

Physical Data Organization and Indexing (supplemental material)

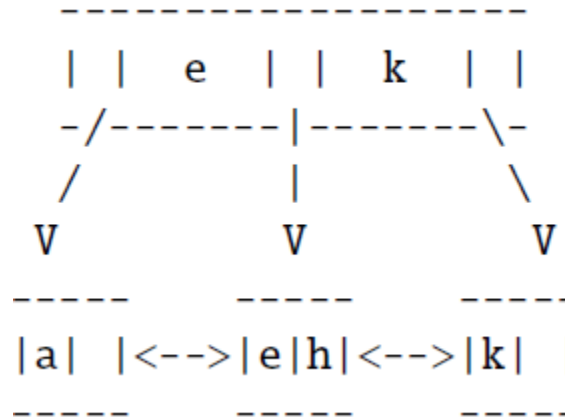
CSE 532, Theory of Database Systems

Stony Brook University

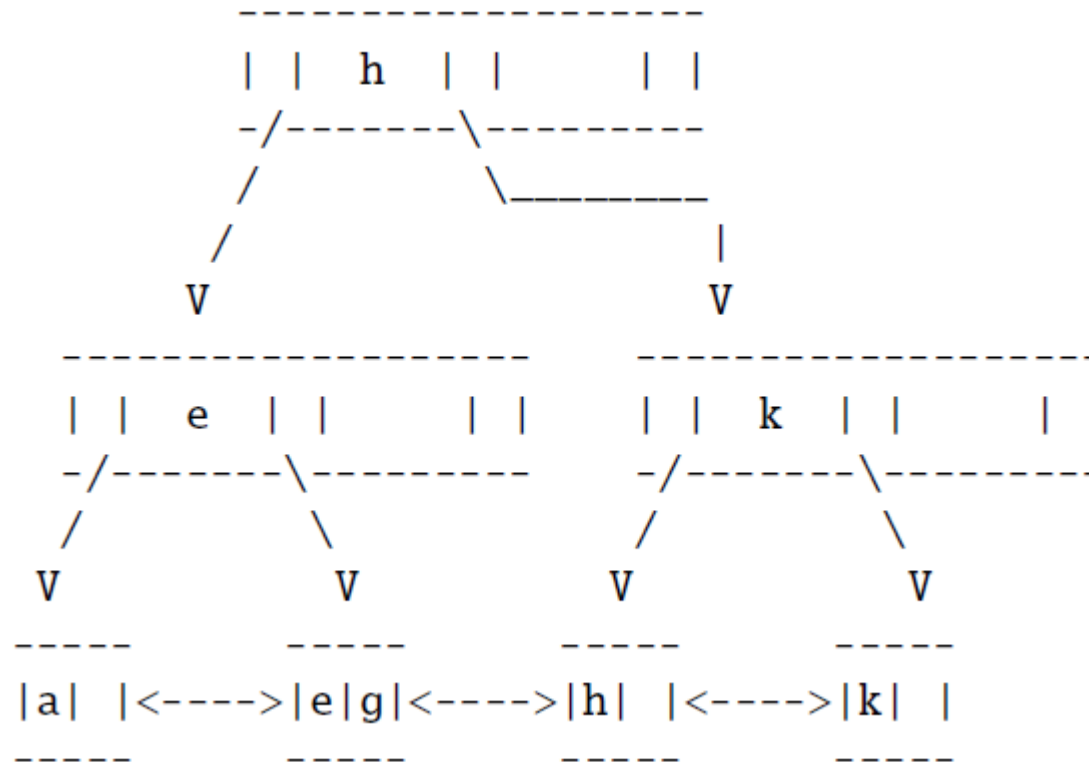
