10.8

I would adopt a hash table, which would work in a constant time to locate a block

10.14

a

They may be set to 0 for safety. In fact, they would not be accessed due to the bit map.

b

We can store the null bitmap at first, then the offset and the length of non-null attributes and finally the value of non-null attributes. In this manner, null attributes occupy only one single bit and non-null attributes can be retrieved according to the null bitmap.

10.17

a

Advantages:

- Simplifying the organization
- Taking full advantage of the file system that the operating system provides

Disadvantages:

- Fetching related relations takes a longer time
- The improvement of performance may be restricted and some organizations cannot be achieved in this manner, like multitable clustering file organization

b

Advantages:

- Some organizations may be adopted to improve performance in such manner
- Fetching related relations takes a shorter time

Disadvantages:

- May cause complex data processing when retrieving data
- Updating even a single tuple results in updating the whole file, and the file system provided by the operating system needs modification to store everything in a file
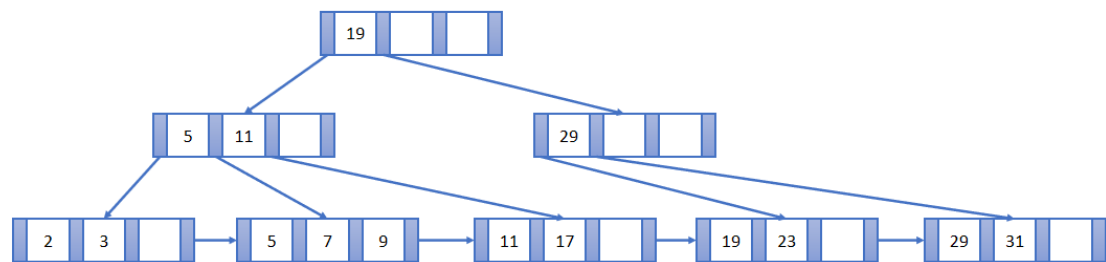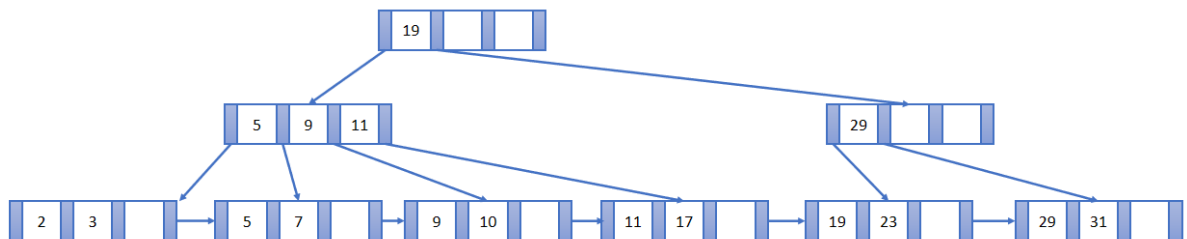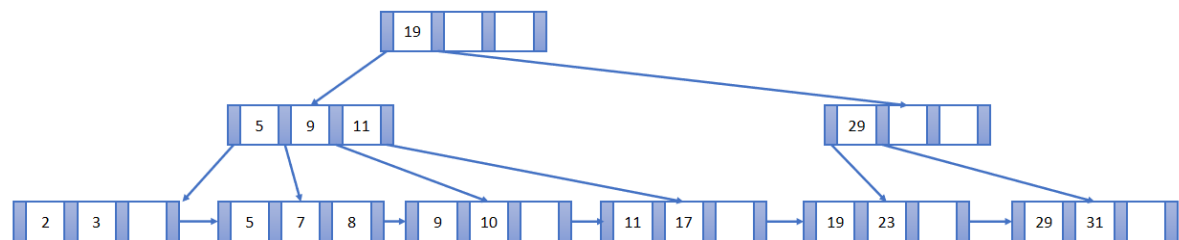
11.3

a

11.4
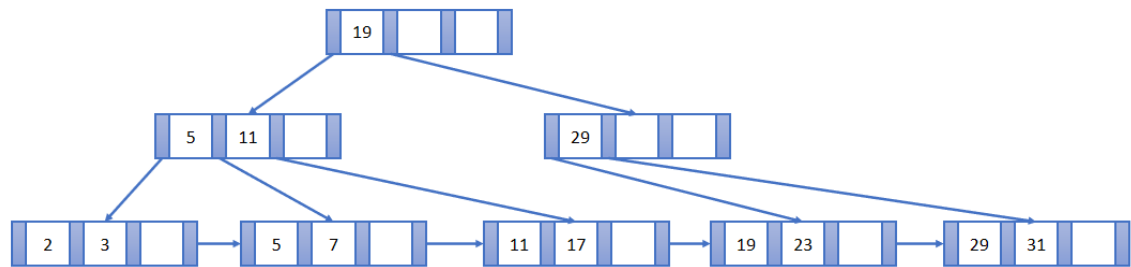
a. Insert 9

b. Insert 10

c. Insert 8

d. Delete 23

e. Delete 19