

DB - HW10

14.3

Construct a B^+ -tree for the following set of key values: (2,3,5,7,11,17,19,23,29,31)

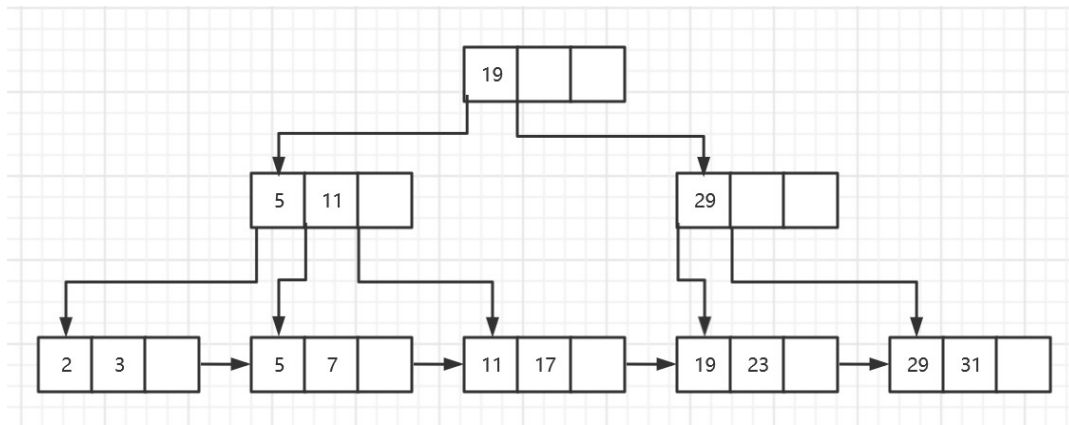
Assume that the tree is initially empty and values are added in ascending order. Construct B^+ -tree for the cases where the number of pointers that will fit in one node is as follows:

a. Four

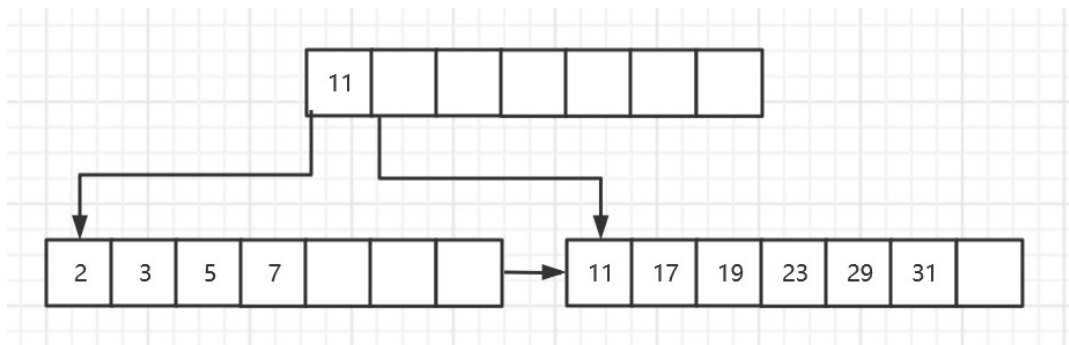
c. Eight

Answer:

a.



c.



14.4

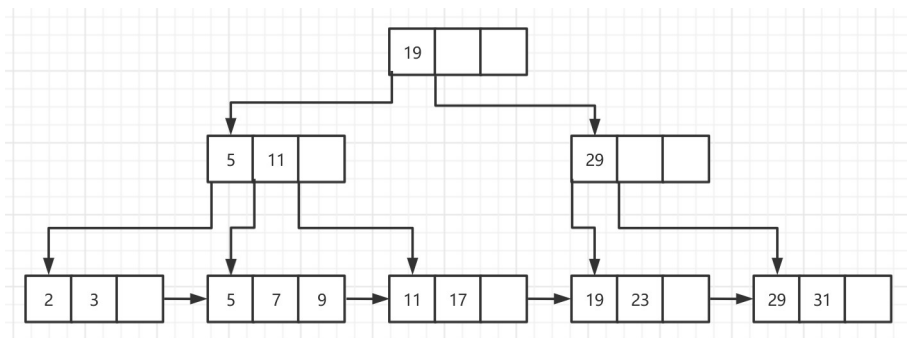
For each B⁺-tree of Exercise 14.3, show the form of the tree after each of the following series of operations:

- Insert 9.
- Insert 10.
- Insert 8
- Delete 23.
- Delete 19.

