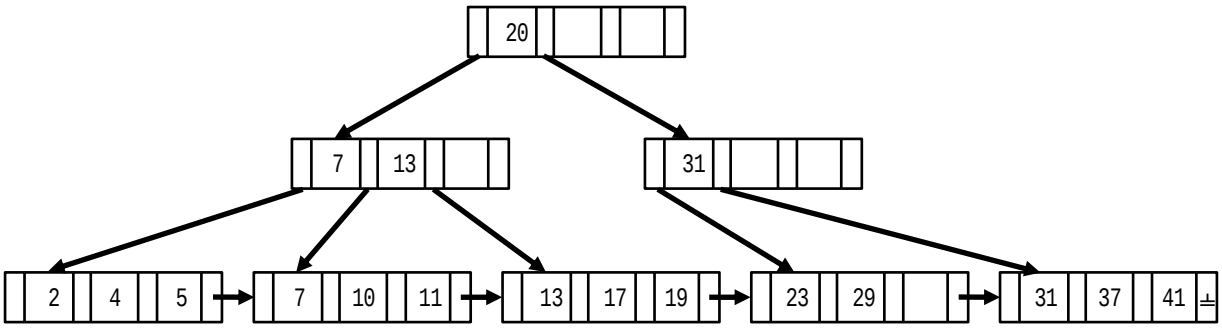
COMP 3311: Database Management Systems

Lecture 13 Exercises
Indexing: B+-tree

Exercise 1: For the B+-tree below with order 2 and fan out 4, show the tree that would result after *successively* applying the following operations in order.

i. insert 3 1 ii. insert 8



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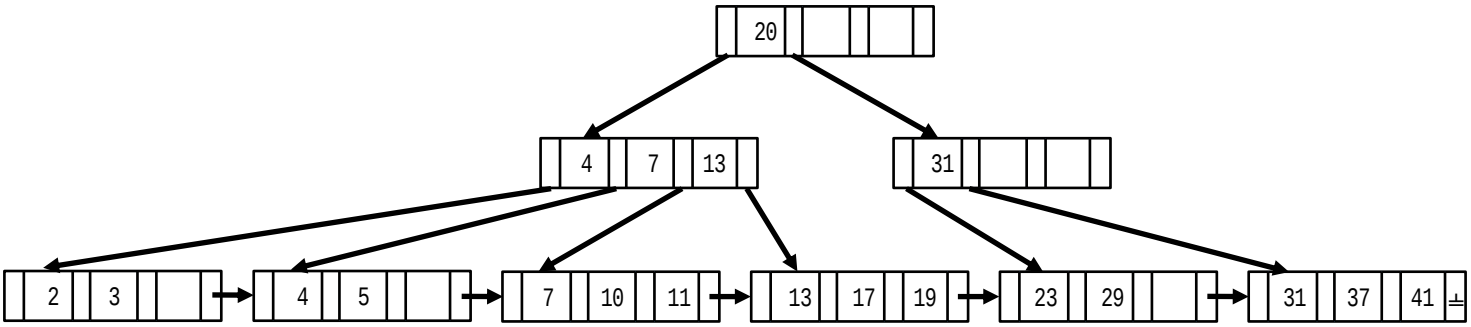
Exercise 2: For the B+-tree below with order 2 and fan out 4, show the tree that would result after *successively* applying the following operations in order.

