

## Database Homework 7

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### 11.2

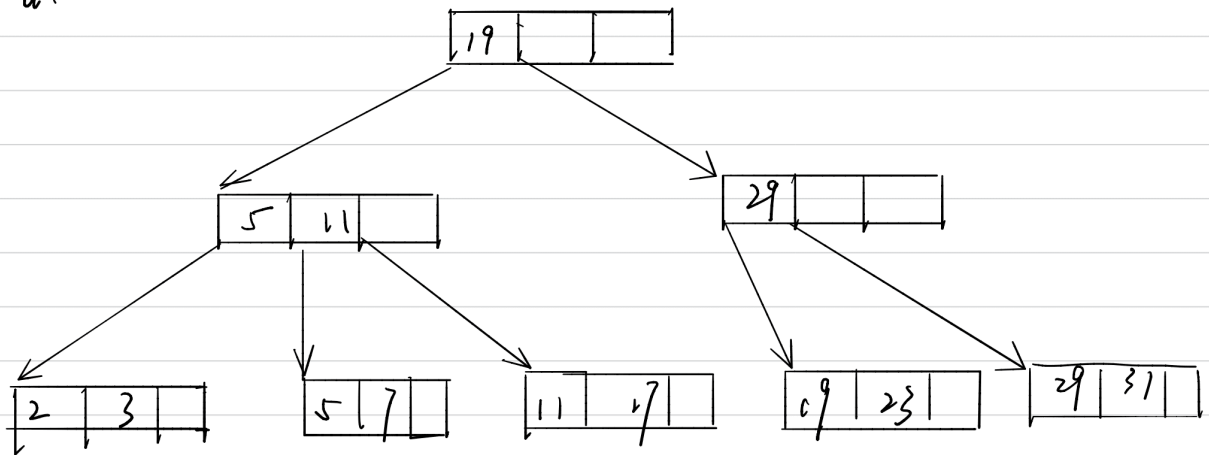
This is not possible.

Because clustering indices determined the physical sequence of each relation. For each relation, there's only one order to store its physical data.

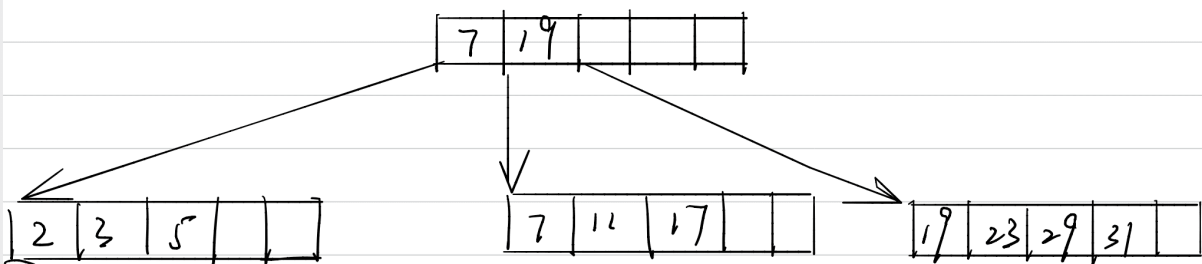
### 11.3

The trees is shown as follows:

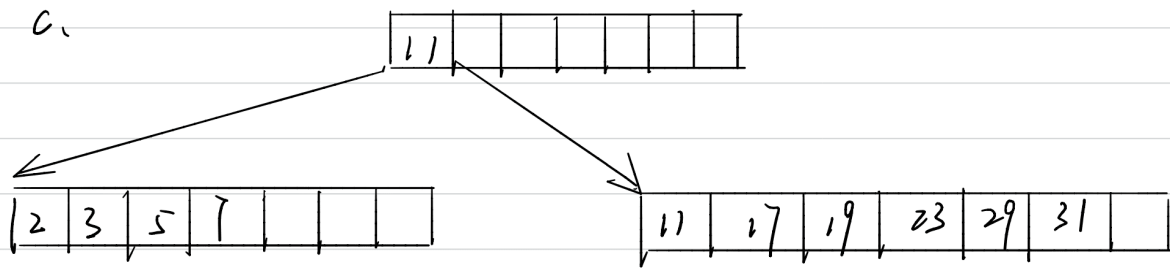
a.



b.