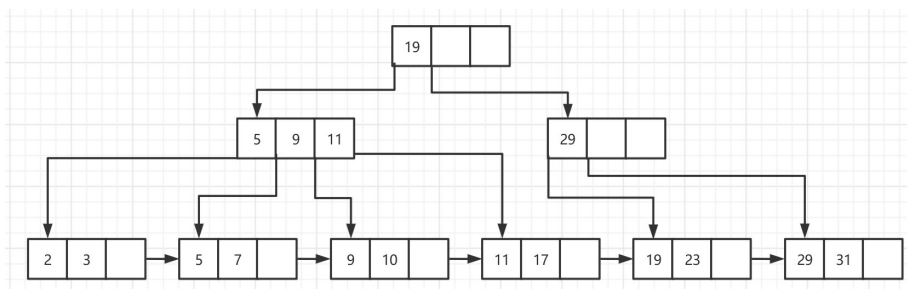
Answer:

- The number of pointers that will fit in one node is FOUR

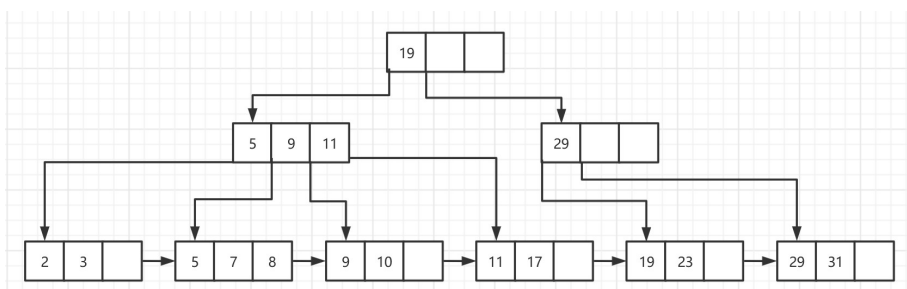
- a. Insert 9



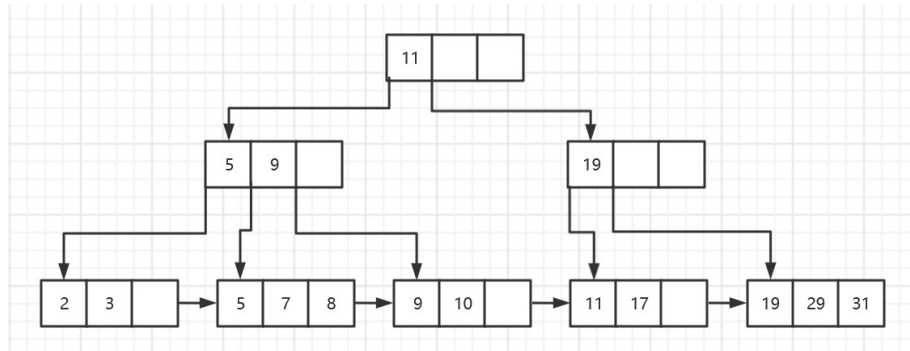
- b. Insert 10



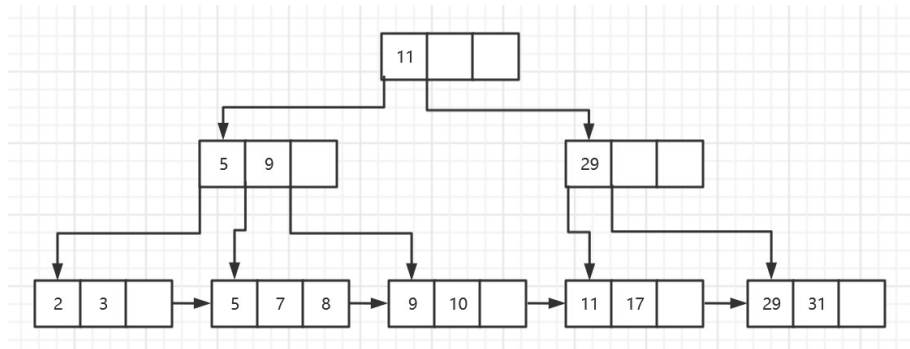
- c. Insert 8



- d. Delete 23

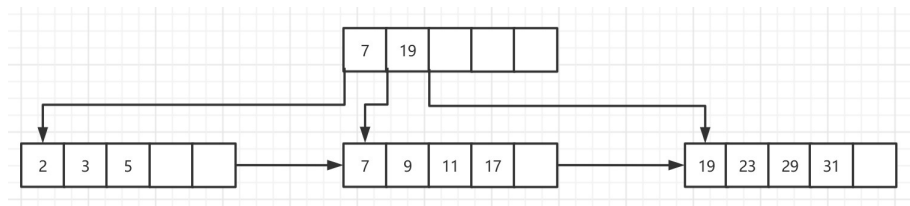


- e. Delete 19

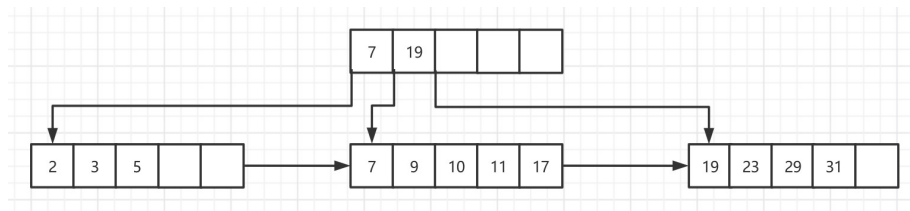


- The number of pointers that will fit in one node is SIX

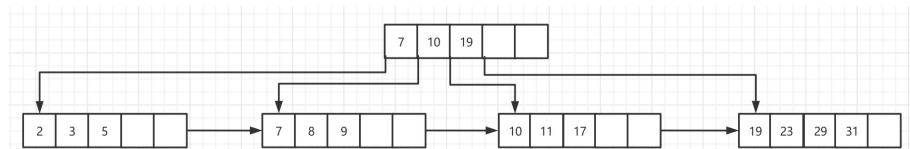
- a. Insert 9



