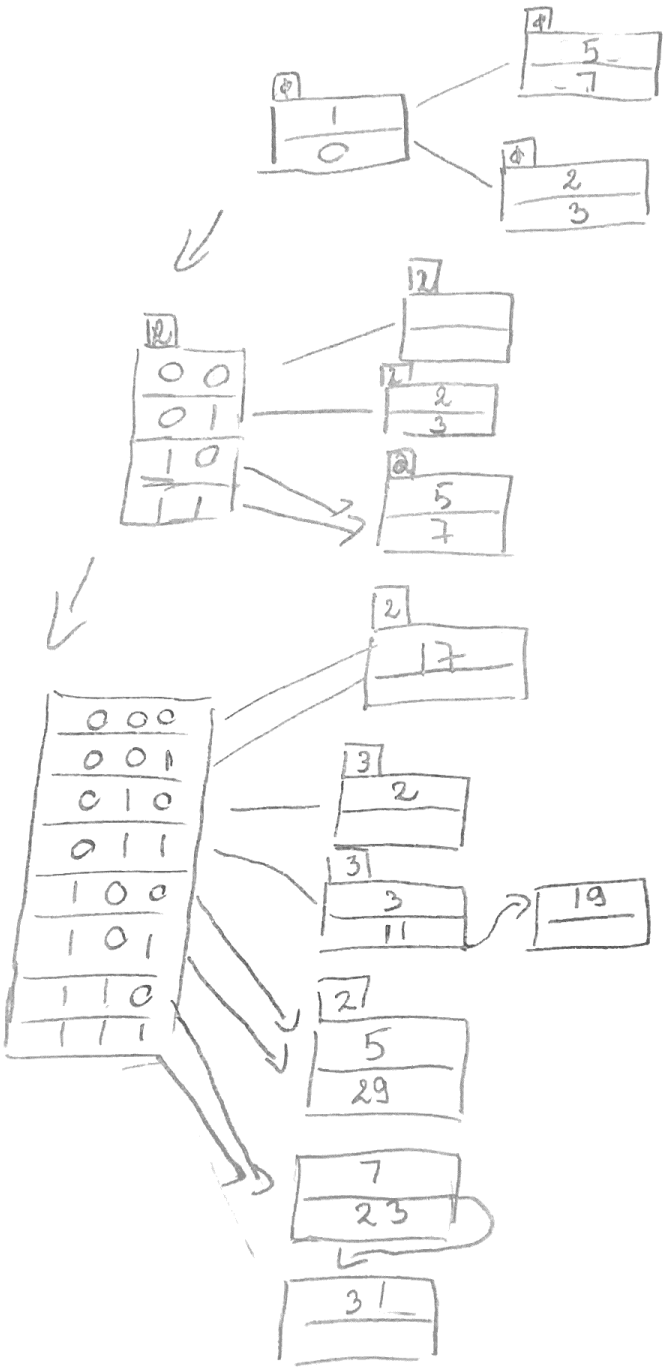
11.6 Suppose that we are using extendable hashing on a file that contains records with the following search-key values: 2, 3, 5, 7, 11, 17, 19, 23, 29, 31 Show the extendable hash structure for this file if the hash function is h(x) = x mod 8 and buckets can hold three records.

2	010
3	011
5	101
7	111
11	011
17	001
19	011
23	111
29	101
31	111



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11.7

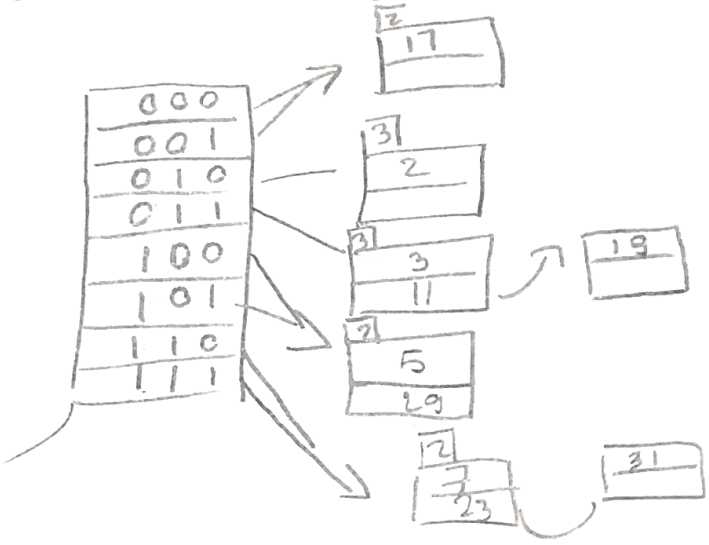
Show how the extendable hash structure of Practice Exercise 11.6 changes as the result of each of the following steps:

a. Delete 11.

b. Delete 31

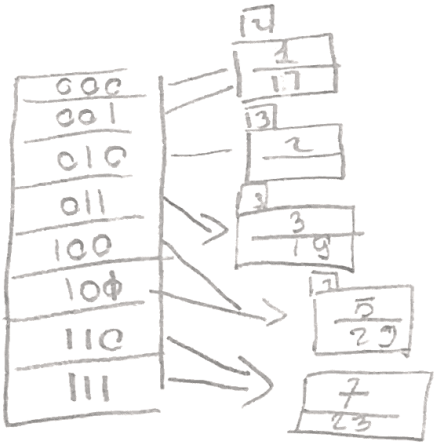
c. Insert 1.

d. Insert 15.

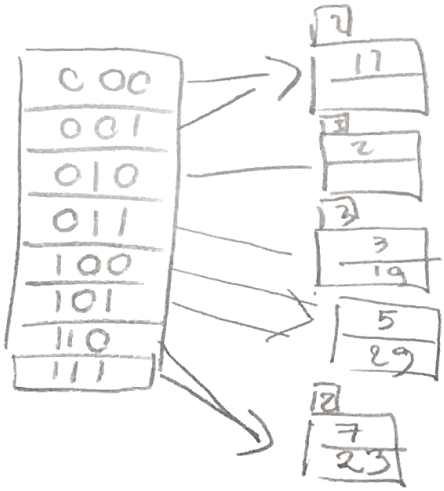


a)

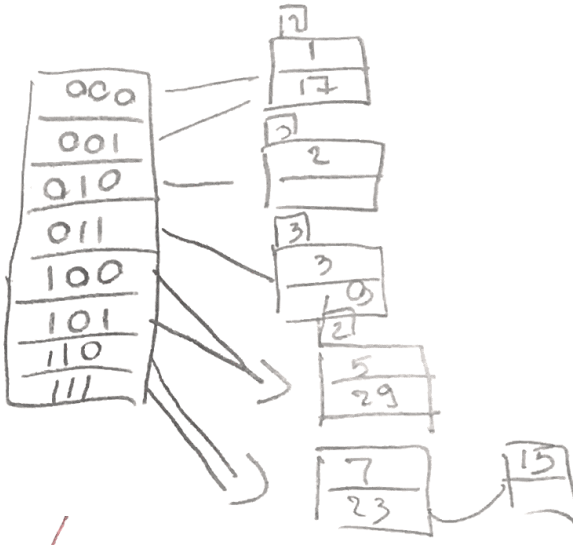
c)



b)



d)



Excellent !