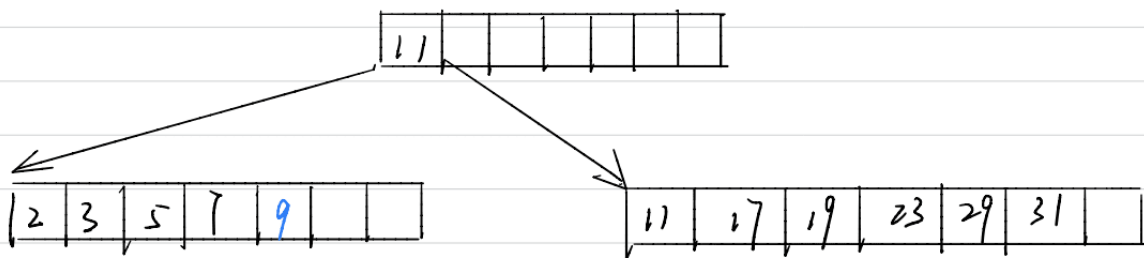
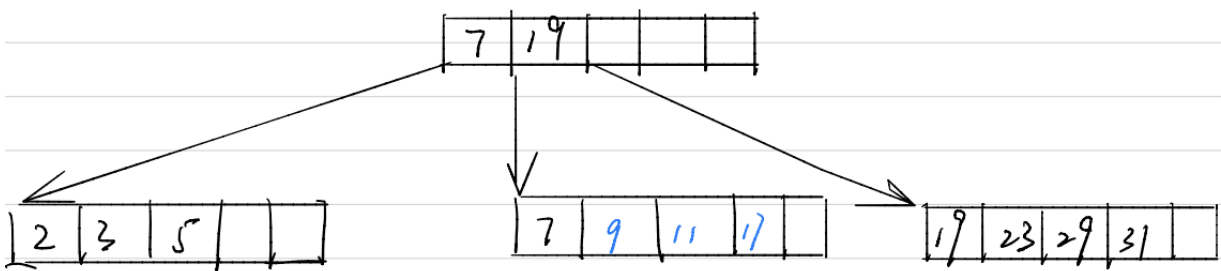
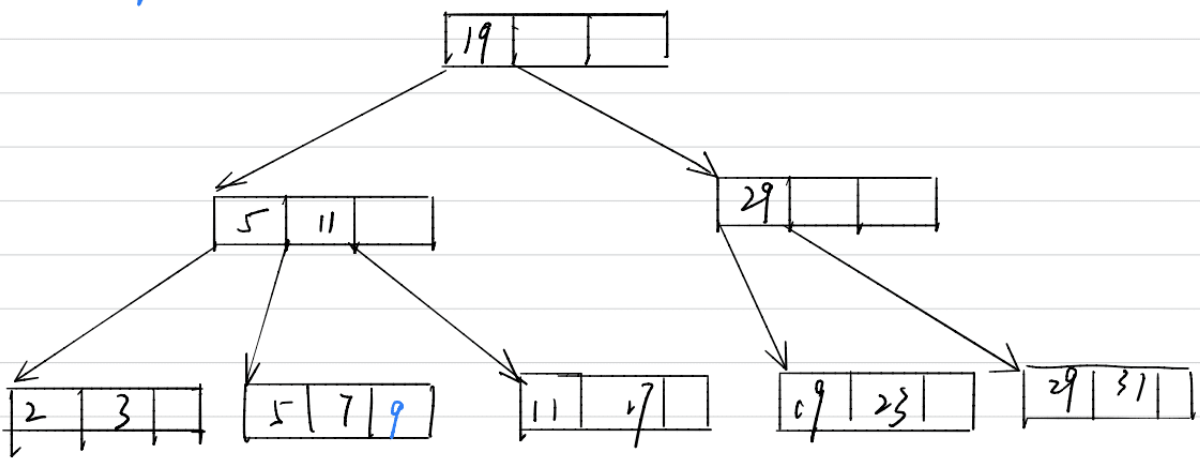


c.