<http://www.cs.stonybrook.edu/~cse532>

B+ tree example 1

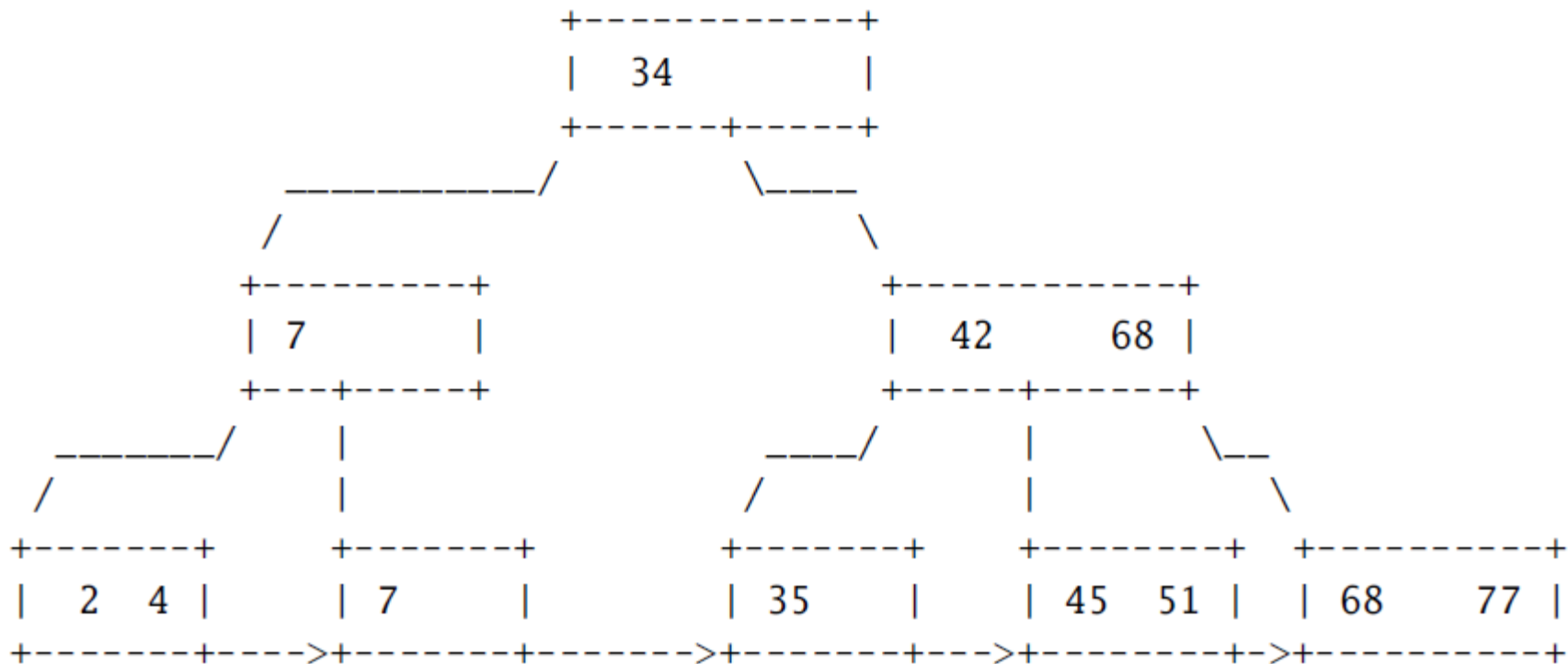
- Show what the following B+ tree looks like after the insertion of g.



