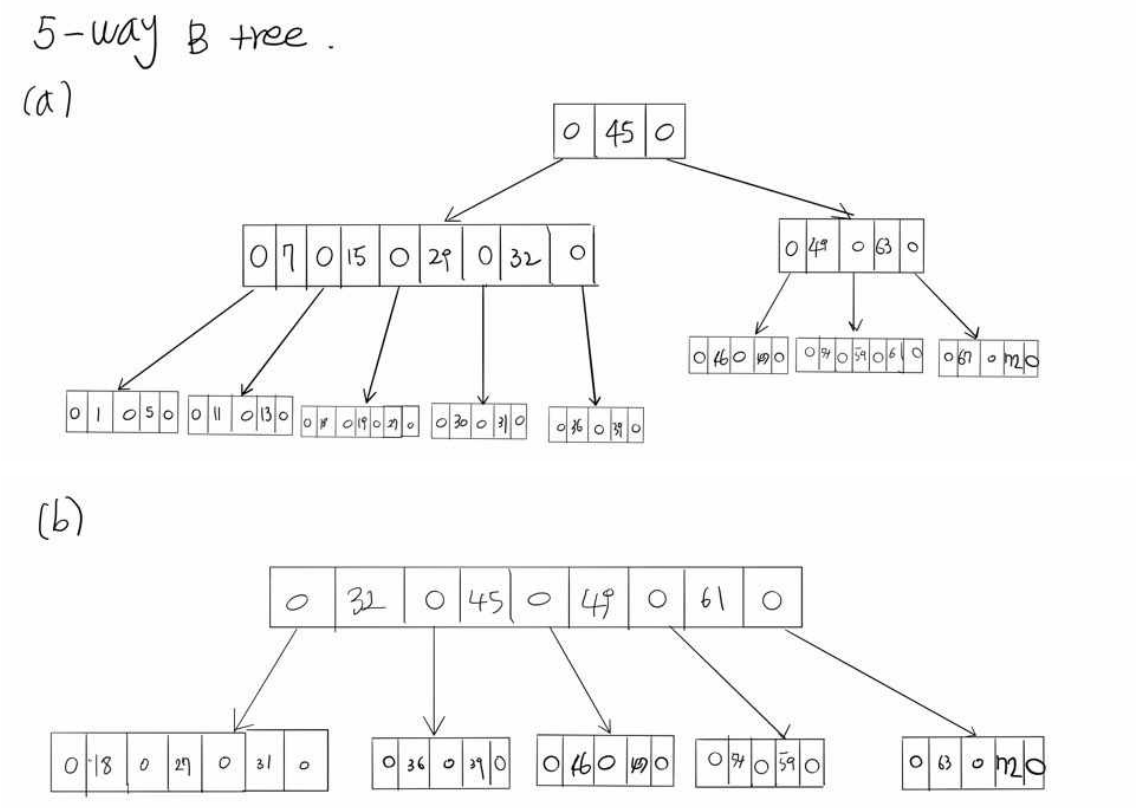
Review Questions

1.There are three reasons why m must be large in a b tree. First, Disk access is very slow. So we should be able to fetch a large amount of data in one disk access. Second, Disk is a block-oriented device. It means data is organized and retrieved in therms of blocks. And then M represents the maximum number of data items that can be stored in a single block. More the data stored in a block, lesser the time needed to move it into the main memory. Third, a large value of m minimizes the height of the tree. So, search algorithm become really fast.

2. ①In B tree, search keys are not repeated, but in the B+ tree search keys are redundant. ②In B tree, data is stored in internal or leaf node, but In B+ tree data is stored only in leaf nodes. ③In B tree, searching takes more time as data may be found in a leaf or non-leaf node but In B+ tree searching data is very easy as the data can be found in leaf nodes only.

3. When we need both random and sequential access to record. And we want to make a simple operation than B tree operation.

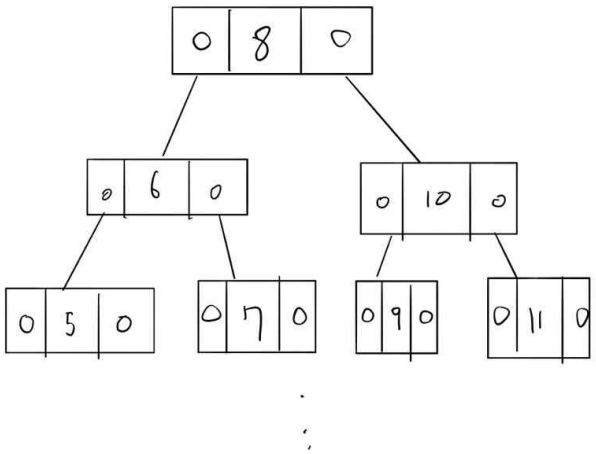
8.



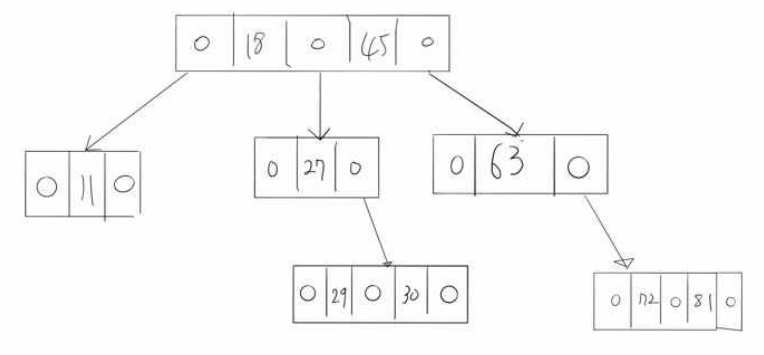
11. When we have to search an un-indexed and unsorted database that contains n key values. The worst case running time to perform this operation would be O(n). In contrast, if the data in the database is indexed with a B tree, the same search operation will run in O(log n).

12.

As shown in the figure below, the root node has two children. The values of the remaining nodes except for the root node are 1, and the children have 2. Therefore, it has the form of a full binary tree.



13.



Multiple-choice Questions

1.(b)
2.(a)
3.(c)
4.(c)
5.(c)

True or False

1. T
2. T
3. F
4. F
5. F
6. T
9. F

Fill in the blanks

1. M, M-1
2. m, m-1
3. m/2
4. B tree