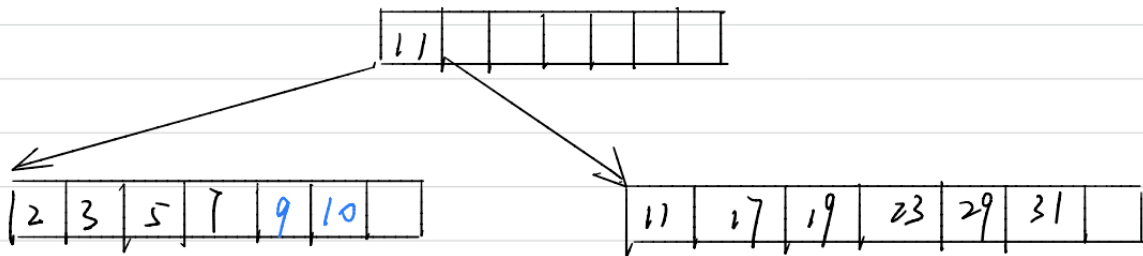
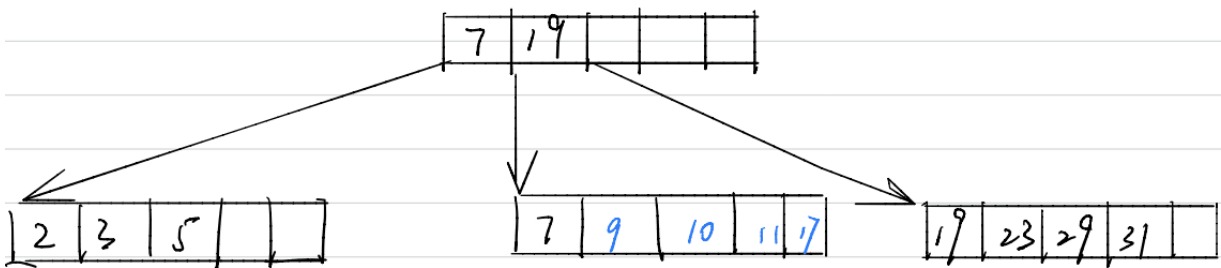
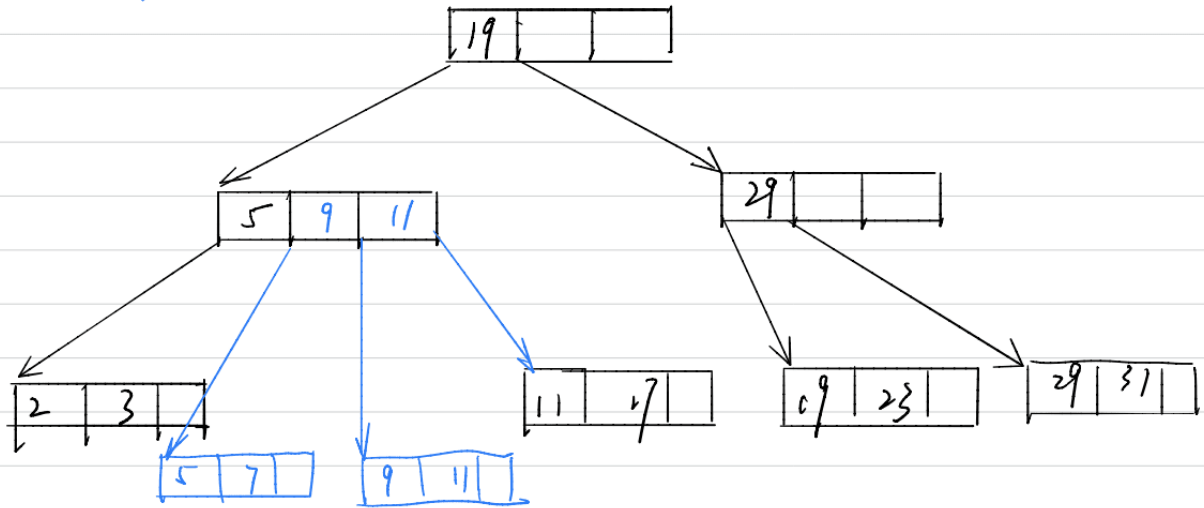