i. delete 5 ii. delete 3 iii delete 11



Name: _____/_____ **Student#:** _____ **Date:** _____
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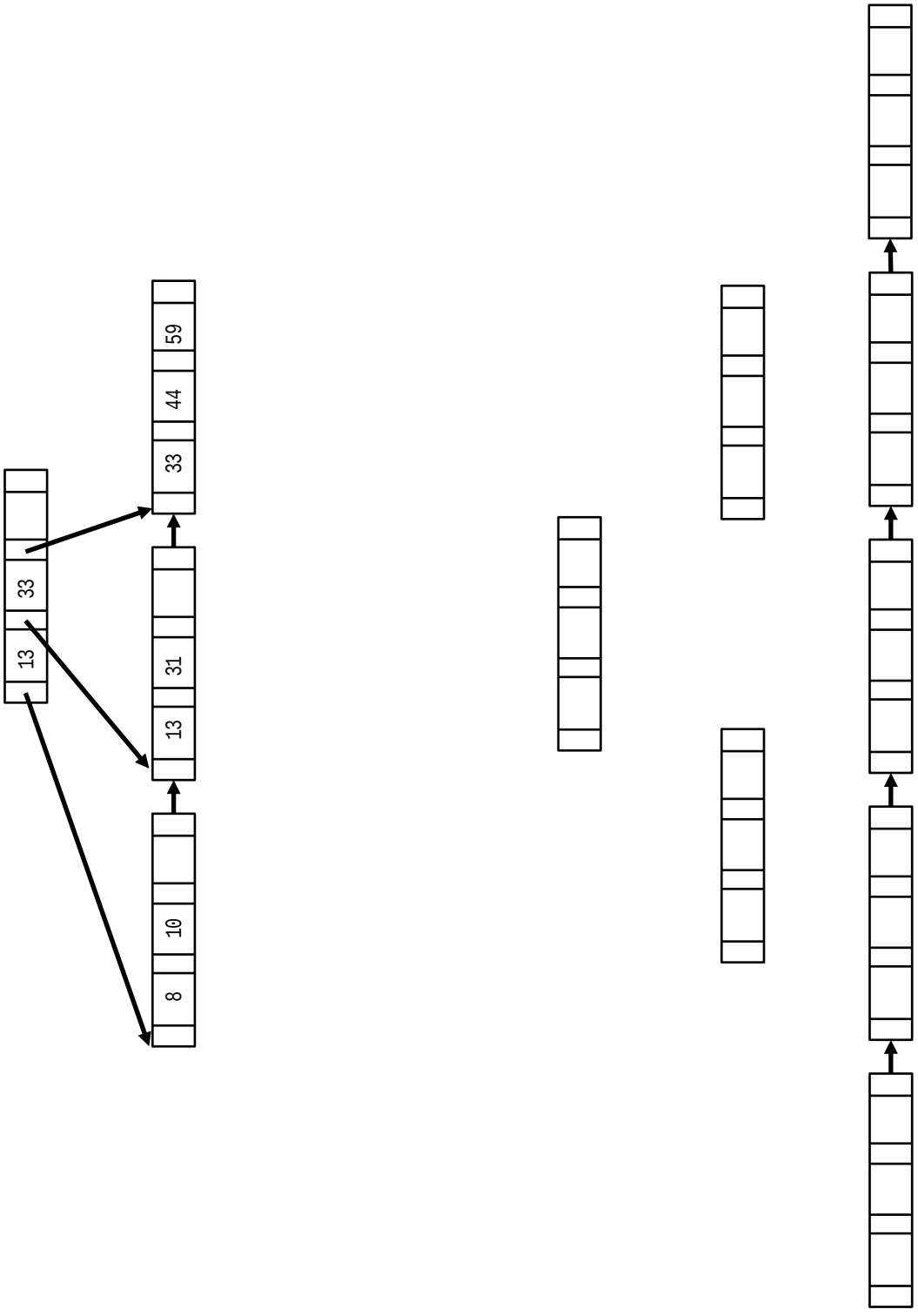
Exercise 3: For the B+-tree below with order 2 and fan out 4, show the tree that would result after *successively* applying the following operations in order. Add nodes to or cross out nodes in the empty B+-tree below as necessary.

i. insert 45 ii. insert 35 iii. insert 40 iv. delete 59

Perform the following operations in the order given

i. insert 45 ii. insert 35 iii. insert 40 iv. delete 59

Initial B+-tree



You must upload this completed exercise sheet to Canvas by **11:00 p.m. today.**

Name: _____/_____ **Student#:** _____ **Date:** _____
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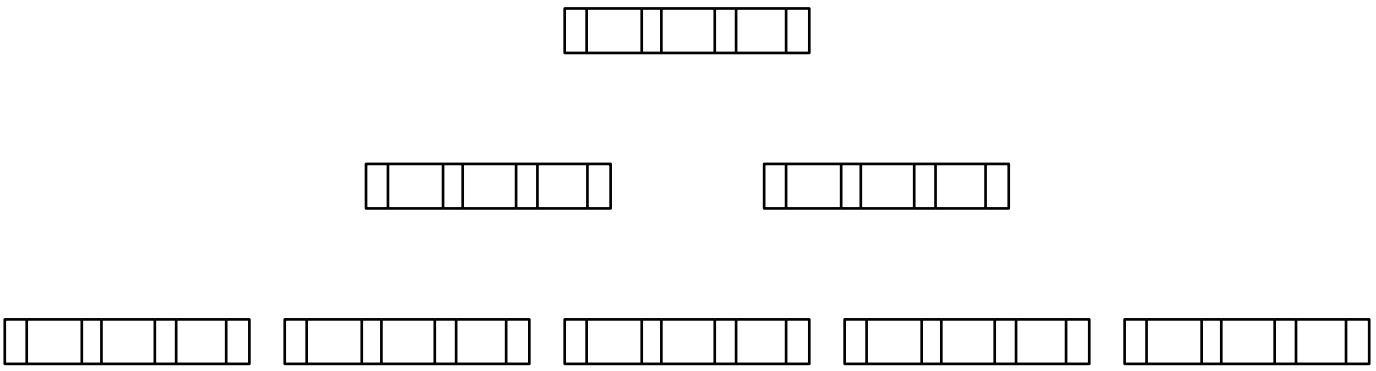
Indexing: B$^+$-tree

Exercise 4: Using the template below, construct a B$^+$-tree for the following set of search-key values using bulk loading, which creates leaf nodes from left to right. Assume that each node can hold 4 pointers (i.e., 3 values) and that each leaf node is loaded with the minimum number of values.

2 3 5 7 11 17 19 23 29 31



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