CSE 332: Data Structures and Parallelism

Exercises (B-Trees)

Directions: *This is an optional exercise to help you prepare for the midterm. Solutions will be discussed in section on 10/25/2018.*

EX OPT. B-Tree Insertion (0 points)

Show the result of inserting

$$28, \ 12, \ 17, \ 4, \ 31, \ 34, \ 8, \ 14, \ 16$$

in that order into an initially empty B-Tree with $M = 3$ and $L = 2$. Show the tree after each insertion, clearly labeling which tree is which. In an actual implementation, there is flexibility in how insertion overflow is handled. However, in this problem, follow these three guidelines:

- Always use splitting (not adoption).

- Split leaf nodes by keeping the smallest 2 elements in the original node and putting the 1 largest element in the new node.

- Split internal nodes by keeping the 2 children with the smaller values attached to the original node and attach the 2 children with the larger values to the new node.