B+ tree example 1



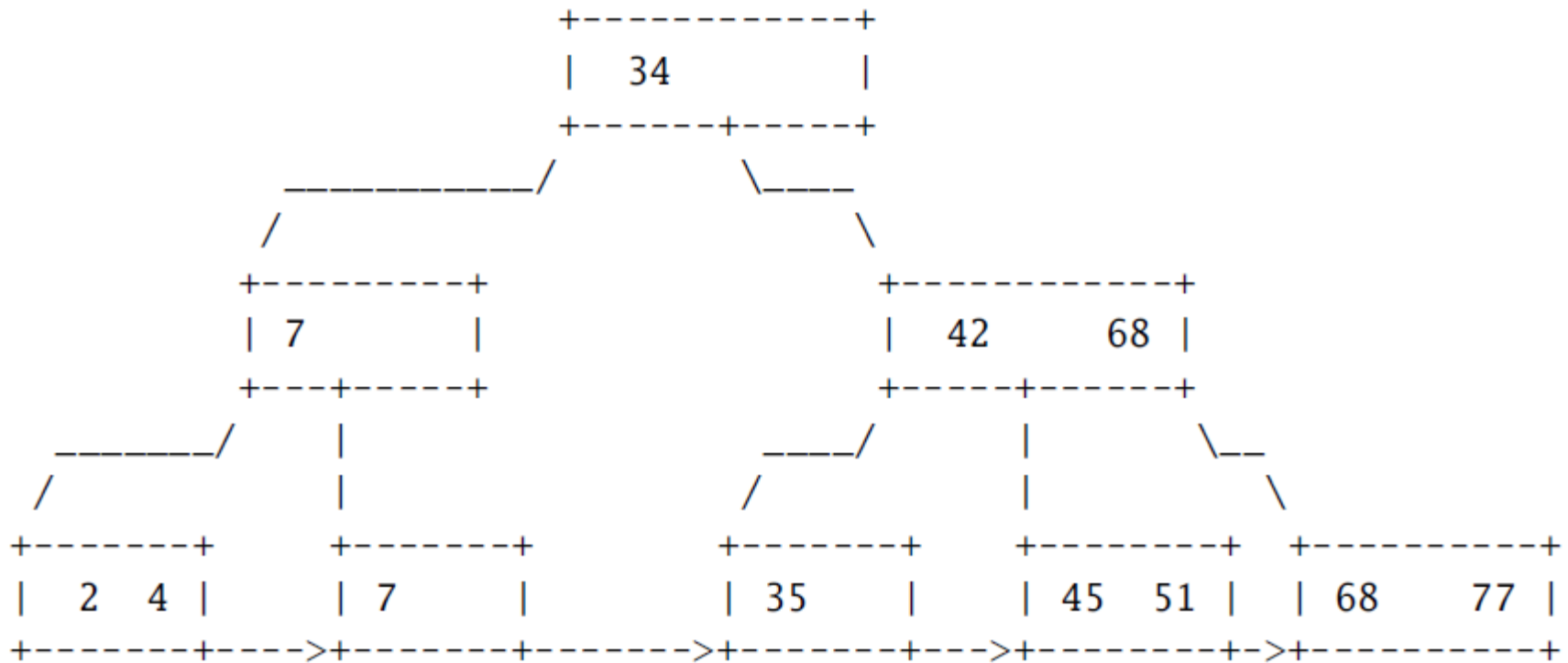
B+ tree example 2



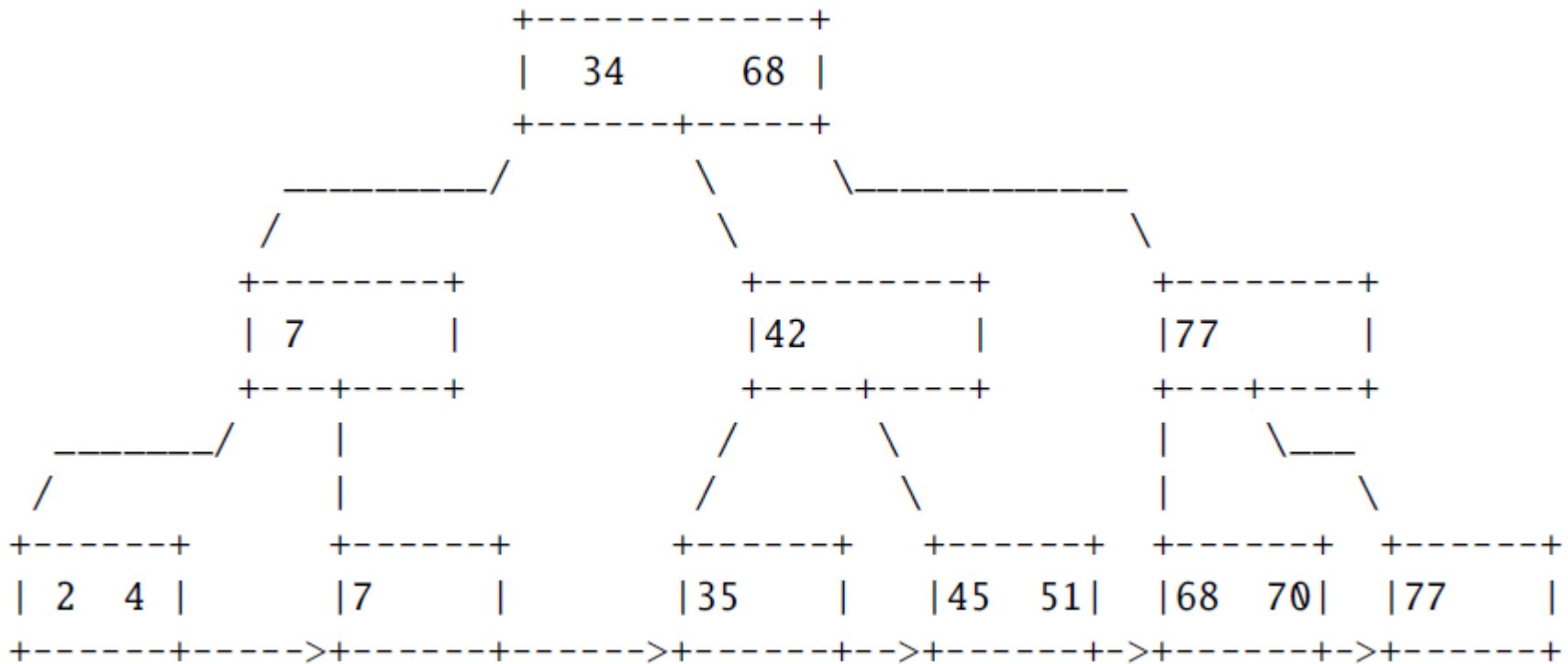
- Assuming that an index is *unclustered*, what is the maximal size (measured in data records) of a file that can be indexed by the depicted B+-tree.
 - Unclustered index: Each leaf entry can index only a single data record, so the max file size is 8 data records.
- Same question, but assume that the index is now *clustered*.
 - Clustered index: the tree can index 8 *pages*, which can contain up to 80 data records.

