Assignment 2

Posted on Feb 9, due on Feb 23

Maximum total of 35 points.

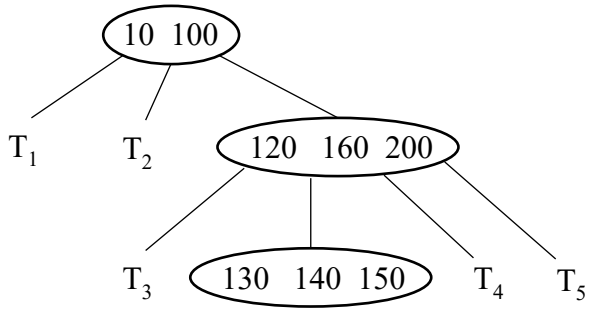
(*20 points*)

1. B-TREES
   For both parts the minimum degree t = 2.

a). Consider the B-Tree below. Illustrate the operation:

B-Tree-Insert (T, 145)

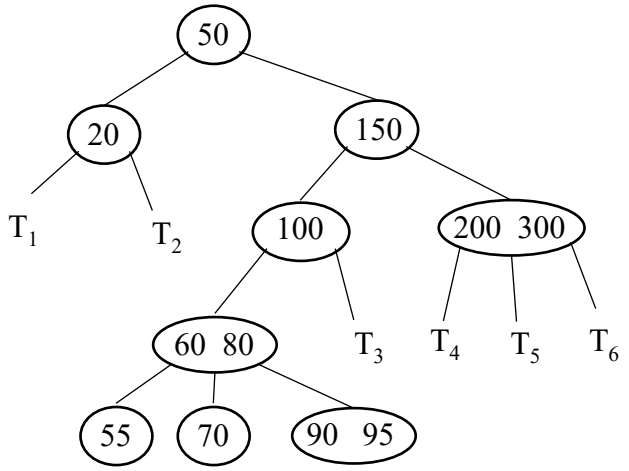
Show your work, the tree obtained after applying each step.



b). Consider the B-Tree below. Illustrate the operation:

B-Tree-Delete (T, 100)

Show your work: the rule used and the tree obtained after each step.



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(*15 points*)
2. BACKTRACKING
Solve the m-Independent Set Problem (defined below) using a backtracking algorithm. Write the pseudo-code and analyze its worst-case running time. **You have to use the general framework described in class. All other attempts will not be graded.**

m-Independent Set Problem: Given a graph G with n nodes, where $n > 2$, and a value m such that $1 < m < n$, find whether G has an independent set of size m. Note that G, m, and n are given as input in this problem.