HW#1

December 2, 2019

This is an optional homework, provided entirely to help you prepare for the final. Print this out, do your work on the pages, scan and submit by Nov 10 here to have your homework graded and get feedback.

1. B+-tree insertion.

Given the above tree, show the resulting tree after inserting “E”. Draw the ending tree configuration, and the series of steps that you took to get there, e.g.:

- Inserted “XX” into node 1 “YY,YZ,ZZ”.
- Split 1 into 1 and 1’
- Inserted pointer to 1’ into node 2.
- Split node 2......

answer:

1. Insert E into 5
2. Split 5 into 5 (w/ first two keys) and 5’ (rest)
3. Insert ptr for 5’ into 2
4. Split 2 into 2 (w/ first two pointers) and 2’ (rest)
5. Insert ptr for 2’ into 1
6. Key E “rotates” up to 1
Given the above tree, show the resulting tree after deleting “H”. Draw the ending tree configuration, and the series of steps that you took to get there.

answer:

1. Delete H from 8
2. Merge 7,8
3. 3 has too few pointers
4. 3 can’t merge with 2, so borrows last pointer
   a. G rotates from 1 to 3
   b. F rotates from 2 up to 1