#### • 11.4

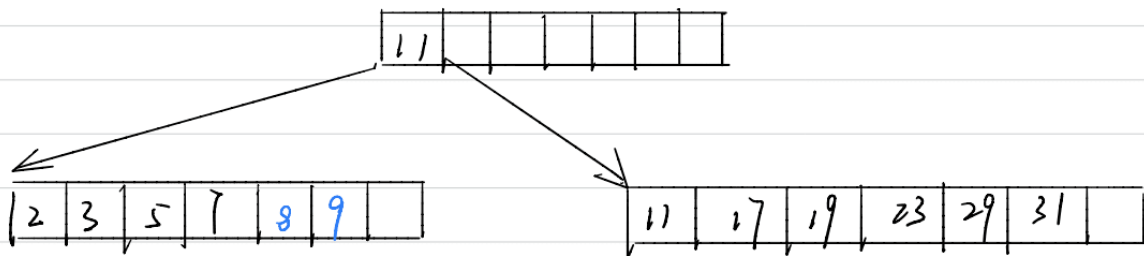
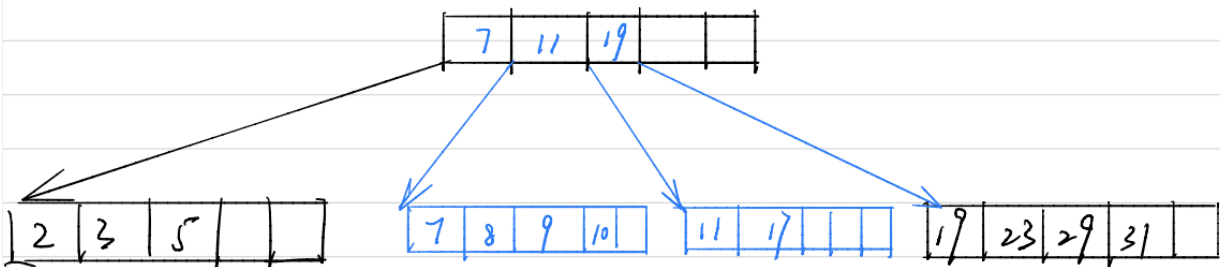
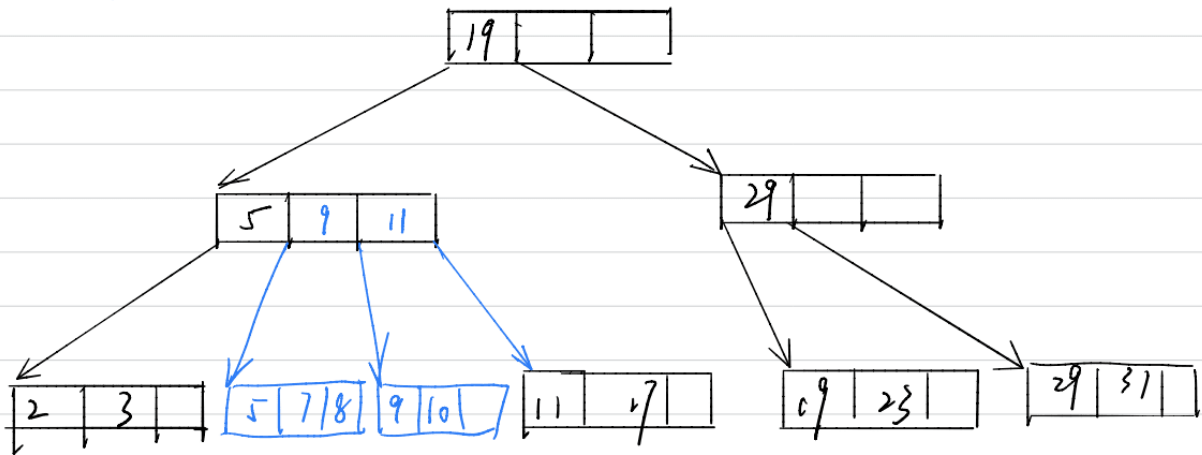
Insert 9:



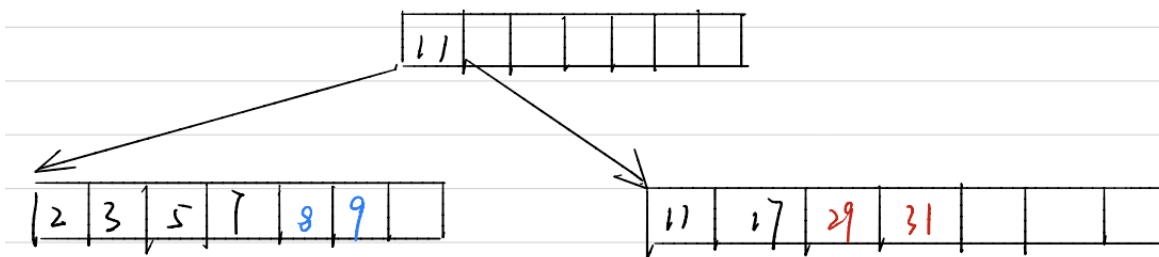
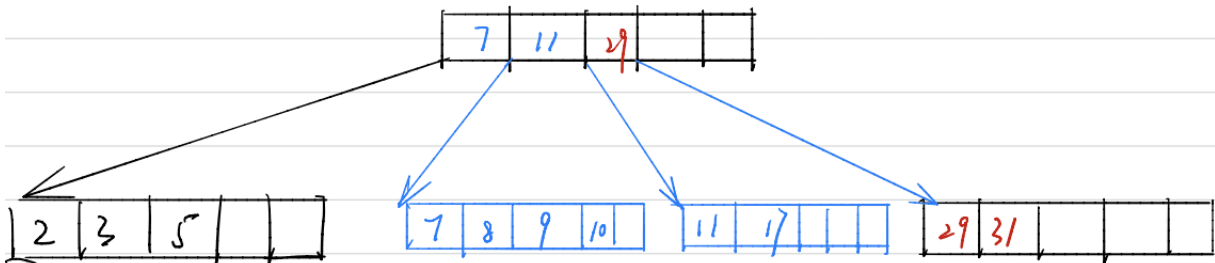
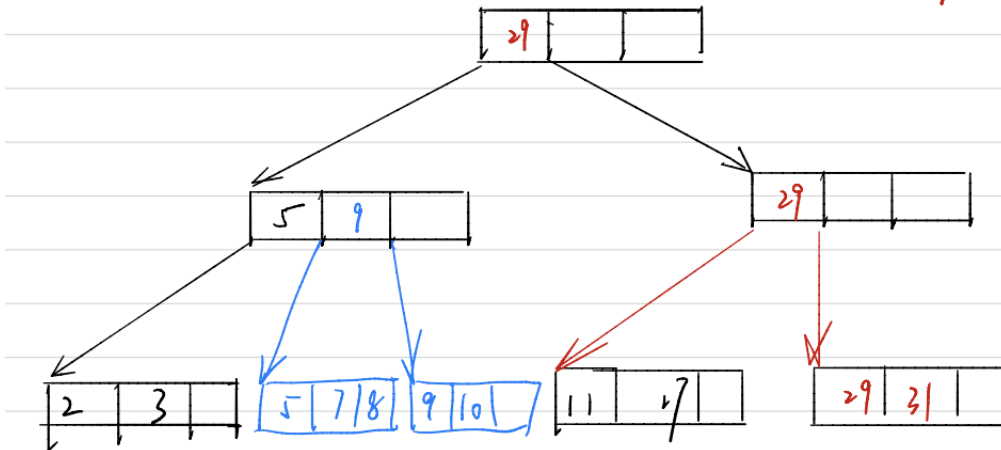
Insert 9 → Insert 10:

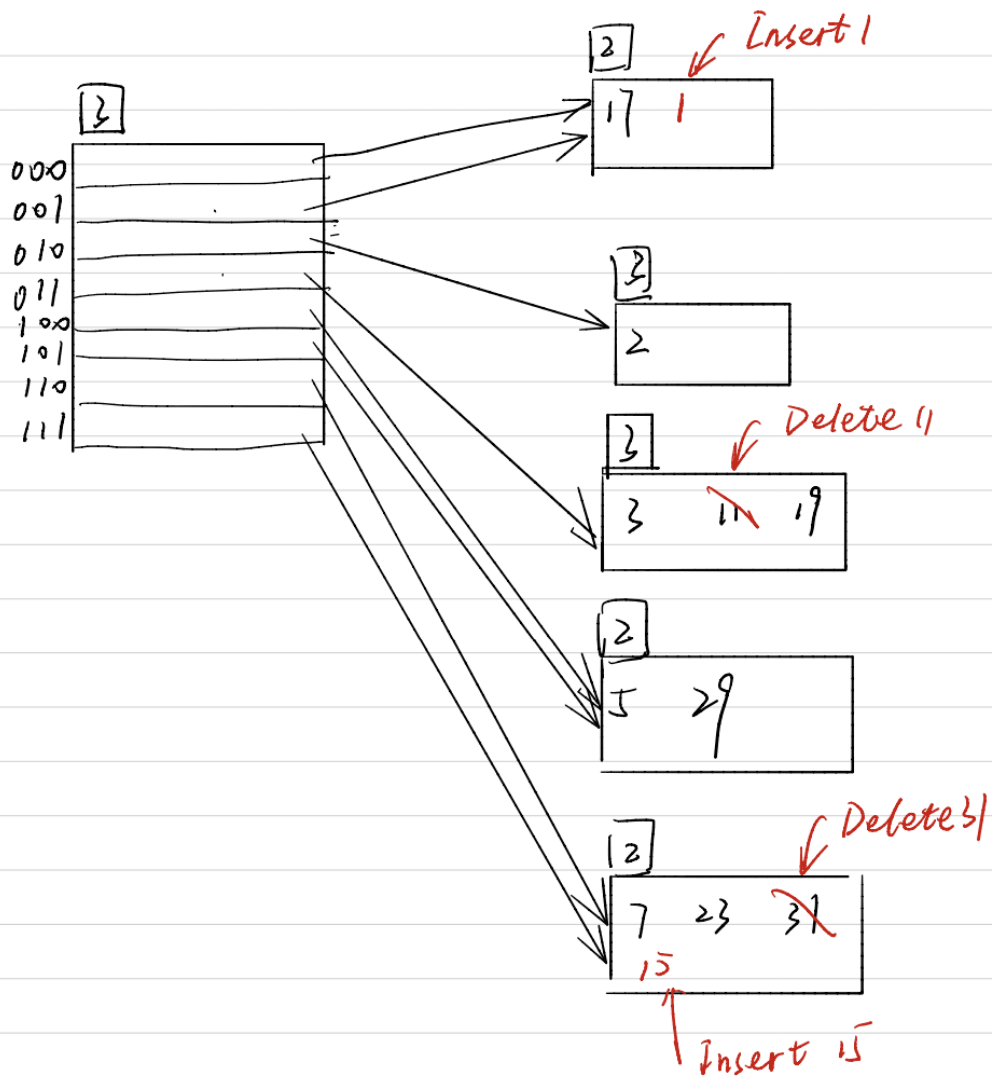


Insert 9 → Insert 10 → Insert 8



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





## 1.11

a. The bitmap index is:

salary	Bitmap index
Below 50000	001000000000
50000 - Below 60000	000000000000
60000 - Below 70000	100010010000
70000 - Above	010101101111

b.

1. Construct bitmap index for dept\_name :

dept_name	Bitmap index
Comp. Sci.	100000100010
Finance	010000001000
Music	001000000000
Physics	000101000000
History	000010010000
Biology	000000000100
Elec. Eng.	000000000001

2. Use  $Finance \cap 70000$  – Above we get: 010000001000 .
3. Then traverse the result after apply and computation with index which satisfies salary > 80000 .

## • 11.23

To index strings, we can only store the prefix of string on non-leaf nodes that is enough to distinguish different strings, and only store the full string in leaf nodes. Like storing 'Will' at a non-leaf node and 'William' at leaf nodes, then 'Willy' and 'Williams' will be son nodes of the same non-leaf node. By this way, the fanout of nodes can be increased.