B+ tree example 2

- Show the B+-tree after inserting a new record with search key value 70

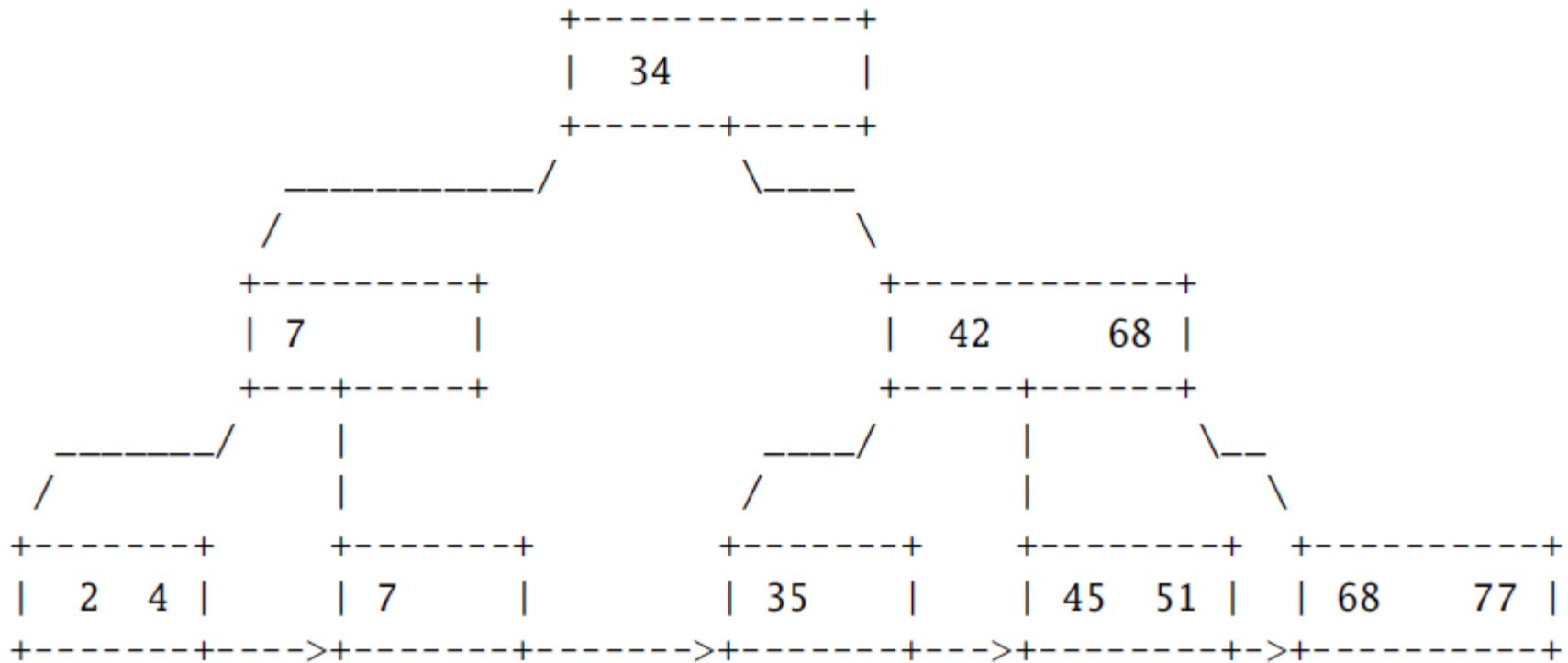


B+ tree example 2

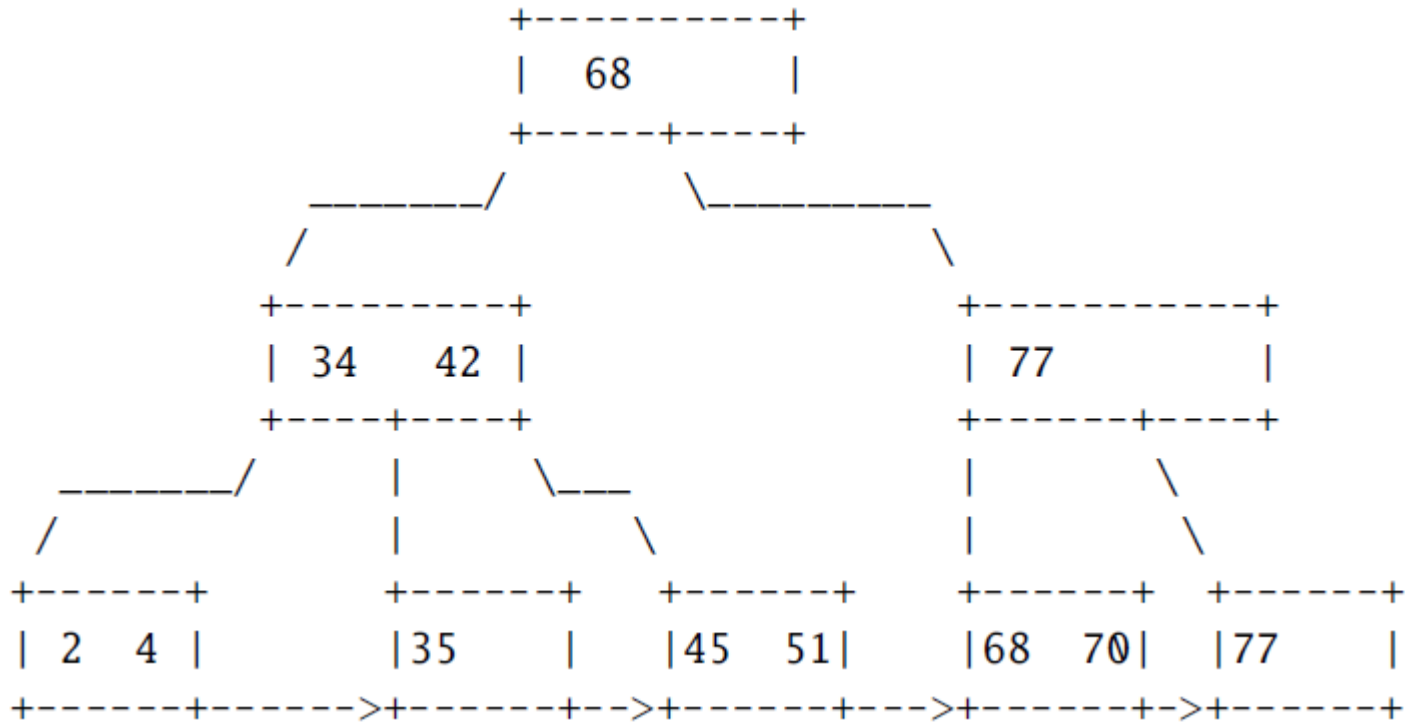


B+ tree example 2

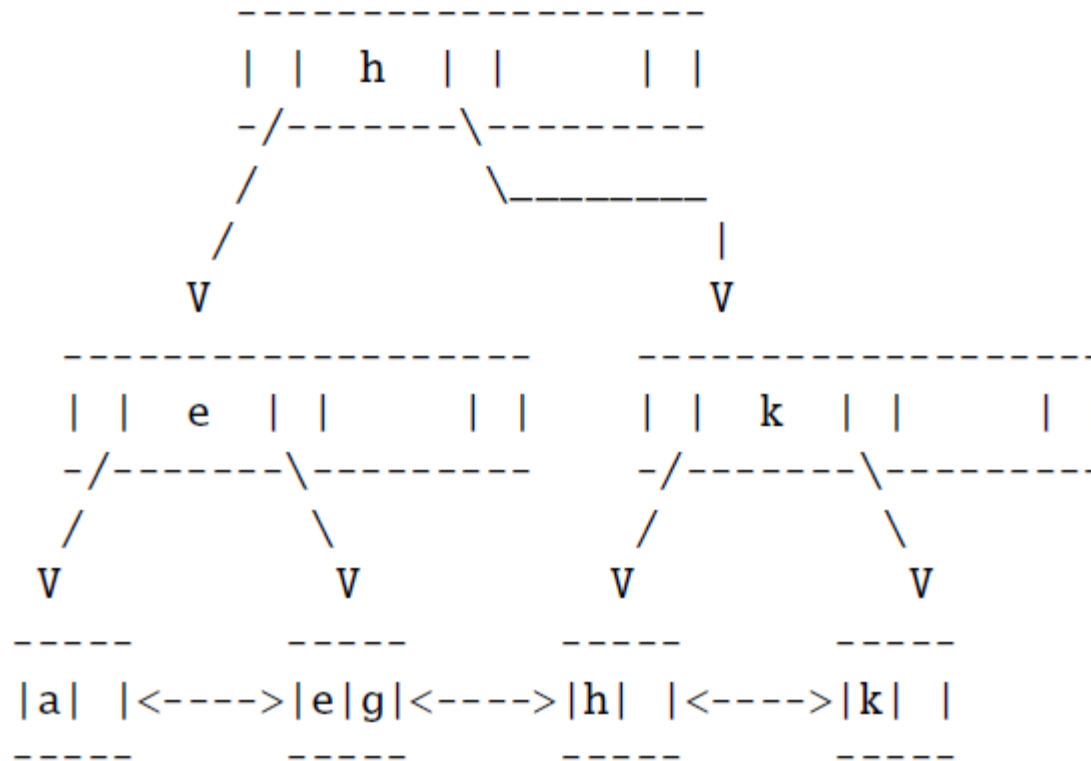
- Show the tree after deletion of the record with search key 7.



B+ tree example 2



B+ tree example 3



- How many pages of actual data file does the tree provide index for?
 - 5 pages. Each leaf key in the tree can index 1 page of the data file.