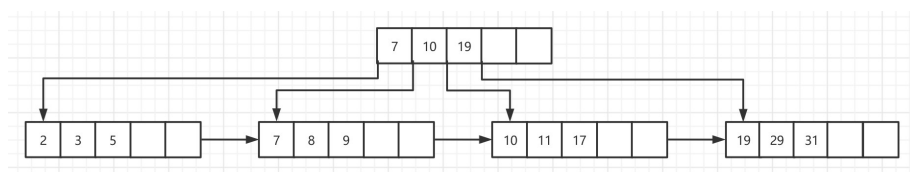
- b. Insert 10



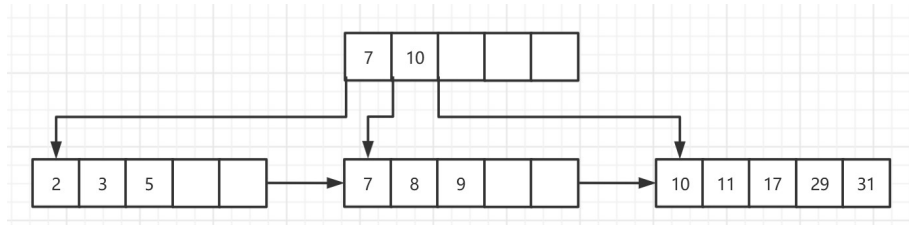
- c. Insert 8



- d. Delete 23

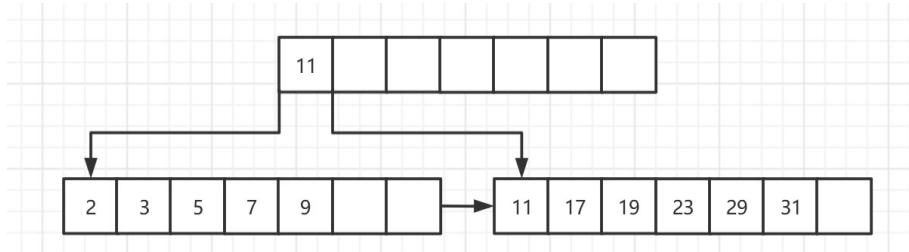


- e. Delete 19

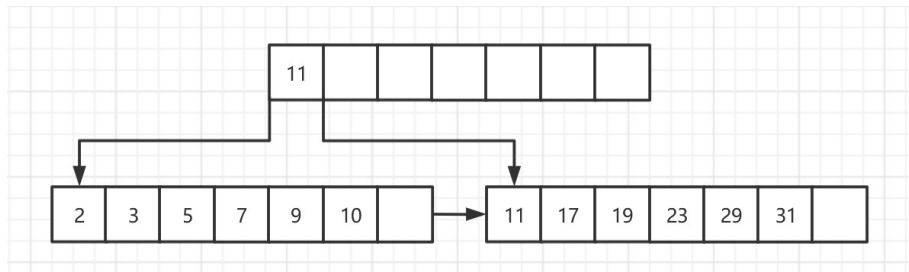


- The number of pointers that will fit in one node is EIGHT

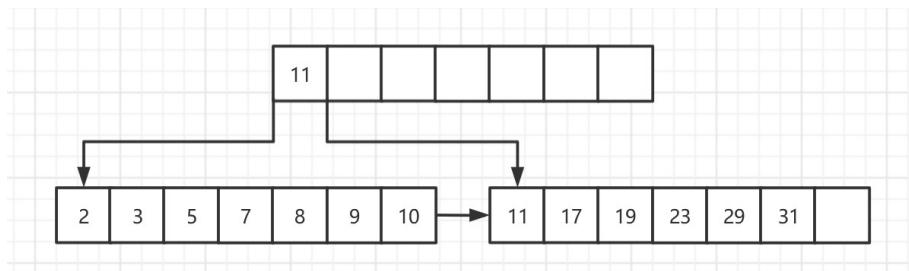
- a. Insert 9



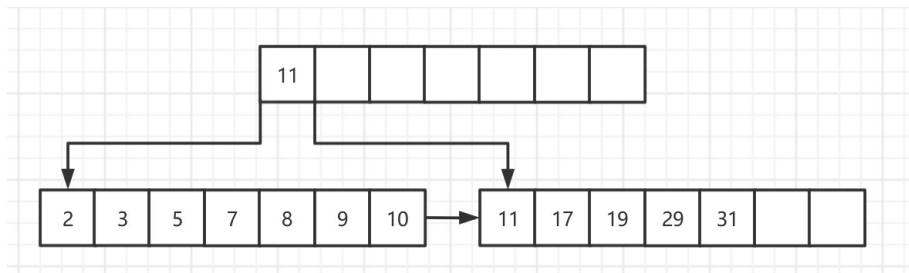
- b. Insert 10



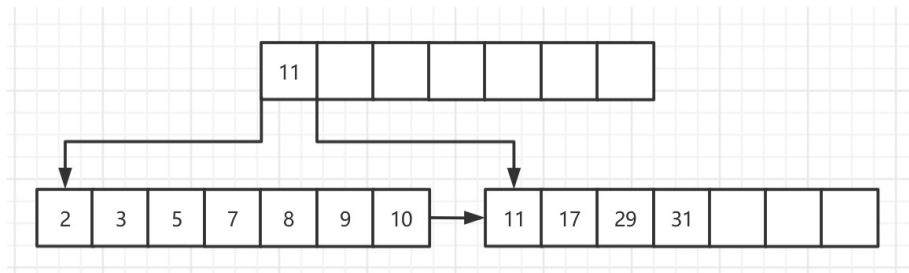
- c. Insert 8



- d. Delete 23



- e. Delete 19



14.17

What is the difference between a clustering index and a secondary index?

Answer:

- Clustering Index
 - Can only be created on only one attribute which has specified sequential order — the primary key or attribute possessing unique values.
 - There can only be one clustering index.
 - The leaf nodes stores the information of the entire row.
- Secondary Index
 - Can be created on one or many attributes, and there can be duplicates.
 - There can be many secondary indexes.
 - The leaf nodes stores only the value of assigned key and clustered key.